

Please do not destroy or throw away this publication. If you have no further use for it write to the Geological Survey at Washington and ask for a frank to return it

DEPARTMENT OF THE INTERIOR
Hubert Work, Secretary

U. S. GEOLOGICAL SURVEY
George Otis Smith, Director

WATER-SUPPLY PAPER 583

SURFACE WATER SUPPLY OF THE
UNITED STATES
1924

PART III. OHIO RIVER BASIN

NATHAN C. GROVER, Chief Hydraulic Engineer
A. W. HARRINGTON, A. H. HORTON, LASLEY LEE, H. E. GROSBACH
W. R. KING, W. E. HALL, and E. D. BURCHARD, District Engineers

Prepared in cooperation with the
STATES OF NEW YORK, WEST VIRGINIA, OHIO, ILLINOIS
TENNESSEE, NORTH CAROLINA, AND ALABAMA



UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON
1927

DEPARTMENT OF THE INTERIOR
Hubert Work, Secretary

U. S. GEOLOGICAL SURVEY
George Otis Smith, Director

Water-Supply Paper 583

SURFACE WATER SUPPLY OF THE UNITED STATES

1924

PART III. OHIO RIVER BASIN

NATHAN C. GROVER, Chief Hydraulic Engineer
A. W. HARRINGTON, A. H. HORTON, LASLEY LEE, H. E. GROSBACH
W. R. KING, W. E. HALL, and E. D. BURCHARD, District Engineers

Prepared in cooperation with the
STATES OF NEW YORK, WEST VIRGINIA, OHIO, ILLINOIS
TENNESSEE, NORTH CAROLINA, AND ALABAMA



**Water Resources Branch,
Geological Survey,
Box 3106, Capitol Station
Oklahoma City, Okla.**

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON
1927

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
35 CENTS PER COPY

CONTENTS

	Page
Authorization and scope of work.....	1
Definition of terms.....	2
Explanation of data	3
Accuracy of field data and computed results.....	4
Publications.....	5
Cooperation	9
Division of work.....	9
Gaging-station records.....	10
Allegheny River Basin	10
Allegheny River at Red House, N. Y.....	10
Monongahela River Basin.....	12
Tygart River near Daily, W. Va.....	12
Tygart River at Belington, W. Va.....	13
Tygart River at Fetterman, W. Va.....	15
Monongahela River at Lock 15, Hoult, W. Va.....	16
Middle Fork at Midvale, W. Va.....	25
Buckhannon River at Hall, W. Va.....	26
West Fork at Butcherville, W. Va.....	27
West Fork at Clarksburg, W. Va.....	36
Buffalo Creek at Barrackville, W. Va.....	38
Cheat River near Parsons, W. Va.....	40
Cheat River at Rowlesburg, W. Va.....	41
Cheat River near Morgantown, W. Va.....	44
Blackwater River at Davis, W. Va.....	46
Shavers Fork at Cheat Bridge, W. Va.....	50
Shavers Fork at Bemis, W. Va.....	52
Shavers Fork at Parsons, W. Va.....	53
Big Sandy Creek at Rockville, W. Va.....	56
Beaver River Basin.....	59
Mahoning River near Deerfield, Ohio.....	59
Mahoning River at Youngstown, Ohio.....	60
Little Beaver Creek Basin.....	62
Little Beaver Creek near East Liverpool, Ohio.....	62
Yellow Creek Basin.....	63
Yellow Creek at Hammondsville, Ohio.....	63
Muskingum River Basin.....	64
Tuscarawas River at Crystal Spring, Ohio.....	64
Tuscarawas River near Dover, Ohio.....	66
Tuscarawas River at Newcomerstown, Ohio.....	67
Muskingum River at Dresden, Ohio.....	69
Muskingum River at McConnelsville, Ohio.....	71
Sandy Creek at Sandyville, Ohio.....	73
Nimishillen Creek at North Industry, Ohio.....	75
Stillwater Creek at Uhrichsville, Ohio.....	77
Mohican River at Greer, Ohio.....	79
Walhonding River at Pomerene, Ohio.....	81
Kokosing River near Millwood, Ohio.....	82
Killbuck Creek at Layland, Ohio.....	84
Licking River at Toboso, Ohio.....	85

Gaging-station records—Continued.

	Page
Hocking River Basin.....	87
Hocking River near Lancaster, Ohio.....	87
Hocking River at Athens, Ohio.....	88
Kanawha River Basin.....	90
New River at Eggleston, Va.....	90
New River near Hinton, W. Va.....	92
Greenbrier River at Alderson, W. Va.....	93
Raccoon Creek Basin.....	95
Raccoon Creek at Adamsville, Ohio.....	95
Scioto River Basin.....	101
Scioto River near Dublin, Ohio.....	101
Scioto River at Columbus, Ohio.....	103
Scioto River at Chillicothe, Ohio.....	105
Little Scioto River near Marion, Ohio.....	106
Olentangy River near Delaware, Ohio.....	108
Big Walnut Creek at Rees, Ohio.....	110
Alum Creek at Columbus, Ohio.....	112
Darby Creek at Darbyville, Ohio.....	114
Paint Creek at Bainbridge, Ohio.....	115
Paint Creek near Bourneville, Ohio.....	116
Whiteoak Creek Basin.....	118
Whiteoak Creek near Georgetown, Ohio.....	118
Little Miami River Basin.....	120
Todd Fork near Wilmington, Ohio.....	120
Licking River Basin.....	121
Licking River at McKinneysburg, Ky.....	121
Miami River Basin.....	122
Miami River at Sidney, Ohio.....	122
Miami River at Taylorsville, Ohio.....	124
Miami River at Dayton, Ohio.....	126
Miami River at Venice, Ohio.....	128
Loramie Creek at Lockington, Ohio.....	130
Stillwater River at Pleasant Hill, Ohio.....	132
Mad River near Springfield, Ohio.....	133
Twin Creek near Germantown, Ohio.....	136
Kentucky River Basin.....	137
Kentucky River at Lock 10, near Winchester, Ky.....	137
Wabash River Basin.....	138
Embarrass River at Ste. Marie, Ill.....	138
Little Wabash River at Wilcox, Ill.....	140
Saline River Basin.....	141
Middle Fork of Saline River near Harrisburg, Ill.....	141
Cumberland River Basin.....	143
Cumberland River at Barbourville, Ky.....	143
Cumberland River at Cumberland Falls, Ky.....	145
Cumberland River at Burnside, Ky.....	147
Cumberland River at Celina, Tenn.....	149
Cumberland River at Carthage, Tenn.....	151
Cumberland River at Nashville, Tenn.....	153
Laurel River near Otas, Ky.....	155
Rockcastle River at Rockcastle Springs, Ky.....	157
New River near New River, Tenn.....	158
South Fork of Cumberland River at Nevelsville, Ky.....	160

Gaging-station records—Continued.

Cumberland River Basin—Continued.

	Page
Obeys River near Boom, Tenn.....	162
Caney Fork near Rock Island, Tenn.....	163
Caney Fork near Silver Point, Tenn.....	165
Collins River near Rowland, Tenn.....	167
Harpeth River at Belleview, Tenn.....	169
Red River near Adams, Tenn.....	171
Tennessee River Basin.....	173
French Broad River at Blantyre, N. C.....	173
French Broad River at Asheville, N. C.....	175
French Broad River near Newport, Tenn.....	177
French Broad River at Dandridge, Tenn.....	179
Tennessee River at Knoxville, Tenn.....	181
Tennessee River at Loudon, Tenn.....	183
Tennessee River at Chattanooga, Tenn.....	184
Tennessee River at Florence, Ala.....	187
Tennessee River at Johnsonville, Tenn.....	189
Davidson River near Brevard, N. C.....	191
Swannanoa River at Biltmore, N. C.....	193
Pigeon River near Crabtree, N. C.....	195
Pigeon River at Newport, Tenn.....	197
North Toe River at Spruce Pine, N. C.....	199
Nolichucky River at Embreeville, Tenn.....	200
Nolichucky River near Greeneville, Tenn.....	202
Nolichucky River near Morristown, Tenn.....	204
Little Pigeon River at Sevierville, Tenn.....	206
South Fork of Holston River near Chilhowie, Va.....	207
South Fork of Holston River at Bluff City, Tenn.....	209
Holston River near Rogersville, Tenn.....	211
Middle Fork of Holston River at Chilhowie, Va.....	213
Watauga River at Butler, Tenn.....	215
Doe River at Valley Forge, Tenn.....	217
North Fork of Holston River near Saltville, Va.....	219
North Fork of Holston River at Mendota, Va.....	221
Little Tennessee River at Franklin, N. C.....	223
Little Tennessee River at Judson, N. C.....	225
Little Tennessee River at Calderwood, Tenn.....	227
Little Tennessee River at McGhee, Tenn.....	229
Cullasaja River at Cullasaja, N. C.....	231
Nantahala River at Almond, N. C.....	233
Tuckasegee River near East Laport, N. C.....	235
Tuckasegee River at Bryson, N. C.....	235
Oconalufly River at Cherokee, N. C.....	239
Cheoah River at Johnson, N. C.....	241
Clinch River at Cleveland, Va.....	243
Clinch River at Speer Ferry, Va.....	245
Clinch River near Lone Mountain, Tenn.....	247
Clinch River at Clinton, Tenn.....	249
Powell River near Pennington, Va.....	251
Powell River near Arthur, Tenn.....	252
Emery River at Deermont, Tenn.....	254
Hiwassee River at Murphy, N. C.....	256

Gaging-station records—Continued.

Tennessee River Basin—Continued.		Page
Hiwassee River at Reliance, Tenn.....		258
Hiwassee River at Charleston, Tenn.....		260
Shooting Creek near Hayesville, N. C.....		262
Valley River at Tomotla, N. C.....		263
Nottely River near Ranger, N. C.....		265
Toccoa River near Dial, Ga.....		267
Toccoa River near Morganton, Ga.....		269
Ocoee River at Copperhill, Tenn.....		270
Ocoee River at McHarge, Tenn.....		271
Ocoee River at Emf, Tenn.....		273
Ocoee River at Parksville, Tenn.....		275
Sequatchie River near Whitwell, Tenn.....		277
Elk River at Estill Springs, Tenn.....		279
Elk River near Elkmont, Ala.....		281
Duck River at Normandy, Tenn.....		283
Duck River at Columbia, Tenn.....		285
Duck River at Centerville, Tenn.....		287
Buffalo River near Flatwoods, Tenn.....		289
Cache River Basin.....		291
Cache River at Forman, Ill.....		291
Miscellaneous discharge measurements.....		293
Index.....		295

ILLUSTRATIONS

	Page
PLATE 1. <i>A</i> , Price current meters; <i>B</i> , Typical gaging station.....	2
2. Typical gaging stations: <i>A</i> , For wading measurement; <i>B</i> , For bridge measurement.....	2
3. Water-stage recorders: <i>A</i> , Au; <i>B</i> , Gurley; <i>C</i> , Stevens.....	2

SURFACE WATER SUPPLY OF OHIO RIVER BASIN, 1924

AUTHORIZATION AND SCOPE OF WORK

This volume is one of a series of 14 reports presenting records of measurements of flow made on streams in the United States during the year ending September 30, 1924.

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 the 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 arid West. Since the fiscal year ending June 30, 1895, successive appropriation bills passed by Congress have carried the following item:

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, 1895-1925

1895 -----	\$12, 500. 00
1896 -----	20, 000. 00
1897 to 1900, inclusive -----	50, 000. 00
1901 to 1902, inclusive -----	100, 000. 00
1903 to 1906, inclusive -----	200, 000. 00
1907 -----	150, 000. 00
1908 to 1910, inclusive -----	100, 000. 00
1911 to 1917, inclusive -----	150, 000. 00
1918 -----	175, 000. 00
1919 -----	148, 244. 10
1920 -----	175, 000. 00
1921 to 1923, inclusive -----	180, 000. 00
1924 and 1925 -----	170, 000. 00

In the execution of the work many private and State organizations have cooperated either by furnishing data 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 5,120 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1924, 1,670 gaging stations were being maintained by the 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, miners’ 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, run-off in inches, acre-feet, and millions of cubic 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.

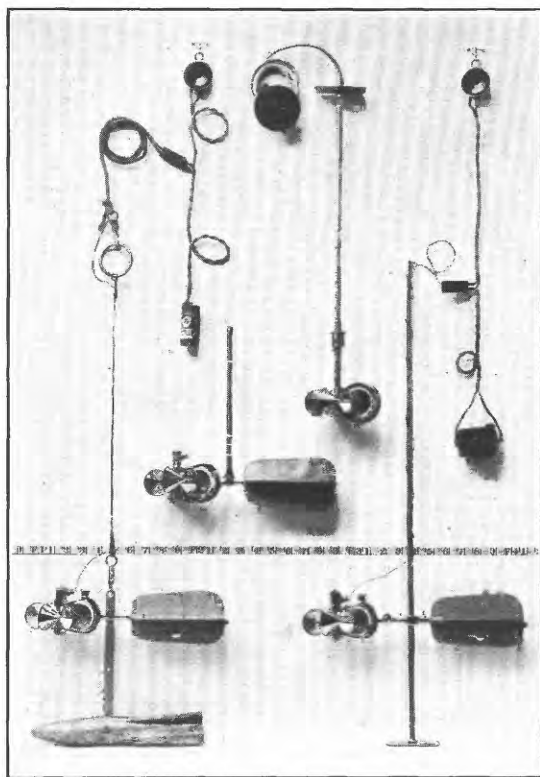
“Run-off in inches” is the depth to which an area would be covered if all the water flowing from it in a given period were uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in inches.

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.

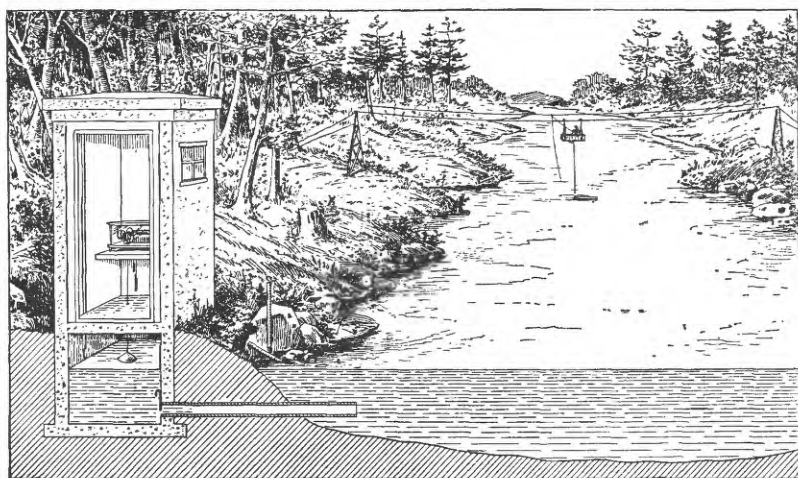
The following terms not in common use are here defined:

“Stage-discharge relation,” an abbreviation 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 determines 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.



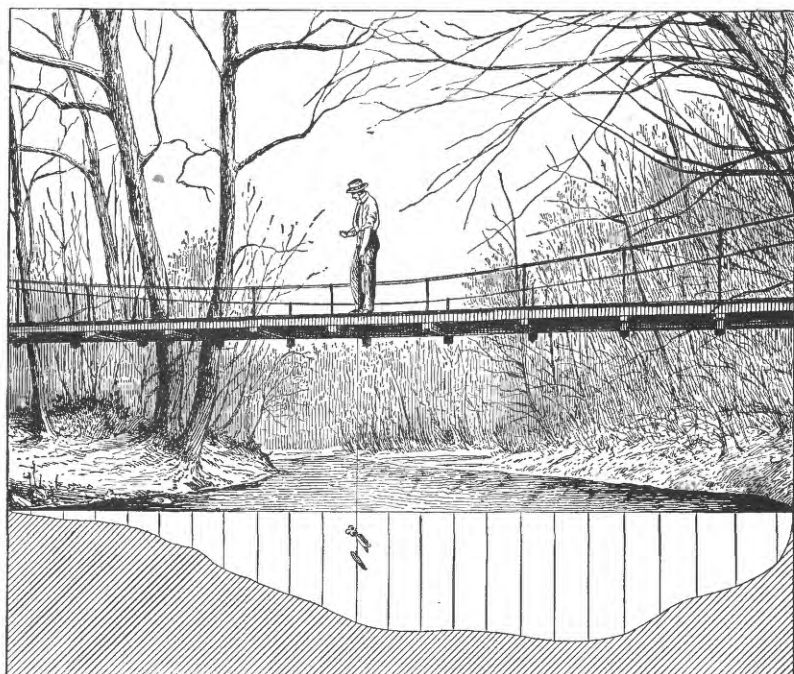
A. PRICE CURRENT METERS



B. TYPICAL GAGING STATION



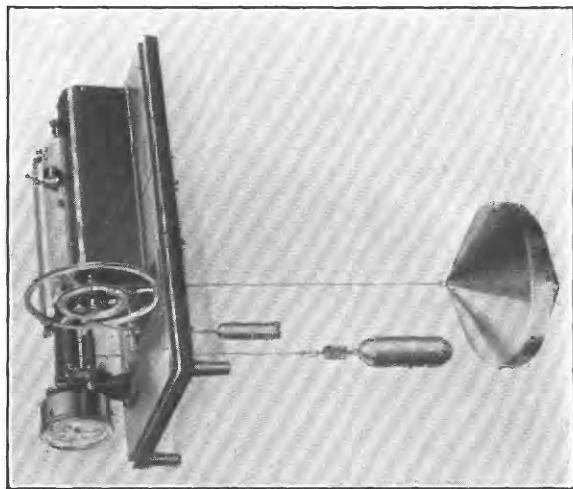
A



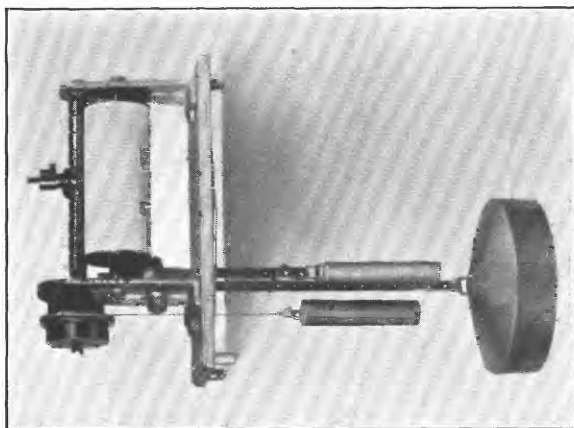
B

TYPICAL GAGING STATIONS

A, For wading measurement; B, for bridge measurement



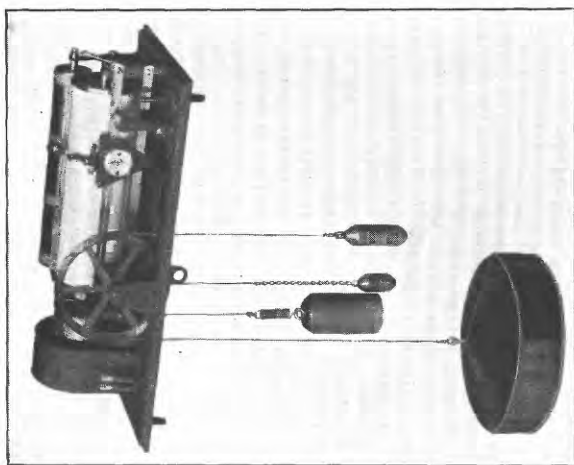
A



B

WATER-STAGE RECORDERS

A. Au; B, Gurley; C, Stevens



C

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, 1923, and ending September 30, 1924. 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 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. (See Pls. 1–3.)

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 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 giving records of discharge measurements, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off.

If the base data are insufficient to determine the daily discharge, tables giving daily gage height and records of discharge measurements are published.

The description of the station gives, in addition to statements regarding location and equipment, information in regard to any conditions 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 depth in inches may be subject to gross errors caused by the inclusion of large noncontributing districts in the measured drainage area, 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" published by the Geological Survey in earlier reports should be used with caution because of possible inherent sources of error not known to the Geological Survey.

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 be first 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 table of monthly discharge gives 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 bulletins, professional papers, monographs, 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.

PART X. Great Basin.**XI. Pacific slope basins in California.****XII. North Pacific slope basins, in three volumes:**

A, Pacific slope basins in Washington and upper Columbia River Basin.

B, Snake River Basin.

C, Lower Columbia River Basin and Pacific slope basins in Oregon.

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 of the United States.

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

Boston, Mass., 2500 Customhouse.

Albany, N. Y., 704 Journal Building.

Trenton, N. J., Statehouse.

Charlottesville, Va., care of University of Virginia.

Asheville, N. C., 316 Jackson Building.

Chattanooga, Tenn., 830 Power Building.

Columbus, Ohio, Engineering Experiment Station, Ohio State University.

Chicago, Ill., 950 Transportation Building.

Madison, Wis., c/o Railroad Commission of Wisconsin.

Ames, Iowa, State Highway Commission Building.

Rolla, Mo., Rolla Building, School of Mines and Metallurgy.

Topeka, Kans., 23 Federal Building.

Helena, Mont., 45-46 Federal Building.

Denver, Colo., 403 Post Office Building.

Tucson, Ariz., 106 College of Law Building, University of Arizona.

Salt Lake City, Utah, 313 Federal Building.

Boise, Idaho, Federal Building.

Idaho Falls, Idaho, 228 Federal Building.

Tacoma, Wash., 404 Federal Building.

Portland, Oreg., 606 Post Office Building.

San Francisco, Calif., 303 Customhouse.

Los Angeles, Calif., 600 Federal Building.

Austin, Tex., Capitol Building.

Honolulu, Hawaii, Territorial 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 5,120 points in the United States, and the data obtained have been published in the reports tabulated on pages 7 and 8.

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-height, 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, and western United States.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also some long-time records).	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.

NOTE.—No data regarding stream flow are given in the 15th and 17th 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.

The following table gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1924. 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.

Number of water-supply papers containing results of stream measurements, 1899-1924

[For basins included see p. 5]

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII		
												A	B	C
1899 ^a	35	b 35, 36	36	36	c 36, 37	37	37	37	d 37, 38	38, e 39	38, f 39	38	38	38
1900 ^g	47, h 48	48	i 49	49	49, j 50	50	50	50	51	51	51	51	51	51
1901	65, 75	65, 75	65, 75	65, 75	k 65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902	82	b 82, 83	83	83	84	84	84	84	85	85	85	85	85	85
1903	97	b 97, 98	98	98	99	99	99	99	100	100	100	100	100	100
1904	n 124, o 125, p 126, 127	p 126, 127	128	129	k 98, 99, m 100	130, q 131	k 128, 131	132	133	133, r 134	134	135	135	135
1905	a 165, o 166, p 167	p 167, 168	169	170	171	172	k 169, 173	174	175, e 177	176, r 177	177	178	178	177, 178
1906	a 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	332-A	332-B	332-C
1913	351	352	353	354	355	356	357	358	359	360	361	362-A	362-B	362-C
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
1921	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

^a Rating tables and index to Water-Supply Papers 35-39 contained in Water-Supply Paper 39. Tables for 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 for 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 proper.

^m Hudson Bay only.

ⁿ New England rivers only.

^o Hudson River to Delaware River, inclusive.

^p Susquehanna River to York 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.

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" published by the Geological Survey in earlier reports should be used with caution because of possible inherent sources of error not known to the Geological Survey.

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 be first 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 table of monthly discharge gives 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 bulletins, professional papers, monographs, 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.

PART X. Great Basin.**XI.** Pacific slope basins in California.**XII.** North Pacific slope basins, in three volumes:*A*, Pacific slope basins in Washington and upper Columbia River Basin.*B*, Snake River Basin.*C*, Lower Columbia River Basin and Pacific slope basins in Oregon.

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 of the United States.

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

Boston, Mass., 2500 Customhouse.

Albany, N. Y., 704 Journal Building.

Trenton, N. J., Statehouse.

Charlottesville, Va., care of University of Virginia.

Asheville, N. C., 316 Jackson Building.

Chattanooga, Tenn., 830 Power Building.

Columbus, Ohio, Engineering Experiment Station, Ohio State University.

Chicago, Ill., 950 Transportation Building.

Madison, Wis., c/o Railroad Commission of Wisconsin.

Ames, Iowa, State Highway Commission Building.

Rolla, Mo., Rolla Building, School of Mines and Metallurgy.

Topeka, Kans., 23 Federal Building.

Helena, Mont., 45-46 Federal Building.

Denver, Colo., 403 Post Office Building.

Tucson, Ariz., 106 College of Law Building, University of Arizona.

Salt Lake City, Utah, 313 Federal Building.

Boise, Idaho, Federal Building.

Idaho Falls, Idaho, 228 Federal Building.

Tacoma, Wash., 404 Federal Building.

Portland, Oreg., 606 Post Office Building.

San Francisco, Calif., 303 Customhouse.

Los Angeles, Calif., 600 Federal Building.

Austin, Tex., Capitol Building.

Honolulu, Hawaii, Territorial 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 5,120 points in the United States, and the data obtained have been published in the reports tabulated on pages 7 and 8.

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-height, 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, and western United States.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also some long-time records).	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.

NOTE.—No data regarding stream flow are given in the 15th and 17th 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.

The following table gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1924. 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.

Number of water-supply papers containing results of stream measurements, 1899-1924

[For basins included see p. 5.]

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII		
												A	B	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	48	48	49, i 50	50	50	50	51	51	51	51	51
1901	66, 75	65, 75	65, 75	65, 75	k 65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902	82	82, 83	82	82, 83	83	84	84	84	85	85	85	85	85	85
1903	97	97, 98	98	97, 98	98	99	99	99	100	100	100	100	100	100
1904	124, o 125, p 126	p 126, 127	128	129	k 98, 99, m 100	130, q 131	k 98, 99	132	133	133, r 134	134	135	135	135
1905	m 165, o 166, p 167	p 167, 168	169	170	k 128, 130	172	k 169, 173	174	175, s 177	176, r 177	177	178	178	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, s 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	332-A	332-B	332-C
1913	351	352	353	354	355	356	357	358	359	360	361	362-A	362-B	362-C
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
1921	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

^a Rating tables and index to Water-Supply Papers 35-39 contained in Water-Supply Paper 38. Tables for 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 for monthly discharge for 1900 in Twenty-second Annual Report, Part IV.

^h Wissachickon and Schuykill 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 proper.

^m Hudson Bay only.

ⁿ New England rivers only.

^o Hudson River to Delaware River, inclusive.

^p Susquehanna River to Yackin 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.

COOPERATION

The State of New York cooperated in maintaining the station on Allegheny River at Red House, N. Y.

The work in West Virginia was done in cooperation with the State Geological Survey, I. C. White, State geologist. Maj. E. L. Daley, district engineer at Pittsburgh office of the United States Engineer Corps also cooperated in maintaining some of the stations in the Monongahela River Basin. West Penn Power Co. cooperated in maintaining stations in the Cheat River Basin. West Virginia Power Co. cooperated in maintaining a gaging station on New River. The Clarksburg Water Board, Scotland G. Highland, general manager, cooperated in investigations in West Virginia.

Work in Ohio was carried on in cooperation with the Ohio Cooperative Topographic Survey, C. E. Sherman, inspector.

Work in Illinois was carried on in cooperation with the Illinois Department of Public Works, division of waterways, W. L. Sackett, superintendent.

Work in Kentucky in the Cumberland River Basin was done in cooperation with the Nashville office of the United States Engineer Corps, Col. E. L. Dent, district engineer.

Work in Tennessee was done in cooperation with the Tennessee Geological Survey, Wilbur A. Nelson, State geologist; the Chattanooga office of the United States Engineer Corps, Maj. Harold C. Fiske, district engineer; and the Nashville office of the United States Engineer Corps, Col. E. L. Dent, district engineer.

Work in North Carolina was done in cooperation with the North Carolina Geological and Economic Survey, Joseph Hyde Pratt, director, succeeded by Brent S. Drane in March, 1924; and the Chattanooga office of the United States Engineer Corps, Maj. Harold C. Fiske, district engineer.

Work in the Tennessee River Basin in Virginia and Alabama was done in cooperation with the Chattanooga office of the United States Engineer Corps. The Alabama Geological Survey, Eugene Allen Smith, State geologist, paid the observer's salary at station on Elk River near Elkmont, Ala.

Financial assistance was also rendered by the Miami Conservancy District, West Virginia Power Co., Winchester Water Works Co., Tennessee Electric Power Co. (seven stations on Caney Fork, Toccoa, Ocoee, Hiwassee, and Tennessee Rivers), Southern Cities Power Co., and the Cumberland Hydroelectric Co.

DIVISION OF WORK

Data for Allegheny River at Red House, N. Y., were collected and prepared for publication under the direction of A. W. Harrington, district engineer, assisted by E. B. Shupe, J. L. Lamson, A. E. Johnson, and Miss Agnes D. Buchanan.

Data for stations in West Virginia and on New River at Eggleston, Va., were collected and prepared for publication under the direction of A. H. Horton, district engineer, assisted by J. J. Dirzulaitis, W. C. Wiggins, and O. D. Mussey.

Data for stations in Ohio were collected and prepared for publication under the direction of Lasley Lee, district engineer, assisted by E. E. R. Dornbach, F. R. Morgan, W. W. Perrin, W. A. Werner, F. A. English, and W. P. Ansley.

Data for stations in Illinois were collected and prepared for publication under the direction of H. E. Grosbach, district engineer, assisted by A. M. Wahl.

Data for stations in Kentucky, Tennessee, Alabama, Virginia (except New River at Eggleston), and Georgia were collected and prepared for publication under the direction of W. R. King, district engineer, assisted by Warren Withee, J. S. S. Jones, P. P. Livingston, J. P. Clawson, D. B. Ventres, Duncan Charlton, and Miss Mary Heird.

Data for stations in North Carolina were collected and prepared for publication under the direction of Warren E. Hall, district engineer, until July 31, 1924, and E. D. Burchard after August 4, assisted by J. H. Morgan, L. J. Hall, D. B. Ventres, P. P. Livingston, Duncan Charlton, and Mrs. Effie T. Workman.

The records were reviewed and manuscript assembled by B. J. Peterson and J. H. Morgan.

GAGING STATION RECORDS

ALLEGHENY RIVER BASIN

ALLEGHENY RIVER AT RED HOUSE, N. Y.

LOCATION.—At highway bridge in Red House, Cattaraugus County, about 5 miles below Salamanca and 13 miles above boundary between New York and Pennsylvania.

DRAINAGE AREA.—1,640 square miles.

RECORDS AVAILABLE.—September 4, 1903, to September 30, 1924.

GAGE.—Gurley seven-day graph water-stage recorder on left bank just below highway bridge; installed September 3, 1917; inspected by W. E. Coe.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Coarse gravel; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, 9.85 feet at 5 p. m. September 30 (discharge, 20,400 second-feet); minimum stage, 2.84 feet at 8 p. m. October 6 (discharge, 125 second-feet).

1903–1924: Maximum stage recorded, 13.6 feet at 10 a. m. March 2, 1910 (41,000 second-feet); minimum stage recorded, 2.7 feet several days in December, 1908 (discharge, about 100 second-feet).

ICE.—Stage-discharge relation usually affected by ice.

ACCURACY.—Stage-discharge relation practically permanent, except as affected by ice during a short period in February and March. Rating curve well defined between 100 and 10,000 second-feet. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of gage-height graph or, for days of considerable fluctuation, by averaging discharge for intervals of day. Records good, except during periods stated in footnote to daily-discharge table, for which they are fair.

Discharge measurements of Allegheny River at Red House, N. Y., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 10	Lamson and Johnson.....	2.85	128	Apr. 13	A. E. Johnson.....	5.58	4,360
Feb. 6	A. E. Johnson.....	4.86	2,860	Sept. 11	A. W. Harrington.....	4.52	2,200

Daily discharge, in second-feet, of Allegheny River at Red House, N. Y., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	232	283	4,080	10,100	1,730	750	7,860	3,600	1,780	2,900	426	320
2.....	192	290	3,300	9,860	1,590	750	6,200	3,460	1,720	2,360	418	532
3.....	166	297	2,190	9,860	1,410	700	4,830	3,380	1,670	1,890	400	1,520
4.....	148	283	1,700	10,900	1,300	650	4,960	5,500	1,620	1,610	367	919
5.....	143	261	1,670	8,020	1,590	1,790	5,500	5,100	1,610	1,730	717	672
6.....	125	261	2,690	5,050	2,840	4,150	8,970	4,320	1,440	2,120	953	590
7.....	125	268	5,920	4,080	2,760	3,600	14,000	3,840	1,320	1,980	760	570
8.....	131	344	4,990	4,080	2,080	2,400	12,600	4,200	1,260	3,380	738	550
9.....	137	434	4,320	3,600	1,590	2,150	11,600	6,790	1,230	3,960	620	1,060
10.....	137	409	4,450	3,050	1,580	1,930	9,180	8,500	1,190	3,600	650	2,900
11.....	137	290	3,960	11,600	1,350	1,700	6,940	7,550	1,150	3,160	550	2,050
12.....	131		3,380	16,700	1,320	1,500	5,360	7,860	1,500	2,450	452	1,380
13.....	131		3,050	11,300	1,090	1,350	4,320	10,600	1,400	2,260	400	1,890
14.....	131		3,380	8,840	984	1,290	4,320	9,520	1,520	2,430	367	2,540
15.....	131		2,840	6,200	945	1,250	4,080	8,840	1,470	1,830	344	1,700
16.....	131	297	2,410	6,040	919	1,230	3,600	7,700	1,280	1,470	336	1,320
17.....	137		2,190	12,000	880	1,190	3,160	6,350	1,110	1,300	375	1,070
18.....	137		313	1,940	10,200	800	1,290	5,400	5,230	984	1,220	375
19.....	137		320	1,700	8,500	700	1,590	10,200	6,060	893	1,050	352
20.....	137		320	1,540	6,790	650	1,540	8,180	5,640	820	906	650
21.....	143	313	1,470	4,100	650	1,580	7,400	4,960	856	784	305	906
22.....	137	283	1,480	1,880	650	1,690	9,520	4,320	945	716	1,080	880
23.....	131	254	2,320	2,120	700	2,250	9,860	3,600	868	672	3,640	784
24.....	154	268	4,450	2,530	650	3,840	7,400	3,270	808	705	1,500	716
25.....	192	367	4,580	2,320	650	4,200	5,780	3,600	1,970	610	880	650
26.....	275	426	4,080	1,980	650	3,840	4,580	3,270	3,160	550	650	550
27.....	268	644	3,380	1,640	650	3,600	3,720	2,780	2,210	523	532	473
28.....	261	808	3,790	1,560	650	3,840	3,160	2,580	1,670	496	443	434
29.....	261	760	4,700	1,410	700	6,620	2,800	2,450	3,380	478	418	3,560
30.....	254	1,390	3,720	1,500	-----	12,000	2,920	2,190	3,840	460	409	18,000
31.....	261	-----	3,770	1,800	-----	10,600	-----	1,940	-----	443	375	-----

NOTE.—Water-stage recorder did not operate satisfactorily Oct. 7-10, 28, 29, Nov. 4, 11-16, Feb. 10, 17, Mar. 16, May 4, June 29, July 27-31, Aug. 1, 2, 17, 18, and Sept. 14-16; discharge estimated by comparison with record of Genesee River at Scio. Discharge Feb. 18 to Mar. 4, ascertained from gage heights corrected for ice effect based on study of gage-height graph, weather records, and comparison with records for Genesee River at Scio.

Monthly discharge of Allegheny River at Red House, N. Y., for the year ending September 30, 1924

[Drainage area, 1, 640 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	275	125	168	0. 102	0. 12
November	1, 390	254	388	. 237	. 26
December	5, 920	1, 470	3, 210	1. 96	2. 26
January	16, 700	1, 410	6, 120	3. 73	4. 30
February	2, 840	650	1, 170	. 713	. 77
March	12, 000	650	2, 800	1. 71	1. 97
April	14, 000	2, 800	6, 620	4. 04	4. 51
May	10, 600	1, 940	5, 130	3. 13	3. 61
June	3, 840	808	1, 560	. 951	1. 06
July	3, 960	443	1, 610	. 982	1. 13
August	3, 640	305	850	. 396	. 46
September	18, 000	320	1, 690	1. 03	1. 15
The year	18, 000	125	2, 600	1. 59	21. 60

MONONGAHELA RIVER BASIN**TYGART RIVER NEAR DAILEY, W. VA.**

LOCATION.—At Burnt Bridge, on Staunton-Parkersburg pike 1 mile northeast of Daily, Randolph County, 2 miles south of Beverly on Western Maryland Railroad, Stalnaker Run enters river on right about 1,000 feet below station.

DRAINAGE AREA.—194 square miles.

RECORDS AVAILABLE.—April 20, 1915, to September 30, 1924.

GAGE.—Vertical staff on face of right abutment of bridge near downstream end; read by Mrs. Rowena McQuain and Mrs. M. B. Chenoweth.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading. Flow of Stalnaker Run is included.

CHANNEL AND CONTROL.—One channel at all stages, straight for 100 feet above and 1,300 feet below bridge. Right bank high; left bank low; large overflow through meadows at high stages. Stream bed is rocky, but banks are sandy. Control probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.9 feet at 8 a.m. on May 12 (discharge, 6,310 second-feet); minimum stage, 0.60 foot from 7.30 a.m. October 19 to 7.30 a.m. October 20 (discharge, 4.5 second-feet).

1915-1924: Maximum stage recorded, 15.9 feet at 5 p.m. March 13, 1918 (discharge, 9,150 second-feet); minimum stage, 0.58 foot October 6-8, 1922 (discharge, 4.2 second-feet).

ICE.—Stage-discharge relation affected by ice at times.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Daily discharge determined from rating curve well defined between 10 and 4,800 second-feet; extended beyond these limits. Gage read twice daily to hundredths. Daily discharge ascertained by applying mean daily gage heights to rating table, except for period affected by ice. Records good.

The following discharge measurement was made by Wiggins and Mussey:
June 23, 1924: Gage height, 1.36 feet; discharge, 69.7 second-feet.

Daily discharge, in second-feet, of Tygart River near Dailey, W. Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	25	304	3,040	289	274	723	1,790	515	116	274	34
2	20	22	230	1,050	259	437	515	857	419	87	203	35
3	18	22	190	3,810	244	401	437	555	320	71	118	113
4	16.5	51	166	2,970	216	367	595	475	274	67	81	79
5	14.5	98	274	1,050	274	767	515	475	203	67	57	60
6	13.5	144	437	515	637	1,090	595	401	166	91	45	48
7	12	335	437	330	437	767	1,340	401	144	101	36	35
8	12	203	384	225	304	475	1,050	419	144	475	36	28
9	10.5	120	274	150	274	335	767	3,740	2,570	304	35	190
10	9.5	84	950	244	244	304	595	1,290	2,620	178	20	767
11	9.5	70	1,140	1,620	144	274	475	811	811	134	20	456
12	9	68	767	1,340	125	244	335	6,230	515	94	25	259
13	9.5	65	515	679	120	190	274	5,220	723	1,140	107	134
14	8	60	595	456	110	178	230	1,670	637	811	51	98
15	8	53	289	289	110	166	216	1,670	351	384	34	76
16	7	50	335	555	120	144	190	998	274	244	26	58
17	6	87	244	2,970	178	230	166	637	274	155	31	47
18	5	144	216	767	1,910	515	178	903	178	124	31	53
19	4.5	134	166	515	1,790	637	515	384	134	91	24	61
20	5	120	155	437	3,600	437	475	335	101	68	58	52
21	7	103	166	335	1,910	595	637	595	84	57	1,340	73
22	8	89	304	124	767	437	515	679	73	47	304	144
23	10.5	113	2,900	150	555	335	367	515	64	73	178	124
24	19.5	767	2,360	200	456	335	274	351	52	65	114	96
25	36	515	1,050	250	289	384	244	304	47	43	155	73
26	34	304	595	320	244	811	190	230	64	34	216	58
27	26	230	475	400	367	1,500	166	203	155	31	134	47
28	21	190	4,400	320	274	1,240	155	304	351	25	87	43
29	17.5	155	1,730	310	274	3,950	351	767	203	23	63	60
30	15.5	274	811	335	-----	3,670	515	1,970	178	27	47	3,530
31	16.5	-----	3,040	456	-----	1,190	-----	857	-----	51	41	-----

NOTE.—Stage-discharge relation affected by ice Jan. 7-9, 23-29, and Feb. 12-16; discharge estimated by study of observer's notes and weather records.

Monthly discharge of Tygart River near Dailey, W. Va., for the year ending September 30, 1924

[Drainage area, 194 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	36	4.5	14	0.072	0.08
November	767	22	156	.804	.90
December	4,400	155	835	4.30	4.96
January	3,810	-----	845	4.36	5.03
February	3,600	-----	570	2.94	3.17
March	3,950	144	732	3.77	4.35
April	1,340	155	453	2.34	2.61
May	6,230	203	1,160	5.98	6.89
June	2,620	47	421	2.17	2.42
July	1,140	23	170	.876	1.01
August	1,340	20	129	.665	.77
September	3,530	28	231	1.19	1.33
The year	6,230	4.5	478	2.46	33.52

TYGART RIVER AT BELINGTON, W. VA.

LOCATION.—At highway bridge at Belington, Barbour County, a quarter of a mile above mouth of Mill Creek.

DRAINAGE AREA.—390 square miles.

RECORDS AVAILABLE.—June 5, 1907, to September 30, 1924.

GAGE.—Chain gage attached to upstream side of bridge; read by M. C. Johnson.

Sea-level elevation of zero of gage, 1,679.89 feet.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge or by wading.

CHANNEL AND CONTROL.—Channel straight above and below bridge. Bed composed of firm coarse gravel. Banks high. Control slightly shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 17 feet at 7.15 a. m. May 13 (discharge, 14,200 second-feet); minimum stage, 2 feet October 19–24 and afternoon of October 25 (discharge, 18 second-feet).

1907–1924: Maximum stage recorded, 21.48 feet March 13, 1917 (discharge, 20,100 second-feet); minimum stage, 1.7 feet October 2, 1914 (discharge, 3 second-feet).

ICE.—Stage-discharge relation affected by ice during severe winters.

ACCURACY.—Stage-discharge relation changed during high water of May 1924.

Two rating curves used, well defined between 20 and 7,000 second-feet, and extended beyond these limits. Gage read to tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except for extreme low water for which they are fair.

Discharge measurements of Tygart River at Belington, W. Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge
June 21	Wiggins and Mussey	Feet 3.07	Sec.-ft. 178
21	do.	3.06	170

Daily discharge, in second-feet, of Tygart River at Belington, W. Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	53	620	7,950	745	745	1,560	3,620	1,310	278	579	82
2	59	47	570	2,870	644	959	1,190	2,700	1,020	186	795	91
3	47	59	430	6,760	644	1,020	959	1,440	850	140	339	278
4	47	59	363	7,350	644	850	1,070	1,250	632	127	202	278
5	42	82	452	2,620	644	959	1,130	1,250	502	215	132	174
6	36	121	745	1,190	1,020	2,460	1,070	1,070	453	477	87	143
7	36	694	850	500	1,190	1,700	2,790	1,130	383	502	85	113
8	36	694	850	350	797	1,250	2,620	1,070	339	961	73	87
9	36	407	1,070	300	644	850	1,780	6,640	1,560	1,130	73	85
10	26	264	1,440	475	595	745	1,370	4,730	6,060	606	102	795
11	26	192	2,620	1,190	430	694	1,070	1,920	2,300	429	74	1,020
12	26	164	1,920	3,810	350	570	850	12,500	1,310	278	91	527
13	26	139	1,130	1,700	320	498	644	13,300	850	1,190	83	318
14	26	139	1,250	1,070	300	522	546	6,060	2,000	2,540	100	222
15	26	117	1,190	745	300	546	475	3,710	961	1,020	100	171
16	26	128	850	644	300	475	430	2,540	606	579	68	140
17	26	128	694	4,010	430	595	385	1,630	477	406	64	113
18	26	178	570	2,460	2,380	1,440	385	1,130	406	297	62	106
19	18	264	475	1,370	4,310	1,700	694	1,020	297	226	60	98
20	18	230	407	959	8,430	1,630	1,020	850	229	165	113	127
21	18	207	385	694	7,950	1,630	1,070	1,130	177	127	1,500	146
22	18	192	595	745	2,230	1,250	1,020	1,700	156	122	905	297
23	18	178	4,210	644	1,190	959	850	1,250	140	361	453	579
24	22	430	7,230	745	797	850	620	905	120	297	361	339
25	22	1,310	2,700	850	745	904	522	740	108	171	297	236
26	26	745	1,500	900	644	1,370	452	795	91	115	579	168
27	63	522	1,020	800	694	4,410	407	905	140	89	383	127
28	59	430	6,990	750	797	2,870	342	632	579	69	244	108
29	53	363	7,470	700	797	4,950	1,020	850	429	66	165	137
30	47	407	2,070	694	-----	9,180	1,130	4,840	383	53	120	4,520
31	59	-----	4,410	745	-----	3,320	-----	2,380	-----	57	95	-----

NOTE.—Stage-discharge relation affected by ice Jan. 7–9, 26–29, and Feb. 12–16; discharge estimated by study of observer's notes and weather records. No gage-height recorded Sept. 16; discharge interpolated.

Monthly discharge of Tygart River at Belington, W. Va., for the year ending September 30, 1924

[Drainage area, 390 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	63	18	34.6	0.089	0.10
November	1,310	47	298	.764	.85
December	7,470	363	1,840	4.72	5.44
January	7,950	300	1,830	4.69	5.41
February	8,430	300	1,410	3.62	3.90
March	9,180	475	1,670	4.28	4.63
April	2,790	342	982	2.52	2.51
May	13,300	632	2,760	7.08	8.16
June	6,090	91	829	2.13	2.38
July	2,549	53	428	1.10	1.27
August	1,500	60	270	.692	.80
September	4,520	82	388	.995	1.10
The year	13,300	18	1,070	2.74	37.15

TYGART RIVER AT FETTERMAN, W. VA.

LOCATION.—At highway bridge at Fetterman, Taylor County, three-fourths mile above Otter Creek.

DRAINAGE AREA.—1,340 square miles.

RECORDS AVAILABLE.—June 3, 1907, to September 30, 1924.

GAGE.—Chain gage attached to downstream side of highway bridge; read by Joseph Weaver. Sea-level elevation of zero of gage, 957.86 feet.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Channel straight above and below bridge. Banks high. Control practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 22.6 feet at 5 p. m. May 12 (discharge, 41,100 second-feet); minimum stage, 3.19 feet October 21–23 (discharge, 64 second-feet).

1907–1924: Maximum stage recorded, 29.1 feet July 25, 1912 (discharge, about 57,600 second-feet); minimum stage, 2.30 feet October 27, 28, and November 4–10, 1912 (discharge, 12 second-feet).

ICE.—Stage-discharge relation affected by ice during severe winters.

ACCURACY.—Stage-discharge relation practically permanent except for ice effect. Rating curve well defined between 80 and 24,000 second-feet; extended beyond these limits. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except for periods of ice effect. Records good.

The following discharge measurement was made by Wiggins and Mussey: June 16, 1924: Gage height, 5.03 feet; discharge, 1,710 second-feet.

Daily discharge, in second-feet, of Tygart River at Fetterman, W. Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	173	173	2,940	23,200	2,260	2,260	5,560	9,900	4,680	1,250	4,160	305
2-----	134	196	2,430	12,000	2,000	2,430	3,980	10,100	3,460	807	3,110	278
3-----	134	220	1,920	23,900	2,180	2,600	3,460	5,740	2,770	570	1,840	445
4-----	127	230	1,660	22,900	2,000	2,430	3,280	4,680	2,430	408	960	370
5-----	102	318	2,090	11,300	2,180	2,430	3,280	3,980	2,090	509	615	338
6-----	102	606	2,600	4,510	3,460	3,640	3,810	3,460	1,750	665	485	485
7-----	102	2,600	3,460	2,770	3,460	4,860	7,380	3,110	1,500	1,030	305	525
8-----	102	4,680	3,810	2,260	2,770	3,640	8,140	3,280	1,660	2,000	338	445
9-----	102	2,600	3,980	2,000	2,260	2,770	6,270	12,200	4,680	2,430	338	370
10-----	88	1,490	4,680	1,920	2,000	2,430	5,210	13,800	11,100	1,920	485	525
11-----	75	960	7,570	4,340	1,750	2,260	3,980	7,950	8,140	1,180	370	2,000
12-----	75	695	7,380	9,700	1,660	1,920	2,940	33,800	4,160	895	338	1,660
13-----	75	552	5,210	5,740	1,500	1,920	2,430	36,100	3,460	1,330	305	1,030
14-----	75	469	7,190	2,940	1,410	2,430	2,000	21,200	2,770	7,190	250	772
15-----	75	469	5,560	2,600	1,250	2,430	1,660	10,900	2,770	3,980	250	570
16-----	75	392	3,810	2,940	1,250	2,180	1,410	8,710	1,840	2,180	250	445
17-----	75	392	2,770	7,000	1,180	2,260	1,250	5,560	1,330	1,410	305	408
18-----	75	357	2,430	7,760	2,940	3,280	1,180	3,640	1,100	960	250	370
19-----	75	509	2,090	4,340	13,300	4,340	1,580	3,280	895	738	305	430
20-----	75	645	1,840	3,110	32,600	4,340	2,000	2,940	665	570	338	525
21-----	64	625	1,750	2,260	24,100	5,210	2,430	3,810	485	461	830	615
22-----	64	552	3,460	1,750	10,500	4,680	2,600	5,560	445	485	3,980	1,410
23-----	64	597	13,100	1,580	4,510	3,810	2,430	4,160	408	1,180	3,110	2,000
24-----	75	895	23,200	1,410	3,110	3,460	1,920	3,280	370	960	1,500	1,750
25-----	88	2,770	11,600	2,600	2,770	3,110	1,660	2,770	338	738	895	1,100
26-----	102	2,770	5,740	4,510	2,430	4,860	1,410	2,260	305	485	2,430	772
27-----	102	2,090	3,810	4,340	2,260	10,500	1,250	1,920	408	370	1,750	570
28-----	102	1,660	15,100	3,110	2,600	8,900	1,330	1,920	772	305	960	445
29-----	117	1,660	19,800	2,430	2,430	28,100	2,770	2,940	1,330	250	665	665
30-----	152	2,600	8,710	2,170	-----	23,400	5,560	12,000	1,180	200	485	13,500
31-----	173	-----	14,600	2,430	-----	12,900	-----	8,900	-----	665	370	-----

NOTE.—Stage-discharge relation affected by ice Jan. 8-10, 21-25, and Feb. 14-17; discharge estimated by study of observer's notes and weather records.

Monthly discharge of Tygart River at Fetterman, W. Va., for the year ending September 30, 1924

[Drainage area, 1,340 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	173	64	97.4	0.073	0.08
November-----	4,680	173	1,160	.865	.96
December-----	23,200	1,660	6,330	4.72	5.44
January-----	23,900	1,410	5,990	4.47	5.15
February-----	32,600	1,180	4,760	3.55	3.83
March-----	28,100	1,920	5,350	3.99	4.60
April-----	8,140	1,180	3,140	2.34	2.61
May-----	36,100	1,920	8,190	6.11	7.04
June-----	11,100	305	2,310	1.72	1.92
July-----	7,190	200	1,230	.918	1.06
August-----	4,160	250	1,050	.784	.90
September-----	13,500	278	1,170	.876	.98
The year-----	36,100	64	3,380	2.52	34.57

MONOGAHELA RIVER AT LOCK 15, HOULT, W. VA.

LOCATION.—At Lock 15, at Hoults, 2½ miles below county highway bridge at Fairmont, Marion County, and 4 miles below mouth of West Fork. Buffalo Creek enters on left three-fourths mile above station.

DRAINAGE AREA.—2,430 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1914, to September 30, 1924. Upper and lower gages at Lock 15 have been read under direction of United States Engineer Corps since May 1, 1904.

GAGE.—Upper vertical staff gage at lock. Lower section is set in recess in left lock wall just above upper gate; upper section, 61.5 feet from face of right lock wall, directly opposite lower section, was used until January 29, 1918, when it was carried away by ice; slope gage installed on revetment wall opposite end of dam during May, 1923. Read by Charles R. Hall, lock master.

DISCHARGE MEASUREMENTS.—Made from bridge at Fairmont or by wading on crest of dam at lock. Flow of Buffalo Creek is added to discharge measured at bridge.

CHANNEL AND CONTROL.—One channel at all stages; straight half a mile above and below bridge. Control for station is crest of dam, permanent. Elevation of crest of dam, gage height 7.02 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 19.86 feet at 6 p. m. May 12 (discharge, 79,300 second-feet); minimum discharge, 40 second-feet October 18 and 19.

1915-1924: Maximum stage recorded, 21.2 feet 7 to 8 a. m. January 2, 1919 (discharge, 91,500 second-feet); minimum discharge, 33 second-feet September 27, 1917. Flood of 1888, before dam No. 15 was built, reached a stage represented by gage height of about 26 feet.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—None.

REGULATION.—The pool above dam at Hoult is about 9 miles long. One foot change in gage height is equivalent to about 24 million cubic feet of storage or 278 second-feet for one day. Therefore the operation of the lock and by-passing of water have an appreciable effect on the flow at low water.

ACCURACY.—The records of discharge previously published are revised in this report. Stage-discharge relation permanent except for effect of operations at lock and change in leakage through lock. Leakage varies depending on which gates are open and upon seating of valves. Rating curve for flow over dam is well defined below 50,000 second-feet; extended above. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table for flow over dam, and adding the estimated leakage determined from the gage heights and leakage graphs based upon leakage measurements. During low water the leakage is a large part of the flow; occasionally the total flow. Records good except for low water which are fair.

The following discharge measurement was made by Wiggins and Mussey:

June 17, 1924: Gage height, 8.22 feet; discharge, 1,820 second-feet (over dam, 1,620 second-feet).

Daily discharge, in second-feet, of Monongahela River at Hoult, W. Va., for the years ending September 30, 1915-1924

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1915							1915						
1 -----		5,520	7,000	191	225	2,030	16 -----	1,680	825	3,870	271	458	283
2 -----		3,580	4,110	200	371	1,310	17 -----	1,380	747	2,380	368	458	334
3 -----		2,490	5,170	209	644	928	18 -----	1,190	656	1,480	489	1,490	566
4 -----		2,130	6,250	191	2,640	706	19 -----	1,150	571	913	380	2,030	8,260
5 -----		1,680	5,520	249	1,400	563	20 -----	973	529	784	584	1,400	3,450
6 -----			1,470	3,440	240	673	21 -----	839	517	592	612	943	3,600
7 -----	889	1,190	2,380	230	482	785	22 -----	808	1,900	497	490	705	5,170
8 -----	872	1,080	1,800	269	384	738	23 -----	922	5,880	387	358	648	3,870
9 -----	641	973	1,390	289	573	1,060	24 -----	2,370	3,020	387	404	736	2,150
10 -----	839	872	1,130	289	645	1,030	25 -----	2,890	2,240	329	358	1,010	1,350
11 -----	1,150	715	851	241	483	786	26 -----	2,240	1,570	287	293	1,210	963
12 -----	1,190	670	851	210	385	608	27 -----	1,790	1,380	208	254	944	832
13 -----	1,790	655	789	251	483	462	28 -----	5,530	1,190	190	214	894	708
14 -----	2,010	746	712	270	483	345	29 -----	9,630	1,470	173	214	1,590	594
15 -----	1,900	973	3,440	231	362	312	30 -----	7,400	7,000	190	179	1,520	539
							31 -----		8,710		179	2,640	

Daily discharge, in second-feet, of Monongahela River at Hoult, W. Va., for the years ending September 30, 1915-1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	9,170	500	1,310	9,170	22,000	4,180	5,170	3,870	2,630	951	278	191
2	27,300	436	1,140	36,800	20,800	4,500	4,180	3,030	1,910	815	238	191
3	12,500	413	1,170	21,400	12,000	8,710	3,450	2,500	1,690	667	198	229
4	5,880	377	1,310	10,100	7,820	7,820	4,180	2,760	1,390	2,380	158	269
5	3,710	344	1,310	5,880	6,250	5,880	5,170	2,900	1,480	2,140	143	209
6	3,600	344	1,220	6,620	5,520	5,170	4,180	3,030	1,200	1,300	582	191
7	3,040	332	1,060	8,260	15,000	13,500	3,310	7,000	2,020	742	1,390	174
8	2,260	344	995	6,620	14,000	26,600	3,040	10,100	2,500	669	1,300	191
9	1,590	367	1,030	4,180	9,170	15,000	4,180	7,000	1,800	502	1,300	229
10	1,310	321	1,030	4,180	10,100	7,820	4,830	4,830	1,800	402	1,020	229
11	1,010	321	894	15,000	7,820	5,880	4,500	3,590	3,030	356	850	331
12	862	344	814	55,000	7,000	4,500	4,500	2,760	2,140	353	4,500	623
13	738	390	878	36,800	47,400	4,180	4,180	2,140	1,580	290	4,500	436
14	621	578	1,490	17,800	30,100	4,500	3,870	1,800	1,200	310	4,830	331
15	552	6,250	1,920	9,630	11,500	22,600	3,440	1,800	1,800	310	2,140	1,200
16	487	20,800	1,810	6,250	7,000	17,200	3,160	1,910	8,710	434	1,390	7,820
17	448	9,630	16,600	4,830	5,520	10,600	2,760	1,800	5,170	460	983	4,500
18	423	4,830	48,200	2,770	5,170	7,400	3,040	2,760	2,900	984	710	2,140
19	3,040	3,600	35,200	1,810	4,500	5,880	3,160	2,250	2,140	3,590	552	1,300
20	2,910	5,880	15,600	2,390	3,870	4,500	2,640	1,690	3,300	2,250	552	882
21	3,170	5,520	7,400	7,000	4,180	4,180	2,250	1,300	5,170	1,300	449	608
22	2,030	4,600	4,830	12,500	3,870	21,400	2,250	1,130	7,820	803	400	525
23	1,490	3,600	3,870	12,500	3,760	31,500	2,250	1,040	4,500	726	475	410
24	1,170	2,910	2,910	9,630	3,450	14,500	2,140	970	2,760	1,130	343	376
25	928	2,260	2,390	6,250	26,600	7,820	2,140	806	2,760	695	288	307
26	830	1,810	2,770	4,500	17,200	5,520	4,830	1,300	5,170	527	249	287
27	784	1,590	3,600	3,870	8,710	4,830	7,400	1,390	3,870	501	209	277
28	663	1,490	5,880	3,310	5,520	5,520	6,250	3,030	2,380	450	249	228
29	620	1,400	24,000	3,450	4,500	10,100	5,170	5,170	1,690	401	268	287
30	562	1,400	32,200	20,200	-----	9,170	5,170	2,760	1,200	360	268	2,250
31	536	-----	15,600	18,400	-----	7,000	-----	2,760	-----	319	229	-----
1916-17												
1	3,440	511	1,800	4,180	5,520	15,000	2,130	3,680	7,920	775	724	710
2	2,020	498	1,910	3,430	4,500	11,500	1,790	2,850	7,500	713	435	1,100
3	1,300	409	1,580	5,520	3,430	8,710	1,790	2,010	6,720	487	532	834
4	931	387	1,390	15,600	2,370	18,400	1,470	1,890	5,620	387	363	637
5	694	375	1,300	11,500	1,790	20,800	1,470	1,570	3,680	265	351	434
6	551	341	2,900	14,500	1,570	16,100	6,620	1,670	4,600	236	284	328
7	448	329	3,440	14,000	1,570	11,000	14,500	1,480	10,600	236	205	273
8	388	306	2,380	8,260	1,680	35,200	13,600	1,390	7,000	196	195	293
9	353	286	1,910	5,170	2,010	43,200	10,600	1,470	4,500	216	235	651
10	353	460	1,800	4,180	1,790	20,200	6,720	2,230	6,620	474	317	1,560
11	410	549	1,690	3,020	1,570	17,800	5,270	2,720	7,000	539	595	1,120
12	448	528	1,580	2,240	1,060	38,400	4,600	2,470	5,170	295	538	695
13	551	472	1,580	1,680	943	46,500	4,600	2,130	3,290	344	336	484
14	512	459	1,300	2,620	910	41,600	3,970	1,780	2,010	334	264	384
15	448	549	1,050	5,520	910	26,600	3,250	1,670	1,470	3,870	235	272
16	525	497	844	5,170	926	12,500	2,470	1,390	1,380	5,170	176	233
17	3,710	578	978	3,870	1,080	9,630	1,890	1,250	1,190	2,890	159	175
18	3,870	578	927	3,870	1,280	10,600	1,780	1,060	939	1,680	150	175
19	5,520	523	944	3,290	2,370	8,260	1,670	791	775	1,380	127	158
20	7,820	497	944	2,240	4,500	5,880	1,570	755	582	1,470	105	118
21	5,880	483	1,380	2,490	7,820	5,170	1,390	755	539	1,380	51	110
22	3,870	471	18,400	80,200	6,620	5,170	1,230	698	512	1,100	61	103
23	2,630	471	20,800	35,200	4,830	7,820	1,070	784	488	1,170	67	70
24	1,800	2,020	10,100	12,500	11,500	9,630	1,010	1,040	376	903	73	59
25	1,390	4,180	5,520	6,250	20,200	11,500	941	1,000	368	1,070	79	59
26	1,070	3,870	3,870	4,940	11,000	8,710	955	906	330	1,470	85	46
27	880	2,630	7,000	3,230	7,820	5,520	1,040	8,260	255	3,240	105	33
28	754	1,910	19,600	3,200	15,600	4,500	1,040	48,200	216	2,710	112	96
29	663	1,580	28,000	4,500	-----	3,820	1,570	40,800	682	2,010	112	70
30	564	1,580	13,500	8,260	-----	3,020	2,850	27,400	937	1,470	127	65
31	498	-----	6,250	7,000	-----	2,490	-----	12,100	-----	852	112	-----

Daily discharge, in second-feet, of Monongahela River at Houdt, W. Va., for the years ending September 30, 1915-1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1917-18												
1.....	54	2,740	2,370	1,000	5,880	6,620	1,290	3,160	2,760	3,710	919	3,630
2.....	33	2,120	2,240	838	2,580	5,170	1,190	2,760	1,800	2,250	526	3,630
3.....	40	1,560	2,240	761	3,150	4,500	1,380	2,140	1,800	1,910	290	1,690
4.....	49	1,040	1,790	838	3,150	3,710	2,010	1,800	981	1,300	261	1,020
5.....	59	897	1,470	838	2,240	5,520	2,750	1,580	816	1,090	261	698
6.....	49	622	1,290	988	2,010	8,260	2,130	1,300	635	1,140	231	556
7.....	59	593	1,000	855	6,250	6,250	1,790	1,390	4,180	899	159	446
8.....	70	536	869	1,790	14,000	8,710	2,130	13,500	6,620	665	159	393
9.....	59	484	681	3,870	22,000	7,000	14,500	14,500	3,300	501	151	347
10.....	54	420	473	2,150	25,900	9,630	15,000	7,820	1,690	437	159	312
11.....	40	421	410	2,130	17,200	8,710	12,000	5,170	1,130	355	271	293
12.....	96	374	387	3,020	10,100	6,250	17,200	4,180	848	320	414	283
13.....	110	316	295	6,620	9,630	16,600	13,500	3,160	555	332	516	283
14.....	132	283	295	5,880	8,260	76,500	9,630	7,000	486	299	776	336
15.....	117	273	295	5,170	9,170	46,500	8,710	11,000	364	269	1,580	336
16.....	111	273	295	7,820	9,630	19,700	9,170	6,250	207	269	1,480	313
17.....	104	273	265	6,620	7,000	9,170	7,000	4,180	525	289	1,020	359
18.....	111	263	236	4,500	4,500	5,880	5,170	3,160	3,870	269	669	614
19.....	175	283	236	2,890	3,870	4,500	4,180	2,250	3,160	269	478	1,400
20.....	1,780	263	255	2,130	28,800	3,150	2,890	1,690	1,910	256	367	2,990
21.....	1,460	215	244	1,790	26,000	2,490	3,300	3,160	1,200	231	670	2,900
22.....	901	195	342	1,290	10,700	3,580	5,880	1,690	916	290	530	3,040
23.....	834	195	583	1,500	6,250	3,870	6,250	2,500	1,580	290	415	2,510
24.....	710	195	699	1,010	4,830	3,150	4,830	3,030	1,800	231	312	1,920
25.....	1,560	195	1,290	1,010	7,090	2,750	3,870	11,500	1,090	356	233	1,140
26.....	2,880	205	3,870	1,010	32,200	3,290	3,590	39,800	787	356	213	888
27.....	2,360	215	5,880	1,570	28,700	3,020	3,710	21,400	3,590	241	213	629
28.....	2,120	235	3,710	12,500	11,500	2,490	4,830	8,710	2,500	261	195	481
29.....	2,240	305	2,240	44,000	-----	1,790	4,500	9,170	1,580	169	195	417
30.....	2,000	1,570	1,150	24,600	-----	1,470	3,710	4,830	2,710	231	178	383
31.....	2,480	-----	1,040	10,600	-----	1,380	-----	3,870	-----	1,800	517	-----
1918-19												
1.....	314	12,500	2,640	32,300	1,590	6,250	2,780	1,600	1,150	1,220	333	438
2.....	294	7,400	2,150	80,200	1,310	6,620	2,270	2,920	969	939	333	476
3.....	235	4,180	1,810	40,800	1,150	5,170	1,930	2,780	869	688	323	427
4.....	225	2,720	1,490	16,600	708	4,180	1,710	2,650	886	603	576	480
5.....	197	1,920	1,400	7,820	1,400	3,600	1,600	2,270	671	412	590	450
6.....	225	1,590	1,310	5,520	1,400	7,000	1,410	2,040	546	472	590	358
7.....	215	1,310	1,210	4,830	1,210	8,260	1,410	1,820	420	412	660	335
8.....	255	1,050	1,400	4,500	1,080	7,000	1,220	2,160	374	321	941	246
9.....	235	897	1,590	4,500	896	7,400	1,160	3,870	520	252	874	192
10.....	215	760	14,500	3,170	946	7,820	1,000	8,260	443	282	605	286
11.....	198	660	27,300	2,640	740	5,880	950	10,100	444	4,830	448	336
12.....	181	660	24,000	2,640	817	4,180	1,500	10,100	602	5,520	606	267
13.....	198	517	12,500	2,640	897	3,450	1,820	6,250	496	2,920	844	219
14.....	198	409	8,260	2,770	1,120	2,910	2,160	4,180	521	5,520	736	202
15.....	198	432	13,500	5,520	1,920	2,510	1,820	3,460	1,320	7,000	606	162
16.....	236	432	12,500	8,260	3,600	2,040	1,820	2,780	4,830	13,500	474	141
17.....	315	420	7,400	5,880	3,170	1,820	4,180	2,520	3,610	21,400	402	141
18.....	275	1,010	4,830	5,520	2,910	1,820	3,870	2,780	2,270	11,000	425	128
19.....	256	3,090	3,310	9,630	2,260	2,160	3,320	3,050	1,500	4,180	526	128
20.....	236	7,400	2,640	8,260	2,040	2,400	2,780	3,610	938	8,260	564	115
21.....	257	9,630	2,260	5,520	1,920	2,040	2,480	11,000	1,070	9,630	577	160
22.....	339	7,400	2,030	4,180	3,710	2,040	2,040	10,600	905	8,260	1,830	186
23.....	351	4,500	6,620	3,450	5,520	1,820	1,820	6,620	631	4,180	1,940	1,720
24.....	362	3,040	7,820	10,600	5,170	1,600	1,930	5,170	688	3,050	1,720	785
25.....	483	2,360	8,710	12,000	4,500	1,500	3,050	5,170	733	2,040	1,230	580
26.....	469	1,810	8,710	7,000	5,170	1,320	2,780	7,000	4,500	1,410	799	961
27.....	430	1,310	5,880	7,000	5,170	1,320	2,270	5,170	15,000	974	578	680
28.....	362	1,170	4,500	3,870	5,880	2,400	1,820	3,460	7,820	735	529	503
29.....	588	2,030	3,310	2,910	-----	4,830	1,600	2,520	3,710	633	404	429
30.....	810	2,770	2,990	2,260	-----	3,710	1,410	1,820	2,270	524	346	337
31.....	10,600	-----	2,510	1,810	-----	3,610	-----	1,410	-----	356	381	-----

Daily discharge, in second-feet, of Monongahela River at Houtt, W. Va., for the years ending September 30, 1915-1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1919-20												
1	297	16,600	4,500	3,060	2,180	2,540	1,060	11,000	906	470	783	363
2	238	35,400	3,330	5,880	1,840	2,540	1,070	13,500	767	942	845	323
3	220	24,000	2,790	4,830	1,620	3,070	1,180	7,400	665	4,830	738	353
4	186	10,100	2,280	3,060	2,940	3,480	1,240	4,830	679	7,400	596	284
5	171	5,520	1,830	2,170	7,000	7,820	1,840	3,340	5,880	4,830	493	237
6	149	3,620	1,830	1,830	5,520	14,500	2,940	3,540	12,000	2,820	400	246
7	156	2,530	29,400	2,050	4,180	8,710	4,180	2,060	5,880	2,690	532	304
8	171	2,050	33,800	2,660	3,190	4,830	5,520	1,730	4,110	3,870	783	304
9	186	1,720	20,200	18,400	2,790	3,870	4,830	1,620	2,080	2,820	1,170	255
10	171	1,420	10,600	29,400	3,870	3,480	3,870	1,340	1,540	1,860	1,060	2,810
11	248	1,230	7,820	12,500	11,500	3,200	3,480	1,160	1,220	1,450	905	1,850
12	879	1,190	6,250	6,620	9,170	3,340	3,340	1,060	992	2,440	828	1,070
13	1,330	1,190	7,000	4,500	6,250	7,400	3,480	4,830	785	2,080	1,000	904
14	2,790	1,160	34,500	3,190	5,520	19,000	4,830	11,000	714	1,750	1,200	677
15	3,500	1,100	22,100	2,280	4,500	11,500	3,480	7,820	1,040	1,540	1,080	477
16	15,600	931	10,600	1,940	3,200	9,630	3,070	4,830	1,110	1,970	1,060	408
17	16,600	881	6,250	3,710	2,670	17,800	3,200	3,450	1,190	1,360	1,000	322
18	11,500	742	4,180	4,180	3,480	15,700	7,400	2,680	1,260	1,190	938	283
19	5,520	726	3,060	3,470	3,870	13,600	7,820	2,190	1,150	2,200	1,260	228
20	3,190	683	2,660	3,330	3,340	37,600	6,250	2,070	1,010	988	1,090	230
21	2,250	613	2,530	5,880	3,480	21,400	34,500	3,210	942	708	2,310	167
22	3,700	558	2,530	21,400	13,500	10,600	26,600	3,810	1,110	570	3,490	174
23	6,250	532	3,060	44,800	16,600	6,620	11,500	2,070	3,360	506	2,430	167
24	7,000	507	3,620	41,600	13,500	5,170	7,400	1,960	3,500	457	2,680	130
25	7,400	727	3,710	24,000	10,600	3,870	4,830	1,630	2,690	7,000	1,850	111
26	5,520	27,300	3,860	13,000	7,400	3,200	3,710	2,680	1,640	13,000	1,440	120
27	5,880	35,200	3,060	7,400	4,830	2,800	3,480	2,680	1,150	5,520	1,160	96
28	13,500	15,600	2,790	5,880	3,340	2,180	4,830	2,070	847	2,440	1,030	691
29	6,620	7,820	2,530	4,180	3,480	1,730	4,830	1,630	640	1,640	1,530	384
30	3,870	6,250	2,410	3,330	-----	1,520	3,870	1,140	534	1,170	693	351
31	2,930	-----	2,280	2,660	-----	1,340	-----	1,050	-----	859	530	-----
1920-21												
1	935	339	3,080	1,960	10,600	10,200	2,740	2,880	7,000	3,290	218	221
2	1,350	329	4,500	2,300	6,250	8,370	4,830	2,610	3,420	2,010	320	381
3	1,630	329	5,520	2,810	4,830	25,200	4,180	2,360	2,610	987	2,130	335
4	1,210	474	4,500	2,550	3,640	22,000	3,140	2,360	1,780	887	12,000	357
5	840	551	3,490	2,430	3,210	13,500	2,610	5,170	1,380	668	5,520	717
6	619	745	3,210	2,070	5,170	7,000	2,330	10,100	969	526	2,370	1,060
7	528	603	3,490	1,960	4,830	5,170	1,780	7,400	773	423	3,010	7,000
8	502	513	2,950	6,250	4,500	4,180	1,560	4,830	732	275	3,430	4,830
9	442	474	2,300	8,710	5,520	3,710	1,460	3,820	610	275	2,750	2,490
10	321	474	1,850	7,000	17,800	7,400	1,560	2,650	396	341	1,680	2,240
11	262	631	1,740	4,830	12,500	5,880	2,820	2,000	363	888	1,060	1,790
12	302	852	1,740	3,640	8,710	4,500	2,480	2,000	329	1,260	701	1,260
13	262	932	1,850	2,550	6,620	4,180	2,000	2,880	294	988	613	1,190
14	195	775	2,550	6,250	5,170	3,570	1,670	2,360	538	1,790	542	892
15	153	673	6,250	14,500	4,180	3,280	1,670	1,780	448	2,620	5,520	703
16	140	645	5,880	7,820	3,490	4,830	1,780	1,370	538	1,680	6,620	558
17	124	4,830	4,180	5,880	2,950	5,520	1,670	1,090	409	1,570	3,290	408
18	119	6,620	3,210	3,350	2,430	4,500	1,560	916	559	1,040	3,870	394
19	106	4,180	2,430	2,810	2,070	3,570	1,560	771	5,880	654	2,750	337
20	97	3,640	1,960	2,430	1,960	3,010	1,460	649	7,000	514	1,680	313
21	93	4,500	1,850	2,550	1,910	2,360	1,370	523	2,620	1,570	1,190	394
22	93	4,180	2,300	2,680	2,070	1,890	1,180	510	1,380	1,380	826	6,250
23	93	5,520	20,200	4,830	2,130	1,890	1,140	384	954	700	630	5,520
24	93	7,000	12,500	5,880	6,360	1,890	1,050	395	1,570	438	492	2,620
25	93	5,170	7,400	4,830	5,630	1,890	999	536	3,020	389	403	1,900
26	93	4,180	4,500	3,640	4,290	1,890	932	1,420	1,900	297	260	2,380
27	93	4,180	3,640	2,950	4,290	1,890	832	4,180	1,680	228	290	2,020
28	93	3,350	3,210	2,550	11,000	1,780	1,670	2,230	1,290	171	221	2,250
29	93	2,810	2,680	2,300	-----	1,780	3,010	1,670	1,170	198	201	1,500
30	93	3,350	2,430	2,300	-----	1,780	3,140	27,300	2,370	218	166	1,480
31	179	-----	2,070	11,000	-----	1,670	-----	17,200	-----	171	183	-----

Daily discharge, in second-feet, of Monongahela River at Houlit, W. Va., for the years ending September 30, 1915-1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1921-22												
1-----	1,300	14,000	12,000	2,500	1,390	3,170	10,100	1,490	733	1,810	699	369
2-----	1,060	19,600	7,000	2,020	1,300	14,500	11,000	1,400	588	1,210	670	19,600
3-----	1,300	10,100	7,820	1,690	1,690	23,300	7,400	1,210	1,720	1,590	1,020	4,830
4-----	8,700	5,880	7,000	2,020	1,910	12,000	5,170	1,310	2,030	3,170	1,400	2,630
5-----	7,820	4,180	6,250	2,900	1,580	11,500	3,870	3,600	2,030	5,880	1,140	1,580
6-----	4,180	2,900	5,530	4,500	1,390	11,000	6,250	13,000	2,640	4,830	921	1,130
7-----	3,020	1,910	5,880	4,830	1,300	8,710	2,510	10,100	2,770	5,880	699	715
8-----	2,240	1,580	7,000	3,710	1,300	11,500	2,150	5,880	2,030	1,700	613	599
9-----	1,800	1,390	7,000	3,710	1,180	10,600	1,920	3,870	1,310	1,210	730	466
10-----	1,680	1,580	5,880	4,180	1,080	7,000	1,700	2,910	1,170	1,140	2,140	347
11-----	1,480	1,800	5,170	5,520	1,580	6,620	1,720	2,260	1,620	1,120	1,400	312
12-----	1,180	1,690	5,880	14,500	20,800	7,820	1,310	2,030	6,750	989	988	504
13-----	979	1,910	7,000	8,710	15,600	6,620	1,310	2,910	7,820	762	730	970
14-----	830	1,910	8,260	5,520	11,500	5,880	9,170	2,260	4,180	2,390	586	684
15-----	736	2,140	7,820	4,500	7,400	40,000	30,800	1,920	2,390	2,390	480	584
16-----	738	3,030	7,000	6,250	8,710	31,500	22,000	1,810	1,700	1,700	404	403
17-----	535	11,000	6,250	5,170	6,250	13,000	9,630	1,490	1,400	1,340	427	322
18-----	445	19,600	10,100	4,830	4,500	7,000	6,250	1,400	16,600	1,140	404	271
19-----	458	9,630	15,000	14,000	5,170	5,170	5,170	2,770	14,500	2,160	369	212
20-----	458	6,620	9,170	28,700	9,630	4,180	4,500	5,170	5,520	2,280	358	145
21-----	484	7,000	5,520	20,800	19,600	3,600	3,710	3,710	3,710	1,530	335	145
22-----	484	5,520	4,180	19,000	13,500	3,040	3,310	2,510	2,910	1,140	243	168
23-----	472	3,870	4,830	12,500	7,820	2,640	3,310	2,040	2,030	854	233	177
24-----	484	7,000	64,700	6,620	5,520	2,520	3,040	1,490	1,490	777	427	103
25-----	408	25,200	44,000	4,500	3,870	2,770	2,640	1,210	1,120	699	1,390	96
26-----	362	17,200	19,000	3,030	3,040	3,450	2,260	1,310	825	2,640	669	103
27-----	351	10,100	9,170	2,630	2,910	4,830	2,150	1,400	520	1,480	760	90
28-----	316	27,300	5,880	2,380	3,040	4,180	2,150	1,590	573	1,000	669	79
29-----	379	47,400	3,870	2,140	-----	4,500	1,920	1,700	2,030	2,140	585	69
30-----	256	25,200	3,590	1,800	-----	3,870	1,700	1,210	3,310	1,340	479	56
31-----	662	-----	2,500	1,580	-----	4,180	-----	923	-----	887	453	-----
1922-23												
1-----	60	78	233	12,500	13,500	10,600	1,580	2,900	579	4,500	5,520	308
2-----	60	78	222	18,400	38,400	7,000	1,200	2,140	447	2,380	5,320	268
3-----	53	68	77	9,170	27,300	5,170	1,030	1,580	296	1,690	3,160	249
4-----	47	68	114	5,170	14,500	4,180	1,050	1,300	317	1,390	2,020	209
5-----	45	68	1,390	3,870	8,710	3,590	1,160	1,130	329	1,260	1,950	298
6-----	45	84	5,880	3,030	5,520	4,500	3,440	1,030	329	881	3,730	609
7-----	45	78	4,810	2,630	4,180	10,100	3,870	964	257	1,580	3,440	850
8-----	60	84	3,160	3,160	3,300	13,500	3,440	880	375	2,630	2,380	1,300
9-----	116	68	10,100	7,000	2,760	8,260	2,900	1,390	473	1,480	3,160	1,580
10-----	232	68	7,000	12,500	2,760	6,250	2,630	2,760	692	1,160	2,250	1,090
11-----	503	59	3,590	8,260	2,900	11,000	1,800	3,590	755	881	1,910	917
12-----	242	68	2,900	5,520	3,300	10,600	1,580	6,250	579	865	5,170	818
13-----	152	68	3,870	4,180	28,000	11,000	1,160	9,630	4,180	1,690	5,880	609
14-----	116	68	2,760	3,160	25,200	8,260	21,400	8,260	9,170	1,580	9,170	436
15-----	123	102	2,760	8,260	11,000	5,880	25,200	5,170	7,820	1,200	4,500	331
16-----	115	210	5,170	9,630	5,520	4,500	13,000	4,180	3,590	1,070	2,140	250
17-----	136	320	13,000	6,620	3,870	5,520	7,400	4,500	3,440	665	1,690	240
18-----	120	240	22,000	4,180	2,900	7,000	4,830	3,870	2,500	581	1,910	192
19-----	110	332	11,000	3,590	1,910	5,880	3,590	3,160	1,580	513	1,690	192
20-----	100	450	5,170	3,160	2,050	4,180	2,760	2,380	1,090	449	1,020	230
21-----	90	590	4,180	6,250	1,830	3,440	2,140	2,140	848	354	834	4,830
22-----	80	443	2,250	20,800	1,530	3,030	1,910	1,800	679	288	949	5,520
23-----	100	364	1,910	16,100	1,530	4,180	1,580	1,390	525	249	1,690	3,300
24-----	130	354	1,390	10,100	1,160	13,000	1,300	1,200	830	182	1,050	1,800
25-----	231	374	1,300	16,600	1,200	13,000	1,130	1,140	2,630	288	740	1,090
26-----	176	354	1,130	11,500	1,200	7,400	980	1,090	4,830	1,140	539	900
27-----	136	287	966	7,820	2,640	4,830	879	5,170	1,800	354	757	757
28-----	129	259	1,160	16,600	10,100	3,440	1,200	785	4,500	1,580	308	582
29-----	108	259	4,320	22,000	-----	2,900	7,400	708	17,800	1,390	354	476
30-----	102	259	4,180	13,500	-----	2,140	3,870	636	9,170	3,590	331	378
31-----	89	-----	3,030	7,000	-----	4,500	-----	636	-----	4,500	331	-----

Daily discharge, in second-feet, of Monongahela River at Houtt, W. Va., for the years ending September 30, 1915-1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1923-24												
1.....	309	115	7,820	40,000	3,870	3,300	8,710	16,600	6,620	1,700	5,880	558
2.....	250	115	4,830	19,600	3,300	3,030	6,250	15,600	4,830	1,400	4,180	494
3.....	192	159	3,300	42,400	3,160	3,160	5,170	8,710	3,870	1,010	2,770	1,600
4.....	158	211	2,760	41,600	3,030	3,030	5,170	8,710	2,760	781	1,590	1,710
5.....	135	951	3,710	19,000	3,200	2,600	5,170	7,400	2,640	844	1,080	1,820
6.....	114	1,580	5,880	7,820	6,620	3,870	5,520	5,880	2,500	1,010	865	1,070
7.....	114	7,400	10,600	3,440	6,400	6,250	10,600	4,830	2,500	1,490	624	761
8.....	101	11,500	7,000	3,030	5,320	4,830	14,500	4,180	2,140	3,440	464	629
9.....	101	5,170	5,880	2,760	4,330	3,870	10,100	13,000	5,880	3,710	451	777
10.....	77	2,630	6,620	2,500	3,030	3,300	7,820	19,000	13,000	3,170	696	1,040
11.....	77	1,800	10,600	8,260	2,530	2,900	5,880	9,630	10,600	2,030	742	1,060
12.....	43	1,390	10,600	16,600	2,250	2,900	4,830	58,500	5,880	1,590	933	2,160
13.....	42	1,020	7,000	11,000	2,630	2,760	8,870	60,300	4,180	1,590	819	1,500
14.....	42	836	9,630	6,250	2,380	4,500	3,030	32,200	3,600	7,000	697	1,040
15.....	42	727	6,620	3,870	2,020	4,830	2,380	17,800	4,030	5,520	529	856
16.....	41	611	6,620	9,170	1,690	3,710	2,020	14,000	2,530	3,040	372	703
17.....	41	611	4,830	22,000	1,580	3,160	1,700	8,710	1,840	1,810	383	561
18.....	40	611	4,180	11,000	2,020	3,440	1,920	5,880	1,360	1,590	349	366
19.....	40	640	3,590	7,400	19,000	5,520	2,020	4,830	1,170	1,190	267	388
20.....	41	758	2,760	5,680	62,900	5,170	2,140	4,500	1,040	940	383	548
21.....	42	789	2,630	3,870	42,400	7,000	2,640	4,830	907	608	775	811
22.....	42	727	3,440	1,800	16,600	8,710	3,040	9,170	733	770	493	1,820
23.....	43	789	22,600	1,910	7,400	6,620	3,040	6,620	603	1,700	3,870	4,180
24.....	59	2,630	36,000	1,910	4,830	5,520	2,500	4,980	457	1,810	3,830	3,320
25.....	59	4,180	19,600	3,300	4,180	4,500	2,140	1,800	580	1,490	3,150	2,040
26.....	68	4,500	10,100	7,000	3,590	4,500	1,700	3,300	488	1,100	10,600	1,160
27.....	102	3,870	5,880	4,830	3,440	14,000	1,580	2,760	352	694	3,610	874
28.....	115	3,050	20,200	3,870	3,440	15,000	1,580	2,640	1,140	541	1,930	750
29.....	122	2,530	28,700	3,440	3,590	52,400	5,880	2,380	1,310	415	1,320	2,400
30.....	129	5,670	13,500	3,440	-----	39,200	8,710	14,500	1,590	346	902	23,300
31.....	136	-----	24,600	3,870	-----	18,400	-----	18,500	-----	313	685	-----

NOTE.—This table supersedes those published in Water-Supply Papers 403, 433, 453, 473, 503, and 523. Water below crest of dam, July 30 to Aug. 3, 1916, Aug. 23-25 and Sept. 26, 1917, July 29, 1918, Oct. 25 and 26, 1920, Oct. 18-24, 1922, and Oct. 13-23, 1923; total flow was leakage and released water through lock.

Monthly discharge of Monongahela River at Lock 15, Houtt, W. Va., for the years ending September 30, 1915-1924

[Drainage area, 2,430 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1915					
April 7-30.....	9,630	641	2,170	0.893	0.80
May.....	8,710	517	2,030	.835	.96
June.....	7,000	173	1,920	.790	.88
July.....	612	179	297	.122	.14
August.....	2,640	225	933	.384	.44
September.....	8,260	283	1,490	.613	.68
1915-16					
October.....	27,300	423	3,040	1.25	1.44
November.....	20,800	321	2,760	1.14	1.27
December.....	48,200	814	7,760	3.19	3.68
January.....	55,000	1,810	11,800	4.86	5.66
February.....	47,400	3,450	11,400	4.69	5.06
March.....	31,600	4,180	9,930	4.09	4.72
April.....	7,400	2,140	3,890	1.60	1.78
May.....	10,100	806	2,940	1.21	1.40
June.....	8,710	1,200	2,920	1.20	1.34
July.....	3,590	290	875	.360	.42
August.....	4,820	143	1,000	.412	.48
September.....	7,820	174	907	.373	.42
The year.....	55,000	143	4,930	2.03	27.61

Monthly discharge of Monongahela River at Lock 15, Hoult, W. Va., for the years ending September 30, 1915-1924—Continued

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1916-17					
October	7,820	353	1,750	0.720	0.83
November	4,180	286	944	.388	.43
December	28,000	844	5,380	2.21	2.55
January	80,200	1,680	9,290	3.82	4.40
February	20,200	910	4,540	1.87	1.95
March	46,500	2,490	15,700	6.46	7.45
April	14,500	941	3,500	1.44	1.61
May	48,200	698	5,750	2.37	2.73
June	10,600	216	3,110	1.28	1.43
July	5,170	196	1,270	.523	.60
August	724	51	236	.097	.11
September	1,560	33	378	.156	.17
The year	80,200	33	4,340	1.79	24.26
1917-18					
October	2,880	33	737	.303	.35
November	2,740	195	584	.240	.27
December	5,880	236	1,240	.510	.69
January	44,000	761	5,230	2.15	2.48
February	32,200	2,010	11,600	4.77	4.97
March	76,500	1,380	9,410	3.87	4.46
April	17,200	1,190	5,940	2.44	2.72
May	30,800	1,300	6,410	2.64	3.04
June	6,620	307	1,870	.770	.86
July	3,710	160	686	.282	.33
August	1,580	151	463	.191	.22
September	3,040	283	1,100	.453	.51
The year	76,500	33	3,720	1.53	20.80
1918-19					
October	10,600	181	637	.262	.30
November	12,500	409	2,860	1.18	1.32
December	27,300	1,210	6,490	2.67	3.08
January	80,200	1,810	10,100	4.16	4.80
February	7,000	708	2,500	1.03	1.07
March	8,260	1,320	3,830	1.58	1.82
April	4,180	950	2,060	.848	.95
May	11,000	1,410	4,490	1.85	2.13
June	15,000	374	2,020	.831	.93
July	21,400	252	3,920	1.61	1.86
August	1,940	323	704	.290	.33
September	1,720	100	392	.161	.18
The year	80,200	100	3,350	1.38	18.77
1919-20					
October	16,600	149	4,130	1.70	1.96
November	35,400	507	6,930	2.85	3.18
December	34,500	1,830	7,980	3.28	3.78
January	44,800	1,830	9,460	3.89	4.48
February	16,600	1,620	5,700	2.35	2.53
March	37,600	1,340	8,190	3.37	3.88
April	34,500	1,060	5,970	2.46	2.74
May	13,500	1,050	3,660	1.51	1.74
June	12,000	534	2,050	.844	.94
July	13,000	457	2,680	1.11	1.28
August	3,490	400	1,190	.490	.56
September	2,810	96	477	.196	.22
The year	44,800	96	4,880	2.01	27.29

Monthly discharge of Monongahela River at Lock 15, Houlst, W. Va., for the years ending September 30, 1915-1924—Continued

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1920-21					
October.....	1,630	93	363	0.149	0.17
November.....	7,000	329	2,430	1.00	1.12
December.....	20,200	1,740	4,180	1.72	1.98
January.....	14,500	1,960	4,440	1.83	2.11
February.....	17,800	1,910	5,500	2.26	2.35
March.....	25,200	1,670	5,490	2.26	2.61
April.....	4,830	832	2,000	.823	.92
May.....	27,300	384	3,750	1.54	1.78
June.....	7,000	294	1,800	.741	.83
July.....	3,290	171	918	.378	.44
August.....	12,000	166	2,060	.848	.98
September.....	7,000	221	1,810	.748	.83
The year.....	27,300	93	2,880	1.19	16.12
1921-22					
October.....	8,700	256	1,470	.605	.70
November.....	47,400	1,390	9,940	4.09	4.56
December.....	64,700	2,500	10,300	4.24	4.89
January.....	28,700	1,580	6,670	2.74	3.16
February.....	20,800	1,080	5,880	2.42	2.52
March.....	40,000	2,520	9,050	3.72	4.29
April.....	30,800	1,310	5,670	2.33	2.60
May.....	13,000	923	2,830	1.16	1.34
June.....	16,600	520	3,270	1.35	1.51
July.....	5,880	699	1,910	.786	.91
August.....	2,140	233	723	.298	.34
September.....	19,600	56	1,260	.519	.58
The year.....	64,700	56	4,910	2.02	27.40
1922-23					
October.....	503	45	124	.510	.59
November.....	590	59	207	.852	.95
December.....	22,000	77	4,210	1.73	1.99
January.....	22,000	2,630	9,110	3.75	4.32
February.....	38,400	1,160	8,170	3.36	3.50
March.....	13,500	2,140	6,740	2.77	3.19
April.....	25,200	879	4,250	1.75	1.95
May.....	9,630	636	2,560	1.05	1.21
June.....	17,800	257	2,860	1.18	1.32
July.....	4,500	182	1,410	.580	.67
August.....	9,170	308	2,440	1.00	1.15
September.....	5,520	192	1,020	.420	.47
The year.....	38,400	45	3,570	1.47	21.31
1923-24					
October.....	309	40	94.1	.039	.04
November.....	11,500	115	2,250	.926	1.03
December.....	36,000	2,630	10,200	4.20	4.84
January.....	42,400	1,800	10,400	4.28	4.93
February.....	62,900	1,580	7,960	3.28	3.54
March.....	52,400	2,760	8,140	3.35	3.86
April.....	14,500	1,580	4,720	1.94	2.16
May.....	60,300	2,380	12,600	5.19	5.98
June.....	13,000	352	3,040	1.25	1.40
July.....	7,000	313	1,760	.724	.83
August.....	10,600	267	1,780	.733	.85
September.....	23,300	366	2,010	.827	.92
The year.....	62,900	40	5,420	2.23	30.38

NOTE.—This table supersedes those published in Water-Supply Papers 403, 433, 453, 473, 503, and 523.

MIDDLE FORK AT MIDVALE, W. VA.

LOCATION.—A third of a mile above Midvale railroad station on Coal & Coke Railway, two-thirds mile below post office at Ellamore, Randolph County.

Laurel Creek enters river on right $1\frac{1}{4}$ miles above station.

DRAINAGE AREA.—122 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 3, 1915, to September 30, 1924.

GAGE.—Vertical and inclined staff on right bank; read by Miss Anna Riley.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—One channel at all stages; straight 300 feet above and 100 feet below cable. Banks are high and wooded. Control slightly shifting. Gage height at which flow would be zero was about 0.65 foot, June 22, 1924.

EXTREMES OF STAGE.—Maximum stage recorded during year, 13.94 feet at 6.30 a. m. May 12; minimum stage, 1.22 feet at 7 a. m. October 19 and 6 p. m. October 20.

1915-1924: Maximum stage recorded, 16.1 feet at 7.30 a. m. January 28, 1918 (stage-discharge relation affected by ice); minimum stage, 1.12 feet August 29, 1917.

Floods of 1888 and 1912 reached gage height of about 18 feet.

ICE.—Stage-discharge relation affected by ice during severe winters.

ACCURACY.—Stage-discharge relation probably permanent. Rating curve not fully developed. Gage read to hundredths twice daily. Records good.

The following discharge measurement was made by Wiggins and Mussey:

June 22, 1924: Gage height, 1.79 feet; discharge, 51 second-feet.

Daily gage height, in feet, of Middle Fork at Midvale, W. Va., for the year ending September 30, 1924

Date	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	1.30	1.62	2.58	6.38	2.74	2.83	3.80	6.12	3.81	2.17	2.79	1.54
2-----	1.30	1.52	2.48	4.58	2.65	3.08	3.36	4.66	3.46	2.00	2.28	2.33
3-----	1.28	1.42	2.45	8.46	2.64	3.00	3.24	4.06	3.12	1.88	2.06	2.68
4-----	1.28	1.44	2.37	6.29	2.62	3.00	3.42	3.92	2.88	1.83	1.80	2.12
5-----	1.28	1.73	2.46	4.88	2.71	3.36	3.33	3.76	2.67	1.84	1.69	2.02
6-----	1.26	1.86	2.63	3.62	3.08	4.34	3.40	3.46	2.52	2.16	1.60	1.94
7-----	1.24	3.28	2.66	5.02	2.72	3.90	4.56	3.36	2.40	2.26	1.60	1.85
8-----	1.26	2.82	2.88	4.78	2.60	3.53	4.25	3.34	2.36	2.56	1.66	1.77
9-----	1.26	2.36	3.77	4.62	2.72	3.16	3.86	7.52	4.12	2.44	1.54	1.98
10-----	1.26	2.11	5.24	4.44	2.62	2.98	3.52	5.47	5.47	2.28	1.52	3.52
11-----	1.26	1.96	5.60	3.98	2.54	2.82	3.21	4.43	3.98	2.17	1.40	2.80
12-----	1.24	1.88	4.36	4.38	2.53	2.87	3.00	13.64	3.38	2.11	1.54	2.40
13-----	1.24	1.86	3.44	3.72	2.46	2.66	2.76	7.94	3.12	5.36	1.56	2.16
14-----	1.24	1.79	3.84	3.19	2.42	2.49	2.63	5.58	3.11	3.60	1.42	2.07
15-----	1.26	1.74	3.46	2.88	2.34	2.44	2.52	5.48	2.74	3.04	1.36	1.98
16-----	1.26	1.76	3.28	2.97	2.16	2.46	2.42	4.60	2.53	2.61	1.31	1.88
17-----	1.23	1.88	2.98	3.82	2.76	2.89	2.34	3.94	2.28	2.21	1.40	1.84
18-----	1.24	2.14	2.87	3.54	7.68	3.32	2.42	3.45	2.14	2.16	1.52	1.86
19-----	1.22	2.14	2.53	3.28	6.24	3.64	2.60	3.38	2.00	2.49	1.46	1.88
20-----	1.22	2.09	2.56	2.81	9.46	3.58	2.73	3.24	1.88	1.86	2.04	1.84
21-----	1.24	2.02	2.69	2.38	6.22	4.30	2.84	3.64	1.83	1.76	3.30	2.10
22-----	1.29	2.05	3.33	2.56	4.56	3.72	2.83	3.62	1.76	1.36	2.32	2.14
23-----	1.31	1.99	7.92	2.62	3.86	3.36	2.72	3.38	1.77	2.02	2.08	2.32
24-----	1.40	3.76	6.46	2.52	3.10	3.28	2.61	3.16	1.68	1.81	1.96	2.18
25-----	1.47	3.28	4.68	3.06	3.02	3.24	2.54	3.12	1.64	1.62	1.97	2.04
26-----	1.52	2.84	3.85	3.18	2.84	4.01	2.45	2.88	1.58	1.54	2.09	1.94
27-----	1.46	2.68	3.52	3.04	2.84	5.62	2.56	2.80	2.44	1.50	1.88	1.88
28-----	1.43	2.51	9.06	2.96	2.86	5.04	2.42	2.89	2.22	1.44	1.78	1.83
29-----	1.39	2.40	5.72	2.77	2.82	8.36	3.47	4.64	2.50	1.42	1.69	2.15
30-----	1.38	2.59	4.46	2.72	-----	6.32	3.69	6.33	2.45	1.42	1.62	8.02
31-----	1.51	-----	7.96	2.58	-----	4.67	-----	4.56	-----	1.52	1.54	-----

BUCKHANNON RIVER AT HALL, W. VA.

LOCATION.—500 feet below ruins of an old milldam, a quarter of a mile above post office and county highway bridge at Hall, Barbour County, and 1 mile from Baltimore & Ohio Railroad station. Pecks Run enters river on left, 1 mile below gaging station.

DRAINAGE AREA.—277 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 7, 1907, to May 25, 1909; April 15, 1915, to September 30, 1924.

GAGE.—Vertical and inclined staff on right bank used since April 15, 1915; read by James Newcomb

DISCHARGE MEASUREMENTS.—Made from county highway bridge or by wading.

CHANNEL AND CONTROL.—Gage is about midway between beginning and end of rapids, having approximately 10-foot fall. Bed of stream in rapids composed of boulders, rocks, and gravel; practically permanent. Banks are high and wooded and are not overflowed except into an old mill race on left bank.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.50 feet at 6 a. m. on May 13; minimum stage 1.52 feet at 6 a. m. October 23.

1915-1924: Maximum stage recorded, 14.7 feet March 14, 1918; minimum stage, 1.52 feet October 23, 1924. Highest flood known prior to establishment of station reached a gage height of about 14 feet in 1888 referred to present gage.

ICE.—Stage-discharge relation affected by ice during severe winters.

ACCURACY.—Stage-discharge relation probably permanent. Gage read to hundredths twice daily. Records good. Daily discharge withheld until measurements of discharge at high stages can be made.

The following discharge measurement was made by Wiggins and Mussey: June 20, 1924: Gage height, 2.31 feet; discharge, 116 second-feet.

Daily gage height, in feet, of Buckhannon River at Hall, W. Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.84	1.90	3.06	8.00	2.92	2.94	3.65	4.70	3.50	2.85	3.20	2.15
2	1.84	1.85	2.90	4.62	2.88	2.87	3.34	4.45	3.25	2.61	3.28	2.24
3	1.82	1.95	2.78	7.40	2.86	2.87	3.25	3.68	3.09	2.49	2.74	3.07
4	1.81	2.01	2.72	8.05	2.86	2.83	3.25	3.48	2.96	2.43	2.49	2.94
5	1.79	2.15	2.78	4.60	2.90	2.89	3.15	3.45	2.87	2.41	2.36	2.62
6	1.79	2.65	3.07	3.38	3.16	3.40	3.25	3.30	2.79	2.46	2.25	2.56
7	1.79	3.72	3.22	3.08	3.14	3.50	4.10	3.15	2.69	3.17	2.16	2.44
8	1.77	3.75	3.28	2.85	3.05	3.40	3.98	3.06	2.62	3.07	2.22	2.35
9	1.75	3.00	3.25	2.85	2.95	3.12	3.60	4.35	3.01	3.06	2.29	2.27
10	1.74	2.67	3.40	2.87	2.87	3.04	3.42	4.25	4.18	2.79	2.26	2.39
11	1.72	2.52	4.55	3.55	2.85	3.01	3.20	3.72	3.60	2.62	2.13	3.04
12	1.71	2.44	4.18	4.55	2.89	2.95	3.11	10.50	3.20	2.57	2.11	2.79
13	1.71	2.36	3.52	3.70	2.83	2.91	2.98	11.95	3.05	3.90	2.12	2.61
14	1.70	2.31	4.15	3.28	2.82	3.11	2.89	7.35	3.02	4.75	2.09	2.52
15	1.70	2.27	3.78	3.03	2.80	3.05	2.83	4.98	2.90	3.48	2.06	2.44
16	1.68	2.23	3.38	3.05	2.78	2.98	2.75	4.30	2.68	3.08	2.03	2.36
17	1.66	2.22	3.16	3.82	2.78	2.92	2.65	3.72	2.60	2.88	2.07	2.30
18	1.64	2.36	3.00	3.52	4.80	3.20	2.61	3.35	2.52	2.74	2.14	2.33
19	1.64	2.49	2.90	3.20	5.95	3.40	2.79	3.24	2.42	2.57	2.11	2.50
20	1.62	2.48	2.81	3.08	9.80	3.35	2.85	3.10	2.34	2.47	2.87	2.46
21	1.59	2.44	2.84	2.95	8.20	3.50	2.87	3.58	2.27	2.34	4.35	2.51
22	1.55	2.42	3.04	2.81	4.40	3.55	2.90	3.82	2.21	2.32	3.23	2.90
23	1.53	2.40	6.30	2.69	3.50	3.40	2.85	3.42	2.18	2.42	3.08	3.13
24	1.58	2.57	8.92	3.69	3.18	3.15	2.76	3.18	2.15	2.54	2.96	2.97
25	1.57	3.18	5.15	3.12	3.13	3.13	2.70	3.13	2.11	2.34	3.15	2.71
26	1.59	3.04	3.80	3.50	3.03	3.38	2.68	3.03	2.09	2.18	3.42	2.57
27	1.60	2.91	3.41	3.32	3.10	4.58	2.61	2.92	2.17	2.10	2.97	2.46
28	1.59	2.86	6.30	3.15	3.04	4.42	2.61	2.96	2.72	2.05	2.63	2.37
29	1.61	2.82	7.00	3.05	2.99	5.92	3.95	3.17	2.66	2.02	2.44	2.58
30	1.68	2.90	4.06	2.95	-----	7.40	3.72	5.10	2.98	1.99	2.31	6.70
31	1.84	-----	5.92	2.95	-----	4.50	-----	4.28	-----	2.01	2.24	-----

NOTE.—Stage-discharge relation affected by ice Jan. 7-9, 20-24, and Feb. 12-16.

WEST FORK AT BUTCHERVILLE, W. VA.

LOCATION.—At trolley bridge between Weston and Clarksburg, a quarter of a mile upstream from Butcherville, Lewis County, 3 miles north of Weston. Freemans Creek enters river on left 1 mile below station.

DRAINAGE AREA.—181 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 8, 1915, to September 30, 1924.

GAGE.—Chain gage on upstream side of trolley bridge; read by Miss Rosa Butcher.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading

CHANNEL AND CONTROL.—One channel except at extreme high stages, when river overflows right bank and a little water passes through two small culverts in trolley embankment; straight for 500 feet above and curved for 1,000 feet below station. Stream bed composed of sand and gravel. Low-water control is rock ledge overlain with some gravel at right end; fairly permanent. High water is channel controlled above gage height 12 feet.

93244—27†—wsp 583—3

EXTREMES OF STAGE.—Maximum stage recorded during year, 22.66 feet at 4.15 p. m. May 12 (discharge, 7,040 second-feet); minimum stage, 3.19 feet at 5 p. m. October 12 (discharge, 0.4 second-foot).

1915-1924: Maximum stage recorded, 24 feet at 4.30 p. m. March 13, 1918, and 9.30 a. m. January 2, 1919 (discharge, 7,590 second-feet); minimum discharge, no flow October 9 and 10, 1919, September 23, and September 27 to October 5, and December 3, 1922.

Highest flood known is reported to have reached a stage represented by gage height of about 27 feet in 1888. Dam since washed out may have increased height of this flood.

ICE.—Stage-discharge relation affected by ice during severe winters.

DIVERSIONS.—The periods of no flow in 1919 and 1922 were caused by either diversion or impounding.

REGULATION.—There have been small dams upstream which have affected very low-water flow.

ACCURACY.—Stage-discharge relation for low water changed in winter of 1919-20; otherwise permanent except as stated in footnote to daily-discharge table. Rating curves fairly well defined between 5 and 4,000 second-feet; extended above and below. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair except those for extreme low water, which are probably poor.

Discharge measurements of West Fork at Butcherville, W. Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge
Jan. 4	J. J. Dirzulaitis.....	<i>Feet</i> 10.20	<i>Sec.-ft.</i> 1,760
June 19	Wiggins and Mussey.....	4.84	63.7

Daily discharge, in second-feet, of West Fork at Butcherville, W. Va., for the years ending September 30, 1915-1924

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1915							1915						
1		268	133	2.2	72	103	16	48	38	33	6.4	27	54
2		125	90	2.9	35	67	17	47	29	34	54	37	32
3		96	860	2.9	2,010	54	18	44	24	29	62	207	27
4		78	820	4.1	247	84	19	40	20	26	35	207	257
5		78	346	7.4	62	278	20	38	18	24	20	84	207
6		62	159	7.4	51	178	21	38	25	16	13	54	1,390
7		54	96	6.7	39	159	22	36	34	12	13	62	590
8	33	46	51	6.1	45	900	23	660	72	7.4	12	72	227
9	31	45	54	6.1	159	395	24	268	84	4.4	8.4	72	118
10	29	40	51	8.4	103	159	25	150	54	3.7	3.4	103	78
11	32	35	31	14	62	103	26	96	48	20	3.3	62	54
12	38	33	32	15	48	37	27	150	46	54	3.9	53	50
13	67	51	31	9.8	96	51	28	1,270	40	3.1	3.1	47	49
14	72	48	28	6.1	54	103	29	590	43	2.4	6.4	78	40
15	54	40	46	3.9	37	110	30	395	67	2.0	44	257	35
							31		207		150	197	

Daily discharge, in second-feet, of West Fork at Butcherville, W. Va., for the years ending September 30, 1915-1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1-----	4,310	20	90	700	2,970	300	247	227	58	37	3.5	12
2-----	2,510	16	96	2,470	900	982	188	168	39	30	3.1	12
3-----	555	16	159	740	555	1,150	300	150	28	24	2.8	12
4-----	268	15	150	300	395	520	740	247	47	20	2.5	9.1
5-----	455	14	118	217	395	395	395	300	48	18	11	8.0
6-----	346	13	96	820	455	780	268	700	37	13	520	6.4
7-----	217	14	84	660	1,880	2,080	188	1,270	38	10	197	4.8
8-----	141	11	78	323	590	1,150	207	860	54	9.8	84	4.8
9-----	96	14	78	268	1,060	425	395	237	48	8.0	118	47
10-----	72	14	72	425	860	346	346	197	54	5.7	110	188
11-----	62	13	54	3,050	455	346	278	150	150	4.3	90	58
12-----	52	14	58	6,370	1,390	268	237	103	90	3.3	1,060	38
13-----	46	37	217	2,260	5,360	247	178	84	58	3.1	323	26
14-----	38	67	346	900	1,190	346	159	67	39	3.5	197	20
15-----	38	2,550	197	346	425	1,760	141	54	197	3.1	96	740
16-----	40	1,310	159	278	300	900	110	52	520	6.1	84	700
17-----	33	300	1,310	207	257	625	133	54	197	34	54	197
18-----	31	168	4,440	150	237	370	247	49	96	42	37	141
19-----	62	217	1,680	118	197	278	150	40	346	125	28	52
20-----	103	370	485	278	178	197	110	45	395	96	20	37
21-----	90	323	278	1,430	159	520	96	37	197	72	16	27
22-----	67	188	188	740	125	3,600	133	29	425	44	12	25
23-----	52	133	150	982	118	1,470	103	29	159	26	11	23
24-----	41	103	118	455	168	455	84	24	40	21	9.1	21
25-----	35	78	96	278	4,060	278	207	24	395	16	7.7	19
26-----	31	62	237	207	1,100	207	268	237	257	13	9.1	18
27-----	32	72	257	168	485	227	300	90	125	12	7.0	16
28-----	31	72	1,190	150	300	1,270	257	67	67	6.7	7.0	14
29-----	28	84	3,520	168	300	1,060	700	62	53	4.1	6.4	58
30-----	24	96	1,800	2,210	-----	555	323	52	44	2.7	7.0	370
31-----	22	-----	520	700	-----	346	-----	90	-----	3.5	14	-----
1916-17												
1-----	150	28	178	159	300	1,230	90	67	278	25	27	268
2-----	84	27	150	159	178	860	84	54	740	21	20	207
3-----	46	26	103	1,880	110	1,470	78	52	820	17	15	159
4-----	38	25	90	1,060	110	2,420	62	51	278	12	11	150
5-----	32	22	346	660	103	2,800	67	58	168	10	7.4	133
6-----	27	21	625	1,270	84	1,150	1,880	51	141	8.4	4.8	118
7-----	22	19	247	555	78	1,270	1,970	48	590	7.0	12	118
8-----	20	18	150	278	96	4,780	1,100	45	178	9.5	54	159
9-----	21	19	133	188	150	3,010	425	46	300	12	54	159
10-----	35	31	141	150	96	820	247	51	660	15	42	84
11-----	72	39	125	118	78	820	159	52	520	20	31	54
12-----	46	51	125	72	54	5,570	133	49	268	22	22	38
13-----	35	40	110	141	44	1,840	103	45	133	18	14	24
14-----	29	33	72	740	50	2,130	90	40	103	14	9.8	18
15-----	28	38	53	425	58	941	72	37	60	26	5.7	12
16-----	62	42	72	300	62	370	58	37	150	40	4.1	8.7
17-----	370	45	58	207	78	740	52	29	58	72	3.1	4.8
18-----	110	38	84	178	270	700	58	26	42	217	2.6	3.7
19-----	982	32	90	150	455	625	58	25	37	207	2.3	3.4
20-----	1,020	29	90	133	395	257	52	23	30	103	2.0	3.2
21-----	485	30	1,520	455	257	247	44	22	24	62	2.0	3.0
22-----	393	26	2,420	5,870	207	346	38	22	21	46	2.0	2.6
23-----	133	45	1,100	1,020	247	395	36	40	21	34	3.7	2.3
24-----	60	485	300	346	2,630	1,060	27	42	20	29	17	2.2
25-----	67	346	247	168	820	555	37	36	16	25	22	2.1
26-----	62	188	168	168	395	300	40	33	13	53	16	2.0
27-----	49	110	227	118	1,020	247	37	3,810	17	197	12	2.0
28-----	39	84	4,520	300	1,920	257	58	4,570	26	178	7.7	3.0
29-----	35	78	2,380	455	-----	188	96	3,140	35	72	6.4	4.1
30-----	33	188	395	625	-----	150	118	941	32	48	28	6.7
31-----	31	-----	159	395	-----	110	-----	300	-----	35	323	-----

Daily discharge, in second-feet, of West Fork at Butcherville, W. Va., for the years ending September 30, 1915-1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1917-18												
1-----	4.3	188	159	44	207	257	31	159	168	133	62	660
2-----	3.1	125	133	42	110	197	72	110	125	110	48	133
3-----	2.7	72	118	41	96	159	60	90	90	90	32	90
4-----	2.9	54	96	40	60	159	237	237	62	110	23	54
5-----	2.7	49	78	40	72	1,020	168	62	49	90	15	25
6-----	2.5	34	67	300	67	455	118	53	37	72	10	19
7-----	2.2	27	52	900	395	300	90	49	860	43	7.4	20
8-----	2.2	26	59	700	820	217	625	485	188	27	4.6	19
9-----	2.4	24	38	300	2,210	370	2,050	150	78	20	2.9	15
10-----	2.5	24	33	170	1,270	820	820	125	58	14	2.0	14
11-----	3.0	23	29	100	520	520	1,640	125	49	12	1.7	12
12-----	5.4	22	26	800	450	323	1,640	110	39	13	1.1	29
13-----	17	19	24	500	400	6,460	1,100	150	28	26	7	72
14-----	17	17	23	400	350	5,700	565	425	20	19	2.7	37
15-----	18	16	22	980	1,100	2,720	395	257	12	12	50.0	26
16-----	12	17	20	600	300	820	247	150	12	8.4	35.0	22
17-----	10	16	18	600	200	346	207	103	28	7.4	23.0	19
18-----	10	14	16	350	133	257	188	72	125	6.7	17.0	38
19-----	34	13	18	180	197	150	168	58	58	3.7	11.0	29
20-----	300	1.7	21	100	3,810	118	257	51	39	14	5.0	43
21-----	125	14	24	80	1,470	346	500	34	31	11	4.6	227
22-----	67	14	28	60	370	395	1,060	24	39	5.0	3.9	54
23-----	72	15	38	65	188	300	247	178	38	2.5	3.1	58
24-----	278	13	62	54	346	197	197	300	28	1.2	2.7	52
25-----	780	12	485	45	740	455	150	2,380	22	.9	2.2	38
26-----	395	11	425	70	4,360	300	118	4,650	700	1.4	1.5	28
27-----	197	14	217	1,000	1,600	207	1,310	1,310	395	2.1	1.4	23
28-----	178	48	159	3,640	395	141	555	3,350	159	2.6	8.0	20
29-----	150	159	118	4,150	-----	103	300	1,020	67	2.9	2.9	17
30-----	150	178	67	660	-----	67	217	323	35	3.9	1.7	14
31-----	178	-----	46	370	-----	45	-----	237	-----	84	110	-----
1918-19												
1-----	11	900	90	4,690	90	455	118	227	54	62	41	37
2-----	9.5	395	84	6,710	90	323	96	188	43	54	51	54
3-----	9.1	188	78	1,430	84	237	84	118	32	45	35	20
4-----	8.0	110	257	555	84	178	72	84	26	38	25	5.0
5-----	6.1	62	197	395	84	323	72	84	23	31	18	15
6-----	5.0	47	141	300	78	425	62	90	21	26	24	6.7
7-----	4.3	39	110	257	78	278	54	110	20	24	67	8.0
8-----	4.3	34	67	227	72	197	45	346	19	21	49	5.2
9-----	3.5	32	141	197	62	740	35	370	18	19	31	10
10-----	3.9	29	1,970	178	54	520	26	520	17	26	14	6.1
11-----	3.1	28	2,970	178	45	346	42	982	15	625	7.7	7.4
12-----	3.9	26	1,680	178	34	268	323	555	46	197	12	5.4
13-----	17	24	425	178	72	207	159	425	72	58	32	8.7
14-----	19	21	370	237	660	178	72	268	67	1,640	26	5.0
15-----	15	18	1,520	1,190	520	133	43	159	168	982	18	3.5
16-----	13	14	555	941	300	110	90	110	1,270	2,010	12	3.2
17-----	12	84	300	590	370	96	323	96	425	1,520	15	3.3
18-----	10	346	188	370	323	133	178	188	197	370	22	1.9
19-----	9.5	982	110	300	197	150	141	110	90	247	323	1.9
20-----	11	1,060	72	268	178	133	103	2,930	48	300	125	1.0
21-----	72	1,270	70	207	168	118	78	2,380	90	227	51	1.2
22-----	67	660	180	159	237	110	62	1,190	67	178	820	2.1
23-----	54	555	290	278	217	90	48	555	39	141	323	72
24-----	38	278	395	1,560	178	78	159	247	227	103	103	150
25-----	24	96	780	982	197	67	141	1,600	1,470	62	54	96
26-----	32	58	425	395	625	62	96	625	4,480	46	29	46
27-----	22	54	300	257	425	84	78	278	2,010	34	21	25
28-----	24	860	207	168	257	395	62	188	740	28	22	6.1
29-----	90	625	133	141	-----	425	78	118	237	25	21	7.7
30-----	346	323	110	118	-----	207	72	90	96	22	24	4.3
31-----	1,680	-----	268	96	-----	150	-----	67	-----	20	78	-----

Daily discharge, in second-feet, of West Fork at Butcherville, W. Va., for the years ending September 30, 1915-1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1919-20												
1-----	3.1	1,060	150	425	118	133	32	2,130	30	26	34	8.8
2-----	1.5	4,100	90	485	72	159	42	1,270	25	26	30	7.9
3-----	.4	740	72	133	54	300	32	268	31	485	27	6.6
4-----	1.5	118	44	125	780	455	54	141	425	820	35	6.0
5-----	1.0	14	34	90	740	1,060	27	103	2,630	278	29	5.0
6-----	1.7	16	159	44	323	780	257	67	900	188	25	18
7-----	.8	29	5,110	58	217	278	780	43	485	520	31	19
8-----	.1	20	1,270	300	168	217	590	34	168	555	118	11
9-----	.0	4.1	740	2,890	141	125	346	39	110	455	39	7.6
10-----	.0	1.4	860	1,100	820	141	150	48	54	141	33	17
11-----	3.3	40	425	370	520	159	67	26	45	103	34	26
12-----	22	47	278	207	237	257	90	150	29	159	103	26
13-----	96	4.8	1,230	118	207	2,300	425	1,270	48	110	370	23
14-----	740	1.6	3,590	58	207	1,430	159	395	820	96	237	21
15-----	3,050	5.2	1,230	43	217	425	118	227	207	96	72	19
16-----	1,640	2.2	425	84	207	300	133	178	150	78	39	11
17-----	1,920	1.0	278	860	159	1,390	740	125	207	67	29	9.4
18-----	740	.3	178	395	178	425	780	96	188	40	23	7.9
19-----	237	2.6	141	247	178	2,590	590	52	72	36	20	5.6
20-----	84	1.7	141	247	159	2,170	1,060	96	150	32	25	4.4
21-----	37	1.6	133	1,800	237	820	3,640	103	300	29	17	3.4
22-----	300	5.0	118	2,010	1,760	395	1,190	78	257	27	23	2.5
23-----	590	26	110	4,990	780	257	425	49	207	20	41	1.5
24-----	425	45	257	2,800	485	188	237	62	141	54	72	2.9
25-----	217	346	278	1,150	227	150	110	425	125	4,310	62	5.2
26-----	197	3,050	268	395	247	133	278	159	103	2,050	39	4.0
27-----	1,470	2,170	178	278	207	84	207	84	67	268	23	2.1
28-----	555	820	159	207	103	72	168	62	49	197	20	6.4
29-----	159	300	133	133	90	52	133	44	34	188	15	2.4
30-----	39	197	110	78	-----	42	227	36	25	159	12	12
31-----	43	-----	103	35	-----	39	-----	33	-----	141	10	-----
1920-21												
1-----	49	0.8	300	60	660	590	346	62	227	44	23	5.6
2-----	17	1.1	425	90	346	590	485	72	188	118	16	8.2
3-----	16	2.6	346	90	278	2,300	268	84	178	20	2,300	5.8
4-----	14	15	237	75	197	1,230	197	247	133	18	590	7.0
5-----	12	23	227	70	207	455	103	740	62	23	217	18
6-----	10	23	300	60	237	237	96	780	26	11	90	49
7-----	7.3	16	141	55	257	188	84	455	19	9.4	90	323
8-----	6.0	7.6	110	85	323	150	49	217	17	7.6	110	278
9-----	5.2	10	72	200	1,880	118	84	141	16	5.6	96	247
10-----	6.0	29	62	140	1,720	247	110	84	14	4.2	62	150
11-----	7.9	42	62	95	1,310	346	96	84	17	3.0	45	49
12-----	6.6	34	197	80	1,190	237	72	168	24	14	33	23
13-----	5.4	32	300	70	425	159	54	257	27	23	30	17
14-----	4.8	29	590	200	300	110	46	197	30	30	370	15
15-----	4.0	27	590	1,000	237	188	52	78	32	33	740	23
16-----	3.0	90	346	900	188	237	67	207	25	38	300	16
17-----	1.7	1,470	227	485	141	217	90	168	21	31	159	12
18-----	1.4	323	217	455	103	159	84	159	15	19	110	21
19-----	.9	197	207	370	84	150	78	150	1,680	25	84	17
20-----	.6	178	133	159	62	133	67	141	227	27	37	9.7
21-----	.6	141	96	84	58	118	62	72	110	26	26	84
22-----	.4	188	247	110	52	84	58	34	67	21	21	1,390
23-----	.4	590	2,210	125	455	72	48	23	96	13	14	555
24-----	.6	395	982	133	1,020	62	43	54	346	6.6	9.7	247
25-----	1.6	300	346	110	395	58	40	625	141	4.6	7.9	227
26-----	2.1	168	159	96	370	52	37	1,350	217	3.4	6.2	278
27-----	3.6	141	125	84	395	45	36	455	227	2.7	3.4	257
28-----	4.8	38	118	67	700	42	39	425	48	2.4	2.7	237
29-----	4.0	32	110	62	-----	39	44	278	46	1.6	2.1	118
30-----	2.0	159	90	395	-----	36	51	323	47	5.0	1.6	62
31-----	1.6	-----	70	1,760	-----	46	-----	227	-----	24	2.4	-----

Daily discharge, in second-feet, of West Fork at Butcherville, W. Va., for the years ending September 30, 1915-1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1921-22												
1-----	67	3,980	740	125	45	168	820	40	29	62	23	10
2-----	62	1,270	247	110	67	2,130	485	32	24	62	22	15
3-----	370	425	237	110	110	1,020	197	35	40	300	32	12
4-----	860	323	268	67	84	780	178	150	96	700	39	10
5-----	278	237	247	207	78	520	159	346	820	395	27	8.5
6-----	237	150	237	590	67	370	125	1,100	1,100	217	16	7.0
7-----	197	84	217	346	67	346	118	455	300	125	10	5.6
8-----	168	67	257	257	67	300	72	395	159	72	21	4.4
9-----	133	62	247	485	45	257	58	125	96	54	52	3.2
10-----	96	54	227	323	58	247	47	90	125	41	72	1.7
11-----	72	62	188	1,640	2,130	227	41	72	96	34	84	2.9
12-----	54	58	217	520	1,270	300	36	62	2,590	29	49	26
13-----	44	47	278	237	370	159	30	54	555	45	27	31
14-----	39	44	300	197	520	455	346	46	207	247	17	18
15-----	33	44	346	520	346	4,820	2,340	41	110	278	11	9.7
16-----	30	78	370	820	590	1,350	700	36	67	84	6.6	5.0
17-----	28	3,050	395	660	257	300	520	39	1,560	72	4.2	3.2
18-----	21	1,150	395	278	237	268	257	58	4,150	125	2.6	1.7
19-----	11	455	197	941	323	237	227	820	625	207	1.7	4.4
20-----	9.4	425	178	900	2,210	227	197	346	278	110	1.2	.8
21-----	11	370	237	1,390	900	197	178	197	247	62	2.9	.5
22-----	25	268	178	820	370	159	257	133	178	27	4.2	.2
23-----	17	178	1,350	370	237	150	257	96	103	23	2.7	.0
24-----	15	590	5,830	247	197	141	159	42	72	178	3.0	.1
25-----	12	2,550	4,020	227	178	125	110	35	42	625	20	1.6
26-----	9.7	860	1,060	141	125	96	90	217	34	247	54	.5
27-----	7.9	346	395	110	84	159	72	118	27	50	38	.0
28-----	9.4	3,940	247	90	110	197	67	72	23	35	30	.0
29-----	11	4,020	227	78	-----	188	58	45	96	32	31	.0
30-----	8.2	1,390	188	62	-----	141	52	36	78	34	23	.0
31-----	84	-----	141	53	-----	207	-----	33	-----	31	13	-----
1922-23												
1-----	0	1.0	0.6	3,180	3,310	520	58	141	16	159	555	14
2-----	0	6.6	.1	1,390	3,100	300	44	72	28	103	207	11
3-----	0	3.4	.0	370	660	207	39	54	22	62	96	10
4-----	0	1.7	6.6	300	455	168	58	46	19	36	300	23
5-----	0	1.3	1,390	227	300	125	150	40	15	28	520	28
6-----	5.6	.8	555	197	227	125	395	34	23	118	237	23
7-----	18	1.4	278	125	217	982	346	21	52	395	118	54
8-----	34	2.2	1,150	625	218	278	278	49	118	125	84	125
9-----	52	1.3	660	1,230	72	237	237	118	46	62	395	237
10-----	67	1.0	278	1,150	52	395	197	300	32	39	217	84
11-----	23	1.1	197	590	45	860	90	237	54	30	96	39
12-----	13	2.2	520	300	159	485	58	346	217	395	1,150	23
13-----	10	6.6	247	168	4,100	982	278	1,230	425	395	2,930	13
14-----	7.3	13	197	197	1,190	395	3,470	425	455	141	660	8.2
15-----	5.0	25	323	590	278	257	1,470	237	159	72	217	6.0
16-----	7.0	30	941	395	237	217	590	188	520	54	118	15
17-----	11	49	4,690	227	168	207	300	168	455	46	118	11
18-----	7.6	90	1,100	178	96	178	237	133	395	39	96	8.5
19-----	4.0	110	395	133	62	150	178	110	370	34	62	19
20-----	3.0	159	247	110	67	133	141	78	300	31	46	52
21-----	2.2	54	197	860	84	125	96	67	217	28	30	1,840
22-----	1.5	45	133	2,170	110	150	72	54	178	21	29	346
23-----	1.5	19	90	1,100	62	395	62	49	150	13	34	178
24-----	5.0	16	62	1,800	54	1,310	54	42	125	41	27	141
25-----	5.8	11	54	1,310	48	625	46	38	96	300	23	72
26-----	3.0	9.1	48	346	44	278	34	32	110	197	19	32
27-----	1.7	5.8	27	395	740	207	25	29	323	58	14	24
28-----	1.3	3.4	84	2,050	1,020	125	110	27	555	72	11	15
29-----	.8	1.7	860	1,100	-----	96	300	25	1,310	159	19	11
30-----	2.0	1.0	278	217	-----	78	237	22	555	207	7.0	12
31-----	1.6	-----	227	395	-----	67	-----	17	-----	268	.2	-----

Daily discharge, in second-feet, of West Fork at Butcherville, W. Va., for the years ending September 30, 1915-1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1923-24												
1-----	15	30	425	2,760	217	159	278	2,210	268	227	455	27
2-----	13	31	268	941	178	150	257	700	188	84	278	84
3-----	12	25	178	4,990	188	159	555	455	133	50	72	485
4-----	8.8	35	141	1,640	178	96	455	520	90	36	35	118
5-----	6.6	346	550	346	207	96	278	346	62	159	26	54
6-----	5.0	425	555	197	520	370	455	207	72	740	23	51
7-----	3.4	1,880	1,230	197	300	300	1,470	178	58	1,230	21	35
8-----	2.5	941	485	168	178	207	700	217	78	1,310	23	28
9-----	1.7	278	323	103	150	141	425	455	1,020	625	20	28
10-----	1.4	323	520	96	118	159	323	346	900	323	18	40
11-----	.8	84	941	2,170	103	178	227	625	323	227	23	38
12-----	.5	72	555	1,060	150	188	207	6,540	188	133	15	46
13-----	3.0	58	278	395	140	168	133	4,100	118	1,720	32	30
14-----	6.6	49	1,920	125	130	455	118	982	133	941	27	27
15-----	6.0	42	982	110	110	323	96	1,020	110	300	18	31
16-----	3.8	38	159	1,680	90	227	72	555	72	159	15	27
17-----	2.5	44	268	1,720	100	207	62	300	39	96	13	24
18-----	1.3	58	207	555	120	141	48	300	35	72	36	25
19-----	5.8	42	188	323	2,000	237	62	247	58	54	32	237
20-----	3.0	33	133	278	6,000	188	141	247	45	35	1,150	72
21-----	3.4	27	159	217	1,970	625	150	1,390	33	29	982	96
22-----	.8	40	900	110	395	485	125	660	30	67	278	625
23-----	3.8	67	3,810	72	268	370	103	300	29	346	560	370
24-----	13	485	2,470	72	197	207	67	197	32	125	247	268
25-----	22	278	941	197	178	62	300	36	36	54	2,510	141
26-----	28	188	395	740	207	700	58	133	25	36	700	78
27-----	38	168	300	425	257	1,560	46	125	72	27	257	53
28-----	67	150	2,300	227	207	660	72	133	217	19	118	40
29-----	72	141	1,310	159	168	3,680	78	1,060	237	11	67	323
30-----	67	860	455	168	-----	900	700	1,640	625	12	54	4,360
31-----	22	-----	3,560	227	-----	455	-----	455	-----	16	33	-----

NOTE.—Discharge for following periods when gage was not read estimated from weather records and by comparison with records of flow at other stations in the basin: Feb. 8, 1917, Feb. 12-17 and Dec. 21-23, 1918, July 1, 1920, Dec. 30, 1920, to Jan. 16, 1921, Feb. 12-20 and Sept. 10, 1924. Discharge estimated because of ice effect Dec. 12-14, 16, 17, 20, and 21, 1917, and Jan. 2, 3, and 5-27, 1918. Discharge determined by indirect method Sept. 24 to Nov. 16, 1920, when stage-discharge relation was affected by growth of vegetation in secondary control below normal low-water control.

Monthly discharge of West Fork at Butcherville, W. Va., for the years ending September 30, 1915-1924

[Drainage area, 181 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1915					
April 8-30-----	1,270	29	184	1.02	0.87
May-----	268	18	62.8	.347	.40
June-----	860	2.0	103	.569	.63
July-----	150	2.2	17.4	.096	.11
August-----	2,010	27	153	.845	.97
September-----	1,360	27	200	1.10	1.23
1915-16					
October-----	4,310	22	320	1.77	2.04
November-----	2,550	11	213	1.18	1.82
December-----	4,440	54	591	3.27	3.77
January-----	6,370	118	915	5.06	5.83
February-----	5,360	118	926	5.12	5.52
March-----	3,600	197	776	4.29	4.95
April-----	740	84	250	1.38	1.54
May-----	1,270	94	187	1.03	1.19
June-----	520	28	143	.790	.88
July-----	125	2.7	23.1	.128	.15
August-----	1,060	2.5	102	.564	.65
September-----	740	4.8	96.8	.535	.60
The year-----	6,370	2.5	378	2.09	28.44

*Monthly discharge of West Fork at Butcherville, W. Va., for the years ending
September 30, 1915-1924—Continued*

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1916-17					
October	1,020	20	148	0.818	0.94
November	485	18	73.4	.406	.45
December	4,520	53	532	2.94	3.39
January	5,870	72	605	3.34	3.85
February	2,630	44	373	2.06	2.14
March	5,570	110	1,210	6.69	7.71
April	1,970	36	246	1.36	1.52
May	4,570	22	447	2.47	2.85
June	820	12	193	1.07	1.19
July	217	7.0	53.4	.295	.34
August	323	2.0	25.3	.140	.16
September	268	2.0	58.5	.323	.36
The year	5,870	2.0	332	1.83	24.90
1917-18					
October	780	2.2	97.5	.539	.62
November	188	1.7	42.0	.232	.26
December	485	16	87.1	.481	.55
January	4,150	40	570	3.17	3.68
February	4,360	67	795	4.39	4.57
March	6,460	45	772	4.27	4.92
April	2,050	31	525	2.90	3.24
May	4,650	24	543	3.00	3.46
June	860	12	121	.669	.75
July	133	.9	30.6	.169	.19
August	110	.7	16.0	.088	.10
September	660	12	63.6	.351	.39
The year	6,460	.7	303	1.67	22.68
1918-19					
October	1,680	3.1	84.7	.468	.54
November	1,270	14	307	1.70	1.90
December	2,970	67	467	2.58	2.97
January	6,710	96	765	4.23	4.88
February	660	34	206	1.14	1.19
March	740	62	233	1.29	1.49
April	323	26	100	.552	.62
May	2,930	67	493	2.72	3.14
June	4,480	15	404	2.23	2.49
July	2,010	19	296	1.64	1.89
August	820	7.7	80.4	.444	.51
September	150	1.0	20.6	.114	.13
The year	6,710	1.0	290	1.60	21.75
1919-20					
October	3,050	0	406	2.24	2.58
November	4,100	.3	439	2.43	2.71
December	5,110	34	600	3.31	3.82
January	4,990	35	715	3.95	4.55
February	1,760	54	339	1.87	2.02
March	2,590	39	559	3.09	3.56
April	3,640	27	436	2.41	2.69
May	2,130	33	255	1.41	1.63
June	2,630	25	269	1.49	1.66
July	4,310	20	379	2.09	2.41
August	370	10	54.4	.301	.35
September	26	1.5	10.1	.056	.06
The year	5,110	0	373	2.06	28.04

Monthly discharge of West Fork at Butcherville, W. Va., for the years ending September 30, 1915-1924—Continued

Month	Discharge in second-feet				Run-off in inches
	aximum	Minimum	Mean	Per square mile	
1920-21					
October	49	0.4	6.47	0.036	0.04
November	1,470	.8	157	.867	.97
December	2,210	62	311	1.72	1.98
January	1,760	55	250	1.38	1.59
February	1,880	52	485	2.68	2.79
March	2,300	36	280	1.55	1.79
April	485	36	99.5	.550	.61
May	1,350	23	270	1.49	1.72
June	1,680	14	144	.796	.89
July	118	1.6	19.8	.109	.13
August	2,300	1.6	181	1.00	1.15
September	1,390	5.6	158	.873	.97
The year	2,300	.4	195	1.08	14.63
1921-22					
October	860	7.9	97.4	.538	.62
November	4,020	44	886	4.90	5.47
December	5,830	141	634	3.50	4.04
January	1,640	53	417	2.30	2.55
February	2,210	45	398	2.20	2.29
March	4,820	96	524	2.90	3.34
April	2,340	30	275	1.52	1.70
May	1,100	32	173	.956	1.10
June	4,150	23	464	2.56	2.86
July	700	23	148	.818	.94
August	84	1.2	23.9	.132	.15
September	31	0	6.00	.033	.04
The year	5,830	0	336	1.86	25.20
1922-23					
October	67	0.	9.48	.052	.06
November	159	8	22.4	.124	.14
December	4,690	0	491	2.71	3.12
January	3,180	110	756	4.18	4.82
February	4,100	44	610	3.37	3.51
March	1,310	67	344	1.90	2.19
April	3,470	2.	322	1.78	1.99
May	1,230	17	143	.790	.91
June	1,310	15	245	1.35	1.51
July	395	13	120	.663	.76
August	2,930	.2	272	1.50	1.73
September	1,840	6.0	116	.641	.72
The year	4,690	0	313	1.73	21.46
1923-24					
October	72	.5	14.2	.078	.09
November	1,880	25	241	1.33	1.48
December	3,810	133	865	4.78	5.51
January	4,990	72	749	4.14	4.77
February	6,000	90	519	2.87	3.10
March	3,680	96	451	2.49	2.87
April	1,470	46	261	1.44	1.61
May	6,540	125	869	4.80	5.53
June	1,020	25	178	.983	1.10
July	1,720	11	299	1.65	1.90
August	2,510	13	263	1.45	1.67
September	4,360	24	262	1.45	1.62
The year	6,540	.5	416	2.30	31.25

• Estimated.

WEST FORK AT CLARKSBURG, W. VA.

LOCATION.—At dam of Clarksburg waterworks, three-fourths mile south of Clarksburg, Harrison County. Elk Creek enters on right 1 mile below station.

DRAINAGE AREA.—384 square miles (measured on topographic maps).

RECORDS AVAILABLE.—March 3, 1923, to September 30, 1924.

GAGE.—Gurley seven-day graph water-stage recorder fastened to upstream wall of gatehouse on right bank referred to a float gage near downstream wall of gatehouse; inspected by R. D. Bates.

DISCHARGE MEASUREMENTS.—Made from trolley bridge half a mile upstream from dam or by wading.

CHANNEL AND CONTROL.—One channel at all stages, straight above and below for about 200 feet. The concrete dam of the Clarksburg waterworks forms control for gage. Stage of zero flow is 0.04 foot gage height.

EXTREMES OF DISCHARGE.—Maximum stage from water-stage recorder, 7.76 feet at 11 p. m. May 12 (discharge, 16,300 second-feet); the water was below top of dam October 22 and 23 (pumpage, 5 second-feet).

1923-1924: Maximum and minimum stages same as given above.

ICE.—No appreciable ice effect during period of record.

DIVERSION.—The water supply for the city of Clarksburg is pumped from river above dam, the amount pumped is measured by a Venturi meter with a continuous graphic recorder. The daily pumpage is added to the discharge as determined from water-stage recorder.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 0 and 11,000 second-feet. Discharge estimated January 20 and 27-31, February 1, and July 8-11. Daily discharge obtained by use of discharge integrator October 1 to May 2, and after May 2 by applying mean daily gage heights to rating table or averaging discharge for intervals of the day. Records good.

Discharge measurements of West Fork at Clarksburg, W. Va., for the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>
Jan. 4	Dirzulaitis and Wiggins.....	5.28	8,900
4	W. C. Wiggins.....	4.50	6,850
June 19	Wiggins and Mussey.....	.43	134

Daily discharge, in second-feet, of West Fork at Clarksburg, W. Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	51	43	1,680	8,380	500	381	1,030	3,640	671	475	692	101
2	43	71	865	2,310	468	376	663	2,200	475	223	673	328
3	36	76	528	7,620	452	313	969	929	366	139	284	751
4	35	95	396	8,380	448	283	979	1,030	408	101	172	401
5	32	478	1,030	2,040	499	272	736	962	347	107	113	235
6	28	658	1,390	746	1,020	368	725	721	271	347	72	166
7	24	3,280	2,350	312	866	580	2,140	497	316	1,010	53	134
8	22	2,710	1,420	382	545	436	1,900	401	315		52	101
9	21	875	836	314	401	415	1,110	781	1,380		77	96
10	17	420	719	279	363	313	923	919	2,220	840	118	117
11	15	290	1,300	2,240	333	358	663	680	1,200		102	134
12	14	224	1,360	3,370	344	396	488	11,400	589	278	81	117
13	12	181	918	1,320	381	411	348	12,200	444	563	77	107
14	13	166	2,710	741	363	876	278	2,870	353	1,630	61	101
15	14	144	1,940	483	338	866	225	2,640	322	645	56	96
16	11	134	1,030	2,500	343	595	193	1,740	253	336	47	86
17	11	131	698	6,030	436	441	172	940	199	230	43	61
18	9	126	530	1,950	1,800	436	178	564	166	182	39	62
19	11	130	415	1,030	4,020	458	239	564	156	140	43	66
20	10	151	353	760	12,600	436	283	539	151	113	323	188
21	6	132	340	494	8,290	811	295	1,270	118	86	2,510	150
22	5	114	692	279	1,690	1,200	283	1,660	92	77	771	593
23	5	191	5,400	297	805	896	266	875	81	265	772	1,210
24	10	840	6,660	284	595	693	219	555	81	395	940	564
25	15	972	2,510	938	503	530	181	497	57	194	2,410	334
26	27	612	1,200	1,500	483	715	157	380	57	124	3,990	223
27	31	497	881		530	3,000	155	316	107	91	742	166
28	32	488	3,970		530	1,990	195	297	199	72	354	134
29	33	380	3,830	600	453	6,580	2,600	629	265	48	229	733
30	33	1,390	1,390			6,580	1,690	4,160	394	44	171	6,960
31	36		5,320			1,650		1,480		200	128	

NOTE.—Discharge interpolated Jan. 20 because of no gage record. Discharge estimated Jan. 27 to Feb. 1 by study of weather records and recorder graph because recorder was not working properly; and July 8-11 by study of weather records and records of West Fork at Butcherville because recorder was not working properly. Braced figures show mean daily discharge for periods indicated.

Monthly discharge of West Fork at Clarksburg, W. Va., for the year ending September 30, 1924

[Drainage area, 384 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	51	5	21.4	0.056	0.06
November	3,280	43	533	1.39	1.55
December	6,660	340	1,760	4.58	5.28
January	8,380		1,880	4.90	5.65
February	12,600	333	1,390	3.62	3.90
March	6,580	272	1,090	2.84	3.27
April	2,600	155	676	1.76	1.96
May	12,200	297	1,880	4.90	5.65
June	2,220	57	402	1.05	1.17
July	1,630	44	370	.964	1.11
August	3,990	39	522	1.36	1.57
September	6,960	61	484	1.26	1.41
The year	12,600	5	920	2.40	32.58

BUFFALO CREEK AT BARRACKVILLE, W. VA.

LOCATION.—At steel highway bridge, 1,000 feet above covered highway bridge at Barrackville, Marion County, $2\frac{3}{4}$ miles northeast of Fairmont. Finchs Run enters on left, 1,600 feet below station.

DRAINAGE AREA.—115 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 3, 1907, to December 31, 1908; May 8, 1915, to June 21, 1924, when station was discontinued.

GAGE.—Chain gage fastened to downstream handrail of bridge; read by E. M. Beall.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

CHANNEL AND CONTROL.—One channel at all stages; straight about 100 feet above and below station. Banks high. Stream bed rocky; some gravel. Control not permanent.

EXTREMES OF STAGE.—Maximum stage recorded October 1, 1923, to June 21, 1924, 11.88 feet at 4.30 p. m. on March 29 (discharge, 5,300 second-feet); minimum stage, 1.04 feet on October 10, 11, and 15 (discharge, 3 second-feet).

1907–1908; 1915–1924: Maximum stage recorded, 14.22 feet January 22, 1917 (discharge, about 6,800 second-feet); no flow during greater part of September, October, and November, 1908. Flood of July, 1912, reached a stage represented by about 16 feet on present gage.

ICE.—Stage-discharge relation affected by ice during severe winters.

ACCURACY.—Stage-discharge relation not permanent, also affected by ice. Gage read to hundredths once or twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records poor.

Discharge measurements of Buffalo Creek at Barrackville, W. Va., during 1924

Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>
June 18	Wiggins and Mussey.....	1.32	18
18	do.....	1.30	18
Oct. 13	O. D. Mussey.....	1.23	13

Daily discharge, in second-feet, of Buffalo Creek at Barrackville, W. Va., for the period October 1, 1923, to June 21, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.5	16.5	222		84	90	a60	a1,090	
2	6	21	a160	a2,190	100	a80	284	384	a106
3	5	27	98		a110	75	124	a370	62
4	a4.5	a106	a320	1,130	121	72	109	a360	60
5	4.5	184	554	596	184	75	116	350	54
6									
7	3.5	114	184	a350	514	101	a250	213	128
8	a3.5	1,130	554	107	266	101	438	144	
9	a3	251	209	48	100	86	456	200	
10	3	90	a190	36	58	a80	300		a253
11	3	62	184	27	a55	75	269	a246	
12									
13	3	a45	1,350	2,150	53	101	176		91
14	3	31	365	382	81	95	134	4,300	65
15	3	28	196		78	90	a115	974	54
16	a3	23	382	a159	64	298	98	784	a45
17	3	21	331		42	150	76		a37
18									
19	3.5	20	a230	3,040	58	a115	60	a250	29
20	4	a20	130	818	a140	82			24
21	4	a22	100	682	222	101	a50		16.5
22	4.5	24	82	196	726	121			16
23		18.5	90	a140	a800	314		176	14
24									
25		15	150	87	867	382	116	165	10.5
26		13.5	1,580	75	365	196	116	122	
27		93			121	a100	85		
28	a8	400	a1,650	a120	a110	98			
29		a270			93	314			
30							a50		
31		130	236	130	93	639		a249	
		298	400	a100	103	867			
		130	1,350	69	95	382	112		
	10	a740	596	58	92	5,310	a500		
	10	1,350	a400	54		a2,700			
	13.5		3,100	96		213			

a Estimated; gage not read.

Monthly discharge of Buffalo Creek at Barrackville, W. Va., for the period October 1, 1923, to June 21, 1924

[Drainage area, 115 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	13.5	3.0	57.7	0.502	0.58
November	1,350	13.5	190	1.65	1.84
December	3,100	82	603	5.24	6.04
January	3,040	27	572	4.97	5.73
February	867	42	200	1.74	1.88
March	5,310	72	436	3.79	4.37
April			163	1.42	1.58
May	4,300	122	447	3.89	4.43
June 1-21		10.5	91.9	.799	.62

CHEAT RIVER NEAR PARSONS, W. VA.

LOCATION.—At Moss highway bridge, 2 miles north of Parsons, Tucker County and 2 miles below junction with Shavers Fork.

DRAINAGE AREA.—719 square miles (measured on topographic maps).

RECORDS AVAILABLE.—January 1, 1913, to September 30, 1924.

GAGE.—Chain gage on downstream side of bridge; read by Mrs. E. C. Linger.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Rocky and permanent. Water is turbulent except at extremely low and high stages. Point of zero flow about gage height 0.9 foot, determined October 19, 1923.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 17.5 feet at 6 p. m. March 29 (discharge, 46,500 second-feet revised); minimum stage, 1.86 feet at 10.30 a. m. October 19 (discharge, 85 second-feet).

1913-1924: Maximum stage recorded, 18.03 feet at 10 a. m. March 12, 1917 (discharge, about 50,000 second-feet); minimum stage, 1.52 feet September 6, 1917 (discharge, 29 second-feet). Minimum stage and discharge of very doubtful accuracy.

Maximum stage recorded, during the past 75 years or more, about 20 feet July 10, 1888; discharge about 80,000 second-feet, based somewhat on the records at Rowlesburg and Ices Ferry because bank is overflowed above stages of 17 feet and introduces great uncertainty in the extension of rating curve for Parsons.

ICE.—Stage-discharge relation affected by ice during severe winters.

REGULATION.—Some regulation at various mills. Effect probably compensating except during very low water when the Parsons Milling Co. ponds some water behind their hydroelectric diversion dam. Dam has not been used since March 29, 1924, when it was nearly destroyed by a flood.

ACCURACY.—Stage-discharge relation probably permanent except when affected by ice. Rating curve well defined above 70 second-feet. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table except for period of ice effect. Records good except for periods of ice and low discharge. For the latter periods the gage-height record is often in error.

COOPERATION.—Results of current-meter measurements and records of discharge furnished by West Penn Power Co.

Discharge measurements of Cheat River near Parsons, W. Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 19	J. E. Stewart ^a	1.89	93.3	Apr. 16	Stewart and Munro ^a ..	3.86	1,600
Feb. 9	.....do.....	^b 3.42	1,025	May 13	J. E. Stewart	9.52	14,200
Mar. 15	.....do.....	3.36	928	.....do.....	.....do.....	7.02	7,440
.....do.....	.....do.....	4.42	2,230	June 24	Wiggins and Mussey ..	2.64	398
.....do.....	.....do.....	5.75	4,590	July 16	J. E. Stewart	3.80	1,510
.....do.....	.....do.....	6.01	5,310	Sept. 11	Stewart and Ghiardi ^a ..	3.64	1,340

^a Engineer of West Penn Power Co.

^b Stage-discharge relation slightly affected by ice.

Daily discharge, in second-feet, of Cheat River near Parsons, W. Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	157	127	1,920	9,920	1,000	950	4,600	5,620	2,660	680	1,780	224
2	154	127	1,320	4,020	950	1,780	2,660	3,140	2,360	450	1,100	208
3	147	110	1,150	16,600	1,050	1,320	2,510	2,060	1,920	330	595	229
4	137	93	1,050	7,420	1,260	1,780	2,820	2,660	1,440	256	438	220
5	137	520	2,210	4,200	1,780	6,280	2,820	2,210	1,260	374	352	275
6	127	815	2,060	1,920	2,980	5,400	6,720	1,710	950	770	315	325
7	127	1,920	2,060	1,380		4,020	7,660	1,640	1,050	1,260	270	284
8	121	1,000	1,920	1,260		2,820	5,400	1,510	1,320	4,200	265	251
9	121	595	3,140	1,150		1,920	4,020	9,140	9,660	3,480	237	284
10	121	450	5,620	1,000	820	1,580	4,400	4,200	7,220	1,920	284	2,660
11	121	558	4,600	6,500		1,320	2,510	4,400	6,280	1,380	229	1,320
12	121	680	3,300	3,660		1,050	2,360	36,200	5,200	950	265	815
13	115	680	2,360	2,660		950	1,920	13,900	4,400	7,420	368	485
14	115	595	2,660	1,640		815	1,710	6,940	3,480	3,300	335	390
15	107	520	2,360	1,050	610	905	1,780	5,620	2,510	2,360	220	269
16	98	396	1,780	1,580		905	1,510	4,020	1,640	1,440	180	251
17	98	638	1,380	5,840		905	1,320	2,980	1,380	1,150	187	229
18	98	680	1,200	2,980	3,840	1,510	2,060	2,660	1,200	1,000	187	220
19	98	725	1,100	2,060	3,300	2,360	2,820	2,360	860	725	203	284
20	93	595	950	1,580	7,180	2,510	2,980	2,210	638	558	251	195
21	93	520	905	595	3,140	2,210	2,660	5,200	595	485	3,300	520
22	88	485	3,300	558		1,780	2,060	2,980	520	815	1,000	1,510
23	93	950	13,900	770		1,200	1,640	2,510	485	1,780	680	905
24	115	4,800	6,720	950	950	1,260	1,380	2,060	420	905	485	265
25	121	2,510	4,020	1,710		1,320	1,150	1,640	374	595	450	251
26	199	1,640	2,660	1,050		4,800	1,100	1,380	357	432	1,780	237
27	184	1,510	2,060		815	4,200	905	1,320	680	374	950	229
28	154	1,200	21,500	600	860	4,600	950	2,210	1,440	320	558	284
29	121	1,050	7,660		860	31,400	1,920	5,200	1,000	284	379	1,640
30	127	1,920	6,060	905		20,100	1,780	5,000	770	242	320	13,600
31	127		20,400	1,150		6,500		2,980		1,000	265	

NOTE.—Discharge interpolated or estimated Nov. 3, Mar. 16 and 17, when gage was not read. Discharge estimated on basis of weather records and observer's notes Jan. 7, 8, 27-29, Feb. 7-17 and 22-26, when stage-discharge relation was affected by ice.

Monthly discharge of Cheat River near Parsons, W. Va., for the year ending September 30, 1924

[Drainage area, 719 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	199	88	124	0.172	0.20
November	4,800	93	947	1.32	1.47
December	21,500	905	4,300	5.98	6.89
January	16,600		2,840	3.95	4.55
February	7,180		1,440	2.00	2.16
March	31,400	815	3,890	5.41	6.24
April	7,660	905	2,670	3.71	4.14
May	36,200	1,320	4,760	6.62	7.63
June	9,660	357	2,140	2.98	3.32
July	7,420	242	1,330	1.85	2.13
August	3,300	180	588	.818	.94
September	13,600	195	963	1.34	1.50
The year	36,200	88	2,180	3.03	41.17

CHEAT RIVER AT ROWLESBURG, W. VA.

LOCATION.—At Baltimore & Ohio Railroad bridge at Rowlesburg, Preston County, 200 feet above mouth of Salt Lick Creek.

DRAINAGE AREA.—978 square miles (includes Salt Lick Creek which flows into Cheat River above control for gage).

RECORDS AVAILABLE.—July 19, 1912, to June 22, 1920; April 27 to June 24, 1921; September 11, 1921, to July 29, 1922; and September 24, 1922, to September 30, 1924. Other records have been kept as indicated hereafter,

but the foregoing periods of record contain the only low-water records of any value; even some of the low-water records included are of doubtful accuracy.

GAGES.—July 19, 1912, to June 22, 1920, Mott tape gage of the United States Weather Bureau, on upstream lower chord of railroad bridge was used; April 27, 1921, to November 17, 1923, chain gage on upstream lower chord of railroad bridge about 100 feet nearer the left bank than Mott tape gage; November 18, 1923, to September 30, 1924, Stevens water-stage recorder on left bank about 50 feet downstream from tape and chain gages. Datum is same for all three gages, but gage readings differ for high water, owing to effect of swift water.

The United States Weather Bureau has collected gage-height records since December 8, 1884. The records are practically continuous except for rather fragmentary records during ice-affected periods prior to 1890 and a gap in the record from July 1 to November 2, 1888. Brief data concerning the United States Weather Bureau gages are as follows:

December 8, 1884, to July 10 (a. m.), 1888: Staff gage on Baltimore & Ohio Railroad bridge pier. No other information available. The staff gage and half of the pier were carried away during flood of July 10, 1888. Gage was not replaced until November 3, 1888.

November 3, 1888, to 1889: Presumably a temporary staff gage.

1889 to July 18, 1912: Staff gage painted on a smooth rock surface, near center of left side of new railroad bridge pier. Gage extends from about 4.3 feet to 17 feet. In 1909 and 1911 this gage was found to be nearly illegible from 4.3 to 7 feet. Accordingly, gage heights of 7 feet or over are the only ones that can be fully relied upon, at least during the latter years that the gage was used. Gage heights of less than 4.3 feet are merely estimates and some extremely low-water readings are believed to be more than 1.5 feet too low.

July 19, 1912, to June 22, 1920: Mott tape gage on upstream lower chord of railroad bridge. Gage about 20 feet upstream and a short distance west of staff gage. Datum 0.69 foot lower than staff gage.

June 23, 1920, to December 31, 1923: Chain gage on downstream side of county highway bridge about 600 feet downstream from staff and Mott gages. Datum 0.38 foot lower than for Mott tape gage. Stage-discharge relation different from those for gages at railroad bridges. This gage seldom used by observer. Most of readings were made on an extemporized staff chiseled on a bridge pier that is near chain gage.

January 1, 1924, to September 30, 1924: Chain gage on upstream lower chord of railroad bridge. Same datum as Mott tape gage but about 100 feet nearer left shore. Readings can be relied upon.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

CHANNEL AND CONTROL.—Channel is curved above and below station. Control consists of small boulders. Stage at which flow would be zero was about 0.45 foot in September, 1917, 1.03 feet in September, 1922, and 0.4 foot in July, 1923.

EXTREMES OF STAGE.—Maximum stage recorded during year, 12.25 feet at 1.30 p. m. March 29; minimum stage, 1.93 feet October 18.

1912–1924: Maximum stage recorded, 14.7 feet at 5 p. m. March 12, 1917; minimum stage, 1.4 feet 7.30 a. m. October 6 to 7.30 a. m. October 8, 1914.

1884–1924 (United States Weather Bureau records): Maximum stage recorded 22 feet July 10, 1888. Gage height uncertain. Records of Baltimore & Ohio Railroad show 20.5 feet while a high-water mark just downstream

indicates only 19 feet. Channel was obstructed not only by bridge and its appurtenances but also by great quantities of drift which lodged against bridge. Stage upstream from bridge was about 24 feet, 5 feet greater than stage just downstream therefrom. Maximum stage recorded with no drift against bridge, 16 feet at 4 p. m. July 17, 1907.

Minimum stage recorded is of no value because there was no gage below 4.3 feet.

ICE.—Stage-discharge relation affected by ice during severe winters.

ACCURACY.—Rating curve not fully developed. Gage read to hundredths twice daily October 1 to November 17. Continuous record November 18 to September 30. Records excellent.

COOPERATION.—Records furnished by West Penn Power Co.

Discharge measurements of Cheat River at Rowlesburg, W. Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 18	J. E. Stewart	^a 1.94	96.1	Mar. 31	J. E. Stewart	7.06	13,000
Nov. 11	do	2.72	700	Apr. 13	Stewart and Munroe	4.08	2,550
Jan. 1	do	6.86	11,900	May 12	J. E. Stewart	11.00	43,600
2	do	5.32	5,930	13	do	10.69	39,300
4	do	7.66	15,400	June 25	do	2.64	487
4	do	7.08	13,300	Sept. 11	Stewart and Gilardi	3.96	2,240
Feb. 11	do	^b 4.09	1,190	20	J. E. Stewart	^a 2.56	376
Mar. 30	do	8.93	23,700	28	do	^a 2.59	398

^a Stage-discharge relation affected by material lodged on control.

^b Stage-discharge relation affected by ice.

Daily gage height, in feet, of Cheat River at Rowlesburg, W. Va., for the year ending September 30, 1924

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.28	2.14	4.34	7.29	3.48	3.45	5.50	5.58	4.49	3.07	3.88	2.44
2	2.26	2.15	3.88	5.56	3.45	3.93	4.72	5.34	4.32	2.82	3.74	2.45
3	2.20	2.18	3.54	8.48	3.42	4.11	4.33	4.53	4.15	2.68	3.22	3.05
4	2.18	2.17	3.36	7.64	3.44	4.03	4.53	4.42	4.01	2.95	2.90	3.07
5	2.16	2.26	3.87	5.58	3.65	5.13	4.58	4.37	3.89	3.19	2.73	2.85
6	2.12	2.98	4.25	4.50	4.58	6.33	5.01	4.12	3.73	3.74	2.61	2.71
7	2.08	3.72	4.12	4.25	4.26	5.50	6.73	3.90	3.60	4.08	2.54	2.65
8	2.06	3.65	4.07	3.88	3.76	4.67	6.24	3.81	3.50	4.60	2.48	2.53
9	2.05	3.19	5.02	3.63	3.48	4.08	5.46	6.68	5.15	5.26	2.47	2.49
10	2.04	2.92	5.37	3.50	4.20	3.92	5.12	6.06	6.71	4.25	2.56	3.22
11	2.00	2.74	5.49	4.48	4.13	3.77	4.83	5.01	5.14	3.78	2.52	3.88
12	2.00	2.80	4.92	5.59	4.03	3.47	4.40	10.15	4.48	3.46	2.49	3.36
13	2.00	2.96	4.84	4.45	3.89	3.35	4.10	9.95	4.12	5.05	2.50	3.05
14	1.98	2.90	4.49	3.97	3.67	3.46	3.92	6.84	4.78	5.60	2.56	2.87
15	1.98	2.85	4.25	3.58	3.55	3.43	3.83	6.07	4.33	4.43	2.54	2.75
16	1.96	2.75	3.88	3.66	3.36	3.26	3.78	5.38	3.87	3.88	2.40	2.65
17	1.96	2.77	3.65	5.55	3.45	3.35	3.63	4.84	3.60	3.55	2.35	2.55
18	1.94	3.02	3.49	4.98	4.08	3.85	3.59	4.41	3.42	3.37	2.35	2.52
19	1.96	3.01	3.33	4.31	5.01	4.21	4.41	4.81	3.22	3.18	2.34	2.49
20	1.96	3.00	3.22	3.96	6.52	4.48	4.40	4.12	3.07	3.00	2.36	2.54
21	1.94	2.91	3.25	3.50	5.74	4.53	4.50	4.73	2.94	2.86	3.15	2.67
22	1.98	2.83	3.90	3.12	4.55	4.16	4.29	5.15	2.85	2.85	3.60	3.45
23	1.98	2.90	6.85	3.37	3.96	3.83	4.05	4.49	2.80	3.60	3.06	3.74
24	2.02	4.55	7.12	3.34	3.67	3.82	3.82	4.10	2.72	3.44	2.90	3.30
25	2.06	4.82	5.49	3.80	3.54	3.87	3.63	3.90	2.66	3.06	2.80	3.00
26	2.10	3.99	4.63	4.07	3.37	4.36	3.49	3.75	2.62	2.84	3.07	2.80
27	2.17	3.71	4.18	3.52	3.37	5.87	3.36	3.65	2.83	2.71	3.42	2.68
28	2.16	3.58	8.06	3.38	3.55	5.40	3.30	4.06	3.47	2.61	3.00	2.61
29	2.13	3.39	7.00	3.37	3.53	10.48	3.66	4.42	3.35	2.54	2.76	2.72
30	2.10	3.99	5.27	3.40	-----	9.96	4.06	6.23	3.23	2.49	2.61	6.45
31	2.14	-----	7.04	3.58	-----	6.94	-----	5.19	-----	3.06	2.51	-----

CHEAT RIVER NEAR MORGANTOWN, W. VA.

LOCATION.—At Ices Ferry highway bridge at Uneva, Monongalia County, 10 miles above mouth of river and 7 miles from Morgantown. Parallel of 39° 40' crosses river at this bridge.

DRAINAGE AREA.—1,380 square miles.

RECORDS AVAILABLE.—July 8 to December 30, 1899; July 1 to December 29, 1900; August 21, 1902, to December 31, 1905; November 18, 1908, to December 31, 1917; and October 1, 1922, to September 30, 1924.

GAGE.—Present chain gage installed October 24, 1922, on new bridge about 200 feet downstream from site of former bridge. A chain gage, located on old bridge since September 28, 1904, was taken out with bridge by an ice jam February 9, 1918. Datum of chain gage on old bridge was 0.64 foot lower than datum of present chain gage. Gage read by Mrs. Gilbert Friend and Mrs. Maggie Myers.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during years ending September 30, 1923 and 1924; 14.25 feet at 6 p. m. March 29, 1924 (discharge, 89,300 second-feet, peak of waves and surges); minimum stage recorded, 1.18 feet at 4.30 p. m., end of discharge measurement, October 17, 1923 (discharge, 110 second-feet). A lower stage and discharge probably occurred during the first week of October, 1922 (just prior to the reestablishment of the station).

1899; 1900; 1902–1905; 1908–1917: Maximum discharge recorded, 73,000 second-feet (revised value) at 5 p. m. March 12, 1917 (stage 13.7 feet old chain gage); minimum stage, 1.74 feet at 8 a. m. October 7, 1914 (discharge not computed but probably less than 100 second-feet). Discharge measurement of November 18, 1908, indicates a discharge of 131 second-feet. Accordingly discharge was about 131 second-feet November 18–22, 1908. Furthermore, the discharge probably was less than 131 second-feet most of the time, and less than 100 second-feet some of the time, from about September 15 to November 18, 1908.

Maximum stage recorded during the past 75 years or more, 18.7 feet (present chain gage datum) July 10, 1888, discharge, 160,000 second-feet.

ICE.—Stage-discharge relation seriously affected by ice when ice jams form during severe winters. Ordinarily this station is free from ice effects to the stage-discharge relation.

ACCURACY.—Stage-discharge relation practically permanent except as affected by ice. Gage read to half-tenths usually once daily except Sunday, October 27 to December 23, 1922, and twice daily after December 27, 1922. Records excellent after December 27, 1922, except when stage-discharge relation was affected by ice. Daily discharge not published October 27 to December 22, 1922, due to erroneous readings and gaps in record.

COOPERATION.—Complete records furnished by West Penn Power Co.

Discharge measurements of Cheat River near Morgantown, W. Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 17	J. E. Stewart.....	1.19	114	Mar. 30	Rudolph and Hastings	9.60	38,500
Dec. 11	do.....	5.56	11,800	Apr. 19	Stewart and Munro...	3.45	3,560
29	do.....	7.24	20,900	May 13	E. A. Rudolph.....	11.02	53,600
Jan. 1	do.....	7.70	24,100	June 26	J. E. Stewart.....	1.81	525
Feb. 12	do.....	^a 2.75	1,880	July 22	do.....	^c 2.05	815
Mar. 30	Stewart and Rudolph.	11.73	57,300	Sept. 16	do.....	1.88	562
30	do.....	10.78	49,300				

^a Possibly slightly affected by ice.

^b Poor measurement.

^c A heavy rainstorm (about 2 inches) occurred while making measurement. Measurement made 1 mile below gage. Correct mean gage height therefore uncertain.

Daily discharge, in second-feet, of Cheat River near Morgantown, W. Va., for the years ending September, 30, 1923 and 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1922-23												
1				6,010	10,600	4,960	1,780	2,300	775	1,980	1,180	355
2				11,500	22,000	3,700	1,880	1,880	545	1,410	1,980	143
3				5,650	15,000	2,890	1,590	1,590	515	1,180	1,250	395
4				4,000	11,000	4,630	1,250	1,330	422	1,030	1,410	282
5				3,020	6,760	4,000	1,590	1,330	363	738	1,250	206
6				2,410		4,630	3,700	1,100	422	775	1,500	239
7				2,410	2,760	6,380	5,650	960	495	800	1,250	485
8				2,300		6,010	2,700	725	906	1,410	1,180	725
9				4,000	2,520	4,630	2,410	1,180	1,250	866	1,780	565
10				4,960	2,190	4,000	1,980	1,980	1,250	665	1,330	467
11				3,850	2,300	4,310	1,680	2,760	1,330	642	1,100	677
12				2,760	1,780	6,380	1,590	3,420	3,420	788	1,100	585
13				2,300	20,100	12,500	2,190	6,010	5,300	1,330	1,590	467
14				1,880	15,000	7,550	22,600	4,630	10,600	1,880	1,780	379
15				10,200	10,200	4,630	14,500	3,420	6,760	1,180	1,100	315
16	160	212	3,390	8,810		3,560	10,600	2,760	3,850	788	800	263
17				4,630		4,630	7,150	2,520	2,410	812	677	263
18				3,560	2,420	5,650	4,960	2,300	1,980	608	642	206
19				3,280		4,310	3,560	1,980	1,780	575	800	186
20				4,000		3,560	2,760	1,880	1,680	387	585	195
21				4,960	1,780	3,020	2,520	1,590	1,330	315	505	2,760
22				11,500	1,780	3,150	1,680	1,500	920	263	585	4,630
23				9,250	1,330	3,850	1,680	1,330	750	263	642	2,410
24				5,650	1,220	11,500	1,330	1,180	812	250	608	1,410
25				4,960	1,100	6,380	1,180	1,100	1,100	355	505	933
26				4,000	1,180	4,630	1,180	1,100	1,030	1,180	440	725
27				3,150	1,880	3,700	1,180	1,100	1,030	1,250	355	585
28				11,500	5,650	3,020	1,500	920	1,780	852	315	485
29				18,900		2,410	4,310	879	6,380	892	355	413
30				12,500		2,080	3,280	825	5,300	2,190	302	371
31				6,760		1,980		738		1,410	331	
1923-24												
1	315	315	4,960	20,700	2,520	2,640	9,250	12,000	4,630	1,980	2,080	396
2	217	315	3,850	10,200	2,300	3,020	6,010	8,810	3,700	1,250	2,410	255
3	206	282	2,760	40,200	2,190	4,000	4,630	5,300	3,420	852	1,500	642
4	234	263	2,640	23,300	2,190	4,000	4,310	4,960	3,020	1,100	960	960
5	206	379	4,000	10,600	2,520	7,550	4,960	4,630	2,890	1,410	738	892
6	206	485	4,960									
7	168	2,410	4,630		4,630	14,000	6,010	2,000	2,640	1,330	515	712
8	159	3,700	4,310	2,700	4,960	9,250	14,500	2,890	2,190	2,760	449	631
9	140	1,980	6,380		3,150	6,760	12,500	3,150	1,980	3,560	422	431
10	140	1,410	9,700	2,300	2,640	4,310	13,000	12,500	3,700	7,150	339	467
11					2,410	3,150	7,960	12,500	13,000	4,000	365	654
12	150	960	11,500	4,310	2,200	2,760	6,760	6,760	6,760	2,640	379	1,880
13	140	892	7,550	13,500	1,980	2,520	4,960	43,800	4,310	1,880	449	1,780
14	140	892	4,960	5,650	1,680	2,190	3,850	43,800	3,150	5,650	485	1,100
15	140	960	5,650	3,700	1,410	2,190	3,150	17,200	4,000	10,200	395	879
16	140	1,030	4,960	2,520	1,410	2,190	2,640	11,000	4,000	4,960	422	750
17												
18	140	933	3,560	3,560	1,880	1,980	2,520	8,380	2,640	3,020	387	596
19	115	825	3,020	10,200	2,190	2,080	2,520	6,010	2,080	2,190	263	431
20	122	852	2,410	7,960	4,310	3,020	2,300	4,310	1,780	1,880	282	379
21	132	1,100	2,080	4,960	6,010	4,310	3,420	4,310	1,410	1,410	244	404
22	115	1,100	1,880	3,700	13,000	5,300	4,000	3,700	1,180	1,030	244	404
23												
24	142	2,300	20,100	2,520	2,520	3,850	2,640	3,700	565	1,880	920	1,600
25	159	6,380	10,200	2,890	2,410	3,700	2,410	3,020	585	1,330	946	
26												
27	172	3,850	6,010	4,000	2,190	6,010	1,980	2,520	535	933	892	
28	195	2,890	4,630	4,000	2,300	13,000	1,780	2,190	585	738	1,250	631
29	223	2,410	20,700	2,760	2,640	9,700	1,880	2,640	960	485	1,030	525
30	250	1,780	18,900	1,980	2,640	55,100	2,760	3,280	4,310	485	812	665
31	263	1,980	8,380	1,980		50,800	4,000	10,600	2,640	422	575	12,000
	302		12,000	2,520		18,300		6,760		619	413	

NOTE.—Discharge estimated from flow at other stations because of unreliable or missing gage readings, and ice effect as follows: Oct. 1 to Dec. 31, 1922; Feb. 3, 4, 6-8, 16-20, 24, 1923; Jan. 6-9, 21, 22, 26, 27, Feb. 11, 23, June 25, 27, Sept. 3, and 21-26, 1924. Braced figures show mean discharge for periods indicated.

Monthly discharge of Cheat River near Morgantown, W. Va., for the years ending September 30, 1923 and 1924

[Drainage area, 1,380 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1922-23					
October			160	0.116	0.13
November			212	.154	.17
December			3,390	2.46	2.84
January	18,900	1,880	5,960	4.32	4.98
February	23,000	1,100	5,560	4.03	4.20
March	12,500	1,980	4,790	3.47	4.00
April	22,600	1,180	3,870	2.80	3.12
May	6,010	725	1,880	1.36	1.57
June	10,600	363	2,220	1.61	1.80
July	2,190	250	938	.680	.78
August	1,980	302	943	.683	.79
September	4,630	186	746	.541	.60
The year	22,600		2,540	1.84	24.98
1923-24					
October	315	115	174	.126	.15
November	6,380	263	1,510	1.09	1.22
December	20,700	1,880	7,140	5.17	5.96
January	40,200	1,980	6,720	4.87	5.62
February	15,500	1,410	3,610	2.62	2.83
March	55,100	1,980	8,460	6.13	7.07
April	14,500	1,780	4,920	3.57	3.98
May	43,800	2,190	8,710	6.31	7.28
June	13,000	535	2,840	2.06	2.30
July	10,200	422	2,290	1.66	1.91
August	2,410	244	781	.566	.65
September	12,000	296	1,270	.920	1.03
The year	55,100	115	4,050	2.93	40.00

BLACKWATER RIVER AT DAVIS, W. VA.

LOCATION.—Half a mile south of Davis, Tucker County, $1\frac{3}{4}$ miles above "Blackwater Falls," and 400 feet below dam and railroad bridge of Babcock Lumber & Boom Co. Beaver Creek enters on right half a mile above station.

DRAINAGE AREA.—87 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 26, 1921, to September 30, 1924.

GAGE.—Slope gage on right bank 100 feet above cable and opposite railroad scale house of Babcock Lumber & Boom Co.; read by E. S. Wheat.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—One channel at all stages; straight for 100 feet above and 200 feet below station. Left bank subject to overflow. Bed of stream composed of boulders. Control about 80 feet above cable and 20 feet below gage, composed of large and small boulders; some water-logged timber on control normally affects stage-discharge relation.

EXTREMES OF STAGE.—Maximum stage recorded during year, 13.20 feet at 3 p. m. March 29 (discharge, 7,170 second-feet); minimum stage, 1.33 feet afternoon of September 1 and forenoon of September 2 (discharge, 12 second-feet).

1921-1924: Maximum stage recorded, that of March 29, 1924; minimum stage, 1.20 feet at 8 a. m. September 5, 1923 (discharge, 10 second-feet, revised determination).

ICE.—Stage-discharge relation seriously affected by ice nearly every winter.

REGULATION.—Dam 400 feet above cable is used to form log forebay for the lumber company. Forebay may occasionally be drained, but it is usually kept full.

ACCURACY.—Stage-discharge relation changed by floods of January 2 and May 12, 1924; otherwise permanent except as affected by ice during January, February, and March. Rating curves well defined between 50 and 1,500 second-feet; fairly well defined between 15 and 50 second-feet and above 1,500 second-feet. Gage read to hundredths twice daily by observer. Frequent check readings by engineers of West Penn Power Co. Mean daily gage height applied to rating table except for estimated periods. Records good.

COOPERATION.—Complete records furnished by West Penn Power Co.

Discharge measurements of Blackwater River at Davis, W. Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 19	J. E. Stewart -----	^a 1.26	13.4	May 14	Stewart and Huber ----	4.98	1,000
Feb. 10	do -----	^b 2.17	89.2	15	J. E. Stewart -----	4.05	651
Mar. 19	Stewart and Pinckney -	^b 2.80	248	July 17	Stewart and Vierheller -	2.07	116
25	Stewart and Davis -----	^b 2.42	165	Sept. 15	J. E. Stewart -----	1.40	17.0
Apr. 17	Stewart and Munro -----	2.24	134	23	do -----	1.98	97.5

^a New débris removed from control before measurement, whereupon water surface dropped 0.01 foot.

^b Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Blackwater River at Davis, W. Va., for the years ending September 30, 1921-1924

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1921							1921						
1 -----		73	244	45	35	50	16 -----		97	40	281	244	41
2 -----		69	256	102	135	38	17 -----		89	45	170	182	33
3 -----		69	157	50	980	31	18 -----		81	170	81	382	33
4 -----		515	124	34	710	41	19 -----		73	356	69	206	31
5 -----		1,180	102	29	356	42	20 -----		66	137	231	119	35
6 -----		675	87	38	157	62	21 -----		59	62	182	95	218
7 -----		382	77	33	106	182	22 -----		62	48	85	73	515
8 -----		294	69	30	268	124	23 -----		64	55	59	62	244
9 -----		206	64	137	150	218	24 -----		515	66	50	57	133
10 -----		159	59	159	93	231	25 -----		980	54	55	51	73
11 -----		146	62	54	69	119	26 -----	52	900	59	40	45	102
12 -----		231	87	218	69	124	27 -----	52	408	45	41	40	170
13 -----		244	69	141	77	97	28 -----	62	244	45	42	38	194
14 -----		150	75	122	242	62	29 -----	87	408	50	35	35	119
15 -----		115	46	382	408	46	30 -----	81	640	50	111	33	268
							31 -----		356		68	38	

Daily discharge, in second-feet, of Blackwater River at Davis, W. Va., for the years ending September 30, 1921-1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1921-22												
1-----	306	1,020	382	160	87	244	515	69	35	35	30	42
2-----	130	780	306		605	860	318	62	38	26	47	545
3-----	244	434	460	268	306	605	244	60	42	382	59	408
4-----	515	256	331		182	382	206	170	43	382	38	231
5-----	434	194	234	356	133	331	170	281	57	356	29	115
6-----	294	144	200	218	130	356	157	356	89	182	26	87
7-----	182	133		206	100	434	137	306	54	97	22	64
8-----	150	111		152	80	382	124	146	36	73	31	54
9-----	170	113		182	115	318	111	119	51	87	83	55
10-----	124	206		170	119	408	93	106	69	62	34	58
11-----	100	159	152	159	780	434	87	106	40	48	24	69
12-----	85	137	170	170	500	356	95	93	81	41	19	102
13-----	85	119	159		820	256	81	89	59	39	20	69
14-----	85	182	170		460	434	356	79	35	47	22	45
15-----	73	382	170		1,100	820	69	28	40	117	36	
16-----	68	231	159			710	486	59	26	36	128	31
17-----	59	515	515	860	231	382	268	66	148	31	92	30
18-----	55	515	1,490			306	218	146	137	29	57	27
19-----	59	318	675	860	256	206	408	73	29	38	26	26
20-----	62	460	382	860	1,340	268	170	206	47	26	30	26
21-----	97	331	408	1,180	940	280	139	117	38	22	23	25
22-----	89	231	318	860	860	290	206	95	40	19	20	24
23-----	85	194	1,260	486	356	306	170	81	30	18	18	21
24-----	52	194	1,940	281	318	318	124	69	24	331	268	25
25-----	50	820	1,180	100	244	268	108	62	23	170	515	29
26-----	45	486	575		460	182	124	73	21	47	218	21
27-----	45	408	356	100	434	256	141	89	21	40	91	19
28-----	43	780	268		356	408	106	62	38	52	77	18
29-----	21	780	231	100	256	318	85	48	66	130	55	18
30-----	41	486	244			256	77	42	66	62	47	16
31-----	60		231			244		40		38	50	
1922-23												
1-----	16	15	27	331	1,020	220	82	70	39	61	45	17
2-----	15	14	52	356	1,590	217	73	60	37	51	41	15
3-----	15	15	42	231	1,020	510	76	54	34	48	35	14
4-----	14	16	640	157	745	510	82	52	37	45	41	12
5-----	14	15	434	135	350	322	103	52	169	47	45	12
6-----	14	15	148	125	217	204	308	52	73	46	35	33
7-----	15	19	244	124	148	640	169	48	85	61	31	28
8-----	18	21	408	119	115	350	103	48	138	48	26	38
9-----	21	19	294	100		250	85	68	79	36	34	49
10-----	40	17	294	169	540	78	92	56	29	31	30	
11-----	77	16	159		87		570	72	132	116	37	39	21
12-----	35	15	194	1,440	900	67	158	230	118	28	17	
13-----	19	15	231		194	820	180	192	364	295	37	16
14-----	21	15	159	745	1,020	420	980	132	308	122	26	14
15-----	18	21	408	300	280	336	710	82	180	51	22	13
16-----	18	36	356			605	570	89	126	43	18	12
17-----	19	28	1,180	331	269	480	350	85	103	42	26	12
18-----	20	38	1,020			308	243	68	78	36	89	12
19-----	21	55	820	130	308	290	180	67	67	32	41	25
20-----	16	35	515			269	138	63	60	28	27	51
21-----	15	24	231	515	192	118	148	53	26	21	364	
22-----	15	14	159	710		110	114	51	26	37	282	
23-----	15	13	159	450	130	420	92	79	43	76	41	99
24-----	42	12	115	231		510	85	72	42	35	27	53
25-----	35		113	230	192	308	76	64	48	230	21	40
26-----	24	12	111	231		70	56	46	90	20	35	
27-----	20		85	281	158	67	56	89	42	17	31	
28-----	18	16	115	486	134	72	53	56	84	17	26	
29-----	16		148	675	101	169	47	180	124	18	24	
30-----	16	14	141	408	101	107	43	82	76	28	22	
31-----	14		87	281	85		41		64	21		

Daily discharge, in second-feet, of Blackwater River at Davis, W. Va., for the years ending September 30, 1921-1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1923-24												
1-----	21	19	243	1,100	130	126	665	500	213	74	91	13
2-----	21	18	148	605		240	365	292	308	54	81	14
3-----	19	17	118	1,600	202	240	320	179	246	56	45	50
4-----	19	38	103	1,250		266	440	190	224	50	34	39
5-----	18	72	420	200	292	850	380	214	180	47	29	23
6-----	17	103	308		335	930	630	157	170	42	27	32
7-----	17	180	204	179	735	930	146	150	81	25	27	
8-----	16	118	243		440	770	190	140	500	24	21	
9-----	16	68	510	157	530	930	700	335	22	19		
10-----	16	64	640		170	440	560	410	150	34	73	
11-----	16	89	510	595	90	335	930	202	109	26	56	
12-----	16	134	336	470		266	2,520	180	78	37	32	
13-----	15	158	230	266	80	214	2,160	191	596	37	22	
14-----	14	99	243	214		190	1,010	295	380	23	19	
15-----	14	74	180	168	179	700	160	246	18	17		
16-----	14	64	158	190	170	157	470	122	130	16	16	
17-----	14	107	148	735		136	335	106	113	19	14	
18-----	14	96	108	410	170	190	258	91	107	21	13	
19-----	14	107	90	240		350	282	81	81	19	14	
20-----	16	76	99	340	380	224	71	65	32	17		
21-----	16	64	148		240	335	595	65	59	49	74	
22-----	15	64	295	140	179	227	470	62	134	32	95	
23-----	16	126	1,100		168	190	258	56	246	25	97	
24-----	23	510	1,020	90	179	146	202	50	91	23	56	
25-----	28	230	605		168	124	202	50	59	37	34	
26-----	25	192	308	140	335	115	202	62	53	93	25	
27-----	22	180	243		470	99	202	140	47	53	21	
28-----	19	138	1,790	140	735	97	320	170	42	25	21	
29-----	17	107	1,260		5,900	146	282	246	37	17	134	
30-----	17	282	540	140	3,760	146	560	160	34	16	1,010	
31-----	21	1,020	1,350		335	335	335	65	13	-----		

NOTE.—This table supersedes that published in Water-Supply Paper 563. Recorded gage height for Aug. 14, 1921, ignored; discharge interpolated. Discharge interpolated or estimated from records for adjacent streams for following periods when gage was not read: Dec. 6-9, 1921; Jan. 1-3, 12-19, Feb. 7, 8, 15, Mar. 21, 22, May 3, 14, Aug. 6, 13, 17, 20, Sept. 10, 24, Oct. 22, Nov. 21, 25-30, and Dec. 25, 1922; Jan. 10, 16-18, 23, Feb. 11, 15-28, Mar. 1, 7, 9, 19, May 24, and July 22, 1923. Discharge estimated from observer's notes, weather records, and discharge of neighboring streams for following periods when stage-discharge relation affected by ice: Dec. 10, 1921; Jan. 1-8, 25-31, and Feb. 1, 16-18, 1922; Jan. 5, 6, 9, 11, 12, 19, 25, and Feb. 8-10, 1923; Jan. 5-9, 20-31, Feb. 1-3, 8-29, and Mar. 9-26, 1924. Braced figures show estimated mean discharge for period indicated.

Monthly discharge of Blackwater River at Davis, W. Va., for the years ending September 30, 1921-1924

[Drainage area, 87 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1921					
May	1,180	59	308	3.54	4.08
June	356	40	95.4	1.10	1.23
July	382	29	102	1.17	1.30
August	980	33	179	2.06	2.38
September	515	31	123	1.41	1.57
1921-22					
October	515	21	126	1.45	1.67
November	1,020	111	371	4.26	4.75
December	1,940	---	444	5.10	5.88
January	1,180	---	255	2.93	3.38
February	1,340	80	402	4.62	4.81
March	1,100	182	385	4.43	5.11
April	820	77	205	2.36	2.63
May	408	40	122	1.40	1.61
June	148	21	51.8	.595	.66
July	382	18	96.0	1.10	1.27
August	515	18	75.1	.863	.99
September	545	16	77.9	.895	1.00
The year	1,940	16	217	2.49	33.76
1922-23					
October	77	14	21.8	.251	.29
November	55	---	19.2	.221	.25
December	1,180	27	293	3.37	3.88
January	745	---	291	3.34	3.85
February	1,590	---	389	4.47	4.66
March	900	85	360	4.14	4.77
April	980	67	187	2.15	2.40
May	192	41	78.6	.903	1.04
June	364	34	102	1.17	1.30
July	295	26	69.3	.797	.92
August	89	17	31.8	.365	.42
September	364	12	47.2	.543	.61
The year	1,590	12	156	1.79	24.39
1923-24					
October	28	14	17.6	.202	.23
November	510	17	120	1.38	1.54
December	1,790	90	431	4.95	5.71
January	1,600	---	325	3.74	4.31
February	---	---	179	2.06	2.22
March	5,900	---	613	7.05	8.13
April	930	97	316	3.63	4.05
May	2,520	146	512	5.89	6.79
June	700	50	177	2.03	2.27
July	595	34	134	1.54	1.78
August	93	13	33.6	.386	.44
September	1,010	13	69.9	.803	.90
The year	5,900	13	245	2.82	38.37

NOTE.—This table supersedes that published in Water-Supply Paper 563.

SHAVERS FORK AT CHEAT BRIDGE, W. VA.

LOCATION.—At highway bridge at Cheat Bridge, Randolph County.

DRAINAGE AREA.—57.5 square miles (measured on topographic maps).

RECORDS AVAILABLE.—February 23, 1922, to September 30, 1924.

GAGE.—Chain gage near center of bridge on downstream guardrail; read by Blanche Cromer.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for about 800 feet above and 500 feet below station. Banks subject to overflow at extreme high water.

Stream bed clean; consists of small boulders and gravel. Control shifting Point of zero flow at about gage height 0.5 foot, July 1, 1923, and October 31, 1924.

EXTREMES OF STAGE.—Maximum stage recorded during year, 8.60 feet at 7.30 and 10.30 p. m. May 12 (discharge not determined); minimum stage, 1.13 feet at 6 p. m. October 17, to 6 p. m. October 18 (discharge not determined).

1922-1924: Maximum stage recorded, that of May 12, 1924; minimum stage, 1.09 feet on several days, September 30 to October 6, 1922 (discharge 12 second-feet).

Highest known flood reached a stage represented by gage height of about 14 feet July, 1896 (higher stages have been known, but they were due to ice gorges).

ICE.—Stage-discharge relation seriously affected by ice during winter.

ACCURACY.—Stage-discharge relation changed by floods of March 29 and May 12. Rating curves not fully developed. Gage read to hundredths twice daily. Record good.

COOPERATION.—Records furnished by West Penn Power Co.

Discharge measurements of Shavers Fork at Cheat Bridge, W. Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Feb. 8	James E. Stewart	2.20	76.0	Sept. 13	Stewart and Gilardi	1.87	92.1
Apr. 14	Stewart and Munro	2.94	412	14	do	1.83	83.0
July 18	James E. Stewart	1.84	82.8				

Daily gage height, in feet, of Shaver Forks at Cheat Bridge, W. Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.36	1.40	2.53	3.15	2.34	2.39	2.79	3.37	2.22	1.70	2.64	1.71
2	1.33	1.36	2.24	2.56	2.27	2.61	2.39	2.51	2.32	1.66	1.84	1.74
3	1.29	1.28	2.05	3.91	2.23	2.48	2.33	2.32	2.17	1.52	1.67	2.10
4	1.28	1.64	2.00	3.21	2.17	2.45	2.33	2.33	2.10	1.60	1.61	1.67
5	1.23	2.82	2.91	1.45	2.62	3.19	2.39	2.34	1.99	1.63	1.54	1.73
6	1.25	2.04	3.28		2.59	3.23	4.87	2.19	1.95	1.54	1.50	1.61
7	1.24	1.96	2.41	3.45	1.98	2.40	3.57	2.22	1.92	2.05	1.49	1.50
8	1.23	1.79	2.28	4.17	2.21	2.20	3.10	2.42	1.91	3.78	1.55	1.49
9	1.23	1.68	2.64	3.92	2.02	2.37	3.23	3.63	4.72	2.42	1.45	2.84
10	1.22	1.57	3.22	3.65	2.57	2.00	3.47	3.57	3.30	2.06	1.39	3.55
11	1.19	1.66	2.43	5.65	2.39	2.71	2.91	3.86	2.60	1.85	1.37	2.35
12	1.19	1.76	2.46	2.73	2.26	3.09	2.63	6.42	2.46	1.78	2.18	2.03
13	1.19	1.69	2.28	2.35	2.28	3.05	2.71	5.25	2.69	4.70	1.73	1.87
14	1.19	1.66	2.45	2.15	2.23	2.83	2.86	4.30	2.49	2.62	1.57	1.82
15	1.19	1.57	2.14	2.02	2.17		2.94	3.70	2.17	2.26	1.46	1.75
16	1.18	1.64	2.18	4.05	2.05	2.53	2.73	2.95	2.26	1.95	1.41	1.70
17	1.13	1.98	2.05	3.29		2.34	2.63	2.65	2.23	1.88	1.52	1.66
18	1.13	1.80	1.97	2.45	2.96	2.29	3.70	2.40	2.02	1.81	1.51	1.81
19	1.19	1.83	1.88	2.26	2.61	2.29	3.22	2.47	1.91	1.78	1.42	1.67
20	1.33	1.72	1.90		3.01	2.33	2.97	2.28	1.82	1.71	4.64	1.77
21	1.26	1.71	1.99	2.35		2.15	2.69	2.61	1.78	1.67	4.07	2.71
22	1.23	1.78	2.36	2.33		2.09	2.49	2.41	1.77	1.66	2.12	2.14
23	1.28	3.46	4.50	2.33	2.71	1.94	2.34	2.23	1.69	2.13	1.90	1.96
24	1.61	3.28	2.88	2.14		1.87	2.20	2.15	1.68	1.67	1.77	1.81
25	1.45	2.40	2.38	2.41	2.63	1.76	2.11	2.12	1.64	1.62	2.15	1.73
26	1.64	2.17	2.38	2.51	2.55	2.01	2.10	2.02	1.62	1.59	2.55	1.70
27	1.48	2.26	2.20	2.39	2.48	2.03	2.02	2.18	2.24	1.52	1.92	1.69
28	1.39	2.04	5.79	2.41	2.51	2.23	2.12	2.51	2.01	1.49	1.76	1.69
29	1.33	1.95	3.01	2.41	2.45	7.77		3.17	1.79	1.48	1.67	4.03
30	1.30	3.34	2.37	2.44		4.52	2.22	2.80	1.77	1.53	1.53	5.69
31	1.57		4.95	2.43		3.33		2.36		2.21	1.57	

SHAVERS FORK AT BEMIS, W. VA.

LOCATION.—At highway bridge at Bemis, Randolph County, one-fourth mile below dam of Bemis Lumber Co.

DRAINAGE AREA.—115 square miles (revised measurement on topographic maps).

RECORDS AVAILABLE.—February 17, 1922, to September 30, 1922; and March 22, 1923, to September 30, 1924.

GAGE.—Chain gage near center of bridge on downstream guardrail; read by Martha Kerr.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge or by wading. At bridge the water eddies and runs at various angles for all stages. In addition the water is swift and turbulent for high stages. Gaging conditions very poor.

CHANNEL AND CONTROL.—Channel 100 feet above station, divided by an island. Series of rapids begin 100 feet above bridge and extend to the dam, one-fourth mile above. Channel below station straight for about 400 feet. Right bank high and wooded, not likely to be overflowed; left bank low and subject to overflow in extreme high water. Stream bed consists of bed rock and boulders. Control permanent except for extreme floods.

EXTREMES OF STAGE.—Maximum stage recorded during year, 10.60 feet at 4.30 p. m. March 29; minimum stage 2.79 feet October 15.

1922-1924: Maximum stage, that of March 29, 1924; minimum stage, 2.66 feet at 7.30 a. m. October 4, 1922.

Highest known flood reached a stage represented by gage height of about 15.3 feet in spring of 1918, probably the middle of March as indicated by rainfall records.

ICE.—Stage-discharge relation affected by ice during the winter.

REGULATION.—Timber-crib dam one-fourth mile above station for holding logs for Bemis Lumber Co. is not used at present. Dam in poor condition.

DIVERSIONS.—None.

ACCURACY.—Stage-discharge relation shifted during year. Rating curves not fully developed. Gage read to hundredths twice daily. Records good.

COOPERATION.—Records furnished by West Penn Power Co.

Discharge measurements of Shavers Fork at Bemis, W. Va., for the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Nov. 14	James E. Stewart	3.57	122	Mar. 25	James E. Stewart	3.75	156
Dec. 14	do	4.83	537	Apr. 15	Stewart and Munro	4.94	580
Feb. 8	do	^a 3.78	153	July 19	James E. Stewart	3.79	152
Mar. 20	do	4.19	293	Sept. 15	do	3.76	160

^a Stage-discharge relation affected by ice.

Daily gage height, in feet, of Shavers Fork at Bemis, W. Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	3.17	3.11	4.81	5.65	3.86	3.64	5.27	5.72	4.59	3.76	4.74	3.37
2-----	3.07	3.11	4.33	4.98	3.74	3.92	4.77	4.97	4.65	3.64	4.04	3.45
3-----	3.13	2.95	4.14	6.89	3.72	3.80	4.57	4.66	4.47	3.63	3.68	4.47
4-----	3.03	3.07	4.00	5.68	3.86	3.96	4.80	4.62	4.35	3.63	3.53	3.79
5-----	2.94	4.81	4.55	4.96	4.20	5.00	4.85	4.64	4.21	3.57	3.44	3.53
6-----	3.01	4.23	5.03	4.52	4.89	5.20	6.26	4.42	4.10	3.47	3.34	3.53
7-----	2.94	4.20	4.54	4.48	4.09	4.72	6.20	4.50	4.00	4.07	3.28	3.43
8-----	2.99	3.93	4.36	4.36	3.83	4.24	5.51	4.52	4.11	5.69	3.31	3.35
9-----	2.89	3.80	4.82	4.25	3.86	4.06	5.35	6.20	6.85	4.99	3.28	4.83
10-----	2.87	3.54	5.37	4.16	3.90	4.10	5.71	5.14	5.95	4.37	3.15	5.82
11-----	2.89	3.54	5.30	6.22	3.68	3.72	5.21	4.90	5.02	4.27	3.09	4.77
12-----	2.85	3.68	4.81	6.12	3.84	3.66	4.91	8.11	4.83	3.70	3.36	4.29
13-----	2.86	3.67	4.54	4.62	3.64	3.88	4.87	7.68	4.84	6.48	3.86	4.04
14-----	2.84	3.54	4.78	4.32	3.58	3.92	4.84	6.20	4.51	5.29	3.42	3.89
15-----	2.79	3.50	4.34	4.01	3.67	3.81	5.04	6.06	4.57	4.57	3.23	3.78
16-----	2.82	3.48	4.20	4.74	3.68	3.66	4.84	5.30	4.45	4.29	3.13	3.16
17-----	2.82	4.01	4.09	6.02	3.79	3.74	4.66	4.97	4.57	4.11	3.24	3.57
18-----	2.84	3.78	3.98	4.80	4.63	3.95	5.50	4.76	4.21	4.01	3.26	3.85
19-----	2.86	3.78	3.88	4.48	4.50	4.08	5.36	4.72	4.21	3.79	3.19	3.65
20-----	2.92	3.73	3.90	4.40	4.81	4.26	5.00	4.55	3.87	3.69	3.93	3.57
21-----	2.99	3.63	4.08	3.90	4.90	4.28	4.98	4.97	3.77	3.61	5.78	4.65
22-----	2.91	3.67	4.50	4.04	4.30	3.50	4.72	4.88	3.71	3.51	4.34	4.30
23-----	2.81	4.21	6.34	4.22	3.93	3.72	4.59	4.52	3.61	3.85	4.05	4.13
24-----	3.08	5.71	5.60	4.12	3.91	3.76	4.38	4.45	3.51	3.73	3.82	3.91
25-----	3.28	4.70	4.80	4.16	3.89	3.75	4.25	4.40	3.52	3.47	4.14	3.75
26-----	3.16	4.41	4.52	4.21	3.78	4.22	4.20	4.25	3.71	3.41	4.82	3.65
27-----	3.25	4.42	4.39	4.78	3.73	4.24	4.10	4.20	4.67	3.33	4.15	3.60
28-----	3.11	4.21	8.10	4.00	3.69	4.65	4.10	4.68	4.49	3.24	3.86	3.55
29-----	3.01	4.13	5.44	3.91	3.62	9.40	5.15	4.80	3.99	3.19	3.69	4.07
30-----	2.91	4.81	4.82	3.92	-----	7.16	4.56	5.46	3.99	3.84	3.54	7.71
31-----	3.31	-----	6.58	3.98	-----	5.94	-----	4.88	-----	3.81	3.46	-----

SHAVERS FORK AT PARSONS, W. VA.

LOCATION.—At steel highway bridge 600 feet northeast of railroad station at Parsons, Tucker County, and half a mile above confluence with Black Fork.

DRAINAGE AREA.—230 square miles (measured by West Virginia Power & Transmission Co.).

RECORDS AVAILABLE.—October 14, 1910, to September 30, 1924.

GAGE.—Chain gage attached to bridge October 14, 1910, to August 25, 1923. After August 25, 1923, staff gage with section below 3.35 feet on lower side of left pier of railroad bridge 40 feet upstream from highway bridge; section above 3.35 feet on upper (shore) side of left pier of highway bridge. Gage read by Robert T. Deem. Sea-level elevation of zero of gage, 1,631.70 feet.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Channel rocky. Control, coarse gravel and rocks, subject to heavy deposits of leaves during low water in the fall. Stage at which flow would be zero was about 2.2 feet October, 1923, and September, 1924.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.60 feet at 7.45 a. m. May 12 (discharge, 14,800 second-feet); minimum stage, 2.71 feet at 5.30 p. m. October 18 (discharge, 24 second-feet).

1910-1924: Maximum stage recorded that of May 12, 1924; minimum discharge, 1 second-foot October 7, 1914 (gage height, 2 feet), minimum stage and discharge both very doubtful. High water of July 10, 1888,

and July 17, 1907, reached a stage of approximately 12.5 feet referred to present gage datum (discharge, 25,000 second-feet, but somewhat uncertain owing to shifting stage-discharge relation).

ICE.—Stage-discharge relation affected by ice during severe winters.

REGULATION.—Flow at low stages may be affected by storage of water at pulp mill dam about three-fourths mile above station.

ACCURACY.—Gage read to hundredths once daily. Stage-discharge relation changed by floods of December 24, 1921, February 1, 1923, March 29, 1924, and May 12, 1924. Rating curves fairly well defined. Records good when control was not obstructed by leaves or stage-discharge relation affected by ice.

COOPERATION.—Records furnished by West Virginia Power & Transmission Co.

Discharge measurements of Shavers Fork at Parsons, W. Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 19	James E. Stewart.....	2.73	24.2	Mar. 27	James E. Stewart.....	4.85	1,400
Feb. 9	.....do.....	3.57	292	Apr. 16	Stewart and Munro....	4.14	728
Mar. 18	.....do.....	3.91	577	18	.....do.....	3.98	600
21	.....do.....	4.23	837	May 13	James E. Stewart.....	6.56	3,810
26	.....do.....	5.05	1,660	14	.....do.....	5.56	2,200

Daily discharge, in second-feet, of Shavers Fork at Parsons, W. Va., for the years ending September 30, 1922-1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1921-22												
1.....	227	6,790	1,070	620	240	710	1,630	290	195	195	290	120
2.....	235	2,140	840	a 318	a 1,130	2,700	1,020	318	175	240	290	345
3.....	405	1,580	a 2,300	155	345	1,130	810	290	195	a 318	470	195
4.....	950	605	1,190	345	a 290	a 710	620	290	318	a 540	620	138
5.....	578	440	840	620	a 240	a 620	470	1,770	620	a 910	345	90
6.....	500	290	a 640	810	218	a 620	345	2,210	620	470	218	90
7.....	290	290	509	620	a 155	1,020	290	910	240	290	195	65
8.....	235	279	a 490	a 620	138	910	240	620	240	a 240	470	90
9.....	235	279	475	540	a 155	810	195	470	290	a 345	810	78
10.....	227	363	475	470	175	a 1,020	265	405	360	240	470	70
11.....	203	235	a 490	a 345	3,230	2,210	240	375	350	138	345	65
12.....	187	290	500	260	2,530	1,250	240	290	1,770	180	240	90
13.....	155	290	a 530	a 195	3,230	810	240	240	810	300	195	90
14.....	138	318	534	240	2,060	a 810	810	345	470	400	195	90
15.....	92	650	a 500	375	a 910	3,420	4,430	375	290		155	57
16.....	92	650	475	a 405	a 620	2,370	1,630	290	195		155	65
17.....	148	3,280	475	290	540	1,020	1,250	240	470	470	155	90
18.....	120	1,720	5,690	a 710	a 620	a 1,020	1,020	240	1,770		155	65
19.....	106	1,260	2,280	2,060	a 710	a 810	710	810	810		90	45
20.....	106	2,140	680	3,050	4,010	810	540	810	910	290	90	38
21.....	120	1,190	475	1,770	3,810	620	540	345	810	195	65	34
22.....	138	840	475	2,030	1,770	a 470	620	345	470	155	55	30
23.....	120	518	2,760	1,020	a 1,370	318	540	318	318	155	45	38
24.....	106	1,190	7,840	a 620	1,130	a 470	345	265	265		470	30
25.....	92	3,460	4,650	290	a 810	810	345	240	195		810	30
26.....	92	1,450	2,210		620	a 710	375	240	240	560	710	30
27.....	80	1,190	1,130		620	620	345	910	240		470	18
28.....	120	a 4,610	620	200		1,250	290	620	195		265	18
29.....	120	2,590	620			810	345	290	290	375	195	18
30.....	92	1,450	470			620	290	290	218	318	155	45
31.....	92		345			620		218		290	120	

a Discharge estimated; gage not read.

Daily discharge, in second-feet, of Shavers Fork at Parsons, W. Va., for the years ending September 30, 1922-1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1922-23												
1-----			30	1,500	5,550	a 540	218	290	90	290	1,440	48
2-----			30	1,500	6,500	470	195	240	85	218	540	41
3-----			30	810	2,560	345	195	195	78	175	700	38
4-----			30	540	1,960	540	218	175	240	138	615	38
5-----			1,250	405	1,210	890	240	175	405	120	890	330
6-----			1,020	265	a 700	a 700	700	155	318	155	540	270
7-----			540	290	540	1,560	615	155	265	265	405	150
8-----			1,020	345	a 405	a 1,440	405	155	265	155	405	245
9-----			1,630	375	318	790	345	318	218	120	470	640
10-----			1,130	375	240	470	290	345	155	120	290	300
11-----			540	240	290	615	265	405	265	120	470	195
12-----			375	240	290	790	240	470	1,820	120	540	132
13-----			405	240	2,560	2,250	470	700	3,240	195	1,210	115
14-----			470	345	1,820	1,320	1,960	615	2,560	138	540	88
15-----			810	810		790	1,320	405	990	90	318	83
16-----	36.8	46.0	1,020	a 810		1,210	990	470	790	105	240	78
17-----			2,370	470	330	2,100	700	470	540	90	218	69
18-----			2,060	a 470		990	470	375	375	65	195	62
19-----			1,020	470		540	405	318	290	53	195	83
20-----			810	a 470		375	345	240	240	45	155	150
21-----			620	405		540	290	318	290	42	120	890
22-----			470	2,530	170	470	265	290	195	38	155	800
23-----			345	1,130		615	240	240	175	120	105	390
24-----			245	810		2,720	218	265	138	155	90	245
25-----			290	810		a 1,560	195	218	345	700	79	195
26-----			240	620	370	890	175	195	318	540	78	150
27-----			218	710		615	175	175	290	240	66	132
28-----			218	3,610		405	175	155	318	240	62	102
29-----			218	2,370		345	345	138	470	1,210	60	88
30-----			155	1,500		318	405	120	470	470	56	81
31-----			290	810		290		105		615	52	
1923-24												
1-----	71	60	990	2,810		360	1,320	2,320	730	218	575	114
2-----	66	76	565	1,260	300	565	940	1,320	650	170	472	178
3-----	60	56	425	4,020		490	695	855	610	147	243	279
4-----	52	52	360	2,810	360	490	940	775	505	159	166	311
5-----	50	69	490	1,260	392	970	855	775	410	151	130	196
6-----	46	490	720		970	1,700	1,320	695	380	368	110	159
7-----	42	640	800			1,160	3,430	620	322	690	99	136
8-----	40	425	640	490		720	1,780	545	311	1,020	94	117
9-----	36	300	990		330	565	1,320	3,260	1,720	1,120	94	120
10-----	35	195	1,440	425		490	1,540	1,540	3,010	575	101	1,160
11-----	32	172	1,660	1,260		425	1,220	940	1,120	440	74	850
12-----	32	172	1,210	1,700		300	855	11,400	850	339	78	440
13-----	29	195	800	880		272	775	7,180	690	1,980	166	311
14-----	28	195	990	640	230	695	2,550	1,260	1,420	104	248	
15-----	28	150	800	490		775	2,550	730	660	99	209	
16-----	26	150	565	490		695	1,420	505	472	74	178	
17-----	25	195	490	2,970		272	620	1,020	440	368	78	155
18-----	25	330	360	1,160	560	565	620	810	410	311	74	140
19-----	25	245	330	800		640	1,540	730	311	253	76	166
20-----	28	245	300	640	2,660	720	940	650	248	200	99	170
21-----	26	220	360		1,470	800	1,030	1,020	209	174	2,120	196
22-----	27	220	640			565	775	980	192	223	540	575
23-----	28	245	3,800			425	620	690	170	410	363	410
24-----	38	1,960	2,890		410	425	545	540	151	290	253	210
25-----	32	990	1,320			425	475	505	136	196	228	218
26-----	69	640	800	260		880	410	440	130	144	610	183
27-----	54	490	640		330	1,360	348	410	205	123	380	159
28-----	64	450	6,120		392	970	348	650	690	101	238	144
29-----	54	390	2,360		392	7,280	855	1,020	334	88	192	170
30-----	44	425	1,160			5,400	775	2,120	279	78	147	5,060
31-----	46		3,300			2,620		1,020		380	126	

a Discharge estimated; gage not read.

NOTE.—Discharge estimated because of ice, Jan. 26-31, 1922; Feb. 15-28, 1923; Jan. 6-9, 21-31, Feb. 1-3, 7-19, 22-26, and Mar. 14-16, 1924. Stage-discharge relation affected by leaves on control during October and November, 1922; discharge estimated by comparison with records for other streams. Discharge Oct. 16 to Nov. 21, 1923, when leaves were lodged on control, estimated on basis of discharge measurements of Oct. 19 to Nov. 2, 1923. Discharge for following periods when observer's readings were in error, estimated by comparison with record for other streams: Oct. 9, Dec. 20 and 26, 1921; Mar. 6, 7, 23, Apr. 17, 18, May 14, June 10, 11, July 12-19, 24-28, Aug. 9 and 21, 1922; and Aug. 12-14, 1924.

Monthly discharge of Shavers Fork at Parsons, W. Va., for the years ending September 30, 1922-1924

[Drainage area, 230 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1921-22					
October	950	80	206	0.896	1.03
November	6,790	235	1,410	6.13	6.84
December	7,840	345	1,370	5.96	6.87
January	3,050	155	646	2.81	3.24
February	4,010	138	1,150	5.00	5.21
March	3,420	318	1,040	4.52	5.21
April	4,430	195	701	3.05	3.40
May	2,210	218	505	2.20	2.54
June	1,770	175	478	2.08	2.32
July	910	138	379	1.65	1.90
August	810	45	300	1.30	1.60
September	345	18	75.6	.329	.37
The year	7,840	18	686	2.98	40.43
1922-23					
October			a 36.8	.160	.18
November			a 46.0	.200	.22
December	2,370	30	645	2.80	3.23
January	3,610	240	848	3.69	4.25
February	6,500		1,030	4.48	4.66
March	2,720	250	887	3.86	4.45
April	1,960	175	436	1.90	2.12
May	700	105	287	1.25	1.44
June	3,240	78	541	2.35	2.62
July	1,210	38	231	1.00	1.15
August	1,440	52	364	1.58	1.82
September	890	38	208	.904	1.01
The year	6,500		460	2.00	27.15
1923-24					
October	71	25	40.6	.177	.20
November	1,960	52	349	1.52	1.75
December	6,120	300	1,240	5.39	6.21
January	4,020		928	4.03	4.65
February	2,660		500	2.17	2.34
March	7,280		1,050	4.57	5.27
April	3,430	348	969	4.21	4.70
May	11,400	410	1,660	7.22	8.32
June	3,010	130	590	2.57	2.87
July	1,980	78	429	1.87	2.16
August	2,120	74	265	1.15	1.33
September	5,090	114	436	1.90	2.12
The year	11,400	25	707	3.07	41.92

* Stage-discharge relation affected by leaves lodged on control; discharge estimated.

BIG SANDY CREEK AT ROCKVILLE, W. VA.

LOCATION.—At highway bridge at Rockville, Preston County, 5 miles above mouth and 6 miles below Bruceton Mills.

DISCHARGE AREA.—202 square miles.

RECORDS AVAILABLE.—May 7, 1909, to March 31, 1918, and April 28, 1921, to September 30, 1924.

GAGE.—Chain gage attached to downstream side of bridge; read by W. O. Walls.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel composed of boulders and bedrock. Control practically permanent. Stage at which flow would be zero was about 2.3 feet on September 19, 1924.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.20 feet at 1 p. m. April 14 (discharge, 4,770 second-feet); minimum stage, 2.89 feet October 2-7 (discharge, 3 second-feet).

1909-1918; 1921-1923: Maximum stage recorded, 18 feet at 7 p. m. July 24; 1912 (discharge, 21,300 second-feet; revised determination); minimum stage, 2.35 feet October 12, 1914 (discharge, approximately 0.4 second-foot).

Maximum known stages were between 20 and 20.5 feet July 10, 1888, and July 17, 1907 (discharge, between 28,000 and 30,000 second-feet, determined by engineers of West Penn Power Co.).

ICE.—Stage-discharge relation slightly affected by ice during severe winters.

REGULATION.—Operation of gristmills at Clifton Mills and Bruceton Mills may produce fluctuations in stage during low water.

ACCURACY.—Stage-discharge relation fairly permanent except for a change December 24, 1921. Rating curves poorly defined below 25 second-feet and fairly well defined above 25 second-feet. Gage read to half-tenths twice daily, except Sunday. Records fair above and poor below 25 second-feet.

COOPERATION.—Records furnished by West Penn Power Co.

Discharge measurements of Big Sandy Creek at Rockville, W. Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet.</i>	<i>Sec.-ft.</i>
Oct. 28	J. E. Stewart.....	3.75	18.6	Sept. 24	R. W. Munro.....	4.88	167
Dec. 12	do.....	7.28	1,350	26	J. E. Stewart.....	4.34	67.8
July 30	Stewart and Gilardi.....	4.01	42.3	29	R. W. Munro.....	5.07	217
Sept. 10	Stewart and Munro.....	5.15	249	30	do.....	8.26	2,390
19	J. E. Stewart.....	3.78	24.2	30	do.....	7.76	1,900
22	R. W. Munro.....	5.51	379				

Daily discharges, in second-feet, of Big Sandy Creek at Rockville, W. Va., for the years ending September 30, 1922-1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1921-22												
1.....	302	134	1,070	250	223	430	1,840	114	57	57	14	8
2.....	300	248	852	152	510	1,490	1,410	114	52	106	52	14
3.....	430	224	1,260	250	710	1,100	770	90	90	315	38	114
4.....	990	236	900	280	510	1,410	660	82	90	315	30	30
5.....	792	236	684	560	470	1,490	510	62	90	250	30	26
6.....	736	220	588	510	430	1,410	350	52	75	198	26	18
7.....	504	202	485	390	470	2,330	315	82	62	97	20	12
8.....	448	191	504	390	280	1,490	315	114	47	97	16	12
9.....	450	151	466	390	223	1,100	250	152	280	106	14	10
10.....	317	362	466	315	280	1,030	250	152	250	106	12	13
11.....	248	413	500	250	560	1,100	250	152	250	52	11	18
12.....	202	430	544	223	2,550	890	250	152	223	90	10	30
13.....	160	370	684	250	1,840	710	198	152	250	52	10	14
14.....	125	379	588	198	1,410	660	770	152	198	350	10	12
15.....	134	1,620	504	250	770	4,330	4,050	152	132	75	9	8
16.....	130	1,490	448	280	390	2,230	2,130	152	97	57	8	8
17.....	118	2,330	485	198	223	1,330	890	152	82	38	6	6
18.....	118	1,760	5,000	315	390	770	710	174	90	30	5	6
19.....	102	990	1,160	770	890	660	560	198	82	26	5	6
20.....	224	850	736	2,440	1,570	510	430	198	62	26	5	5
21.....	248	684	588	2,230	1,570	430	390	198	75	38	4	5
22.....	248	524	430	1,570	830	350	390	250	52	34	4	4
23.....	220	413	792	830	770	390	315	198	34	30	4	4
24.....	191	1,480	8,300	510	510	510	223	152	26	47	6	5
25.....	160	3,080	4,330	315	360	430	223	152	26	38	10	4
26.....	118	1,260	1,490		430	390	223	198	26	30	14	4
27.....	102	4,000	830		510	390	223	152	23	26	12	4
28.....	110	6,300	660	300	560	315	174	132	68	18	10	4
29.....	118	5,510	510			710	152	114	132	16	9	3
30.....	120	4,060	390	198		660	132	82	68	16	8	2
31.....	118		350	223		660		90		14	8	

Daily discharge, in second-feet, of Big Sandy Creek at Rockville, W. Va., for the years ending September 30, 1922-1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1922-23												
1	3	12	26	3, 130	1, 330	610	152	610	75	315	68	30
2	3	12	20	1, 570	2, 230	223	132	470	62	152	57	23
3	3	11	26	890	1, 490	174	152	350	47	106	47	23
4	3	10	34	610		350	152	280	42	82	132	16
5	3	10	1, 170	430		470	198	250	38	57	106	13
6	3	10	430	390	400	390	960	198	38	57	90	23
7	3	10	350	350		560	610	174	57	82	90	30
8	4	10	315	350		470	390	174	42	62	132	30
9	4	10	132	830	315	250	223	250	57	52	510	20
10	11	10	152	960	315	560	280	250	57	42	223	14
11	42	10	198	560	152	890	250	315	75	350	470	30
12	42	10	174	470	114	1, 250	174	1, 170	152	315	223	26
13	26	10	132	315	3, 010	1, 930	223	1, 030	106	223	97	23
14	25	10	152	1, 830	2, 230	770	4, 620	770	97	106	75	18
15	16	11	280	2, 660	960	610	3, 250	610	57	132	62	14
16	12	68	315	1, 490		510	2, 130	510	106	315	62	13
17	12	57	2, 030	610	170	470	1, 100	430	52	280	62	12
18	10	52	1, 490	510		470	770	315	23	223	75	14
19	10	42	390	560		470	610	250	52	174	57	23
20	8	34	350	470		315	510	223	52	106	42	38
21	8	26	223	1, 570		280	280	280	42	57	38	62
22	16	30	223	2, 440	100	315	250	250	23	38	132	42
23	30	20	198	1, 750		1, 100	250	198	38	30	82	38
24	23	16	198	960		1, 930	223	174	57	38	68	30
25	18	14	152	830		1, 250	174	152	90	30	57	23
26	20	14	106	430	152	770	152	132	82	23	47	20
27	23	16	198	390	390	390	62	106	57	23	38	12
28	18	23	280	1, 030	660	350	105	82	75	114	30	10
29	16	20	830	1, 750		280	660	68	1, 250	350	47	8
30	14	38	470	390		223	1, 410	68	470	90	34	9
31	13		1, 330	710		174		75		90	34	
1923-24												
1	10	47	890	1, 570	390	350	960	2, 660	315	610	223	12
2	9	38	660	770	315	470	610	1, 330	315	198	152	26
3	8	38	390	7, 120	280	610	610	830	315	223	132	57
4	6	38	315	2, 440	350	770	610	610	315	174	90	34
5	6	52	510	1, 170	1, 030	1, 660	1, 490	660	250	250	62	174
6	6	174	660	830	1, 030	1, 410	2, 550	560	280	250	38	38
7	6	770	660	510	660	1, 660	1, 490	390	280	315	38	38
8	6	560	660	390	470	710	1, 170	430	280	500	34	34
9	6	315	1, 490	315	390	710	960	1, 840	660	350	30	42
10	4	198	2, 440	315	390	660	1, 100	1, 030	470	280	23	250
11	3	152	2, 440	1, 490	250	510	890	830	315	223	23	152
12	4	152	1, 410	1, 170	315	470	890	4, 050	280	198	38	82
13	4	82	890	560	174	390	610	2, 770	223	1, 330	174	114
14	4	97	890	174	250	390	390	1, 750	250	1, 170	250	97
15	8	75	770	280	174	390	315	1, 330	198	660	198	82
16	6	90	610	770	90	315	250	890	174	510	90	57
17	6	90	470	2, 030	174	350	250	315	152	250	174	38
18	7	90	390	1, 030	315	610	250	223	132	198	174	30
19	6	82	315	660	560	710	390	770	114	174	18	20
20	6	68	315	430	770	710	250	660	114	114	34	20
21	7	57	770	390	770	770	280	510	90	82	30	20
22	8	52	1, 100	198	510	770	280	560	82	75	30	152
23	9	82	2, 890	315	390	770	315	430	75	390	30	390
24	10	830	2, 230	250	350	770	315	350	57	152	34	152
25	13	660	1, 250	770	280	770	250	315	57	152	34	132
26	18	390	770	560	315	1, 490	198	350	52	132	52	75
27	23	350	770	350	280	1, 840	174	430	47	97	52	62
28	20	250	3, 640	315	470	1, 490	152	350	250	68	34	57
29	10	198	1, 170	315	315	8, 300	560	315	1, 930	52	30	114
30	26	1, 100	1, 170			5, 870	430	280	1, 250	38	26	1, 930
31	52		1, 170	510		2, 440		315		114	16	

NOTE.—Gage not read on Sundays; discharge estimated by comparing gage-height graph with graphs for other Cheat Basin streams. Braced figures show estimated mean discharge for periods of ice effect. Observer's recorded gage height June 22, 1923, reduced 1 foot. No gage July 27 to Aug. 10, 1924; discharge estimated from hydrographs from adjacent streams.

Monthly discharge of Big Sandy Creek at Rockville, W. Va., for the years ending September 30, 1922-1924

[Drainage area, 202 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1921-22					
October	990	102	277	1.37	1.58
November	6,300	134	1,340	6.63	7.40
December	8,300	350	1,180	5.84	6.73
January	2,440	152	508	2.51	2.89
February	2,550	223	724	3.58	3.73
March	4,330	315	1,020	5.05	5.82
April	4,050	132	645	3.19	3.56
May	250	52	141	.698	.80
June	280	23	103	.510	.57
July	350	14	88.7	.439	.51
August	52	4	13.5	.067	.08
September	114	2	13.6	.067	.08
The year	8,300	2	503	2.49	33.75
1922-23					
October	42	3	14.3	.071	.08
November	68	10	20.9	.103	.11
December	2,030	20	399	1.98	2.28
January	3,130	350	1,010	5.00	5.76
February	3,010	.....	591	2.93	3.05
March	1,930	174	607	3.00	3.50
April	4,620	62	682	3.38	3.77
May	1,170	68	329	1.63	1.88
June	1,250	23	116	.574	.64
July	350	23	133	.658	.76
August	510	30	106	.525	.61
September	62	8	22.9	.113	.13
The year	4,620	3	335	1.66	22.57
1923-24					
October	52	3	10.2	.050	.06
November	1,100	38	239	1.18	1.32
December	3,640	315	1,100	5.45	6.28
January	7,120	174	916	4.53	5.22
February	1,030	90	416	2.06	2.22
March	8,300	315	1,260	6.24	7.19
April	2,560	152	633	3.13	3.49
May	2,770	223	908	4.49	5.18
June	1,930	47	311	1.54	1.72
July	1,330	38	303	1.50	1.73
August	250	16	76.2	.377	.43
September	1,930	12	149	.738	.82
The year	8,300	3	530	2.62	35.66

BEAVER RIVER BASIN

MAHONING RIVER NEAR DEERFIELD, OHIO

LOCATION.—In T. 1 N., R. 6 W., at highway bridge one-third mile north of line between Portage and Mahoning Counties, 1 mile above mouth of Willow Creek and $2\frac{1}{2}$ miles southwest of Deerfield, Portage County.

DRAINAGE AREA.—175 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 31, 1923, to September 30, 1924.

GAGE.—Chain gage on highway bridge, read by Mrs. Thresa Walters.

DISCHARGE MEASUREMENTS.—Made from bridge at gage or by wading.

CHANNEL AND CONTROL.—Channel curved above but straight for 1,000 feet below gage. Banks high and brushy. Control is riffle composed of large flat stones and large boulders. Zero flow would occur at gage height 1 foot.

EXTREMES OF STAGE.—Maximum stage recorded during year, 17.4 feet at 5 p. m. June 29; minimum stage, 1.74 feet at 7 a. m. August 29.

The flood of March, 1913, reached a stage equivalent to gage height 19 feet.

ACCURACY.—Gage read to hundredths twice daily. Records reliable. Rating curve not yet developed for high water.

Discharge measurements of Mahoning River near Deerfield, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 31	Morgan and Dornbach.	2.10	16.2	July 22	E. E. R. Dornbach.	3.08	177
Jan. 28	W. W. Perrin	2.23	31.4	Aug. 19	do	1.90	18.2
Mar. 20	do	2.42	64.9	Sept. 10	do	2.84	130
Apr. 16	W. A. Werner	2.50	84.1				

Daily gage height, in feet, of Mahoning River near Deerfield, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		2.08	4.65	6.9	3.24	3.03	3.68	3.66	2.70	5.5	1.92	1.77
2		1.98	3.35	4.58	2.83	4.02	3.66	3.74	2.68	3.54	1.94	1.82
3		1.97	2.84	4.80	2.70	3.96	3.58	2.90	2.66	2.99	1.90	1.97
4		2.00	2.66	5.5	2.70	5.5	3.22	4.66	2.73	2.68	1.91	1.95
5		2.20	4.39	4.58	3.28	7.0	2.99	3.69	2.72	2.52	1.97	1.90
6		2.22	5.3	3.18	4.95	6.4	2.90	2.96	2.74	2.42	1.96	1.90
7		2.10	5.8	3.72	3.83	4.17	3.12	2.68	3.02	5.6	2.11	1.88
8		2.10	4.55	3.46	3.00	3.29	3.48	2.55	3.20	5.8	2.00	1.83
9		2.20	4.42	2.74	2.94	3.03	5.07	2.77	5.4	4.35	2.03	2.10
10		2.17	6.2	2.44	2.68	2.96	5.25	3.11	4.34	3.15	2.07	2.86
11		2.10	5.2	8.9	2.75	3.02	3.82	2.77	3.38	2.83	2.00	2.77
12		2.06	3.92	7.9	2.50	3.21	3.14	3.46	3.31	2.56	1.98	2.42
13		1.97	3.46	5.4	2.48	3.20	2.90	5.6	3.19	2.74	1.96	2.61
14		1.95	4.82	3.50	2.49	3.28	2.70	5.7	3.13	2.70	2.02	3.00
15		1.88	3.62	3.16	2.46	2.97	2.62	6.0	2.66	2.44	1.95	2.68
16		1.92	2.98	4.48	2.52	2.53	2.50	5.3	2.50	2.22	1.95	2.31
17		1.94	2.93	10.2	2.39	2.54	2.42	4.42	2.40	2.19	1.97	2.16
18		1.90	2.80	6.6	2.29	2.48	4.37	3.60	2.62	2.11	1.94	2.02
19		2.02	2.70	3.70	2.32	2.44	6.2	5.0	3.75	2.07	1.91	1.95
20		1.95	2.63	3.36	2.43	2.38	4.31	4.25	3.06	2.02	1.91	1.98
21		1.92	3.18	3.30	2.80	2.45	3.40	3.38	2.58	2.03	1.90	2.13
22		1.92	3.78	3.72	2.90	2.63	3.42	2.97	2.34	2.92	1.90	2.40
23		1.90	6.5	3.19	2.69	4.00	3.44	2.70	2.28	3.06	1.90	2.37
24		2.34	5.6	2.67	2.64	5.8	2.99	2.75	2.30	2.54	1.88	2.16
25		2.33	3.90	2.46	2.45	5.0	2.75	3.64	2.26	2.22	1.81	1.96
26		2.32	3.48	2.50	2.32	4.62	2.57	3.14	3.06	2.08	1.78	1.98
27		2.95	3.32	2.30	2.30	6.4	2.43	2.82	2.50	2.04	1.80	1.92
28		2.78	5.5	2.22	2.54	6.1	2.38	2.74	2.46	2.03	1.77	1.94
29		2.41	5.1	2.28	2.61	7.0	2.80	2.76	16.6	2.00	1.75	4.28
30		3.69	3.55	4.15		8.5	2.87	3.32	10.1	1.96	1.76	5.8
31	2.10		5.1	4.88		4.96		3.05		1.92	1.76	

MAHONING RIVER AT YOUNGSTOWN, OHIO

LOCATION.—At Bridge Street Bridge, at Ohio Works of Carnegie Steel Co., at Youngstown, Mahoning County. Mill Creek enters on right three-fourths mile below gage.

DRAINAGE AREA.—899 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 13, 1921, to September 30, 1924, at present site; May 23, 1903, to July 23, 1906, at a station $4\frac{1}{2}$ miles downstream from present site.

GAGE.—Chain gage on highway bridge, read by R. Centrello. Zero of gage is 826.53 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for 1,000 feet above and below gage. Banks high. One channel at all stages. Bed of stream composed of gravel and small boulders. Control for low water is riffle 150 feet below gage; control for high water is stretch of channel below gage and Baldwin Dam $1\frac{3}{4}$ miles below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.6 feet at 8 a. m. July 1 (discharge, 10,000 second-feet); minimum stage, 1.18 feet at 9 a. m. and 4 p. m. October 5 and 9 a. m. October 6 (discharge, 78 second-feet).

1922-1924: Maximum stage recorded, that of July 1, 1924; minimum stage, 1.12 feet at 4 p. m. October 22, 1921 (discharge, 59 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Water is diverted for municipal water supply above station.

REGULATION.—Flow is regulated at Milton Reservoir.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined up to 4,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by Carnegie Steel Co.

Discharge measurements of Mahoning River at Youngstown, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
Oct. 17	W. W. Perrin	Feet 1.32	Sec.-ft. 121	Apr. 16	W. A. Werner	Feet 2.26	538
Jan. 26	do	1.75	246	July 21	E. E. R. Dornbach	1.56	177
Mar. 19	do	2.04	397	Aug. 16	do	1.60	192

Daily discharge, in second-feet, of Mahoning River at Youngstown, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	99	104	1,050	3,080	1,450	830	2,980	690	560	9,060	135	320
2	89	116	975	2,780	1,130	938	2,330	795	465	6,100	127	1,530
3	104	116	495	2,600	900	1,210	2,060	592	364	1,880	132	1,290
4	94	140	342	2,980	760	2,420	1,520	1,530	358	1,130	146	938
5	78	135	795	2,600	975	4,380	1,050	1,610	348	1,050	152	495
6	78	140	2,980	1,210	2,980	4,380	725	1,050	336	725	138	342
7	119	154	3,880	795	2,600	3,880	725	690	342	938	140	249
8	111	163	2,880	625	1,530	2,880	830	560	405	2,600	179	224
9	116	160	1,880	495	1,050	2,600	1,210	725	1,130	2,330	199	375
10	111	179	2,510	405	725	1,880	1,530	1,050	1,530	1,450	206	1,290
11	104	179	2,060	5,330	625	1,370	1,050	938	1,050	760	189	1,790
12	114	146	1,370	7,310	465	1,370	795	1,210	725	528	192	938
13	111	129	1,370	6,870	348	1,450	658	3,480	560	495	189	865
14	106	122	2,060	2,980	348	1,370	658	3,880	528	435	189	1,700
15	106	119	2,420	1,930	300	1,130	560	4,380	465	336	192	1,210
16	116	124	1,370	1,290	253	900	495	4,380	310	285	186	760
17	106	122	975	6,540	348	725	528	2,650	232	262	210	592
18	104	132	760	5,660	300	560	1,530	1,790	196	232	189	465
19	114	124	625	4,180	262	405	4,280	2,150	221	192	189	342
20	109	129	495	2,060	336	375	2,780	2,060	290	189	199	253
21	104	127	528	865	370	405	1,880	1,370	353	157	186	290
22	94	124	1,130	658	405	495	1,700	865	249	170	189	465
23	111	132	4,180	495	405	1,530	1,970	592	210	176	270	375
24	119	132	4,180	348	348	2,330	1,450	495	199	173	217	253
25	135	140	2,980	320	342	1,970	1,050	658	320	166	192	206
26	132	206	1,700	270	285	1,610	830	658	528	154	176	176
27	143	249	1,450	224	331	3,580	560	560	465	154	189	166
28	149	495	2,510	214	592	3,780	435	465	320	146	206	132
29	132	280	3,180	257	725	3,780	405	435	7,200	138	196	1,970
30	129	435	2,150	592	-----	6,540	495	592	8,220	129	179	5,000
31	124	-----	2,150	1,290	-----	5,440	-----	725	-----	129	179	-----

Monthly discharge of Mahoning River at Youngstown, Ohio, for the year ending September 30, 1924

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	149	78	112	May	4,380	435	1,410
November	495	104	168	June	8,820	196	969
December	4,180	342	1,850	July	9,060	129	1,050
January	7,310	214	2,160	August	270	127	182
February	2,980	253	741	September	5,000	132	833
March	6,540	375	2,130	The year	9,060	78	1,080
April	4,280	405	1,300				

LITTLE BEAVER CREEK BASIN

LITTLE BEAVER CREEK NEAR EAST LIVERPOOL, OHIO

LOCATION.—At steel highway bridge known as Grimms Bridge, 4 miles above mouth of creek and 4 miles northeast of East Liverpool, Columbiana County. North Fork enters creek on left 3 miles above station.

DRAINAGE AREA.—505 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 17, 1915, to September 30, 1924.

GAGE.—Chain gage on downstream side of highway bridge; read by Burl Thompson.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—One channel at all stages; at extreme high stages water flows around both bridge abutments. Channel straight for 100 feet above and 300 feet below station. Rapids about 600 feet below bridge act as primary control; probably permanent. Zero flow would occur at gage height 0.1 foot.

EXTREMES OF STAGE.—Maximum stage recorded during year, 13.7 feet at 5 p. m. January 16; minimum stage recorded, 2.10 feet on October 8 and 10.

1915-1924: Maximum stage recorded, 13.7 feet at 5 p. m. January 16, 1924; minimum stage recorded, 1.78 feet at 6 p. m. August 22 and 7 a. m. August 26, 1918 (discharge, 12 second-feet).

Highest known flood reached a stage represented by gage height about 20 feet.

ICE.—Stage-discharge relation affected by ice during severe winters.

REGULATION.—None.

ACCURACY.—Gage read to hundredths twice daily. Rating curve not developed for extremely high water.

COOPERATION.—Gage-height record furnished by United States Engineer Corps.

Discharge measurements of Little Beaver River near East Liverpool, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
Oct. 15	W. W. Perrin.....	<i>Feet</i> 2.18	<i>Sec.-ft.</i> 36.0	July 22	E. E. R. Dornbach....	<i>Feet</i> 2.93	<i>Sec.-ft.</i> 137
Mar. 17	—do.	3.84	443	Aug. 18	—do.	2.53	74.0
Apr. 17	W. A. Werner	3.89	518				

Daily gage height, in feet, of Little Beaver Creek near East Liverpool, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.42	2.54	4.70	7.6	4.9	-----	5.8	6.0	3.77	6.4	2.81	2.26
2	2.35	2.50	4.00	6.0	-----	7.7	5.6	5.3	3.98	5.0	2.75	2.80
3	2.28	2.49	3.67	7.3	-----	7.1	5.3	4.6	3.90	4.5	2.77	3.13
4	2.24	2.54	3.36	6.7	4.5	7.1	4.8	5.5	4.14	4.07	2.63	2.90
5	2.17	2.89	4.6	5.3	5.8	9.3	4.5	5.3	3.56	3.88	2.64	2.67
6	2.17	3.06	7.0	4.6	6.5	6.7	5.8	4.8	4.2	3.88	2.74	2.74
7	2.13	2.87	7.5	5.1	4.9	5.7	5.8	4.3	4.03	5.6	2.74	2.68
8	2.10	2.81	5.9	6.0	4.2	4.7	6.0	4.15	4.8	5.8	2.74	2.56
9	2.12	2.76	5.3	5.3	3.88	4.5	6.9	4.6	5.2	4.5	2.72	2.57
10	2.10	2.70	7.3	5.0	4.02	4.5	6.7	4.6	5.1	4.3	2.75	3.22
11	2.12	2.64	6.5	8.1	3.94	4.5	5.6	4.2	4.4	4.00	2.68	3.30
12	2.13	2.59	5.4	7.0	3.94	4.5	5.2	7.3	4.6	3.70	2.66	3.11
13	2.14	2.54	5.0	5.9	3.62	4.5	4.8	7.7	4.3	4.2	2.62	3.10
14	2.12	2.50	4.9	5.2	3.62	4.8	4.5	6.6	4.05	3.49	2.70	3.59
15	2.18	2.45	4.6	4.9	3.56	4.5	4.2	6.9	3.74	3.48	2.69	3.22
16	2.22	2.48	4.09	9.2	4.12	3.90	4.03	6.3	3.55	3.22	2.66	2.98
17	2.20	2.46	4.17	9.7	4.10	3.88	3.72	5.6	3.46	3.22	2.69	2.80
18	2.16	2.46	4.02	7.0	4.10	3.84	6.3	5.5	4.4	3.10	2.62	2.70
19	2.18	2.46	3.86	5.8	-----	3.76	6.7	6.5	4.4	3.04	2.59	2.63
20	2.20	2.47	3.71	5.5	-----	3.73	5.7	5.7	3.99	2.99	2.62	2.60
21	2.16	2.44	3.94	5.4	-----	3.82	4.7	5.0	3.68	2.92	2.62	2.83
22	2.16	2.39	5.0	-----	4.8	4.2	5.0	4.6	3.46	2.98	2.56	2.64
23	2.14	2.46	7.7	-----	-----	5.7	4.7	4.3	3.38	3.29	3.24	3.31
24	2.26	2.88	6.1	-----	-----	7.1	4.3	4.3	3.48	3.20	2.88	3.04
25	2.50	3.08	5.3	6.4	4.6	6.3	4.08	4.9	3.64	3.04	2.71	2.84
26	2.56	3.00	5.1	-----	-----	7.2	3.80	4.3	3.84	2.94	2.54	2.69
27	2.52	3.70	4.7	-----	-----	7.7	3.70	4.06	3.67	2.82	2.46	2.59
28	2.48	3.48	6.9	5.7	-----	7.2	4.4	4.08	3.72	2.80	2.46	2.72
29	2.40	3.26	5.9	-----	4.2	8.5	4.2	4.14	3.73	2.78	2.44	5.7
30	2.41	4.2	5.2	-----	-----	8.7	4.13	4.6	9.3	2.76	2.42	7.1
31	2.52	-----	7.1	-----	-----	6.6	-----	4.14	-----	2.76	2.36	-----

YELLOW CREEK BASIN

YELLOW CREEK AT HAMMONDSVILLE, OHIO.

LOCATION.—At covered highway bridge on Steubenville Pike, one-fifth mile southwest of Hammondsville, Jefferson County. North Fork enters on left 1,000 feet below station.

DRAINAGE AREA.—169 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 13, 1915, to September 30, 1924.

GAGE.—Chain gage on downstream side of bridge; read by W. J. Sprague.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—One channel, but at extreme high stages stream flows around both abutments; straight 1,000 feet above and curved 100 feet below station. Control not permanent. Zero flow would occur at gage height 1.5 feet; determined August 18, 1924.

EXTREMES OF STAGE.—Maximum stage recorded during year, 10 feet at 8.30 a. m. January 11, 2.15 p. m. January 16, and 9 a. m. March 29; minimum stage, 2.06 feet August 3 and September 15.

1915-1924: Maximum stage recorded, 13.2 feet at 10 a. m. June 17, 1920; minimum stage, 1.28 feet at 7.10 p. m. August 28, 1918.

Highest known flood reached a stage represented by gage height about 16 feet.

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Gage read to hundredths twice daily. Rating curve not yet defined for high water.

COOPERATION.—Gage-height record furnished by United States Engineer Corps.

Discharge measurements of Yellow Creek at Hammondsville, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
Oct. 1 st	W. W. Perrin-----	<i>Feet</i> 2.60	<i>Sec.-ft.</i> 9.0	July 22	E. E. R. Dornbach----	<i>Feet</i> 2.30	<i>Sec.-ft.</i> 24.1
Mar. 18	-----do-----	3.29	163	Aug. 18	-----do-----	2.12	13.9

* Stage-discharge relation affected by leaves on control.

Daily gage height, in feet, of Yellow Creek at Hammondsville, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	2.67	2.71	3.92	5.0	3.82	3.52	4.5	3.28	3.78	2.62	3.10	2.22
2-----	2.62	2.76	3.78	4.4	3.70	3.34	4.4	3.16	3.58	2.72	2.78	2.29
3-----	2.59	2.80	3.42	6.8	3.48	3.28	4.2	3.09	3.46	2.78	2.38	2.22
4-----	2.64	2.86	3.38	5.4	3.39	6.0	4.1	3.42	3.60	2.84	2.42	2.17
5-----	2.64	3.02	4.2	5.6	3.52	7.2	3.98	3.88	3.48	2.94	2.48	2.24
6-----	2.60	2.98	6.4	7.7	4.4	4.9	4.6	3.75	3.48	2.92	2.42	2.20
7-----	2.62	2.92	5.5	7.6	3.58	4.3	4.3	3.62	3.32	4.5	2.32	2.22
8-----	2.58	2.88	4.1	6.6	3.48	4.0	4.3	3.65	5.4	4.3	2.22	2.17
9-----	2.56	2.84	3.88	5.6	3.34	3.91	4.3	3.88	4.5	4.0	2.28	2.26
10-----	2.60	2.79	4.2	5.8	3.28	3.88	4.2	3.78	4.4	3.15	2.19	2.22
11-----	2.62	2.76	4.2	9.0	3.21	3.82	4.1	5.1	4.5	2.88	2.20	2.26
12-----	2.57	2.74	3.70	6.8	3.14	3.72	3.98	6.4	4.4	2.82	2.19	2.18
13-----	2.54	2.74	3.78	4.1	3.09	3.58	3.82	5.7	4.3	2.90	2.19	2.13
14-----	2.54	2.70	3.68	3.58	3.02	3.46	3.70	5.8	4.1	2.70	2.14	2.10
15-----	2.60	2.69	3.48	3.42	2.98	3.39	3.58	4.8	3.52	2.58	2.12	2.06
16-----	2.61	2.73	3.42	7.0	3.12	3.28	3.35	4.5	3.46	2.48	2.11	2.10
17-----	2.69	2.76	3.34	6.5	3.60	3.22	3.41	4.3	3.42	2.49	2.22	2.10
18-----	2.65	2.74	3.35	5.6	4.0	3.28	4.7	4.4	3.52	2.44	2.14	2.12
19-----	2.62	2.69	3.55	5.2	3.58	3.26	4.6	4.2	3.58	2.39	2.16	2.18
20-----	2.59	2.71	3.85	4.9	4.5	3.20	4.2	4.1	3.42	2.34	2.22	2.25
21-----	2.59	2.76	4.1	4.4	3.67	3.26	4.1	3.98	3.38	2.32	2.28	2.48
22-----	2.52	2.74	7.3	4.1	3.65	3.42	3.69	4.1	3.15	2.39	2.19	2.66
23-----	2.59	2.80	6.8	3.68	3.84	3.49	3.42	4.2	2.88	2.55	2.32	2.38
24-----	2.66	2.88	4.9	3.52	4.0	3.46	3.32	3.92	2.78	2.52	2.32	2.28
25-----	2.72	2.84	3.72	3.40	4.3	3.48	3.24	3.68	2.72	2.58	2.20	2.22
26-----	2.74	3.10	4.2	3.24	4.6	3.39	3.26	3.45	2.66	2.42	2.12	2.17
27-----	2.74	3.08	4.6	4.2	4.4	3.38	3.28	3.38	2.82	2.29	2.14	2.10
28-----	2.69	2.95	4.5	4.6	4.0	3.52	3.48	3.48	2.92	2.24	2.17	2.12
29-----	2.66	3.12	4.4	4.4	3.72	9.0	3.58	3.66	6.5	2.19	2.12	2.36
30-----	2.72	3.38	4.6	4.6	-----	5.4	3.48	3.78	4.2	2.13	2.12	2.46
31-----	2.74	-----	4.8	3.98	-----	5.3	-----	3.98	-----	2.70	2.06	-----

MUSKINGUM RIVER BASIN

TUSCARAWAS RIVER AT CRYSTAL SPRING, OHIO

LOCATION.—In NW. $\frac{1}{4}$ sec. 30, T. 11 N., R. 9 W., at highway bridge at Crystal Spring, Stark County, 4 miles above Massillon. Newman Creek enters on right 3 miles below station.

DRAINAGE AREA.—430 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 15, 1921, to September 30, 1924.

GAGE.—Chain gage on highway bridge; read by R. W. Smith.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for 500 feet above and below gage.

One channel at all stages. Left bank high; right bank subject to overflow at extremely high water. Bed of stream composed of boulders and gravel. Control for low water is just below gage; control for high water is long stretch of channel below gage. Zero flow would occur at gage height -1.2 feet before flood of July 1, 1924, and at -1.4 feet thereafter.

EXTREMES OF DISCHARGE.—1921-1924: Maximum stage recorded, 10.5 feet at 6 p. m. July 1, 1924 (discharge from extension of rating curve, 3,260 second-feet); minimum stage recorded, 1.18 feet at 6 a. m. October 23, 1923 (discharge, 53 second-feet).

ICE.—Stage-discharge relation not affected by ice except during severe winters.

DIVERSIONS.—Ohio Canal diverts a small amount of water from Tuscarawas River at Portage Lakes, 3 miles south of Akron. Part of water flows from point of diversion into Cuyahoga River Basin and part flows down Tuscarawas River past this gaging station. (See list of miscellaneous measurements of Ohio Canal, p. 293.)

REGULATION.—Flow is slightly regulated at headwaters of this stream.

ACCURACY.—Stage-discharge relation for low water changed during high water on July 1; not seriously affected by ice. Rating curves well defined between 100 and 2,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except for extremely high and extremely low water for which they are fair.

Discharge measurements of Tuscarawas River at Crystal Spring, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 20	W. W. Perrin	1.26	58.7	May 12	W. A. Werner	4.60	851
Jan. 16	do	4.92	877	July 23	E. E. R. Dornbach	4.39	717
Mar. 15	do	2.82	351	Aug. 19	do	1.60	126
28	do	6.38	1,420	Sept. 13	do	3.49	477
Apr. 9	W. A. Werner	4.36	748				

Daily discharge, in second-feet, of Tuscarawas River at Crystal Spring, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	102	795	915	540	320	1,750	204	275	3,210	134	106
2	78	83	1,050	885	439	414	1,160	184	254	2,880	127	134
3	78	72	623	1,160	366	514	895	214	254	2,110	122	251
4	72	78	439	1,120	390	915	595	623	275	1,420	122	206
5	72	109	679	795	679	1,190	464	567	244	855	134	167
6	72	124	1,020	623	945	1,350	414	366	234	439	140	146
7	72	109	1,340	567	707	1,220	390	275	204	514	140	127
8	67	102	1,300	514	414	980	438	264	390	623	140	134
9	67	95	1,340	343	366	707	623	297	1,020	489	140	153
10	67	89	1,500	214	320	464	735	320	980	370	127	567
11	62	72	1,500	1,340	297	390	514	343	2,020	289	116	489
12	62	72	1,120	2,740	297	414	390	707	2,880	328	127	392
13	62	67	1,160	2,960	264	390	320	885	2,920	707	127	439
14	62	67	1,420	2,560	244	414	254	1,160	2,830	489	134	464
15	67	62	1,420	1,840	234	390	234	1,880	2,540	308	140	328
16	67	62	1,420	1,050	204	275	214	2,200	1,420	233	127	251
17	67	72	1,220	1,500	175	204	194	2,060	679	198	122	215
18	62	83	980	1,300	166	194	320	1,540	623	174	116	190
19	62	78	855	1,120	157	184	915	1,190	885	160	127	153
20	58	78	707	855	140	194	707	1,050	567	153	127	160
21	54	72	623	623	175	234	489	735	390	153	127	270
22	54	62	980	514	275	439	623	489	297	595	127	540
23	54	62	1,500	414	264	679	736	390	414	795	153	464
24	58	184	1,840	390	234	825	464	439	623	464	140	251
25	78	204	1,840	366	194	945	366	489	514	289	122	198
26	102	184	1,750	297	157	980	254	414	414	206	116	182
27	116	224	1,500	275	157	1,260	204	320	320	174	111	160
28	83	234	1,190	254	184	1,380	194	297	297	153	111	140
29	78	254	915	414	214	1,880	224	297	1,580	153	111	651
30	83	390	765	735	-----	2,380	224	366	2,560	140	106	1,190
31	116	-----	735	765	-----	2,380	-----	320	-----	134	106	-----

Monthly discharge of Tuscarawas River at Crystal Spring, Ohio, for the year ending September 30, 1924

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maxi- mum	Mini- mum	Mean		Maxi- mum	Mini- mum	Mean
October.....	116	54	71.7	May.....	2,200	184	674
November.....	390	62	118	June.....	2,920	204	957
December.....	1,840	439	1,150	July.....	3,210	134	620
January.....	2,960	214	951	August.....	153	106	126
February.....	945	140	317	September.....	1,190	106	304
March.....	2,380	184	791	The year.....	3,210	54	551
April.....	1,750	194	508				

TUSCARAWAS RIVER NEAR DOVER, OHIO

LOCATION.—In T. 9 N., R. 2 W., at highway bridge $2\frac{1}{2}$ miles northeast of Dover, Tuscarawas County, and $3\frac{1}{2}$ miles above mouth of Sugar Creek.

DRAINAGE AREA.—1,400 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 5, 1923, to September 30, 1924.

GAGE.—Chain gage on highway bridge; read by R. E. Burkey.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for half a mile above and one-eighth mile below gage. Banks fairly high, wooded. Control is riffle composed of gravel and small boulders about 500 feet below gage.

EXTREMES OF STAGE.—Maximum stage recorded, 8.9 feet at 11.15 a. m. March 30; minimum stage, 0.56 foot at 6.35 a. m. November 15.

ACCURACY.—Gage read to hundredths twice daily. Record reliable. Rating curve not yet developed for high water.

Discharge measurements of Tuscarawas River near Dover, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis- charge	Date	Made by—	Gage height	Dis- charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 5	Dornbach and Perrin..	1.53	301	May 14	W. A. Werner	5.32	4,950
11	W. W. Perrin.....	1.50	266	July 24	E. E. R. Dornbach	2.35	1,180
Mar. 13	do.....	2.96	1,800	Aug. 21	do.....	1.55	322
Apr. 10	W. A. Werner	3.73	2,810				

Daily gage height, in feet, of Tuscarawas River near Dover, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-----	1.76	4.4	5.2	3.32	2.84	-----	3.45	2.60	5.4	1.88	1.70
2	-----	1.67	3.43	4.2	3.00	3.02	-----	3.56	2.53	5.1	1.82	1.88
3	-----	1.59	2.48	4.5	2.60	3.50	-----	2.87	2.43	4.5	1.62	1.98
4	-----	1.52	2.50	5.6	2.36	4.7	3.53	3.30	2.50	3.82	1.58	1.81
5	1.53	1.18	3.31	5.1	2.17	6.7	-----	3.30	2.38	3.13	1.64	1.64
6	1.42	1.29	4.5	5.4	3.00	6.7	2.97	2.95	2.77	2.84	1.67	1.51
7	1.50	1.53	5.2	5.3	3.76	5.6	2.98	2.62	3.08	2.85	1.61	1.50
8	1.42	1.69	4.9	5.1	3.34	4.2	3.19	2.38	3.38	3.22	1.52	1.65
9	1.43	1.34	5.1	4.8	2.67	3.26	3.38	2.64	5.5	2.65	1.34	1.85
10	1.52	1.30	6.1	4.4	2.49	2.96	3.74	2.74	5.2	2.36	1.24	1.94
11	1.50	1.20	5.8	8.5	2.34	2.95	3.64	2.84	6.1	2.29	.93	2.25
12	1.49	1.38	4.8	8.6	2.42	3.09	2.84	3.74	7.7	2.22	.85	1.97
13	1.47	1.60	4.1	6.8	2.30	2.88	2.71	5.0	6.8	3.00	1.22	2.12
14	1.35	.91	4.8	5.1	2.23	2.75	2.48	5.3	5.9	2.82	1.44	2.32
15	1.32	.65	4.2	4.8	2.08	2.70	2.32	6.3	5.1	2.42	1.45	2.08
16	1.60	.96	3.91	4.8	2.00	2.45	2.19	6.0	4.2	1.92	1.32	1.84
17	1.63	.82	3.67	8.0	1.89	2.23	2.10	5.3	3.48	1.98	1.31	1.62
18	1.50	1.05	3.26	7.7	1.80	2.08	3.08	4.9	3.05	1.90	1.36	1.54
19	1.43	1.22	2.80	5.8	1.72	2.07	4.9	5.3	3.91	1.70	1.30	1.40
20	1.40	1.26	2.64	4.4	3.20	1.99	4.1	5.3	3.19	1.60	1.60	1.40
21	1.24	1.46	2.67	4.6	3.64	2.08	3.28	4.4	2.62	1.76	1.74	1.71
22	1.06	1.08	3.50	4.1	3.32	2.30	3.27	3.24	2.40	1.94	1.68	2.08
23	1.40	1.26	6.2	4.0	3.14	3.89	3.43	3.18	2.36	2.54	1.82	2.14
24	1.49	1.78	6.3	3.96	2.90	4.4	2.90	3.14	2.52	2.36	1.94	1.76
25	1.69	1.92	5.8	3.76	2.56	4.2	2.70	3.18	2.54	2.01	1.84	1.56
26	1.76	1.95	5.2	3.00	2.52	4.6	2.52	2.95	2.42	1.80	1.60	1.44
27	1.75	2.17	3.95	2.66	2.49	6.1	2.26	2.60	2.30	1.94	1.75	1.37
28	1.70	2.57	4.4	2.26	2.46	5.9	2.30	2.58	2.32	1.56	1.69	1.47
29	1.57	2.22	4.6	2.52	2.39	6.1	2.55	2.67	5.4	1.68	1.72	2.78
30	1.66	2.69	3.60	4.6	-----	8.9	2.66	2.82	6.8	1.68	1.74	4.4
31	1.57	-----	4.3	4.4	-----	7.7	-----	2.89	-----	1.63	1.70	-----

TUSCARAWAS RIVER AT NEWCOMERSTOWN, OHIO

LOCATION.—In T. 5 N., R. 3 W., at highway bridge three-fourths mile east of Newcomerstown, Tuscarawas County.

DRAINAGE AREA.—2,430 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 15, 1921, to September 30, 1924.

GAGE.—Chain gage on highway bridge, read by David Zimmer.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for 800 feet above and below gage.

One channel at all stages. Right bank high and wooded; left bank wooded, subject to overflow during floods. Bed of stream composed of gravel and small boulders. Control for low water is riffle 800 feet below gage; may shift during floods. Control for high water is long stretch of channel below gage. Zero flow would occur at gage height 0.2 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.6 feet at 5 p. m. January 18 and March 31 (discharge, 16,700 second-feet); minimum stage, 1.23 feet at 5 p. m. October 20 and 23 (discharge, 315 second-feet).

1921-1924: Maximum stage recorded, 11.8 feet at 6 p. m. May 14, 1923 (discharge from extension of rating curve, 19,400 second-feet); minimum stage, 1.20 feet September 28, 1922 (discharge, 290 second-feet). The flood of March, 1913, reached a stage corresponding to about 21.5 feet on gage.

ICE.—Stage-discharge relation seriously affected by ice during severe winters.

REGULATION.—Flow slightly regulated at Portage Lakes.

DIVERSIONS.—A small amount of water is diverted into the Cuyahoga River Basin by Ohio Canal.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve well defined up to 13,000 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Tuscarawas River at Newcomerstown, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
Oct. 10	W. W. Perrin.....	<i>Feet</i> 1.32	<i>Sec.-ft.</i> 361	Aug. 21	E. E. R. Dornbach ----	<i>Feet</i> 1.92	<i>Sec.-ft.</i> 806
Mar. 12	do	3.99	3,590	Sept. 10	do	1.38	395
July 26	E. E. R. Dornbach ----	2.58	1,540				

Daily discharge, in second-feet, of Tuscarawas River at Newcomerstown, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	490	432	6,020	8,350	3,340	3,180	13,100	4,180	2,700	7,550	970	432
2-----	432	460	4,540	6,970	2,400	3,500	9,750	4,900	2,550	5,640	1,020	490
3-----	432	432	2,860	7,750	2,120	3,500	6,020	3,840	2,400	4,540	745	745
4-----	378	460	2,120	10,400	1,980	5,830	4,720	3,840	2,700	3,500	628	788
5-----	405	555	4,720	9,150	3,020	9,780	3,840	4,180	2,260	2,860	628	665
6-----	350	665	6,780	6,400	5,830	12,300	3,500	3,340	3,180	1,980	745	520
7-----	350	788	8,150	5,080	4,900	9,670	3,500	2,700	4,180	2,550	665	432
8-----	350	705	7,350	3,670	3,020	7,550	3,500	2,260	3,840	3,840	665	405
9-----	320	628	6,590	2,700	2,260	4,720	3,500	2,260	8,550	2,550	705	460
10-----	378	555	9,570	2,550	2,260	3,500	4,360	2,860	8,750	1,980	665	490
11-----	350	555	9,570	8,350	1,980	3,500	3,670	2,400	9,990	1,720	590	1,120
12-----	340	378	7,550	14,200	1,980	3,500	3,020	4,180	11,900	1,470	555	920
13-----	350	432	5,450	15,200	1,850	3,340	2,550	8,150	10,800	2,700	520	970
14-----	320	520	6,400	10,600	1,720	3,180	2,400	8,150	8,350	2,860	520	1,230
15-----	345	460	5,830	7,160	1,720	2,860	2,120	9,360	3,020	1,850	590	1,070
16-----	330	432	4,360	7,750	1,350	2,400	1,850	10,800	5,080	1,470	555	830
17-----	432	432	3,840	13,800	1,350	1,980	1,720	8,550	3,840	1,350	520	705
18-----	378	490	3,180	16,700	1,230	1,850	2,700	6,590	2,700	1,350	555	628
19-----	320	555	2,550	13,400	1,290	1,850	6,970	7,750	3,840	1,070	520	555
20-----	315	555	2,260	9,150	3,840	1,720	6,020	6,210	3,180	920	590	555
21-----	320	520	2,260	4,900	5,830	1,850	4,360	4,720	2,260	875	788	590
22-----	320	520	5,260	2,550	4,540	2,400	3,670	3,840	1,980	920	830	875
23-----	315	555	10,400	2,700	3,840	4,010	3,840	3,020	1,850	1,850	665	1,180
24-----	340	628	12,500	2,550	3,020	5,830	3,180	2,860	2,120	1,850	665	920
25-----	378	1,230	12,300	2,400	2,260	5,830	2,550	3,670	1,980	1,230	665	705
26-----	520	1,230	9,990	2,260	1,720	6,020	2,260	3,020	2,120	1,180	555	628
27-----	520	1,980	7,160	1,850	1,720	9,150	1,980	2,550	1,850	830	520	555
28-----	460	2,860	6,400	1,720	2,260	9,360	1,850	2,400	1,850	745	490	590
29-----	432	1,180	7,550	1,560	2,550	10,800	2,260	2,550	6,970	705	460	920
30-----	432	2,400	6,020	2,700	-----	14,600	2,700	3,670	10,400	830	432	4,900
31-----	520	-----	5,830	4,900	-----	16,700	-----	3,500	-----	788	432	-----

Monthly discharge of Tuscarawas River at Newcomerstown, Ohio, for the year ending September 30, 1924

[Drainage area, 2,430 square miles]

Month	Discharge in second-feet				Run-off in Inches
	Maximum	Minimum	Mean	Per square mile	
October	520	315	385	0.158	0.18
November	2,860	378	786	.323	.36
December	12,500	2,120	6,300	2.59	2.99
January	16,700	1,590	6,760	2.78	3.20
February	5,830	1,230	2,660	1.09	1.18
March	16,700	1,720	5,680	2.34	2.70
April	13,100	1,720	3,920	1.61	1.80
May	10,800	2,260	4,590	1.89	2.18
June	11,900	1,850	4,570	1.88	2.10
July	7,550	705	2,110	.868	1.00
August	1,020	432	628	.258	.30
September	4,900	405	862	.355	.40
The year	16,700	315	3,280	1.35	18.39

MUSKINGUM RIVER AT DRESDEN, OHIO

LOCATION.—At highway bridge half a mile east of Dresden, Muskingum County, and half a mile below mouth of Wakatomika Creek.

DRAINAGE AREA.—5,980 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 14, 1921, to September 30, 1924.

GAGE.—Chain gage on highway bridge; read by Howard Snack. Zero of gage 693.15 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Channel straight for a quarter of a mile above and below gage. One channel at all stages. Banks high, not subject to overflow. Bed composed of solid rock, sand, and gravel. Control is concrete dam No. 11, 7 miles below gage. At low-water channel just below gage partly controls stage-discharge relation.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 22.2 feet at 4 p. m. March 30 (discharge from extension of rating curve, 45,800 second-feet); minimum stage recorded, 3.5 feet at 7 p. m. August 21 (discharge, 680 second-feet).

1921-1924: Maximum stage recorded on March 30, 1924; minimum stage recorded, 3.45 feet at 6 a. m. September 30, 1922 (discharge, 655 second-feet).

The flood of March, 1913, the highest known to have occurred at this station, reached a stage corresponding to about 39 feet referred to gage datum (estimated from gage readings at dam No. 11, which is control for high stages).

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Occasionally slight regulation at dam 7 miles below gage.

DIVERSIONS.—A small amount of water is diverted into the Cuyahoga River Basin by Ohio Canal.

ACCURACY.—Stage-discharge relation permanent; affected by ice January 28 and 29. Rating curve well defined below 30,000 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Muskingum River at Dresden, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Nov. 8	W. W. Perrin.....	4.96	2,000	July 30	E. E. R. Dornbach ----	4.80	1,760
Apr. 2	Lasley Lee.....	18.68	31,900	Aug. 29	-----do-----	4.44	1,340
18	F. R. Morgan.....	7.57	5,500				

Daily discharge, in second-feet, of Muskingum River at Dresden, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	1,310	1,060	5,910	17,200	11,300	6,910	38,100	9,300	7,270	16,700	1,310	790
2-----	1,310	1,060	9,490	18,500	8,750	8,350	34,000	10,800	5,750	11,300	2,270	1,140
3-----	1,060	1,140	7,810	17,200	7,090	8,540	25,300	9,870	5,910	8,920	1,400	990
4-----	990	1,140	5,430	24,700	6,400	8,730	16,200	10,100	6,070	7,090	1,700	790
5-----	990	1,140	5,590	23,200	6,570	18,000	11,700	10,200	5,430	6,400	950	1,220
6-----	920	1,310	9,870	18,500	9,870	24,400	10,100	5,280	9,460	5,130	1,060	990
7-----	920	1,920	19,500	14,200	13,300	25,000	8,730	6,400	10,400	4,980	1,500	730
8-----	920	1,810	18,300	13,800	10,800	23,500	8,350	5,280	13,300	6,400	1,400	1,060
9-----	790	1,700	15,900	11,300	7,620	16,900	8,540	5,280	26,900	5,450	1,400	920
10-----	850	1,600	21,700	7,630	6,070	11,000	8,540	4,260	25,100	4,680	1,500	790
11-----	850	1,500	22,000	21,700	5,750	8,920	8,540	6,400	32,700	3,840	1,400	990
12-----	790	1,310	19,700	37,800	5,120	8,920	7,090	10,200	37,800	3,700	1,310	1,220
13-----	790	1,220	15,400	35,000	4,980	8,920	6,570	14,700	30,100	3,980	990	1,700
14-----	850	1,060	21,100	32,700	4,830	8,540	6,070	16,900	22,900	5,430	1,060	1,500
15-----	850	1,140	20,800	23,800	4,680	8,350	5,590	22,600	17,200	4,120	920	1,920
16-----	850	1,060	15,000	18,800	4,260	7,270	4,540	23,200	14,100	3,560	943	1,600
17-----	790	1,060	11,900	29,700	3,980	6,230	4,680	22,600	11,000	3,170	967	1,400
18-----	790	1,140	10,400	30,100	3,840	5,430	5,590	15,700	7,090	2,780	990	1,500
19-----	850	1,140	8,540	30,700	3,700	5,130	10,100	14,700	6,740	2,650	790	1,500
20-----	790	1,140	7,090	28,800	13,300	4,830	13,500	15,400	6,740	2,520	735	1,400
21-----	790	1,220	6,400	18,800	15,700	5,280	10,800	13,600	6,160	2,520	680	1,600
22-----	790	1,220	8,170	12,100	14,000	6,570	7,450	11,900	5,590	2,520	1,500	1,700
23-----	730	1,140	25,900	8,730	11,900	11,000	8,730	9,680	6,000	2,520	2,030	1,810
24-----	730	1,400	30,100	7,090	10,800	14,500	7,990	7,810	6,400	3,430	1,310	1,810
25-----	920	1,810	28,500	6,740	9,680	16,500	6,740	8,170	5,910	3,040	1,310	1,400
26-----	990	2,910	27,200	5,750	7,090	18,500	5,750	7,090	4,830	2,390	1,810	1,400
27-----	1,060	3,700	23,800	5,130	5,280	21,100	5,220	5,750	4,680	2,030	790	1,310
28-----	1,310	4,680	20,800	4,920	5,590	22,900	4,680	5,130	4,540	1,820	1,310	1,560
29-----	1,140	5,750	20,300	4,680	6,070	28,800	4,980	5,430	14,500	1,600	1,220	1,810
30-----	990	4,680	18,000	5,750	-----	45,100	6,570	7,270	16,200	1,600	730	4,990
31-----	990	-----	15,700	11,700	-----	44,700	-----	7,630	-----	1,700	920	-----

NOTE.—Stage-discharge relation affected by ice Jan. 28 and 29; discharge determined by comparison with records of flow of Tuscarawas River, the largest tributary above station. Gage not read Apr. 27, May 21, June 16, 21, 23, July 17, 21, 22, 28, Aug. 16, 17, 20, Sept. 22, 28, and 30; discharge interpolated.

Monthly discharge of Muskingum River at Dresden, Ohio, for the year ending September 30, 1924

[Drainage area, 5,980 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	1,310	730	926	0.155	0.18
November.....	5,750	1,060	1,810	.303	.34
December.....	30,100	5,430	16,000	2.68	3.09
January.....	37,800	.....	17,600	2.94	3.39
February.....	15,700	3,700	7,870	1.32	1.42
March.....	45,100	4,830	14,800	2.47	2.85
April.....	38,100	4,540	10,400	1.74	1.94
May.....	23,200	5,130	10,600	1.77	2.04
June.....	37,800	4,540	12,600	2.11	2.35
July.....	16,700	1,600	4,450	.744	.86
August.....	2,270	680	1,230	.206	.24
September.....	4,990	730	1,450	.242	.27
The year.....	45,100	730	8,340	1.40	18.97

MUSKINGUM RIVER AT McCONNELLSVILLE, OHIO

LOCATION.—At power plant of McConnellsville-Malta Electric Co. at dam No. 7 at McConnellsville, Morgan County.

DRAINAGE AREA.—7,410 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1921, to September 30, 1924.

GAGE.—Vertical staff gage in three sections on upstream side of power plant; installed July 27, 1922; read by Earl Tomson. Zero of gage is at elevation of crest of dam, 650.31 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from bridge half a mile above gage or by boat 800 feet below gage.

CHANNEL AND CONTROL.—Channel straight for a mile above and below gage. One channel at all stages. Bed composed of sand and gravel. Control is dam No. 7 just below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11 feet at 5 p. m. March 30 (discharge, 51,000 second-feet); minimum mean daily discharge, 1,000 second-feet on October 11.

1922-1924: Maximum stage recorded, 11.9 feet at 6.15 a. m. April 16, 1922 (discharge, 56,600 second-feet); minimum mean daily discharge, 726 second-feet on October 7, 1922.

The flood of March, 1913, reached a stage on March 27 of 33.5 feet referred to gage datum.

ICE.—Stage-discharge relation not affected by ice except during unusually severe winters.

DIVERSIONS.—Diversions above station negligible. Water is diverted past dam at this station by the McConnellsville-Malta Electric Co. and the Elk Eye Milling Co. The discharge measurements and discharge tables show total flow of river.

REGULATION.—Slight regulation at dam No. 7.

ACCURACY.—Stage-discharge relation for low water changed during high water on March 30; not affected by ice. Rating curves well defined up to 30,000 second-feet. Gage read to hundredths twice daily before and after the Elk Eye Milling Co. is running. Daily discharge ascertained by applying mean daily gage height to rating table for flow over dam, including leakage through canal lock, and adding flow through power house determined from mean head, gate openings, and manufacturer's rating of water wheels. Records good.

COOPERATION.—Gage-height record furnished by McConnelsville-Malta Electric Co.

Discharge measurements of Muskingum River at McConnelsville, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Apr. 17	F. R. Morgan	2.16	5,470
July 31	E. E. R. Dornbach	1.05	1,970
Aug. 30	.....do.....	.75	1,710

Daily discharge, in second-feet, of Muskingum River at McConnelsville, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	2,010	1,580	7,610	20,200	12,200	7,570	35,500	11,700	9,090	15,900	2,240	1,110
2-----	1,780	1,580	10,300	19,200	10,000	9,090	32,000	12,200	7,540	13,600	2,240	1,280
3-----	1,560	1,580	8,400	27,100	7,910	9,170	24,900	12,200	6,820	10,300	2,570	1,250
4-----	1,350	1,730	6,530	27,600	7,200	9,190	19,200	12,600	6,810	8,310	2,210	1,250
5-----	1,350	2,060	10,400	22,800	8,380	23,900	14,500	11,700	6,110	6,090	2,000	1,410
6-----	1,140	2,100	17,200	22,800	11,300	25,500	11,600	11,300	9,120	6,050	1,780	1,390
7-----	1,100	1,940	23,900	17,500	13,600	24,400	10,000	9,120	13,600	5,430	1,780	1,190
8-----	1,160	2,300	19,700	17,000	11,700	21,900	9,590	7,560	18,400	6,090	1,780	1,250
9-----	1,160	2,270	17,400	14,000	8,370	17,400	9,120	7,550	30,900	6,430	1,570	1,240
10-----	1,160	2,010	26,000	9,400	7,100	12,700	9,160	6,820	32,000	6,450	1,530	1,080
11-----	1,000	1,950	23,900	26,600	6,130	10,000	9,140	7,910	27,100	4,770	1,780	1,240
12-----	1,070	1,690	20,700	37,800	6,160	10,000	8,340	17,400	30,900	4,810	1,550	1,550
13-----	1,060	1,690	17,200	33,200	5,820	10,000	7,490	16,400	30,900	6,050	1,580	1,680
14-----	1,190	1,480	23,300	29,300	5,470	10,000	6,450	18,300	24,400	5,450	1,400	1,630
15-----	1,280	1,400	22,300	24,400	5,470	9,560	6,140	22,300	19,400	5,430	1,400	1,780
16-----	1,280	1,540	17,300	22,800	4,820	7,530	5,770	22,300	15,400	4,190	1,400	1,780
17-----	1,350	1,400	13,500	32,000	4,790	6,840	5,450	22,300	12,200	4,210	1,520	1,820
18-----	1,160	1,720	11,700	28,700	4,830	6,480	7,570	19,400	9,530	3,320	1,400	1,610
19-----	1,230	1,600	10,000	27,600	5,170	6,110	10,000	17,400	7,910	3,310	1,400	1,580
20-----	1,170	1,580	8,400	27,600	23,900	5,820	13,500	15,900	7,930	2,990	1,410	1,590
21-----	1,100	1,600	8,020	23,200	19,200	9,590	13,100	14,500	7,170	3,030	1,400	1,530
22-----	1,190	1,610	17,800	14,600	17,300	9,980	10,900	11,600	6,050	2,770	1,400	1,790
23-----	1,210	2,110	33,200	10,800	14,700	13,500	9,140	9,560	6,810	2,760	1,650	1,780
24-----	1,500	2,040	30,600	8,700	13,300	22,500	9,140	8,340	7,550	3,030	1,950	2,000
25-----	1,820	2,190	27,600	8,300	10,300	23,500	7,950	7,890	6,810	3,290	2,010	1,580
26-----	1,580	6,200	26,600	7,100	7,970	19,700	6,800	8,330	6,110	3,030	1,900	1,580
27-----	1,560	9,170	23,300	6,300	6,160	23,300	6,070	7,580	6,110	2,450	1,780	1,230
28-----	1,390	5,480	23,900	6,100	6,860	22,800	6,120	6,840	5,450	2,410	2,220	1,350
29-----	1,790	6,770	21,800	5,800	6,860	39,000	6,130	6,830	6,050	2,080	1,560	1,720
30-----	1,580	6,750	19,400	7,970	-----	50,400	6,830	9,930	14,500	2,080	1,280	2,740
31-----	1,570	-----	21,800	13,600	-----	42,500	-----	9,950	-----	2,000	1,180	-----

NOTE.—Gage not read Jan. 6-10, 21-29, and Feb. 22-24; discharge estimated by comparison with record of flow of Muskingum River at Dresden, Ohio.

Monthly discharge of Muskingum River at McConnellsville, Ohio, for the year ending September 30, 1924

[Drainage area, 7, 410 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	2, 010	1, 000	1, 350	0. 182	0. 21
November.....	9, 170	1, 400	2, 640	. 356	. 40
December.....	33, 200	6, 530	18, 400	2. 48	2. 86
January.....	37, 800	5, 800	19, 400	2. 62	3. 02
February.....	23, 900	4, 790	9, 410	1. 27	1. 37
March.....	50, 400	5, 820	16, 800	2. 27	2. 62
April.....	35, 500	5, 450	11, 300	1. 52	1. 70
May.....	22, 300	6, 820	12, 400	1. 67	1. 92
June.....	32, 000	5, 450	13, 300	1. 80	2. 01
July.....	15, 900	2, 000	5, 100	. 688	. 79
August.....	2, 570	1, 180	1, 710	. 231	. 27
September.....	2, 740	1, 080	1, 530	. 206	. 23
The year.....	50, 400	1, 000	9, 460	1. 28	17. 40

SANDY CREEK AT SANDYVILLE, OHIO

LOCATION.—In sec. 8, T. 10 N., R. 1 W., at highway bridge a quarter of a mile south of Sandyville, Tuscarawas County, and a quarter of a mile below mouth of Nimishillen Creek.

DRAINAGE AREA.—481 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1923, to September 30, 1924.

GAGE.—Chain gage on highway bridge, read by H. M. Welker.

DISCHARGE MEASUREMENTS.—Made from bridge at gage or by wading.

CHANNEL AND CONTROL.—Channel straight for 500 feet above and below gage. Banks fairly high and wooded. One channel at all stages. Control is riffle composed of coarse gravel about 700 feet below gage. Zero flow would occur at zero gage height.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.7 feet at 4 p. m. June 29 (discharge, 5,540 second-feet); minimum stage, 1.18 feet at 9 a. m. October 21 (discharge, 69 second-feet).

ICE.—Stage-discharge relation not seriously affected by ice.

REGULATION.—Slight diurnal fluctuation on account of regulation of Nimishillen Creek at Canton.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 100 and 3,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good for medium stages, fair for extremely high and low stages.

Discharge measurements of Sandy Creek at Sandyville, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 12	W. W. Perrin.....	1. 26	85. 6	May. 14	W. A. Werner.....	5. 04	1, 970
Jan. 30	-----do-----	3. 88	1, 220	July 24	E. F. R. Dornbach....	1. 93	268
Mar. 14	-----do-----	2. 86	576	Aug. 21	-----do-----	1. 95	285
Apr. 10	W. A. Werner.....	3. 68	1, 080				

Daily discharge, in second-feet, of Sandy Creek at Sandyville, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	100	111	1,220	1,660	562	680	1,400	1,160	630	1,280	194	130
2-----	110	109	730	995	540	830	1,160	885	630	830	174	259
3-----	100	107	540	1,870	495	995	1,050	680	585	630	154	194
4-----	98	111	454	1,730	518	1,940	940	1,220	680	630	161	164
5-----	85	161	940	1,100	830	3,860	780	830	562	730	315	154
6-----	89	170	1,540	585	1,470	2,640	730	680	940	562	187	139
7-----	81	154	1,800	730	830	1,470	780	585	730	780	174	120
8-----	103	154	1,190	680	562	940	940	540	940	885	174	142
9-----	103	148	1,540	540	495	780	1,220	885	1,940	585	191	194
10-----	96	148	2,430	540	495	780	1,100	730	1,280	474	180	223
11-----	101	116	1,800	4,180	434	780	830	780	1,870	454	170	209
12-----	98	130	1,160	2,920	454	780	730	1,540	2,080	454	174	161
13-----	89	120	1,100	1,540	454	680	630	2,010	1,160	830	167	474
14-----	82	120	1,340	1,050	434	680	585	1,940	885	474	167	296
15-----	107	120	830	780	414	562	540	2,360	680	374	161	198
16-----	99	118	730	1,940	354	474	474	1,730	630	334	142	174
17-----	96	136	680	4,740	334	454	454	1,220	562	315	157	164
18-----	96	148	585	2,570	334	454	1,280	1,280	780	296	151	148
19-----	96	142	518	1,540	334	414	1,800	1,800	1,220	278	142	142
20-----	89	111	495	1,100	680	414	1,220	1,220	730	241	201	154
21-----	75	103	630	630	680	474	885	995	540	259	241	223
22-----	107	103	1,280	630	630	518	940	830	495	354	161	518
23-----	101	145	2,220	562	1,050	1,280	885	680	630	374	180	296
24-----	118	259	1,870	518	334	1,540	630	830	495	278	161	209
25-----	145	209	1,540	540	374	1,160	585	940	585	241	148	180
26-----	133	315	1,050	434	296	1,600	495	730	540	209	142	157
27-----	118	630	885	434	354	2,360	434	630	518	209	124	142
28-----	107	394	1,940	434	518	2,010	495	680	630	201	120	161
29-----	107	296	1,220	414	495	3,140	630	680	4,900	184	120	1,050
30-----	124	1,220	1,100	1,340	-----	4,660	562	680	2,990	167	124	1,600
31-----	120	-----	2,220	885	-----	2,150	-----	680	-----	241	111	-----

NOTE.--Discharge Oct. 1-3 estimated by comparison with record of flow of Nimishillen Creek at North Industry. Gage not read May 30 and Aug. 10; discharge interpolated.

Monthly discharge of Sandy Creek at Sandyville, Ohio, for the year ending September 30, 1924

[Drainage area, 481 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	145	75	102	0.212	0.24
November-----	1,220	103	210	.437	.49
December-----	2,430	454	1,210	2.52	2.90
January-----	4,740	414	1,280	2.66	3.07
February-----	1,470	296	543	1.13	1.22
March-----	4,660	414	1,340	2.79	3.22
April-----	1,800	434	839	1.74	1.94
May-----	2,360	540	1,050	2.13	2.51
June-----	4,900	495	1,060	2.20	2.46
July-----	1,280	167	457	.950	1.10
August-----	315	111	167	.347	.40
September-----	1,600	120	279	.580	.65
The year-----	4,900	75	713	1.48	20.20

NIMISHILLEN CREEK AT NORTH INDUSTRY, OHIO

LOCATION.—Prior to December 13, 1923, in NW. $\frac{1}{4}$ sec. 34, T. 10 N., R. 8 W., at highway bridge at North Industry, Stark County. Beginning December 13, 1923, in SW. $\frac{1}{4}$ sec. 35, just below railroad bridge, a mile downstream from former site and 8 miles above junction with Sandy Creek.

DRAINAGE AREA.—173 square miles at original location, 175 square miles at new location (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1921, to September 30, 1924.

GAGE.—Chain gage on highway bridge at upper location; read by H. E. Deex.

Au water-stage recorder at new location inspected by M. F. Albright.

DISCHARGE MEASUREMENTS.—Made from bridge at North Industry or by wading near gage.

CHANNEL AND CONTROL.—Channel at upper location straight for 300 feet above and below gage. Left bank high and wooded; right bank fairly high and brushy. One channel at all stages. Bed composed of small boulders, gravel, and sand. Control for low water, riffle 200 feet below gage; permanent. Control for high stages is long stretch of channel below gage. Zero flow would occur at gage height 0.7 foot.

Channel at new location straight for 300 feet above and below gage. Banks high. Control for low water, rock ledge across channel just below gage. Control for high stages is long stretch of channel below gage. Zero flow would occur at gage height 0.2 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.9, feet at 7.30 p. m. June 29 (discharge, from extension of rating curve, 2,950 second-feet); minimum stage, 1.20 feet at 4 p. m. October 13 (discharge, 10 second-feet).

1921-1924: Maximum stage recorded on June 29, 1924; minimum stage, 1.20 feet at 9 a. m. August 5, 1922, and 4 p. m. October 13, 1923 (discharge, 10 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Some regulation by steel mills and sewage disposal works at Canton, about 4 miles above gage.

ACCURACY.—Stage-discharge relation permanent. Rating curves for both gages well defined between 30 and 1,500 second-feet extended above. Gage at upper location; read to hundredths twice daily. Operation of water-stage recorder satisfactory, except as noted in footnote to table of daily discharge. Daily discharge prior to December 13, ascertained by applying mean daily gage height to rating table; by means of discharge integrator thereafter. Records prior to December 13 good, excellent thereafter except for extremely high water.

Discharge measurements of Nimishillen Creek at North Industry, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 13	W. W. Perrin.....	0.95	* 44.5	Apr. 10	W. A. Werner.....	2.11	409
Jan. 17	.....do.....	4.28	1,240	11	.....do.....	1.68	234
Feb. 20	.....do.....	1.82	272	May 14	.....do.....	2.77	659
Mar. 14	.....do.....	1.54	177	July 23	E. E. R. Dornbach.....	1.42	* 133
28	.....do.....	2.56	534	Aug. 20	.....do.....	1.15	* 78.4
31	.....do.....	2.14	356	Sept. 10	.....do.....	1.20	* 94.3

* Measured by wading.

Daily discharge, in second-feet, of Nimishillen Creek at North Industry, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42	65	284	590	202	250	315	261	162	500	80	58
2	46	52	210	260	175	335	308	170	178	290	76	126
3	42	34	136	680	162	415	288	152	166	200	70	71
4	42	56	139	485	195	760	248	288	198	164	102	62
5	47	81	565	232	390	990	208	178	152	380	85	63
6	39	59	715	135	475	410	198	144	246	200	72	55
7	34	63	425	150	210	315	216	124	166	240	82	50
8	38	65	212	125	190	215	280	119	425	330	95	58
9	41	59	418	125	168	198	510	252	635	188	74	106
10	35	44	625	212	172	208	220	186	305	175	68	87
11	41	66	346	1,740	170	218	235	204	710	154	75	70
12	41	61	236	865	172	218	292	550	720	145	74	66
13	26	81	368	415	162	210	175	480	352	350	90	184
14	30	61	455	288	160	188	158	650	254	192	76	95
15	20	47	228	228	158	160	152	840	185	154	70	72
16	42	49	164	1,080	140	125	138	465	185	135	78	68
17	36	56	158	1,240	138	128	137	324	157	130	69	65
18	36	56	152	465	132	130	520	442	288	120	70	64
19	35	56	132	340	132	128	530	520	365	110	122	62
20	39	46	140	290	268	125	282	335	200	100	85	80
21	39	44	210	170	220	150	236	244	155	100	76	94
22	44	46	555	168	178	168	285	200	135	140	75	122
23	36	106	810	148	152	375	240	174	162	150	73	78
24	83	114	465	138	128	450	188	273	146	118	72	66
25	72	111	275	144	125	320	162	285	160	105	65	60
26	49	108	228	122	122	640	145	206	152	89	63	57
27	36	154	255	118	178	715	122	182	166	85	60	56
28	32	91	675	112	200	560	152	186	178	84	58	112
29	54	85	350	188	170	1,400	162	205	1,520	84	57	460
30	72	685	235	540	-----	915	174	272	1,620	89	58	535
31	66	-----	900	280	-----	420	-----	182	-----	88	55	-----

NOTE.—Gage not read Nov. 18, 25, Dec. 2 and 9; discharge interpolated. Water-stage recorder not operating July 17-23; daily discharge estimated by comparison with record of Sandy Creek at Sandyville, Ohio.

Monthly discharge of Nimishillen Creek at North Industry, Ohio, for the year ending September 30, 1924

[Drainage area, 175^a square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	83	20	43.1	0.249	0.29
November	685	34	90.0	.520	.58
December	900	132	367	2.05	2.36
January	1,740	112	389	2.22	2.56
February	475	122	188	1.07	1.15
March	1,400	125	387	2.18	2.51
April	530	122	239	1.37	1.53
May	840	119	294	1.68	1.94
June	1,620	135	348	1.99	2.22
July	500	84	174	.994	1.15
August	122	55	75.0	.429	.49
September	535	50	107	.611	.68
The year	1,740	20	224	1.28	17.46

^a 173 square miles was used up to Dec. 12.

STILLWATER CREEK AT UHRICHVILLE, OHIO

LOCATION.—At pumping station a mile south of Uhrichsville and Dennison, in Tuscarawas County, and 6 miles above junction with Tuscarawas River.

DRAINAGE AREA.—367 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 20, 1922, to September 30, 1924.

GAGE.—Vertical staff gage in two sections at pumping station; lower section, reading from 0 to 2.9 feet on post set in concrete on right bank; upper section, reading from 1 to 16 feet, fastened to concrete intake pier in stream near right bank; read by J. C. Morrow. Auxiliary gage at dam 8,000 feet below gage is vertical staff in three sections reading from 0 to 14 feet.

DISCHARGE MEASUREMENTS.—Made from highway bridge below dam or by wading below dam.

CHANNEL AND CONTROL.—Concrete dam in Uhrichsville 8,000 feet below gage is control at all stages. Channel makes sharp bend to left just below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.8 feet at 8 a. m. March 31 (discharge, 4,550 second-feet); minimum stage, 0.35 foot at 4 p. m. August 16 and 19 (discharge, 9.8 second-feet).

1922–1924: Maximum stage recorded on March 31, 1924; minimum stage, 0.26 foot at 4 p. m. August 18, 1922 (discharge, 2.9 second-feet).

ICE.—Stage-discharge relation may be affected by ice during severe winters.

DIVERSIONS.—Municipal water supply for Dennison and Uhrichsville diverted at gage; not included in tables of discharge. See table of monthly mean diversion.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve well defined up to 2,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by The Dennison Water Supply Co.

Discharge measurements of Stillwater Creek at Uhrichsville, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 11	W. W. Perrin	0.39	14.0	May 15	W. A. Werner	5.06	2,070
Mar. 13	do	1.88	578	July 25	E. E. R. Dornbach	.98	226
Apr. 11	W. A. Werner	1.94	650	Aug. 21	do	.43	19.6

Daily discharge, in second-feet, of Stillwater Creek at Uhrichsville, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	35	64	1,010	1,660	525	785	4,170	829	525	697	67	13
2.....	31	71	741	1,800	439	873	2,190	1,100	397	313	75	17
3.....	25	64	460	2,290	292	741	1,190	1,100	355	166	39	29
4.....	19	57	313	2,540	292	785	963	963	313	122	25	53
5.....	17	87	654	3,160	355	1,850	785	918	292	98	19	35
6.....	17	182	1,380	2,690	918	2,490	654	785	334	94	15	21
7.....	15	174	1,750	2,140	963	2,790	654	611	482	142	17	19
8.....	15	142	1,660	1,050	504	2,840	697	439	400	313	14	23
9.....	14	114	1,190	611	355	1,240	697	418	1,010	227	21	25
10.....	14	87	1,380	482	397	697	697	418	1,140	142	33	19
11.....	14	64	1,470	1,330	272	654	654	355	1,470	106	21	23
12.....	15	53	1,190	2,540	334	654	525	741	1,190	87	15	27
13.....	19	46	918	2,840	292	611	439	1,660	785	130	13	29
14.....	25	39	829	2,390	272	568	397	1,940	697	138	11	31
15.....	29	35	785	1,470	231	568	355	2,090	504	110	11	35
16.....	29	35	568	1,190	178	460	313	1,940	376	75	11	31
17.....	31	35	482	2,640	186	334	272	1,280	313	64	11	25
18.....	35	67	418	3,580	182	334	334	873	252	49	13	23
19.....	39	83	355	3,470	194	313	1,100	873	231	35	11	19
20.....	35	67	313	2,540	829	292	1,140	873	215	31	12	19
21.....	33	53	334	1,190	1,560	313	1,050	697	170	27	19	19
22.....	31	42	918	525	1,610	482	741	568	138	33	90	57
23.....	27	49	2,240	525	1,380	829	654	439	154	71	49	98
24.....	33	150	3,690	525	1,010	1,100	525	376	142	272	49	67
25.....	42	292	4,010	439	611	1,050	418	418	110	150	87	31
26.....	71	231	3,160	418	439	1,050	376	418	102	49	35	23
27.....	71	611	1,940	460	376	1,470	313	313	98	33	35	17
28.....	49	697	1,240	219	400	1,610	292	292	110	27	29	15
29.....	35	418	1,560	206	654	1,940	460	334	460	21	25	83
30.....	85	482	1,380	313	-----	3,320	611	741	1,100	19	19	355
31.....	42	-----	1,280	568	-----	4,550	-----	785	-----	75	15	-----

Monthly discharge of Stillwater Creek at Uhrichsville, Ohio, for the year ending September 30, 1924

[Drainage area, 367 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	71	14	30.4	0.083	0.10
November.....	697	35	153	.417	.47
December.....	4,010	313	1,280	3.49	4.02
January.....	3,580	206	1,550	4.22	4.86
February.....	1,610	178	556	1.51	1.63
March.....	4,550	292	1,200	3.27	3.77
April.....	4,170	272	789	2.15	2.40
May.....	2,090	292	825	2.25	2.59
June.....	1,470	98	464	1.26	1.41
July.....	697	19	126	.343	.40
August.....	90	11	29.2	.080	.09
September.....	355	13	42.7	.116	.13
The year.....	4,550	11	589	1.60	21.87

Monthly mean diversion, in second-feet, from Stillwater River at Uhrichsville, Ohio, for the years ending September 30, 1922-1924

Month	1922	1923	1924	Month	1922	1923	1924
October.....		3.70	3.77	May.....		3.88	3.36
November.....		3.59	3.83	June.....		3.91	3.86
December.....		3.59	3.62	July.....	3.17	3.91	3.40
January.....		4.03	4.01	August.....	3.51	3.77	3.51
February.....		4.14	4.12	September.....	3.62	3.92	3.52
March.....		4.09	4.12				
April.....		3.82	3.86	The year.....		3.86	3.71

NOTE.—Monthly mean diversion computed by U. S. Geol. Survey from record of total gallons pumped each month by the Dennison Water Supply Co. This diversion not included in tables of daily and monthly discharge of the river.

MOHICAN RIVER AT GREER, OHIO

LOCATION.—At highway bridge at Greer (railroad station called Edlam), Knox County, and 6 miles below mouth of Lake Fork.

DRAINAGE AREA.—942 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 10, 1921, to September 30, 1924.

GAGE.—Chain gage on bridge, read by R. P. Hipp and Forest Frasher.

DISCHARGE MEASUREMENTS.—Made from highway bridge at gage or by wading.

CHANNEL AND CONTROL.—Channel straight for a quarter of a mile above and half a mile below gage. One channel at all stages. Bed composed of solid rock and gravel. Zero flow would occur at gage height 0.3 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.8 feet at 7.30 a. m. January 11 (discharge, 10,100 second-feet); minimum stage, 1.46 feet at 6.15 p. m. September 1 (discharge, 144 second-feet).

1921-1924: Maximum stage recorded on January 11, 1924; minimum stage, 1.40 feet August 25-27, 1923 (discharge, 130 second-feet).

ICE.—Stage-discharge relation seriously affected by ice.

ACCURACY.—Stage-discharge relation permanent except as affected by ice during January. Rating curve well defined between 300 and 6,000 second-feet, fairly well defined below and extended above. Gage read to hundredths once a day. Daily discharge ascertained by applying daily gage height to rating table. Records good except for extremely high and low water and for periods of ice effect, for which they are fair.

Discharge measurements of Mohican River at Greer, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 8	W. W. Perrin	1.51	124	Aug. 23	E. E. R. Dornbach.....	1.76	241
Mar. 10	.....do.....	3.20	1,390	Sept. 8	.....do.....	1.49	148
May 17	W. A. Werner.....	4.09	2,420				

Daily discharge, in second-feet, of Mohican River at Greer, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	175	216	665	2,510	1,620	1,310	3,300	1,310	665	1,520	224	144
2	169	202	489	1,520	1,410	1,410	2,390	925	708	1,020	202	164
3	169	194	392	2,050	1,260	1,520	1,830	792	665	708	202	180
4	164	209	343	1,830	1,110	2,510	1,410	880	665	665	194	169
5	164	224	1,060	1,210	1,830	5,080	1,160	1,210	665	489	180	164
6	164	241	4,010	1,100	2,270	3,580	1,020	925	835	580	180	158
7	158	258	3,020	1,000	1,410	2,760	925	750	622	1,310	180	148
8	153	250	2,050	900	1,410	2,160	925	580	3,580	1,020	209	164
9	153	224	1,830	850	880	1,830	925	1,260	4,460	792	194	418
10	148	209	3,160	800	750	1,410	925	2,050	8,370	503	180	258
11	153	194	2,270	10,100	665	1,210	750	835	9,320	418	175	233
12	164	194	1,830	6,060	665	1,110	665	1,260	6,060	379	194	202
13	164	194	2,270	4,760	580	1,260	580	1,060	3,860	622	187	250
14	164	187	5,890	2,760	542	1,260	580	2,160	3,160	431	187	224
15	169	187	4,160	2,270	474	970	503	2,510	2,630	366	187	202
16	175	187	2,510	2,160	366	708	489	2,270	1,520	309	187	180
17	175	209	2,160	3,300	489	665	474	1,620	1,110	355	202	202
18	175	224	1,620	2,050	431	622	750	1,310	1,060	332	187	258
19	180	216	1,210	1,620	418	622	1,310	1,830	925	278	175	209
20	175	216	1,020	1,310	1,620	580	1,020	1,620	750	268	180	224
21	169	224	1,620	1,100	1,210	665	792	1,110	622	278	309	250
22	175	224	2,050	900	1,020	750	1,110	792	580	309	216	309
23	175	250	5,720	900	835	1,940	1,160	708	1,410	332	241	224
24	169	224	3,860	850	580	2,050	835	750	1,020	268	216	202
25	194	216	3,300	750	580	2,160	750	1,210	1,020	* 241	175	180
26	250	233	2,510	700	542	3,300	580	835	792	233	169	164
27	224	343	2,160	650	503	3,580	542	708	835	216	164	169
28	209	309	3,160	600	580	2,890	622	580	925	216	158	158
29	202	278	2,270	600	665	7,990	708	708	2,160	216	164	542
30	216	431	1,720	650	-----	9,320	708	925	2,050	250	164	1,060
31	224	-----	2,760	2,050	-----	4,760	-----	750	-----	233	148	-----

NOTE.—Stage-discharge relation seriously affected by ice Jan. 6-10 and 21-30; discharge estimated from study of observer's notes, weather records, and record of flow of near-by streams.

Monthly discharge of Mohican River at Greer, Ohio, for the year ending September 30, 1924

[Drainage area, 942 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	250	148	178	0.189	0.22
November	431	187	232	.246	.27
December	5,890	343	2,360	2.51	2.89
January	10,100	-----	1,930	2.05	2.36
February	2,270	366	921	.978	1.05
March	9,320	580	2,320	2.46	2.84
April	3,300	474	991	1.05	1.17
May	2,510	580	1,170	1.24	1.43
June	9,320	580	2,100	2.23	2.49
July	1,520	216	489	.519	.60
August	309	148	191	.203	.23
September	1,060	144	247	.262	.29
The year	10,100	144	1,100	1.17	15.84

WALHONDING RIVER AT POMERENE, OHIO

LOCATION.—At highway bridge at Pomerene, 2 miles east of Walhonding, Coshocton County, and 4 miles below junction of Mohican and Kokosing Rivers. Honey Run enters from left one-third mile below station.

DRAINAGE AREA.—1,490 square miles (measured on topographic maps).

RECORDS AVAILABLE.—December 1, 1910, to March 31, 1913 (gage heights and results of discharge measurements only published under name of Mohican River at Pomerene); September 9, 1921, to September 30, 1924.

GAGE.—Chain gage on bridge; read by C. R. Rahn. Chain gage at same location but at different datum used 1910–1913.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for half a mile above and below gage. Bed composed of small boulders, gravel, and sand. Control is riffle 500 feet below gage. Right bank high and wooded; left bank fairly high. Zero flow would occur at gage height –1.3 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.5 feet at 3.10 p. m. January 11 (discharge from extension of rating curve, 21,700 second-feet); minimum stage, 1.33 feet at 4 p. m. October 9 (discharge, 210 second-feet).

1921–1924: Maximum stage recorded that of January 11, 1924; minimum stage, 1.42 feet at 2.15 p. m. October 4 and 12.40 p. m. October 5, 1922 (discharge, 192 second-feet).

The flood of March, 1913, reached a stage represented by 21.6 feet, present gage datum, as determined by leveling to high-water mark noted during flood by present observer.

ICE.—Stage-discharge relation seriously affected by ice.

ACCURACY.—Stage-discharge relation permanent except when affected by ice in January. Rating curve well defined up to 6,000 second-feet. Gage read to hundredths once a day. Daily discharge ascertained by applying daily gage height to rating table except as noted in footnote to table of daily discharge. Records good.

Discharge measurements of Walhonding River at Pomerene, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 9	W. W. Perrin.....	1.34	^a 207	July 26	E. E. R. Dornbach.....	1.68	^a 373
Mar. 11	.....do.....	3.30	1,910	Aug. 22	.....do.....	1.64	^a 339
May 15	W. A. Werner.....	5.10	4,350	Sept. 9	.....do.....	1.47	^a 266

^a Measured by wading.

Daily discharge, in second-feet, of Walhonding River at Pomerene, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	266	296	1,100	3,860	2,510	2,240	5,400	2,240	1,160	2,240	367	234
2-----	246	296	810	2,510	2,110	2,370	4,020	1,870	955	1,760	342	318
3-----	242	296	675	5,760	1,870	2,110	3,080	1,420	1,100	1,320	342	296
4-----	238	296	548	3,380	1,760	3,860	2,370	1,760	1,000	1,060	318	296
5-----	238	342	1,320	2,510	2,510	8,980	1,990	1,990	1,000	955	318	274
6-----	246	367	5,760	1,100	4,190	5,580	1,640	1,530	5,220	810	318	254
7-----	231	367	5,580	1,210	2,370	3,860	1,640	1,260	2,240	1,640	296	250
8-----	231	367	3,540	1,320	1,870	3,230	1,530	1,060	3,230	1,420	318	262
9-----	220	342	2,510	1,420	1,640	2,370	1,420	1,100	16,500	1,420	318	296
10-----	224	342	6,310	1,530	810	1,990	1,530	1,530	6,310	905	318	342
11-----	231	318	4,390	20,100	1,100	1,870	1,330	1,260	19,400	765	296	448
12-----	231	296	2,790	12,500	1,100	1,870	1,160	2,510	12,000	675	296	318
13-----	242	296	2,650	6,880	1,000	1,870	1,060	1,990	6,120	810	318	318
14-----	234	274	14,200	4,360	955	1,870	1,000	2,110	4,700	810	296	367
15-----	227	274	6,690	3,080	905	1,640	905	4,700	3,540	675	296	318
16-----	227	274	3,860	3,700	1,000	1,260	858	3,860	2,650	589	296	318
17-----	234	296	3,080	6,690	810	1,100	810	3,080	1,870	548	296	296
18-----	238	296	2,510	4,020	765	1,060	1,100	2,510	1,530	512	296	394
19-----	238	266	1,990	2,790	765	1,000	2,110	2,650	1,530	512	296	342
20-----	246	296	1,640	2,650	4,360	1,000	1,640	2,370	810	475	274	342
21-----	238	342	1,760	1,210	2,510	1,060	1,420	1,990	1,060	448	296	318
22-----	234	296	6,690	1,210	1,870	1,210	1,420	1,530	955	475	342	318
23-----	227	318	11,500	1,640	1,640	3,080	1,760	1,260	2,930	512	318	318
24-----	224	318	7,900	1,420	1,260	3,860	1,420	1,210	1,760	475	342	318
25-----	274	318	4,870	1,100	1,160	3,700	1,260	1,640	1,320	420	342	296
26-----	342	367	3,700	1,760	810	4,190	1,060	1,420	1,210	367	274	274
27-----	318	448	3,080	2,240	1,100	6,880	905	1,160	1,210	367	262	266
28-----	296	512	5,940	1,990	1,210	4,870	905	1,100	1,260	342	258	266
29-----	296	448	4,190	2,110	1,160	16,200	1,260	1,100	6,500	318	246	448
30-----	296	548	2,650	5,760	-----	16,200	1,160	1,530	3,700	342	246	1,210
31-----	296	-----	2,930	3,380	-----	8,760	-----	1,420	-----	394	238	-----

NOTE.—Stage-discharge relation affected by ice Jan. 7-9; discharge interpolated.

Monthly discharge of Walhonding River at Pomerene, Ohio, for the year ending September 30, 1924

[Drainage area, 1,490 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	342	220	251	0.168	0.19
November-----	548	266	337	.226	.25
December-----	14,200	548	4,100	2.75	3.17
January-----	20,100	1,100	3,720	2.50	2.88
February-----	4,360	765	1,620	1.09	1.18
March-----	16,200	1,000	3,910	2.62	3.02
April-----	5,400	810	1,640	1.10	1.23
May-----	4,700	1,060	1,880	1.26	1.45
June-----	19,400	810	3,830	2.57	2.87
July-----	2,240	318	786	.528	.61
August-----	367	238	303	.203	.23
September-----	1,210	234	344	.231	.26
The year-----	20,100	220	1,900	1.27	17.34

KOKOSING RIVER NEAR MILLWOOD, OHIO

LOCATION.—On east line of sec, 3, T. 6 N., R. 10 W., at highway bridge, 3 miles southeast of Millwood, Knox County. Brush Run enters on right three-eighths mile above station.

DRAINAGE AREA.—472 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1921, to September 30, 1924.

GAGE.—Chain gage on bridge; read by Clyde Wharton.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for 600 feet above and below gage.

One channel at all stages. Bed composed of solid rock, boulders, and gravel.

Control consists of boulders and gravel, 400 feet below gage. Zero flow would occur at gage height -0.4 foot.

EXTREMES OF STAGE.—Maximum stage recorded during year, 8.4 feet at 8 a. m. March 29; minimum stage, 1.40 feet October 7, 8, August 28–31, September 1, 6, 8, and 26.

1921–1924: Maximum stage recorded, 9.9 feet on May 13, 1923; minimum stage, 1.36 feet August 25, 1923.

ACCURACY.—Gage read to hundredths once daily. Records reliable. Rating curve not yet developed for high water.

Discharge measurements of Kokosing River near Millwood, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
Oct. 9	W. W. Perrin.....	<i>Feet</i> 1.42	<i>Sec.-ft.</i> 67.3	Aug. 22	E. E. R. Dornbach.....	<i>Feet</i> 1.55	<i>Sec.-ft.</i> 84.6
Mar. 11	do.....	2.54	534	Sept. 9	do.....	1.50	78.3
July 26	E. E. R. Dornbach.....	1.74	138				

Daily gage height, in feet, of Kokosing River near Millwood, Ohio, for the year ending September 30, 1924

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.
1.....	1.44	1.46	2.32	3.33	2.76	3.63	3.65	3.40	2.38	2.86	1.68	1.40
2.....	1.44	1.46	2.02	2.72	2.52	3.14	3.30	2.84	2.32	2.56	1.56	1.62
3.....	1.44	1.46	1.74	4.0	2.38	2.68	3.10	2.54	2.24	2.38	1.56	1.58
4.....	1.42	1.48	1.86	3.58	2.48	3.43	2.90	3.35	2.20	2.24	1.58	1.48
5.....	1.42	1.60	2.98	3.02	2.94	5.6	2.78	2.52	2.20	2.18	1.56	1.48
6.....	1.42	1.58	5.3	2.28	3.68	3.33	2.70	2.40	4.6	2.10	1.54	1.40
7.....	1.40	1.64	4.5	2.72	2.68	3.18	2.60	2.32	3.70	2.30	1.54	1.44
8.....	1.40	1.60	3.48	2.72	2.58	2.78	2.60	2.22	3.00	2.20	1.54	1.40
9.....	1.41	1.58	2.98	2.32	2.48	2.58	2.54	2.34	8.9	2.20	1.52	1.45
10.....	1.42	1.56	4.9	2.30	2.34	2.58	2.50	2.10	5.0	2.18	1.54	1.50
11.....	1.42	1.50	4.7	1.58	2.12	2.56	2.40	2.38	8.5	2.02	1.52	1.48
12.....	1.42	1.50	3.78	5.5	2.18	2.68	2.30	3.35	4.5	1.94	1.50	1.46
13.....	1.44	1.50	2.98	3.78	2.18	2.60	2.26	2.92	3.80	2.14	1.52	1.50
14.....	1.42	1.48	4.9	3.22	2.08	2.70	2.22	3.06	3.30	2.12	1.50	1.50
15.....	1.44	1.48	3.98	2.98	2.04	2.40	2.18	4.3	2.98	1.94	1.50	1.48
16.....	1.44	1.48	3.22	3.04	1.94	2.30	2.12	3.60	2.80	1.90	1.50	1.44
17.....	1.44	1.58	3.04	4.8	2.06	2.20	2.12	3.20	2.66	1.88	1.46	1.46
18.....	1.42	1.50	2.82	3.33	1.98	2.20	2.38	2.78	2.52	1.78	1.50	1.72
19.....	1.44	1.54	2.68	2.98	1.98	2.20	2.70	3.20	2.42	1.78	1.48	1.52
20.....	1.44	1.54	2.76	2.88	5.5	2.20	2.52	2.84	2.32	1.74	1.44	1.50
21.....	1.42	1.52	2.82	2.32	3.38	2.30	2.48	2.62	2.02	1.74	1.46	1.54
22.....	1.44	1.50	6.7	2.72	2.76	2.40	2.52	2.40	2.22	1.84	1.50	1.80
23.....	1.42	1.50	6.8	2.54	2.72	3.55	2.56	2.38	4.20	1.80	1.52	1.52
24.....	1.46	1.56	4.5	2.44	2.62	4.2	2.40	2.40	2.60	1.76	1.46	1.48
25.....	1.52	1.56	3.53	2.36	2.28	3.70	2.30	2.58	2.30	1.68	1.46	1.44
26.....	1.50	1.70	3.22	1.98	2.02	4.6	2.20	2.38	2.56	1.70	1.46	1.40
27.....	1.50	1.88	2.98	3.02	2.22	5.0	2.14	2.18	2.36	1.62	1.44	1.42
28.....	1.48	1.92	5.2	2.84	2.68	3.90	2.20	2.30	2.34	1.60	1.40	1.50
29.....	1.48	1.74	3.48	2.82	2.58	8.4	2.38	2.32	7.4	1.56	1.40	1.80
30.....	1.50	2.08	3.02	5.9	-----	6.8	2.40	2.92	3.60	1.56	1.40	1.98
31.....	1.48	-----	3.33	3.38	-----	4.8	-----	2.40	-----	1.72	1.40	-----

KILLBUCK CREEK AT LAYLAND, OHIO

LOCATION.—In T. 7 N., R. 7 W., at highway bridge at Layland, Coshocton County, $4\frac{1}{2}$ miles southeast of Killbuck. Big Run enters on right three-tenths of a mile below gage.

DRAINAGE AREA.—507 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1923, to September 30, 1924.

GAGE.—Chain gage on highway bridge; read by B. T. Layland.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel curved above but straight for 400 feet below gage. Banks high and brushy. Control for low water is riffle of boulders and gravel just below gage. Control for higher stages is long stretch of channel below gage. Zero flow would occur at zero gage height.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period of record, 14.4 feet at 10 a. m. January 12 (discharge, 2,940 second-feet); minimum stage, 1.16 feet at 4.30 p. m. October 20 (discharge, 17 second-feet).

The highest known flood occurred in March, 1913, and reached a stage corresponding to gage height 22.6 feet.

ICE.—Stage-discharge relation not seriously affected by ice except during severe winters.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve well defined below 2,100 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Killbuck Creek at Layland, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 2	Perrin and Dornbach..	1.67	31.6	May 15	W. A. Werner.....	10.66	1,610
10	W. W. Perrin.....	2.01	51.6	July 25	E. E. R. Dornbach....	3.46	184
23	-----do.....	2.02	40.3	Aug. 22	-----do.....	3.42	178
Apr. 19	F. A. Morgan.....	8.45	1,000	Sept. 9	-----do.....	2.44	81.0

Daily discharge, in second-feet, of Killbuck Creek at Layland, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	88	422	825	825	550	2,120	710	484	2,020	144	66
2	30	88	364	825	619	584	2,050	655	422	1,630	131	108
3	54	70	297	825	484	637	1,850	516	422	729	118	123
4	45	74	407	1,360	484	885	1,380	619	407	584	113	98
5	58	83	584	1,240	601	1,470	927	691	378	407	118	51
6	62	108	691	1,090	949	1,920	710	533	786	364	128	88
7	48	103	865	927	971	1,950	637	422	767	407	133	74
8	48	88	865	673	655	1,850	619	378	710	825	123	74
9	45	88	905	452	500	691	584	378	1,920	452	113	88
10	45	83	1,140	422	452	673	601	550	2,330	437	108	166
11	45	83	1,040	2,400	452	637	533	710	2,660	271	103	247
12	48	78	865	2,850	364	655	533	786	2,620	235	88	133
13	48	70	865	2,620	350	655	422	885	2,440	284	83	211
14	40	70	1,380	2,020	336	637	392	885	3,150	271	123	177
15	51	70	1,330	1,880	310	601	364	1,560	1,780	223	108	123
16	54	70	1,300	1,880	297	452	336	2,080	825	211	108	98
17	54	70	1,170	2,660	284	392	310	2,080	691	188	118	93
18	42	78	927	2,660	259	378	422	1,920	601	188	128	223
19	40	78	500	2,050	259	378	993	1,880	601	177	45	58
20	32	83	468	1,530	993	378	805	1,750	500	166	28	30
21	58	83	484	786	949	422	655	1,240	407	113	155	113
22	62	83	500	655	691	584	637	786	407	247	177	144
23	51	83	533	655	468	865	710	637	533	310	133	98
24	58	88	971	533	422	1,120	567	673	949	247	123	38
25	93	177	1,190	484	350	1,240	468	748	885	188	93	98
26	118	199	1,690	468	310	1,410	407	584	533	155	83	78
27	88	223	1,380	452	336	1,600	364	500	484	144	78	93
28	74	223	1,190	452	364	1,780	364	468	584	133	74	619
29	70	177	1,120	407	407	2,330	437	468	2,330	133	70	748
30	78	271	993	949	-----	2,740	584	584	2,370	128	66	516
31	88	-----	825	971	-----	2,260	-----	567	-----	144	66	-----

NOTE.—No record Oct. 1 and Aug. 2; discharge estimated by comparison with that of Walhonding River and Sandy Creek.

Monthly discharge of Killbuck Creek at Layland, Ohio, for the year ending September 30, 1924

[Drainage area, 507 square miles.]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	118	30	56.7	0.112	0.13
November	271	70	108	.213	.24
December	1,690	297	879	1.73	1.99
January	2,850	407	1,230	2.43	2.80
February	993	259	508	1.00	1.08
March	2,740	378	1,060	2.09	2.41
April	2,120	310	726	1.43	1.60
May	2,080	378	879	1.73	1.99
June	2,660	378	1,100	2.17	2.42
July	2,020	113	387	.763	.88
August	177	28	106	.209	.24
September	748	30	162	.320	.36
The year	2,850	28	601	1.19	16.14

LICKING RIVER AT TOBOSO, OHIO

LOCATION.—In T. 2 N., R. 10 W., at covered highway bridge at Toboso, Licking County, and 3 miles below mouth of Rocky Fork.

DRAINAGE AREA.—672 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 20, 1921, to September 30, 1924.

GAGE.—Chain gage on bridge; read by A. B. Lebold.

DISCHARGE MEASUREMENTS.—Made from bridge, from cable 2,000 feet above gage, or by wading.

CHANNEL AND CONTROL.—Channel straight for 500 feet above and below gage. One channel at all stages. Banks high. Bed composed of gravel and sand. Control for low water is riffle 500 feet below gage; shifting. Control for higher stages is long stretch of river below gage.

EXTREMES OF DISCHARGE.—1921-1924: Maximum stage recorded, 17 feet at 7.15 p. m. March 29, 1924 (discharge, 15,600 second-feet); minimum discharge recorded, 74 second-feet, at 8.30 a. m. September 28, 1924.

ICE.—Stage-discharge relation not seriously affected by ice except during unusually severe winters.

REGULATION.—Some regulation at Buckeye Lake above gage.

ACCURACY.—Stage-discharge relation changed during high water on March 29; not affected by ice. Rating curves well defined up to 9,000 second-feet and extended above. Gage read to hundredths once daily, additional readings made during extremely high water. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Licking River at Toboso, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
Nov. 7	W. W. Perrin.....	Feet 2.75	Sec.-ft. ^a 332	July 29	E. E. R. Dornbach....	Feet 2.46	Sec.-ft. ^a 154
Mar. 30	Lasley Lee.....	11.55	8,720	Aug. 28	.....do.....	2.34	^a 111
Apr. 2	.....do.....	4.66	1,350				

^a Measured by wading.

Daily discharge, in second-feet, of Licking River at Toboso, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	425	502	1,010	1,840	1,010	945	2,060	2,240	758	428	146	85
2.....	296	425	760	1,220	760	760	1,490	1,340	630	348	133	96
3.....	232	375	612	3,380	612	612	1,270	922	541	322	126	102
4.....	212	350	530	2,730	585	670	1,060	1,130	541	304	123	85
5.....	193	425	2,910	2,010	730	6,480	922	1,060	484	286	117	85
6.....	179	450	6,700	1,010	1,360	2,730	856	790	2,420	273	114	85
7.....	179	350	5,380	945	730	1,520	758	600	1,970	286	120	82
8.....	168	325	2,460	730	585	945	725	512	5,540	295	114	82
9.....	165	286	1,680	640	450	730	693	484	11,700	268	111	85
10.....	165	258	5,820	640	475	700	630	484	5,540	260	114	85
11.....	165	224	3,090	12,200	425	640	600	484	3,200	226	108	85
12.....	165	216	1,920	5,600	450	820	541	4,220	2,600	218	111	85
13.....	165	201	1,440	2,910	425	760	512	2,060	1,890	2,600	111	102
14.....	375	261	6,040	1,680	400	730	484	1,730	1,060	630	108	93
15.....	400	193	2,550	1,220	400	585	456	3,000	790	600	105	85
16.....	400	193	1,520	1,520	350	502	428	1,570	692	374	102	79
17.....	350	209	1,220	4,280	276	450	428	1,130	630	277	111	96
18.....	350	250	1,010	2,280	400	450	692	856	512	243	105	93
19.....	375	286	880	1,440	400	450	1,130	1,340	456	226	102	90
20.....	425	250	820	1,360	7,470	400	823	990	401	203	105	93
21.....	450	241	820	820	2,190	612	660	823	374	195	102	108
22.....	450	228	7,580	760	1,150	820	660	600	374	192	96	96
23.....	502	241	8,060	640	700	1,600	660	541	3,400	184	102	90
24.....	558	375	4,280	558	585	3,880	570	541	790	170	96	85
25.....	558	375	2,370	585	585	2,460	512	512	541	178	102	79
26.....	585	350	1,840	425	450	3,880	484	484	401	164	96	76
27.....	558	880	1,440	585	585	3,190	428	456	484	160	90	76
28.....	530	700	4,080	558	945	2,010	512	512	428	153	108	74
29.....	502	530	2,190	425	760	13,400	823	512	725	146	90	218
30.....	502	945	1,520	2,640	-----	9,740	630	1,890	570	126	88	174
31.....	475	-----	1,840	1,520	-----	3,400	-----	1,200	-----	153	88	-----

Monthly discharge of Licking River at Toboso, Ohio, for the year ending September 30, 1924

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October.....	585	165	357	May.....	4,220	456	1,130
November.....	945	193	361	June.....	11,700	374	1,680
December.....	8,060	530	2,720	July.....	2,600	126	338
January.....	12,200	425	1,910	August.....	146	88	108
February.....	7,470	276	905	September.....	218	74	94.9
March.....	13,400	400	2,160	The year.....	13,400	74	1,050
April.....	2,060	428	750				

HOCKING RIVER BASIN

HOCKING RIVER NEAR LANCASTER, OHIO

LOCATION.—In SW. $\frac{1}{4}$ sec. 28, T. 14 N., R. 18 W., at highway bridge a quarter of a mile west of Clark Crossing and 5 miles southeast of Lancaster, Fairfield County. Rush Creek enters on left $2\frac{1}{2}$ miles below station.

DRAINAGE AREA.—92.8 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 26, 1923, to September 30, 1924.

GAGE.—Chain gage on highway bridge; read by H. R. Snoko.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for 200 feet above and below gage. Banks fairly high, brushy. Control for low water is gravel riffle just below gage. Control for high stages is long stretch of channel below gage. Zero flow would occur at gage height 1 foot.

EXTREMES OF STAGE.—Maximum stage recorded during period, 8.8 feet at 7.30 a. m. March 29; minimum stage, 1.42 feet at 9 p. m. September 27, 1923.

ACCURACY.—Gage read to hundredths twice daily. Record reliable. Rating curve not yet developed for high water.

Discharge measurements of Hocking River near Lancaster, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Sept. 26	Perrin and Dornbach.....	1.51	31.4	Aug. 1	E. E. R. Dornbach.....	1.76	29.3
Nov. 9	W. W. Perrin.....	1.62	37.0	Sept. 23	W. P. Ansley.....	1.58	17.8
23	Lee and Morgan.....	2.07	96.0				

Daily gage height, in feet, of Hocking River near Lancaster, Ohio, for the period September 26, 1923, to September 30, 1924

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		1.63	1.59	1.97	2.90	1.99	1.88	2.98	2.19	2.11	1.83	1.74	1.56
2		1.57	1.54	1.84	2.45	1.89	1.88	2.81	2.73	2.02	1.81	1.72	1.80
3		1.56	1.54	1.80	7.2	1.60	1.88	2.68	4.2	2.02	1.82	1.69	1.55
4		1.54	2.08	1.80	3.48	2.03	2.05	2.50	3.23	2.03	1.82	1.68	1.54
5		1.51	1.89	5.0	2.88	2.32	5.9	2.48	2.68	1.95	1.82	1.68	1.58
6		1.51	1.74	7.6	2.22	2.14	3.23	2.50	2.33	4.9	1.80	1.65	1.60
7		1.50	1.69	3.52	2.30	1.84	2.56	2.43	2.28	2.80	1.91	1.60	1.58
8		1.50	1.64	2.82	2.10	1.77	2.33	2.38	2.26	3.71	1.81	1.65	1.60
9		1.50	1.60	4.1	2.10	1.78	2.12	2.35	2.31	3.13	1.79	1.66	1.60
10		1.47	1.58	4.6	2.09	1.78	2.17	2.36	2.73	2.84	1.74	1.63	1.64
11		1.49	1.57	3.12	6.8	1.75	2.03	2.23	4.5	2.80	1.74	1.58	1.57
12		1.48	1.54	2.62	3.46	1.76	2.10	2.16	5.0	2.50	1.74	1.56	1.55
13		1.48	1.52	4.2	2.86	1.71	2.06	2.14	4.6	2.28	1.74	1.58	1.56
14		1.47	1.52	3.04	2.30	1.67	2.02	2.14	5.1	2.23	1.72	1.64	1.56
15		1.54	1.51	2.52	2.39	1.60	2.10	2.14	4.6	2.20	1.74	1.62	1.60
16		1.48	1.53	3.38	4.9	1.66	1.88	2.13	4.5	2.25	1.75	1.58	1.58
17		1.46	1.64	2.26	4.5	1.86	1.80	2.14	4.5	2.14	1.78	1.62	1.57
18		1.45	1.67	2.12	2.65	1.98	1.88	3.16	2.57	2.04	1.78	1.60	1.57
19		1.47	1.58	2.06	2.39	4.2	1.93	3.08	2.41	1.98	1.78	1.55	1.57
20		1.46	1.56	2.09	2.35	6.0	1.88	2.53	2.31	1.97	1.77	1.56	1.57
21		1.46	1.58	2.48	1.99	2.83	3.56	2.37	2.22	1.96	1.74	1.56	1.58
22		1.46	1.54	7.0	2.00	2.73	3.20	2.27	2.21	1.94	1.78	1.56	1.59
23		1.45	1.90	5.0	1.99	2.13	2.86	2.22	2.17	2.56	1.76	1.56	1.60
24		1.78	1.85	3.82	1.98	1.91	1.63	2.16	2.13	2.10	1.72	1.57	1.60
25		1.84	1.70	2.95	2.49	1.84	2.78	2.13	2.09	1.91	1.58	1.62	1.55
26	1.52	1.62	2.68	2.65	2.01	1.86	3.49	2.07	2.11	1.87	1.64	1.61	1.60
27	1.45	1.52	2.60	2.52	1.76	1.94	3.07	2.03	2.11	3.28	1.76	1.54	1.60
28	4.71	1.59	1.89	4.0	1.79	1.91	2.45	2.25	2.08	2.12	1.74	1.57	1.75
29	2.04	1.51	1.75	2.65	1.82	1.88	8.8	2.35	2.10	1.93	1.72	1.57	1.81
30	1.73	1.61	2.75	2.47	4.4		4.5	2.13	2.13	1.87	1.72	1.53	1.90
31		1.67		5.8	2.65		3.43		2.11		1.73	1.56	

HOCKING RIVER AT ATHENS, OHIO

LOCATION.—At highway bridge on Mill Street, about three-fourths mile east of business section of Athens, Athens County. Margaret Creek enters on right $3\frac{1}{2}$ miles above station.

DRAINAGE AREA.—944 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 3, 1915, to September 30, 1924.

GAGE.—Chain gage on highway bridge; installed July 26, 1922; read by Miss Marjorie France. Elevation of zero of gage is 615.59 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for 700 feet above and below gage. Right bank high. On left bank paved highway to bridge is overflowed at gage height 17 feet. Bed of stream rocky. Control for low water is riffle at ruins of old timber mill dam 200 feet below gage. Control for high water is stretch of channel below gage. Zero flow would occur at gage height 1.9 feet \pm 0.1 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 18.6 feet at 5 p. m. March 30 (discharge from extension of rating curve, 13,400 second-feet); minimum stage, 2.36 feet at 5 p. m. August 19 (discharge, 18 second-feet).

1915-1924: Maximum stage recorded, 21.8 feet at 7 a. m. April 16, 1922 (discharge from extension of rating curve, 20,500 second-feet); minimum stage on August 19, 1924.

Maximum known stage occurred in January, 1907, gage height 26.7 feet as determined by levels to high-water mark in house on Mill Street (discharge not determined).

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined up to 12,000 second-feet, extended above. Gage read twice daily to hundredths. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by United States Engineer Corps.

Discharge measurements of Hocking River at Athens, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge
July 31	E. E. R. Dornbach -----	<i>Feet</i>	<i>Sec.-ft.</i>
Sept. 22	W. P. Ansley -----	2.98	126
		2.93	115

Daily discharge, in second-feet, of Hocking River at Athens, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	320	158	1,380	9,710	830	765	2,640	3,160	735	420	164	85
2.....	251	215	960	5,930	798	765	1,800	2,500	675	345	138	92
3.....	219	227	705	8,810	675	705	705	1,310	615	311	127	101
4.....	188	181	645	10,900	705	705	1,240	4,360	585	320	122	104
5.....	155	475	2,780	7,370	1,310	5,120	1,030	3,240	530	320	122	77
6.....	149	735	8,270	1,520	2,010	7,910	960	1,590	2,850	275	114	73
7.....	138	895	10,200	1,100	1,170	2,500	960	1,240	3,880	395	119	73
8.....	124	645	5,840	1,100	960	1,590	830	1,100	1,660	395	116	79
9.....	138	370	2,710	960	645	1,100	765	1,100	6,920	284	104	73
10.....	144	530	5,660	895	645	1,030	765	895	8,900	243	104	75
11.....	152	267	6,290	8,450	585	1,030	705	1,030	3,960	227	97	77
12.....	135	203	2,430	10,500	585	1,100	615	7,910	1,800	235	85	77
13.....	116	192	1,660	4,760	585	960	585	10,300	1,310	675	104	77
14.....	114	199	3,000	1,800	530	895	530	5,210	1,100	475	116	83
15.....	135	192	1,940	1,380	585	830	1,100	3,640	830	298	122	94
16.....	132	251	1,380	3,240	530	705	645	2,360	765	243	114	81
17.....	109	223	1,240	8,360	558	645	585	1,660	765	227	90	79
18.....	127	284	1,100	4,850	615	615	2,080	1,240	645	188	53	73
19.....	132	345	895	2,010	1,660	585	3,720	1,240	530	124	19	75
20.....	109	298	1,030	1,060	10,100	585	1,730	1,450	475	161	83	65
21.....	116	275	1,240	1,170	11,300	6,650	1,380	960	420	188	88	97
22.....	111	243	5,840	895	3,640	7,100	1,030	895	370	475	94	119
23.....	111	275	10,700	798	1,310	3,880	960	735	475	705	99	138
24.....	111	1,100	10,600	798	1,100	2,080	798	675	705	255	146	116
25.....	135	645	4,440	830	1,030	1,660	705	705	448	175	178	116
26.....	345	705	2,570	798	830	2,150	585	675	370	164	122	88
27.....	215	2,220	1,800	675	830	2,920	558	615	1,940	164	104	83
28.....	203	1,380	5,210	558	765	2,220	615	798	1,800	146	99	65
29.....	171	765	4,600	530	765	8,450	960	675	645	144	90	101
30.....	149	1,240	2,080	830	-----	12,820	798	1,240	502	127	97	370
31.....	132	-----	9,530	960	-----	10,700	-----	1,100	-----	127	97	-----

Monthly discharge of Hocking River at Athens, Ohio, for the year ending September 30, 1924

[Drainage area, 944 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	345	109	158	0.167	0.19
November.....	2,220	158	524	.555	.62
December.....	10,700	645	3,830	4.06	4.68
January.....	10,900	530	3,360	3.56	4.10
February.....	11,300	530	1,640	1.74	1.88
March.....	12,800	585	2,930	3.10	3.57
April.....	3,720	530	1,080	1.14	1.27
May.....	10,300	615	2,120	2.25	2.59
June.....	8,900	370	1,570	1.66	1.85
July.....	705	124	285	.302	.35
August.....	178	19	107	.113	.13
September.....	370	65	96.8	.103	.11
The year.....	12,800	19	1,480	1.57	21.34

KANAWHA RIVER BASIN**NEW RIVER AT EGGLESTON, VA.****LOCATION.**—At highway bridge at Eggleston, Giles County.**DRAINAGE AREA.**—2,920 square miles.**RECORDS AVAILABLE.**—October 1, 1914, to September 30, 1924.**GAGE.**—Chain gage attached to downstream side of bridge; read by J. A. Bishop.**DISCHARGE MEASUREMENTS.**—Made from upstream side of bridge.**CHANNEL AND CONTROL.**—Stream bed composed of rock covered with silt.Primary control is rock ledge about $1\frac{1}{4}$ miles below gage; permanent.**EXTREMES OF DISCHARGE.**—Maximum stage recorded during year, 14.98 feet at 8 a. m. January 17 (discharge, 41,200 second-feet); minimum stage, 2.70 feet at 5 p. m. October 21 (discharge, 905 second-feet).

1914-1924: Maximum stage recorded, 39.5 feet July 16, 1916 (discharge, about 152,000 second-feet); minimum stage, 2.37 feet August 29, 1917 (discharge, 652 second-feet). The flood of 1878 reached a stage of about 40 feet on present gage.

ICE.—Stage-discharge relation affected by ice during severe winters.**ACCURACY.**—Stage-discharge relation practically permanent, except as affected by ice January 8 and 9. Rating curve well defined between 600 and 45,000 second-feet; extended beyond these limits. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except for periods of ice effect. Records good.

The following discharge measurement was made by Wiggins and Mussey:

April 22, 1924: Gage height, 5.74 feet; discharge, 6,580 second-feet.

Daily discharge, in second-feet, of New River at Eggleston, Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.-----	2,810	2,450	1,970	7,490	5,260	5,490	8,320	4,380	5,040	2,810	1,750	1,540
2.-----	2,280	1,970	2,450	7,220	5,260	5,490	7,490	4,600	4,600	2,810	1,750	1,610
3.-----	1,820	1,540	1,970	6,960	5,040	5,720	6,700	4,600	3,190	2,280	1,900	1,540
4.-----	1,340	1,280	1,680	8,040	3,760	5,720	6,200	3,760	2,450	2,280	2,120	1,470
5.-----	1,400	1,820	1,750	8,610	4,820	6,200	5,960	3,760	2,450	3,000	2,450	1,470
6.-----	1,280	3,380	2,120	14,900	5,040	8,610	6,700	4,600	2,810	3,760	2,810	1,470
7.-----	1,280	4,380	2,630	10,800	5,260	12,400	11,100	4,170	3,000	5,260	1,970	1,400
8.-----	1,340	3,760	3,380	9,200	4,820	11,400	8,328	3,000	3,190	20,400	1,680	1,170
9.-----	1,340	2,450	3,960	9,500	3,760	5,260	7,760	4,170	3,380	18,800	1,610	1,030
10.-----	1,220	1,540	3,960	10,800	4,600	5,040	6,960	4,170	2,450	11,800	1,680	1,220
11.-----	1,220	1,470	3,960	14,900	4,600	5,260	6,700	6,200	4,170	9,200	1,540	1,220
12.-----	1,220	1,400	3,760	28,500	4,380	5,040	6,200	10,400	3,960	5,260	1,610	1,280
13.-----	1,280	1,610	3,000	13,800	3,760	4,170	5,720	11,800	3,960	4,820	1,540	1,220
14.-----	1,340	1,610	2,280	6,200	2,120	4,170	5,260	8,320	3,760	4,820	1,610	1,220
15.-----	1,280	1,540	1,820	10,800	2,120	4,810	5,490	6,200	3,380	4,600	3,000	1,470
16.-----	1,340	1,400	1,900	18,400	3,190	3,960	5,490	6,450	3,000	4,170	2,810	1,340
17.-----	1,280	1,280	1,820	35,900	2,280	3,760	5,720	5,960	3,000	3,570	1,680	1,280
18.-----	1,280	1,400	1,900	17,200	3,190	4,170	5,960	4,600	3,000	2,630	1,680	1,340
19.-----	1,280	1,540	1,970	10,100	4,380	5,040	6,450	4,380	2,450	1,750	1,540	1,820
20.-----	1,400	1,340	1,970	8,900	4,380	5,260	9,500	5,260	2,120	1,750	1,680	3,190
21.-----	1,170	1,470	1,820	7,760	4,820	5,960	7,490	5,960	1,820	2,630	1,680	5,720
22.-----	985	1,470	1,750	5,490	5,260	6,960	6,700	5,960	1,610	3,760	1,610	5,490
23.-----	1,120	1,610	1,820	5,490	5,490	6,700	5,720	6,450	1,820	4,170	1,540	5,040
24.-----	1,220	1,820	2,120	5,260	5,040	5,490	4,600	6,200	1,900	3,960	1,470	4,170
25.-----	2,810	1,750	2,450	5,260	4,820	5,260	5,040	5,960	3,000	1,750	1,970	1,970
26.-----	3,000	1,680	3,380	6,450	4,600	5,260	4,600	5,490	3,000	1,820	4,380	2,630
27.-----	3,380	1,610	3,000	7,760	4,380	5,040	4,170	5,960	2,280	1,750	4,600	2,280
28.-----	3,380	1,540	2,280	11,800	4,380	4,820	4,380	4,380	1,970	1,610	3,000	4,170
29.-----	3,380	1,470	1,820	8,900	4,600	8,600	4,170	5,040	1,900	1,610	1,610	9,810
30.-----	3,000	1,610	2,630	5,040	-----	11,400	3,960	5,260	1,970	1,610	1,400	31,000
31.-----	2,810	-----	4,170	5,260	-----	11,400	-----	5,040	-----	1,610	1,400	-----

NOTE.—Stage-discharge relation affected by ice Jan. 8 and 9; discharge estimated by study of weather records and observer's notes.

Monthly discharge of New River at Eggleston, Va., for the year ending September 30, 1924

[Drainage area, 2,920 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,380	.985	1,780	0.610	0.70
November	4,380	1,280	1,840	.630	.70
December	4,170	1,680	2,500	.856	.99
January	35,900	5,040	10,700	3.66	4.22
February	5,490	2,120	4,320	1.48	1.60
March	12,400	3,760	6,260	2.14	2.47
April	11,100	3,960	6,290	2.15	2.40
May	11,800	3,000	5,600	1.92	2.21
June	5,040	1,610	2,890	.990	1.10
July	20,400	1,610	4,900	1.68	1.94
August	4,600	1,400	2,030	.695	.80
September	31,000	1,030	3,390	1.16	1.29
The year	35,900	985	4,380	1.50	20.42

NEW RIVER NEAR HINTON, W. VA.

LOCATION.—At site of Packs Ferry (now abandoned), on Sims farm in Summers County, $3\frac{1}{2}$ miles above Hinton. Greenbrier River enters from right 2 miles below gage.

DRAINAGE AREA.—4,560 square miles (measured on topographic maps).

RECORDS AVAILABLE.—December 1, 1923, to September 30, 1924.

GAGE.—Sloping and vertical staff gage on right bank about 170 feet below cable on Sims farm. Sloping staff gage, 1 to 9.25 feet; vertical staff gage in two sections, 9.25 to 17.50 feet and 16.50 to 24 feet. Gage read by J. A. Sims.

DISCHARGE MEASUREMENTS.—Made from cable 170 feet upstream from sloping staff gage.

CHANNEL AND CONTROL.—Bed of stream apparently ledge rock, probably permanent. One channel at all stages, straight for about 1,000 feet above and below cable. Flow smooth with moderate velocities.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period of record, 13.03 feet at 5.30 p. m. January 17 (discharge, 49,700 second-feet); minimum stage, 2.50 feet at 5.30 p. m. September 14 (discharge, 1,500 second-feet).

The floods of April 21 and May 23, 1901, reached a stage of about 24.2 feet on present gage. The flood of 1878 probably reached a higher stage.

ICE.—No appreciable ice effect during period of record.

REGULATION.—Probably some regulation at low and medium low stages by power plants above station.

ACCURACY.—Stage-discharge relation probably permanent. Rating curve well defined between 700 and 40,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of New River near Hinton, W. Va., during the period ending September 30, 1924

Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Apr. 17	Horton and Wiggins	4.85	6,800
May 14	J. J. Dirzulaitis	6.52	12,800

Daily discharge, in second-feet, of New River at Hinton, W. Va., for the year ending September 30, 1924

Day	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,970	19,500	6,100	8,260	15,200	6,100	6,700	2,810	2,250	2,430
2	4,210	13,900	5,530	9,620	13,500	6,700	7,940	3,970	2,430	2,080
3	3,490	13,100	6,700	9,260	12,300	7,000	6,100	2,610	2,610	2,080
4	3,250	16,200	4,990	9,260	10,700	6,400	5,260	3,970	3,030	2,430
5	3,730	13,500	5,800	9,260	8,900	5,530	4,990	4,210	3,730	2,430
6	5,530	9,980	5,530	9,980	8,260	5,530	4,720	4,990	3,970	2,250
7	6,100	7,620	6,400	15,700	13,500	5,530	3,490	5,530	3,970	2,080
8	6,400	5,260	6,700	13,500	14,800	4,990	4,720	12,700	3,030	2,810
9	4,990	4,990	4,990	11,100	13,100	5,800	11,500	23,700	2,610	1,750
10	4,720	5,530	4,990	9,620	11,500	7,000	17,600	14,300	2,430	1,830
11	4,210	9,980	4,450	7,940	10,300	7,620	12,300	9,980	2,610	2,430
12	4,450	30,900	4,450	7,620	9,620	17,600	9,980	7,300	2,610	2,080
13	3,970	21,600	4,990	6,700	9,260	19,000	7,620	6,400	3,030	1,600
14	3,490	13,900	4,450	6,400	8,260	13,900	11,100	5,260	3,490	1,600
15	3,490	9,980	4,450	6,400	7,620	13,100	7,940	5,530	3,490	1,830
16	3,970	10,700	3,490	6,100	7,000	12,300	7,300	4,990	3,730	1,750
17	3,250	43,000	3,970	5,800	6,400	10,700	5,800	4,450	3,490	2,000
18	2,810	28,100	4,450	6,700	7,000	9,260	4,990	4,990	2,610	2,080
19	3,730	18,100	6,400	8,580	11,500	8,580	4,990	3,970	2,610	2,080
20	2,810	13,500	11,500	8,900	13,900	7,940	4,450	4,720	2,430	2,250
21	3,030	10,700	11,500	8,900	11,500	7,620	4,210	3,730	2,810	2,810
22	3,250	7,620	12,300	11,100	9,980	11,100	3,730	4,210	2,610	4,990
23	3,030	6,100	9,260	10,700	8,580	9,260	3,250	3,970	2,430	6,400
24	3,730	6,100	8,260	9,980	6,700	7,000	3,250	4,450	3,030	6,700
25	3,490	6,400	6,400	9,620	6,400	6,400	3,730	3,970	3,030	4,450
26	3,730	8,900	6,700	9,620	6,400	5,530	3,730	3,030	5,800	3,250
27	3,490	8,580	7,000	9,980	6,100	5,530	3,970	3,030	5,530	2,810
28	4,990	7,620	8,580	8,580	7,000	6,100	3,730	2,610	4,720	2,610
29	7,300	6,400	8,580	21,100	6,100	7,300	4,210	3,030	3,970	6,400
30	4,990	5,260	23,700	7,300	7,300	8,580	3,250	2,430	2,430	44,300
31	8,260	6,100	19,500	7,000	7,000	7,000	2,610	2,250	2,250	

Monthly discharge of New River at Hinton, W. Va., for the year ending September 30, 1924

[Drainage area, 4,560 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
December	8,260	2,810	4,250	0.932	1.07
January	43,000	4,990	12,600	2.76	3.18
February	12,300	3,490	6,510	1.43	1.54
March	23,700	5,800	10,300	2.26	2.61
April	15,200	6,100	9,620	2.11	2.35
May	19,000	4,990	8,450	1.85	2.13
June	17,600	3,250	6,220	1.36	1.52
July	23,700	2,430	5,600	1.23	1.42
August	5,800	2,250	3,190	.700	.81
September	44,300	1,600	4,220	.925	1.03

GREENBRIER RIVER AT ALDERSON, W. VA.

LOCATION.—At reinforced concrete arch highway bridge at Alderson, Monroe County, half a mile above mouth of Muddy Creek.

DRAINAGE AREA.—1,340 square miles.

RECORDS AVAILABLE.—July 30, 1895, to June 30, 1906; May 10, 1907, to September 30, 1924.

GAGE.—Chain gage attached to downstream side of bridge near center of second span from left side of river; read by W. C. England.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—The channel and control are composed of coarse gravel and are practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.60 feet at 5 p. m. May 12 (discharge, 32,000 second-feet); minimum stage, 1.98 feet October 17 (discharge, 117 second-feet).

1895–1924: Maximum stage recorded, 22.0 feet during night of March 13–14, 1918 (discharge, roughly 60,000 second-feet); minimum discharge recorded, 46 second-feet September 30 to October 6, October 17, 24, 27–31, and November 7, 10, 11, 1904 (gage height, 1.40 feet).

ICE.—Stage-discharge relation occasionally affected by ice for short periods during severe winters.

ACCURACY.—Stage-discharge relation fairly permanent; not affected by ice during year. Rating curve fairly well defined between 100 and 25,000 second-feet and extended beyond these limits. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except for extreme low stages, for which they are fair.

Discharge measurements of Greenbrier River at Alderson, W. Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge
Apr. 18	Wiggins and Horton	Feet 3 29	Sec.-ft. 1,520
May 13	J. J. Dirzulaitis	10. 11	21,400

Daily discharge, in second-feet, of Greenbrier River at Alderson, W. Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	266	154	2,580	6,570	1,820	3,690	6,860	1,360	4,830	592	210	662
2	232	151	2,690	6,570	1,580	3,420	4,830	1,910	3,160	537	195	537
3	200	144	2,000	6,570	1,580	3,160	3,160	1,580	2,480	486	336	486
4	185	391	1,660	15,100	1,500	2,690	2,280	1,430	1,910	413	402	437
5	176	802	2,920	8,020	1,430	5,120	3,160	1,280	2,090	371	371	391
6	162	662	6,570	5,120	1,500	8,890	3,970	1,200	2,090	344	293	353
7	151	746	5,410	3,040	2,480	8,310	5,410	1,130	1,360	578	254	362
8	144	788	3,690	2,090	2,480	5,700	5,700	1,130	1,130	980	232	321
9	140	620	2,920	1,580	1,910	3,690	4,830	1,280	1,200	4,830	216	336
10	137	511	2,580	1,430	1,740	3,160	3,970	1,360	5,120	2,480	205	293
11	140	425	2,090	1,430	1,500	2,690	3,420	3,420	7,150	1,430	200	300
12	144	371	1,910	8,310	1,360	2,180	2,800	25,000	4,540	1,130	344	425
13	151	321	1,740	5,990	1,280	1,820	2,480	20,700	2,920	905	905	353
14	140	293	1,660	4,250	1,130	1,580	2,090	12,100	7,150	3,420	905	321
15	133	266	1,500	2,690	980	1,430	1,740	9,180	4,830	2,180	648	293
16	123	254	1,360	3,040	905	1,430	1,580	7,440	3,970	1,580	486	266
17	117	314	1,130	21,300	830	1,500	1,430	5,120	3,160	1,360	353	328
18	126	321	1,060	9,760	1,060	1,910	1,740	3,690	2,380	1,130	279	273
19	140	293	1,060	5,120	1,500	2,580	3,970	2,920	1,820	905	221	243
20	154	266	980	3,970	2,090	3,160	4,540	2,580	1,500	690	1,360	221
21	162	243	905	3,690	6,860	3,160	3,420	2,690	1,280	564	3,970	210
22	180	227	1,060	3,160	5,120	3,160	2,920	2,920	1,060	511	3,160	216
23	195	273	1,360	2,280	3,290	2,920	2,480	2,690	830	499	1,580	1,200
24	195	437	2,000	1,580	2,480	2,480	2,090	2,480	704	620	1,280	1,060
25	200	499	2,380	1,740	2,000	2,920	1,660	1,910	802	690	7,440	905
26	205	1,280	2,280	2,280	1,910	3,290	1,580	1,660	704	499	5,410	676
27	190	1,280	2,090	2,090	2,090	4,540	1,360	2,280	620	362	3,420	511
28	205	788	2,090	1,660	2,690	5,120	1,200	2,800	564	293	2,090	461
29	195	718	9,470	1,430	5,700	14,200	1,200	2,800	537	266	1,660	592
30	185	905	5,410	1,360	-----	19,800	1,200	10,300	648	243	1,280	12,400
31	171	-----	3,690	1,660	-----	10,300	-----	7,730	-----	227	802	-----

Monthly discharge of Greenbrier River at Alderson, W. Va., for the year ending September 30, 1924

[Drainage area, 1,340 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	266	117	169	0.126	0.15
November	1,280	144	491	.366	.41
December	9,470	905	2,590	1.93	2.22
January	21,300	1,360	4,670	3.49	4.02
February	6,860	830	2,170	1.62	1.75
March	19,800	1,430	4,520	3.37	3.88
April	6,860	1,200	2,970	2.22	2.48
May	25,000	1,130	4,710	3.52	4.06
June	7,150	537	2,420	1.81	2.02
July	4,830	227	1,000	.749	.86
August	7,440	195	1,310	.975	1.12
September	12,400	210	848	.633	.71
The year	25,000	117	2,330	1.74	23.68

RACCOON CREEK BASIN

RACCOON CREEK AT ADAMSVILLE, OHIO

LOCATION.—On line between secs. 25 and 26, T. 6 N., R. 16 W., just above highway bridge at Adamsville, Gallia County, $1\frac{1}{4}$ miles east of Rio Grande and 4 miles southwest of Bidwell. Indian Creek enters on right $1\frac{1}{4}$ miles above station.

DRAINAGE AREA.—537 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 25, 1915, to September 30, 1924.

GAGE.—Prior to November 23, 1923, vertical and inclined staff on left bank 200 feet above bridge; since November 23, 1923, vertical staff in two sections on right bank at highway bridge; read by Irene and Cora Call.

DISCHARGE MEASUREMENTS.—Made from highway bridge at gage or by wading.

CHANNEL AND CONTROL.—Straight for about 600 feet above and below bridge. Bed of stream composed of sand and gravel. Control for low water is ruins of old mill dam 1,000 feet below bridge; control for high water is long stretch of channel below gage. Zero flow would occur at gage height 1.1 feet; determined August 14, 1924.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 20 feet at 5 p. m. January 3 (discharge, 7,320 second-feet); minimum stage, 1.70 feet at 5 p. m. October 23 (discharge, 14 second-feet).

1915-1924: Maximum stage recorded, 21.10 feet at 5 p. m. April 21, 1920 (discharge, 7,920 second-feet); minimum stage recorded, 1.50 feet August 5-8, 1922 (discharge, 4 second-feet).

High-water marks indicate maximum stage of about 24.5 feet previous to installation of gage.

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation for low water changed during flood of April 21-22, 1920. Rating curve used prior to the change well defined between 100 second-feet and 6,000 second-feet; curve used thereafter well defined below 6,000 second-feet, extended above. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records for low water fair; for higher stages, good.

COOPERATION.—Gage-height record furnished by United States Engineer Corps.

Discharge measurements of Raccoon Creek at Adamsville, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge
Nov. 23	Perrin and Dornbach.....	<i>Feet</i> 2.69	<i>Sec.-ft.</i> 154
Aug. 14	Lasley Lee.....	1.84	24.2

Daily discharge, in second-feet, of Raccoon Creek at Adamsville, Ohio, for the years ending September 30, 1918-1922 and 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1917-18												
1.....	33	338	66	114	602	2,700	222	650	211	338	63	20
2.....	40	211	66	94	482	1,340	234	506	136	338	56	37
3.....	44	136	78	82	458	920	291	434	128	386	48	50
4.....	44	108	71	78	458	860	1,160	338	108	291	45	47
5.....	46	98	74	75	338	890	1,040	362	110	200	53	50
6.....	66	100	71	146	338	775	700	256	132	81	56	42
7.....	35	85	64	775	950	750	434	222	178	56	51	74
8.....	33	68	71	675	1,380	626	675	211	211	66	47	71
9.....	44	78	50	626	3,290	530	700	211	178	62	48	44
10.....	38	71	46	554	4,200	830	775	211	119	46	53	39
11.....	35	85	46	482	4,750	725	950	211	79	71	45	82
12.....	46	97	48	200	5,250	775	2,390	362	62	56	46	86
13.....	47	88	44	157	5,100	4,050	2,390	1,440	108	48	44	46
14.....	48	68	42	132	5,050	6,000	530	2,980	85	44	39	37
15.....	35	59	44	114	4,850	6,500	650	2,840	63	51	42	35
16.....	44	68	46	125	4,400	6,200	890	2,310	61	46	50	33
17.....	45	64	48	92	3,160	5,250	1,100	1,690	75	46	42	108
18.....	56	52	46	82	1,300	1,690	700	1,270	117	61	39	79
19.....	602	46	50	71	1,270	880	626	830	66	56	39	47
20.....	410	48	46	100	3,600	700	602	602	56	58	42	42
21.....	211	62	39	146	4,050	602	750	650	62	46	38	39
22.....	157	44	38	78	4,350	530	980	530	45	42	37	42
23.....	97	44	94	63	3,420	506	1,010	482	40	50	35	43
24.....	97	68	48	58	1,550	362	775	386	61	52	37	42
25.....	90	44	46	58	980	434	725	268	578	47	39	34
26.....	85	46	56	74	3,470	434	800	222	1,340	66	40	30
27.....	117	74	291	338	3,200	386	830	245	750	58	32	26
28.....	128	50	314	482	3,110	338	890	211	386	110	25	22
29.....	117	56	291	750	-----	291	830	222	314	56	20	37
30.....	458	64	234	830	-----	268	725	362	362	56	35	36
31.....	410	-----	121	675	-----	245	-----	338	-----	56	38	-----

Daily discharge, in second-feet, of Raccoon Creek at Adamsville, Ohio, for the years ending September 30, 1918-1922 and 1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1918-19												
1-----	37	128	168	1,950	314	482	245	650	506	85	256	178
2-----	39	97	134	5,100	234	458	362	1,010	482	84	200	157
3-----	33	71	189	4,900	200	482	503	1,100	675	68	114	146
4-----	30	68	178	4,550	234	530	458	1,040	775	107	107	146
5-----	35	79	157	3,560	222	920	386	920	650	61	91	136
6-----	33	78	146	1,340	200	1,010	291	800	578	66	88	245
7-----	28	56	136	920	189	890	245	725	482	75	77	234
8-----	39	39	117	602	157	775	200	578	434	74	82	189
9-----	29	39	482	482	146	2,480	178	2,750	362	56	85	234
10-----	23	31	1,910	410	146	3,200	168	3,850	268	88	85	530
11-----	20	31	2,390	362	146	2,750	168	3,700	256	68	91	434
12-----	19	30	1,870	268	136	2,110	222	2,610	245	77	110	211
13-----	31	33	1,620	458	200	1,580	268	2,190	245	314	222	85
14-----	26	37	1,910	578	200	775	291	1,830	222	434	1,070	82
15-----	28	44	2,700	458	314	890	314	1,300	245	434	1,300	85
16-----	27	61	2,150	362	434	980	578	1,200	291	554	1,620	86
17-----	22	79	1,760	338	434	725	700	1,070	291	482	1,380	82
18-----	25	157	1,300	314	410	700	602	980	268	362	1,440	85
19-----	29	338	1,070	291	362	725	482	950	200	386	1,800	85
20-----	38	506	950	291	338	675	434	920	222	386	1,990	108
21-----	46	554	750	291	338	775	338	1,070	268	314	1,720	178
22-----	46	482	950	234	505	700	314	1,070	222	245	1,240	314
23-----	48	458	1,410	386	410	602	291	950	146	200	482	458
24-----	46	410	2,150	800	434	458	291	920	178	200	386	554
25-----	56	386	1,760	1,440	506	410	280	830	157	256	146	362
26-----	46	338	1,010	1,070	482	314	291	700	132	178	85	222
27-----	47	338	830	675	458	410	291	650	136	132	53	189
28-----	62	291	700	554	482	410	338	650	178	100	61	178
29-----	62	256	602	554	-----	362	338	626	105	82	78	168
30-----	51	234	530	530	-----	268	434	578	88	78	78	146
31-----	91	-----	482	434	-----	291	-----	530	-----	146	189	-----
1919-20												
1-----	103	1,720	3,650	362	506	626	554	1,160	554	626	346	166
2-----	100	2,980	1,660	338	482	602	554	1,070	530	675	324	62
3-----	86	3,020	700	362	860	602	554	1,040	554	700	302	59
4-----	94	2,750	482	338	1,520	578	578	950	1,550	725	226	64
5-----	386	2,390	434	268	1,600	675	626	890	1,990	578	147	62
6-----	530	1,990	554	434	1,160	775	578	890	890	483	106	65
7-----	410	1,410	5,850	482	482	1,200	578	800	483	506	101	65
8-----	256	950	5,650	2,270	482	700	602	800	302	675	117	59
9-----	189	950	5,800	3,650	578	626	626	775	258	675	87	79
10-----	178	860	4,850	3,290	700	650	578	700	258	626	112	97
11-----	157	750	4,250	2,440	725	700	578	675	248	626	49	324
12-----	157	650	3,900	1,040	775	1,300	578	920	248	602	103	1,100
13-----	338	530	3,600	554	775	1,620	602	2,190	302	554	156	1,380
14-----	506	410	3,800	725	750	1,200	602	3,280	302	554	156	1,410
15-----	482	362	3,850	700	700	950	602	2,030	302	950	147	1,340
16-----	482	362	4,050	675	700	860	626	1,410	302	1,010	89	750
17-----	980	386	2,980	650	650	1,130	700	1,100	346	860	59	460
18-----	800	280	1,380	626	458	2,190	700	1,070	346	700	156	437
19-----	482	200	750	650	458	4,600	1,160	980	346	1,270	156	368
20-----	410	189	626	920	890	4,850	4,350	920	414	1,200	120	368
21-----	506	168	578	1,520	1,440	4,150	7,540	890	860	980	166	368
22-----	458	178	482	2,110	2,190	3,520	7,650	860	1,300	860	216	346
23-----	157	136	410	2,440	2,930	2,030	6,990	860	1,160	675	206	346
24-----	100	134	386	4,850	2,390	1,410	5,600	775	1,040	530	185	437
25-----	97	256	362	4,450	1,760	950	3,240	675	980	437	166	460
26-----	362	4,800	362	3,290	1,300	750	1,800	675	860	346	156	460
27-----	578	6,100	386	2,390	1,010	626	1,480	650	860	258	156	460
28-----	434	6,100	386	1,300	700	578	1,440	650	626	175	195	650
29-----	338	6,050	338	1,010	675	578	1,200	602	602	156	324	675
30-----	245	5,450	314	650	-----	578	1,240	578	554	138	391	650
31-----	434	-----	338	578	-----	578	-----	578	-----	166	414	-----

Daily discharge, in second-feet, of Raccoon Creek at Adamsville, Ohio, for the years ending September 30, 1918-1922 and 1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1920-21												
1-----	626	346	206	206	1,960	530	3,560	1,580	700	626	175	700
2-----	554	324	185	950	2,700	750	3,520	1,480	700	460	175	700
3-----	554	302	120	1,550	3,800	1,410	3,520	3,900	626	437	185	675
4-----	554	302	110	1,380	3,800	1,550	3,340	4,300	506	346	650	675
5-----	483	324	129	980	3,750	1,440	2,800	4,200	483	530	830	700
6-----	437	346	156	950	3,750	1,800	1,340	3,420	437	700	920	750
7-----	368	324	138	830	3,110	2,440	920	2,110	368	830	920	725
8-----	302	324	120	725	1,520	3,340	1,010	1,870	368	980	775	700
9-----	258	346	120	675	1,010	3,560	1,550	1,070	391	950	650	650
10-----	237	437	185	626	950	3,900	1,580	980	391	920	700	602
11-----	216	460	216	554	1,950	3,800	1,300	1,270	237	700	700	578
12-----	206	460	195	460	2,440	3,950	1,240	1,580	237	460	650	554
13-----	206	414	166	460	2,480	3,560	700	1,620	216	650	675	483
14-----	156	391	156	483	1,690	1,910	700	1,620	216	725	700	460
15-----	147	226	175	483	675	1,410	725	1,380	216	700	578	437
16-----	138	216	175	506	675	1,480	750	980	216	650	554	414
17-----	138	237	103	506	1,010	1,550	800	920	237	578	1,440	483
18-----	129	166	100	506	1,010	1,200	860	950	437	414	1,550	506
19-----	106	138	98	483	950	1,070	800	391	460	302	1,270	506
20-----	93	138	100	460	920	980	700	368	460	237	1,340	483
21-----	89	129	97	483	775	578	675	237	460	248	1,130	626
22-----	90	138	90	460	700	483	650	237	414	280	950	675
23-----	87	156	106	414	675	920	675	237	437	237	675	675
24-----	89	206	120	368	675	950	650	237	437	216	578	602
25-----	95	185	120	346	650	920	578	346	437	175	506	626
26-----	147	138	120	280	626	650	725	460	437	175	506	626
27-----	483	138	129	226	602	578	1,240	800	437	156	530	554
28-----	650	129	120	226	578	1,480	1,440	775	530	156	460	554
29-----	1,010	120	106	226	-----	3,020	1,620	1,070	602	156	437	578
30-----	980	129	90	1,200	-----	3,380	1,620	890	626	175	391	578
31-----	650	-----	90	1,620	-----	3,470	-----	675	-----	185	554	-----
1921-22												
1-----	578	483	1,550	890	506	950	2,880	626	650	506	8	8
2-----	554	602	1,660	775	506	950	1,070	626	578	391	6	437
3-----	530	602	1,480	675	483	920	725	1,040	578	237	6	1,760
4-----	506	554	1,040	675	483	800	775	1,100	578	64	5	650
5-----	483	483	750	626	506	725	1,010	1,100	578	49	4	414
6-----	578	460	554	460	460	675	1,240	1,070	578	42	4	302
7-----	554	437	530	460	483	1,040	1,070	675	578	49	4	185
8-----	554	437	530	506	460	1,300	1,040	626	626	71	4	120
9-----	530	554	530	506	437	1,300	830	460	626	71	5	53
10-----	460	554	506	483	437	1,300	700	506	602	64	6	28
11-----	414	554	460	460	460	1,270	675	602	602	56	7	26
12-----	237	578	460	460	460	860	1,010	675	602	49	8	26
13-----	237	506	506	460	460	700	2,880	675	578	42	8	26
14-----	237	483	626	460	460	2,700	3,470	675	554	30	8	26
15-----	237	460	626	437	460	5,150	5,050	554	530	30	8	27
16-----	248	626	578	437	437	6,100	5,700	675	506	30	8	27
17-----	248	2,070	554	460	483	6,560	6,050	860	530	30	7	28
18-----	237	3,520	675	506	650	6,060	6,100	950	506	30	7	29
19-----	226	3,290	700	530	1,040	5,100	4,050	890	506	42	6	30
20-----	216	2,110	700	554	1,160	1,960	1,580	830	530	42	6	30
21-----	195	1,480	700	554	1,270	1,620	1,240	775	530	42	6	30
22-----	185	1,300	1,340	554	1,270	1,100	1,300	700	530	42	6	30
23-----	175	1,270	5,150	530	1,240	920	980	602	506	30	6	30
24-----	166	1,340	6,300	530	980	750	890	650	506	30	6	30
25-----	166	2,390	7,320	530	950	675	920	650	506	42	9	30
26-----	156	3,160	6,770	530	860	650	950	675	483	42	18	30
27-----	156	3,420	6,200	530	775	750	920	700	460	30	14	32
28-----	166	4,600	3,700	530	890	1,690	750	700	483	21	8	32
29-----	175	4,600	3,240	530	-----	1,870	650	700	506	21	8	36
30-----	195	2,840	1,070	530	-----	2,440	626	725	506	11	8	36
31-----	216	-----	1,040	530	-----	2,880	-----	675	-----	8	8	-----

Daily discharge, in second-feet, of Racoon Creek at Adamsville, Ohio, for the years ending September 30, 1918-1922 and 1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1923-24												
1.....	40	55	530	3, 110	602	602	3, 240	980	346	3, 020	117	23
2.....	58	48	675	4, 650	530	626	1, 870	1, 380	302	830	103	56
3.....	59	42	650	7, 100	483	578	1, 100	1, 240	302	460	90	66
4.....	40	56	675	7, 100	460	530	700	725	280	391	68	65
5.....	30	90	800	6, 500	1, 040	675	626	1, 520	269	578	56	59
6.....	30	195	3, 650	5, 350	1, 550	1, 270	530	1, 800	258	391	45	53
7.....	29	156	3, 380	3, 290	1, 410	1, 520	506	1, 200	237	554	175	40
8.....	25	437	3, 160	980	830	1, 340	483	890	437	437	156	26
9.....	21	530	3, 060	675	530	775	414	675	860	280	95	45
10.....	20	346	3, 020	554	483	602	391	530	1, 160	216	56	42
11.....	18	237	1, 690	3, 560	460	602	368	530	1, 950	166	30	32
12.....	18	147	1, 410	3, 750	414	578	346	1, 340	2, 800	147	32	26
13.....	20	95	1, 100	3, 950	391	530	324	2, 310	1, 950	530	40	25
14.....	20	74	980	3, 160	391	483	280	2, 620	950	650	30	28
15.....	21	68	980	1, 690	391	437	280	2, 570	700	602	25	25
16.....	26	73	890	2, 230	391	391	258	1, 910	554	324	35	23
17.....	41	79	725	2, 980	368	368	346	1, 160	437	129	68	21
18.....	37	84	626	3, 240	554	346	1, 130	890	269	138	53	28
19.....	36	90	530	2, 440	1, 690	302	1, 910	626	226	120	32	27
20.....	32	84	483	1, 690	4, 650	437	1, 690	506	195	138	49	49
21.....	28	89	650	950	4, 850	2, 390	1, 200	800	346	185	42	40
22.....	20	100	1, 690	725	4, 950	3, 110	830	700	166	237	30	34
23.....	15	156	3, 340	626	4, 000	3, 110	626	602	138	175	26	36
24.....	25	216	3, 750	506	2, 230	2, 620	578	483	226	156	26	26
25.....	35	368	3, 650	530	1, 040	1, 760	460	414	368	156	42	20
26.....	28	437	3, 240	578	890	1, 160	414	346	530	112	52	18
27.....	22	506	2, 190	530	800	1, 270	368	437	980	106	49	19
28.....	25	626	1, 830	506	725	1, 270	437	414	1, 660	95	38	23
29.....	32	725	1, 690	346	650	2, 750	675	414	5, 850	68	37	52
30.....	40	578	1, 870	346	-----	3, 340	725	578	5, 600	49	41	129
31.....	62	-----	2, 350	483	-----	3, 650	-----	391	-----	90	40	-----

NOTE.—Gage not read Dec. 15-16, 1917; discharge interpolated. Daily discharge for the year ending Sept. 30, 1923, published in Water-Supply Paper 563.

Monthly discharge of Racoon Creek at Adamsville, Ohio, for the years ending September 30, 1918-1922 and 1924

[Drainage area, 537 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1917-18					
October.....	602	33	121	0.225	0.26
November.....	338	44	84.0	.156	.17
December.....	314	38	86.7	.161	.19
January.....	830	58	269	.501	.58
February.....	5,250	338	2,690	5.01	5.28
March.....	6,500	245	1,530	2.85	3.29
April.....	2,390	222	846	1.58	1.76
May.....	2,980	211	705	1.31	1.51
June.....	1,340	40	207	.385	.43
July.....	386	42	98.1	.183	.21
August.....	63	20	42.7	.080	.06
September.....	108	20	47.3	.088	.10
The year.....	6,500	20	546	1.02	13.87
1918-19					
October.....	91	19	38.5	.072	.08
November.....	554	30	192	.358	.40
December.....	2,700	117	1,050	1.96	2.26
January.....	5,100	234	1,110	2.07	2.39
February.....	506	136	308	.574	.60
March.....	3,200	268	908	1.69	1.95
April.....	700	168	343	.639	.71
May.....	3,850	530	1,250	2.33	2.69
June.....	775	88	310	.577	.64
July.....	554	56	200	.372	.43
August.....	1,990	53	540	1.01	1.16
September.....	554	82	210	.391	.44
The year.....	5,100	19	543	1.01	13.75
1919-20					
October.....	980	86	350	.652	.75
November.....	6,100	134	1,750	3.26	3.64
December.....	5,850	314	2,040	3.80	4.38
January.....	4,850	268	1,460	2.72	3.14
February.....	2,930	458	1,020	1.90	2.05
March.....	4,850	578	1,360	2.53	2.92
April.....	7,650	554	1,820	3.39	3.78
May.....	3,290	578	1,010	1.88	2.17
June.....	1,990	248	646	1.20	1.34
July.....	1,270	138	623	1.16	1.34
August.....	414	49	182	.339	.39
September.....	1,410	59	452	.842	.94
The year.....	7,650	49	1,060	1.97	26.84
1920-21					
October.....	1,010	87	332	.618	.71
November.....	460	120	256	.477	.53
December.....	216	90	134	.250	.29
January.....	1,620	206	633	1.18	1.36
February.....	3,800	578	1,660	3.09	3.22
March.....	3,950	483	1,870	3.48	4.01
April.....	3,560	578	1,390	2.59	2.89
May.....	4,300	237	1,350	2.51	2.89
June.....	700	216	424	.790	.88
July.....	980	156	463	.862	.99
August.....	1,550	175	715	1.33	1.53
September.....	750	414	596	1.11	1.24
The year.....	4,300	87	813	1.51	20.54
1921-22					
October.....	578	156	317	.590	.68
November.....	4,600	437	1,530	2.85	3.18
December.....	7,320	460	1,870	3.48	4.01
January.....	890	437	539	1.00	1.15
February.....	1,270	437	681	1.27	1.32
March.....	6,600	650	2,010	3.74	4.31
April.....	6,100	626	1,900	3.54	3.95
May.....	1,100	460	734	1.37	1.58
June.....	650	460	548	1.02	1.14
July.....	506	8	72.4	.135	.16
August.....	18	4	7.16	.013	.01
September.....	1,760	8	152	.283	.32
The year.....	7,320	4	862	1.61	21.81

Monthly discharge of Raccoon Creek at Adamsville, Ohio, for the years ending September 30, 1918-1922 and 1924—Continued

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1923-24					
October.....	62	15	30.7	0.057	0.07
November.....	725	42	226	.421	.47
December.....	3,750	483	1,780	3.31	3.82
January.....	7,100	346	2,390	4.45	5.13
February.....	4,950	368	1,300	2.42	2.61
March.....	3,650	302	1,270	2.36	2.72
April.....	3,240	258	770	1.43	1.60
May.....	2,620	346	999	1.86	2.14
June.....	5,850	138	1,010	1.88	2.10
July.....	3,020	49	372	.693	.80
August.....	175	25	57.4	.107	.12
September.....	129	18	38.5	.072	.08
The year.....	7,100	15	856	1.59	21.66

Note.—Monthly discharge for the year ending Sept. 30, 1923, published in Water-Supply Paper 563.

SCIOTO RIVER BASIN

SCIOTO RIVER NEAR DUBLIN, OHIO

LOCATION.—A quarter of a mile north of line between Delaware and Franklin Counties, three-fourths mile below O'Shaughnessy Dam, and 3 miles north of Dublin.

DRAINAGE AREA.—988 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 1, 1921, to September 30, 1924.

GAGE.—Vertical staff in three sections attached to large trees on left bank three-fourths mile below dam; installed August 26, 1921; read by employees of city of Columbus.

DISCHARGE MEASUREMENTS.—Made from highway bridge 1 mile above gage or by wading.

CHANNEL AND CONTROL.—Channel slightly curved at gage. Right bank high; left bank fairly high. Control is riffle composed of large boulders and flat rocks 100 feet below gage; fairly permanent. Zero flow would occur at gage height 2 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.9 feet at noon March 29 (discharge, 19,400 second-feet); minimum stage recorded, 3.16 feet at 8.30 a. m. October 13 (discharge, 30 second-feet).

1921-1924: Maximum stage recorded on March 29, 1924; minimum discharge, 9 second-feet August 29, 1921. The flood of 1913 reached a stage of 24.6 feet, referred to gage datum, on March 25.

ICE.—Stage-discharge relation not seriously affected by ice except during severe winters.

REGULATION.—Flow regulated during part of year at site of O'Shaughnessy Dam, three-fourths mile above gage.

ACCURACY.—Stage-discharge relation for extremely low water changed gradually from October 22 to November 27 and changed during high water on December 6; not affected by ice. Rating curves well defined. Gage read to hundredths once daily except Sunday. Daily discharge ascertained by applying daily gage height to rating table and by method for shifting control. Records good except for period when control shifted, for which they are fair.

COOPERATION.—Gage-height record furnished by Bureau of Water Works Extension of city of Columbus.

Discharge measurements of Scioto River near Dublin, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Nov. 22	F. R. Morgan	3.42	55.1	Apr. 3	W. A. Werner	5.57	1,870
27	do	3.45	54.9	Aug. 21	Lee and Markel	3.20	46.9
Mar. 27	do	8.14	6,820	26	Dornbach and Lee	3.09	36.8
29	do	11.62	18,300				

Daily discharge, in second-feet, of Scioto River near Dublin, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	109	79	86	1,260	2,400	880	6,240	284	494	1,560	65	39
2	79	96	116	1,260	2,100	935	3,240	372	471	1,620	65	43
3	61	103	146	1,210	1,960	990	1,820	365	359	1,620	62	33
4	52	124	136	935	1,820	732	1,380	410	365	1,470	58	32
5	44	146	295		1,820	1,960	1,040	456	551	1,320	56	32
6	40	269	3,610		3,240	2,560	886	341	1,210	1,260	54	32
7	37	289	3,420	510	3,610	2,560	732	284	1,690	1,210	208	32
8	34	258	1,820		1,380	1,820	638	235	2,100	1,320	185	33
9	32	191	4,000		1,040	1,280	576	300	8,290	1,320	112	37
10	31	146	4,840		816	732	526	284	8,570	1,160	89	33
11	31	124	3,610	8,290	593	638	493	484	7,230	830	66	35
12	31	101	2,400	7,750	433	593	426	683	5,290	353	65	34
13	30	84	5,760	5,880	448	683	412	880	4,410	294	65	41
14	32	77	7,750	4,000	385	780	399	780	3,060	235	56	43
15	34	71	4,000		329	880	305	780	2,510	197	54	45
16	36	65	2,980		279	690	269	830	1,960	170	49	42
17	33	61	1,960			501	244	780	1,820	148	48	41
18	31	60	1,210	1,500		413	279	633	1,820	128	47	39
19	33	58	990			379	253	486	1,690	112	45	38
20	42	56	830			365	242	419	1,620	110	50	36
21	42	53	1,160			419	230	406	1,500	108	47	36
22	41	52	6,240		570	585	235	323	1,240	335	44	36
23	41	53	6,360			2,600	244	258	990	160	44	36
24	50	53	6,480			4,620	419	235	990	112	42	35
25	69	52	4,950	340		4,200	385	257	1,160	90	40	41
26	67	52	3,420			7,230	300	279	1,210	77	38	36
27	63	53	2,100		517	7,230	263	300	1,260	71	36	33
28	96	53	2,700		372	4,840	226	263	1,260	65	36	45
29	69	56	1,960	222	638	18,200	217	235	1,350	65	33	57
30	71	58	1,610	1,820		13,000	208	376	1,440	58	32	57
31	73		1,260	3,060		8,860		517		69	36	

NOTE.—Discharge determined by method for shifting control Oct. 22 to Nov. 27. Braced figures show mean discharge for periods indicated, estimated because of ice effect from study of observer's notes, weather records, and record of flow of near-by streams. Gage not read on Sundays; discharge interpolated.

Monthly discharge of Scioto River near Dublin, Ohio, for the year ending September 30, 1924

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	109	30	48.5	May	880	235	437
November	289	52	99.8	June	8,570	359	2,260
December	7,750	86	2,850	July	1,620	58	569
January	8,290		1,670	August	208	32	62.2
February	3,610		1,030	September	57	32	38.4
March	18,200	365	2,970				
April	6,240	208	771	The year	18,200	30	1,070

SCIOTO RIVER AT COLUMBUS, OHIO

LOCATION.—At city of Columbus sewage treatment works, Franklin County, four-tenths mile below highway bridge on Frank Road, and five miles below mouth of Olentangy River.

DRAINAGE AREA.—1, 620 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 1, 1921, to September 30, 1924. Gage-height record obtained by city of Columbus since May 11, 1906.

GAGE.—Vertical staff in two sections attached to large tree on right bank at sewage treatment works; read by employees of city. Zero of gage is 680.40 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from bridge four-tenths mile above gage or by wading. Discharge from sewage treatment works included in discharge measurements and tables of discharge.

CHANNEL AND CONTROL.—Channel straight for 1,000 feet above and 500 feet below gage. Banks fairly high, wooded. Left bank is overflowed during floods. Control is riffle of small boulders and gravel half a mile below gage. Zero flow would occur at gage height 4.55 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 22.6 feet at 4 and 6 p. m. March 29 (discharge from extension of rating curve, 24,400 second-feet); minimum stage recorded, 5.5 feet September 6–16, 19–21, 23–28 (discharge, 54 second-feet).

1921–1924: Maximum stage recorded on March 29, 1924; minimum stage recorded, 5.5 feet on twenty-nine days, July to October, 1921, and on twenty days in September, 1924.

Maximum known stage, 25.9 feet, referred to gage datum, on March 25, 1913.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Water is diverted above station for municipal water supply of Columbus. Other diversions negligible.

REGULATION.—Flow regulated at Griggs Reservoir for municipal water supply of Columbus. Table of monthly discharge shows mean discharge corrected for storage.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to half-tenths once daily; additional readings made during high water. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by city of Columbus.

Discharge measurements of Scioto River at Columbus, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Mar. 25	F. R. Morgan	12.04	6,000	Aug. 25	Ansley and Jones	5.87	136
26	do	15.56	11,000	Sept. 18	E. E. R. Dornbach	5.65	73.2
Aug. 4	E. E. R. Dornbach	5.92	132				

Daily discharge, in second-feet, of Scioto River at Columbus, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	194	82	271	3,100	3,796	1,110	8,410	558	780	1,970	130	82
2.....	177	74	481	2,170	2,990	1,790	4,660	665	780	1,880	104	160
3.....	130	82	456	2,990	2,270	1,790	2,990	720	665	1,790	104	82
4.....	130	104	408	2,370	1,750	1,430	2,270	665	665	1,610	120	66
5.....	104	231	1,040	1,610	2,990	4,400	1,880	720	720	1,520	104	66

Daily discharge, in second-feet, of Scioto River at Columbus, Ohio, for the year ending September 30, 1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
6-----	82	231	8, 730	1, 110	5, 580	4, 920	1, 520	665	5, 180	1, 350	104	54
7-----	93	456	7, 770	665	3, 430	3, 910	1, 350	558	2, 990	1, 880	93	54
8-----	93	456	4, 660	970	2, 070	2, 670	1, 190	506	10, 400	2, 470	82	54
9-----	82	360	4, 270	970	1, 350	1, 610	1, 110	506	15, 100	1, 970	160	54
10-----	82	212	9, 530	900	1, 110	1, 270	1, 040	558	13, 600	1, 610	160	54
11-----	82	271	7, 770	14, 500	970	1, 190	970	456	11, 000	1, 270	130	54
12-----	82	194	4, 530	14, 300	900	1, 110	840	1, 350	8, 570	1, 840	104	54
13-----	82	170	2, 990	8, 890	840	1, 350	750	1, 350	7, 020	1, 880	93	54
14-----	82	130	15, 800	5, 310	720	1, 350	780	1, 270	4, 270	780	82	54
15-----	74	130	8, 890	3, 320	605	1, 430	720	1, 350	2, 770	558	82	54
16-----	66	117	5, 050	3, 550	558	1, 350	610	1, 270	3, 210	481	104	54
17-----	66	130	3, 210	5, 580	558	970	558	1, 270	2, 470	408	104	104
18-----	66	130	2, 270	3, 550	558	840	780	1, 270	2, 370	360	104	64
19-----	66	104	1, 790	2, 270	558	720	584	970	2, 070	314	82	54
20-----	66	93	1, 520	1, 700	2, 990	720	558	840	1, 970	271	82	54
21-----	66	93	1, 970	840	2, 270	840	532	840	1, 790	231	82	54
22-----	66	82	12, 100	610	1, 430	1, 270	532	271	1, 520	194	82	66
23-----	66	231	16, 000	780	1, 190	4, 400	780	231	1, 350	194	82	54
24-----	66	130	12, 100	840	1, 190	7, 170	720	271	970	194	82	54
25-----	104	130	7, 770	780	900	5, 860	665	314	1, 610	231	100	54
26-----	66	130	5, 180	506	720	10, 500	558	456	1, 610	177	82	54
27-----	66	160	3, 430	456	720	11, 600	558	665	1, 880	160	82	54
28-----	66	160	4, 400	456	840	6, 870	532	532	1, 610	160	82	54
29-----	82	160	3, 910	506	1, 110	22, 400	408	456	1, 700	130	82	104
30-----	82	251	2, 670	2, 470	-----	21, 400	456	840	2, 270	104	82	117
31-----	93	-----	2, 170	5, 310	-----	13, 100	-----	900	-----	107	82	-----

Monthly discharge, in second-feet, of Scioto River at Columbus, Ohio, for the years 1921-1924

Month	Observed			Corrected mean *
	Maximum	Minimum	Mean	
1921				
April	7, 770	1, 040	2, 600	2, 600
May	9, 860	130	1, 510	1, 520
June	1, 190	82	283	280
July	194	54	85. 5	71. 5
August	408	54	95. 5	81. 0
September	104	54	66. 9	53. 5
1921-22				
October	82	54	60. 5	49. 5
November	9, 370	82	2, 590	2, 620
December	11, 000	840	2, 390	2, 390
January	5, 050	271	944	944
February	6, 280	305	2, 080	2, 080
March	13, 300	780	3, 350	3, 360
April	19, 100	720	5, 340	5, 320
May	16, 000	360	3, 590	3, 620
June	2, 070	194	748	746
July	1, 110	104	415	400
August	231	66	119	108
September	780	74	192	189
The year	19, 100	54	1, 810	1, 810
1922-23				
October	93	66	69. 5	41. 6
November	117	60	71. 7	66. 5
December	2, 370	60	264	304
January	7, 930	231	2, 390	2, 390
February	3, 790	271	1, 310	1, 310
March	8, 890	720	3, 140	3, 140
April	5, 310	292	1, 050	1, 050
May	16, 000	160	2, 650	2, 670
June	2, 470	145	495	505
July	780	107	250	248
August	506	66	179	179
September	900	82	222	224
The year	16, 000	60	1, 010	1, 010

^a Corrected for storage in Griggs Reservoir.

Monthly discharge, in second-feet, of Scioto River at Columbus, Ohio, for the years 1921-1924—Continued

Month	Observed			Corrected mean
	Maximum	Minimum	Mean	
1923-24				
October.....	194	66	87.8	80.8
November.....	456	74	178	182
December.....	16,000	271	5,260	5,270
January.....	14,500	456	3,010	3,010
February.....	5,580	558	1,620	1,610
March.....	22,400	720	4,560	4,570
April.....	8,410	408	1,310	1,280
May.....	1,350	231	751	778
June.....	15,100	665	3,760	3,760
July.....	2,470	104	874	850
August.....	160	82	98.3	67.9
September.....	160	54	66.4	65.4
The year.....	22,400	54	1,800	1,800

SCIOTO RIVER AT CHILLICOTHE, OHIO

LOCATION.—At highway bridge on Bridge Street, at north end of Chillicothe.

DRAINAGE AREA.—3,850 square miles (measured on topographic maps).

RECORDS AVAILABLE.—December 1, 1913, to September 30, 1914; April 1, 1921, to September 30, 1924.

GAGE.—Chain gage on highway bridge; installed February 2, 1923; read by Alphonse Muller. Zero of gage is 594.02 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for a quarter of a mile above and three-fourths mile below gage. Right bank high; left bank fairly high. Control is long stretch of channel below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 22.9 feet at 1 p. m. March 31 (discharge, 60,700 second-feet); minimum stage, 1.36 feet September 11, 17, and 18 (discharge, 254 second-feet).

1921-1924: Maximum stage recorded on March 31, 1924; minimum stage, 1.30 feet at 7.30 a. m. October 18, 1922 (discharge, 236 second-feet).

Maximum known stage occurred March 26, 1913, gage height 39.8 feet present datum (discharge, estimated, 260,000 second-feet, by engineers of Franklin County Conservancy District).

ICE.—Stage-discharge relation not seriously affected by ice.

REGULATION.—Flow regulated at Griggs Reservoir for municipal water supply of Columbus.

DIVERSIONS.—Water is diverted for municipal water supply of Columbus. Other diversions negligible.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

Discharge measurements of Scioto River at Chillicothe, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Nov. 1	W. W. Perrin	1.83	358	Aug. 22	W. P. Ansley	1.70	396
Mar. 26	W. A. Werner	9.95	12,000	Sept. 19	.....do	1.38	311
Aug. 15	Lee and Markel	1.78	429				

Daily discharge, in second-feet, of Scioto River at Chillicothe, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	1,070	452	1,610	8,660	9,880	2,760	36,700	2,760	3,200	4,100	656	334
2-----	834	478	1,710	7,340	6,500	2,980	19,500	3,090	2,650	3,310	623	334
3-----	689	452	1,420	7,520	5,220	3,420	8,660	2,650	2,320	2,980	592	312
4-----	562	478	1,330	14,100	4,100	3,310	6,500	2,980	2,110	2,760	505	402
5-----	505	623	1,610	8,660	3,860	11,000	5,220	3,420	2,110	2,540	505	355
6-----	452	1,160	8,660	4,500	6,500	17,000	3,860	2,980	3,420	2,320	505	292
7-----	452	1,070	16,400	2,540	9,880	12,200	3,860	2,430	14,700	2,320	505	292
8-----	355	1,070	21,500	2,870	5,540	7,520	3,530	2,110	13,800	2,760	505	292
9-----	355	1,030	11,200	2,980	3,750	5,220	3,200	1,810	16,700	3,860	478	272
10-----	355	909	13,500	2,760	2,760	3,860	2,980	1,710	48,100	3,200	452	272
11-----	312	759	21,200	17,600	2,650	3,420	2,760	1,710	43,900	2,760	478	254
12-----	312	689	18,900	29,700	2,320	3,090	2,650	1,710	27,900	2,210	505	272
13-----	312	623	8,860	36,700	2,210	3,090	2,430	5,540	17,900	2,110	505	272
14-----	312	562	12,000	25,400	1,910	3,200	2,320	3,980	19,900	3,860	478	272
15-----	312	534	21,900	10,100	1,910	3,200	2,210	4,220	7,880	2,760	452	272
16-----	312	478	26,500	6,340	1,910	3,090	2,110	5,700	5,540	1,910	452	272
17-----	312	478	10,500	15,500	1,610	2,650	1,910	3,530	6,180	1,520	427	254
18-----	312	452	6,500	17,600	1,710	2,320	2,110	2,980	4,640	1,330	427	254
19-----	312	452	5,060	7,880	1,810	2,110	3,200	2,650	4,100	1,160	402	272
20-----	312	452	4,220	5,380	13,300	2,110	2,760	2,540	3,640	1,030	402	292
21-----	292	452	4,100	4,100	14,400	2,760	2,320	2,390	3,420	989	402	292
22-----	292	427	6,980	2,430	6,020	5,860	2,110	2,110	3,200	1,240	402	402
23-----	272	452	22,900	2,320	3,750	6,340	2,010	1,610	2,980	909	427	355
24-----	312	505	31,600	2,760	3,200	10,800	2,010	1,330	3,860	834	402	355
25-----	334	724	33,100	2,760	2,760	14,400	2,010	1,330	2,540	796	452	312
26-----	478	656	22,900	2,430	2,540	12,000	1,910	1,240	2,760	759	402	312
27-----	505	949	10,100	1,710	2,110	14,900	1,710	1,420	7,520	759	378	272
28-----	427	1,910	9,260	1,810	2,110	20,500	1,610	1,610	4,920	689	378	272
29-----	427	1,160	13,300	1,710	2,540	23,200	1,710	1,610	3,420	656	378	378
30-----	378	949	8,660	1,910	-----	37,500	1,710	2,010	3,090	623	355	505
31-----	402	-----	7,520	9,060	-----	60,200	-----	3,860	-----	505	334	-----

Monthly discharge of Scioto River at Chillicothe, Ohio, for the year ending September 30, 1924

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	1,070	272	415	0.108	0.12
November-----	1,910	427	713	.185	.21
December-----	33,100	1,330	12,400	3.22	3.71
January-----	36,700	1,710	8,620	2.24	2.58
February-----	14,400	1,610	4,440	1.15	1.24
March-----	60,200	2,110	9,870	2.56	2.95
April-----	36,700	1,610	4,590	1.19	1.33
May-----	5,700	1,240	2,610	.678	.78
June-----	48,100	2,110	9,610	2.50	2.79
July-----	4,100	505	1,920	.499	.58
August-----	656	334	457	.119	.14
September-----	505	254	310	.081	.09
The year-----	60,200	254	4,680	1.22	16.52

LITTLE SCIOTO RIVER NEAR MARION, OHIO

LOCATION.—At highway bridge on south line of sec. 25, T. 5 S., R. 14 E., 4 miles southwest of Marion, Marion County.

DRAINAGE AREA.—81.3 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 26, 1923, to September 30, 1924.

GAGE.—Chain gage on highway bridge; read by R. L. Lucas.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel is straight for 500 feet above and below gage.

Banks are high and brushy; not subject to overflow. Bed of stream composed of gravel and sand overlain with a little silt. Control is section of channel below gage. Zero flow would occur at gage height 0.6 foot.

EXTREMES OF DISCHARGE.—Maximum stage during period of record, 13.6 feet at 11.20 a. m. March 30 (discharge, 1,050 second-feet); minimum stage, 1.54 feet at 2.30 p. m. September 9 (discharge, 2.8 second-feet).

ICE.—Stage-discharge relation not affected by ice except during severe winters.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

Discharge measurements of Little Scioto River near Marion, Ohio, during the years ending September 30, 1923 and 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
1923 Sept. 26	Morgan and Lee-----	<i>Feet</i> 1.91	<i>Sec.-ft.</i> 8.63	1924 Apr. 26	F. R. Morgan -----	<i>Feet</i> 2.40	<i>Sec.-ft.</i> 32.0
1924 Oct. 1	F. R. Morgan-----	1.94	10.3	May 6	do -----	2.82	50.5
Apr. 23	do -----	3.00	63.1	July 8	W. P. Ansley-----	7.65	451
				Aug. 27	F. R. Morgan -----	1.65	4.35

Daily discharge, in second-feet, of Little Scioto River near Marion, Ohio, for the period September 26, 1923, to September 30, 1924

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		9.4	17	54	182	256	60	646	66	35	247	10	3.1
2		7.9	13	51	142	190	126	274	60	35	119	5.9	4.1
3		7.0	11	32	190	119	91	214	45	40	91	4.9	4.1
4		6.6	32	45	158	174	126	190	40	57	63	5.9	3.8
5		5.9	40	166	119	310	274	142	35	70	35	5.6	3.5
6		5.2	40	454	112	265	292	105	32	174	463	4.6	3.1
7		4.6	38	373	91	214	190	91	30	150	586	6.3	3.3
8		4.3	35	230	77	142	126	84	35	427	445	5.9	3.1
9		4.1	22	373	74	98	98	77	54	876	382	5.6	2.8
10		3.8	16	556	98	84	84	70	35	836	150	5.2	3.3
11		3.5	11	364	826	84	63	60	45	866	98	4.6	3.5
12		3.5	11	230	746	63	105	51	70	897	70	5.2	3.8
13		3.3	10	576	517	48	112	45	80	626	60	5.6	4.9
14		4.1	9.4	756	409	51	112	40	105	373	48	5.6	4.6
15		4.1	8.4	481	198	45	98	35	134	206	40	5.2	4.1
16		4.3	10	337	256	48	54	32	112	174	32	5.2	3.8
17		4.6	9.4	230	230	42	54	38	77	119	26	4.6	4.1
18		4.6	8.4	182	214	40	48	35	105	84	23	1.9	3.5
19		4.9	8.4	174	142	32	42	30	84	63	19	5.6	4.1
20		4.6	7.5	206	119	134	40	32	63	51	14	4.3	4.6
21		3.8	7.0	265	91	112	70	38	45	42	12	4.6	4.3
22		3.3	7.0	686	91	112	74	60	40	35	11	4.6	3.8
23		3.3	8.8	816	70	60	301	60	35	391	9.4	4.9	3.5
24		3.8	7.9	706	51	63	328	45	51	222	7.9	4.1	3.8
25		5.2	8.4	556	45	57	373	40	48	508	7.5	4.6	3.8
26	8.8	5.9	8.8	373	42	42	596	30	42	382	6.6	4.1	4.1
27	7.5	6.3	10	265	40	57	546	28	35	230	6.3	4.3	4.3
28	22	5.9	9.4	373	38	105	463	32	30	214	5.9	3.5	4.6
29	27	5.6	11	247	66	66	919	35	51	301	5.9	3.8	5.2
30	13	15	24	190	364	-----	1,050	35	42	222	6.6	4.3	4.3
31		16	-----	214	319	-----	1,040	-----	38	-----	19	3.5	-----

Monthly discharge of Little Scioto River near Marion, Ohio, for the year ending September 30, 1924

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October.....	16	3.3	5.63	May.....	134	30	56.9
November.....	40	7.0	15.3	June.....	897	35	290
December.....	816	32	339	July.....	586	5.9	100
January.....	826	38	197	August.....	10	3.5	5.06
February.....	310	32	107	September.....	5.2	2.8	3.60
March.....	1,050	40	257				
April.....	646	28	89.8	The year.....	1,050	2.8	123

OLENTANGY RIVER NEAR DELAWARE, OHIO

LOCATION.—Prior to December 15, 1923, at William Street Bridge in Delaware, Delaware County. Beginning that date at highway bridge a quarter of a mile north of Pennsylvania Railroad crossing, 4 miles north of Delaware.

DRAINAGE AREA.—415 square miles at original location and 387 square miles at new location (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1921, to September 30, 1924.

GAGE.—Chain gage at original station on Winter Street Bridge; read by D. H. Leas. Zero of gage is 848.58 feet above mean sea level. Au water-stage recorder at new station. Zero of gage is 876.92 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from highway bridges near gages or by wading.

CHANNEL AND CONTROL.—At original station channel is straight for a quarter of a mile above and below gage. Banks high. Control for extremely low water is riffle just below gage. Control for higher stages is riffle a quarter of a mile below gage. Zero flow would occur at gage height —1.3 feet. At new station channel is straight for 400 feet above and 200 feet below gage. Banks fairly high. Short stretch of road on right bank is overflowed at gage height 18 feet. Control for low water is riffle half a mile below gage. Control for higher stages is long stretch of channel below gage. Zero flow would occur at zero gage height.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.4 feet from 1 to 3 p. m. March 29 (discharge, 7,770 second-feet); minimum stage, 0.86 foot from 10 p. m. September 4 to 7 a. m. September 5 (discharge, 3.4 second-feet).

1921–1924: Maximum stage recorded, 11.3 feet at 5.30 p. m. May 20, 1922 (discharge, 15,000 second-feet); minimum stage occurred September 4–5, 1924.

ICE.—Stage-discharge relation affected by ice during severe winters.

ACCURACY.—Stage-discharge relation at both stations permanent; affected by ice January 6–10 and 21–29. Rating curve for original station well defined; for new station well defined between 50 and 1,000 second-feet, and fairly well defined above and below. Operation of recorder excellent. Daily discharge prior to December 15 ascertained by applying daily gage height to rating table; beginning that date by applying to rating table mean daily gage height determined from recorder graph by inspection, or for days of considerable variation in stage, by averaging determinations obtained by applying mean gage heights for shorter intervals. Records good except for extremely low water and periods of ice effect which are fair.

COOPERATION.—Gage-height record October 1 to December 14 furnished by United States Weather Bureau.

Discharge measurements of Olentangy River near Delaware, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 1	F. R. Morgan	0.21	20.6	Apr. 4	Lee, Sherman, and		
Nov. 22	do	0.46	37.2		Werner	3.35	446
27	do	0.56	50.6	22	F. R. Morgan	2.12	121
Jan. 7	Perrin and Morgan	4.11	201	May 24	do	1.95	100
Mar. 10	F. R. Morgan	3.04	308	July 28	E. E. R. Dornbach	1.18	18.2
29	Lasley Lee	12.39	7,760	Sept. 5	do	.89	3.74
				26	Werner and Dornbach	1.08	7.39

*Refers to William Street gage.

Daily discharge, in second-feet, of Olentangy River near Delaware, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	29	200	951	757	542	847	168	157	310	13	4.0
2	20	31	242	474	507	1,380	667	236	120	224	12	4.2
3	18	40	186	642	407	2,180	542	168	117	168	17	4.5
4	15	104	186	802	777	1,140	437	157	138	129	16	3.8
5	13	118	785	745	2,040	610	347	148	178	103	12	3.8
6	12	133	2,700	297	1,410	347	297	129	659	237	10	4.0
7	9.6	143	2,620	224	560	322	260	110	530	987	10	4.5
8	10	118	1,550	138	347	347	236	95	2,150	928	9.3	4.8
9	9.6	79	2,300	100	347	347	236	95	4,100	507	10	5.0
10	8.9	65	3,140	407	272	347	212	100	2,560	322	10	4.8
11	8.9	54	1,600	5,180	248	322	190	128	1,760	190	8.6	4.5
12	8.9	47	1,550	3,290	201	437	168	236	2,400	148	9.0	5.0
13	8.2	40	1,760	1,800	178	472	148	201	1,600	138	9.3	7.9
14	8.2	34	6,440	667	178	437	129	272	667	101	10	8.6
15	8.9	31	1,970	759	178	310	120	297	407	89	9.3	9.6
16	9.6	29	906	1,020	168	224	108	284	310	74	9.0	14
17	8.9	28	622	1,400	178	190	103	201	248	57	9.3	14
18	7.5	28	507	632	236	178	110	178	201	45	8.2	11
19	8.9	28	437	407	236	178	120	212	168	37	7.9	10
20	7.5	31	437	322	212	168	120	201	148	33	7.9	11
21	7.1	42	928	236	310	201	115	148	120	30	7.2	10
22	11	39	3,840	236	248	473	120	118	105	27	6.8	8.2
23	8.2	38	4,580	178	322	1,900	157	106	509	26	6.5	6.5
24	13	36	2,960	129	310	1,640	148	98	460	25	6.0	6.5
25	24	38	1,430	105	377	1,050	120	129	613	22	5.5	7.2
26	25	40	897	80	347	2,440	105	138	592	18	6.0	9.0
27	29	50	712	81	322	1,980	89	110	347	16	5.8	8.2
28	36	65	1,400	75	667	1,180	82	92	475	14	4.8	10
29	34	68	1,170	310	667	6,350	89	98	1,050	14	6.2	16
30	32	108	582	2,110	-----	5,310	106	212	530	14	6.8	27
31	32	-----	1,020	1,370	-----	2,090	-----	224	-----	16	5.0	-----

NOTE.—Stage-discharge relation affected by ice Jan. 6-10 and 21-29; discharge estimated by study of one discharge measurement, weather records, and records of flow of near-by streams.

Monthly discharge of Olentangy River near Delaware, Ohio, for the year ending September 30, 1924

[Drainage area, 415 square miles.] ^a

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	36	7.1	15.3	0.037	0.04
November	143	28	57.8	.139	.16
December	6,440	186	1,610	4.03	4.65
January	5,180	-----	812	2.10	2.42
February	2,040	168	449	1.16	1.25
March	6,350	168	1,130	2.92	3.37
April	847	82	218	.563	.63
May	297	92	164	.424	.49
June	4,100	105	781	2.02	2.25
July	987	14	163	.421	.49
August	17	4.8	8.85	.023	.03
September	27	3.8	8.25	.021	.02
The year	6,440	3.8	454	1.16	15.80

^a 387 square miles after Dec. 14 when station was moved upstream.

BIG WALNUT CREEK AT REES, OHIO

LOCATION.—At Scioto Valley Railway & Power Co.'s bridge at Rees (formerly called Rees Station), Franklin County, 3 miles below junction of Big Walnut, Alum, and Blacklick Creeks.

DRAINAGE AREA.—544 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 18, 1921, to September 30, 1924.

GAGE.—Chain gage on bridge for low water; staff gage on bridge pier for higher stages; read by employees of the power company. Zero of gage is 700.20 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from highway bridge three-tenths mile below gage or by wading.

CHANNEL AND CONTROL.—Channel slightly curved at gage. Banks high. Control is riffle of gravel and small boulders 500 feet below gage. Zero flow would occur at gage height -1.1 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 15.4 feet at 9 p. m. on March 29 (discharge, 18,000 second-feet); minimum stage, -0.52 foot at noon August 27, 29, and 30 (discharge, 18 second-feet).

1921-1924: Maximum stage recorded on March 29, 1924; minimum stage, -0.56 foot at noon October 4, 1922 (discharge, 12 second-feet).

The flood of March, 1913, reached a stage on March 25 of 18.5 feet referred to gage datum.

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation for low and medium stages changed during high water on March 29; not affected by ice. Rating curves well defined. Gage read once daily to hundredths. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by Scioto Valley Railway & Power Co.

Discharge measurements of Big Walnut Creek at Rees, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Nov. 2	W. W. Perrin-----	-0.14	81.0	July 3	Ansley and Dornbach	0.43	166
Dec. 6	Lasley Lee-----	11.85	10,200	Aug. 5	E. E. R. Dornbach----	-.33	46.1
Mar. 26	F. R. Morgan-----	7.16	4,840	Sept. 17	do-----	-.48	22.2

Daily discharge, in second-feet, of Big Walnut Creek at Rees, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	139	90	810	1,060	710	470	970	855	358	450	51	20
2-----	90	78	510	552	510	575	640	640	375	255	42	22
3-----	67	71	370	3,270	370	575	540	375	310	172	48	25
4-----	56	94	352	2,950	410	530	430	358	229	132	37	25
5-----	44	450	3,270	620	1,060	4,400	375	450	182	106	40	27
6-----	41	303	10,300	335	2,000	1,540	325	340	4,000	103	40	25
7-----	37	272	4,810	303	575	910	310	242	2,730	141	40	22
8-----	34	216	1,420	335	352	575	296	205	2,100	472	35	25
9-----	34	143	1,360	288	243	410	268	205	15,000	800	30	25
10-----	30	126	6,760	272	319	450	255	229	3,800	358	32	22
11-----	27	106	2,140	13,000	191	390	229	229	1,960	194	32	25
12-----	27	94	1,180	4,500	272	490	194	1,690	1,270	132	27	25
13-----	27	82	2,280	1,300	243	490	205	1,030	1,270	1,960	30	25
14-----	27	75	9,820	620	216	470	172	745	690	800	27	25
15-----	30	71	1,600	370	204	450	161	1,320	410	375	27	25
16-----	30	59	860	1,120	139	410	151	800	1,360	217	27	27
17-----	25	52	810	3,270	230	243	205	495	410	123	30	20
18-----	27	71	760	860	230	258	375	375	375	103	27	25
19-----	30	63	710	665	216	258	495	640	310	90	25	22
20-----	37	52	575	258	3,540	243	340	375	205	80	22	20
21-----	34	71	810	230	960	665	296	296	182	68	25	37
22-----	37	82	5,920	288	470	1,180	282	268	161	62	25	27
23-----	34	118	8,780	288	430	3,030	255	182	217	56	27	22
24-----	44	110	2,630	243	191	3,540	255	182	194	51	22	22
25-----	63	122	1,300	319	352	1,600	217	161	229	65	22	22
26-----	110	319	1,010	143	147	4,000	182	182	161	59	22	20
27-----	86	450	810	158	230	2,950	182	182	229	51	18	20
28-----	82	303	2,560	158	430	1,360	182	182	182	48	22	22
29-----	71	1,060	1,300	168	450	13,100	205	217	194	40	18	56
30-----	71	935	760	1,120	-----	12,700	229	1,210	1,030	45	18	62
31-----	78	-----	1,010	1,420	-----	1,510	-----	640	-----	62	20	-----

NOTE.—Gage not read Nov. 30; discharge interpolated.

Monthly discharge of Big Walnut Creek at Rees, Ohio, for the year ending September 30, 1924

[Drainage area, 544 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	139	25	50.6	0.093	0.11
November-----	1,060	52	205	.377	.42
December-----	10,300	352	2,500	4.60	5.30
January-----	13,000	143	1,310	2.41	2.78
February-----	3,540	139	541	.994	1.07
March-----	13,100	243	1,930	3.55	4.09
April-----	970	151	307	.564	.63
May-----	1,690	161	494	.908	1.05
June-----	15,000	161	1,340	2.46	2.74
July-----	1,960	40	247	.454	.52
August-----	51	18	29.3	.054	.06
September-----	62	20	26.2	.048	.05
The year-----	15,000	18	752	1.38	18.82

ALUM CREEK AT COLUMBUS, OHIO

LOCATION.—A quarter of a mile below Livingston Avenue Bridge at Columbus, Franklin County.

DRAINAGE AREA.—190 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 28, 1923, to September 30, 1924.

GAGE.—Prior to December 18, 1923, Gurley eight-day water-stage recorder on left bank a quarter of a mile below Livingston Avenue Bridge; replaced by Au recorder on that date.

DISCHARGE MEASUREMENTS.—Made from Livingston Avenue Bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for 500 feet above and below gage. Banks high and wooded. Left bank subject to overflow at gage height 9 feet. Bed of stream composed of gravel and small boulders. Control for low water is riffle 30 feet below gage; for medium water, riffle 150 feet below gage; and for high water, long stretch of channel below gage. Control apparently permanent. Zero flow would occur at gage height 0.35 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period of record, 12.1 feet at 5 p. m. March 29, 1924 (discharge, 6,130 second-feet); minimum stage, 0.90 foot from 6 to 11 p. m. September 7, 1924 (discharge, 4.2 second-feet).

ICE.—Stage-discharge relation not affected by ice except during unusually severe winters.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve well defined. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by use of discharge integrator. Records excellent.

Discharge measurements of Alum Creek at Columbus, Ohio, during the years ending September 30, 1923 and 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
1923		<i>Feet</i>	<i>Sec.-ft.</i>	1924		<i>Feet</i>	<i>Sec.-ft.</i>
Aug. 30	F. R. Morgan	1.56	68.7	Mar. 29	Lasley Lee	11.28	5,090
Sept. 4	Wall and Dickson	1.13	15.7	July 3	Ansley and Dornbach	1.44	52.9
Nov. 27	W. W. Perrin	1.86	123	Aug. 4	E. E. R. Dornbach	1.16	18.5
Dec. 6	Lasley Lee	9.16	3,160	Sept. 5	do	1.01	10.0
1924				17	do	1.10	13.0
Mar. 25	F. R. Morgan	3.18	481				

^a Measured from bridge.

Daily discharge, in second-feet, of Alum Creek at Columbus, Ohio, for the years ending September 30, 1923 and 1924

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1		10	26	11		42	14	21		43	95
2		15	17	12		40	13	22		20	176
3		35	19	13		110	12	23		13	74
4		64	14	14		90	10	24		12	47
5		155	90	15		58	9	25		10	34
6		110	38	16		34	7.5	26		8.5	27
7		175	35	17		27	7.3	27		18	63
8		78	32	18		19	17	28		16	455
9		50	20	19		16	16	29		28	80
10		58	19	20		50	32	30		15	68
								31		12	40

Daily discharge, in second-feet, of Alum Creek at Columbus, Ohio, for the years ending September 30, 1923 and 1924—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1923-24												
1.....	34.0	21	180	325	196	160	290	192	103	118	20	15.0
2.....	25.0	19	116	160	135	182	225	162	79	76	19	12.0
3.....	21.0	19	88	850	108	164	182	112	77	55	18	12.0
4.....	17.0	80	107	525	125	254	160	130	80	45	17	12.0
5.....	15.0	112	1,100	205	515	940	134	134	95	36	15	8.3
6.....	14.0	105	2,900	93	630	490	124	90	1,450	50	14	4.8
7.....	12.0	80	1,360	105	182	295	120	68	1,350	170	12	5.1
8.....	12.0	61	430	330	101	165	110	64	1,660	302	12	6.9
9.....	11.0	47	1,280	300	84	114	98	93	5,160	232	12	8.3
10.....	11.0	39	1,800	490	92	125	92	76	1,420	97	11	8.5
11.....	11.0	34	768	3,500	68	121	84	94	900	62	12	8.8
12.....	10.0	30	422	1,560	73	135	73	470	665	118	14	9.3
13.....	10.0	26	1,410	405	65	150	67	310	565	405	12	14.0
14.....	9.6	23	2,610	200	76	156	82	270	245	190	12	8.3
15.....	18.0	21	536	148	70	135	58	375	150	89	12	9.8
16.....	11.0	20	290	685	67	105	51	258	300	58	12	9.8
17.....	11.0	21	248	965	84	88	55	148	116	46	14	23.0
18.....	12.0	20	214	305	79	90	150	120	91	36	11	13.0
19.....	14.0	20	178	190	278	88	128	148	77	32	11	12.0
20.....	12.0	21	178	155	870	100	102	113	60	27	11	14.0
21.....	12.0	21	340	126	330	182	89	86	58	24	11	30.0
22.....	12.0	22	2,410	99	158	458	91	71	50	24	10	11.0
23.....	12.0	35	2,480	76	132	1,180	100	62	76	22	11	9.0
24.....	44.0	29	845	65	112	916	84	62	68	21	11	8.6
25.....	24.0	29	430	67	106	505	71	61	51	27	12	8.3
26.....	25.0	82	330	74	80	1,440	60	71	48	26	12	8.0
27.....	28.0	114	280	54	96	1,060	51	78	76	25	12	7.3
28.....	30.0	98	705	46	122	599	54	77	73	24	12	30.0
29.....	30.0	76	375	50	136	4,990	54	134	255	23	11	33.0
30.....	36.0	153	220	505	-----	2,530	94	285	318	22	12	31.0
31.....	23.0	-----	275	440	-----	467	-----	182	-----	21	24	-----

NOTE.—Aug. 12-13, 1923, approximate gage-height graph based on range in stage indicated on chart by recorder pencil while clock was stopped. Recorder not operating; July 26 to Aug. 3, 1924; daily discharge interpolated.

Monthly discharge of Alum Creek at Columbus, Ohio, for the years ending September 30, 1923 and 1924

[Drainage area, 190 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1923					
July 29-31.....	28	12	18.3	0.096	0.01
August.....	175	8.5	49.0	.258	.30
September.....	455	7.3	51.5	.271	.30
1923-24					
October.....	44	9.6	18.3	.096	.11
November.....	153	19	49.3	.259	.29
December.....	2,900	88	803	4.23	4.88
January.....	3,500	46	423	2.23	2.57
February.....	870	65	178	.937	1.01
March.....	4,990	88	593	3.12	3.60
April.....	290	51	104	.547	.61
May.....	470	61	148	.779	.90
June.....	5,160	48	524	2.76	3.08
July.....	405	21	80.7	.425	.49
August.....	24	10	13.2	.069	.08
September.....	33	4.8	13.0	.068	.08
The year.....	5,160	4.8	247	1.30	17.70

DARBY CREEK AT DARBYVILLE, OHIO

LOCATION.—At highway bridge three-eighths mile northeast of Darbyville, Pickaway County, and 3 miles below mouth of Greenbrier Creek.

DRAINAGE AREA.—533 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 21, 1921, to September 30, 1924.

GAGE.—Vertical staff gage on bridge pier on right bank installed October 18, 1922; read by J. M. Waples and Harry Hott. Zero of gage 713.64 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for 1,000 feet above and below gage. Banks high and wooded. Control for low water is a riffle 100 feet below gage; control for higher stages is long stretch of channel below gage. Zero flow would occur at gage height 0.1 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.2 feet at 8 a. m. March 30 (discharge, 14,300 second-feet); minimum stage, 2.01 feet at 5 p. m. September 15 (discharge, 17 second-feet).

1921-1924: Maximum stage recorded March 30, 1924; minimum stage recorded, 1.70 feet on September 30, October 3, 5, and 7, 1922 (discharge, 12 second-feet).

ICE.—Stage-discharge relation affected by ice during severe winters.

ACCURACY.—Stage-discharge relation changed during high water on March 30; affected by ice in January. Rating curves well defined below 8,000 second-feet, extended above. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Darby Creek at Darbyville, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 31	W. W. Perrin.....	1.72	31.7	Aug. 5	E. E. R. Dornbach.....	2.36	76.6
Mar. 27	W. A. Werner.....	6.93	3,430	Sept. 18	----do.-----	2.08	24.0

^a Measured from bridge.

Daily discharge, in second-feet, of Darby Creek at Darbyville, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	47	34	59	802	740	189	1,270	237	424	310	93	24
2-----	49	32	53	315	650	355	1,110	248	331	264	87	24
3-----	41	32	71	1,110	490	279	970	248	264	221	95	21
4-----	37	39	81	465	440	246	835	331	331	210	84	24
5-----	32	98	315	465	465	1,780	770	268	376	189	77	20
6-----	29	74	1,110	262	1,600	1,600	642	268	1,780	182	72	23
7-----	27	116	2,150	280	540	1,270	584	200	4,240	186	70	18
8-----	26	109	970	298	418	622	529	169	6,270	354	64	19
9-----	24	103	622	317	355	395	475	156	13,800	502	60	20
10-----	24	68	2,550	335	355	355	424	141	8,010	354	58	18
11-----	24	59	2,350	1,600	315	335	400	130	3,720	280	56	19
12-----	24	56	1,270	8,490	279	315	354	196	2,250	225	58	18
13-----	23	53	835	1,600	246	315	310	354	1,690	237	54	20
14-----	23	52	3,720	970	202	279	288	376	1,270	642	54	19
15-----	26	41	2,550	740	231	297	331	331	970	424	47	17
16-----	26	39	1,110	1,600	176	315	280	310	1,110	310	45	19
17-----	26	39	835	970	164	216	248	264	835	244	45	19
18-----	24	37	710	1,040	189	202	280	214	705	206	43	24
19-----	24	36	595	740	246	189	288	200	584	178	41	28
20-----	24	37	515	622	1,780	246	256	172	450	163	41	24
21-----	24	36	540	395	970	297	225	178	400	147	40	26
22-----	25	36	3,470	395	490	540	225	150	376	141	38	34
23-----	26	36	6,270	315	355	1,270	240	121	556	135	35	32
24-----	32	41	4,240	279	315	2,050	237	115	424	175	35	26
25-----	34	39	1,780	246	315	1,960	200	115	331	135	35	30
26-----	32	41	1,190	236	216	1,780	175	107	331	121	30	26
27-----	34	43	1,600	226	246	3,590	153	118	475	109	29	22
28-----	39	48	1,420	216	355	1,690	156	118	354	95	32	38
29-----	36	43	1,780	315	418	6,890	144	121	376	93	26	45
30-----	35	41	835	970	-----	14,800	172	502	354	87	25	56
31-----	34	-----	970	835	-----	3,230	-----	770	-----	87	23	-----

NOTE.—Stage-discharge relation affected by ice Jan. 7-9 and 26-27; discharge interpolated.

Monthly discharge of Darby Creek at Darbyville, Ohio, for the year ending September 30, 1924

[Drainage area, 533 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	49	23	30	0.056	0.06
November-----	116	32	51.9	.097	.11
December-----	6,270	53	1,500	2.81	3.24
January-----	8,490	216	885	1.66	1.91
February-----	1,780	164	468	.878	.95
March-----	14,300	189	1,530	2.87	3.31
April-----	1,270	144	419	.786	.88
May-----	770	107	233	.437	.50
June-----	13,800	264	1,780	3.34	3.73
July-----	642	87	226	.424	.49
August-----	95	23	51.4	.096	.11
September-----	56	17	25.1	.047	.05
The year-----	14,300	17	601	1.13	15.34

PAINT CREEK AT BAINBRIDGE, OHIO

LOCATION.—At highway bridge half a mile northwest of Bainbridge, Ross County.

Buckskin Creek enters on right 500 feet above gage.

DRAINAGE AREA.—773 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 6, 1921, to December 31, 1923, when station was discontinued.

GAGE.—Chain gage for low water on highway bridge; vertical staff for higher stages on left abutment; read by G. P. Moore. Zero of gage is 700.81 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from railroad bridge 1,000 feet above gage, from highway bridge at gage, or by wading. The flow of Buckskin Creek is measured and added to measurements made at railroad bridge.

CHANNEL AND CONTROL.—Channel straight for a quarter of a mile above and half a mile below gage. Banks wooded; right bank high; left bank fairly high, subject to overflow during floods. Control for low water is rock ledge at gage. Control for higher stages is stretch of channel below gage.

EXTREMES OF STAGE.—Maximum stage recorded during period, 16.1 feet at 4 p. m. December 31; minimum stage, 2.10 feet at 4 p. m. October 23.

1922-23: Maximum stage, 20 feet on December 24, 1921 (determined by leveling to high-water mark); minimum stage, 2.10 feet at 4 p. m. October 23, 1923.

ICE.—Stage-discharge relation not affected by ice except during severe winters.

ACCURACY.—Gage read to hundredths twice daily. Records reliable. Rating curve not developed for high water.

Discharge measurements of Paint Creek at Bainbridge, Ohio, during the year ending September 30, 1924

[Made by W. W. Perrin]

Date		Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Nov. 1	-----	2.23	38.6
Nov. 21	-----	2.24	40.0

Daily gage height, in feet, of Paint Creek at Bainbridge, Ohio, for the period October 1 to December 31, 1923

Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.
1.-----	2.18	2.23	2.33	11.-----	2.13	2.17	4.8	21.-----	2.19	2.16	3.64
2.-----	2.15	2.21	2.31	12.-----	2.15	2.14	3.38	22.-----	2.13	2.17	6.0
3.-----	2.17	2.21	2.26	13.-----	2.13	2.13	3.57	23.-----	2.11	2.47	7.2
4.-----	2.15	2.58	2.28	14.-----	2.21	2.15	3.90	24.-----	2.24	2.33	6.8
5.-----	2.17	2.44	2.78	15.-----	2.35	2.13	3.55	25.-----	2.28	2.27	6.1
6.-----	2.18	2.34	4.1	16.-----	2.26	2.34	3.00	26.-----	2.23	2.76	4.3
7.-----	2.17	2.29	3.72	17.-----	2.18	2.29	3.06	27.-----	2.21	2.56	4.03
8.-----	2.15	2.25	3.44	18.-----	2.22	2.23	3.15	28.-----	2.23	2.34	6.4
9.-----	2.13	2.23	3.45	19.-----	2.48	2.19	2.92	29.-----	2.19	2.33	4.8
10.-----	2.15	2.19	5.0	20.-----	2.22	2.13	3.03	30.-----	2.26	2.35	4.08
								31.-----	2.24	-----	16.0

PAINT CREEK NEAR BOURNEVILLE, OHIO

LOCATION.—At highway bridge $1\frac{1}{4}$ miles southwest of Bourneville and 11 miles southwest of Chillicothe, Ross County. Upper Twin Creek enters on left $1\frac{1}{4}$ miles below station.

DRAINAGE AREA.—808 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1923, to September 30, 1924.

GAGE.—Chain gage on highway bridge; read by M. C. Jones to August 27, 1924.

Au water-stage recorder at downstream end of bridge pier installed on August 27, 1924, at same datum.

DISCHARGE MEASUREMENTS.—Made from cable 75 feet below gage or by wading.
CHANNEL AND CONTROL.—Channel slightly curved above and below gage. Right bank high, brushy; left bank fairly high, protected by levee, brushy. Control for low water is gravel riffle one-eighth mile below gage. Control for high stages is long stretch of channel below gage. Zero flow would occur at gage height 0.25 foot.

EXTREMES OF STAGE.—Maximum stage recorded during year, 15.3 feet at 1.30 p. m. December 31; minimum stage, 1.88 feet on October 16, 17, 21, and 23.
ACCURACY.—Gage read to hundredths once daily. Operation of water-stage recorder satisfactory. Rating curve not developed for high water.

Discharge measurements of Paint Creek near Bourneville, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Nov. 1	W. W. Perrin	1.99	36.0	Aug. 13	Lee and Markel	2.06	58.0
Mar. 26	W. A. Werner	5.28	1,670	21	W. P. Ansley	1.99	53.6
June 9	Lee and English	6.16	2,330	Sept. 18	do	2.56	144
July 30	Lasley Lee	2.20	89.6				

Daily gage height, in feet, of Paint Creek near Bourneville, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.96	1.99	2.27	-----	4.2	3.76	5.5	5.5	3.58	-----	2.27	1.96
2	1.92	1.99	2.26	5.8	4.2	4.6	-----	4.4	3.55	-----	2.26	1.97
3	1.94	1.99	2.20	5.6	3.91	-----	4.6	-----	3.50	-----	2.18	2.37
4	1.92	2.02	2.22	7.2	3.86	3.72	-----	-----	-----	-----	2.12	2.17
5	1.94	2.19	2.78	5.5	4.3	11.4	-----	4.1	3.82	-----	-----	2.05
6	1.90	2.24	4.9	4.1	-----	8.1	4.0	-----	-----	3.12	2.10	2.04
7	1.90	2.20	4.5	4.2	-----	6.0	3.87	-----	5.5	4.7	2.09	2.02
8	1.90	2.14	4.2	4.4	-----	5.2	-----	-----	-----	4.5	2.04	1.99
9	1.89	-----	3.88	4.0	-----	4.5	3.42	-----	7.3	3.95	-----	1.87
10	1.90	2.10	4.8	4.0	3.51	4.3	3.57	-----	-----	3.54	-----	2.01
11	1.92	2.14	5.4	13.8	3.14	4.1	3.39	-----	-----	-----	1.99	2.01
12	1.90	2.10	5.2	8.6	3.36	-----	3.31	-----	5.7	-----	2.00	1.99
13	1.90	2.08	5.0	6.3	3.24	-----	3.22	-----	-----	3.99	2.06	1.98
14	1.89	2.13	4.9	5.2	3.15	3.89	-----	-----	-----	-----	2.02	2.01
15	1.92	-----	4.4	4.1	3.16	3.70	-----	3.65	4.9	-----	-----	2.00
16	1.88	2.10	4.3	5.7	3.16	3.52	3.10	-----	-----	-----	1.98	2.00
17	1.88	2.10	4.0	7.5	3.12	3.40	3.03	-----	4.1	2.84	-----	2.08
18	1.90	2.00	3.9	6.6	3.14	3.37	-----	-----	3.85	-----	-----	2.44
19	1.95	2.02	3.8	5.1	3.18	3.34	3.86	-----	-----	2.62	1.95	2.20
20	1.91	2.00	3.63	4.7	7.3	3.32	3.50	3.27	-----	-----	1.96	2.08
21	1.88	2.04	4.2	-----	5.9	6.4	3.24	3.22	-----	2.54	1.99	2.09
22	1.90	2.04	6.9	3.30	5.0	-----	3.40	-----	-----	2.50	2.01	4.41
23	1.88	2.06	8.3	3.93	4.3	-----	-----	-----	4.6	-----	2.00	2.68
24	2.06	2.08	7.1	3.63	3.9	5.5	3.11	-----	-----	-----	-----	2.32
25	2.02	2.16	6.1	4.6	3.56	5.0	-----	-----	-----	-----	2.12	2.17
26	2.04	2.19	5.5	4.2	4.6	-----	-----	-----	-----	-----	2.40	2.09
27	2.06	2.16	5.0	3.18	3.43	5.3	2.94	-----	-----	2.30	2.10	2.05
28	2.04	2.14	7.7	3.20	3.48	-----	-----	3.19	-----	-----	2.07	2.02
29	2.02	2.16	6.1	3.30	3.61	-----	-----	-----	-----	2.24	2.00	2.34
30	2.00	2.18	5.2	6.2	-----	11.1	3.26	-----	-----	2.22	2.00	2.92
31	2.04	-----	14.8	5.7	-----	-----	-----	-----	-----	2.21	1.96	-----

WHITEOAK CREEK BASIN

WHITEOAK CREEK NEAR GEORGETOWN, OHIO

LOCATION.—At highway bridge 600 feet below mouth of Opossum Run, $1\frac{3}{4}$ miles southwest of Georgetown, Brown County, and $6\frac{1}{4}$ miles above junction with Ohio River.

DRAINAGE AREA.—221 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 26, 1923, to September 30, 1924.

GAGE.—Chain gage on downstream side of bridge; for high water a vertical staff gage in two sections on right abutment of highway bridge is used. Gage read by Fred Hauck.

DISCHARGE MEASUREMENTS.—Made from cable a mile below gage or by wading near gage.

CHANNEL AND CONTROL.—Channel straight for 1,000 feet above and below gage. Banks high and brushy. Control is riffle of boulders and large flat stones about 150 feet below gage. Zero flow would occur at zero gage height.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11 feet at 4.30 p. m. December 31 (discharge, 6,800 second-feet); minimum stage, 0.40 foot at 5 p. m. August 19 (discharge, 1.2 second-feet).

ICE.—Stage-discharge relation affected by ice during severe winters.

ACCURACY.—Stage-discharge relation permanent; affected by ice in January. Rating curve well defined between 2 and 3,000 second-feet and fairly well defined above and below this limit. Gage read to hundredths twice a day. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Whiteoak Creek near Georgetown, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Mar. 10	Lee and Werner -----	1.59	101	Aug. 20	W. P. Ansley-----	0.50	2.7
25	do.-----	1.89	160	Sept. 18	do.-----	.75	8.4
July 9	E. E. R. Dornbach ----	1.40	75.0				

Daily discharge, in second-feet, of Whiteoak Creek near Georgetown, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		6.1	69	1,680	162	235	110	1,750	54	121	3.8	3.5
2		5.5	53	222	162	470	89	263	43	68	89	11
3		4.4	34	3,960	121	235	75	133	35	47	36	9.3
4		9.3	27	785	185	197	67	342	44	34	18	21
5		8.7	376	152	1,230	4,320	59	185	90	26	9.3	16
6		8.7	3,960	131	470	552	54	119	52	110	6.7	9.3
7		14	687	110	114	263	51	74	36	412	5.2	6.4
8		16	197	88	72	152	46	80	32	162	4.1	4.7
9		11	174	67	63	97	43	78	263	66	3.5	3.7
10		8.4	835	90	53	103	38	63	1,480	38	3.0	3.0
11		7.0	263	4,770	38	107	36	60	2,400	26	2.6	2.5
12		6.7	137	394	45	222	33	67	249	43	2.6	2.1
13		5.2	376	222	40	209	30	59	490	835	2.5	2.5
14		4.7	940	152	42	141	27	52	141	174	2.0	2.2
15		4.1	235	105	59	100	26	45	75	75	2.0	2.0
16		4.7	139	2,560	64	72	24	47	53	49	1.8	1.6
17		3.8	209	1,350	52	55	26	39	40	35	2.0	22
18		3.7	152	235	152	57	1,110	42	36	26	1.7	8.7
19		3.5	110	152	835	55	249	32	28	19	1.3	5.8
20		3.5	152	162	3,120	59	125	84	22	14	2.2	29
21		3.5	1,420	34	293	2,880	107	263	18	44	222	59
22		3.7	3,200	40	174	940	92	112	26	31	8.7	490
23		7.4	2,260	46	135	342	81	59	835	12	4.4	107
24		7.0	785	52	125	209	57	43	263	11	5.0	46
25		6.7	342	53	110	162	45	35	82	8.0	76	24
26	3.2	32	394	53	60	293	38	28	49	6.4	105	14
27	2.8	105	263	54	87	263	34	71	394	5.5	49	8.7
28	3.2	72	1,480	54	100	141	64	249	185	5.0	22	82
29	5.0	37	309	55	108	3,460	152	90	1,610	4.1	10	185
30	7.7	43	174	159		470	293	278	490	3.8	6.7	235
31	7.4		4,050	263		185		92		4.4	4.4	

NOTE.—Discharge Oct. 23 to Dec. 4 computed by shifting-control method. Stage-discharge relation affected by ice Jan. 6-8, 22, 23, 25-28, and 30; discharge interpolated.

Monthly discharge of Whiteoak Creek near Georgetown, Ohio, for the year ending September 30, 1924.

[Drainage area, 221 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October 26-31	7.7	2.8	4.88	0.022	0.005
November	105	3.5	15.2	.069	.08
December	4,050	27	768	3.48	4.01
January	4,770	34	589	2.67	3.08
February	3,120	38	285	1.29	1.39
March	4,320	55	550	2.49	2.87
April	1,110	24	109	.493	.55
May	1,750	28	159	.719	.83
June	2,400	18	320	1.45	1.62
July	835	3.8	81.1	.367	.42
August	222	1.3	23.0	.104	.12
September	490	1.6	47.2	.214	.24

LITTLE MIAMI RIVER BASIN

TODD FORK NEAR WILMINGTON, OHIO

LOCATION.—At dam site three-fourths mile below Xenia Pike crossing, 3 miles northwest of Wilmington, Clinton County, and $4\frac{1}{4}$ miles above mouth of Dutch Creek.

DRAINAGE AREA.—26.1 square miles (measured on topographic map).

RECORDS AVAILABLE.—July 24 to November 30, 1923, when station was discontinued.

GAGE.—Vertical staff in two sections bolted to rock ledge on left bank at dam site; read by Mrs. M. E. Walker.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Channel straight for 100 feet above and 200 feet below gage. Bed of stream is largely rock ledge at gage. Control is rock ledge 40 feet below gage. Zero flow would occur at gage height, 0.50 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 1.15 feet on September 3 (discharge, 18.8 second-feet); minimum stage recorded, 0.58 foot on August 20 (discharge, 0.08 second-foot).

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by city of Wilmington.

Discharge measurements of Todd Fork near Wilmington, Ohio, during the period July 24 to December 21, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
July 24	Lee and Morgan.....	<i>Feet</i> 0.73	<i>Sec.-ft.</i> 0.77	Oct. 19	F. R. Morgan.....	<i>Feet</i> 0.65	<i>Sec.-ft.</i> 0.17
Aug. 28	F. R. Morgan.....	.70	.37	Dec. 21	Lasley Lee.....	1.46	51.1
Sept. 14	Lee and Wall.....	.62	.12				

Daily discharge, in second-feet, of Todd Fork near Wilmington, Ohio, for the period July 24 to November 30, 1923

Day	July	Aug.	Sept.	Oct.	Nov.	Day	July	Aug.	Sept.	Oct.	Nov.
1.....		0.2	0.1	0.1	0.4	16.....		0.2	0.1	0.2	0.3
2.....		.2	.2	.1	.3	17.....		.1	.1	.2	.3
3.....		2.5	18.8	.2	.3	18.....		.1	.2	.3	.3
4.....		1.0	.9	.2	5.0	19.....		.1	1.2	.2	.3
5.....		.3	3.6	.1	3.0	20.....		.1	.4	.2	.3
6.....		.2	3.9	.1	1.9	21.....		.6	.2	.1	.3
7.....		.2	2.8	.2	1.2	22.....		1.2	.2	.3	.3
8.....		.1	.9	.1	1.0	23.....		.2	.2	.2	1.2
9.....		.1	.3	.1	.5	24.....	0.2	.2	.2	3.6	.6
10.....		.1	.2	.1	.4	25.....	.4	.2	.4	.6	.6
11.....		.1	.2	.1	.4	26.....	.2	.1	.2	.3	1.9
12.....		.1	.2	.2	.3	27.....	.2	.4	.2	.2	1.3
13.....		.1	.1	.2	.3	28.....	.2	.3	.6	.2	1.0
14.....		.1	.1	.3	.2	29.....	.2	.2	.2	.3	.7
15.....		.1	.1	.4	.2	30.....	.2	.2	.2	1.2	2.5
						31.....	.2	.1		.6	

NOTE.—Gage not read Aug. 21, 24, Oct. 14, Nov. 10, 11, and 17; discharge interpolated.

Monthly discharge of Todd Fork near Wilmington, Ohio, for the period July 24 to November 30, 1923

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
July 24-31.....	0.4	0.2	0.22	October.....	3.6	0.1	0.36
August.....	2.5	.1	.31	November.....	5.0	.2	.92
September.....	18.8	.1	1.23				

LICKING RIVER BASIN

LICKING RIVER AT MCKINNEYSBURG, KY.

LOCATION.—At highway bridge at McKinneysburg, Pendleton County, 8 miles southeast of Falmouth and same distance above mouth of South Fork.

DRAINAGE AREA.—2,270 square miles (area south of latitude 38° measured on topographic maps, area north of latitude 38° measured on United States Geological Survey map of Kentucky; scale 1: 500,000).

RECORDS AVAILABLE.—July 23 to September 30, 1924.

GAGE.—Chain gage on highway bridge; read by Virgil Holmes.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for 600 feet above and below gage. Banks high. Control for extremely low water is riffle just below bridge; for medium stages, riffle 600 feet below bridge; and for high stages, long stretch of channel below gage. Zero flow would occur at gage height 0.6 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period of record, 13 feet at 7.25 a. m. September 22 (discharge, 10,600 second-feet); minimum stage, 1.49 feet for part of day on August 17 and 18 and September 19 (discharge, 65 second-feet).

ICE.—Stage-discharge relation not affected except during unusually severe winters.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Licking River at McKinneysburg, Ky., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
July 23	Lasley Lee.....	2.07	290
Aug. 18	W. P. Ansley.....	1.50	67.0
Sept. 16	do.....	1.66	107

Daily discharge, in second-feet, of Licking River at McKinneysburg, Ky., for the period July 23 to September 30, 1924

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1.....		188	255	11.....		91	114	21.....		302	2,470
2.....		650	201	12.....		94	97	22.....		302	10,200
3.....		326	209	13.....		89	89	23.....	278	255	6,500
4.....		326	167	14.....		86	83	24.....	255	302	6,060
5.....		218	140	15.....		80	128	25.....	255	740	2,710
6.....		163	144	16.....		78	108	26.....	452	680	1,590
7.....		128	167	17.....		67	89	27.....	400	350	930
8.....		111	155	18.....		67	75	28.....	302	426	710
9.....		108	151	19.....		148	67	29.....	237	452	2,310
10.....		111	148	20.....		167	83	30.....	201	452	6,940
								31.....	171	375	-----

Monthly discharge of Licking River at McKinneysburg, Ky., for the period July 23 to September 30, 1924

[Drainage area, 2,270 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
July 23-31	452	171	283	0.125	0.04
August	740	67	256	.113	.13
September	10,200	67	1,440	.634	.71

MIAMI RIVER BASIN

MIAMI RIVER AT SIDNEY, OHIO

LOCATION.—At North Street Bridge at Sidney, Shelby County, 500 feet below Cleveland, Cincinnati, Chicago & St. Louis Railway bridge, and half a mile below mouth of Tawawa Creek.

DRAINAGE AREA.—545 square miles (measured on topographic maps).

RECORDS AVAILABLE.—February 1, 1914, to September 30, 1924.

GAGE.—Vertical staff in two sections; lower section attached to upstream wing and upper section to downstream wing of right abutment of bridge; read by Thaleon Blake. Gage datum, 924.74 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from bridge 1,000 feet below gage or by wading.

CHANNEL AND CONTROL.—Channel straight for 500 feet above and below gage. Right bank high and wooded; left bank low and brushy. Roadway along left bank is high. Bed of stream composed of gravel and small boulders. Control is riffle three-eighths mile below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.6 feet at 7.20 a. m. March 29 (discharge, 14,900 second-feet); minimum stage recorded, 0.57 foot at 6.50 a. m. August 30 (discharge, 31 second-feet).

1914-1924: Maximum stage recorded, 12.8 feet at noon April 21, 1920 (discharge, 15,500 second-feet); minimum stage, -1.5 feet September 18 and 19, 1917 (discharge, 9 second-feet).

The flood of March, 1913, the highest known to have occurred at this station, reached a stage on March 25 of 19.6 feet, present gage datum (discharge estimated by engineers of the Miami Conservancy District, 44,000 second-feet).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Water to feed Miami & Erie Canal is diverted from river at Port Jefferson. The amount diverted through Sidney around gage may be a large proportion of low-water flow. Flow in the canal feeder is not included in tables of daily discharge. See miscellaneous discharge measurements of canal feeder on p. 293.

ACCURACY.—Stage-discharge relation permanent; affected by ice in January and February. Rating curve well defined below 7,000 second-feet, extended above. Gage read to hundredths once daily at low water; additional readings made at extremely high water. Daily discharge ascertained by applying daily gage height to rating table. Records good except for periods of ice effect and extremely high water for which they are fair.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

Discharge measurements of Miami River at Sidney, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 11	F. R. Morgan	1.68	168	July 25	W. P. Ansley	1.25	80.1
Mar. 14	Lee and Werner	3.53	786	Aug. 11	do	1.20	89.2
31	W. A. Werner	7.05	3,090	Sept. 8	do	.90	62.5
May 7	do	1.64	189				

Daily discharge, in second-feet, of Miami River at Sidney, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50	62	62	895	1,140	370	2,340	146	305	1,730	90	69
2	50	54	57	595	895	352	1,660	182	320	1,380	69	69
3	163	57	62	555	715	260	1,200	146	225	990	67	63
4	163	64	69	555	805	335	940	335	440	850	79	52
5	172	102	74	590	1,660	2,430	760	203	370	555	74	59
6	163	96	79	590	1,800	1,730	675	163	2,430	370	74	47
7	163	90	69	590	1,800	1,140	675	154	5,860	635	79	46
8	172	85	305	590	520	635	595	163	9,300	715	68	54
9	182	79	370	590	570	370	515	182	8,160	515	57	59
10	146	59	1,660	590	520	335	635	163	1,870	370	74	61
11	154	53	895	7,090	520	475	555	182	3,720	335	67	59
12	138	69	275	3,960	520	635	515	203	3,080	760	84	45
13	138	79	1,320	2,340	388	715	475	203	3,600	305	74	60
14	122	69	3,720	1,730	335	760	475	225	2,520	250	69	59
15	59	69	1,590	1,200	352	635	475	352	2,020	250	69	61
16	59	74	760	805	275	370	405	225	1,660	250	53	67
17	54	62	595	1,590	305	475	440	163	1,140	182	62	59
18	50	59	475	1,040	262	440	440	102	895	115	61	57
19	50	62	352	635	275	440	320	203	595	84	69	182
20	69	66	760	580	715	440	182	262	475	79	67	225
21	69	69	805	580	600	475	192	250	370	90	69	214
22	59	74	2,100	580	485	475	635	250	370	96	61	250
23	50	79	3,080	580	370	1,320	388	238	1,040	130	52	225
24	50	69	2,020	580	405	2,260	203	250	1,040	90	50	203
25	41	69	2,150	580	370	2,180	172	225	940	90	52	203
26	41	69	990	580	335	4,210	154	238	940	69	62	203
27	41	69	895	580	405	2,790	163	225	805	69	60	182
28	41	69	1,200	580	555	1,730	172	250	635	79	52	79
29	43	67	895	760	352	14,900	440	262	475	69	52	74
30	53	79	675	2,610	-----	8,380	388	515	1,520	79	31	69
31	59	-----	715	1,870	-----	5,410	-----	370	-----	90	41	-----

NOTE.—Gage not read Nov. 6-8, June 7, Aug. 8, Feb. 21 and 22; discharge interpolated. Gage not read Jan. 5-10, 20-28, Feb. 8-12, 21-22; river frozen at gage; discharge estimated by comparison with record of Miami River at Dayton, Ohio.

Monthly discharge of Miami River at Sidney, Ohio, for the year ending September 30, 1924

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	182	41	92.4	May	515	102	227
November	102	53	70.8	June	9,300	225	1,900
December	3,720	57	939	July	1,730	69	376
January	7,090	555	1,190	August	90	31	64.1
February	1,800	262	628	September	250	45	105
March	14,900	290	1,850	The year	14,100	31	669
April	2,340	164	573				

MIAMI RIVER AT TAYLORSVILLE, OHIO

LOCATION.—At outlet works of Taylorsville Dam of Miami Conservancy District, three-fourths mile north of Taylorsville, $1\frac{1}{2}$ miles south of Tadmor, and 8 miles north of Dayton, Montgomery County.

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

RECORDS AVAILABLE.—January 1, 1922, to September 30, 1924, at present site; January 1, 1914, to September 30, 1917, at former station at Tadmor where drainage area is 1,150 square miles (revised measurement on topographic maps.)

GAGE.—Painted and chiseled on concrete slope on downstream end of right retaining wall below outlet works of dam; read by H. B. Cromes. Add 700 feet to gage heights as published to refer them to mean sea level.

DISCHARGE MEASUREMENTS.—Made by wading half a mile below gage or from highway bridge 2 miles below gage.

CHANNEL AND CONTROL.—Channel fairly straight for 2 miles below gage. Control is a boulder and gravel bar 1,000 feet below gage. Zero flow would occur at gage height, 61.1 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 72.6 feet at 9 a. m. June 9 (discharge, 26,700 second-feet); minimum stage, 61.8 feet on October 21, 23, and 24 (discharge, 64 second-feet).

1922-1924: Maximum stage recorded on June 9, 1924; minimum stage, 61.75 feet on October 27 and 28, 1922 (discharge, 55 second-feet).

The flood of March, 1913, reached a stage of 25.4 feet at the former gaging station at Tadmor, $1\frac{1}{2}$ miles above this station (discharge estimated by engineers of Miami Conservancy District, 127,000 second-feet).

ICE.—Stage-discharge relation affected by ice during unusually severe winters.

REGULATION.—Flow at high stages automatically regulated at the retarding basins on Miami River just above station and on Loramie Creek at Lockington.

ACCURACY.—Stage-discharge relation for low water changed during high water on March 30, affected by ice during January. Rating curves well defined. Gage read to tenths once daily, occasionally to half-tenths. Daily discharge ascertained by applying daily gage height to rating table. Records good, except for low water, for which they are fair.

COOPERATION.—Gage-height record and some discharge measurements furnished by Miami Conservancy District.

Discharge measurements of Miami River at Taylorsville, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 2	Kohlmann* and Scholl*	61.90	95.6	July 23	W. P. Ansley-----	62.50	304
13	F. R. Morgan-----	62.30	218	Aug. 14	do-----	62.10	170
Dec. 11	Kohlmann and Scholl--	64.93	2,330	25	Evans and party-----	61.90	83.1
Mar. 31	Evans* and Peacock*	69.84	12,500	Sept. 10	W. P. Ansley-----	61.90	92.0
June 9	do-----	72.40	25,300				

* Engineer of Miami Conservancy District.

Daily discharge, in second-feet, of Miami River at Taylorsville, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	102	146	146	1,440	2,490	830	5,610	450	685	1,990	190	79
2.....	88	146	146	1,250	1,990	905	3,710	450	620	1,870	208	79
3.....	88	116	116	1,250	1,540	755	2,880	450	620	1,440	190	79
4.....	218	146	146	985	1,440	685	2,230	450	685	1,160	160	104
5.....	260	218	180	830	2,490	5,220	1,760	620	985	985	117	104
6.....	260	180	560	505	4,500	3,860	1,340	505	2,230	755	104	92
7.....	260	180	1,340	478	2,230	2,620	1,160	450	4,500	755	160	92
8.....	260	180	945	478	1,440	1,650	1,160	450	3,860	830	145	79
9.....	260	180	830	505	1,120	1,190	1,070	450	26,000	905	145	79
10.....	218	146	3,430	685	1,030	985	1,160	425	17,100	620	145	92
11.....	218	146	2,490	10,300	905	985	1,070	400	8,800	620	130	79
12.....	218	116	1,990	11,600	830	1,070	985	505	5,810	560	145	79
13.....	218	116	1,540	3,710	755	1,340	830	532	1,990	620	130	117
14.....	180	116	10,300	3,010	685	1,440	830	685	3,430	505	145	104
15.....	180	116	4,500	2,230	720	1,250	830	685	3,430	450	130	104
16.....	146	116	2,360	1,990	685	985	755	620	3,290	450	130	104
17.....	116	116	1,760	4,330	652	905	755	400	3,290	450	130	92
18.....	116	102	1,440	2,620	620	792	755	400	1,760	375	117	92
19.....	116	88	1,160	1,760	620	755	685	400	1,340	265	117	92
20.....	146	88	985	1,250	1,650	755	560	400	1,070	225	104	79
21.....	64	88	1,070	620	1,160	905	560	505	985	225	117	265
22.....	88	88	3,860	590	830	985	620	450	830	225	117	265
23.....	64	88	6,230	560	792	1,870	755	450	1,540	245	104	305
24.....	64	88	5,220	532	652	4,010	620	450	1,990	225	104	305
25.....	146	88	3,430	532	685	6,230	505	450	1,650	225	104	285
26.....	116	88	2,490	505	620	5,220	505	478	1,440	190	104	285
27.....	88	88	1,990	450	620	7,600	400	478	2,280	190	104	285
28.....	88	88	2,490	560	830	4,170	450	505	1,540	175	104	305
29.....	88	102	2,110	1,160	985	11,600	450	505	1,540	145	104	190
30.....	116	116	1,540	4,010	-----	18,400	450	755	1,440	145	104	130
31.....	116	-----	1,340	3,570	-----	12,400	-----	985	-----	190	92	-----

NOTE.—Stage-discharge relation affected by ice Jan. 7-9, 22-23; discharge estimated from study of observer's notes, weather records, and records of flow of near-by streams.

Monthly discharge of Miami River at Taylorsville, Ohio, for the year ending September 30, 1924

[Drainage area, 1,160 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	260	64	152	0.131	0.15
November.....	218	88	123	.106	.12
December.....	10,300	116	2,200	1.90	2.19
January.....	11,600	450	2,070	1.78	2.05
February.....	4,500	620	1,230	1.06	1.14
March.....	18,400	685	3,300	2.84	3.27
April.....	5,610	400	1,180	1.02	1.14
May.....	985	400	508	.438	.50
June.....	26,000	620	3,570	3.08	3.44
July.....	1,990	145	581	.501	.58
August.....	208	92	129	.111	.13
September.....	305	79	148	.128	.14
The year.....	26,000	64	1,270	1.09	14.85

MIAMI RIVER AT DAYTON, OHIO

LOCATION.—At Main Street Bridge at Dayton, Montgomery County, half a mile below mouth of Mad River and four-fifths mile above mouth of Wolf Creek.

DRAINAGE AREA.—2,510 square miles (measured on topographic maps).

RECORDS AVAILABLE.—March 18, 1905, to December 31, 1909; April 1, 1913, to September 30, 1924.

GAGE.—Vertical staff in two sections; lower section on pier in midstream, upper section on first pier from left abutment; read by employee of United States Weather Bureau. Hydrochronograph at same location as upper gage section used to obtain record for stages above gage height 4 feet. Gage heights beginning October 1, 1921, refer to datum, 721 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from bridge at gage or by wading.

CHANNEL AND CONTROL.—Channel straight for half a mile above and below gage. Banks high. Bed of stream composed of gravel and small boulders. Control for low water is riffle three-eighths mile below gage; control for high stages is long stretch of channel below gage. Zero flow would occur at gage height —1.4 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.4 feet at 3.30 p. m. June 9 (discharge, 47,700 second-feet); minimum stage, 0.6 foot at 7 a. m. October 2 (discharge, 228 second-feet).

1913–1924: Maximum stage recorded 16 feet (old datum) on April 21, 1920 (discharge at Millers Ford $3\frac{1}{2}$ miles below gage estimated by engineers of Miami Conservancy District at 59,800 second-feet); minimum stage, 0.4 foot August 9, 1914 (discharge, 215 second-feet).

Maximum known stage occurred on March 26, 1913, gage height 31.7 feet (present datum) determined from high-water marks (discharge estimated by engineers of Miami Conservancy District, 250,000 second-feet).

ICE.—Stage-discharge relation affected by ice during unusually severe winters.

REGULATION.—Flood flow automatically regulated at four retarding basins of Miami Conservancy District on Miami River and tributaries above station.

DIVERSIONS.—Miami & Erie Canal diverts water around gaging station; amount of water diverted not included in tables of discharge. See miscellaneous discharge measurements of canal, page 293.

ACCURACY.—Stage-discharge relation changed gradually October 2 to 4; affected by construction work in channel below gage October 5 to December 5; changed June 9; affected by ice in January. Rating curve used December 6 to June 9 well defined; curve used June 10 to September 30, fairly well defined between 1,200 and 10,000 second-feet, and well defined beyond those limits. Gage read to tenths once daily. Operation of hydrochronograph satisfactory for stages above gage height 4 feet. Daily discharge ascertained by method for shifting control or by applying mean daily gage height to rating table. Records good except for October, November, and periods of ice effect, for which they are fair.

COOPERATION.—Gage-height record furnished by United States Weather Bureau and Miami Conservancy District. Some discharge measurements made by Miami Conservancy District.

Discharge measurements of Miami River at Dayton, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 2	Evans ^a and Peacock ^a	0.60	228	June 9	Kohlmann and Scholl ^a	13.13	46,100
15	F. R. Morgan	1.18	356	July 23	W. P. Ansley	1.20	761
16	Kohlmann ^a and party	1.22	313	Aug. 14	do	.60	503
Dec. 11	Evans and Peacock	4.82	5,660	29	Evans and party	.75	325
14	do	8.27	19,300	Sept. 11	W. P. Ansley	.70	334
Mar. 26	do	6.43	10,800				

^a Engineer of Miami Conservancy District.

Daily discharge, in second-feet, of Miami River at Dayton, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	325	525	470	2,970	6,580	1,890	14,300	1,670	1,670	3,550	845	415
2.....	228	525	470	2,670	4,930	2,010	10,200	1,670	1,670	3,240	745	415
3.....	234	470	470	2,670	3,130	1,780	5,730	1,130	1,470	2,940	745	355
4.....	239	835	470	2,530	3,130	1,670	3,830	1,060	1,670	2,650	565	415
5.....	245	905	470	2,260	6,010	9,370	3,460	1,380	2,010	2,240	565	415
6.....	285	765	1,670	2,130	7,190	8,210	2,820	1,210	8,210	1,980	565	415
7.....	285	765	2,820	2,130	6,010	4,930	2,390	1,130	9,370	2,650	565	415
8.....	285	835	2,130	2,130	4,240	2,970	2,260	1,060	11,000	2,370	565	415
9.....	285	700	2,390	2,260	2,260	2,390	2,130	1,060	42,000	2,370	565	415
10.....	245	580	7,510	2,890	2,130	2,130	2,130	1,130	33,300	2,110	650	415
11.....	245	580	5,460	21,500	1,780	2,010	2,010	1,130	19,700	1,980	485	415
12.....	287	470	3,460	21,000	1,670	2,010	1,780	1,210	16,100	1,610	485	415
13.....	328	420	3,640	12,200	1,670	2,130	1,780	1,210	15,300	2,510	565	485
14.....	370	420	17,000	7,850	1,470	2,670	1,670	1,470	12,200	1,850	485	415
15.....	370	470	8,980	6,880	1,470	2,530	1,670	1,470	8,830	1,610	485	415
16.....	325	470	4,690	7,510	1,130	2,130	1,570	1,380	5,500	1,610	485	415
17.....	325	370	4,030	8,980	1,470	1,670	1,570	1,210	5,500	1,590	485	485
18.....	420	420	2,970	5,460	1,470	1,670	1,570	1,060	4,530	1,590	485	415
19.....	525	420	2,530	3,460	1,470	1,670	1,470	1,060	3,870	1,380	485	415
20.....	470	420	2,130	2,670	4,460	1,670	1,470	1,130	2,940	1,270	485	485
21.....	470	420	2,390	2,390	2,820	1,890	1,890	1,130	2,790	1,160	485	650
22.....	470	370	8,980	2,130	1,780	2,260	1,780	1,130	2,510	945	485	650
23.....	420	370	13,400	2,130	1,670	2,390	1,670	1,060	2,940	745	565	650
24.....	420	370	11,400	2,010	1,670	6,880	1,470	1,130	4,360	845	485	650
25.....	580	370	11,000	2,010	1,780	11,800	1,470	1,130	3,240	745	485	650
26.....	525	420	5,190	1,890	1,570	11,400	1,470	1,130	3,240	650	485	650
27.....	470	370	4,240	1,890	1,470	13,800	1,130	1,290	5,500	650	485	650
28.....	700	370	4,930	1,890	1,780	8,590	1,470	1,290	4,710	565	485	745
29.....	470	370	4,690	1,780	2,010	25,800	1,470	1,290	4,030	565	415	650
30.....	420	470	3,460	8,590	-----	38,000	1,670	1,420	3,550	565	415	565
31.....	525	-----	3,130	10,600	-----	23,100	-----	1,540	-----	945	415	-----

NOTE.—Daily discharge ascertained by method for shifting control Oct. 2-4; from parallel rating curve, Oct. 5 to Dec. 5. Stage-discharge relation affected by ice Jan. 6-9, 21-28; discharge computed by use of observer's notes, weather records, and records of flow of near-by streams. Gage not read Oct. 12, 13, May 30, and 31; discharge interpolated.

Monthly discharge of Miami River at Dayton, Ohio, for the year ending September 30, 1924

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October.....	700	228	380	May.....	1,670	1,060	1,240
November.....	905	370	509	June.....	42,000	1,470	8,120
December.....	17,000	470	4,730	July.....	3,550	565	1,660
January.....	21,500	1,780	5,130	August.....	845	415	533
February.....	7,190	1,130	2,770	September.....	745	355	499
March.....	38,000	1,670	6,560	The year.....	42,000	228	2,900
April.....	14,300	1,130	2,710				

MIAMI RIVER AT VENICE, OHIO

LOCATION.—In Hamilton County, at highway bridge three-fourths mile south-east of Venice, Butler County, and $1\frac{1}{2}$ miles below mouth of Indian Creek.

DRAINAGE AREA.—3,780 square miles.

RECORDS AVAILABLE.—June 14, 1915, to September 30, 1924.

GAGE.—Chain gage on bridge; installed August 24, 1922; read by H. B. Matson. Zero of gage is 520.22 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for 2,000 feet above and below gage.

Left bank high, wooded; right bank fairly high, lined with trees. All water flows under bridge up to a stage of about 25 feet. Bed of stream composed of gravel. Control for low water is riffle at gage; control for higher stages is long stretch of channel below gage. Zero flow would occur at gage height -0.5 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 19.75 feet at 6 p. m. June 10 (discharge from extension of rating curve, 42,000 second-feet); minimum stage recorded, 1.26 feet at 4.30 p. m. November 29 (discharge, 295 second-feet).

1915–1924: Maximum stage recorded, 24.2 feet on April 22, 1920 (discharge from extension of rating curve, 55,600 second-feet); minimum stage recorded, 1.24 feet at 7 p. m. August 26, 1923 (discharge, 291 second-feet).

The flood of March, 1913, the highest known to have occurred at this station, reached a stage on March 26 of 38 feet referred to gage datum (discharge estimated at 370,000 second-feet).

ICE.—Stage-discharge relation not affected by ice except during unusually severe winters.

DIVERSIONS.—Miami & Erie Canal diverts water from this drainage basin above station. Miscellaneous discharge measurements are made of canal at Lindenwald, near Hamilton, near point where it leaves basin. Amount of water diverted not included in tables of discharge.

REGULATION.—Flow at low stages is regulated for power at Hamilton. At extremely low stages a diurnal fluctuation of from 0.1 to 0.4 foot is recorded at Venice. Flow at high water is automatically regulated at five retarding basins of Miami Conservancy District above this station.

ACCURACY.—Stage-discharge relation changed during high water on March 31; not affected by ice. Rating curves well defined below 30,000 second-feet; extended above. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Miami River at Venice, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 17	F. R. Morgan-----	1.44	377	Aug. 16	W. P. Ansley-----	1.62	533
Mar. 11	Werner and Lee-----	4.76	3,600	Sept. 12	do-----	1.49	548
July 25	Lasley Lee-----	2.51	1,200				

Daily discharge, in second-feet, of Miami River at Venice, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.
1.....	586	502	427	4,550	8,090	3,110	20,500	3,780	4,080	5,690	1,360	528
2.....	586	502	456	4,080	6,060	3,110	14,000	2,950	3,490	5,030	1,260	615
3.....	502	502	557	5,720	4,870	2,850	10,000	2,820	3,210	4,550	1,080	555
4.....	476	530	476	4,080	4,710	3,240	7,800	2,950	3,080	3,930	1,360	528
5.....	451	825	586	2,850	10,300	11,400	6,720	2,950	3,490	3,490	905	528
6.....	403	980	1,200	2,100	11,800	12,100	6,030	2,820	10,000	2,950	905	428
7.....	380	1,060	2,560	1,990	8,280	9,080	5,520	2,700	13,500	4,550	865	475
8.....	403	900	2,720	2,720	5,550	6,240	5,190	3,210	10,200	4,550	948	585
9.....	476	616	4,550	2,850	3,930	4,390	4,870	2,580	24,000	3,490	750	555
10.....	502	586	7,520	4,390	3,370	3,920	4,550	2,580	40,200	3,080	825	555
11.....	502	502	6,060	27,200	3,110	3,650	4,230	2,950	31,000	2,820	960	500
12.....	530	530	5,210	24,000	2,980	3,930	4,080	2,820	22,000	2,580	750	450
13.....	530	586	13,400	15,500	2,850	4,710	3,780	2,580	17,800	2,820	715	382
14.....	427	557	18,300	10,100	2,590	4,870	3,490	2,950	17,000	2,580	750	405
15.....	502	530	14,600	8,880	2,550	4,390	3,350	2,950	13,000	2,460	680	555
16.....	530	530	8,880	18,000	2,220	3,930	3,210	2,700	10,400	2,220	585	528
17.....	427	502	6,240	13,600	2,220	3,370	3,210	2,460	8,700	2,100	585	528
18.....	502	427	5,040	9,280	2,850	3,110	3,080	2,460	7,620	1,880	825	528
19.....	530	502	4,080	5,720	2,340	2,980	3,060	2,340	5,860	1,600	788	528
20.....	451	502	3,790	4,870	11,400	2,980	2,950	2,340	4,710	1,560	680	585
21.....	380	502	4,550	4,080	7,520	6,960	2,820	2,220	3,930	1,560	715	475
22.....	403	502	18,300	3,790	3,790	6,780	2,820	2,100	3,630	1,360	750	990
23.....	476	476	19,000	3,370	3,110	7,710	2,820	2,100	11,400	1,860	680	948
24.....	502	476	13,900	3,240	2,980	8,880	2,820	2,340	7,440	1,260	500	865
25.....	502	427	10,300	2,980	3,850	10,700	2,580	2,220	5,860	1,460	750	788
26.....	502	451	7,710	2,460	2,720	12,700	2,340	1,990	5,690	1,170	715	715
27.....	476	476	5,550	1,990	2,590	14,600	2,100	2,580	16,800	1,080	680	500
28.....	427	403	12,700	1,960	2,720	10,700	2,340	2,580	13,000	1,170	648	500
29.....	476	315	8,880	3,370	2,980	36,400	2,580	3,350	12,500	990	615	648
30.....	502	451	5,890	9,080	-----	36,100	2,700	5,350	6,540	1,080	500	865
31.....	530	-----	5,550	11,200	-----	36,400	-----	5,030	-----	1,560	475	-----

Monthly discharge of Miami River at Venice, Ohio, for the year ending September 30, 1924

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October.....	586	380	480	May.....	5,350	1,990	2,830
November.....	1,060	315	555	June.....	40,200	3,080	11,400
December.....	19,000	427	7,070	July.....	5,690	990	2,510
January.....	27,200	1,990	7,100	August.....	1,360	475	795
February.....	11,800	2,220	4,600	September.....	960	382	588
March.....	36,400	2,850	9,200	The year			
April.....	20,900	2,100	4,870		40,200	315	4,330

LORAMIE CREEK AT LOCKINGTON, OHIO

LOCATION.—In NE. $\frac{1}{4}$ sec. 30, T. 7 N., R. 6 E., at highway bridge just below Lockington Dam of Miami Conservancy District, half a mile northwest of Lockington, Shelby County, and $1\frac{3}{4}$ miles above junction with Miami River.

DRAINAGE AREA.—261 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1915, to September 30, 1924.

GAGE.—Vertical staff attached to bridge pier, read by T. L. Mitchell to April 12 and W. E. Rees thereafter. Gage lowered 1 foot on July 2, 1924. New gage datum is 874.99 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from bridge at gage or by wading.

CHANNEL AND CONTROL.—Channel straight for 1,000 feet above and 200 feet below gage. Banks high, riprapped. Control is a small island and riffle of boulders 200 feet below gage. Zero flow would occur at gage height 0.3 foot, new datum, determined September 8, 1924.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.5 feet at 12.10 and 6.30 p. m. March 29 and 6.30 p. m. June 8 (discharge, 5,970 second-feet); minimum stage recorded, 0.80 foot, new datum, numerous times in September (discharge, 5 second-feet).

1915-1924: Maximum stage recorded, 10.4 feet at 4.30 a. m. May 7, 1916 (discharge, 10,400 second-feet); minimum discharge (5 second-feet) at 7 a. m. November 18, 1915, and numerous times in September, 1924.

Maximum known stage occurred March 25, 1913; gage height 15.6 feet (discharge estimated by engineers of the Miami Conservancy District 25,600 second-feet).

ICE.—Stage-discharge relation seriously affected by ice only during unusually severe winters.

REGULATION.—There is a small amount of regulation due to storage of water in Loramie Reservoir, which controls about 30 per cent of the total drainage area of Loramie Creek. At high stages flow is automatically regulated by the Loramie retarding basin of the Miami Conservancy District.

ACCURACY.—Stage-discharge relation changed during high water on January 11; not affected by ice. Rating curves well defined up to 7,000 second-feet. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except for low-water periods for which they are fair.

COOPERATION.—Gage-height record and some discharge measurements furnished by Miami Conservancy District.

Discharge measurements of Loramie Creek at Lockington, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 11	F. R. Morgan	0.05	7.3	June 11	Evans and Harnish * ..	5.85	3,390
Jan. 11	Bennett * and Eiffert * ..	6.25	4,380	July 25	W. P. Ansley	1.30	17.2
Mar. 13	Werner and Lee	2.00	400	Aug. 11	.....do	1.20	13.0
29	Evans * and Peacock * ..	7.42	5,310	29	Evans and Scholl * .....	.85	7.2
Apr. 1	W. A. Werner	3.38	1,240	Sept. 8	W. P. Ansley .....	.88	7.6
May 6	.....do .....	.89	75.8				

* Engineers of Miami Conservancy District.

NOTE.—Gage datum lowered 1 foot on July 2, 1924.

Daily discharge, in second-feet, of Loramie Creek at Lockington, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	8	8	10	175	544	342	1,130	81	84	168	18	5
2.....	8	8	10	146	470	271	860	74	88	133	18	6
3.....	8	8	10	81	382	209	652	60	78	144	16	6
4.....	8	8	12	45	404	1,130	494	181	288	104	14	6
5.....	8	10	63	30	1,500	1,340	271	123	288	81	13	6
6.....	8	10	81	23	740	710	239	84	1,660	64	13	6
7.....	8	10	58	23	494	362	209	64	1,060	45	18	6
8.....	7	10	38	23	342	382	181	96	3,030	35	14	6
9.....	7	8	625	23	224	382	161	93	5,200	33	13	5
10.....	6	8	422	272	181	305	133	78	3,030	33	13	5
11.....	6	8	230	1,170	156	271	113	93	3,270	33	13	5
12.....	6	8	134	2,010	133	425	96	144	1,580	29	13	5
13.....	6	8	2,100	975	113	382	96	156	1,830	29	13	7
14.....	10	8	1,090	800	96	324	81	255	860	29	13	6
15.....	8	8	658	625	96	181	70	195	598	25	13	6
16.....	8	8	625	1,060	96	113	64	104	925	25	12	5
17.....	8	8	272	925	96	96	67	84	625	24	12	5
18.....	8	8	192	800	81	96	70	70	342	22	10	5
19.....	8	8	114	518	67	96	64	67	224	22	10	5
20.....	8	8	104	382	144	96	123	64	168	18	10	5
21.....	8	8	192	382	96	104	123	54	117	18	10	6
22.....	8	8	1,400	305	81	181	271	45	78	18	10	7
23.....	6	8	1,320	209	67	598	168	43	1,130	18	8	6
24.....	8	8	535	209	67	960	93	52	448	18	6	6
25.....	8	8	505	209	67	1,270	78	64	448	18	6	6
26.....	8	8	422	209	67	3,030	70	57	448	16	6	5
27.....	8	8	450	209	88	1,660	54	52	518	16	6	5
28.....	8	8	478	156	239	1,060	67	48	288	16	6	6
29.....	8	9	320	224	305	5,650	67	54	195	14	6	6
30.....	9	10	192	1,660	-----	5,050	67	195	195	13	6	6
31.....	9	-----	146	925	-----	2,700	-----	138	-----	17	6	-----

Monthly discharge of Loramie Creek at Lockington, Ohio, for the year ending September 30, 1924

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October.....	10	6	7.74	May.....	255	43	95.7
November.....	10	8	8.37	June.....	5,200	78	970
December.....	2,100	10	413	July.....	168	13	41.2
January.....	4,170	23	573	August.....	18	6	11.1
February.....	1,500	67	256	September.....	7	5	5.67
March.....	5,650	96	961	The year....	5,650	5	296
April.....	1,130	54	208				

STILLWATER RIVER AT PLEASANT HILL, OHIO

LOCATION.—In SE. $\frac{1}{4}$ sec. 18, T. 7 N., R. 5 E., at highway bridge three-fourths mile northwest of Pleasant Hill, Miami County, and 4 miles below mouth of Greenville Creek.

DRAINAGE AREA.—502 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1916, to September 30, 1924.

GAGE.—Prior to August 28, 1924, vertical staff in two sections; lower section reading from 0 to 10.3 feet attached to bridge pier; upper section attached to downstream wing on left abutment. On August 28, 1924, the lower section was replaced by a chain gage on upstream side of bridge; upper vertical staff still in use. Zero of gage, 846.55 feet above mean sea level. Gage read by Roger Black.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight above and below bridge. Control composed of rock and gravel, practically permanent. During floods water overflows levee on left bank and inundates a wide strip of bottom land. Zero flow would occur at gage height 0.4 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 15.7 feet at 8 a. m. June 9 (discharge, 13,600 second-feet); minimum stage, 0.96 foot at 6 a. m. September 6 (discharge, 10 second-feet).

1916–1924: Maximum stage recorded on June 9, 1924; minimum discharge, 4 second-feet, October 17, 1920, July 12, 22, and August 30, 1921.

Maximum known stage occurred on March 25, 1913, gage height 17.5 feet (discharge estimated by engineers of Miami Conservancy District, 51,400 second-feet).

ICE.—Stage-discharge relation seriously affected by ice only during unusually severe winters.

REGULATION.—Regulation for power purposes on Greenville Creek causes slight diurnal fluctuation at station during low-water season.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve well defined between 20 and 7,000 second-feet, fairly well defined below and extended above. Gage read to tenths once daily prior to August 28; to hundredths thereafter. Daily discharge ascertained by applying daily gage height to rating table. Records good except for low water and very high water periods for which they are fair.

COOPERATION.—Gage-height record furnished by United States Weather Bureau and Miami Conservancy District.

Discharge measurements of Stillwater River at Pleasant Hill, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 12	F. R. Morgan	1.46	37.4	July 24	W. P. Ansley	1.76	70.7
Mar. 13	Lee and Werner	4.14	1,010	Aug. 12	do	1.78	70.6
Apr. 1	W. A. Werner	4.96	1,360	Sept. 9	do	1.24	20.9
May 7	do	2.30	175				

Daily discharge, in second-feet, of Stillwater River at Pleasant Hill, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50	40	40	370	1,240	410	1,520	144	334	635	62	34
2	50	50	50	370	835	370	1,180	189	270	585	50	12
3	40	50	50	334	835	301	945	144	241	270	50	11
4	50	40	75	301	945	241	835	166	585	241	50	21
5	50	50	89	105	2,570	4,220	685	214	635	189	40	11
6	62	75	785	105	1,940	2,120	585	189	2,120	166	40	10
7	50	89	334	89	1,450	1,380	370	166	2,930	144	50	34
8	50	89	105	89	635	735	301	144	9,950	166	50	26
9	62	89	370	89	370	540	334	166	13,600	144	21	17
10	50	75	2,300	89	334	450	270	105	7,910	124	50	11
11	40	75	1,450	7,550	241	410	241	166	5,400	105	40	13
12	43	75	835	6,390	270	334	214	241	2,930	105	55	12
13	50	75	1,310	2,300	189	890	189	214	1,850	75	40	31
14	40	62	4,850	1,000	144	835	189	166	1,240	105	40	40
15	40	62	2,120	635	166	585	189	189	835	89	32	32
16	50	62	1,160	1,000	124	410	166	166	1,520	105	32	12
17	50	50	835	2,300	124	301	144	144	1,940	89	21	12
18	50	50	735	1,180	124	301	166	144	1,060	89	40	13
19	50	62	635	735	134	301	144	166	735	75	26	15
20	40	62	540	370	270	301	144	124	585	62	32	13
21	40	50	635	241	202	370	144	144	410	75	16	13
22	62	50	2,210	241	124	301	144	144	301	75	26	62
23	50	50	4,120	241	134	785	214	105	835	75	26	22
24	50	62	2,570	214	214	1,850	166	124	635	72	40	27
25	50	40	1,240	189	214	3,920	124	124	334	62	50	27
26	40	75	835	189	124	3,520	105	214	410	62	26	27
27	62	75	735	166	370	3,020	75	124	735	62	26	40
28	50	62	1,310	189	735	1,520	144	144	1,380	50	21	50
29	62	40	890	189	410	9,710	124	166	1,060	50	12	52
30	75	32	735	3,220	-----	8,750	144	450	835	50	13	21
31	75	-----	635	1,940	-----	3,220	-----	635	-----	62	11	-----

Monthly discharge of Stillwater River at Pleasant Hill, Ohio, for the year ending September 30, 1924

[Drainage area, 502 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	75	40	51.1	0.102	0.12
November	89	32	60.6	.121	.14
December	4,850	40	1,120	2.23	2.57
January	7,550	89	1,050	2.09	2.41
February	2,570	124	533	1.06	1.14
March	9,710	241	1,690	3.37	3.88
April	1,520	75	340	.677	.76
May	635	105	185	.369	.43
June	13,600	241	2,120	4.22	4.71
July	635	50	137	.273	.31
August	62	11	35.1	.070	.08
September	62	10	24.0	.048	.05
The year	13,600	10	612	1.22	16.60

MAD RIVER NEAR SPRINGFIELD, OHIO

LOCATION—Prior to March 1, 1924, in NW. $\frac{1}{4}$ sec. 10, R. 9, T. 4, 800 feet below Cleveland, Cincinnati, Chicago & St. Louis Railway bridge, one-third mile below mouth of Buck Creek, and 1 mile west of Springfield, Clark County. Beginning March 1, 1924, in NW. $\frac{1}{4}$ sec. 16, R. 9, T. 4, at highway bridge half a mile west of Masonic Home, and $1\frac{3}{4}$ miles downstream from former location. Rock Run enters from right just below new gage.

DRAINAGE AREA.—460 square miles at location used prior to March 1, 1924; 477 square miles at new location (measured on topographic maps).

RECORDS AVAILABLE.—January 1, 1904, to March 31, 1906; February 1, 1914, to September 30, 1924.

GAGE.—Prior to March 1, 1924, vertical staff in three sections 800 feet below railway bridge; read by Sampson Carter. Zero of gage is 887.81 feet above mean sea level. Beginning March 1, 1924, chain gage on highway bridge $1\frac{3}{4}$ miles downstream with vertical staff gage for flood stages; read by J. P. Reinheimer. Zero of gage is 881.95 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from highway bridge at new gage, from highway bridge three-eighths mile below new gage, or by wading.

CHANNEL AND CONTROL.—Channel slightly curved at old gage. Right bank high; left bank fairly high. Control for low water is riffle one-eighth mile below gage, fairly permanent. Control for higher stages is long stretch of channel below gage. Zero flow would occur at gage height -2.8 feet. Channel curves sharply to left at new gage; straight for half a mile above and a mile below bend. Right bank high; left bank fairly high, protected by levee. Control is well-defined riffle a quarter of a mile below gage. Zero flow would occur at gage height 0.4 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.5 feet at 1.20 p. m. March 29 (discharge from extension of rating curve, 25,000 second-feet); minimum stage, 1.1 feet numerous days in October, and November (discharge, 152 second-feet).

1914-1924: Maximum stage recorded on March 29, 1924; minimum stage, 1 foot several days in August, 1918, and September, 1923 (discharge, 134 second-feet).

The flood of March, 1913, reached a stage on March 25, of 19.2 feet referred to gage datum at upper gage site and 16.9 feet at lower site (discharge at railway bridge between old and new gage locations estimated by engineers of Miami Conservancy District at 55,400 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—The small amount of water diverted past gage used prior to March 1, 1924, by old mill race is included in rating of station.

ACCURACY.—Stage-discharge relation permanent. Rating curves for both gages well defined below 11,000 second-feet and extended above. Gage read to tenths once daily to February 29, to hundredths thereafter. Daily discharge ascertained by applying daily gage height to rating table. Records good except for period in December and January when gage was not read, and for extremely high water for which they are fair.

COOPERATION.—Gage-height record furnished by the United States Weather Bureau.

Discharge measurements of Mad River near Springfield, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Dec. 8	F. R. Morgan.....	2.30	490	July 28	W. P. Ansley	1.88	351
Mar. 14	Lee and Werner.....	2.06	459	Aug. 13	do	1.72	234
30	W. A. Werner	4.76	2,690	Sept. 10	do	1.62	206
May 6	do	2.00	415				

• Refers to gage used prior to Mar. 1, 1925.

Daily discharge, in second-feet, of Mad River near Springfield, Ohio, for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	172	172	196	900	700	605	1,110	510	480	510	362	196
2.....	172	172	196		660	510	1,030	450	480	580	317	196
3.....	172	172	172		575	450	880	420	420	450	306	196
4.....	172	250	196		615	540	810	572	670	420	295	207
5.....	172	280	418		1,040	1,600	775	480	540	420	284	207
6.....	172	222	1,910	900	990	880	740	420	3,690	450	272	156
7.....	152	222	705		615	740	670	420	1,270	480	284	186
8.....	152	172	535		575	572	638	420	13,100	605	261	186
9.....	152	172	990		535	510	638	420	11,100	480	261	207
10.....	152	172	1,580		495	510	605	391	9,050	450	261	201
11.....	152	172	1,100	1,000	418	480	572	480	7,030	420	250	207
12.....	152	172			456	510	540	540	5,000	420	261	196
13.....	152	172			418	480	540	480	2,980	1,030	256	261
14.....	152	172			418	450	510	480	955	510	250	207
15.....	152	172			418	420	510	480	810	450	250	196
16.....	152	172	1,000	1,000	382	420	480	480	810	420	239	196
17.....	152	172			418	391	480	420	705	420	239	196
18.....	152	152			418	391	510	450	670	391	239	196
19.....	172	152			575	391	480	450	605	362	239	196
20.....	172	152			615	391	480	420	540	362	239	207
21.....	152	152	1,000	1,000	575	480	480	420	540	362	239	228
22.....	152	152			418	540	540	391	540	362	218	272
23.....	152	152			456	456	1,030	480	362	880	351	207
24.....	196	152			456	418	1,270	450	420	605	340	207
25.....	172	152			456	418	1,430	420	391	540	340	207
26.....	172	152	1,000	1,000	346	382	2,140	420	362	510	340	196
27.....	172	172			346	535	1,430	420	450	1,030	328	196
28.....	152	172			382	575	955	450	420	705	334	196
29.....	152	172			418	495	22,000	420	420	605	306	196
30.....	172	196			2,910	3,070		420	775	540	306	196
31.....	172				900	1,430			540		362	196

NOTE—Gage not read Oct. 1, 2, and June 9-13; discharge interpolated. Gage not read Dec. 11 to Jan. 22 and in error Jan. 31 and Feb. 1; discharge estimated by comparison with record of flow of Mad River near Dayton, Ohio. Braced figures show mean discharge for periods indicated.

Monthly discharge of Mad River near Springfield, Ohio, for the year ending September 30, 1924

[Drainage area, 460 square miles]^a

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	196	152	162	0.352	0.41
November.....	280	152	176	.383	.43
December.....		172	932	2.03	2.34
January.....		346	889	1.93	2.22
February.....	1,040	382	538	1.17	1.26
March.....	22,000	391	1,520	3.19	3.68
April.....	1,110	420	583	1.22	1.36
May.....	775	362	456	.956	1.10
June.....	13,100	420	2,250	4.72	5.27
July.....	1,030	306	428	.897	1.03
August.....	362	196	246	.516	.59
September.....	295	186	211	.442	.49
The year.....	22,000	152	699	1.44	20.18

^a 477 square miles after Feb. 29 when station was moved downstream.

TWIN CREEK NEAR GERMANTOWN, OHIO

LOCATION.—In NE. $\frac{1}{4}$ sec. 14, T. 3 N., R. 4 E., at covered highway bridge 1 mile west of Germantown, Montgomery County, and 2 miles above mouth of Little Twin Creek.

DRAINAGE AREA.—276 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 12, 1914, to December 31, 1923, when station was discontinued.

GAGE.—Vertical staff in two sections on right abutment of bridge; read by Thomas Stettler. Zero of gage is 712.73 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from cable a mile above gage or by wading.

CHANNEL AND CONTROL.—Channel straight for a quarter mile above and below gage. Banks fairly high. Control for low water is riffle half a mile below gage, shifts at flood stages. Control for high stages is long stretch of channel below gage. Zero flow would occur at gage height -0.4 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 7.5 feet at 7 a. m. December 22 (discharge, 4,570 second-feet); minimum stage, 0.16 foot numerous days in October (discharge, 10.8 second-feet).

1914-1923: Maximum stage recorded, 11 feet April 21, 1920 (discharge, 8,480 second-feet); minimum stage, 0.1 foot October 24, 1921 (discharge, 9 second-feet).

The flood of March-April, 1913, reached the stage on March 25 of 18.3 feet referred to gage datum (discharge estimated by engineers of Miami Conservancy District, 66,000 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Flow at high stages automatically regulated at Germantown retarding basin of the Miami Conservancy District, $1\frac{1}{4}$ miles above station, after November, 1920.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Gage-height record and some discharge measurements furnished by Miami Conservancy District.

Discharge measurements of Twin Creek near Germantown, Ohio, during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 2	Kohlman * and party a.	0.24	15.4	Mar. 29	Evans * and Peacock a.	9.40	6,620
16	F. R. Morgan	.25	14.1	July 22	W. P. Ansley	1.14	70.3

* Engineer of Miami Conservancy District.

Daily discharge, in second-feet, of Twin Creek near Germantown, Ohio, for the period October 1 to December 31, 1923

Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.
1	14	17	23	11	11	18	445	21	14	14	400
2	14	16	21	12	12	17	295	22	12	14	4,570
3	14	16	20	13	11	16	1,930	23	11	14	2,350
4	12	21	20	14	11	18	2,260	24	11	16	1,170
5	12	33	50	15	14	17	750	25	12	16	668
6	11	33	54	16	14	16	468	26	12	16	540
7	11	26	68	17	12	14	355	27	11	15	468
8	11	23	53	18	11	14	315	28	11	14	2,620
9	11	21	490	19	15	14	275	29	11	14	668
10	11	19	930	20	14	14	258	30	12	23	445
								31	21		378

Monthly discharge of Twin Creek near Germantown, Ohio, for the period October 1 to December 31, 1923

[Drainage area, 276 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	21	11	12.4	0.045	0.05
November	33	14	18.0	.065	.07
December	4,570	20	753	2.73	3.15

KENTUCKY RIVER BASIN

KENTUCKY RIVER AT LOCK 10, NEAR WINCHESTER, KY.

LOCATION.—At Lock 10, 1 mile below mouth of Otter Creek, $1\frac{1}{2}$ miles below Louisville & Nashville Railroad crossing, and 8 miles southwest of Winchester, Clark County.

DRAINAGE AREA.—3,990 square miles (measured on topographic maps by United States Engineer Corps).

RECORDS AVAILABLE.—October 1, 1923, to September 30, 1924. Gage-height record obtained by United States Engineer Corps since January 1, 1907.

GAGE.—Lower section chiseled on vertical wall of lock, upstream from upper gate. Upper section is vertical staff fastened to tree on upstream side of transverse levee on left bank at dam. Zero of gage is 558.6 feet and crest of dam 567.6 feet above mean sea level. Gage read by J. A. Walters.

DISCHARGE MEASUREMENTS.—Made from rowboat below dam.

CHANNEL AND CONTROL.—Channel straight for a quarter of a mile above and below dam. Right bank high. Left bank fairly high. Control is dam No. 10. Main dam is concrete on bedrock. Auxiliary dam on left side of channel is concrete on sheet piling. Lock is between main and auxiliary dam. Leakage through lock is very small and is included in rating of crest of dam.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 28.8 feet at 7 a. m. January 5 (discharge, 114,000 second-feet); minimum stage, 9.2 feet on October 9–18, 22–25, and 30 (discharge, 60 second-feet).

Maximum stage on record, 35.1 feet at 7 a. m. March 29, 1913 (discharge not determined).

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined below and fairly well defined above 30,000 second-feet. Gage read three times daily; to tenths prior to September 8, 1924, to hundredths thereafter. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except for extremely high stages, for which they are fair.

Discharge measurements of Kentucky River at Lock 10, near Winchester, Ky., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
July 7	E. E. R. Dornbach.....	Feet 13.90	Sec.-ft. 12,400	Aug. 19	W. P. Ansley	Feet 10.25	Sec.-ft. 1,030
24	Lasley Lee.....	10.28	858	Sept. 17	...do.....	9.60	413

Daily discharge, in second-feet, of Kentucky River at Lock 10, near Winchester, Ky., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	165	105	2,720	39,800	4,580	6,840	14,900	12,700	27,700	3,920	235	390
2-----	235	105	2,720	48,600	4,580	5,530	9,220	16,700	12,300	3,300	310	390
3-----	475	105	2,190	98,600	4,580	4,580	6,570	14,000	6,840	2,540	660	502
4-----	310	165	1,680	110,000	4,140	4,140	5,280	9,220	5,040	1,850	565	390
5-----	165	165	3,500	114,000	4,140	10,200	4,140	8,600	4,580	1,520	1,230	310
6-----	235	235	13,100	61,100	4,140	12,300	3,710	5,280	4,810	2,020	980	416
7-----	165	660	20,700	12,700	3,920	13,100	3,500	4,140	4,140	10,200	1,850	922
8-----	105	1,100	17,700	6,040	4,140	10,200	3,300	3,500	3,300	10,500	1,230	502
9-----	165	1,230	8,910	4,810	3,920	7,700	3,710	3,300	2,720	5,040	475	424
10-----	165	980	5,530	4,360	3,300	6,040	3,710	3,100	2,540	3,100	475	342
11-----	165	980	4,140	19,200	2,910	5,780	3,500	3,300	21,800	2,020	390	350
12-----	165	865	4,140	34,200	2,720	5,280	3,300	3,300	21,300	1,520	1,230	310
13-----	105	660	5,780	33,500	2,720	4,810	2,910	3,300	12,700	4,140	1,370	342
14-----	105	475	9,220	16,700	2,540	4,360	2,540	6,040	9,220	3,300	865	350
15-----	60	390	12,300	8,910	2,360	4,360	2,540	12,300	8,000	3,100	565	310
16-----	60	475	10,200	14,000	2,190	4,360	2,360	15,800	14,900	2,910	475	288
17-----	60	390	7,410	18,700	2,020	4,140	2,190	13,100	11,200	2,540	980	295
18-----	60	390	5,530	18,200	2,540	4,140	5,040	8,600	5,530	1,850	1,230	288
19-----	105	310	4,140	13,500	10,500	3,920	7,120	5,780	3,500	1,370	980	272
20-----	105	235	3,710	9,220	28,900	4,140	8,300	6,840	2,540	1,230	980	272
21-----	105	235	5,040	6,840	38,400	6,300	7,700	19,700	2,020	1,100	760	641
22-----	60	235	14,900	4,810	35,600	12,000	5,780	23,500	1,850	1,100	565	11,600
23-----	60	235	24,100	3,500	16,200	13,100	4,810	20,700	5,530	1,100	475	13,100
24-----	60	310	24,100	3,500	9,540	10,200	4,140	11,600	7,410	980	310	7,410
25-----	60	390	18,700	5,530	7,120	8,300	3,300	7,700	8,600	865	1,850	4,140
26-----	105	475	10,200	5,280	8,910	6,570	3,100	6,040	6,570	660	5,280	2,540
27-----	105	660	6,840	4,140	11,200	5,530	2,910	4,580	8,000	565	8,300	1,520
28-----	105	760	6,300	3,300	10,900	4,810	3,300	3,920	7,700	475	1,850	1,440
29-----	105	980	7,120	3,100	8,910	19,700	3,300	4,580	8,910	475	1,230	2,100
30-----	60	1,520	8,300	4,140	-----	28,900	4,580	17,700	5,780	390	865	8,600
31-----	105	-----	32,200	5,280	-----	27,700	-----	32,200	-----	235	475	-----

Monthly discharge of Kentucky River at Lock 10, near Winchester, Ky., for the year ending September 30, 1924

[Drainage area, 3,990 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	475	60	132	0.033	0.04
November-----	1,520	105	527	.132	.15
December-----	32,200	1,680	9,780	2.45	2.82
January-----	114,000	3,100	23,700	5.94	6.85
February-----	38,400	2,020	8,540	2.14	2.31
March-----	28,900	3,920	8,680	2.18	2.51
April-----	14,900	2,190	4,690	1.18	1.32
May-----	32,200	3,100	10,000	2.51	2.89
June-----	27,700	1,850	8,230	2.06	2.30
July-----	10,500	235	2,450	.614	.71
August-----	5,280	235	1,100	.276	.32
September-----	13,100	272	2,040	.511	.57
The year-----	114,000	60	6,680	1.67	22.79

WABASH RIVER BASIN

EMBARRASS RIVER AT STE. MARIE, ILL.

LOCATION.—In sec. 30, T. 6 N., R. 14 W. second principal meridian, at highway bridge at north end of Main Street, Ste. Marie, Jasper County, $2\frac{1}{2}$ miles upstream from mouth of North Fork.

DRAINAGE AREA.—1,540 square miles.

RECORDS AVAILABLE.—October 20, 1909, to December 31, 1912; August 24, 1914, to September 30, 1924.

GAGE.—Chain gage attached to bridge; read by F. C. Armstrong.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge at ordinary stages; by wading during low stages.

CHANNEL AND CONTROL.—Channel in sand and gravel, shifting; banks wooded, wide overflow section at high stages. Control, 1,800 feet below gage, shifts.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 18.9 feet March 31 (discharge, 9,070 second-feet); minimum stage recorded, 2.24 feet October 13-17 (discharge, 63 second-feet).

1909-1912 and 1914-1924: Maximum stage recorded during periods of records, 21.8 feet April 18, 1922 (discharge, 22,600 second-feet); minimum stage, 1.1 feet September 5-9, 1914, and October 19, 1914 (discharge, 1 second-foot).

Flood of spring of 1908 reached a height of 22.5 feet on present gage.

ACCURACY.—Stage-discharge relation changed during March and June; not affected by ice. Rating curves poorly defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table, except June 11-30 when indirect method for shifting control was used. Records poor.

Discharge measurements of Embarrass River at Ste. Marie, Ill., during the year ending September 30, 1924

[Made by H. E. Grosbach]

Date		Gage height	Dis-charge
		Feet	Sec.-ft.
May 23	-----	4.50	514
Sept. 23	-----	5.83	963

Daily discharge, in second-feet, of Embarrass River at Ste. Marie, Ill., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	114	320	280	1,290	4,050	1,040	7,150	3,700	2,500	1,450	249	925
2	99	320	340	1,180	3,800	1,100	4,250	3,250	2,190	1,270	429	1,960
3	92	320	340	1,040	4,050	1,010	3,100	2,740	2,020	1,090	287	1,420
4	86	512	360	985	4,470	1,040	2,300	1,980	1,980	953	429	897
5	79	848	1,680	512	5,320	1,200	1,940	1,650	2,300	841	287	757
6	79	765	3,750	560	6,020	1,070	1,620	1,380	3,600	757	268	645
7	74	685	3,400	560	6,020	1,010	1,440	1,200	4,470	701	249	570
8	74	685	2,340	660	4,250	958	1,290	1,060	3,450	645	231	495
9	74	635	2,500	848	3,600	875	1,200	1,030	4,880	595	231	473
10	68	585	2,700	1,320	2,940	820	1,090	1,110	3,200	545	249	429
11	66	512	2,220	3,650	1,960	792	1,000	1,060	2,220	520	249	387
12	63	446	1,740	2,580	1,590	820	890	974	1,780	495	268	367
13	63	402	3,650	1,320	1,410	1,680	840	865	1,480	495	231	495
14	63	380	5,700	1,100	1,320	1,680	790	790	1,270	495	249	387
15	63	360	6,270	875	1,380	1,470	765	715	1,090	451	231	367
16	63	360	6,020	1,120	1,410	1,320	740	665	1,010	429	213	327
17	63	468	4,350	1,350	1,850	1,230	740	640	897	429	196	307
18	86	446	4,050	792	4,250	1,180	765	592	813	387	188	307
19	2,140	402	3,650	765	2,900	1,100	1,110	592	767	387	188	307
20	3,020	380	3,400	792	1,840	1,040	1,380	616	701	367	188	287
21	2,580	360	3,950	468	1,530	985	1,230	616	645	367	1,480	1,750
22	1,620	340	3,550	468	1,200	1,010	974	544	620	347	1,090	1,150
23	1,040	320	4,100	610	1,120	1,680	865	521	729	327	1,090	897
24	792	300	4,250	660	1,040	1,470	790	2,420	1,480	307	1,040	729
25	635	300	3,300	610	958	1,470	690	4,470	1,690	307	1,780	495
26	560	280	2,500	710	875	1,530	665	1,840	2,300	307	1,480	495
27	446	280	2,260	610	848	1,530	765	3,020	2,820	287	1,450	429
28	402	280	1,960	490	848	1,440	1,680	4,350	2,820	268	1,630	387
29	380	280	1,840	560	958	4,950	2,980	3,150	2,100	268	1,780	347
30	340	280	1,620	3,400	-----	6,680	3,500	3,750	1,660	268	1,660	347
31	340	-----	1,470	4,150	-----	9,070	-----	3,300	-----	249	1,270	-----

Monthly discharge of Embarrass River at Ste. Marie, Ill., for the year ending September 30, 1924

[Drainage area, 1,540 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,020	63	505	0.328	0.38
November	848	280	428	.278	.31
December	6,270	280	2,890	1.88	2.17
January	4,150	468	1,160	.753	.87
February	6,020	848	2,540	1.65	1.78
March	9,070	792	1,750	1.14	1.31
April	7,150	665	1,620	1.05	1.17
May	4,470	521	1,760	1.14	1.31
June	4,830	620	1,980	1.29	1.44
July	1,450	249	536	.348	.40
August	1,780	188	673	.437	.50
September	1,960	237	638	.414	.46
The year	9,070	63	1,370	.890	12.10

LITTLE WABASH RIVER AT WILCOX, ILL.

LOCATION.—In SW. $\frac{1}{4}$ sec. 3, T. 2 N., R. 8 E., at highway bridge at Wilcox, Clay County, 6 miles southeast of Clay City, and a quarter of a mile below mouth of Big Muddy Creek.

DRAINAGE AREA.—1,130 square miles.

RECORDS AVAILABLE.—August 22, 1914, to September 30, 1924.

GAGE.—Chain gage attached to bridge; read by Mrs. Kate Holman.

DISCHARGE MEASUREMENTS.—At ordinary stages made from downstream side of bridge, which is at a pool; during high water made also from bridge across drainage ditch and overflow section about half a mile east of highway bridge.

CHANNEL AND CONTROL.—Bed composed of heavy clay. Low-water control is about 100 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 19.8 feet April 2 (discharge, 4,610 second-feet); minimum stage, 2.19 feet August 21 and 22 (discharge, 16 second-feet).

1914-1924: Maximum stage prevailed August 22, 1915 (gage inaccessible; discharge estimated at 14,000 second-feet); minimum stage recorded, 1.69 feet September 30, 1922 (discharge, 2.9 second-feet).

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 10 and 1,000 second-feet; fairly well defined between 1,000 and 8,000 second-feet, and extended above 8,000 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except for days of wide range in stage.

The following discharge measurement was made by H. E. Grosbach:

September 24, 1924: Gage height, 9.64 feet; discharge, 1,020 second-feet (discharge corrected for changing stage, 1,090 second-feet).

Daily discharge, in second-feet, of Little Wabash River at Wilcox, Ill., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	193	105	61	379	1,870	366	4,400	122	4,190	216	28	48
2	90	127	95	314	2,200	405	4,610	110	3,980	160	28	42
3	64	110	171	252	2,170	490	4,540	138	2,980	138	1,720	85
4	48	127	171	193	1,540	475	3,770	149	1,670	116	1,440	756
5	42	905	535	204	2,440	520	1,720	116	738	100	353	599
6	36	1,000	1,820	228	3,580	666	684	90	886	80	149	392
7	31	738	2,740	182	3,400	684	461	80	2,230	80	116	132
8	28	405	2,740	160	2,940	475	379	90	2,140	122	90	85
9	26	264	2,620	149	2,230	392	327	475	1,640	72	80	61
10	23	182	2,350	520	867	327	301	447	1,720	68	64	48
11	23	138	2,740	1,900	520	301	301	301	2,700	64	58	45
12	22	110	2,260	3,170	447	314	264	204	2,900	58	45	39
13	22	95	1,740	2,980	419	615	228	171	2,140	171	34	36
14	20	85	3,340	1,670	461	1,180	204	138	774	54	28	31
15	20	76	3,980	1,260	551	1,380	193	110	366	51	26	26
16	19	68	4,120	924	649	1,180	182	90	288	51	23	80
17	18	64	3,770	1,480	1,040	756	182	76	240	54	23	58
18	42	64	3,910	1,500	2,530	520	171	64	204	51	20	48
19	684	105	3,770	1,200	3,580	475	149	160	182	48	20	39
20	1,620	132	2,470	720	3,580	475	160	276	160	64	18	42
21	1,820	110	2,200	615	3,280	475	149	649	160	110	16	36
22	1,040	90	3,020	490	2,120	829	138	632	138	72	16	505
23	379	80	3,280	461	943	1,360	127	405	132	64	85	1,080
24	228	76	3,340	379	567	1,820	138	567	2,820	58	252	1,060
25	160	68	3,020	340	505	1,300	122	2,470	3,770	240	475	475
26	127	64	2,140	327	433	867	122	3,340	3,840	204	340	216
27	100	61	1,180	379	405	567	105	3,070	3,070	85	505	149
28	90	61	738	392	379	461	100	3,580	1,560	48	314	100
29	72	61	583	461	366	1,400	95	4,050	615	39	160	85
30	76	58	475	314	-----	3,580	149	4,260	327	34	100	68
31	72	-----	490	829	-----	4,400	-----	4,400	-----	31	64	-----

Monthly discharge of Little Wabash River at Wilcox, Ill., for the year ending September 30, 1924

[Drainage area, 1,130 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,820	18	233	0.206	0.24
November	1,000	58	188	.166	.19
December	4,120	61	2,120	1.88	2.17
January	3,170	149	786	.696	.80
February	3,580	366	1,590	1.41	1.52
March	4,400	301	937	.829	.96
April	4,610	95	816	.722	.81
May	4,400	64	995	.881	1.02
June	4,190	132	1,620	1.43	1.60
July	240	31	90.4	.080	.09
August	1,720	16	216	.191	.22
September	1,080	26	216	.191	.21
The year	4,610	16	814	.720	9.83

SALINE RIVER BASIN

MIDDLE FORK OF SALINE RIVER NEAR HARRISBURG, ILL.

LOCATION.—In sec. 13; T. 9 S., R. 6 E., on highway bridge 2 miles east of Harrisburg, Saline County, and 5 miles above junction with South Fork.

DRAINAGE AREA.—198 square miles.

RECORDS AVAILABLE.—October 25, 1922, to September 30, 1924.

GAGE.—Chain gage on bridge; read by Henry McGuire.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Control is clay and mud, probably shifting. Banks wooded; right bank is overflowed during extremely high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 19.5 feet December 14 (discharge, 3,310 second-feet); minimum discharge, 0.6 second-foot September 30.

1922-1924: Maximum stage recorded same as above; possibly higher stage occurred February 2-4, 1923, when water was over old bridge; minimum stage, 0.50 foot October 28, 1922 (discharge, 0.6 second-foot).

ACCURACY.—Stage-discharge relation changed slightly in June. Rating curves fairly well defined below and approximate above 1,500 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair for ordinary low and medium stages, poor for high and very low stages.

Discharge measurements of Middle Fork of Saline River near Harrisburg, Ill., during the year ending September 30, 1924

[Made by H. E. Grosbach]

Date	Gage height	Discharge
May 21.....	Feet 10.72	Sec.-ft. 675
Sept. 24.....	1.20	2.25

Daily discharge, in second-feet, of Middle Fork of Saline River near Harrisburg, Ill., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	4.0	13	132	190	234	43	67	138	49	24	63	1.7
2.....	2.7	11	67	132	292	28	37	52	37	13	8.4	2.8
3.....	1.8	292	52	319	535	18	30	24	25	5.4	1.7	1.9
4.....	1.4	1,290	226	2,790	431	13	31	19	18	10	1.4	1.1
5.....	1.0	1,290	547	2,010	475	197	49	14	156	6.4	1.6	1.0
6.....	.9	511	431	1,220	120	100	75	6.1	283	4.2	2.5	1.0
7.....	2.7	95	144	442	95	52	138	67	52	6.4	1.2	.7
8.....	2.4	43	105	319	59	31	234	95	28	2.8	1.2	1.0
9.....	1.8	37	1,190	190	40	34	806	126	20	4.7	4.7	1.0
10.....	1.2	24	2,550	806	46	63	442	46	15	2.2	1.4	1.2
11.....	3.9	4.3	2,200	1,590	105	43	234	52	13	1.7	2.0	1.4
12.....	2.4	18	1,360	1,240	55	183	115	30	17	24	2.7	.9
13.....	1.4	31	2,240	990	52	242	40	17	20	8.4	2.5	1.2
14.....	3.9	21	3,310	972	75	266	34	12	884	169	15	1.0
15.....	7.4	15	2,550	972	40	197	30	14	559	41	2.7	.8
16.....	6.1	22	1,650	1,260	36	90	17	13	211	9.2	1.6	.7
17.....	8.8	37	936	2,100	367	75	26	17	110	14	.9	1.3
18.....	523	14	523	868	584	52	23	5.5	954	16	1.4	1.7
19.....	954	12	597	690	1,190	46	12	9.6	3,190	90	1.2	2.2
20.....	420	10	718	511	1,650	319	16	511	2,350	357	1.0	258
21.....	40	7.2	1,390	420	662	211	21	690	2,030	761	.9	25
22.....	23	5.5	2,310	367	328	150	36	115	1,190	234	.9	3.4
23.....	13	21	2,630	218	120	100	15	46	662	32	.7	1.0
24.....	6.1	20	1,680	144	110	59	10	511	2,000	13	2.8	1.6
25.....	4.5	16	898	100	36	49	21	90	1,720	2.8	1.9	2.5
26.....	37	31	475	63	115	55	18	43	398	9.6	1.5	.9
27.....	26	30	266	40	63	43	12	52	63	3.4	1.2	.9
28.....	8.8	40	662	16	43	301	7.1	610	52	2.7	1.4	1.4
29.....	15	150	234	3.7	55	821	15	1,050	144	2.0	1.0	1.3
30.....	40	746	95	14	-----	337	190	1,140	43	1.2	.9	.6
31.....	19	-----	523	95	-----	25	-----	258	-----	5.4	1.2	-----

Monthly discharge of Middle Fork of Saline River near Harrisburg, Ill., for the year ending September 30, 1924

[Drainage area, 198 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	954	0.9	70.4	0.356	0.41
November	1,290	4.3	160	.808	.40
December	3,310	52	1,050	5.30	6.11
January	2,790	3.7	680	3.43	3.95
February	1,650	36	276	1.39	1.50
March	821	13	137	.692	.80
April	806	7.1	98.4	.472	.53
May	1,140	5.5	189	.955	1.10
June	3,190	13	576	2.91	3.25
July	761	1.2	60.5	.306	.35
August	63	.7	4.27	.022	.02
September	258	.6	10.7	.054	.06
The year	3,310	.6	277	1.40	18.98

CUMBERLAND RIVER BASIN

CUMBERLAND RIVER AT BARBOURVILLE, KY.

LOCATION.—At main highway bridge at Barbourville, Knox County, three blocks south of courthouse. Richland Creek enters a quarter of a mile below gage.

DRAINAGE AREA.—982 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1922, to September 30, 1924.

GAGE.—Chain gage on downstream side of highway bridge; read by J. L. Blair.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight 700 feet above and 500 feet below gage. Banks high and subject to overflow only during extreme floods. Bed composed of rock. Low-water control is rock ledge 20 feet below gage; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 26.9 feet at 7 a. m. January 4 (discharge, 16,000 second-feet); minimum stage, 0.14 foot October 22 and 23 (discharge, 17 second-feet).

1922-1924: Maximum stage recorded, 30.6 feet at 7 a. m. February 4, 1923 (discharge, 18,600 second-feet); minimum stage, that of October 22 and 23, 1923.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined below 4,000 second-feet; poorly defined between 4,000 and 13,000 second-feet; and extended above. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good below 4,000 second-feet and poor above.

Discharge measurements of Cumberland River at Barbourville, Ky., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 6	J. P. Clawson	0.24	28.1	May 12	J. P. Clawson	3.51	2,230
Nov. 17	Livingston and Clawson .....	.49	58.3	12	do	3.72	2,440
17	do .....	.49	59.1	29	W. R. King	4.60	3,630
Feb. 21	J. P. Clawson	21.50	12,200	July 27	J. P. Clawson	1.14	361
May 9	do	2.33	1,070				

Daily discharge, in second-feet, of Cumberland River at Barboursville, Ky., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	35	40	398	13,000	840	2,320	3,000	4,800	4,160	840	220	65
2.....	32	39	398	8,770	840	1,960	1,900	3,630	2,720	600	205	58
3.....	29	46	370	12,500	810	1,280	1,450	2,450	1,640	480	156	136
4.....	26	72	354	15,400	780	1,450	1,280	2,200	1,740	370	185	175
5.....	24	82	570	7,740	840	1,450	2,320	1,450	1,280	332	205	175
6.....	22	110	2,580	3,300	1,200	2,720	2,320	1,200	980	298	190	156
7.....	22	136	3,300	1,540	1,450	3,430	1,960	1,050	810	510	140	113
8.....	20	156	1,450	1,280	1,280	2,320	1,640	980	660	720	132	72
9.....	20	156	910	1,120	1,050	1,740	1,450	1,050	600	480	152	96
10.....	20	165	660	910	980	1,640	1,280	980	1,640	370	148	144
11.....	19	165	840	5,860	910	1,540	1,120	1,120	2,860	370	132	102
12.....	19	128	810	11,300	840	1,360	980	2,200	3,630	304	425	88
13.....	19	113	840	5,190	810	1,200	840	2,860	4,800	1,850	276	82
14.....	19	80	2,320	2,720	810	1,200	780	2,580	4,080	2,200	260	106
15.....	20	72	2,580	1,280	690	1,280	750	3,900	3,150	1,740	210	185
16.....	20	65	1,850	3,710	630	1,200	690	3,780	2,200	1,200	180	160
17.....	20	58	1,540	6,950	660	1,120	660	2,450	1,360	840	99	132
18.....	19	56	1,360	4,890	1,360	1,120	2,320	1,640	980	810	80	116
19.....	19	62	1,120	3,540	4,550	1,450	4,980	1,450	1,120	690	78	120
20.....	18	58	910	2,450	11,200	1,640	4,080	1,050	630	630	96	102
21.....	18	54	910	1,540	12,300	4,490	2,450	4,080	510	690	99	88
22.....	17	54	980	980	5,420	5,130	1,850	3,540	660	600	75	1,960
23.....	17	60	1,640	910	3,000	4,080	1,450	2,320	1,120	750	68	2,720
24.....	18	88	4,080	980	2,200	2,720	1,120	1,740	1,540	810	75	1,200
25.....	19	132	3,000	1,050	2,320	1,960	980	1,850	1,640	630	99	720
26.....	20	160	1,740	1,120	3,300	1,640	980	1,640	1,120	480	82	540
27.....	25	195	1,360	910	3,900	1,450	1,050	1,740	980	348	136	452
28.....	31	245	2,080	910	4,000	1,280	1,050	2,720	750	271	195	348
29.....	29	245	4,000	980	3,150	4,640	3,430	4,000	720	225	165	425
30.....	27	298	2,860	980	-----	6,150	6,300	9,120	1,200	195	110	3,150
31.....	31	-----	3,950	910	-----	4,430	-----	7,920	-----	190	88	-----

Monthly discharge of Cumberland River at Barboursville, Ky., for the year ending September 30, 1924

[Drainage area, 982 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	35	17	22.4	0.023	0.03
November.....	298	39	113	.115	.13
December.....	4,080	354	1,670	1.70	1.96
January.....	15,400	910	4,020	4.09	4.72
February.....	12,300	630	2,490	2.54	2.74
March.....	6,150	1,120	2,300	2.34	2.70
April.....	6,300	660	1,880	1.91	2.13
May.....	9,120	980	2,690	2.74	3.16
June.....	4,800	510	1,710	1.74	1.94
July.....	2,200	190	672	.684	.79
August.....	425	68	154	.157	.18
September.....	3,150	58	466	.475	.53
The year.....	15,400	17	1,520	1.55	21.01

CUMBERLAND RIVER AT CUMBERLAND FALLS, KY.

LOCATION.—At Cumberland Falls post office, Whitley County, 400 feet above falls, 13 miles east of Cumberland Falls railroad station, McCreary County.

DRAINAGE AREA.—2,010 square miles (revised measurement on topographic maps).

RECORDS AVAILABLE.—August 15, 1907, to December 10, 1911; April 1, 1915, to September 30, 1924.

GAGE.—Staff, inclined and vertical, on right bank 400 feet above brink of falls, installed April 3, 1915, and reconstructed July 22, 1923; read by Misses Alice Brunson and Minnie Vanover. For description of earlier gage see United States Geological Survey Water-Supply Paper 543.

DISCHARGE MEASUREMENTS.—Made from cable 600 feet above gage or by wading. A reference gage on left bank near cable is used to determine depths when soundings can not be made.

CHANNEL AND CONTROL.—Solid rock; permanent. At high stages edge of falls serves as control, there being a vertical drop of 68 feet at low water. During extreme low stages the river, just above the falls, flows in several small channels or crevices.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9 feet at 4 p. m. January 3 (discharge, 35,100 second-feet); minimum stage, 1.06 feet October 25 and 26 (discharge, 26 second-feet).

1907–1911; 1915–1924: Maximum stage recorded, 12.5 feet at 7.30 a. m. January 28, 1918 (discharge, 59,600 second-feet); minimum stage, 1.04 feet September 29, 1919 (revised discharge, 22 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Low-water flow may be affected to a small extent by operation of power plant at Williamsburg 25 miles above station.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Cumberland River at Cumberland Falls, Ky., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Nov. 12	Clawson and Livingston	1.38	212	June 10	Christian and Perkins	2.16	974
Feb. 18	J. P. Clawson	2.23	1,290	17	Clawson and Christian	3.18	3,430
May 22	Christian and Everett*	3.98	6,180	18	do	2.80	2,360
30	Christian and Schreiber*	7.05	21,100	18	do	2.80	2,460
31	Christian and Rice*	6.56	17,900	18	do	2.71	2,220
June 2	Christian and Perkins*	4.14	5,280	19	do	2.50	1,730
3	do	3.39	4,080	19	do	2.49	1,760
3	do	3.32	3,980	Sept. 5	Christian and Rice*	1.31	131
7	do	2.52	1,740	9	Clawson and Christian	1.47	263
				9	do	1.46	231
				10	J. P. Clawson	1.39	211

* Engineers for Chas. B. Hawley & Co.

Daily discharge, in second-feet, of Cumberland River at Cumberland Falls, Ky., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	88	34	401	14,500	1,890	4,760	6,470	11,400	12,600	1,090	370	256
2.....	83	34	478	19,800	1,780	4,150	4,450	12,400	6,100	905	350	239
3.....	73	37	604	35,100	1,670	3,440	3,300	8,110	3,570	756	300	222
4.....	83	69	578	28,800	1,560	2,920	2,560	5,080	3,050	658	330	187
5.....	83	110	1,180	21,700	1,560	2,680	4,150	3,850	2,800	630	290	157
6.....	83	37	2,800	14,000	1,560	3,180	4,760	3,050	2,110	686	290	187
7.....	73	83	3,850	4,700	1,890	4,150	4,450	2,440	1,780	1,270	310	195
8.....	65	116	3,850	2,920	2,110	4,150	3,570	2,220	1,560	1,560	290	214
9.....	61	122	2,330	2,440	2,000	3,570	3,180	2,110	1,360	1,670	282	259
10.....	57	116	1,670	2,110	1,670	3,050	2,800	2,000	1,780	1,180	290	205
11.....	53	171	1,360	6,470	1,460	3,050	2,560	1,890	2,560	954	273	187
12.....	49	171	1,360	19,200	1,460	2,920	2,220	2,110	4,150	742	290	179
13.....	49	179	1,360	16,800	1,460	2,680	2,000	3,050	6,100	1,780	282	187
14.....	46	171	2,000	8,550	1,360	2,560	1,780	4,000	7,260	4,450	552	195
15.....	43	157	4,150	4,150	1,270	2,560	1,670	4,450	5,410	4,450	456	187
16.....	40	136	3,850	7,260	1,180	2,560	1,560	5,080	4,150	2,920	380	164
17.....	37	98	3,050	15,000	1,090	2,440	1,460	4,000	3,570	2,330	330	157
18.....	34	116	2,680	12,400	1,270	2,330	2,440	3,570	2,560	1,780	282	205
19.....	37	104	2,330	7,680	5,410	2,330	8,550	2,800	1,780	1,460	239	214
20.....	40	98	2,000	4,760	23,000	2,560	8,550	2,330	1,360	1,360	187	214
21.....	40	98	1,670	3,570	23,600	5,750	5,410	2,800	1,090	1,370	164	330
22.....	34	88	1,560	2,680	18,600	9,930	3,850	6,100	954	1,270	136	6,100
23.....	31	104	2,330	2,110	9,460	8,550	3,300	4,760	1,180	1,270	129	5,080
24.....	28	104	4,450	1,890	4,760	5,750	2,680	3,440	2,560	1,460	205	3,850
25.....	26	104	5,410	2,110	4,760	4,450	2,330	3,050	3,050	1,180	205	2,220
26.....	26	116	3,850	2,330	5,750	3,440	2,110	3,180	3,050	988	179	1,360
27.....	31	116	2,920	2,220	6,860	3,050	2,000	3,050	2,330	920	171	988
28.....	34	136	2,680	1,780	8,110	2,800	2,220	4,760	1,780	770	157	742
29.....	31	205	3,440	1,780	6,470	6,100	2,110	10,400	1,460	658	187	728
30.....	31	330	4,760	1,890	-----	10,900	2,800	21,700	1,360	500	205	2,000
31.....	34	-----	6,860	1,890	-----	10,400	-----	18,600	-----	434	239	-----

Monthly discharge of Cumberland River at Cumberland Falls, Ky., for the year ending September 30, 1924

[Drainage area, 2,010 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	88	26	49	0.024	0.03
November.....	330	34	119	.059	.07
December.....	6,860	401	2,640	1.31	1.51
January.....	35,100	1,780	8,800	4.38	5.05
February.....	23,600	1,090	5,000	2.49	2.68
March.....	10,900	2,330	4,300	2.14	2.47
April.....	8,550	1,460	3,380	1.68	1.87
May.....	21,700	1,890	5,410	2.69	3.10
June.....	12,900	954	3,180	1.57	1.75
July.....	4,450	434	1,400	.699	.81
August.....	552	129	271	.125	.16
September.....	6,100	157	913	.454	.51
The year.....	35,100	26	2,950	1.47	20.01

CUMBERLAND RIVER AT BURNSIDE, KY.

LOCATION.—Below mouth of South Fork of Cumberland River at Burnside, Pulaski County.

DRAINAGE AREA.—4,890 square miles (measured on topographic maps and maps of Kentucky and Tennessee prepared by the United States Geological Survey; scale, 1: 500,000).

RECORDS AVAILABLE.—October 1, 1914, to September 30, 1924.

GAGE.—Vertical staff in two sections on piers of toll bridge across South Fork about 700 feet above mouth; installed in July, 1914, by United States Weather Bureau. Elevation of zero of gage above mean sea level, 591.20 feet. Prior to January 1, 1915, a gage marked on rails of warehouse incline, 500 feet downstream, was used. Datum unchanged.

DISCHARGE MEASUREMENTS.—Flow of South Fork is measured from highway bridge; the Cumberland above the South Fork measured from a cable half a mile upstream from gage after July 14, 1924; prior to that time from a boat. During low stages both streams are measured by wading.

CHANNEL AND CONTROL.—Channel permanent except for deposits of mud, which are washed away at high stages. Low-water control is crest of dam No. 21, 28 miles below Burnside; gage height of crest of dam, 1.47 feet. The dam is a concrete structure, and probably little or no water leaks through dam and lock.

EXTREMES OF DISCHARGE.—Maximum stage during year, 53.8 feet at 7 a. m. January 4 (discharge, 110,000 second-feet); minimum stage, 1.85 feet at 7 a. m. October 1 and 16–18 (discharge, 188 second-feet).

1915–1924: Maximum stage recorded, 69.5 feet at 1 a. m. January 29, 1918 (discharge, roughly, 157,000 second-feet); minimum stage, 1.8 feet September 18–21, 1919 (discharge, 115 second-feet). Lower stages have been recorded but were due to lowering of pool at dam No. 21.

The flood of January 29, 1918, reached the highest stage recorded since December 15, 1884, the date of establishment by United States Weather Bureau gage.

ICE.—Stage-discharge relation seldom affected by ice.

REGULATION.—Stage at low water will be affected by any manipulation of level of pool No 21 at lock.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined below 30,000 second-feet; above 30,000 second-feet curve is an extension and may be considerably in error. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. At low water, stage-discharge relation may be affected by water entering between gage and dam resulting from heavy local showers in the basins of small intervening tributaries. Records fair below 30,000 second-feet; subject to error above that stage.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

Discharge measurements of Cumberland River at Burnside, Ky., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec. ft.</i>
Oct. 1	J. P. Clawson	2.04	330	July 15	J. P. Clawson	9.73	10,900
Nov. 14	Livingston and Clawson	2.15	424	16	.....do	7.88	7,780
Feb. 19	J. P. Clawson	9.56	9,790	22	.....do	4.25	2,720
May 4	King and Clawson	11.12	13,200	Sept. 13	.....do	2.32	459

Daily discharge, in second-feet, of Cumberland River at Burnside, Ky., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	188	262	1,320	42,600	6,250	14,600	17,700	22,400	26,700	2,500	810	300
2-----	262	262	1,540	38,600	6,250	11,400	12,700	27,900	18,100	2,370	720	300
3-----	262	262	1,770	79,000	5,950	9,490	9,650	20,100	11,400	2,130	630	380
4-----	262	262	1,650	110,000	5,500	7,750	7,900	13,800	8,370	1,890	810	380
5-----	262	340	2,370	75,700	5,500	7,750	7,300	10,400	7,300	1,770	14,30	380
6-----	262	340	6,700	38,200	6,400	9,010	10,800	8,050	6,250	1,770	1,210	380
7-----	262	502	12,000	18,800	6,250	12,900	10,900	6,700	4,930	2,370	1,000	380
8-----	262	502	10,400	10,400	5,210	11,600	9,330	6,400	3,950	10,100	905	300
9-----	262	502	8,850	8,050	5,070	9,970	8,050	7,000	3,540	6,550	720	380
10-----	262	460	5,210	6,550	4,790	8,210	9,490	6,550	2,760	4,370	720	380
11-----	262	460	5,650	10,900	4,230	8,050	7,450	5,650	2,370	3,150	720	300
12-----	262	460	5,070	38,200	4,230	7,900	6,550	5,070	7,300	2,370	720	300
13-----	262	460	4,930	32,800	3,810	7,000	5,800	5,070	7,330	4,370	810	380
14-----	262	460	6,700	23,300	3,670	6,700	4,930	8,050	9,970	13,600	810	460
15-----	262	460	9,810	14,300	3,670	6,550	4,370	18,600	8,690	11,900	810	460
16-----	188	380	8,850	11,200	3,410	6,250	4,370	15,100	8,210	8,530	810	380
17-----	188	300	8,850	41,100	2,890	5,950	4,510	11,900	8,050	6,250	720	300
18-----	188	300	7,300	37,100	3,670	5,500	5,650	8,050	5,800	4,370	720	300
19-----	262	300	6,100	23,700	6,550	5,500	14,600	5,800	3,810	3,410	460	300
20-----	262	300	5,070	17,200	44,400	5,800	18,100	5,950	3,020	3,150	380	300
21-----	262	300	4,370	11,700	62,400	10,900	14,900	9,970	2,370	3,020	300	720
22-----	262	300	5,070	8,370	42,600	20,700	10,100	15,800	3,540	2,890	460	1,210
23-----	262	300	11,200	6,400	25,700	18,100	8,690	13,100	1,770	2,890	460	11,200
24-----	262	300	23,700	5,350	15,400	16,100	7,300	9,650	2,890	3,280	380	9,970
25-----	262	300	16,300	5,950	14,300	12,200	5,650	8,210	7,450	3,020	460	5,800
26-----	262	300	13,100	8,050	16,000	10,100	5,070	7,000	8,370	2,370	460	3,410
27-----	262	300	9,650	6,850	15,300	8,370	5,070	6,550	5,950	1,890	300	2,370
28-----	262	380	7,900	5,950	24,700	7,150	11,900	8,210	5,070	1,210	300	1,650
29-----	262	545	7,900	5,070	19,000	12,600	9,810	19,900	3,810	1,000	300	1,210
30-----	262	810	9,650	5,210	-----	29,700	8,850	53,900	3,020	905	300	1,540
31-----	262	-----	14,600	6,250	-----	24,300	-----	47,000	-----	905	300	-----

NOTE.—Pool lowered at dam No. 21 by opening the lock Aug. 28 and 29; discharge interpolated.

Monthly discharge of Cumberland River at Burnside, Ky., for the year ending September 30, 1924

[Drainage area, 4,890 square miles]

Month	Discharge in second-feet				Run-off in inches.
	Maximum	Minimum	Mean	Per square mile	
October-----	262	188	261	0.053	0.06
November-----	810	262	380	.078	.09
December-----	23,700	1,320	7,860	1.61	1.86
January-----	110,000	5,070	24,300	4.97	5.75
February-----	62,400	2,890	12,900	2.64	2.82
March-----	29,700	5,500	10,900	2.23	2.57
April-----	18,100	4,370	8,920	1.82	2.03
May-----	53,900	5,070	13,500	2.76	3.18
June-----	26,700	1,770	6,740	1.38	1.54
July-----	13,600	905	3,880	.794	.92
August-----	1,430	300	643	.131	.15
September-----	11,200	300	1,540	.315	.36
The year-----	110,000	188	7,670	1.57	21.35

CUMBERLAND RIVER AT CELINA, TENN.

LOCATION.—At boat landing at Celina, Clay County, 900 feet below mouth of Obey River.

DRAINAGE AREA.—7,320 square miles (64 per cent measured on topographic maps and 36 per cent on State maps; compiled by United States Geological Survey; scale, 1 : 500,000).

RECORDS AVAILABLE.—October 1, 1922, to September 30, 1924. Gage-height record obtained by United States Weather Bureau since December 1, 1903.

GAGE.—Staff gage in four sections at boat landing; read by R. L. Dale. Lower section, -1.0 to 0.2 foot, is vertical iron rod wedged into solid rock just above landing; second section, 0.2 to 30.7 feet, consists of strips of band iron mounted on an inclined timber bedplate just below low-water section; third section, 30.7 to 46 feet, is a vertical oak timber attached to elm tree, 30 feet north of inclined section; high-water section, 46 to 56 feet, is painted on north wall of ice house.

DISCHARGE MEASUREMENTS.—Made from boat or by wading.

CHANNEL AND CONTROL.—Channel straight 800 feet above and 700 feet below gage. Banks high but are overflowed during extreme high water. Low-water control is rock and gravel shoal 500 feet below gage; permanent. High water is channel controlled.

EXTREMES OF STAGE.—Maximum stage during year ending September 30, 1923, 44.5 feet at 3 p. m. February 6 (discharge, 108,000 second-feet); minimum stage, 0.7 foot November 6, 8-14 (discharge, 350 second-feet). Maximum stage during year ending September 30, 1924, 46.1 feet at 7 a. m. January 6 (discharge, 113,000 second-feet); minimum stage, 0.4 foot October 27 to November 3, the accuracy of these readings is questioned, however, and it is believed that actually the stage did not fall below 0.6 foot (discharge at stage of 0.6 foot is 270 second-feet).

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined between 400 and 5,000 second-feet; well defined between 5,000 and 35,000 second-feet; extended above. Gage read to tenths once daily. Low-water gage readings are doubtful; readings October 20 to November 3, 1923, and September 3, 1924, discarded. Daily discharge ascertained by applying daily gage height to rating table except as stated in footnote to daily discharge table. Records between 5,000 and 35,000 second-feet good; beyond these limits they range from fair to poor.

Discharge measurements of Cumberland River at Celina, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 8	J. P. Clawson.....	0.78	433	Apr. 28	J. P. Clawson.....	8.68	10,500
Nov. 8	.....do.....	1.02	639	29	.....do.....	10.30	14,300
Feb. 11	.....do.....	5.94	6,270	29	.....do.....	10.48	14,400
Apr. 28	.....do.....	8.72	10,500	Aug. 18	D. B. Ventres.....	1.51	1,100
28	.....do.....	8.68	10,500				

Daily discharge, in second-feet, of Cumberland River at Celina, Tenn., for the years: ending September 30, 1923 and 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1922-23												
1-----	530	530	820	6,820	73,500	12,500	9,530	18,700	14,400	4,800	1,650	1,320
2-----	530	530	920	6,820	65,700	13,800	8,120	23,200	15,400	4,740	1,430	1,220
3-----	820	530	1,980	6,820	84,300	14,800	6,960	19,600	13,400	3,420	2,060	1,120
4-----	720	530	3,420	7,820	99,600	13,400	6,270	13,800	10,400	2,970	3,080	1,430
5-----	530	530	4,980	9,050	103,000	11,000	9,370	10,200	8,120	2,420	3,190	1,650
6-----	440	350	9,690	9,530	108,000	12,100	15,200	8,270	6,680	1,980	2,860	1,220
7-----	440	440	11,000	8,420	105,000	46,900	16,900	6,960	5,230	1,870	2,530	1,430
8-----	440	350	18,000	7,520	90,000	66,600	20,700	6,140	4,620	1,780	2,530	1,320
9-----	530	350	24,900	6,650	58,800	76,500	17,300	6,140	4,260	2,750	4,500	1,870
10-----	530	350	21,900	6,010	27,800	80,100	13,600	5,880	4,980	8,120	4,140	1,540
11-----	620	350	21,900	5,620	19,100	68,100	11,400	5,880	4,980	8,420	3,780	1,320
12-----	620	350	16,900	5,100	16,900	62,100	9,530	6,270	4,140	6,010	3,420	1,430
13-----	720	350	12,700	4,620	32,800	68,100	8,420	6,960	4,140	4,260	8,270	1,650
14-----	720	350	9,370	4,260	50,900	71,700	22,300	6,960	5,880	2,970	6,820	1,430
15-----	720	440	28,300	7,240	60,300	70,500	32,500	6,960	16,900	2,420	9,530	1,320
16-----	620	440	40,900	8,730	63,300	58,500	37,100	13,600	13,800	1,870	7,520	1,120
17-----	530	530	65,700	8,120	53,800	51,400	36,100	11,200	8,270	1,870	6,010	920
18-----	530	530	78,600	9,530	37,100	44,100	29,500	10,500	6,680	2,090	6,010	820
19-----	440	620	79,800	9,690	21,600	45,500	21,900	12,100	4,860	2,530	4,740	820
20-----	440	620	74,700	8,730	13,600	37,400	15,200	9,530	3,660	2,530	3,300	720
21-----	440	620	54,000	15,200	10,400	26,800	11,800	7,820	3,160	2,750	2,640	920
22-----	440	620	27,300	42,800	8,730	19,800	9,660	6,820	2,640	2,310	2,090	1,220
23-----	440	820	14,000	52,000	7,520	33,500	8,120	6,010	2,530	1,870	1,870	1,020
24-----	440	820	9,530	69,300	6,540	45,200	7,670	8,270	2,310	1,430	1,650	920
25-----	530	920	7,520	71,700	5,880	52,300	9,210	20,200	1,980	1,430	1,320	1,320
26-----	530	920	6,140	68,700	5,230	54,900	7,240	32,500	1,760	1,760	1,220	1,220
27-----	530	920	5,100	59,100	8,570	48,000	7,520	35,300	1,760	1,980	1,220	1,220
28-----	530	920	3,490	54,600	11,400	34,300	7,100	27,800	2,860	1,320	1,220	1,120
29-----	530	920	6,820	57,300	-----	22,100	9,030	17,800	4,620	1,120	1,540	820
30-----	530	920	6,680	60,000	-----	15,200	12,500	12,900	4,260	1,540	1,430	720
31-----	530	-----	6,680	70,200	-----	11,400	-----	13,400	-----	1,870	1,430	-----
1923-24												
1-----	620	350	1,220	49,700	9,050	30,000	34,300	23,700	70,200	4,260	1,430	440
2-----	620	350	1,220	57,900	9,210	23,200	28,800	25,100	61,500	3,420	1,820	440
3-----	530	350	1,650	91,500	9,210	17,600	20,700	37,400	40,900	2,750	1,760	400
4-----	530	350	2,310	106,000	8,890	13,400	14,600	33,800	22,100	2,640	1,430	620
5-----	440	620	3,780	112,000	8,120	11,400	12,500	23,900	13,800	2,640	1,430	620
6-----	440	530	6,400	113,000	8,420	10,700	12,300	16,500	3,300	2,530	1,320	620
7-----	440	530	8,890	112,000	8,730	12,100	12,900	12,000	8,570	2,750	1,540	620
8-----	350	620	13,100	103,000	8,420	14,800	14,400	9,860	6,960	2,970	1,760	620
9-----	350	620	14,200	66,600	7,380	15,200	13,400	9,860	5,750	6,140	1,540	620
10-----	350	620	11,400	22,300	6,960	14,000	11,800	10,200	4,860	9,370	1,320	620
11-----	350	620	8,120	16,900	6,540	12,500	10,400	9,370	4,140	6,400	1,220	530
12-----	350	620	7,240	20,900	6,010	11,400	10,200	7,970	3,540	4,740	1,220	530
13-----	350	620	7,100	36,100	5,750	11,000	8,890	6,960	3,660	5,100	1,220	530
14-----	350	620	9,530	45,500	5,360	9,030	7,520	7,520	7,820	8,730	1,220	620
15-----	270	620	11,400	38,200	5,360	9,210	6,680	20,700	11,000	12,700	1,020	720
16-----	270	620	12,300	29,800	4,980	8,730	6,010	26,800	13,200	14,800	1,020	720
17-----	270	620	14,200	39,200	4,740	8,270	5,750	24,900	12,100	12,300	1,020	620
18-----	270	620	12,900	49,700	5,230	8,120	6,960	18,700	9,030	8,730	1,120	530
19-----	270	620	10,400	57,300	8,730	7,670	9,530	13,800	8,270	6,400	1,120	530
20-----	350	620	8,420	46,900	35,300	7,670	14,200	11,200	5,750	5,100	920	530
21-----	350	620	7,240	31,000	57,000	19,100	23,500	17,600	4,260	4,020	920	720
22-----	350	620	7,520	19,100	69,900	22,800	22,100	19,800	3,420	3,540	720	1,540
23-----	350	620	15,600	13,400	73,500	26,300	17,100	20,200	2,750	3,420	720	1,870
24-----	350	620	25,100	9,860	60,000	30,000	12,900	19,800	2,860	3,420	720	3,660
25-----	350	620	31,200	9,210	39,500	25,900	10,200	15,000	6,820	3,300	620	12,500
26-----	350	620	30,500	10,200	27,300	19,800	9,530	11,200	6,680	3,300	620	8,570
27-----	350	620	22,800	10,400	27,500	15,200	10,400	9,860	10,700	3,080	530	5,360
28-----	350	620	15,400	10,400	28,300	12,100	11,000	12,000	8,730	2,640	530	3,420
29-----	350	720	11,600	8,730	29,500	19,600	12,900	19,800	6,400	2,200	530	2,420
30-----	350	1,120	10,700	7,970	-----	21,600	16,900	49,700	5,230	1,760	920	1,870
31-----	350	-----	12,100	8,890	-----	31,000	-----	67,500	-----	1,540	620	-----

NOTE.—Gage-height record for Oct. 20 to Nov. 3, 1923, and Sept. 3, 1924, unreliable; discharge estimated by comparison with records for Cumberland River at Burnside, Ky.

Monthly discharge of Cumberland River at Celina, Tenn., for the years ending September 30, 1923 and 1924

[Drainage area, 7,320 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1922-23					
October	820	440	546	0.075	0.09
November	920	350	582	.080	.09
December	79,800	820	21,800	2.98	3.44
January	71,700	4,260	24,800	3.38	3.90
February	108,000	5,230	44,700	6.11	6.36
March	80,100	11,000	41,600	5.69	6.56
April	37,100	6,270	14,600	1.99	2.22
May	35,300	5,880	12,800	1.75	2.02
June	16,900	1,760	6,290	.860	.96
July	8,420	1,120	2,880	.394	.45
August	9,530	1,220	3,390	.463	.53
September	1,870	720	1,210	.165	.19
The year	108,000	350	14,400	1.97	26.81
1923-24					
October	620	270	375	.051	.06
November	1,120	350	598	.082	.09
December	31,200	1,220	11,500	1.57	1.81
January	113,000	7,970	43,700	5.97	6.88
February	73,500	4,740	20,200	2.76	2.98
March	31,000	7,670	16,100	2.20	2.54
April	34,300	5,750	13,600	1.86	2.08
May	67,500	6,960	19,800	2.70	3.11
June	70,200	2,750	12,500	1.71	1.91
July	14,800	1,540	5,050	.690	.80
August	1,760	530	1,080	.147	.17
September	12,500	400	1,780	.243	.27
The year	113,000	270	12,200	1.67	22.70

CUMBERLAND RIVER AT CARTHAGE, TENN.

LOCATION.—At highway bridge at Carthage, Smith County, a quarter of a mile below mouth of Caney Fork, 8 miles above Lock and Dam No. 7, and below Lock and Dam No. 8 on Cumberland River.

DRAINAGE AREA.—10,740 square miles (74 per cent measured on topographic maps and 26 per cent measured on State maps compiled by United States Geological Survey, scale 1:500,000).

RECORDS AVAILABLE.—October 1, 1922, to September 30, 1924. Gage-height record has been obtained by United States Weather Bureau since February 10, 1885.

GAGE.—United States Weather Bureau gage painted on north face of pier in midstream; read by C. C. Davis.

CHANNEL AND CONTROL.—Channel is straight for 500 feet above and 800 feet below gage. Left bank is high and not subject to overflow; right bank subject to overflow. One channel at all stages. Control is crest of Dam No. 7 located 8 miles downstream. This is a timber and rock crib structure and leaks very badly. At times entire flow passes through dam. The gage is in a deep pool at all stages.

DISCHARGE MEASUREMENTS.—Made from bridge or from a boat at section 1,000 feet downstream. Owing to great depth, velocities at bridge during low water are too slow for accurate current-meter work.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 45.1 feet at 12.25 p. m. January 5 (discharge, 139,000 second-feet); minimum stage, 7.2 feet November 2 (discharge, 600 second-feet).

1922-1924: Maximum and minimum stages same as given above. A stage of 54.4 feet April 7, 1886, is reported by United States Weather Bureau.

REGULATION.—Extreme low-water flow is considerably regulated by a hydro-electric plant on Caney Fork.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve poorly defined below 5,000 second-feet and fairly well defined above. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Owing to inaccuracy of rating curve for low water, and to daily fluctuations of stage caused by regulation of Caney Fork, records below 5,000 second-feet are poor; fair above.

COOPERATION.—Gage-height record furnished by the United States Weather Bureau.

Discharge measurements of Cumberland River at Carthage, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 16	J. P. Clawson	7.85	1,110	Apr. 22	J. P. Clawson	16.50	29,600
Nov. 1	do	7.59	886	Aug. 13	D. B. Ventres	8.59	2,140
Feb. 6	do	11.86	11,900	14	do	8.53	2,060

Daily discharge, in second-feet, of Cumberland River at Carthage, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,200	730	2,420	32,800	14,300	45,500	34,200	32,800	69,000	7,310	2,660	880
2	1,820	600	2,200	50,600	13,600	36,700	34,900	44,400	67,900	5,070	2,420	960
3	1,380	660	1,820	102,000	13,000	30,600	29,500	42,900	58,400	3,810	2,920	800
4	1,510	800	1,820	126,000	14,300	24,500	23,400	40,300	38,200	4,120	2,920	800
5	1,510	1,380	8,940	137,000	13,300	19,900	20,200	36,060	24,100	3,810	2,200	1,150
6	1,380	1,510	12,600	137,000	13,300	21,600	21,300	28,100	17,400	4,120	2,200	960
7	1,260	1,660	18,200	132,000	13,000	32,000	21,300	21,600	14,600	4,430	2,660	880
8	1,260	2,000	19,600	125,000	13,300	29,500	20,200	18,500	11,900	4,430	2,660	800
9	1,150	2,000	19,600	117,000	13,300	25,900	19,900	17,400	9,930	3,810	2,200	800
10	1,050	2,000	20,200	87,000	12,300	23,400	19,200	17,400	9,600	7,950	2,420	730
11	1,050	1,820	15,000	41,000	10,900	22,000	16,400	15,700	8,610	9,930	2,420	730
12	1,150	1,820	11,900	31,300	10,300	19,900	15,400	15,000	6,350	8,280	2,660	730
13	1,260	1,510	10,300	40,000	9,600	18,500	14,600	13,000	7,950	7,950	1,660	730
14	1,380	1,510	15,400	45,100	9,600	17,800	13,600	11,900	6,670	12,300	1,260	730
15	1,380	1,660	19,200	46,200	9,600	16,400	12,300	18,200	10,300	13,000	1,260	800
16	1,050	1,660	21,300	42,100	9,270	15,000	10,600	25,600	15,700	16,800	1,150	800
17	1,050	1,510	21,300	48,800	8,940	14,300	10,300	28,800	16,800	15,700	1,150	730
18	1,260	1,510	21,600	59,900	8,940	12,300	10,900	26,300	13,000	13,300	1,050	730
19	1,380	1,380	19,600	62,900	11,600	12,300	14,300	22,000	11,600	10,300	1,050	880
20	1,260	1,260	15,400	53,200	38,500	13,600	24,100	16,800	9,600	9,600	1,050	960
21	1,260	1,150	13,000	47,300	59,500	25,200	28,400	15,000	8,610	8,610	960	800
22	1,050	1,150	13,000	33,500	72,400	31,000	29,200	21,600	6,990	6,350	960	800
23	960	1,260	29,200	23,800	74,000	33,500	26,300	21,600	5,710	5,070	960	880
24	960	1,380	32,400	18,200	68,300	34,200	21,600	22,400	4,430	4,430	1,050	1,660
25	880	1,260	36,400	16,800	62,200	33,500	17,400	20,200	6,990	4,430	1,050	6,350
26	960	1,050	37,800	17,100	42,900	29,200	15,000	17,100	8,940	4,430	880	11,200
27	880	1,380	32,000	17,400	40,300	24,100	15,000	15,700	9,930	4,120	880	8,610
28	880	1,510	26,300	17,400	46,200	20,200	15,700	23,400	11,600	4,120	960	5,710
29	880	2,000	20,600	15,400	51,000	17,800	16,400	48,800	9,930	3,500	960	3,500
30	800	2,420	18,500	13,000	-----	24,800	21,600	66,400	7,950	3,200	800	2,000
31	730	-----	16,400	15,000	-----	28,100	-----	68,600	-----	3,200	800	-----

Monthly discharge of Cumberland River at Carthage, Tenn., for the year ending September 30, 1924

[Drainage area, 10,740 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,200	730	1,190	0.111	0.13
November	2,420	600	1,450	.135	.15
December	37,800	1,820	17,900	1.67	1.92
January	137,000	13,000	56,500	5.26	6.06
February	74,000	8,940	26,800	2.50	2.70
March	45,500	12,300	24,300	2.26	2.61
April	34,900	10,300	19,800	1.84	2.05
May	68,600	11,900	26,900	2.50	2.88
June	69,000	4,430	17,000	1.58	1.76
July	16,800	3,200	7,020	.654	.75
August	2,920	800	1,620	.151	.17
September	11,200	730	1,940	.181	.20
The year	137,000	600	16,900	1.57	21.38

CUMBERLAND RIVER AT NASHVILLE TENN.

LOCATION.—At Municipal Wharf at Broad and First Streets, Nashville, Davidson County, 2.6 miles above Lock and Dam No. 1.

DRAINAGE AREA.—12,860 square miles (61 per cent measured on topographic maps and 38 per cent measured on State maps compiled by United States Geological Survey; scale, 1 : 500,000).

RECORDS AVAILABLE.—Records of discharge, October 1, 1918, to September 30 1924. Gage readings obtained by United States Weather Bureau since 1873.

GAGE.—Enameled steel sections embedded in concrete walls and columns of Municipal Wharf or River Terminals Building; installed in 1922. For detailed description see Water-Supply Paper 563. Datum same as that of original gage.

DISCHARGE MEASUREMENTS.—Made from upstream of Sparkman Street highway bridge, 300 feet above gage.

CHANNEL AND CONTROL.—Bed composed of sediment. Low-water control is formed by dam at Lock No. 1, 2.6 miles below gage. Operation of locks has a negligible effect on stage-discharge relation. Dam is drowned out at stages above 12½ feet, then channel control prevails.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 44 feet from 7 a. m. to 2 p. m. January 8 (discharge, 124,000 second-feet); minimum stage, 6.7 feet August 28–31, September 1, 4–7, 17, 18, 24, and 25 (discharge, 1,020 second-feet).

1918–1924: Maximum stage recorded, 45.1 feet March 16, 1922 (discharge, 128,000 second-feet); minimum discharge, 1,000 second-feet November 9–14, 1922.

A stage of 55.3 feet on January 22, 1882, is reported by the United States Weather Bureau (discharge from extension of present rating curve, 167,000 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Very slight regulation unless pool is lowered for repairs to lock and dam.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

Discharge measurements of Cumberland River at Nashville, Tenn., during the year ending Sept. 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 19	J. P. Clawson	6.83	1,170	Jan. 14	J. P. Clawson	23.70	50,800
20	do	6.82	1,240	18	do	27.63	68,700
31	do	6.76	1,040	30	do	11.80	17,100
Jan. 9	do	43.74	120,000	31	do	11.49	15,900
10	do	43.32	120,000	Feb. 4	do	11.53	17,300
11	do	42.24	120,000	Apr. 15	do	10.85	13,800
12	do	36.70	84,100	Aug. 9	D. B. Ventres	7.70	3,060
13	do	27.64	56,100	9	do	7.72	3,350

Daily discharge, in second-feet, of Cumberland River at Nashville, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	2,200	1,180	4,480	23,700	17,200	61,200	29,400	33,400	77,100	8,670	3,400	1,020
2-----	2,200	1,180	3,920	39,300	17,200	57,800	36,100	40,100	76,700	7,300	4,480	1,180
3-----	1,760	1,180	3,920	92,900	17,200	48,100	36,700	49,400	75,300	5,980	3,660	1,180
4-----	1,560	1,360	3,920	116,000	17,200	36,100	31,100	50,400	69,300	5,060	3,140	1,020
5-----	1,560	1,360	5,360	120,000	16,100	28,600	25,300	48,700	54,100	4,480	3,400	1,020
6-----	1,560	1,180	12,700	121,000	16,800	26,400	22,000	41,000	29,100	4,200	3,400	1,020
7-----	1,560	1,180	16,100	122,000	16,800	26,100	21,200	31,100	19,500	3,920	3,140	1,020
8-----	1,560	1,180	19,300	124,000	15,300	34,000	22,200	24,000	15,700	3,920	3,400	1,180
9-----	1,560	1,980	20,700	124,000	15,300	32,800	21,000	26,100	13,000	3,400	3,400	1,180
10-----	1,360	2,200	21,200	122,000	14,500	28,800	20,700	20,700	11,600	3,660	3,140	1,180
11-----	1,360	2,200	20,200	119,000	13,400	26,400	19,500	19,800	10,100	3,920	3,140	1,180
12-----	1,180	1,980	16,400	104,000	13,400	24,000	17,600	18,200	9,370	10,160	3,400	1,560
13-----	1,180	1,760	13,400	70,000	11,900	22,000	16,100	16,400	7,960	9,730	3,140	1,760
14-----	1,180	1,760	16,400	52,000	11,900	19,300	14,900	15,300	7,960	12,360	2,660	1,760
15-----	1,360	1,760	22,200	53,000	10,800	18,900	14,200	18,200	7,960	18,800	2,200	1,760
16-----	1,360	1,980	23,700	56,400	10,400	18,000	12,700	20,700	10,800	14,200	1,980	1,180
17-----	1,360	1,980	26,400	66,500	10,100	16,800	11,600	22,000	13,800	16,400	1,980	1,020
18-----	1,360	1,980	24,800	64,800	10,800	15,700	11,900	30,200	16,400	16,400	1,760	1,020
19-----	1,360	1,760	23,700	69,000	11,900	14,500	12,300	28,300	14,200	14,200	2,200	1,360
20-----	1,360	1,560	21,000	71,400	36,700	15,700	16,400	22,700	11,900	14,500	1,760	1,360
21-----	1,360	1,560	18,000	69,300	62,300	29,100	25,800	20,000	10,100	10,800	1,760	1,760
22-----	1,360	1,560	19,100	59,500	69,600	33,100	29,100	17,600	8,660	9,370	1,760	1,560
23-----	1,360	1,760	43,900	41,400	76,700	37,300	29,700	21,500	6,620	7,300	1,560	1,360
24-----	1,360	1,760	53,700	27,500	80,300	37,900	27,200	22,500	6,300	5,980	1,360	1,020
25-----	1,360	1,760	45,800	22,000	83,200	38,700	22,200	22,700	5,360	5,360	1,360	1,020
26-----	1,360	1,760	44,800	20,700	83,200	37,300	18,900	21,700	6,960	5,060	1,360	4,760
27-----	1,360	1,980	44,500	19,500	68,600	32,200	16,100	19,100	8,660	4,760	1,180	10,800
28-----	1,180	2,200	39,000	18,900	65,100	26,400	15,300	28,800	9,730	4,760	1,020	9,020
29-----	1,180	2,420	29,700	18,900	61,200	22,200	16,400	40,700	11,900	4,200	1,020	6,300
30-----	1,180	3,660	23,000	17,600	-----	20,200	20,200	73,500	10,400	3,660	1,020	4,760
31-----	1,180	-----	20,000	16,400	-----	25,000	-----	77,100	-----	3,660	1,020	-----

Monthly discharge of Cumberland River at Nashville, Tenn., for the year ending September 30, 1924

[Drainage area, 12,860 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,220	1,180	1,420	0.110	0.13
November	3,660	1,180	1,770	.138	.15
December	53,700	3,920	22,600	1.76	2.03
January	124,000	16,400	66,500	5.17	5.96
February	83,200	10,100	32,900	2.56	2.76
March	61,200	14,500	29,400	2.29	2.64
April	36,700	11,600	21,100	1.64	1.83
May	77,100	15,300	30,400	2.36	2.72
June	77,100	5,360	21,200	1.65	1.84
July	16,400	3,400	7,780	.605	.70
August	4,480	1,020	2,360	.184	.21
September	10,800	1,020	2,240	.174	.19
The year	124,000	1,020	20,000	1.56	21.16

LAUREL RIVER NEAR OTAS, KY.

LOCATION.—At old wooden highway bridge on Corbin-Rockcastle Springs road, $1\frac{1}{2}$ miles northwest of Otas, Whitley County, and $2\frac{1}{2}$ miles northwest of Corbin. Horse Creek enters half a mile above gage.

DRAINAGE AREA.—198 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1922, to September 30, 1924, when station was discontinued.

GAGE.—Vertical staff in two sections bolted to left side of first masonry pier from left bank; read by Clayborne Killian.

CHANNEL AND CONTROL.—Channel straight for 300 feet above and 700 feet below gage. Banks high and rocky; not subject to overflow. Bed of stream very rough; composed of coarse gravel and boulders. Control is rocky shoal just below gage; probably permanent.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.2 feet at 6 a. m. January 3 (discharge, 7,420 second-feet); no flow November 3.

1922-1924: Maximum stage recorded, same as above; no flow October 5 and 6, 1922, and November 3, 1923.

REGULATION.—None.

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation assumed to have changed during high water of January 3. Rating curves used before and after that date are fairly well defined up to 3,000 second-feet and extended above. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records prior to January 3 fair for stages below 3,000 second-feet, after that date, fair to poor; all records above 3,000 second-feet, poor.

Discharge measurements of Laurel River near Otas, Ky., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 4	J. P. Clawson-----	0.26	3.4	July 25	J. P. Clawson-----	1.34	84
Nov. 20	Livingston and Clawson	.17	3.4	1925			
Feb. 25	J. P. Clawson-----	4.10	1,310	Feb. 20	Duncan Charlton-----	2.47	481
25	do-----	4.10	1,430				

Daily discharge, in second-feet, of Laurel River near Otas, Ky., for the year ending September, 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	4.3	0.1	570	5,530	410	455	590	1,300	890	388	19	4.0
2-----	5.2	.1	230	2,960	325	345	455	940	545	228	14	3.6
3-----	4.0	.0	200	7,240	455	245	455	640	410	60	265	5.5
4-----	3.6	.2	260	4,270	388	210	388	285	1,180	110	940	8.5
5-----	3.2	.6	950	3,200	305	590	640	175	740	160	640	11
6-----	3.2	186	1,780	1,300	210	890	345	175	500	228	545	11
7-----	2.4	173	1,180	740	228	740	228	132	285	1,180	365	10
8-----	2.0	110	950	590	210	500	228	66	210	1,360	210	9.4
9-----	2.4	57	705	545	175	455	345	265	175	1,000	132	8.5
10-----	2.0	44	530	410	132	365	228	175	690	690	31	7.9
11-----	1.8	31	1,060	1,920	110	285	192	132	740	345	33	7.0
12-----	1.8	27	705	1,920	132	228	145	78	640	74	545	6.1
13-----	1.8	20	1,180	790	145	228	132	66	640	1,180	345	5.5
14-----	1.2	14	1,180	640	110	245	110	1,060	840	1,060	228	9.4
15-----	1.0	10	1,180	590	90	345	120	2,080	890	1,060	210	6.7
16-----	1.0	7.8	660	1,240	81	245	99	1,850	2,720	615	210	5.2
17-----	1.0	6.4	570	1,430	120	192	265	640	740	305	81	4.3
18-----	1.0	3.6	570	1,060	545	192	1,640	210	325	228	78	4.0
19-----	.8	3.0	570	840	1,430	192	740	99	245	175	75	3.6
20-----	1.1	2.0	530	640	4,630	175	640	99	210	285	40	3.2
21-----	1.0	2.0	490	545	3,200	1,360	545	840	175	305	23	7.0
22-----	.8	2.0	705	455	1,850	1,300	455	1,920	90	210	18	1,430
23-----	.7	2.0	1,780	365	890	840	410	1,430	740	432	12	2,000
24-----	.6	2.8	1,780	245	690	590	285	410	1,120	325	8.2	940
25-----	.6	5.5	1,120	500	1,430	500	192	81	740	145	7.6	545
26-----	.4	20	1,000	455	1,180	455	265	99	545	97	7.0	500
27-----	.4	49	615	455	940	365	410	20	640	42	6.4	388
28-----	.3	80	1,000	345	640	325	345	740	228	39	5.8	33
29-----	.3	136	1,060	228	545	2,320	305	2,160	410	32	5.5	40
30-----	.3	305	570	455	-----	1,850	715	3,120	500	30	5.2	74
31-----	.2	-----	2,960	410	-----	1,300	-----	1,300	-----	27	4.6	-----

Monthly discharge of Laurel River near Otas, Ky., for the year ending September 30, 1924

[Drainage area, 198 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	5.2	0.2	1.63	0.008	0.01
November-----	305	0	43.3	.219	.24
December-----	2,960	200	924	4.67	5.38
January-----	7,240	225	1,360	6.87	7.92
February-----	4,630	81	745	3.76	4.06
March-----	2,320	175	591	2.98	3.44
April-----	1,640	99	397	2.00	2.23
May-----	3,120	20	729	3.68	4.24
June-----	2,720	60	627	3.17	3.54
July-----	1,360	27	400	2.02	2.33
August-----	940	4.6	165	.834	.96
September-----	2,000	3.2	203	1.02	1.14
The year-----	7,240	0	517	2.61	35.49

ROCKCASTLE RIVER AT ROCKCASTLE SPRINGS, KY.

LOCATION.—At Rockcastle Springs, Laurel County, 3 miles below Cane Creek and 5 miles above mouth of river.

DRAINAGE AREA.—746 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1922, to September 30, 1924.

GAGE.—Staff gage in four sections on left bank about 300 feet from Rockcastle Springs post office; read by Ben Wells. Lower section, 0 to 7.3 feet is inclined and the other three sections are vertical timbers attached to trees and faced with enamel sections.

CHANNEL AND CONTROL.—Channel straight for 1,000 feet above and 300 feet below gage. Banks are steep and wooded and are overflowed at 18-foot stage. Bed is smooth and uniform; solid rock and gravel. Control is rock and coarse gravel shoal 250 feet below gage; probably permanent.

DISCHARGE MEASUREMENTS.—Made from cable just above gage since December 16, 1923; made from boat at cable section prior to that date. Low-water measurements made by wading.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 29.9 feet at 7.30 p. m. January 3 (discharge not determined); minimum stage, 0.20 foot October 22 and 23 (discharge, 15 second-feet).

1922-1924: Maximum stage recorded, that of January 3, 1924; minimum stage, 0.10 foot at 8 a. m. October 5, 1922 (discharge, 10 second-feet).

REGULATION.—None.

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined below 7,000 second-feet; extended beyond that point. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records below 7,000 second-feet good; others fair to poor depending upon stage.

Discharge measurements of Rockcastle River at Rockcastle Springs, Ky., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 3	J. P. Clawson	0.64	44.7	Feb. 27	J. P. Clawson	5.07	1,970
Nov. 19	Livingston and Clawson .....	.67	45.4	July 24	do	1.78	276
Feb. 27	J. P. Clawson	5.10	1,980				

Daily discharge, in second-feet, of Rockcastle River at Rockcastle Springs, Ky., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	68	31	905	14,100	1,130	1,190	1,890	4,570	2,030	315	106	51
2-----	73	33	600	5,080	1,190	1,020	1,500	4,470	1,500	270	103	53
3-----	60	33	405	27,700	1,190	850	1,190	2,030	1,190	212	123	115
4-----	48	56	368	25,600	1,130	700	960	1,630	905	368	510	82
5-----	44	91	600	4,870	1,070	850	905	1,250	800	332	255	60
6-----	38	131	2,800	2,240	1,130	2,100	800	960	700	368	167	58
7-----	36	129	3,240	1,190	960	1,500	700	800	600	3,780	129	48
8-----	33	127	1,630	1,190	750	1,250	650	750	445	3,330	104	43
9-----	29	129	960	960	650	1,020	600	750	368	1,250	90	40
10-----	27	112	750	800	600	960	1,630	700	332	750	78	38
11-----	27	97	960	6,070	600	1,020	1,190	600	2,100	510	70	42
12-----	26	85	1,370	7,170	555	850	1,020	650	1,700	385	315	46
13-----	27	79	1,020	2,970	555	750	850	600	960	1,170	188	53
14-----	27	70	1,960	1,890	532	750	750	1,960	800	1,700	175	51
15-----	22	65	2,170	1,500	465	750	700	6,510	1,250	1,310	119	42
16-----	21	74	1,440	2,240	425	750	600	3,060	1,310	1,020	94	44
17-----	20	58	1,130	10,400	385	650	555	1,960	905	700	79	44
18-----	19	57	850	3,870	555	650	1,190	1,370	650	510	73	44
19-----	19	54	700	2,480	1,500	750	1,890	1,020	555	555	119	42
20-----	20	53	555	1,820	14,600	700	1,440	1,020	350	425	110	46
21-----	17	51	750	1,370	9,450	1,500	1,130	4,770	285	425	85	82
22-----	15	48	2,640	850	3,330	2,720	1,020	4,870	270	510	72	1,250
23-----	15	52	7,280	800	2,100	2,100	850	2,400	600	332	225	2,480
24-----	19	62	8,240	750	1,630	1,760	700	1,630	1,820	270	110	700
25-----	18	74	2,970	1,020	1,960	1,440	600	1,370	2,480	200	82	405
26-----	17	97	1,760	1,440	2,240	1,190	650	1,020	1,190	163	63	255
27-----	19	106	1,250	960	2,100	1,070	1,560	800	850	131	205	212
28-----	24	125	1,190	850	1,760	850	1,370	750	700	115	185	165
29-----	27	155	1,500	800	1,370	5,410	1,500	1,310	488	103	91	175
30-----	34	255	1,370	906	-----	6,840	1,630	7,170	368	94	70	600
31-----	31	-----	6,290	1,130	-----	3,420	-----	3,420	-----	86	60	-----

Monthly discharge of Rockcastle River at Rockcastle Springs, Ky., for the year ending September 30, 1924

[Drainage area, 746 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	73	15	29.7	0.040	0.05
November-----	255	31	86.3	.116	.13
December-----	8,240	368	1,920	2.57	2.96
January-----	27,700	750	4,360	5.84	6.73
February-----	14,600	385	1,930	2.59	2.79
March-----	6,840	650	1,530	2.05	2.36
April-----	1,890	555	1,070	1.43	1.60
May-----	7,170	600	2,130	2.85	3.29
June-----	2,480	270	952	1.28	1.43
July-----	3,780	86	698	.936	1.08
August-----	510	60	137	.184	.21
September-----	2,480	38	246	.330	.37
The year-----	27,700	15	1,260	1.69	23.00

NEW RIVER NEAR NEW RIVER, TENN.

LOCATION.—At county highway bridge, 1 mile above mouth of Brimstone Creek, 1½ miles above Cincinnati, New Orleans & Texas Pacific Railroad bridge at New River, Scott County, and 7 miles above confluence with Clear Fork.

DRAINAGE AREA.—312 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 19, 1922, to September 30, 1924. United States Weather Bureau has obtained a gage-height record 1½ miles below since February 1, 1908.

GAGE.—Chain gage bolted to railing on downstream side of bridge; read by L. D. Washam.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.
CHANNEL AND CONTROL.—Channel practically straight for 500 feet above and below gage. Right bank subject to overflow each year; left bank high and is not overflowed. Bed composed of gravel and rock; one channel at all stages. Control is coarse gravel shoal 25 feet below gage; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 23 feet at 8 a. m. May 30 (discharge not determined); minimum stage, 0.43 foot October 12-16 and 28 (discharge, 1.9 second-feet).

1922-1924: Maximum and minimum stages, same as given above.

REGULATION.—None.

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 7 and 3,000 second-feet and extended beyond. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good between 7 and 3,000 second-feet; subject to error above and below.

Discharge measurements of New River near New River, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Feb. 16	J. P. Clawson.....	1.26	171	May 3	J. P. Clawson.....	3.79	1,040
28	Duncan Charlton.....	6.90	2,760	Sept. 6	.....do.....	.55	7.67
May 2	J. P. Clawson.....	4.63	1,430				

Daily discharge, in second-feet, of New River near New River, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	4.0	3.1	234	3,720	335	1,060	755	3,400	970	115	113	3.4
2.....	6.7	3.7	170	3,080	320	880	555	1,650	675	86	125	6.7
3.....	5.8	5.8	101	12,600	305	635	450	1,060	450	68	96	5.8
4.....	3.7	19	103	3,340	290	520	450	755	335	66	96	4.0
5.....	3.7	39	485	1,290	305	715	1,060	555	262	94	84	4.9
6.....	3.7	72	1,240	795	290	2,340	925	450	208	115	55	6.7
7.....	3.7	46	555	1,020	248	1,290	755	432	170	450	34	6.7
8.....	4.9	36	398	450	195	835	635	432	147	485	23	8.5
9.....	4.0	23	262	365	170	635	520	380	122	248	55	10
10.....	3.1	19	221	305	182	675	450	305	108	170	132	11
11.....	2.5	14	195	7,390	182	555	380	335	157	140	46	12
12.....	1.9	11	170	2,400	182	485	320	320	1,290	110	31	10
13.....	1.9	11	170	1,290	182	450	276	290	485	970	36	12
14.....	1.9	9.4	1,340	795	170	432	262	210	248	755	25	13
15.....	1.9	9.4	880	555	157	450	365	365	170	380	23	10
16.....	1.9	9.4	675	4,540	144	380	350	320	144	234	17	23
17.....	2.5	9.4	635	3,200	144	365	305	305	120	195	18	23
18.....	2.5	5.8	221	1,540	520	398	2,940	276	89	170	13	15
19.....	3.1	5.8	415	1,020	3,860	450	2,400	234	72	132	10	23
20.....	2.5	7.6	305	715	8,920	555	1,290	208	61	118	13	18
21.....	2.5	7.6	262	450	2,340	2,640	835	320	48	125	11	17
22.....	3.1	5.8	262	335	1,240	1,540	715	290	40	132	10	3,980
23.....	3.1	7.6	3,860	335	880	1,150	485	221	34	106	10	715
24.....	3.4	8.5	2,160	305	755	795	398	248	715	77	5.8	305
25.....	2.5	13	1,020	485	795	635	335	450	715	61	4.9	144
26.....	2.5	39	635	415	795	520	380	398	380	50	4.9	96
27.....	2.5	39	485	398	7,120	450	2,100	3,080	432	44	3.7	72
28.....	1.9	82	555	398	2,700	380	1,700	4,330	320	37	3.7	53
29.....	2.2	75	1,200	350	1,440	880	1,340	9,190	182	29	3.7	68
30.....	2.5	103	795	365	-----	1,920	5,360	9,280	152	20	3.7	350
31.....	2.5	-----	2,040	365	-----	1,100	-----	1,540	-----	20	3.4	-----

Monthly discharge of New River near New River, Tenn., for the year ending September 30, 1924

[Drainage area, 312 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	6.7	1.9	3.05	0.010	0.01
November.....	103	3.1	24.7	.079	.09
December.....	3,860	101	711	2.28	2.63
January.....	12,600	305	1,760	5.64	6.50
February.....	8,920	144	1,210	3.88	4.18
March.....	2,640	365	842	2.70	3.11
April.....	5,360	262	970	3.11	3.47
May.....	9,280	208	1,350	4.33	4.99
June.....	1,290	34	310	.993	1.11
July.....	970	20	187	.599	.69
August.....	132	3.4	35.8	.115	.13
September.....	3,980	3.4	201	.644	.72
The year.....	12,600	1.9	633	2.04	27.63

SOUTH FORK OF CUMBERLAND RIVER AT NEVELSVILLE, KY.

LOCATION.—One-fourth mile below Turkey Creek ferry on Greenwood-Monticello pike and 1 mile from Nevelsville, McCreary County. Little South Fork enters on left $1\frac{3}{4}$ miles above station.

DRAINAGE AREA.—1,260 square miles (measured on maps compiled by United States Geological Survey; scale 1:500,000).

RECORDS AVAILABLE.—March 10, 1915, to September 30, 1924.

GAGE.—Vertical staff in five sections bolted to rock ledges on left bank; read by J. S. Carrell. A reference gage for use in referencing soundings at the measuring section, is attached to tree on left bank 110 feet below cable.

DISCHARGE MEASUREMENTS.—Made from cable 2,000 feet below gage or by wading.

CHANNEL AND CONTROL.—Channel straight above and below; bed, compact gravel. Low-water control is partly bed of river below gage and partly a gravel bar about 2 miles below gage. Both are probably permanent. High-water control is bed of stream for several miles below gage, and may be slightly affected by foliage along banks.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 35.7 feet at 6.30 a. m. May 30 (discharge, 52,900 second-feet); minimum stage, 1.61 feet at 5.30 p. m. August 31 (discharge, 54 second-feet).

1915-1924: Maximum stage recorded, 51.4 feet January 28, 1918 (discharge, 84,300 second-feet); minimum stage, 1.53 feet September 19, 1919 (discharge, 49 second-feet).

ICE.—Stage-discharge relation seldom if ever affected by ice.

REGULATION.—Operation of a small power plant a short distance above gage may affect flow at extreme low water.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 100 and 25,000 second-feet; extended above 25,000 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good between 100 and 25,000 second-feet; fair above and below.

Discharge measurements of South Fork of Cumberland River at Nevelsville, Ky., during the year ending September 30, 1924

[Made by J. P. Clawson]

Date	Gage height	Dis-charge
	<i>Feet.</i>	<i>Sec.-ft.</i>
Feb. 16.....	3.68	810
July 18.....	3.82	852
Sept. 11.....	2.21	178

Daily discharge, in second-feet, of South Fork of Cumberland River at Nevelsville, Ky., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	105	82	445	11,500	1,450	3,130	2,730	14,900	4,280	445	165	81
2.....	114	80	400	13,200	1,390	2,730	2,150	6,340	2,290	360	160	99
3.....	90	81	445	48,500	1,270	2,360	1,730	4,010	2,220	320	286	103
4.....	81	135	445	27,500	1,210	1,940	1,660	2,890	1,870	270	740	196
5.....	77	303	970	7,540	1,210	2,010	3,740	2,290	1,150	239	445	142
6.....	72	224	2,890	4,770	1,450	6,220	3,920	1,870	1,090	320	360	114
7.....	70	210	2,500	2,650	1,330	4,010	3,380	1,660	970	3,050	320	105
8.....	69	196	2,150	2,010	1,150	2,810	2,570	2,150	740	2,290	254	126
9.....	69	196	1,090	1,800	910	2,360	2,360	2,650	685	1,330	239	103
10.....	66	183	850	1,730	970	2,220	1,870	2,360	585	910	254	148
11.....	62	170	850	6,580	970	2,010	1,590	1,660	660	740	224	170
12.....	62	153	795	11,500	1,030	2,080	1,390	1,590	3,560	585	254	151
13.....	61	131	1,150	4,970	970	1,870	1,210	1,390	2,970	10,300	196	135
14.....	60	126	1,730	3,290	910	1,800	1,210	3,290	1,270	4,570	184	122
15.....	58	124	3,130	2,360	850	1,730	1,210	2,570	910	2,360	151	109
16.....	56	122	2,150	12,500	795	1,590	1,660	1,870	740	1,520	139	103
17.....	61	111	1,800	21,200	795	1,520	1,390	1,590	585	1,090	133	101
18.....	60	107	1,730	7,180	1,330	1,520	4,470	1,330	490	850	124	94
19.....	76	105	1,330	4,190	4,100	1,590	10,200	1,270	445	740	114	88
20.....	81	101	1,090	3,830	23,700	1,940	4,670	1,210	340	850	109	101
21.....	97	92	1,030	2,360	10,900	6,220	3,050	1,940	303	740	103	210
22.....	97	95	1,270	1,660	5,520	6,700	2,500	1,520	254	585	101	970
23.....	95	101	3,740	1,450	3,380	4,010	2,150	1,390	239	535	94	3,130
24.....	92	124	7,420	1,520	2,970	3,290	1,590	1,090	910	512	88	1,030
25.....	88	148	3,740	1,660	4,670	2,500	1,390	1,150	3,050	400	69	585
26.....	84	160	2,360	2,010	1,660	2,150	1,450	1,660	1,390	320	74	490
27.....	86	158	1,870	1,450	7,180	1,870	8,190	1,660	1,210	286	69	286
28.....	88	183	1,800	1,390	8,580	1,800	5,630	9,360	1,210	239	62	254
29.....	86	270	2,150	1,330	5,520	3,380	4,190	21,200	740	210	58	239
30.....	84	445	2,360	1,450	-----	6,820	6,460	52,900	585	196	56	535
31.....	82	-----	6,460	1,520	-----	3,830	-----	7,420	-----	170	54	-----

Monthly discharge of South Fork of Cumberland River at Nevelsville, Ky., for the year ending September 30, 1924

[Drainage area, 1,260 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	114	56	78.4	0.062	0.07
November.....	445	80	157	.125	.14
December.....	7,420	400	2,000	1.59	1.83
January.....	48,500	1,330	6,960	5.55	6.40
February.....	23,700	795	3,380	2.68	2.89
March.....	6,820	1,520	2,900	2.30	2.65
April.....	10,200	1,210	3,060	2.43	2.71
May.....	52,900	1,090	5,170	4.10	4.73
June.....	4,280	239	1,260	1.00	1.12
July.....	10,300	170	1,200	.952	1.10
August.....	740	54	183	.145	.17
September.....	3,130	81	337	.268	.30
The year	52,900	54	2,230	1.77	24.11

OBEY RIVER NEAR BOOM, TENN.

LOCATION.—At county highway bridge on Livingston-Byrdstown road, $1\frac{1}{2}$ miles above mouth of Eagle Creek, $1\frac{1}{2}$ miles below mouth of Franklin Creek, $1\frac{1}{2}$ miles northeast of Boom, Pickett County, and 4 miles southwest of Byrdstown.

DRAINAGE AREA.—416 square miles (measured on topographic maps).

RECORDS AVAILABLE.—March 16, 1919, to September 30, 1924.

GAGE.—Chain gage attached to downstream side of bridge; read by Eunice Reynolds.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed chiefly of rock. Banks high, but left bank subject to overflow at extreme stages. Control for low water is at gravel and rock shoal a quarter of a mile below gage, drowned out at 1,000 second-feet. High water is channel controlled.

ICE.—Ice seldom forms at this point.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 24.93 feet at 3.30 p. m. January 3 (discharge, 19,900 second-feet); minimum stage, 1.20 feet November 2 and 3 (discharge, 10 second-feet).

1919-1924: Maximum stage recorded, 35.65 feet at 8 a. m. March 2, 1922 (discharge, 30,700 second-feet); minimum stage, 0.90 foot November 3, 1920 (discharge, 7 second-feet).

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined between 20 and 15,000 second-feet, extended above and below. Gage read to hundredths once daily, oftener during high water. Daily discharge ascertained by applying daily or mean daily gage height to rating table. Records fair.

Discharge measurements of Obey River near Boom, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 9	J. P. Clawson.....	1.33	32.0	Apr. 25	J. P. Clawson.....	2.81	554
Nov. 7	do.....	1.59	92.9	May 30	W. R. King.....	13.26	6,960
Feb. 13	do.....	2.64	453	Aug. 16	D. B. Ventres.....	1.50	78.8

Daily discharge, in second-feet, of Obey River near Boom, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	70	19	168	3,210	575	1,600	670	3,700	1,660	174	41	65
2.....	60	10	132	1,960	530	1,250	598	2,080	1,200	147	60	31
3.....	50	10	112	18,300	508	920	530	1,480	920	126	360	210
4.....	45	55	78	9,400	485	820	485	1,140	720	110	280	85
5.....	37	105	420	2,860	530	720	1,360	870	598	100	168	60
6.....	35	65	1,720	1,480	820	1,660	1,360	720	462	320	174	45
7.....	33	65	1,250	1,140	695	1,300	1,080	670	400	975	132	37
8.....	29	60	820	870	598	1,030	920	720	340	508	150	33
9.....	27	45	575	695	530	820	770	1,200	300	320	228	29
10.....	22	33	440	620	485	820	670	920	262	210	150	33
11.....	20	25	420	2,200	485	870	575	770	228	204	85	45
12.....	19	19	620	2,330	462	770	508	670	228	162	110	37
13.....	19	19	462	1,600	462	695	462	598	183	1,480	100	33
14.....	19	22	1,720	1,140	420	695	420	645	189	1,200	95	45
15.....	16	19	1,540	870	380	720	400	695	174	720	80	33
16.....	16	22	1,080	4,180	340	670	400	620	340	485	70	31
17.....	16	19	820	5,480	340	620	380	530	245	300	60	25
18.....	16	19	695	2,460	485	620	820	462	245	440	68	22
19.....	16	10	508	1,660	920	720	1,540	400	180	360	65	19
20.....	16	13	420	1,250	7,010	720	1,140	360	144	245	55	19
21.....	16	13	380	920	3,490	3,280	920	360	129	245	60	25
22.....	16	13	360	695	1,960	2,330	820	340	110	162	45	159
23.....	14	19	1,660	575	1,420	1,600	820	300	90	174	41	90
24.....	18	19	3,000	552	1,140	1,250	598	280	2,200	115	37	50
25.....	19	19	1,660	645	1,960	975	530	300	620	115	22	45
26.....	19	19	1,140	720	1,660	870	485	440	670	85	29	35
27.....	19	60	820	598	4,980	720	1,200	1,250	380	80	29	25
28.....	19	33	770	530	4,020	670	920	3,000	340	75	25	16
29.....	20	70	1,030	530	2,330	695	770	9,300	210	75	19	33
30.....	16	60	1,030	552	-----	920	1,140	14,600	204	41	20	70
31.....	25	-----	920	552	-----	770	-----	3,070	-----	75	19	-----

NOTE.—Gage not read Oct. 20; discharge interpolated.

Monthly discharge of Obey River near Boom, Tenn., for the year ending September 30, 1924

[Drainage area, 416 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	70	14	25.2	0.061	0.07
November.....	105	10	32.6	.078	.09
December.....	3,000	78	864	2.08	2.40
January.....	18,300	530	2,280	5.48	6.32
February.....	7,010	340	1,380	3.32	3.58
March.....	3,280	620	1,030	2.48	2.86
April.....	1,540	380	776	1.87	2.09
May.....	14,600	280	1,690	4.06	4.68
June.....	2,200	90	466	1.12	1.25
July.....	1,450	41	319	.767	.88
August.....	360	19	92.8	.223	.26
September.....	210	16	49.5	.119	.13
The year.....	18,300	10	752	1.81	24.61

CANEY FORK NEAR ROCK ISLAND, TENN.

LOCATION.—At power house of Tennessee Electric Power Co., half a mile downstream from storage dam at mouth of Collins River and 1 mile northwest of Rock Island, Warren County.

DRAINAGE AREA.—1,640 square miles (measured on post-route map).

RECORDS AVAILABLE.—November 14, 1911, to May 15, 1921; December 16, 1921, to March 31, 1924, when station was temporarily discontinued.

GAGE.—Bristol water-stage recorder on right bank, directly opposite power house and half a mile downstream from Rock Island Dam. This gage has been used since October 1, 1920.

DISCHARGE MEASUREMENTS.—Made from cable at section 1,800 feet below gage.

CHANNEL AND CONTROL.—Bed of stream above and below gage consists chiefly of solid rock; probably permanent. Control is at head of rapids 300 feet below gage.

EXTREMES OF DISCHARGE.—Maximum mean daily stage recorded during period October 1, 1923, to March 31, 1924, 11.7 feet January 3 (discharge, 23,400 second-feet); minimum discharge, 45 second-feet, represents leakage through dam and occurs during low-water season at week ends when power plant is shut down.

1911-1924: Maximum stage recorded, 13.2 feet April 2, 1912, at original gage at dam site (discharge, 107,000 second-feet); minimum discharge, 45 second-feet representing leakage, occurs when power plant is shut down.

DIVERSIONS.—None.

REGULATION.—Considerable fluctuation caused by storage in reservoir and operation of plant.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined below 20,000 second-feet and extended above. Operation of water-stage recorder satisfactory prior to March 30. Daily discharge ascertained by averaging discharge obtained by applying tri-hourly gage heights to rating table. Records good except for extreme high stages, for which they are fair.

COOPERATION.—Gage-height record furnished by Tennessee Electric Power Co.

Discharge measurements of Caney Fork near Rock Island, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Apr. 19	P. P. Livingston.....	9.61	16,900	Apr. 30	P. P. Livingston.....	10.40	18,300
23	do.....	6.08	5,940	30	do.....	7.82	10,800
24	do.....	2.60	1,460	July 24	D. B. Ventres.....	2.40	1,320
24	do.....	2.50	1,410				

Daily discharge, in second-feet, of Caney Fork near Rock Island, Tenn., for the period October 1, 1923, to March 31, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1	755	265	820	12,400	2,390	6,780	16	411	373	5,550	8,820	1,220	1,420
2	477	254	464	12,400	2,150	6,430	17	360	366	4,820	13,500	1,050	1,830
3	529	136	845	23,400	2,160	3,620	18	395	194	3,840	7,300	2,170	1,930
4	566	325	974	19,000	2,340	3,000	19	383	526	2,850	6,090	4,610	1,920
5	509	875	2,500	9,050	1,770	8,990	20	264	487	3,160	2,950	10,800	1,980
6	467	1,000	8,060	4,180	1,990	18,600	21	117	329	2,070	3,010	8,340	3,980
7	45	980	6,430	2,860	2,200	11,300	22	408	357	3,040	1,760	4,150	3,890
8	511	296	4,480	3,180	2,090	5,810	23	393	314	4,030	3,130	4,460	2,740
9	630	572	2,540	2,210	1,820	2,910	24	322	219	6,860	2,340	3,260	2,600
10	590	536	2,480	7,090	1,130	3,570	25	328	45	4,870	2,600	4,280	2,280
11	562	174	1,520	9,130	1,570	3,360	26	353	634	3,680	2,520	4,800	2,280
12	639	760	1,400	11,900	1,370	2,540	27	148	621	2,450	2,780	15,800	1,900
13	277	800	2,750	10,300	1,650	2,520	28	45	449	2,440	1,670	15,700	1,870
14	45	532	6,880	5,720	1,690	2,190	29	263	745	3,790	2,070	11,100	1,970
15	519	299	7,440	4,120	1,640	2,790	30	292	845	2,470	2,150	-----	3,830
							31	265	-----	5,080	1,580	-----	2,000

NOTE.—Gage not operating March 31; discharge estimated on basis of a relationship curve between discharge and total kilowatt hours generated at plant above.

Monthly discharge of Caney Fork near Rock Island, Tenn., for the period October 1, 1923, to March 31, 1924

[Drainage area 1,640 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	755	45	383	0.234	0.27
November.....	1,000	45	475	.290	.32
December.....	8,060	464	3,570	2.18	2.51
January.....	23,400	1,580	6,490	3.96	4.56
February.....	15,800	1,050	4,130	2.52	2.72
March.....	18,600	1,420	3,960	2.41	2.78

CANEY FORK NEAR SILVER POINT, TENN.

LOCATION.—At Johnson Ferry on Silver Point-Smithville road, 4 miles south of Silver Point, Putnam County, and 4 miles below mouth of Falling Water River.

DRAINAGE AREA.—2,100 square miles (93 per cent measured on topographic maps and 7 per cent measured on map compiled by United States Geological Survey; scale 1: 500,000).

RECORDS AVAILABLE.—November 23, 1922, to September 30, 1924.

GAGE.—Staff gage in three sections on right bank. Lower section is inclined and reads from 0 to 9.4 feet; the two upper sections (9.3 to 30.7 feet) are vertical and attached to trees near lower section; read by J. M. Johnson, Daisy Dyer, and Mrs. James Herald.

CHANNEL AND CONTROL.—Channel straight for 500 feet above and below gage; one channel at ordinary stages. Bed composed of rock and coarse gravel. Left bank is high rock bluff; right bank subject to overflow at stages above 20 feet. Low-water control is coarse gravel shoal 50 feet below gage, probably permanent, is drowned out at 3,000 second-feet and stage-discharge relation is channel controlled above.

DISCHARGE MEASUREMENTS.—Made from cable 25 feet upstream or by wading.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 29 feet at 8 a. m. January 4 (discharge from extension of rating curve, 56,000 second-feet); minimum stage, 1.00 foot several times in August and September (discharge, 180 second-feet).

1922-1924: Same as above.

REGULATION.—The flow is regulated to a large extent by a large hydroelectric plant at Great Falls, 35 miles upstream, and to a slight extent by a small hydroelectric plant on Falling Water River.

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 200 and 30,000 second-feet and extended above. Gage read twice daily to hundredths. Daily discharge ascertained by applying mean daily gage height to rating table. Records good up to bankful stage (discharge, 33,500 second-feet); above that they may be in error.

Discharge measurements of Caney Fork near Silver Point, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 11	J. P. Clawson	2.40	936	Nov. 6	J. P. Clawson	2.15	715
13	do	2.40	920	Feb. 8	do	5.48	4,340
15	do	1.18	239	Apr. 24	do	4.38	2,750
Nov. 4	do	2.50	893	Aug. 15	D. B. Ventres	2.04	677
5	do	1.69	422				

Daily discharge, in second-feet, of Caney Fork near Silver Point, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	235	360	1,150	12,700	2,800	11,900	4,620	28,300	6,200	805	932	205
2	848	360	1,100	16,800	4,750	7,920	4,120	15,900	4,750	932	848	465
3	655	320	502	38,000	2,690	6,760	3,040	9,520	4,240	765	235	725
4	502	655	1,200	55,000	2,580	5,270	3,400	7,040	3,640	450	282	450
5	725	530	2,470	29,200	3,400	6,200	4,360	5,920	3,040	300	765	450
6	502	690	7,920	11,900	3,040	23,200	7,920	4,620	3,040	205	1,330	622
7	380	1,200	6,760	7,180	3,280	15,900	4,120	3,400	3,160	205	975	180
8	265	1,100	6,480	6,200	3,400	9,200	4,360	4,360	2,250	265	320	205
9	380	805	5,400	5,140	3,400	7,760	4,360	5,270	2,470	340	1,060	380
10	590	590	2,470	4,360	2,360	6,480	2,920	4,620	2,140	848	1,060	425
11	622	590	3,280	6,200	2,250	5,920	2,920	3,400	1,200	590	340	475
12	590	320	1,720	14,300	2,800	4,880	3,880	3,040	2,470	475	425	425
13	590	725	2,030	10,200	2,140	5,140	3,880	3,400	590	2,250	425	192
14	450	1,060	4,620	8,080	2,030	4,620	3,280	3,160	1,060	3,880	530	425
15	235	725	10,300	5,920	2,470	3,880	2,140	3,400	1,060	1,820	530	205
16	380	380	6,340	8,560	2,680	3,640	2,470	2,140	2,690	1,240	475	340
17	475	450	5,790	27,500	1,820	1,920	3,160	4,240	1,020	1,420	475	475
18	502	475	5,660	17,700	1,620	4,000	3,400	2,690	975	1,920	380	560
19	590	282	4,120	10,500	4,120	3,040	17,000	2,470	1,820	1,100	205	502
20	475	725	3,160	9,520	19,000	4,490	11,600	1,420	1,150	3,880	475	205
21	475	655	3,880	5,920	23,700	6,900	5,660	1,520	1,280	890	475	450
22	265	502	2,470	5,140	11,900	7,040	5,400	1,820	1,820	1,330	475	235
23	380	425	6,340	3,520	8,400	5,530	3,640	2,030	1,240	1,060	402	220
24	530	450	8,560	5,400	7,920	5,140	3,760	2,030	1,150	1,100	380	265
25	475	380	7,320	4,880	6,900	5,140	2,690	1,820	1,150	1,060	380	265
26	425	250	5,010	4,880	6,900	4,620	2,800	2,250	1,520	1,150	265	340
27	475	450	4,750	5,010	18,300	4,240	3,280	5,270	1,100	502	450	235
28	282	932	3,520	3,520	26,600	3,040	3,880	29,200	1,240	235	450	265
29	235	590	3,160	2,920	18,100	4,360	4,120	23,500	1,280	560	380	265
30	325	1,060	4,490	4,490	-----	3,040	7,320	16,800	975	1,240	380	380
31	340	-----	3,880	3,640	-----	4,360	-----	10,900	-----	725	265	-----

NOTE.—Gage-height record unreliable Oct. 30 and Sept. 2; discharge estimated or interpolated. Mean gage height for May 17 estimated from one reading.

Monthly discharge of Caney Fork near Silver Point, Tenn., for the year ending September 30, 1924

[Drainage area, 2,100 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	848	235	458	0.218	0.25
November.....	1,200	250	601	.286	.32
December.....	10,300	502	4,380	2.09	2.41
January.....	55,000	2,920	11,400	5.43	6.26
February.....	26,600	1,620	6,940	3.30	3.56
March.....	23,200	1,920	6,310	3.00	3.46
April.....	17,000	2,140	4,650	2.21	2.47
May.....	29,200	1,420	6,950	3.31	3.82
June.....	6,200	590	2,060	.981	1.09
July.....	3,880	205	1,080	.514	.59
August.....	1,330	205	528	.251	.29
September.....	725	180	361	.172	.19
The year.....	55,000	180	3,820	1.82	24.71

COLLINS RIVER NEAR ROWLAND, TENN.

LOCATION.—At Hennessee's iron highway bridge, 1 mile below Mountain Creek, $2\frac{1}{2}$ miles northwest of Rowland, Warren County, and 5 miles southwest of Rock Island.

DRAINAGE AREA.—800 square miles (measured by Tennessee Electric Power Co.).

RECORDS AVAILABLE.—April 1, 1916, to September 30, 1924.

GAGE.—Chain gage on downstream side of bridge at middle of second span from right bank; read by Joe Keathley. Zero of gage, 795.86 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of rock, boulders, and sand. Channel fairly straight for a considerable distance above and below gage. Right bank is a steep rock bluff; left bank is low and subject to overflow above a stage of 8 feet. A series of rock and boulder riffles beginning just below bridge forms control; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.85 feet at 5 p. m. January 3 (discharge, 18,300 second-feet); minimum stage, 1.03 feet at 6 a. m. November 14, 18, and 22, and 6 p. m. November 25 (discharge, 87 second-feet).

1916-1924: Maximum stage recorded, 16.67 feet April 2, 1920 (discharge, 34,000 second-feet); minimum stage, 0.95 foot at 5 p. m. November 10, 1922 (discharge, 60 second-feet).

High-water marks of flood of 1854 as reported by old residents indicate stage of 32.6 feet (estimated discharge, 82,200 second-feet). High-water marks of flood of 1902 indicates a stage of 27.2 feet (estimated discharge, 66,600 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Small mills upstream probably cause some diurnal fluctuation.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined below 8,000 second-feet and extended above that point. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records below 11,300 second-feet (stage of overflow) are good; above that point only fair.

COOPERATION.—Gage-height record furnished by Tennessee Electric Power Co.

Discharge measurements of Collins River near Rowland, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge
Apr. 25	P. P. Livingston.....	Feet	Sec.-ft.
July 25	D. B. Ventres.....	2.31	1,250
		1.45	324

Daily discharge, in second-feet, of Collins River near Rowland, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	213	135	367	5,800	1,090	3,310	1,470	8,840	2,170	359	219	213
2.....	239	130	487	4,620	1,090	2,660	1,250	4,620	1,820	319	253	219
3.....	239	135	343	15,200	982	2,170	1,140	3,180	1,470	303	532	171
4.....	189	327	443	12,500	930	1,820	1,200	2,410	1,250	288	418	183
5.....	189	343	1,580	5,450	930	3,310	2,170	2,050	1,090	288	367	177
6.....	171	359	3,580	3,180	930	8,390	1,930	1,700	982	319	319	165
7.....	213	219	2,540	2,410	930	4,780	1,700	1,470	930	303	295	150
8.....	201	246	1,700	1,930	830	3,040	1,470	2,540	830	274	274	195
9.....	195	213	1,250	1,700	782	2,410	1,300	2,540	735	288	219	140
10.....	189	207	982	1,580	735	2,170	1,250	1,930	735	281	239	145
11.....	145	150	830	4,020	735	2,170	1,250	1,700	688	288	246	165
12.....	120	195	830	4,620	782	1,820	1,200	1,470	688	319	303	107
13.....	115	145	880	3,440	782	1,580	1,250	1,360	631	2,290	213	130
14.....	165	115	3,310	2,410	735	1,580	1,140	1,140	782	930	219	239
15.....	195	111	2,780	1,930	735	1,470	1,090	1,140	640	568	177	140
16.....	160	125	2,290	4,160	735	1,360	1,040	1,200	613	443	183	120
17.....	145	135	2,050	7,740	688	1,250	1,140	1,140	523	375	213	140
18.....	150	91	1,930	4,620	688	1,250	3,580	1,040	505	351	195	145
19.....	213	145	1,470	3,180	1,420	1,360	6,170	982	469	1,140	160	150
20.....	165	135	1,200	2,410	8,610	1,470	3,440	880	434	1,200	160	140
21.....	207	160	1,040	1,930	5,620	2,410	2,290	782	400	640	150	140
22.....	201	115	1,360	1,580	3,440	2,170	1,820	782	409	469	165	135
23.....	213	120	2,410	1,420	2,540	1,930	1,580	688	400	409	171	135
24.....	145	150	2,920	1,360	2,170	1,700	1,300	688	384	384	165	135
25.....	145	91	2,170	1,700	2,050	1,470	1,140	782	367	335	155	130
26.....	135	246	1,700	1,580	1,930	1,360	1,040	830	351	319	155	140
27.....	125	225	1,360	1,470	8,170	1,250	1,420	5,980	367	288	160	140
28.....	115	232	1,250	1,250	7,330	1,200	1,470	7,740	375	246	145	145
29.....	140	335	1,200	1,200	4,940	1,200	1,470	6,170	319	219	155	232
30.....	165	351	1,200	1,200	-----	1,820	5,450	4,320	375	267	150	135
31.....	165	-----	2,410	1,200	-----	1,700	-----	2,780	-----	288	115	-----

Monthly discharge of Collins River near Rowland, Tenn., for the year ending September 30, 1924

[Drainage area, 800 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	239	115	173	0.216	0.25
November.....	359	91	190	.238	.27
December.....	3,580	343	1,610	2.01	2.32
January.....	15,200	1,200	3,510	4.39	5.06
February.....	8,610	688	2,180	2.72	2.93
March.....	8,390	1,200	2,180	2.72	3.14
April.....	6,170	1,040	1,840	2.30	2.57
May.....	8,840	688	2,420	3.02	3.48
June.....	2,170	319	724	.905	1.01
July.....	2,290	219	477	.596	.69
August.....	532	115	222	.278	.32
September.....	239	107	157	.196	.22
The year.....	15,200	91	1,310	1.64	22.26

HARPETH RIVER AT BELLEVIEW, TENN.

LOCATION.—At county highway bridge on Harding Pike, a quarter of a mile south of Belleview, Davidson County, and 12 miles south of Nashville.

DRAINAGE AREA.—410 square miles (measured on map prepared by United States Geological Survey; scale 1:500,000).

RECORDS AVAILABLE.—April 11, 1920, to September 30, 1924.

GAGE.—Chain gage bolted to downstream side of highway bridge; read by Ellis B. Jones. Previous to December 15, 1920, vertical staff gage on south bank, 40 feet downstream from bridge, was used.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Right bank steep and high and is not overflowed; left bank fairly steep up to 12 feet, then flat. Low-water control is well-defined shoal 700 feet below gage; composed of limestone and coarse gravel; may shift in extremely high water. High-water control not determined.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 16.15 feet at 3 p. m. January 3 (discharge, 12,100 second-feet); Minimum stage, 0 foot October 12, 14, and 15 (discharge, 3 second-feet).

1920-1924: Maximum stage recorded, 17.54 feet at 7 a. m. March 11, 1922 (discharge, 13,400 second-feet); minimum stage, -0.08 foot October 4, 5, 7, 8, 10, 18, and 21, 1922 (no flow).

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation not permanent. Two rating curves used; one, well defined between 5 and 8,000 second-feet, used from October 1 to January 4; the other, fairly well defined between 25 and 8,000 second-feet, used from January 5 to September 30. The indirect method for shifting control was used from July 14 to September 30. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records previous to July 14 good below 8,000 second-feet; other records fair.

Discharge measurements of Harpeth River of Belleview, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 19	J. P. Clawson -----	0.41	49.7	Apr. 21	J. P. Clawson -----	0.82	197
30	do -----	.14	15.9	21	do -----	.80	199
Jan. 12	do -----	3.99	1,780	Aug. 11	D. B. Ventres -----	.32	44.3
31	do -----	1.62	540	11	do -----	.31	43.1
Apr. 21	do -----	.83	207				

Daily discharge, in second-feet, of Harpeth River at Bellevue, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	20	8	178	365	440	1,370	308	1,250	400	72	40	11
2.....	15	10	103	428	420	1,080	290	860	342	69	150	21
3.....	11	10	66	11,700	380	965	260	660	290	66	116	23
4.....	11	18	58	11,900	400	860	290	420	254	63	79	39
5.....	13	64	345	2,450	380	760	460	420	212	58	73	33
6.....	9.0	45	450	1,430	420	965	460	360	195	69	105	25
7.....	11	33	258	2,450	342	760	380	290	180	66	70	22
8.....	8.0	30	66	2,450	325	592	342	290	185	58	239	18
9.....	7.0	21	130	1,080	308	548	308	275	155	66	97	16
10.....	8.0	21	115	1,130	290	592	275	248	146	66	68	11
11.....	6.0	16	140	4,950	290	570	275	236	138	61	49	36
12.....	3.0	21	175	1,930	308	525	254	218	130	58	44	27
13.....	4.0	18	185	1,490	290	440	230	200	260	3,270	52	24
14.....	3.0	16	1,590	1,190	290	440	224	236	175	480	40	32
15.....	3.0	14	815	1,020	275	380	212	224	165	221	35	28
16.....	6.0	14	705	2,000	275	360	206	195	138	190	32	26
17.....	6.0	14	595	1,930	275	325	218	218	122	158	27	24
18.....	18	16	450	1,610	325	360	290	185	110	138	24	20
19.....	42	13	405	1,310	2,320	380	275	170	106	152	23	17
20.....	33	11	305	1,250	3,480	660	236	150	99	548	20	13
21.....	20	11	495	1,020	2,580	502	206	155	92	175	19	11
22.....	17	15	2,500	965	1,670	480	206	170	89	128	18	9.0
23.....	13	32	9,450	660	1,430	860	195	155	86	106	17	7.8
24.....	11	78	3,750	460	1,740	735	185	146	86	90	14	6.0
25.....	11	40	1,980	910	1,550	615	175	206	110	81	14	5.2
26.....	8.0	66	1,290	760	1,610	548	170	165	103	76	13	4.8
27.....	10	78	705	685	5,940	480	195	380	99	69	11	4.0
28.....	10	62	870	660	3,060	400	260	1,370	92	65	9.6	4.4
29.....	8.0	103	678	525	2,780	440	275	810	82	55	9.0	4.4
30.....	8.0	232	545	502	-----	420	1,670	735	76	51	9.0	4.0
31.....	7.0	-----	495	502	-----	325	-----	502	-----	46	9.6	-----

NOTE.—Gage-height record missing Dec. 7 and Feb. 16; discharge interpolated.

Monthly discharge of Harpeth River at Bellevue, Tenn., for the year ending September 30, 1924

[Drainage area, 410 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	42	3.0	11.6	0.028	0.03
November.....	232	8.0	37.7	.092	.10
December.....	9,450	58	964	2.35	2.71
January.....	11,900	460	1,990	4.85	5.59
February.....	5,940	275	1,180	2.88	3.11
March.....	1,370	325	604	1.47	1.70
April.....	1,670	170	311	.759	.85
May.....	1,370	146	384	.937	1.08
June.....	400	76	157	.383	.43
July.....	3,270	46	222	.541	.62
August.....	239	9.0	49.2	.120	.14
September.....	39	4.0	17.6	.043	.05
The year.....	11,900	3.0	494	1.20	16.41

RED RIVER NEAR ADAMS, TENN.

LOCATION.—At county highway bridge $1\frac{1}{2}$ miles north of Adams, Robertson County, three-eighths mile below Louisville & Nashville Railroad bridge, and half a mile below mouth of Elk Creek.

DRAINAGE AREA.—678 square miles (average of measurements on United States Geological Survey map, scale 1:500,000, and United States post-route map).

RECORDS AVAILABLE.—June 16, 1920, to September 30, 1924.

GAGE.—Chain gage attached to handrail on downstream side of bridge; read by J. T. Brooksher, Forrest Jackson, and Robert Holloway.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge.

CHANNEL AND CONTROL.—Right bank steep, high, and not subject to overflow; left bank subject to overflow at gage height of about 28 feet. Low-water control is a solid rock shoal about 200 feet below bridge.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 25.2 feet at 7 a. m. January 3 (discharge, 16,500 second-feet); minimum stage, 1.66 feet at noon September 10 (discharge, 82 second-feet).

1920-1924: Maximum stage recorded, that of January 3, 1924; minimum stage, 1.39 feet at 10.30 a. m. September 18, 1922 (discharge, 39 second-feet).

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation practically permanent during year. Rating curve well defined below 13,000 second-feet and extended above that point. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table, except as noted in footnote to table of daily discharge. Records good below 13,000 second-feet and fair above, except for days when gage was not read.

Discharge measurements of Red River near Adams, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 21	J. P. Clawson.....	2.46	311	Apr. 16	J. P. Clawson	3.10	667
Jan. 17	.....do	8.70	4,670	Aug. 7	D. B. Ventres	2.45	343
Feb. 5	.....do	5.06	2,000		.....do	2.44	333
Apr. 16	.....do	3.10	680				

Daily discharge, in second-feet, of Red River near Adams, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Aug.	Sept.
1	207	125	895	10,300	1,600	1,380	830	2,390	2,100	-----	98
2	194	125	960	3,760	1,530	1,310	1,100	1,380	1,740	-----	680
3	170	125	830	16,500	1,460	1,170	1,100	960	1,460	-----	350
4	595	194	830	15,700	1,380	1,100	1,820	830	1,600	-----	182
5	146	200	770	5,270	2,390	1,740	1,820	740	1,310	-----	167
6	164	207	960	4,050	1,820	1,380	1,240	650	1,100	-----	155
7	164	200	960	3,620	1,460	1,300	1,170	490	830	310	132
8	158	194	830	2,900	1,240	1,230	1,100	552	770	235	110
9	158	182	650	2,460	1,240	1,150	1,100	616	710	218	130
10	152	176	710	2,250	1,200	1,070	960	680	650	209	82
11	146	170	1,460	6,140	1,150	1,000	830	680	595	200	110
12	140	200	1,670	4,190	1,100	1,100	830	650	568	235	120
13	135	182	3,400	3,700	1,030	960	770	1,170	542	185	105
14	135	158	5,560	3,250	960	895	710	1,240	515	235	100
15	130	140	3,330	2,850	960	830	650	1,240	540	152	95
16	140	130	2,540	2,500	830	830	622	960	465	140	132
17	170	110	2,150	4,980	830	830	680	830	418	140	86
18	568	110	1,810	3,260	1,670	740	1,030	740	395	140	110
19	440	152	1,600	2,970	4,410	710	770	670	595	138	100
20	372	130	1,330	2,540	5,130	960	650	1,810	395	138	2,900
21	310	115	1,460	2,250	3,540	1,820	515	2,970	372	125	1,840
22	235	110	4,260	1,890	2,820	1,310	515	1,380	350	128	770
23	200	158	7,940	1,820	2,390	1,170	540	1,100	372	125	515
24	176	152	5,270	1,860	2,180	1,100	515	895	372	118	418
25	164	130	3,830	2,540	2,180	1,030	410	895	350	112	270
26	164	170	2,900	5,630	1,960	960	740	830	330	135	270
27	152	252	2,610	1,670	1,820	895	490	710	310	98	235
28	140	350	2,250	1,460	1,670	830	465	1,890	290	98	202
29	135	350	2,030	1,530	1,460	2,680	1,030	5,990	270	92	170
30	130	960	1,820	1,530	-----	2,540	1,670	7,070	270	86	149
31	120	-----	3,400	1,670	-----	1,530	-----	2,750	-----	92	-----

NOTE.—Gage-height record missing and discharge estimated or interpolated Jan. 13–16, Feb. 10, 11, Mar. 7–11, May 8, 9, 20, June 13, Aug. 10, 17, 24, 31, Sept. 7, 14, 21, 28. No record July 1 to Aug. 6.

Monthly discharge of Red River near Adams, Tenn., for the year ending September 30, 1924

[Drainage area, 678 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	595	120	207	0.305	0.35
November	960	110	199	.294	.33
December	7,940	650	2,300	3.39	3.91
January	16,500	1,460	4,100	6.05	6.98
February	5,130	830	1,840	2.71	2.2
March	2,680	710	1,210	1.78	2.05
April	1,820	465	892	1.32	1.47
May	7,070	490	1,480	2.18	2.51
June	2,100	270	686	1.01	1.13
August 7–31	-----	86	155	.229	.21
September	2,900	82	359	.529	.59

TENNESSEE RIVER BASIN

FRENCH BROAD RIVER AT BLANTYRE, N. C.

LOCATION.—At highway bridge 700 feet east of Blantyre railroad station, Transylvania County, 3 miles downstream from mouth of Little River.

DRAINAGE AREA.—296 square miles (measured on topographic map).

RECORDS AVAILABLE.—December 11, 1920, to September 30, 1924.

GAGE.—Chain gage attached to downstream side of bridge; read by Mrs. A. B. Osborne.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge.

CHANNEL AND CONTROL.—Channel straight for several hundred feet above and below gage. Bed composed of sand and gravel, somewhat shifting. Banks steep and about 15 feet above zero of gage; subject to overflow which floods the wide, cultivated bottoms. Control is apparently formed by a rock ledge across river about 1 mile below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 15.1 feet at 8 a. m. January 17 (discharge, 4,470 second-feet); minimum stage, 3.20 feet at 8 a. m. November 3 (discharge, 353 second-feet).

1920-1924: Maximum stage recorded, 15.95 feet at 8 a. m. May 30, 1923 (discharge, 6,000 second-feet); minimum stage, 2.6 feet at 5 p. m. November 26, 1922 (discharge, 239 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Slight diurnal fluctuation noticeable during low-water periods is probably due to operation of small mills on tributaries.

ACCURACY.—Stage-discharge relation changed once during year; change assumed to have occurred January 11. Rating curve used to January 11 well defined below 3,200 second-feet and extended above; curve used after January 11 well defined below 3,500 second-feet, and extended above. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except as stated in footnote to daily-discharge table. Records good.

Discharge measurements of French Broad River at Blantyre, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 22	L. J. Hall.....	3.45	410	May 23	D. B. Ventres.....	5.08	811
Dec. 22	Warren E. Hall.....	5.48	876	Sept. 18	L. J. Hall.....	3.42	386
Feb. 9	L. J. Hall.....	5.74	1,010	22	do.....	7.96	1,730
Mar. 6	do.....	9.19	2,070	22	do.....	7.96	1,700
6	D. B. Ventres.....	9.19	2,080				

Daily discharge, in second-feet, of French Broad River at Blantyre, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	484	374	990	840	1,070	1,360	1,010	1,530	809	625	651	433
2-----	460	353	756	870	1,070	1,430	950	1,330	836	755	729	501
3-----	438	353	672	1,430	980	1,360	920	1,230	836	1,040	836	625
4-----	438	1,690	840	1,500	950	1,260	1,010	1,170	892	2,700	1,130	477
5-----	438	2,360	2,740	1,140	1,700	1,810	2,280	1,100	782	1,330	755	433
6-----	416	990	1,830	900	1,400	2,230	2,260	1,070	729	1,640	703	411
7-----	416	756	1,230	870	1,170	1,700	1,700	1,070	836	2,610	625	391
8-----	416	672	1,050	870	1,070	1,460	1,460	1,070	782	3,190	625	391
9-----	395	588	930	812	1,010	1,330	1,300	1,010	836	3,300	625	411
10-----	395	560	840	1,060	980	1,330	1,300	1,040	950	1,940	703	391
11-----	395	534	784	4,470	950	1,200	1,730	1,360	1,040	1,490	600	371
12-----	374	534	728	3,820	920	1,130	1,800	1,300	1,130	1,490	625	371
13-----	374	484	700	1,940	892	1,100	1,530	1,130	960	1,260	782	371
14-----	353	484	1,140	1,530	864	1,130	1,460	1,070	836	1,130	920	477
15-----	374	460	900	1,330	836	1,070	1,760	1,040	836	1,010	625	477
16-----	374	460	1,110	2,980	809	1,010	1,700	1,010	755	950	575	433
17-----	374	438	1,110	4,270	809	980	1,490	950	729	892	550	411
18-----	395	438	960	2,870	836	980	3,190	920	729	836	600	391
19-----	930	438	870	1,940	1,010	980	3,980	892	729	836	525	371
20-----	574	416	1,200	1,700	2,470	1,230	2,460	864	677	864	525	1,530
21-----	438	416	1,110	1,460	1,730	2,040	1,940	864	625	836	501	2,150
22-----	395	416	990	1,330	1,360	1,430	1,730	864	600	809	550	1,590
23-----	395	534	1,170	1,260	1,200	1,260	1,530	809	625	782	677	1,230
24-----	395	534	1,080	1,300	1,130	1,200	1,430	809	729	980	729	836
25-----	395	460	930	1,660	1,070	1,100	1,360	836	677	892	575	755
26-----	374	438	870	1,400	1,130	1,070	1,300	782	600	836	600	1,560
27-----	374	438	840	1,230	1,460	1,010	1,330	1,200	836	729	501	1,840
28-----	353	438	812	1,130	1,400	980	1,300	1,170	782	677	477	3,360
29-----	374	460	756	1,100	1,400	1,010	1,200	1,040	625	677	455	2,990
30-----	374	1,640	728	1,070	-----	1,400	1,260	920	600	703	455	2,490
31-----	416	-----	728	1,040	-----	1,100	-----	836	-----	677	433	-----

NOTE.—Discharge Dec. 4 and 5, Jan. 10, 11, 16, Feb. 20, Mar. 5, Apr. 4, 5, 18, July 3, 4, 6, Sept. 20 and 28 determined by approximate integration of graph constructed on basis of two daily gage readings.

Monthly discharge of French Broad River at Blantyre, N. C., for the year ending September 30, 1924

[Drainage area, 296 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	870	353	419	1.42	1.64
November-----	2,360	353	638	2.16	2.41
December-----	2,740	672	1,010	3.41	3.93
January-----	4,470	812	1,650	5.57	6.42
February-----	2,470	809	1,160	3.92	4.23
March-----	2,230	980	1,280	4.32	4.98
April-----	3,980	920	1,670	5.64	6.29
May-----	1,530	809	1,040	3.51	4.05
June-----	1,130	600	781	2.64	2.94
July-----	3,300	625	1,240	4.19	4.83
August-----	1,130	433	634	2.14	2.47
September-----	3,360	371	949	3.21	3.58
The year-----	4,470	353	1,040	3.51	47.77

FRENCH BROAD RIVER AT ASHEVILLE, N. C.

LOCATION.—At Bingham School concrete highway bridge $1\frac{1}{2}$ miles below Smith Bridge, $2\frac{1}{4}$ miles below Southern Railway station at Asheville, Buncombe County, and 3 miles below mouth of Swannanoa River.

DRAINAGE AREA.—949 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 17, 1895, to December 31, 1901; January 1, 1905, to July 16, 1916; January 1, 1917, to September 30, 1924. The records January 1, 1905, to September 30, 1922, were obtained at Smith Bridge $1\frac{1}{4}$ miles upstream.

GAGE.—Chain gage attached to bridge October 1, 1922; read by L. W. Robertson. Datum of present gage not the same as that of the gage used until December 31, 1901, at old bridge at same site which was carried out by the flood in July, 1916.

DISCHARGE MEASUREMENTS.—Made from Bingham School Bridge.

CHANNEL AND CONTROL.—Bed of stream composed chiefly of rock; practically permanent. Control is a long shoal composed of rock boulders and gravel beginning about 50 feet below gage; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.35 feet evening reading January 16 (discharge, 9,600 second-feet); minimum stage, 0.70 foot evening reading October 13 and morning reading October 14 (discharge, 644 second-feet).

1895–1901; 1905–1924: Maximum stage, 24.13 feet (Smith Bridge gage datum) July 16, 1916, determined by levels from flood marks November 21, 1917 (discharge not determined; stage-discharge relation probably affected by backwater caused by drift lodged against railroad bridge). Maximum stage recorded before or after flood of July, 1916, 7.8 feet (Smith Bridge gage datum) January 23, 1906 (discharge, 25,800 second-feet). Minimum stage, -0.7 foot (Smith Bridge gage datum) September 16 and 20, 1907 (discharge, 380 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Negligible; see Swannanoa River at Biltmore, N. C.

REGULATION.—Slight diurnal fluctuation probably caused by small mills on tributaries.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined below 10,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except as stated in footnote to daily-discharge table. Records good.

Discharge measurements of French Broad River at Asheville, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 12	L. J. Hall.....	0.87	803	May 24	D. B. Ventres.....	1.49	1,570
Mar. 4	do.....	2.15	2,470	July 15	L. J. Hall.....	1.84	2,060
4	D. B. Ventres.....	2.15	2,510	Sept. 13	do.....	.72	697

Daily discharge, in second-feet, of French Broad River at Asheville, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	975	859	2,190	1,540	2,040	2,680	2,190	3,030	1,680	1,220	1,340	804
2.....	917	804	1,540	1,540	2,190	2,850	1,900	2,510	1,680	1,540	1,340	975
3.....	859	804	1,280	1,900	2,040	2,850	1,900	2,350	1,610	2,040	1,480	1,160
4.....	859	1,220	4,370	2,680	2,040	2,680	2,040	2,190	1,750	3,970	1,480	1,160
5.....	859	3,770	3,580	2,190	2,680	3,030	3,390	2,040	1,610	2,510	1,610	859
6.....	859	2,040	2,850	1,900	3,210	4,780	4,170	2,040	1,540	2,510	1,410	749
7.....	804	1,480	2,510	1,680	2,510	3,770	3,390	2,040	1,540	5,900	1,220	749
8.....	804	1,280	1,900	1,680	2,190	3,030	2,850	2,040	1,540	4,990	1,100	749
9.....	804	1,160	1,750	1,480	2,040	2,680	3,030	2,040	1,750	5,420	1,160	749
10.....	804	1,100	1,540	1,480	2,040	2,680	2,350	2,040	1,610	4,570	1,220	749
11.....	804	1,040	1,480	7,850	1,900	2,350	3,770	2,850	1,900	3,030	1,160	707
12.....	749	975	1,410	6,780	1,820	2,350	3,770	2,850	1,820	2,680	1,160	696
13.....	707	975	1,280	4,570	1,820	2,190	3,390	2,510	1,820	2,350	1,160	665
14.....	686	975	1,820	3,030	1,680	2,190	3,030	2,190	1,820	2,190	1,540	718
15.....	728	975	2,040	2,680	1,680	2,190	3,030	2,190	1,610	2,040	1,340	859
16.....	728	917	2,040	6,150	1,680	2,040	3,390	2,040	1,480	1,900	1,100	859
17.....	728	917	2,190	8,690	1,610	2,040	2,850	1,900	1,410	1,750	1,040	859
18.....	749	917	1,820	7,490	1,680	2,040	4,900	1,900	1,340	1,680	1,040	804
19.....	975	859	1,680	4,570	1,750	2,040	7,010	1,820	1,480	1,610	1,040	749
20.....	1,280	859	1,680	3,390	3,740	2,190	5,860	1,750	1,410	1,750	975	1,050
21.....	975	859	2,040	2,850	4,990	4,570	4,570	1,680	1,220	1,680	917	3,560
22.....	975	859	1,820	2,350	3,770	3,390	3,390	1,680	1,220	1,610	917	2,850
23.....	917	917	1,820	2,350	2,350	2,680	3,030	1,680	1,220	1,540	1,410	2,190
24.....	804	1,040	2,040	2,350	2,190	2,510	2,850	1,610	1,410	1,680	1,280	1,540
25.....	859	1,040	1,820	3,030	2,040	2,350	2,680	1,900	1,480	1,680	1,280	1,340
26.....	804	975	1,610	2,680	2,350	2,350	2,510	1,680	1,280	1,540	1,280	2,040
27.....	804	917	1,540	1,680	2,850	2,190	2,510	2,040	1,280	1,410	1,160	3,030
28.....	749	917	1,480	2,190	2,850	2,040	2,510	2,850	2,040	1,280	917	4,570
29.....	749	917	1,410	2,040	2,850	2,040	2,350	2,350	1,220	1,280	804	5,860
30.....	804	1,540	1,410	2,040	-----	2,680	2,680	2,040	1,160	1,340	804	5,420
31.....	804	-----	1,340	2,040	-----	2,510	-----	1,820	-----	1,340	804	-----

NOTE.—Discharge Jan. 11, 16, Feb. 20, Apr. 18, July 7, Sept. 20, and 21 determined by approximate integration of graph constructed on basis of two daily gage readings.

Monthly discharge of French Broad River at Asheville, N. C., for the year ending September 30, 1924

[Drainage area, 949 square miles.]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	1,280	686	836	0.881	1.02
November.....	3,770	804	1,130	1.19	1.33
December.....	4,370	1,280	1,910	2.01	2.32
January.....	8,690	1,480	3,190	3.36	3.87
February.....	4,990	1,610	2,360	2.49	2.68
March.....	4,780	2,040	2,640	2.78	3.20
April.....	7,010	1,900	3,240	3.41	3.80
May.....	3,030	1,610	2,120	2.23	2.57
June.....	2,040	1,160	1,530	1.61	1.80
July.....	5,900	1,220	2,320	2.44	2.81
August.....	1,610	904	1,180	1.24	1.43
September.....	5,860	665	1,640	1.73	1.93
The year.....	8,690	665	2,010	2.12	28.76

FRENCH BROAD RIVER NEAR NEWPORT, TENN.

LOCATION.—At highway bridge at Oldtown, on Newport-Morristown road, $2\frac{1}{2}$ miles northeast of Newport, Cocke County, 4 miles above mouth of Pigeon River.

DRAINAGE AREA.—1,860 square miles.

RECORDS AVAILABLE.—September 4, 1900, to November 8, 1901; November 1, 1902, to December 31, 1905; August 16 to December 31, 1907; November 17, 1920, to September 30, 1924.

GAGE.—Chain gage bolted to downstream railing of second span of bridge from left bank; installed November 17, 1920; read by Frank Odell. Gage used 1900 and 1901 and bench marks were destroyed when bridge washed out in spring of 1902. Gage used 1903–1907 referred to independent datum. Present gage also referred to independent datum as old bench marks have been destroyed.

DISCHARGE MEASUREMENTS.—Made from five span steel highway bridge at gage.

CHANNEL AND CONTROL.—Channel fairly straight for 500 feet above and below gage. Banks high and not subject to overflow. Bed of river composed of sand and gravel. Control is rock and gravel shoal 300 feet downstream; probably changes slightly during high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.9 feet at 7 a. m. January 17 (discharge, 14,300 second-feet); minimum stage, 1.66 feet at 6 a. m. September 16 (discharge, 754 second-feet).

Maximum stage recorded during periods of records, 12 feet April 8, 1903 (discharge, 62,200 second-feet); minimum stage, 0.90 foot October 18, 1904, and September 21, 1907 (discharge, 440 second-feet, revised determination).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—There are three or four medium sized water-power plants on river above this station. As regulating capacity of these plants is comparatively small, it is believed that the mean of two gage readings a day closely approximates the mean for the day.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve well defined below 12,000 second-feet; extended above that point. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of French Broad River near Newport, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 12	P. P. Livingston	1.78	915	Apr. 19	W. R. King	4.83	9,860
Feb. 9	do	2.61	2,660	May 26	D. B. Ventres	2.62	2,700
28	do	3.47	5,070	Sept. 20	King and Ventres	1.84	1,020
Mar. 6	W. R. King	5.07	10,900	30	J. P. Clawson	4.58	8,450

Daily discharge, in second-feet, of French Broad River near Newport, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	1,170	1,070	2,290	2,640	2,400	4,450	3,160	5,390	2,640	1,760	1,760	1,120
2.....	1,170	1,060	2,400	2,520	3,160	4,760	2,890	4,450	2,520	1,860	1,660	1,120
3.....	1,120	1,040	1,860	3,860	2,890	4,450	2,640	3,570	2,400	2,070	1,760	1,380
4.....	1,150	1,100	1,760	4,760	2,760	4,150	2,520	3,430	2,520	2,520	1,960	1,560
5.....	1,140	1,760	1,960	5,070	2,640	7,430	2,890	3,160	2,400	5,710	1,860	1,290
6.....	1,090	4,760	5,710	2,520	3,570	11,300	4,760	2,890	2,180	3,570	2,180	1,070
7.....	1,060	3,860	4,150	2,290	3,570	7,790	4,760	2,760	2,180	7,470	2,520	992
8.....	1,040	1,860	2,890	2,290	3,160	5,390	3,860	2,760	2,180	6,720	2,290	960
9.....	1,060	1,660	2,400	2,180	2,640	4,450	3,430	3,020	2,180	6,040	1,760	1,020
10.....	1,060	1,470	2,180	2,070	2,760	4,150	3,290	2,890	2,180	6,040	1,560	992
11.....	1,010	1,380	2,070	6,040	2,520	3,860	3,860	3,860	2,890	4,450	1,760	885
12.....	976	1,240	1,960	10,500	2,520	3,430	6,040	6,040	3,290	3,430	2,520	885
13.....	945	1,240	1,560	8,160	2,290	3,160	5,390	5,070	3,570	3,290	1,960	855
14.....	930	1,240	1,860	5,070	2,180	3,160	4,760	4,150	4,450	3,290	1,760	825
15.....	855	1,190	2,400	3,860	2,180	3,160	5,070	3,860	3,860	4,760	2,070	825
16.....	915	1,200	2,400	3,860	2,070	2,890	4,450	3,430	2,890	3,160	1,760	915
17.....	930	1,190	2,640	13,400	1,960	2,890	4,150	3,160	2,520	2,520	1,560	1,120
18.....	930	1,120	2,890	10,500	2,760	3,020	4,450	2,890	2,180	3,160	1,860	1,040
19.....	976	1,150	2,400	6,040	3,020	3,160	9,710	2,640	2,070	2,520	1,380	1,040
20.....	1,270	1,100	1,960	5,070	3,430	3,020	8,920	2,520	2,180	2,520	1,290	1,020
21.....	1,660	1,070	2,180	3,860	6,380	5,390	6,380	2,520	1,960	2,400	1,290	2,180
22.....	1,190	1,070	2,280	3,160	4,760	6,040	5,070	2,400	1,860	2,290	1,200	4,760
23.....	1,170	1,060	2,290	3,570	3,570	4,760	4,150	2,290	1,760	2,180	1,220	3,160
24.....	1,190	1,120	2,520	3,160	3,290	4,150	3,860	2,290	1,760	2,070	1,660	2,520
25.....	1,260	1,290	2,400	3,430	2,890	3,570	3,570	2,760	2,180	2,290	1,960	1,860
26.....	1,200	1,380	2,180	3,570	2,890	3,430	3,430	2,640	1,960	2,070	2,180	1,660
27.....	1,100	1,200	2,180	3,020	3,430	3,160	3,430	2,400	1,760	1,960	1,760	2,760
28.....	1,010	1,140	2,290	2,760	4,760	3,020	3,290	4,150	1,760	1,760	1,380	3,570
29.....	976	1,220	2,400	2,760	4,760	3,020	3,160	4,150	1,860	1,760	1,140	7,070
30.....	1,010	1,190	2,070	2,520	-----	3,290	4,150	3,570	1,760	1,660	1,240	8,540
31.....	945	-----	2,070	2,520	-----	3,570	-----	2,890	-----	1,660	1,100	-----

Monthly discharge of French Broad River near Newport, Tenn., for the year ending September 30, 1924

[Drainage area, 1,860 square miles]

Month	Discharge in second-feet				Run off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,660	885	1,080	0.580	0.67
November	4,760	1,040	1,450	.780	.87
December	5,710	1,560	2,410	1.29	1.49
January	13,400	2,070	4,420	2.38	2.74
February	6,380	1,960	3,150	1.69	1.82
March	11,300	2,890	4,310	2.32	2.68
April	9,710	2,520	4,380	2.35	2.62
May	6,040	2,290	3,350	1.80	2.08
June	4,450	1,760	2,400	1.29	1.44
July	7,070	1,660	3,180	1.71	1.97
August	2,520	1,100	1,710	.920	1.06
September	8,540	825	1,970	1.06	1.18
The year	13,400	825	2,820	1.52	20.62

FRENCH BROAD RIVER AT DANDRIDGE, TENN.

LOCATION.—At steel highway bridge at Dandridge, Jefferson County, 23 miles by river below mouth of Nolichucky River.

DRAINAGE AREA.—4,450 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1918, to September 30, 1924. Gage-height records obtained by United States Weather Bureau since December 1, 1904.

GAGE.—Staff gage in two sections, inclined and vertical, on right bank under highway bridge; installed October 8, 1923; read by F. R. Moreland. Original (Weather Bureau) gage is painted on shoreward side of second concrete pier from right end of bridge. Datum of present gage is 0.04 foot lower than that of original gage.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge.

CHANNEL AND CONTROL.—Bed of stream at gage composed of silt and rock; shifting. One channel at all stages. Control formed by series of milldams and rock dikes across the three channels into which river divides 1 mile below station. The dikes are in very poor repair and are subject to change at each flood. Right bank high; left bank is subject to overflow at stages above 12 feet (discharge, 55,000 second-feet).

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.8 feet March 6 (discharge, 37,300 second-feet); minimum stage, 0.3 foot October 14–16 and September 16 (discharge, 1,770 second-feet).

1918–1924: Maximum stage recorded, 18.7 feet during night of April 2, 1920 (discharge not determined); minimum discharge, 830 second-feet October 10–12, 1918.

The United States Weather Bureau records a maximum stage of 28 feet May 21, 1901.

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined between 1,800 and 30,000 second-feet; extended beyond those limits.

Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

Discharge measurements of French Broad River at Dandridge, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 4	P. P. Livingston-----	0.57	2,340	May 28	D. B. Ventres -----	2.46	7,720
Feb. 8	-----do-----	2.22	7,300	Sept. 27	J. P. Clawson -----	1.56	4,840
29	-----do-----	4.28	14,800				

Daily discharge, in second-feet, of French Broad River at Dandridge, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	2,200	2,200	5,020	7,540	5,930	13,500	9,280	14,300	8,220	4,170	3,130	2,200
2.....	2,650	2,200	4,170	8,920	6,240	11,100	7,880	12,700	6,560	3,640	3,130	2,420
3.....	2,200	2,200	3,900	11,900	6,880	10,800	7,210	9,280	6,560	3,640	3,130	2,420
4.....	2,200	1,980	3,380	17,000	6,240	11,100	6,880	8,220	6,240	3,640	3,380	3,130
5.....	2,200	2,200	2,890	15,600	6,240	11,100	7,210	7,540	5,930	5,020	4,730	2,890
6.....	1,980	2,420	4,170	9,640	7,880	37,300	8,220	7,210	5,930	8,570	4,450	2,420
7.....	1,980	5,320	9,280	6,240	9,640	29,300	11,500	6,880	5,320	9,280	3,900	2,200
8.....	2,200	4,170	6,880	5,620	8,570	17,900	10,400	6,880	5,020	17,000	5,320	2,200
9.....	1,980	2,890	5,320	5,620	6,880	13,500	8,570	6,880	4,730	12,700	5,620	2,200
10.....	2,200	2,890	4,450	5,930	6,240	11,900	8,570	7,210	5,620	11,100	4,450	2,200
11.....	1,980	2,420	4,730	6,880	5,930	10,400	7,880	7,540	5,930	11,100	3,900	2,200
12.....	1,980	2,420	3,900	34,100	6,240	9,280	7,210	14,300	8,220	7,880	4,450	2,200
13.....	1,980	2,420	3,640	21,700	6,240	8,570	12,700	15,200	11,100	7,210	4,730	1,980
14.....	1,770	2,420	3,900	14,800	5,930	7,880	11,100	11,500	9,280	8,220	4,730	1,980
15.....	1,770	2,200	4,730	9,640	5,930	8,220	10,000	10,800	14,300	9,280	4,170	2,200
16.....	1,770	2,420	5,620	8,220	5,620	7,880	10,000	9,640	8,570	8,920	3,900	1,770
17.....	2,200	2,420	5,020	27,700	5,620	7,210	9,640	8,570	6,880	6,240	3,640	2,200
18.....	1,980	1,980	6,240	26,700	6,240	7,210	10,000	7,880	5,930	8,920	2,890	2,200
19.....	1,980	2,200	5,620	18,400	9,640	7,540	20,200	7,210	5,320	6,240	3,130	2,200
20.....	1,980	2,200	5,020	12,700	13,500	7,880	22,100	6,880	5,020	5,930	2,650	2,200
21.....	2,420	2,200	3,900	10,000	17,000	8,220	17,000	6,560	4,730	5,320	2,420	2,200
22.....	2,420	2,200	4,450	8,920	15,600	16,500	11,900	6,240	4,450	5,320	2,200	6,240
23.....	2,200	2,200	5,020	7,210	11,500	12,300	10,400	5,930	4,450	4,730	2,420	9,280
24.....	2,650	2,200	5,020	6,880	8,920	10,400	8,920	5,620	4,730	4,730	2,200	5,980
25.....	2,420	2,650	5,980	8,920	7,880	8,920	8,220	5,620	4,730	5,320	3,130	4,450
26.....	2,420	2,890	5,020	11,100	7,540	8,220	7,880	6,240	5,020	4,730	3,640	3,130
27.....	2,420	2,890	4,730	8,920	7,210	7,880	7,880	6,240	4,170	4,170	3,130	3,130
28.....	2,200	2,420	5,320	6,880	14,800	7,880	7,540	6,880	3,640	3,900	3,900	5,320
29.....	2,200	2,420	7,210	6,560	15,200	7,880	7,540	11,100	3,640	3,900	2,890	10,400
30.....	2,200	2,420	6,560	6,560	-----	10,400	7,540	13,500	3,380	3,380	2,200	20,200
31.....	2,200	-----	5,620	6,560	-----	11,100	-----	9,640	-----	3,130	2,420	-----

Monthly discharge of French Broad River at Dandridge, Tenn., for the year ending September 30, 1924

[Drainage area, 4,450 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	2,650	1,770	2,160	0.485	0.56
November.....	5,320	1,980	2,540	.571	.64
December.....	9,280	2,890	5,050	1.13	1.30
January.....	34,100	5,620	11,700	2.63	3.03
February.....	17,000	5,620	8,530	1.92	2.07
March.....	37,300	7,210	11,600	2.61	3.01
April.....	22,100	6,880	10,000	2.25	2.51
May.....	15,200	5,620	8,720	1.96	2.26
June.....	14,300	3,380	6,120	1.38	1.54
July.....	17,000	3,130	6,690	1.50	1.73
August.....	5,620	2,200	3,580	.804	.93
September.....	20,200	1,770	3,860	.867	.97
The year.....	37,300	1,770	6,720	1.51	20.55

TENNESSEE RIVER AT KNOXVILLE, TENN.

LOCATION.—At Gay Street Bridge in Knoxville, Knox County, 4 miles below junction of French Broad and Holston Rivers.

DRAINAGE AREA.—8,990 square miles (measured on topographic maps).

RECORDS AVAILABLE.—January 17, 1899, to September 30, 1924. Gage-height record obtained by United States Weather Bureau since February 1, 1883, but prior to 1899 records were not continuous.

GAGE.—Vertical staff bolted to shoreward side near downstream end of second bridge pier from right bank. Elevation of zero of gage, 797.45 feet above mean sea level. For history of earlier gages see Water-Supply Paper 323.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed of stream below gage composed principally of rock and coarse gravel. Several rock dikes were constructed by the United States Engineers Corps during and prior to 1918. These dikes are subject to change during high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10 feet at 7 a. m. March 7 (discharge, 51,800 second-feet); minimum stage, -0.5 foot October 15 and 16 (discharge, 2,550 second-feet).

1900-1924: Maximum stage recorded, 36.4 feet at 5 p. m. March 1, 1902 (discharge, 195,000 second-feet, revised determination); minimum discharge, 1,550 second-feet October 5-7, 1903 (revised).

The United States Weather Bureau reports a maximum stage of 44.4 feet March 10, 1867.

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation practically permanent during year. Rating curve well defined below 120,000 second-feet; extended as a tangent above that point. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good, although daily discharge for individual days may be in error due to infrequency of gage readings and poor location of the gage for observation.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

Discharge measurements of Tennessee River at Knoxville, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 2	P. P. Livingston	0.10	3,510	Mar. 8	Livingston and Clawson	7.60	39,400
15	Withee and Ventres .....	.62	3,280	Apr. 28	D. B. Ventres	2.98	13,900
Nov. 9	P. P. Livingston	1.14	5,620	May 2	do	4.41	22,900
23	J. P. Clawson .....	.02	3,330	6	J. P. Clawson	2.94	13,800
Jan. 10	P. P. Livingston	2.72	12,200	28	do	3.09	15,600
Feb. 7	do	3.01	15,100	Sept. 16	do .....	.00	3,430
Mar. 1	Livingston and Clawson	4.98	25,500	21	King and Ventres .....	.22	3,860
3	do	4.42	21,900				

Daily discharge, in second-feet, of Tennessee River at Knoxville, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	3,930	3,200	4,120	19,000	11,200	24,800	22,800	22,800	24,800	8,280	6,960	5,370
2-----	3,380	3,030	3,930	26,300	10,600	22,800	19,000	21,500	19,400	8,280	6,960	4,510
3-----	3,930	3,030	6,670	40,500	11,200	21,000	16,900	20,200	16,200	7,920	6,960	5,860
4-----	3,380	3,030	6,120	41,600	10,600	21,000	14,300	16,900	14,300	7,920	6,960	6,670
5-----	3,380	2,860	6,120	33,900	10,600	22,000	15,200	15,200	12,600	7,580	8,280	4,920
6-----	3,380	3,380	9,550	23,800	10,600	45,400	14,300	13,400	11,200	11,200	7,920	5,370
7-----	3,380	7,260	12,600	20,600	13,400	51,800	18,000	10,000	10,000	12,600	7,580	4,920
8-----	3,380	7,580	11,900	17,500	13,400	40,500	19,000	11,900	9,090	19,000	7,580	4,310
9-----	3,380	6,390	6,670	12,600	11,200	26,800	17,500	12,600	9,090	18,500	7,580	4,120
10-----	3,380	5,610	6,390	19,000	10,000	22,400	15,200	11,900	9,090	18,500	7,580	4,310
11-----	2,860	5,140	7,580	16,900	9,550	20,200	14,300	14,300	10,600	17,500	6,960	3,740
12-----	2,860	4,510	8,280	33,400	9,550	19,000	16,900	18,000	17,500	14,300	6,960	4,920
13-----	2,700	3,740	7,580	47,700	9,090	16,900	20,200	24,800	23,800	12,600	7,580	3,740
14-----	3,380	3,560	8,280	29,800	9,090	16,200	19,000	26,800	22,800	12,600	7,580	3,740
15-----	2,550	3,380	8,670	21,000	8,670	12,600	17,500	22,800	22,000	21,000	8,280	3,380
16-----	2,550	3,030	9,550	17,500	8,090	14,300	16,900	19,400	37,200	17,500	7,580	3,380
17-----	2,860	3,200	8,670	23,800	7,920	12,600	16,900	19,400	20,200	11,200	7,580	3,380
18-----	2,860	3,030	9,550	44,400	9,090	11,900	19,800	18,500	14,300	10,000	6,960	3,740
19-----	3,030	2,860	8,670	37,800	17,500	12,600	35,000	18,000	11,900	10,600	6,390	3,380
20-----	3,030	2,700	8,280	25,300	28,800	14,300	40,500	13,400	10,600	10,000	6,960	3,740
21-----	3,200	2,860	7,260	20,200	35,600	18,000	33,900	12,600	9,090	9,090	6,390	3,560
22-----	3,740	2,860	7,260	16,900	39,400	20,200	24,800	11,900	8,670	8,280	6,120	10,000
23-----	3,380	2,860	7,260	14,300	28,800	26,300	20,200	10,000	8,280	7,920	5,610	11,200
24-----	3,740	3,030	7,260	11,900	20,600	21,500	17,500	10,000	7,580	8,280	5,370	10,000
25-----	3,380	3,380	7,580	14,300	17,500	18,000	16,200	11,200	11,200	8,280	5,370	9,090
26-----	3,200	3,930	6,960	19,400	16,900	16,200	14,300	11,200	11,900	7,920	5,370	7,580
27-----	3,740	3,930	9,090	20,600	19,400	16,200	12,600	11,900	11,200	7,580	6,960	6,390
28-----	3,380	5,140	8,280	17,500	28,800	14,300	14,300	12,600	9,550	7,260	7,260	6,390
29-----	3,200	4,310	12,600	13,400	27,800	16,200	14,300	17,500	9,090	6,960	7,260	8,280
30-----	3,380	3,930	16,900	12,600	-----	20,200	14,300	29,800	8,670	6,960	6,390	22,000
31-----	3,560	-----	16,200	11,200	-----	23,800	-----	29,800	-----	6,390	5,370	-----

Monthly discharge of Tennessee River at Knoxville, Tenn., for the year ending September 30, 1924

[Drainage area, 8,990 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	3,930	2,550	3,270	0.364	0.42
November-----	7,580	2,700	3,890	.433	.48
December-----	16,900	3,930	8,580	.954	1.10
January-----	47,700	11,200	23,400	2.60	3.00
February-----	39,400	7,920	16,100	1.79	1.93
March-----	51,800	11,900	21,300	2.37	2.73
April-----	40,500	12,600	19,100	2.12	2.36
May-----	29,800	10,000	16,800	1.87	2.17
June-----	37,200	7,580	14,100	1.57	1.75
July-----	21,000	6,390	11,000	1.22	1.41
August-----	8,280	5,370	6,920	.770	.89
September-----	22,000	3,380	6,070	.675	.75
The year-----	51,800	2,550	12,500	1.39	18.99

TENNESSEE RIVER AT LOUDON, TENN.

LOCATION.—At Huffs Ferry, half a mile northwest of Loudon, Loudon County, and 5 miles by river below Southern Railway bridge over Tennessee River at Loudon.

DRAINAGE AREA.—12,300 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1922, to September 30, 1924. Daily gage-height record obtained by United States Weather Bureau at a gage on Southern Railway bridge, 5 miles upstream, since February 26, 1884.

GAGE.—Staff gage in four sections, inclined and vertical, on right bank, installed November 4, 1922; read by A. T. Hedrick. Inclined section, 1 to 14.9 feet about 100 feet upstream from ferry cable. Vertical section 14.3 to 26 feet is 15 feet below inclined section. Vertical section 26 to 32 feet is attached to large tree beside road, 40 feet upstream from inclined section. Vertical section 32 to 40 feet is attached to ferry pole.

DISCHARGE MEASUREMENTS.—Made from car suspended from Huffs Ferry cable or from a boat.

CHANNEL AND CONTROL.—Channel slightly curved above and below gage. Banks subject to overflow during high stages. Control for low and medium stages formed by rock and gravel shoal and artificial dike at head of Sweetwater Island, 2½ miles below gage. High-water control not determined.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.22 feet at 5 p. m. March 6 (discharge, 71,900 second-feet); minimum stage, 1.76 feet at 6 a. m. October 18 (discharge, 4,250 second-feet).

1922-1924: Maximum stage recorded, 18.5 feet at 6 a. m. December 18, 1922 (discharge, 106,000 second-feet); minimum stage, 1.75 feet at 5 p. m. November 27 and 6 a. m. November 30, 1922 (discharge, 4,210 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Low-water flow affected somewhat by regulation on Little Tennessee River at Cheoah Dam.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined below 60,000 second-feet; extended above that point. 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 that point.

Discharge measurements of Tennessee River at Loudon, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 16	Withee and Ventres-----	1.84	4,600	Jan. 15	King and Ventres-----	7.08	32,500
Nov. 25	J. P. Clawson-----	2.14	5,840	Feb. 22	D. B. Ventres-----	10.07	52,100
Dec. 10	—do-----	3.72	13,600				

Daily discharge, in second-feet, of Tennessee River at Loudon, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	7, 120	5, 740	6, 660	28, 000	19, 400	37, 700	32, 800	45, 200	35, 800	13, 000	10, 000	7, 580
2.....	7, 120	5, 520	6, 660	34, 000	18, 300	34, 000	26, 800	37, 700	29, 800	12, 500	10, 000	8, 060
3.....	6, 660	5, 300	8, 540	56, 200	18, 300	31, 600	23, 300	32, 800	24, 500	12, 000	10, 000	8, 060
4.....	7, 120	5, 740	9, 020	67, 200	18, 300	30, 400	22, 200	28, 600	21, 600	11, 500	9, 500	10, 000
5.....	6, 660	5, 970	10, 000	56, 800	17, 800	33, 400	23, 900	25, 000	20, 500	12, 000	11, 500	9, 020
6.....	6, 660	6, 660	18, 800	45, 200	17, 800	66, 600	24, 500	22, 800	18, 300	16, 200	12, 500	8, 060
7.....	6, 200	7, 580	19, 400	31, 000	19, 400	67, 200	25, 000	21, 000	17, 200	22, 800	12, 000	8, 060
8.....	5, 520	9, 020	18, 300	23, 900	20, 500	56, 800	26, 800	21, 000	16, 700	24, 500	11, 500	7, 580
9.....	5, 520	8, 060	16, 200	20, 500	18, 300	42, 700	25, 000	21, 600	15, 600	26, 200	13, 000	7, 580
10.....	5, 300	8, 060	13, 500	18, 800	16, 700	35, 200	24, 500	20, 500	16, 700	23, 300	12, 000	7, 120
11.....	5, 520	7, 580	12, 000	26, 800	15, 600	31, 600	25, 000	23, 900	18, 800	23, 300	10, 500	6, 660
12.....	4, 860	7, 120	12, 500	49, 000	15, 600	28, 600	28, 000	31, 600	21, 600	20, 500	10, 000	6, 200
13.....	4, 860	6, 660	12, 000	58, 200	15, 600	25, 600	31, 000	35, 800	29, 200	22, 200	10, 500	6, 660
14.....	5, 080	5, 970	14, 600	43, 900	15, 100	23, 900	29, 200	37, 700	31, 000	28, 000	11, 000	6, 200
15.....	4, 420	6, 200	15, 100	32, 800	14, 000	23, 300	26, 800	35, 200	25, 600	26, 800	13, 000	5, 520
16.....	4, 640	5, 520	14, 600	29, 200	13, 500	22, 200	25, 600	31, 000	46, 400	25, 000	11, 000	5, 520
17.....	4, 420	5, 300	16, 200	48, 400	13, 000	21, 000	25, 000	28, 600	28, 600	20, 500	11, 000	5, 300
18.....	4, 640	5, 520	15, 600	54, 900	14, 600	20, 500	36, 400	25, 600	21, 600	16, 700	10, 000	5, 520
19.....	4, 640	5, 300	14, 600	53, 600	21, 000	20, 500	63, 400	23, 300	18, 800	15, 600	9, 500	5, 740
20.....	4, 640	5, 300	13, 500	43, 900	37, 000	21, 600	57, 500	21, 000	16, 700	15, 600	9, 500	5, 740
21.....	4, 640	5, 300	12, 500	31, 600	54, 200	29, 200	52, 300	20, 000	15, 600	14, 600	9, 500	5, 870
22.....	5, 300	5, 300	12, 000	26, 200	51, 000	34, 600	42, 700	19, 400	14, 600	13, 500	8, 540	16, 700
23.....	5, 300	5, 740	13, 500	22, 800	42, 000	38, 900	32, 800	18, 800	13, 500	13, 500	8, 060	23, 900
24.....	5, 520	6, 200	15, 100	20, 500	34, 600	33, 400	28, 000	18, 300	14, 000	14, 600	8, 540	18, 300
25.....	6, 200	5, 740	15, 600	23, 900	26, 800	28, 000	25, 000	19, 400	14, 600	13, 500	8, 060	14, 000
26.....	5, 520	5, 970	16, 200	28, 000	23, 900	25, 000	22, 800	18, 800	16, 700	13, 500	8, 540	12, 000
27.....	5, 300	6, 660	15, 100	29, 800	29, 200	23, 900	22, 800	20, 000	15, 100	12, 000	9, 500	11, 000
28.....	5, 520	6, 660	14, 600	25, 600	42, 700	22, 800	22, 800	28, 600	13, 500	11, 000	10, 500	11, 000
29.....	5, 520	7, 120	17, 800	21, 600	41, 400	22, 800	21, 600	38, 300	12, 500	11, 000	10, 000	12, 500
30.....	5, 740	6, 200	22, 200	19, 400	-----	28, 600	25, 600	38, 900	13, 500	10, 000	9, 020	25, 000
31.....	5, 300	-----	23, 300	19, 400	-----	31, 600	-----	42, 700	-----	9, 500	8, 060	-----

Monthly discharge of Tennessee River at Loudon, Tenn., for the year ending September 30, 1924

[Drainage area, 12,300 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	7, 120	4, 420	5, 530	0.450	0.52
November.....	9, 020	5, 300	6, 300	.512	.57
December.....	23, 300	6, 660	14, 400	1.17	1.35
January.....	67, 200	18, 800	35, 200	2.86	3.30
February.....	54, 200	13, 000	24, 300	1.98	2.14
March.....	67, 200	20, 500	32, 000	2.60	3.00
April.....	63, 400	21, 600	30, 000	2.44	2.72
May.....	45, 200	18, 300	27, 500	2.24	2.58
June.....	35, 800	12, 500	20, 600	1.67	1.86
July.....	28, 000	9, 500	16, 900	1.37	1.58
August.....	13, 000	8, 060	10, 200	.829	.96
September.....	25, 000	5, 300	9, 680	.787	.88
The year.....	67, 200	4, 420	19, 400	1.58	21.46

TENNESSEE RIVER AT CHATTANOOGA, TENN.

LOCATION.—At Walnut Street Bridge in Chattanooga, Hamilton County, 3 miles above mouth of Chattanooga Creek, 4 miles below mouth of South Chickamauga Creek, and 33 miles upstream from Hales Bar Dam.

DRAINAGE AREA.—21,400 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 1, 1874, to October 21, 1913; March 1, 1915, to September 30, 1924.

GAGES.—Four gages were used during year. Two of these, 7 miles apart, are set to the same datum and are used to determine variation in slope of water

surface caused by operation of power plant and locks at Hales Bar Dam, as the station is within influence of backwater from dam. The other two gages are situated at Hales Bar Dam and are used to determine discharge at Chattanooga for the periods during which flashboards are in place on dam, as the slope method does not give consistent results during those periods. Gage No. 1 (United States Weather Bureau gage) consists of a sloping section of railroad rail bolted to rocks, and a vertical timber section bolted to cliff on left bank about 200 feet upstream from Walnut Street Bridge; elevation of zero, 620.8 feet above mean sea level. A Fulton long-distance recording gage operates in connection with gage No. 1, the recorder being located in the United States Weather Bureau Office. Gage No. 2 is a chain gage on Cincinnati Southern Railway bridge, 7 miles above Chattanooga, installed January 5, 1921, to replace the vertical staff which had been used prior to October 1, 1918; read by J. F. Skillern. Gage No. 3 is a vertical staff on lower lock wall on right bank at Hales Bar Dam, zero of which is 588.7 feet above mean sea level; supplemented by a Gurley 7-day recorder after August 23; inspected by R. J. Hoge. Gage No. 4 is a Bristol 24-hour recorder on upper lock wall on right bank at Hales Bar Dam; inspected by employees of Tennessee Electric Power Co.

DISCHARGE MEASUREMENTS.—Made from downstream footway of Walnut Street Bridge. Discharge measurements at Hales Bar Dam are made from boat one-fourth mile downstream from dam.

CHANNEL AND CONTROL.—Channel practically permanent. Control is compound. A channel control modified by backwater caused by Hales Bar Dam and lock and further affected by water-power wheels. Control for gage No. 3 is rock and gravel shoal one-fourth mile below dam; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 26.9 feet January 5 (discharge, 143,000 second-feet); minimum discharge, 6,780 second-feet October 18 and 24.

1874–1924: Maximum stage recorded, 54.0 feet at 7 a. m. March 1, 1875 (discharge, 361,000 second-feet); minimum stage, zero on gage September 11–14, 1881, and September 19, 1883 (discharge, 4,800 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Flow during low stages is regulated to a large extent by operation of power plant at Hales Bar Dam.

ACCURACY.—Stage-discharge relation affected by changes in slope of water surface caused by operation of power plant at Hales Bar Dam and by rising and falling stages. Discharge January 1 to June 30 determined by slope method, the normal rating curve being well defined between 11,500 and 370,000 second-feet. Slope determined from daily gage reading from gage No. 2, and the simultaneous gage height at Chattanooga obtained from recorder graph corrected by the daily morning reading from gage No. 1. Discharge October 1 to December 31 and July 1 to September 30, when 3-foot flashboards were on Hales Bar Dam, ascertained by applying mean daily gage heights from gage No. 3 (obtained by inspection of recorder graph) to a rating table determined by measurements below the dam after reducing the measured discharge by 2 per cent, the approximate inflow between Chattanooga and dam. Daily discharge thus obtained is corrected for changes in stored water in pool above determined from midnight readings of gage No. 4, in order to give the flow at Chattanooga. Rating curve for gage No. 3 is well defined between 8,000 and 17,000 second-feet. Records fair.

COOPERATION.—Gage-height record for gage No. 1 furnished by United States Weather Bureau. Gage heights for gages Nos. 3 and 4 furnished by Tennessee Electric Power Co.

Discharge measurements of Tennessee River at Chattanooga, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height		Dis-charge
		Gage No. 1	Gage No. 2	
		<i>Feet</i>	<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 1	King and Ventres	α 8.30	9.28	10,900
Nov. 1	Ventres and Withee	α 8.05	8.98	9,080
Jan. 7	King, Livingston, Clawson, and Ventres	19.55	22.23	89,800
Mar. 15	Livingston and Clawson	12.02	14.68	42,309
June 9	Ventres and Clawson	9.53	12.29	28,100
Aug. 25	D. B. Ventres	α 8.07	9.36	11,600

• Flashboards on Hales Bar Dam.

Discharge measurements of Tennessee River at Hales Bar, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 12	King, Withee, and Ventres	2.05	8,640
13	do	2.00	8,330
31	Withee and Ventres	1.67	7,960

Daily discharge, in second-feet, of Tennessee River at Chattanooga, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10,400	9,000	12,800	46,100	32,900	84,400	53,600	77,600	91,900	17,900	15,900	11,100
2	9,680	9,000	12,800	62,600	31,300	70,600	59,500	95,400	74,600	22,200	16,500	11,100
3	10,000	8,340	12,900	57,600	30,600	60,200	52,800	80,500	65,400	18,900	16,600	10,700
4	10,000	9,410	12,500	136,000	31,200	55,100	44,000	62,600	51,300	19,800	13,800	11,000
5	9,680	11,800	23,900	143,000	29,400	58,600	44,900	56,000	42,800	15,900	13,800	11,700
6	9,350	10,700	30,000	115,000	29,700	88,700	39,000	49,500	37,000	18,700	14,300	11,900
7	9,670	10,700	32,700	93,100	29,100	121,000	45,800	42,700	33,500	22,600	16,100	11,500
8	9,340	10,400	32,200	67,200	29,100	113,000	45,800	38,800	30,100	29,200	17,000	10,600
9	8,670	10,700	28,300	51,400	30,100	124,000	44,000	37,000	28,000	36,500	16,200	10,400
10	9,000	11,400	27,900	41,600	29,600	86,700	42,200	37,700	26,500	32,500	16,000	11,000
11	9,340	11,100	25,800	33,800	27,000	63,800	40,300	38,200	26,400	29,300	15,700	11,000
12	9,000	11,100	23,300	66,000	25,000	55,800	41,600	40,300	29,600	29,800	15,200	10,200
13	9,000	9,680	22,300	96,000	24,900	49,800	42,800	44,600	32,400	28,100	13,700	9,390
14	9,000	10,000	26,600	88,400	24,900	44,900	45,200	49,700	41,400	29,800	14,000	9,010
15	8,010	10,100	29,800	81,500	25,000	41,400	42,600	54,400	51,700	34,300	14,300	9,090
16	7,440	10,700	31,500	69,400	23,600	38,400	43,500	52,800	48,900	33,400	14,300	8,480
17	7,710	10,700	31,500	83,300	22,200	36,700	44,200	51,000	59,800	32,300	16,000	8,530
18	6,780	9,350	32,500	102,000	23,100	35,800	75,800	47,000	52,800	28,500	14,700	8,810
19	7,710	9,680	30,400	94,800	23,500	34,700	136,000	44,100	39,400	24,900	14,400	8,480
20	7,080	7,410	27,400	94,800	46,600	33,500	129,000	40,700	31,200	23,100	12,000	9,100
21	7,440	8,040	25,900	79,900	88,900	38,200	110,000	35,900	27,000	21,400	12,500	10,600
22	8,350	8,010	24,300	67,500	106,000	47,000	96,400	31,800	23,600	21,300	13,500	10,800
23	7,110	9,680	26,700	35,900	98,800	56,600	77,900	30,700	22,100	20,200	13,300	24,000
24	6,780	10,100	29,200	41,400	84,400	58,800	60,700	30,600	20,600	19,900	11,900	34,800
25	7,410	10,700	30,000	38,600	51,000	59,500	49,400	30,100	19,800	19,100	11,400	25,100
26	7,410	10,100	30,600	40,600	53,400	51,900	43,500	29,100	19,800	19,400	10,800	23,900
27	7,710	10,400	28,700	45,600	59,400	43,800	40,900	31,700	25,300	18,000	10,900	21,400
28	8,040	11,700	29,100	43,500	91,900	40,600	41,400	43,100	25,400	17,000	11,900	17,700
29	7,380	12,100	25,900	42,800	94,800	38,200	39,600	61,200	23,600	17,600	12,200	16,300
30	7,410	12,800	28,300	39,500	-----	41,900	43,200	76,600	20,100	16,300	13,400	16,500
31	8,340	-----	32,200	34,700	-----	37,700	-----	93,900	-----	15,500	12,800	-----

Monthly discharge of Tennessee River at Chattanooga, Tenn., for the year ending September 30, 1924

[Drainage area, 21,400 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	10,400	6,780	8,390	0.392	0.45
November.....	12,800	7,410	10,200	.477	.53
December.....	32,700	12,500	26,400	1.23	1.42
January.....	143,000	33,800	68,800	3.21	3.70
February.....	106,000	22,200	44,700	2.09	2.25
March.....	124,000	33,500	58,400	2.73	3.15
April.....	136,000	39,000	57,200	2.67	2.98
May.....	95,400	29,100	49,500	2.31	2.66
June.....	91,900	19,800	37,400	1.75	1.95
July.....	34,300	15,500	23,500	1.10	1.27
August.....	17,000	10,800	14,000	.654	.75
September.....	34,800	8,480	13,600	.636	.71
The year.....	143,000	6,780	34,300	1.60	21.82

TENNESSEE RIVER AT FLORENCE, ALA.

LOCATION.—At Southern Railway bridge at lower end of Pattons Island, just below foot of Little Muscle Shoals, 1 mile south of Florence, Lauderdale County, and 3 miles below Wilson Dam.

DRAINAGE AREA.—30,800 square miles.

RECORDS AVAILABLE.—November 7, 1871, to September 30, 1924; gage heights only prior to October 1, 1894.

GAGE.—Rod gage consisting of 4 sections of steel, $\frac{3}{8}$ inch by $7\frac{1}{4}$ inches, attached to right face of stone draw pier, which has batter of 1 inch to the foot. These sections form one continuous gage graduated from -1.92 to 33.5 feet. Zero of gage, 400.85 feet above sea level. Gage read by R. E. Coburn. For description of gages used prior to September 30, 1913, see Water-Supply Paper 353, page 151.

DISCHARGE MEASUREMENTS.—Made from downstream side of combined railway and highway bridge at gage, using highway section which is the low level or through section of bridge; also from boat at section 3,800 feet below bridge.

CHANNEL AND CONTROL.—Bed rocky, rough and uneven; probably permanent. Control is practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 17 feet January 6 (discharge, 196,000 second-feet); minimum stage, -0.6 foot August 6 and September 15-20 (discharge, 8,550 second-feet).

1871-1924: Maximum stage recorded, 32.5 feet at 10 and 12 p. m. March 19, 1897 (discharge, from extension of rating curve 444,000 second-feet); minimum stage, -0.8 foot September 18, 1878 (discharge, estimated 7,350 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Considerable regulation after July 6 due to manipulation of sluiceways in Wilson Dam. See footnote to daily-discharge table.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined up to 35,000 second-feet and well defined between 35,000 and 320,000 second-feet. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good

prior to July 6; only fair after that date because of regulation at Wilson Dam.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

No discharge measurements made during the year.

Daily discharge, in second-feet, of Tennessee River at Florence, Ala., for the year ending September 30, 1924

Day	Oct.	N o .	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	17,800	11,200	21,000	52,500	57,900	152,000	57,000	107,000	125,000	36,000	16,600	11,200
2.....	16,600	11,200	23,100	61,500	53,400	149,000	57,000	125,000	127,000	32,600	19,000	11,200
3.....	14,300	11,200	25,400	138,000	49,800	135,000	63,300	138,000	131,000	31,000	23,800	16,600
4.....	13,200	11,200	26,100	181,000	48,000	114,000	71,300	138,000	112,000	27,700	26,100	16,600
5.....	11,200	13,200	31,000	181,000	48,000	107,000	76,600	125,000	95,000	27,700	24,600	19,600
6.....	11,200	15,400	48,000	196,000	45,400	156,000	78,800	102,000	78,800	11,200	10,300	19,600
7.....	11,200	16,600	57,000	181,000	45,400	188,000	74,400	82,100	66,300	23,100	16,600	11,200
8.....	11,200	16,600	61,500	174,000	45,400	186,000	72,300	76,600	58,800	21,700	20,300	11,200
9.....	10,300	15,400	62,400	155,000	44,600	180,000	68,300	66,300	53,400	21,700	23,100	11,200
10.....	10,300	13,800	61,500	125,000	44,600	174,000	66,300	59,700	48,000	23,100	19,000	13,800
11.....	10,300	13,800	60,600	99,800	43,700	159,000	66,300	55,200	51,600	36,000	31,000	14,300
12.....	10,300	13,800	62,400	99,800	42,000	131,000	64,300	52,500	53,400	41,200	31,000	16,600
13.....	10,300	13,800	61,500	99,800	41,200	106,000	62,400	48,000	49,800	37,800	31,000	16,600
14.....	10,300	13,800	61,500	106,000	39,400	87,800	59,700	50,700	48,900	39,400	31,000	11,200
15.....	10,300	13,800	74,400	114,000	39,400	71,300	58,800	55,200	49,800	39,400	19,600	8,550
16.....	10,300	13,800	71,300	125,000	39,400	69,300	61,500	59,700	55,200	32,600	8,550	8,550
17.....	11,200	13,200	68,300	138,000	37,800	63,300	61,500	61,500	58,800	41,200	20,300	8,550
18.....	11,200	13,800	66,300	138,000	36,000	57,000	68,300	62,400	61,500	44,600	19,600	8,550
19.....	10,300	13,800	66,300	141,000	36,000	57,000	125,000	59,700	64,300	45,400	16,600	8,550
20.....	9,850	13,200	66,300	145,000	55,200	57,000	159,000	57,000	68,300	45,400	16,600	8,550
21.....	9,850	11,200	57,000	138,000	82,100	61,500	172,000	57,000	59,700	41,200	17,800	11,200
22.....	10,300	11,200	61,500	127,000	102,000	63,300	180,000	52,500	48,000	32,600	17,800	11,200
23.....	10,300	13,200	71,300	112,000	125,000	61,500	170,000	48,000	43,700	31,000	17,800	11,200
24.....	10,800	13,200	78,800	93,800	138,000	64,300	152,000	50,700	36,000	24,600	17,800	11,200
25.....	10,300	14,300	71,300	82,100	138,000	69,300	117,000	48,000	33,500	28,500	16,600	11,200
26.....	9,850	16,600	71,300	74,400	131,000	71,300	93,800	48,000	31,000	26,900	16,600	11,200
27.....	9,850	16,600	66,300	66,300	135,000	74,400	74,400	48,000	31,000	14,300	16,600	14,300
28.....	9,850	20,300	61,500	60,600	149,000	68,300	66,300	76,600	31,000	21,700	16,600	19,600
29.....	9,850	22,400	57,000	59,700	156,000	62,400	61,500	93,800	29,300	17,800	16,600	16,600
30.....	11,200	21,700	55,200	60,600	-----	58,800	82,100	106,000	29,300	26,100	12,200	16,600
31.....	11,200	-----	52,500	61,500	-----	57,000	-----	122,000	-----	23,100	11,200	-----

NOTE.—Started closing open sections in Wilson Dam on April 26; dam closed on July 6, all water passing through 13 nine foot diameter sluices. After July 6 gage readings influenced by manipulation of these sluices.

Monthly discharge of Tennessee River at Florence, Ala., for the year ending September 30, 1924

[Drainage area, 30,800 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	17,800	9,850	11,100	0.360	0.42
November.....	22,400	11,200	14,400	.468	.52
December.....	78,800	21,000	57,400	1.86	2.14
January.....	196,000	52,500	116,000	3.77	4.35
February.....	156,000	36,000	70,600	2.29	2.47
March.....	188,000	57,000	100,000	3.25	3.75
April.....	180,000	57,000	88,000	2.86	3.19
May.....	138,000	48,000	75,200	2.44	2.81
June.....	131,000	29,300	61,000	1.98	2.21
July.....	45,400	11,200	30,500	.990	1.14
August.....	31,000	8,550	19,400	.630	.73
September.....	19,600	8,550	12,900	.419	.47
The year.....	196,000	8,550	54,800	1.78	24.20

TENNESSEE RIVER AT JOHNSONVILLE, TENN.

LOCATION.—At Nashville, Chattanooga & St. Louis Railway warehouse, 1,000 feet below railway bridge at Johnsonville, Humphreys County.

DRAINAGE AREA.—38,500 square miles.

RECORDS AVAILABLE.—October 1, 1875, to September 30, 1924 (gage heights only prior to October 1, 1889).

GAGE.—Vertical staff at freight elevator in warehouse on right bank, 1,000 feet below railway bridge. Elevation of zero of gage above mean sea level, 322.77 feet.

DISCHARGE MEASUREMENTS.—Made from railway bridge consisting of six spans and draw span.

CHANNEL AND CONTROL.—Bed of stream at measuring section at bridge composed of boulders and coarse gravel; apparently permanent. Channel straight for about 1 mile above bridge and half a mile below. Right bank not subject to overflow; left bank is overflowed at extreme high water. Control is at head of Reynoldsburg Island 3 miles below.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 29.7 feet January 7 (discharge, 245,000 second-feet); minimum stage, 0.7 foot September 19 and 20 (discharge, 11,500 second-feet).

1889–1924: Maximum stage recorded, 48 feet March 24, 1897 (discharge, 410,000 second-feet); minimum stage, –0.9 foot October 26 to November 4 1904 (discharge, 7,150 second-feet).

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation practically permanent; not appreciably affected by backwater from Ohio River during year. Rating curve fairly well defined below 20,000 second-feet and well defined between 20,000 and 302,000 second-feet. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except for low and high stages for which they are fair.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

Discharge measurements of Tennessee River at Johnsonville, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 24	J. P. Clawson.....	1.34	12,600
Jan. 29	do.....	10.81	73,400
Aug. 2	D. B. Ventres.....	3.14	22,800

Daily discharge, in second-feet, of Tennessee River at Johnsonville, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17,800	12,900	30,600	69,400	69,400	204,000	67,700	114,000	155,000	30,600	22,200	16,100
2	19,200	12,900	29,900	69,400	66,900	202,000	64,400	138,000	154,000	33,100	25,000	15,700
3	18,700	12,600	29,360	129,000	32,800	193,000	63,600	150,000	151,000	33,800	20,700	15,300
4	17,800	12,600	29,900	193,000	58,800	182,000	66,900	156,000	150,000	32,500	19,200	14,500
5	16,500	12,600	32,500	223,000	55,000	164,000	74,400	158,000	143,000	29,300	23,900	14,100
6	15,300	13,700	37,800	239,000	52,100	146,000	85,500	154,000	128,000	27,400	23,900	16,500
7	14,500	14,500	49,100	245,000	49,900	153,000	90,600	139,000	110,000	25,600	21,700	16,100
8	14,100	15,700	61,200	241,000	37,700	176,000	91,500	114,000	92,400	22,800	22,200	16,100
9	14,100	17,000	67,700	234,000	49,100	190,000	89,800	99,300	77,800	23,900	25,000	15,700
10	14,100	17,400	70,200	226,000	47,700	196,000	87,200	86,300	69,400	23,900	25,000	13,700
11	13,700	17,000	72,700	222,000	46,200	197,000	84,600	76,900	61,200	22,800	22,200	13,300
12	13,700	16,100	72,700	209,000	44,800	194,000	82,000	69,400	56,500	24,500	26,200	13,300
13	13,300	15,700	73,500	193,000	45,500	183,000	78,600	62,800	57,300	37,200	27,400	13,300
14	13,300	15,300	89,800	176,000	44,800	161,000	74,400	58,800	66,100	42,700	29,300	16,100
15	13,300	15,300	96,700	165,000	44,100	133,000	71,000	55,800	63,600	42,700	29,300	15,300
16	12,900	15,300	105,000	162,000	42,000	108,000	66,900	56,500	60,400	42,000	27,400	15,300
17	12,900	14,500	104,000	170,000	40,600	90,600	66,100	59,600	60,400	35,100	20,700	14,100
18	14,500	14,900	96,700	179,000	39,900	80,300	69,400	62,800	62,000	34,400	16,100	12,200
19	21,700	14,900	91,500	186,000	39,900	72,700	75,200	65,200	64,400	40,600	17,800	11,500
20	23,300	14,900	87,200	180,000	44,800	67,700	104,000	64,400	65,200	44,800	18,700	11,500
21	20,200	14,900	82,000	184,000	57,300	71,000	137,000	62,800	70,200	46,200	18,300	13,300
22	17,000	14,500	87,200	178,000	91,500	76,000	158,000	60,400	67,700	44,100	17,800	13,700
23	15,300	14,500	108,000	171,000	115,000	83,800	170,000	57,300	58,100	37,200	16,500	13,700
24	14,100	15,300	138,000	153,000	132,000	80,300	176,000	54,300	49,900	32,500	17,000	13,700
25	13,300	16,100	149,000	141,000	151,000	77,800	176,000	49,900	42,700	28,600	17,000	14,100
26	12,900	16,100	139,000	120,000	165,000	79,500	163,000	48,400	37,200	26,800	17,000	14,500
27	12,900	16,500	117,000	103,000	172,000	82,900	138,000	47,000	37,800	26,800	17,000	14,500
28	12,600	17,800	98,400	88,900	183,000	85,500	109,000	59,600	33,800	23,900	17,000	14,500
29	12,200	20,200	87,200	77,800	195,000	83,800	90,600	92,400	30,600	21,700	17,400	14,100
30	12,200	25,000	77,800	73,500	-----	76,900	84,600	128,000	29,900	20,700	17,400	14,100
31	12,600	-----	71,900	70,200	-----	71,900	-----	147,000	-----	21,700	17,000	-----

Monthly discharge of Tennessee River at Johnsonville, Tenn., for the year ending September 30, 1924

[Drainage area 38,500 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	23,300	12,200	15,200	0.395	0.46
November	25,000	12,600	15,600	.405	.45
December	149,000	29,300	80,100	2.08	2.40
January	245,000	69,400	164,000	4.26	4.91
February	195,000	39,900	77,700	2.02	2.18
March	204,000	67,700	128,000	3.32	3.83
April	176,000	63,600	98,500	2.56	2.86
May	153,000	47,000	88,600	2.30	2.65
June	155,000	29,900	76,900	2.00	2.23
July	46,200	20,700	31,600	.821	.95
August	29,300	16,100	21,100	.548	.63
September	16,500	11,500	14,300	.371	.41
The year	245,000	11,500	67,700	1.76	23.96

DAVIDSON RIVER NEAR BREVARD, N. C.

LOCATION.—At steel highway bridge on road from Brevard to Mount Pisgah, 500 feet downstream from boundary of Pisgah National Forest, $1\frac{1}{2}$ miles upstream from junction of Davidson and French Broad Rivers, 2 miles downstream from mouth of Avery Creek, $2\frac{1}{4}$ miles downstream from site of old gaging station which was discontinued in 1909, and $5\frac{1}{2}$ miles north-east of Brevard, Transylvania County.

DRAINAGE AREA.—41 square miles (measured on topographic map).

RECORDS AVAILABLE.—December 10, 1920, to September 30, 1924.

GAGE.—Vertical staff gage bolted to left bank pier of bridge; read by Mrs. U. G. Reeves.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge.

CHANNEL AND CONTROL.—Channel is straight 600 feet above and 50 feet below gage. Bed of stream consists of gravel and is shifting. Banks are high and are seldom overflowed. Control is a rock ledge and boulder riffle 20 feet below gage; subject to slight shifts during big floods.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.75 feet during early morning of January 11 (discharge not determined); minimum stage, 0.64 foot several periods in October and November (discharge, 46 second-feet).

1920-1924: Maximum stage recorded, 7.5 feet at 7.30 a. m. December 14, 1920 (discharge not determined); minimum stage recorded, 0.54 foot November 21-26, 1922 (discharge, 37 second-feet).

ICE.—No ice effect during ordinary winters.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed January 11, 1924. Rating curves are well defined between 50 and 400 second-feet; extended beyond these limits. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except as stated in footnote to daily-discharge table. Records good except those for stages above 400 second-feet, for which they are fair.

Discharge measurements of Davidson River near Brevard, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 22	L. J. Hall.....	0.65	48	Mar. 21	L. J. Hall.....	1.66	210
Feb. 28	do.....	1.43	161	21	do.....	1.62	195
Mar. 6	do.....	1.69	216	Sept. 19	do.....	.68	44
19	do.....	1.22	118	22	E. D. Burchard.....	1.23	127
20	do.....	1.25	128				

Daily discharge, in second-feet, of Davidson River near Brevard, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	58	46	108	94	134	160	126	170	102	134	88	53
2	55	46	88	126	134	160	118	150	102	102	88	62
3	54	55	78	286	126	150	118	142	118	134	116	58
4	54	315	147	183	118	142	134	134	102	220	220	55
5	53	126	315	136	265	295	280	134	92	118	118	53
6	52	84	207	126	170	220	220	142	97	651	97	51
7	52	71	147	147	150	182	170	134	96	430	88	50
8	52	64	126	126	142	160	150	134	97	340	83	50
9	51	60	108	100	150	150	142	126	96	235	100	51
10	50	58	98	126	134	150	170	150	118	170	94	48
11	50	56	90	866	126	142	250	235	118	150	82	48
12	50	56	85	325	118	134	220	160	118	150	94	48
13	48	53	88	235	118	134	195	142	110	142	92	50
14	47	52	147	195	110	134	170	142	102	118	88	58
15	46	52	86	170	110	126	170	134	97	110	80	51
16	46	51	171	775	110	126	160	126	89	110	76	52
17	46	50	126	430	110	118	160	126	85	99	72	51
18	61	50	108	325	110	126	642	118	82	97	71	48
19	93	50	106	265	195	126	370	118	79	94	68	48
20	61	48	136	235	325	235	280	110	76	94	68	451
21	55	48	117	182	208	195	235	110	73	94	65	195
22	48	49	108	170	170	160	208	110	72	85	76	118
23	47	78	147	160	150	150	195	102	79	170	83	79
24	48	58	126	208	142	142	170	110	78	110	80	68
25	46	52	108	195	142	142	160	110	70	89	76	118
26	46	51	103	170	160	134	160	102	70	89	72	280
27	46	55	96	150	170	126	170	170	97	80	62	325
28	46	52	93	142	160	126	150	142	66	83	60	630
29	46	64	86	142	160	170	150	126	59	82	58	370
30	55	246	85	142	-----	150	208	118	72	97	58	280
31	50	-----	88	134	-----	126	-----	110	-----	85	55	-----

NOTE.—Discharge Jan. 11 and 16, Apr. 18, July 6, Sept. 20 and 28 determined by approximate integration of graph constructed on basis of two daily gage readings.

Monthly discharge of Davidson River near Brevard, N. C., for the year ending September 30, 1924

[Drainage area, 41 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	93	46	52.0	1.27	1.46
November	315	46	73.2	1.79	2.00
December	315	78	120	2.93	3.38
January	866	94	228	5.56	6.41
February	325	110	152	3.71	4.00
March	295	118	155	3.78	4.36
April	642	118	202	4.93	5.50
May	235	102	133	3.24	3.74
June	118	59	90.4	2.20	2.46
July	651	80	154	3.76	4.34
August	220	55	84.5	2.06	2.38
September	630	48	130	3.17	3.54
The year	866	46	131	3.20	43.57

SWANNANOA RIVER AT BILTMORE, N. C.

LOCATION.—At Biltmore Avenue concrete bridge 600 feet upstream from Southern Railway bridge at Biltmore, Buncombe County, 600 feet below mouth of Foster Mill Creek, and $1\frac{1}{2}$ miles above junction of Swannanoa and French Broad Rivers.

DRAINAGE AREA.—128 square miles (measured on topographic map).

RECORDS AVAILABLE.—December 1, 1920, to September 30, 1924.

GAGE.—A vertical staff attached to downstream end of bridge pier nearest right bank; read by Mr. W. M. Brown.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Channel is straight for 300 feet above and below gage. Bed consists of sand, gravel, and boulders; probably permanent. Banks are high and have never been known to have been overflowed except during the great flood of July, 1916. Control is a rock ledge extending entirely across river making a sharp riffle 300 feet below gage; permanent except that drift sometimes lodges on top of riffle causing temporary disturbance of stage-discharge relation. Great floods on French Broad River $1\frac{1}{2}$ miles below may cause backwater, but there has been no backwater since this station was established.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.5 feet at 6 a. m. January 11 (discharge, 1,980 second-feet); minimum stage, 0.90 foot 6 a. m. August 29 (discharge, 12 second-feet) owing to putting in operation new municipal dam at park about 3 miles above.

1920-1924: Maximum stage recorded, 8.2 feet at 3 p. m. May 29, 1923 (discharge, 6,240 second-feet); minimum stage, that of August 29, 1924.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—The water supply for the city of Asheville is drawn from headwaters of Beetree Creek and North Fork, both tributaries of Swannanoa River. The amount diverted is said to be about 11 second-feet but has not been accurately measured. Practically entire flow from 28 square miles is used during extreme low stages. Some of the water reenters river above gage.

REGULATION.—During low water there will probably be diurnal fluctuation due to operation of a small hydroelectric plant 3 miles upstream.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined below 1,300 second-feet; extended above that point. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except as stated in footnote to daily-discharge table. Records good.

Discharge measurements of Swannanoa River at Biltmore, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 12	L. J. Hall.....	1.22	53.0	Mar. 21	J. H. Morgan.....	^a 2.62	397
Jan. 22	Hall and Morgan.....	1.63	173	25	L. J. Hall.....	1.79	231
Mar. 7	L. J. Hall.....	^a 2.34	338	Aug. 1	do.....	1.26	62.9
13	do.....	^a 1.72	187	29	do.....	.93	13.9

^a Stage-discharge relation affected by backwater during construction of a pipe line across river 10 feet below gage in stream bed.

Daily discharge, in second-feet, of Swannanoa River at Biltmore, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	61	135	186	145	200	196	218	161	97	78	18
2	65	61	106	158	200	240	175	182	164	116	70	218
3	65	59	106	236	164	240	108	178	168	186	70	54
4	61	92	119	254	161	245	175	168	168	400	70	52
5	63	126	254	193	380	255	236	158	129	193	83	48
6	61	100	193	161	290	325	344	171	119	727	68	45
7	59	103	161	161	254	235	272	158	122	650	70	34
8	68	92	135	175	189	275	218	158	129	362	63	43
9	68	78	126	151	189	245	218	175	116	290	61	41
10	59	72	138	113	171	230	200	168	116	189	63	41
11	54	68	116	1,460	145	195	326	308	119	164	59	39
12	54	68	106	400	142	200	400	308	122	148	113	37
13	48	72	106	290	132	185	326	290	129	142	80	32
14	48	70	148	236	129	190	290	236	218	126	92	52
15	63	72	138	193	122	195	272	218	132	175	72	50
16	59	70	154	1,420	116	175	254	218	122	116	68	48
17	61	70	164	200	116	185	218	196	103	103	59	50
18	61	68	138	400	132	240	420	175	97	113	57	57
19	70	68	122	308	148	240	400	168	97	103	57	46
20	61	68	129	254	236	290	326	154	89	86	54	80
21	72	68	138	196	218	435	236	148	89	103	54	135
22	70	70	122	158	161	335	254	138	70	103	54	175
23	70	78	161	186	168	400	218	135	83	92	75	89
24	106	92	151	164	151	326	218	132	83	94	72	70
25	80	97	135	182	151	218	200	168	168	89	70	57
26	70	80	129	151	175	218	200	132	92	80	113	145
27	70	92	126	171	190	218	196	135	100	75	68	308
28	70	97	116	158	165	200	189	236	78	80	54	816
29	65	103	119	122	190	218	168	218	78	80	14	575
30	72	119	116	122	-----	308	200	186	94	80	16	650
31	68	-----	103	122	-----	218	-----	161	-----	86	21	-----

NOTE.—Discharge Jan. 11, 16, July 6, and Sept. 28 determined by approximate integration of graph constructed on basis of two daily gage readings. Discharge Feb. 27 to Mar. 22 estimated from three discharge measurements and gage-height record during construction of a pipe line across river 10 feet below gage which caused backwater at gage.

Monthly discharge of Swannanoa River at Biltmore, N. C., for the year ending September 30, 1924

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	106	48	65.5	May	308	132	187
November	126	59	81.1	June	218	70	118
December	254	103	136	July	727	75	176
January	1,460	113	280	August	113	14	65.1
February	380	116	177	September	816	18	137
March	435	175	248	The year	1,460	14	160
April	420	168	250				

PIGEON RIVER NEAR CRABTREE, N. C.

LOCATION.—At steel highway bridge on road from Waynesville to Crabtree, $1\frac{1}{2}$ miles upstream from mouth of Crabtree Creek and 2 miles south of Crabtree, Haywood County.

DRAINAGE AREA.—244 square miles (measured on topographic map).

RECORDS AVAILABLE.—December 16, 1920, to September 30, 1924.

GAGE.—Chain gage on upstream side of bridge; read by Miss Mary Kinsland.

Zero of gage is 2,463.54 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Channel straight for 200 feet above and 100 feet below gage. Bed of stream composed of rock, gravel, and sand; probably permanent. Right bank high; seldom subject to overflow. Left bank not subject to overflow. Control is a rock riffle 100 feet below gage; permanent except that at times floating logs may lodge on top of riffle and temporarily change stage-discharge relation.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.4 feet at 8 a. m. January 11 (discharge, 9,56Q second-feet); minimum stage, 1.22 feet at 5 p. m. August 23 (discharge, 37 second-feet).

1920-1924: Maximum stage recorded, that of January 11, 1924; minimum stage, 1.10 feet at 8 a. m. November 21, 1922, caused by regulation (discharge, 14 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—None.

REGULATION.—Mills on Pigeon River and tributaries cause considerable diurnal fluctuation during low water. On Richland Creek, a good-sized tributary, a large artificial lake is sometimes partly drained and then allowed to fill slowly. Such operation is likely to cut off a large percentage of flow at gage during low water.

ACCURACY.—Stage-discharge relation permanent except when logs lodge on control. Rating curve well defined between 120 and 3,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except as stated in footnote to daily-discharge table. Records good.

Discharge measurements of Pigeon River near Crabtree, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 23	L. J. Hall	1.63	171	May 21	D. B. Ventres	2.08	436
Mar. 3	D. B. Ventres	2.37	616	July 18	L. J. Hall	2.00	379
7	do	2.72	926	Sept. 19	E. D. Burchard	1.57	136

Daily discharge, in second-feet, of Pigeon River near Crabtree, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	169	192	300	515	448	515	550	735	448	236	285	152
2	164	174	246	448	448	620	515	585	448	228	255	218
3	182	178	187	735	448	480	515	515	415	338	295	270
4	160	480	205	735	333	515	515	480	448	585	311	196
5	148	585	775	620	775	1,510	735	448	397	448	295	164
6	152	241	515	448	515	855	735	448	373	3,200	236	160
7	160	200	328	415	480	775	735	415	658	1,920	232	156
8	178	178	295	480	397	620	658	448	658	1,110	210	148
9	160	148	338	515	403	620	620	409	448	895	311	178
10	169	148	250	385	361	620	585	480	585	815	350	152
11	169	136	210	2,640	338	620	815	815	361	620	232	144
12	169	164	200	1,060	350	550	895	695	306	585	311	136
13	164	148	192	855	322	515	775	585	322	585	270	132
14	160	144	385	695	300	515	735	550	397	415	355	128
15	169	140	275	620	270	480	695	515	338	415	246	136
16	178	124	409	2,070	296	448	735	480	295	397	232	152
17	140	124	385	1,300	265	448	775	480	236	373	228	156
18	182	128	328	978	295	480	1,020	448	246	350	214	140
19	241	132	316	855	322	480	1,300	448	236	350	200	128
20	214	120	328	775	1,200	515	895	448	270	333	200	265
21	169	103	322	620	515	775	695	409	285	306	265	403
22	169	124	328	620	448	620	658	338	265	295	182	515
23	169	187	480	658	480	585	620	260	275	316	103	361
24	178	223	385	620	515	585	550	260	328	311	192	210
25	192	205	322	735	480	515	515	403	285	306	236	200
26	156	148	306	658	515	550	585	328	255	300	367	855
27	156	160	270	585	515	515	585	448	379	275	187	480
28	156	174	290	515	515	550	515	620	311	275	187	1,810
29	160	174	306	515	480	620	480	585	246	228	174	1,060
30	160	350	391	448	-----	735	695	550	255	295	178	1,060
31	160	-----	275	403	-----	620	-----	515	-----	270	132	-----

NOTE.—Discharge Jan. 11, 16, Mar. 5, and July 6 determined by approximate integration of graph constructed on basis of two daily gage readings.

Monthly discharge of Pigeon River near Crabtree, N. C., for the year ending September 30, 1924

[Drainage area, 244 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	241	140	169	0.693	0.80
November	585	103	191	.783	.87
December	775	187	327	1.34	1.54
January	2,640	385	759	3.11	3.58
February	1,200	265	449	1.84	1.98
March	1,510	448	608	2.49	2.87
April	1,300	480	690	2.83	3.16
May	815	260	488	2.00	2.31
June	658	236	359	1.47	1.64
July	3,200	228	560	2.30	2.65
August	367	103	241	.988	1.14
September	1,810	128	342	1.40	1.56
The year	3,200	103	432	1.77	24.10

PIGEON RIVER AT NEWPORT, TENN.

LOCATION.—At Cocke County highway bridge, 300 feet above Southern Railway bridge, 1 mile above Newport railway station, and 6 miles above mouth of river.

DRAINAGE AREA.—655 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 4, 1900, to October 12, 1901 (fragmentary gage-height record); January 1, 1903, to December 31, 1905; December 1, 1906, to December 31, 1909; November 6, 1918, to September 30, 1924.

GAGE.—Chain gage on downstream side of bridge; read by C. M. Babb.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed of stream composed of solid rock overlain with shifting sand near right bank. Well-defined low-water control formed by rock ledge extending across stream in front of a sand-bar island below Southern Railway bridge and 500 feet below gage; probably permanent. The dam at the Newport flour mills, 1 mile downstream, is control during medium stages. Left bank high rock cliff; right bank is overflowed above stage of 10 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.2 feet March 6 (discharge, 5,700 second-feet); minimum stage, 0.9 foot October 20–24 (discharge, 290 second-feet).

1903–1905; 1907–1909; 1919–1924: Maximum stage recorded, 17 feet at 5 a. m. April 2, 1920 (discharge not determined); minimum stage, 0.4 foot October 3, 1919 (discharge, 102 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Slight regulation caused by operation of power plants upstream.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 500 and 5,000 second-feet; fairly well defined below and extended above these limits. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good between 500 and 5,000 second-feet, fair above and below these limits.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

Discharge measurements of Pigeon River at Newport, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 10	P. P. Livingston.....	1.02	367	Apr. 18	W. R. King.....	4.71	4,840
Feb. 9	do.....	1.74	807	May 26	D. B. Ventres.....	1.94	1,080
28	do.....	2.31	1,410	Sept. 20	King and Ventres.....	1.01	314
Mar. 6	W. R. King.....	4.58	4,650	28	J. P. Clawson.....	2.53	1,580

Daily discharge, in second-feet, of Pigeon River at Newport, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	330	380	380	845	935	1,250	1,740	2,680	1,250	605	1,040	410
2.....	330	380	380	1,360	1,040	1,250	2,000	1,740	1,040	605	935	470
3.....	330	380	380	2,400	935	1,250	1,870	1,360	1,040	605	935	1,250
4.....	330	380	620	3,270	935	1,250	1,740	1,250	935	760	935	935
5.....	330	380	1,360	1,870	935	1,870	1,610	1,040	935	845	845	605
6.....	330	430	1,740	1,250	935	5,700	1,870	1,040	935	1,480	680	410
7.....	330	430	1,040	1,140	935	2,970	1,740	1,040	935	4,680	605	470
8.....	330	430	845	1,140	1,040	2,680	1,740	845	935	1,480	760	410
9.....	330	430	935	1,040	1,040	2,000	1,610	1,040	845	1,140	680	355
10.....	330	430	1,250	935	935	1,740	1,480	1,870	1,250	1,140	605	470
11.....	330	380	1,040	4,040	1,040	1,360	2,000	2,260	1,480	1,040	535	410
12.....	330	380	690	3,420	1,140	1,360	2,680	2,820	1,740	845	845	355
13.....	330	330	550	2,260	1,250	1,250	2,260	2,000	1,140	935	605	300
14.....	330	330	620	1,740	760	1,140	2,000	1,610	1,250	1,040	470	300
15.....	330	330	690	1,610	760	1,040	1,610	1,610	1,140	2,260	535	300
16.....	330	330	765	1,480	760	1,040	1,610	2,000	1,040	1,360	535	300
17.....	330	330	765	1,610	680	1,040	1,480	1,480	1,040	935	410	300
18.....	330	330	690	1,140	935	1,140	2,000	1,250	935	680	470	300
19.....	330	330	690	1,040	1,040	1,250	3,720	1,250	760	760	470	355
20.....	290	330	620	1,040	3,120	1,250	2,400	1,040	845	1,040	470	470
21.....	290	330	620	935	2,000	1,250	2,000	1,040	760	935	410	605
22.....	290	430	620	1,140	2,000	1,250	1,870	1,040	680	935	470	760
23.....	290	430	690	1,380	1,870	1,140	1,610	845	680	935	470	1,250
24.....	290	550	765	1,610	1,480	1,480	1,480	760	605	1,360	470	680
25.....	330	430	765	1,740	1,250	1,360	1,140	1,250	680	935	470	470
26.....	330	430	765	1,360	1,360	1,040	1,360	1,040	680	935	410	605
27.....	330	430	765	1,360	1,040	1,040	1,480	1,040	680	845	410	1,250
28.....	330	430	845	1,250	1,480	1,040	1,480	1,250	605	760	355	1,360
29.....	330	380	845	1,140	1,360	1,610	2,000	2,000	535	1,040	410	2,000
30.....	330	380	845	1,040	1,610	1,610	2,130	2,260	605	1,250	410	3,270
31.....	330	-----	845	935	-----	1,480	-----	1,740	-----	1,040	355	-----

Monthly discharge of Pigeon River at Newport, Tenn., for the year ending September 30, 1924

[Drainage area, 655 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	330	290	324	0.495	0.57
November.....	550	330	389	.594	.66
December.....	1,740	380	788	1.20	1.38
January.....	4,040	845	1,560	2.38	2.74
February.....	3,120	680	1,230	1.88	2.03
March.....	5,700	1,040	1,550	2.37	2.73
April.....	3,720	1,140	1,866	2.84	3.17
May.....	2,820	760	1,470	2.24	2.58
June.....	1,740	535	933	1.42	1.58
July.....	4,680	605	1,140	1.74	2.01
August.....	1,040	355	581	.889	1.02
September.....	3,270	300	714	1.09	1.22
The year.....	5,700	290	1,070	1.63	21.69

NORTH TOE RIVER AT SPRUCE PINE, N. C.

LOCATION.—At county highway bridge at Spruce Pine, Mitchell County, 600 feet southwest of Carolina, Clinchfield & Ohio Railroad station, half a mile below mouth of Beaver Creek, and 3 miles above mouth of Bear Creek.

DRAINAGE AREA.—130 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 19, 1907, to June 30, 1908; April 21, 1920, to September 30, 1924.

GAGE.—Chain gage attached to floor on upstream side of highway bridge, installed February 1, 1921; read by G. A. Wilkie.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed of stream sandy and rough; shifting. Control is a well-defined shoal 100 feet below gage; probably shifting. Right bank is overflowed during extreme high water; left bank is overflowed below bridge during high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.8 feet at 6 p. m. January 16 (discharge, 3,910 second-feet); minimum stage, 1.34 feet at 6 p. m. September 12 (discharge, 68 second-feet).

1920-1924: Maximum stage recorded, that of January 16, 1924; minimum stage, 1.24 feet at 2 a. m. November 28, 1922 (discharge, 55 second-feet).

ICE.—Stage-discharge relation may be slightly affected by ice for short periods.

REGULATION.—Small power plant upstream probably causes some diurnal fluctuation.

ACCURACY.—Stage-discharge relation not permanent. Rating curve used to January 11 fairly well defined between 100 and 550 second-feet; extended above. Curve used after January 11 well defined below 350 second-feet and extended above. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except as stated in footnote to daily-discharge table. Records poor.

Discharge measurements of North Toe River at Spruce Pine, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 16	P. P. Livingston.....	1.51	109	Feb. 25	P. P. Livingston.....	2.54	302
16	do	1.51	102	Sept. 16	L. J. Hall.....	1.61	108
Feb. 25	do	2.60	306				

Daily discharge, in second-feet, of North Toe River at Spruce Pine, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	114	197	372	682	299	326	286	286	160	124	116	160
2.....	126	209	311	466	408	326	299	251	151	133	108	124
3.....	110	203	292	331	356	326	340	218	142	160	106	116
4.....	110	224	441	517	326	312	372	218	142	208	108	108
5.....	110	257	625	625	408	299	340	218	124	262	102	108
6.....	101	240	491	441	540	299	312	208	151	448	106	97
7.....	110	224	292	351	516	340	340	198	151	840	116	90
8.....	119	206	257	292	516	326	470	208	142	564	102	87
9.....	133	224	274	292	540	299	470	229	151	613	97	84
10.....	114	224	292	372	372	299	516	240	133	408	108	82
11.....	123	224	292	2, 120	540	286	638	229	124	251	116	75
12.....	114	224	292	840	492	299	564	274	116	208	102	69
13.....	112	203	274	688	408	408	540	274	116	198	103	72
14.....	130	183	257	516	326	356	492	251	108	198	94	82
15.....	123	183	224	299	299	340	448	262	124	198	106	98
16.....	133	200	240	1, 740	326	312	540	240	108	178	100	84
17.....	119	224	257	1, 430	262	312	516	198	116	888	94	76
18.....	143	240	257	688	356	299	516	208	108	178	100	81
19.....	150	224	257	390	564	312	492	198	103	169	92	108
20.....	156	194	274	312	492	340	340	198	151	160	84	198
21.....	169	200	292	262	428	326	286	188	133	151	87	218
22.....	172	203	257	251	356	326	262	178	142	151	87	169
23.....	177	209	274	262	326	312	251	188	133	142	81	142
24.....	180	224	257	240	340	326	240	188	124	133	95	124
25.....	172	257	257	236	340	326	229	178	124	142	106	124
26.....	166	257	257	262	340	312	218	169	116	133	116	198
27.....	166	274	274	240	326	299	218	160	108	124	151	198
28.....	177	311	311	218	312	299	229	160	108	116	151	1, 210
29.....	189	394	331	229	356	239	218	151	108	124	124	1, 270
30.....	180	441	311	218	-----	286	274	151	108	116	108	892
31.....	175	-----	274	240	-----	286	-----	151	-----	116	108	-----

NOTE.—Discharge Jan. 11 and 16 determined by approximate integration of graph constructed on basis of two daily gage readings.

Monthly discharge of North Toe River at Spruce Pine, N. C., for the year ending September 30, 1924

[Drainage area, 130 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	189	101	141	1. 08	1. 24
November.....	441	183	236	1. 82	2. 03
December.....	625	224	302	2. 32	2. 68
January.....	2, 120	218	519	3. 99	4. 60
February.....	564	262	396	3. 05	3. 29
March.....	408	286	317	2. 44	2. 81
April.....	638	218	375	2. 88	3. 21
May.....	286	151	209	1. 61	1. 86
June.....	160	103	128	.985	1. 10
July.....	840	116	230	1. 77	2. 04
August.....	151	81	106	.815	. 94
September.....	1, 270	69	218	1. 68	1. 87
The year.....	2, 120	69	264	2. 03	27. 67

NOLICHUCKY RIVER AT EMBREEVILLE, TENN.

LOCATION.—At county highway bridge at Embreeville, Washington County, $1\frac{1}{2}$ miles below mouth of South Indian Creek, $3\frac{1}{2}$ miles northwest of Erwin, where North Indian Creek enters.

DRAINAGE AREA.—795 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 1, 1920, to September 30, 1924.

GAGE.—Chain gage bolted to downstream railing of bridge; read by James Ammons.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Control formed by solid rock and gravel shoal 600 feet below gage; shifts occasionally. Banks wooded; right bank steep and high; left bank subject to overflow above stage of about 15 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.8 feet at 7 a. m. September 29 (discharge, 10,100 second-feet); minimum stage, 2.08 feet at 5 p. m. November 14 (discharge, 310 second-feet).

1920–1924: Maximum stage recorded, about 11 feet at noon August 3, 1921 (discharge not determined); minimum discharge, that of November 14, 1923.

ICE.—Stage-discharge relation slightly affected by ice during average winters.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined below 4,000 second-feet; extended above that point. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good below 4,000 second-feet; subject to error above that point on account of extension of rating curve.

Discharge measurements of Nolichucky River at Embreeville, Tenn., during the year ending September 20, 1924

Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 15	P. P. Livingston	2.24	392
Feb. 13	do.	3.06	1,070
May 21	J. P. Clawson	3.30	1,320

Daily discharge, in second-feet, of Nolichucky River at Embreeville, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	500	326	535	2,610	1,350	2,150	2,010	2,610	1,600	500	685	468
2	500	375	500	2,930	1,010	1,730	1,600	3,630	1,470	550	645	608
3	468	468	468	4,000	862	1,600	1,350	2,770	1,350	750	725	608
4	435	500	500	4,180	815	2,300	1,540	2,150	1,230	1,000	910	535
5	435	435	645	2,150	862	3,630	2,450	2,010	1,180	1,250	880	500
6	468	435	1,730	1,470	910	5,170	4,000	1,870	1,120	2,500	840	468
7	468	405	1,470	1,870	1,290	9,120	3,270	1,600	1,010	2,000	800	468
8	435	405	1,180	1,230	1,010	5,580	2,150	1,470	960	1,500	770	435
9	468	405	1,960	1,230	815	2,770	1,730	1,350	910	1,290	645	468
10	435	375	960	960	1,010	1,730	1,870	1,290	910	1,350	685	468
11	468	364	1,010	7,300	1,010	2,010	2,150	2,300	1,290	1,350	910	435
12	435	358	1,010	4,000	910	1,870	2,300	4,000	1,470	1,230	1,180	435
13	435	336	1,010	2,300	862	1,870	2,010	3,630	1,230	1,230	910	405
14	405	315	1,010	1,870	1,180	1,730	1,600	3,270	1,290	1,180	815	405
15	435	336	960	1,730	1,010	1,730	1,290	2,930	1,410	1,010	725	405
16	375	326	862	3,100	910	1,600	1,010	2,610	1,010	815	608	405
17	375	348	1,060	4,970	910	1,540	910	2,450	960	770	570	405
18	370	375	1,010	3,810	1,470	1,470	2,930	2,300	815	725	500	435
19	342	358	960	2,610	1,730	1,730	3,810	2,150	770	770	500	405
20	336	336	910	1,870	1,470	4,190	2,450	2,010	725	770	468	405
21	358	336	862	3,100	1,410	2,610	2,150	1,870	645	770	468	405
22	326	358	815	2,770	1,290	1,730	1,600	1,730	770	725	585	1,010
23	358	405	770	2,300	1,230	1,470	1,600	1,470	862	815	685	815
24	405	500	960	2,150	1,060	1,600	1,410	1,410	960	862	1,010	645
25	468	645	1,010	2,610	1,010	1,730	1,410	1,470	815	770	1,230	570
26	468	570	960	2,450	1,410	1,600	1,870	1,730	770	608	1,120	815
27	435	608	960	2,150	1,730	2,010	1,600	1,730	862	645	910	645
28	435	570	1,350	1,470	1,600	1,730	1,350	2,010	815	645	685	4,380
29	405	535	1,180	1,120	2,010	2,150	1,410	2,300	535	645	500	9,820
30	375	535	1,060	815	2,610	1,730	2,010	535	770	500	5,370	
31	358	-----	1,600	1,410	2,300	-----	4,190	-----	725	500	-----	

NOTE.—Discharge estimated on basis of records for Greeneville July 1–8, and interpolated Aug. 5–7; gage not read for these periods.

Monthly discharge of Nolichucky River at Embreeville, Tenn., for the year ending September 30, 1924

[Drainage area, 795 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	500	326	419	0.527	0.61
November	645	315	421	.530	.59
December	1,730	468	980	1.23	1.42
January	7,300	815	2,530	3.18	3.67
February	2,010	815	1,180	1.48	1.60
March	9,120	1,470	2,490	3.13	3.61
April	4,000	910	1,960	2.47	2.76
May	4,190	1,290	2,260	2.84	3.27
June	1,600	535	1,010	1.27	1.42
July	2,500	500	985	1.24	1.43
August	1,230	468	739	.930	1.07
September	9,820	405	1,120	1.41	1.57
The year	9,820	315	1,340	1.69	23.02

NOLICHUCKY RIVER NEAR GREENEVILLE, TENN.

LOCATION.—At Jones highway bridge, half a mile below Camp Creek, 5 miles southeast of Greeneville, Greene County, and 9 miles above power plant of Tennessee Eastern Electric Co.

DRAINAGE AREA.—1,100 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 9, 1903, to December 31, 1908; April 7, 1919, to September 30, 1924.

GAGE.—Chain gage bolted to downstream side of bridge; read by J. A. Blevins. Prior to December 31, 1908, chain gage attached to upstream side of bridge was used. Datum of present gage is 2.04 feet lower than that of original gage.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed composed of gravel and rock; somewhat shifting. Right bank high but subject to overflow at extreme flood stages; left bank not subject to overflow. Control is formed by well-defined gravel and rock riffle about 50 feet below gage; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9 feet at 5 p. m. January 11 (discharge, 16,900 second-feet); minimum stage, 2.14 feet October 15 and 18 (discharge, 506 second-feet).

1903–1908; 1919–1924: Maximum stage recorded, 19.3 feet (original datum) crest stage during early morning January 23, 1906 (discharge not determined); minimum stage, –0.15 foot (original datum) October 23, 1904 (discharge, 305 second-feet).

ICE.—Stage-discharge relation not affected by ice during year.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 300 and 9,000 second-feet; extended above 9,000 second-feet. Gage read to hundredths once daily; oftener during extreme high water. Daily discharge ascertained by applying daily gage height to rating table, except as indicated in footnote to table of daily discharge. Records good, except those for high stages, which are fair.

Discharge measurements of Nolichucky River near Greeneville, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
Oct. 12	P. P. Livingston	<i>Feet</i> 2.24	<i>Sec.-ft.</i> 630	May 22	J. P. Clawson	<i>Feet</i> 3.18	<i>Sec.-ft.</i> 1,810
Feb. 12	do	3.14	1,750	30	do	3.50	2,320
26	do	3.37	2,190				

Daily discharge, in second-feet, of Nolichucky River near Greeneville, Tenn., for the year ending September 30, 1924

Date	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	620	710	2,830	2,650	1,740	3,200	2,830	3,020	1,810	1,110	990	710
2	660	710	1,510	4,200	1,810	3,400	2,650	2,830	1,740	1,110	990	660
3	660	710	930	4,200	1,970	3,600	2,470	2,650	1,740	1,180	990	710
4	640	640	760	5,540	2,300	3,200	1,970	2,470	1,660	1,440	1,050	760
5	600	610	870	3,400	2,130	3,020	2,300	2,300	1,440	1,970	990	815
6	600	660	2,130	3,020	3,400	11,800	2,300	2,130	2,300	2,300	930	710
7	600	1,110	1,660	1,660	2,300	6,280	3,400	1,580	1,370	4,420	990	710
8	610	1,050	1,300	1,810	2,130	3,200	2,650	1,510	1,370	4,000	2,470	710
9	620	870	1,240	1,970	1,810	3,600	2,470	1,580	1,300	3,200	1,440	710
10	560	815	1,240	1,810	1,740	3,200	2,300	2,470	1,370	2,300	990	710
11	600	710	1,110	10,000	1,810	2,650	2,470	2,650	1,370	2,130	990	710
12	560	710	990	5,300	1,810	2,470	3,020	4,860	2,130	1,580	930	660
13	560	660	990	4,200	1,660	2,300	2,830	4,000	2,830	1,580	930	630
14	580	710	1,180	2,300	1,890	2,300	2,650	3,020	2,650	2,830	990	660
15	506	710	1,370	2,470	1,890	2,470	2,470	3,020	2,300	2,650	1,050	630
16	524	660	1,370	2,470	1,440	1,970	2,470	2,650	1,890	2,300	990	630
17	542	660	1,440	11,200	1,440	1,970	2,300	2,470	1,660	2,300	930	650
18	506	710	1,440	4,860	2,130	1,970	3,600	2,300	1,440	2,300	815	660
19	524	710	1,300	3,200	3,600	1,970	6,020	2,130	1,370	2,300	870	650
20	542	1,810	1,180	3,600	3,600	2,470	4,000	1,970	1,300	2,130	815	650
21	560	1,810	1,180	2,830	3,800	2,470	3,200	1,890	1,240	1,740	590	710
22	660	660	1,240	1,970	3,200	4,000	2,830	1,740	1,180	1,440	580	1,580
23	542	710	1,240	1,810	4,200	3,200	2,470	1,510	1,180	1,050	710	1,810
24	660	710	1,370	1,810	4,000	2,830	2,300	1,510	1,180	1,110	990	1,180
25	760	930	1,440	3,200	4,000	2,650	2,130	1,370	1,240	1,240	1,180	930
26	760	870	1,240	3,020	3,800	2,470	1,740	1,500	1,180	1,240	1,240	990
27	760	760	1,440	2,300	3,300	2,470	2,130	1,620	1,110	1,050	1,240	990
28	660	870	1,970	1,660	2,830	2,470	1,970	1,740	1,050	1,050	1,050	1,890
29	660	1,240	2,470	1,810	3,200	2,470	1,890	2,470	990	990	990	8,500
30	660	2,300	1,890	1,740	-----	2,470	1,890	2,300	1,180	990	930	7,900
31	660	-----	1,660	1,740	-----	3,200	-----	2,130	-----	930	815	-----

NOTE.—Gage not read Feb. 27; gage readings erroneous May 26 and 27; discharge interpolated.

Monthly discharge of Nolichucky River near Greeneville, Tenn., for the year ending September 30, 1924

[Drainage area, 1,100 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	760	506	611	0.555	0.64
November.....	2,300	640	894	1.813	.91
December.....	2,850	760	1,420	1.29	1.49
January.....	11,200	1,660	3,350	3.05	3.52
February.....	4,200	1,440	2,580	2.34	2.52
March.....	11,800	1,970	3,150	2.86	3.30
April.....	6,020	1,740	2,660	2.42	2.70
May.....	4,860	1,370	2,300	2.09	2.41
June.....	2,830	960	1,550	1.41	1.57
July.....	4,420	930	1,870	1.70	1.96
August.....	2,470	580	1,010	.918	1.06
September.....	8,500	630	1,340	1.22	1.36
The year.....	11,800	506	1,890	1.72	23.44

NOLICHUCKY RIVER NEAR MORRISTOWN, TENN.

LOCATION.—At Jones Bridge on main road between Morristown and Newport, 9 miles southeast of Morristown, Hamblen County, and 11 miles above mouth of river. Bent Creek enters 3 miles above station and Lick Creek 4 miles above.

DRAINAGE AREA.—1,650 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 15, 1920, to September 30, 1924.

GAGE.—Chain gage bolted to upstream railing near left end of bridge; read by Lizzie Smith.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed of stream smooth and uniform. Channel clear; straight for 1,000 feet above and 600 feet below gage. Low-water control is rock and gravel shoal 600 feet below gage; probably permanent. Left bank high and not subject to overflow; right bank subject to overflow during extreme high water, the overflow water covering a wide area of cultivated land at gage but not at high-water control 2 miles below.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.3 feet at 7 a. m. March 6 (discharge, 18,300 second-feet); minimum stage, 1.80 feet at 5 p. m. September 11 (discharge, 315 second-feet).

1920-1924: Maximum stage recorded, 15.37 feet at 7 a. m. July 21, 1921 (discharge from extension of rating curve, 24,000 second-feet); minimum stage, 1.46 feet at 5 p. m. October 18, 1922 (discharge, 162 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Considerable regulation at low water is caused by operation of power plant of Tennessee Eastern Power Co., 22 miles upstream.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 150 and 15,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good above 1,500 second-feet; others only fair because of regulation.

Discharge measurements of Nolichucky River near Morristown, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
Oct. 11	P. P. Livingston	Feet 2.02	Sec.-ft. 450	Apr. 19	W. R. King	Feet 7.99	Sec.-ft. 7,540
Feb. 11	do	3.82	1,990	May 27	D. B. Ventres	4.08	2,310
27	do	6.80	5,740				

Daily discharge, in second-feet, of Nolichucky River near Morristown, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	780	595	630	3,370	1,970	4,760	3,140	3,850	2,170	1,200	820	742
2	780	630	940	5,040	1,970	4,100	2,920	3,370	2,270	1,200	860	668
3	705	668	1,020	6,570	1,970	4,490	2,590	2,590	2,590	900	780	705
4	742	668	780	7,240	2,370	4,760	2,590	2,270	1,770	1,060	1,570	668
5	495	742	820	5,630	2,170	11,000	2,700	2,070	1,770	1,970	1,470	668
6	668	668	1,570	4,490	3,140	16,400	3,030	1,770	1,770	2,370	1,200	668
7	595	980	2,480	2,170	2,590	8,850	3,970	1,970	1,570	3,030	1,380	668
8	705	940	1,250	2,070	2,590	5,330	3,250	2,370	1,380	4,360	1,970	412
9	780	780	1,060	2,370	2,480	4,100	2,810	2,170	1,770	3,250	1,970	705
10	595	668	1,380	1,770	1,870	3,730	2,810	2,270	2,170	2,590	900	860
11	528	668	980	4,760	2,170	3,610	2,810	3,030	3,140	1,870	980	599
12	780	668	1,470	10,800	2,170	3,140	3,250	5,180	3,490	2,170	1,200	630
13	595	742	940	5,330	1,870	2,520	3,250	4,620	4,760	2,370	1,870	560
14	630	595	1,110	3,610	1,770	2,590	3,140	3,730	5,480	3,030	1,470	630
15	430	528	1,570	2,920	1,570	3,030	3,030	3,850	3,370	2,270	1,290	462
16	668	630	1,380	3,970	1,570	2,590	3,140	3,250	2,270	1,770	1,200	630
17	742	630	1,670	9,800	1,380	2,370	2,700	3,140	1,970	1,470	900	630
18	668	705	1,470	6,250	4,100	2,570	5,630	2,480	1,770	2,370	1,200	630
19	528	462	1,570	4,100	5,780	2,590	6,900	2,480	1,670	1,570	860	595
20	705	595	1,020	3,250	6,570	2,810	5,630	1,870	1,570	1,380	742	705
21	495	595	820	3,030	6,730	4,230	3,730	1,870	1,470	1,770	630	495
22	500	668	1,020	2,370	5,330	4,490	3,140	2,170	1,380	1,380	595	1,670
23	780	560	1,060	1,870	3,250	3,250	2,920	2,070	1,470	1,260	462	2,590
24	630	668	1,770	3,030	2,810	3,450	2,590	1,770	1,670	2,170	705	1,380
25	742	705	1,770	5,630	2,810	3,030	2,480	1,770	1,770	1,570	1,200	595
26	630	900	1,470	4,100	2,590	2,810	2,370	2,070	1,250	742	1,380	780
27	705	780	1,380	2,370	5,480	2,700	2,370	1,970	1,380	1,160	1,570	495
28	1,060	595	2,920	1,770	5,780	3,250	2,590	2,590	1,020	1,290	1,020	2,920
29	462	630	3,250	2,070	5,780	3,730	2,270	4,230	940	860	705	9,800
30	595	780	2,270	2,070	2,070	3,970	3,030	4,100	1,470	1,110	630	7,240
31	595	2,170	2,070	2,070	2,070	3,850	3,140	3,140	1,670	528	528	528

Monthly discharge of Nolichucky River near Morristown, Tenn., for the year ending September 30, 1924

[Drainage area, 1,650 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,060	430	668	0.405	0.47
November	980	462	681	.413	.46
December	3,250	630	1,450	.879	1.01
January	10,800	1,770	4,060	2.46	2.84
February	6,730	1,380	3,190	1.93	2.08
March	16,400	2,370	4,340	2.63	3.03
April	6,900	2,270	3,230	1.96	2.19
May	5,180	1,770	2,780	1.68	1.94
June	5,480	940	2,090	1.27	1.42
July	4,360	742	1,850	1.12	1.29
August	1,970	462	1,100	.667	.77
September	9,800	412	1,860	.824	.92
The year	16,400	412	2,230	1.35	18.42

LITTLE PIGEON RIVER AT SEVIERVILLE, TENN.

LOCATION.—At H. O. Eckel's farmhouse, half a mile below Sevierville, Sevier County, and confluence of East and West Forks of river and 5 miles above junction with French Broad River.

DRAINAGE AREA.—346 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 23, 1920, to September 30, 1924.

GAGE.—Vertical staff in two sections spiked to trees on left bank, 100 feet from Eckel's house; read by Harry Eckel.

DISCHARGE MEASUREMENTS.—Made by measuring East and West Forks of river from highway bridges just above confluence and half a mile above gage, or by wading at section 1,000 feet below confluence of the forks.

CHANNEL AND CONTROL.—Right bank at gage low and subject to overflow above gage height 6 feet; left bank high and not subject to overflow except during extreme high water. Extreme floods submerge practically entire town of Sevierville. During ordinary floods all water passes under bridges from which discharge measurements are made. Low-water control is rock shoal 500 feet below gage; probably permanent. Medium and high-water control is a concrete dam in three sections about 1 mile below gage. During extreme floods on French Broad River stage-discharge relation at gage may be affected by backwater.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.7 feet at 5 p. m. March 5 (discharge, 9,550 second-feet); minimum stage, 0.60 foot at 5 p. m. October 12 and November 3 (discharge, 5 second-feet).

1920-1924: Maximum stage recorded, 10.25 feet at 5 p. m. February 10, 1921 (discharge, 15,400 second-feet); minimum stage, that of October 12 and November 3, 1923.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Operation of power plant on West Fork 3 miles above Sevierville causes considerable fluctuation during low water. Several flour mills on both forks cause some regulation.

ACCURACY.—Stage-discharge relation not permanent. Rating curve used October 1 to January 10 and March 6 to September 30, well defined between 40 and 3,000 second-feet and fairly well defined above; curve used January 11 to March 5 fairly well defined; above 2,160 second-feet the two curves are identical. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

Discharge measurements of Little Pigeon River at Sevierville, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 3	P. P. Livingston.....	0.79	34.7	May 29	D. B. Ventres	3.18	1,620
Feb. 8	do	1.45	387	Sept. 26	J. P. Clawson.....	1.26	206
29	do	2.56	1,170				

Daily discharge, in second-feet, of Little Pigeon River at Sevierville, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1.....	84	87	131	910	373	955	758	1,920	685	147	84	127
2.....	77	101	151	950	316	1,140	485	990	548	115	80	159
3.....	62	21	143	1,290	379	992	425	832	455	127	213	1,200
4.....	30	77	151	1,030	311	810	425	795	455	123	147	425
5.....	50	384	1,380	950	316	4,420	685	580	384	123	123	191
6.....	68	240	1,480	548	439	3,290	720	515	346	171	56	195
7.....	87	94	990	650	379	1,480	685	455	320	250	270	123
8.....	68	98	2,840	580	355	1,090	485	580	310	455	285	143
9.....	77	139	1,290	485	316	832	455	615	295	222	171	280
10.....	74	147	870	390	322	758	1,090	615	320	231	139	222
11.....	131	115	758	3,760	328	615	950	1,480	485	340	65	175
12.....	38	115	832	2,080	415	548	1,480	1,290	395	187	356	147
13.....	38	80	1,380	1,180	361	455	990	1,030	351	222	200	127
14.....	84	131	950	845	284	485	832	832	305	455	135	127
15.....	23	112	1,200	775	294	425	870	832	290	455	112	115
16.....	40	112	685	2,420	278	395	720	720	340	275	112	127
17.....	56	123	685	1,340	262	395	615	615	305	204	71	135
18.....	62	112	795	775	1,340	455	4,080	548	213	175	191	135
19.....	45	119	910	955	1,070	455	1,920	485	131	351	80	112
20.....	74	112	870	918	4,080	515	1,120	425	175	320	65	98
21.....	48	84	950	572	1,520	1,030	832	515	167	204	53	56
22.....	108	77	832	451	992	758	720	515	155	163	28	1,120
23.....	123	143	362	670	775	990	580	425	155	131	28	650
24.....	159	228	425	670	670	580	455	455	270	101	62	335
25.....	155	143	325	433	572	548	425	1,070	285	87	56	265
26.....	90	135	310	333	572	515	395	650	104	119	515	200
27.....	131	123	285	373	1,140	548	485	1,290	119	59	183	200
28.....	147	175	260	367	1,260	485	425	2,560	195	108	90	191
29.....	74	84	310	638	1,180	1,690	395	1,480	171	59	74	548
30.....	101	135	455	705	-----	1,200	2,420	990	222	56	59	2,290
31.....	112	-----	548	572	-----	758	-----	758	-----	71	94	-----

Monthly discharge of Little Pigeon River at Sevierville, Tenn., for the year ending September 30, 1924

[Drainage area, 346 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	159	23	81.2	0.235	0.27
November.....	384	21	128	.370	.41
December.....	2,840	131	760	2.20	2.54
January.....	3,760	333	920	2.66	3.07
February.....	4,080	262	721	2.08	2.24
March.....	4,420	395	953	2.75	3.17
April.....	4,080	395	895	2.59	2.89
May.....	2,560	425	867	2.51	2.89
June.....	685	104	288	.861	.96
July.....	455	56	197	.569	.66
August.....	515	28	135	.390	.45
September.....	2,290	56	341	.986	1.10
The year.....	4,420	21	525	1.52	20.65

SOUTH FORK OF HOLSTON RIVER NEAR CHILHOWIE, VA.

LOCATION.—At Riverside Bridge, half a mile downstream from Bebord flour mill 2 miles below Holstein mill, 5 miles southeast of Chilhowie, Smyth County.

DRAINAGE AREA.—94.5 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 1, 1920, to September 30, 1924. From June 10, 1907, to December 31, 1909, records were obtained at a point just above the mouth of Grose Creek, 4½ miles downstream from present gage.

GAGE.—Chain gage bolted to downstream side of bridge; read by Margaret Williams.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading. Section at bridge is very rough.

CHANNEL AND CONTROL.—Bed composed of boulders and coarse gravel; banks are low and subject to overflow during unusual floods. Control is rocky shoal 100 feet downstream from gage; may change slightly during high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.85 feet at 9 a. m. September 30 (discharge, 1,760 second-feet); minimum stage, 0.64 foot at 6 p. m. October 12 (discharge, 25 second-feet).

1920-1924: Maximum stage recorded, 7.7 feet at 4 p. m. June 12, 1923 (discharge, 4,450 second-feet); minimum stage, 0.28 foot at 6 p. m. September 8, 1923, caused by closing gates of dam above (discharge, 3.4 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Several flour and grist mills above gage cause considerable diurnal fluctuation during low water.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 50 and 1,100 second-feet; extended beyond these limits. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good below 1,100 second-feet; others fair.

Discharge measurements of South Fork of Holston River near Chilhowie, Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 31	P. P. Livingston.....	0.93	54
Feb. 16	.....do.....	1.15	85
May 15	J. P. Clawson.....	1.83	231

Daily discharge, in second-feet, of South Fork of Holston River near Chilhowie, Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	42	37	48	560	120	155	380	135	275	77	62	71
2.....	46	48	47	380	111	175	235	145	222	77	51	80
3.....	50	48	51	335	116	175	198	135	185	77	135	85
4.....	37	64	61	398	107	175	185	125	155	80	102	77
5.....	34	71	91	320	123	380	248	120	135	71	78	71
6.....	46	60	105	260	109	380	222	104	125	86	91	57
7.....	50	56	74	165	116	350	275	109	116	198	97	56
8.....	54	50	56	155	125	248	248	109	112	485	85	54
9.....	43	47	81	155	107	198	210	116	111	260	74	59
10.....	35	49	71	145	105	175	185	118	125	185	64	68
11.....	40	54	75	900	96	155	175	145	125	145	72	54
12.....	39	64	67	398	109	145	165	290	135	135	450	51
13.....	34	48	74	235	91	125	145	275	155	155	222	49
14.....	41	46	74	222	94	125	145	235	175	125	235	49
15.....	37	43	62	175	99	116	145	210	155	125	165	53
16.....	35	53	67	121	96	109	135	198	125	112	145	51
17.....	40	55	69	645	101	102	135	175	116	102	125	53
18.....	38	51	72	350	125	165	185	155	101	94	107	56
19.....	53	47	61	248	155	165	185	135	101	85	94	54
20.....	45	43	64	210	365	175	175	135	88	89	88	59
21.....	40	44	72	210	415	305	210	165	85	81	83	85
22.....	49	43	59	210	290	235	165	165	83	83	86	81
23.....	54	59	74	165	210	198	155	155	86	83	88	72
24.....	56	56	68	155	165	210	135	135	91	72	145	68
25.....	51	54	77	175	145	210	125	198	75	61	165	67
26.....	49	59	67	125	135	248	123	155	68	75	125	57
27.....	43	51	155	145	125	275	120	135	75	72	105	54
28.....	43	55	275	123	145	235	125	145	72	65	93	72
29.....	43	49	222	125	155	485	125	175	93	62	81	960
30.....	41	57	185	120	-----	415	135	190	94	55	78	1,280
31.....	42	-----	305	120	-----	398	-----	398	-----	50	71	-----

Monthly discharge of, South Fork of Holston River near Chilhowie, Va., for the year ending September 30, 1924

[Drainage area, 94.5 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	56	34	43.5	0.460	0.53
November	71	37	52.0	.550	.61
December	305	47	94.5	1.00	1.15
January	900	120	260	2.75	3.17
February	415	91	146	1.54	1.66
March	485	102	226	2.39	2.76
April	380	120	180	1.90	2.12
May	790	104	187	1.98	2.28
June	275	68	122	1.29	1.44
July	485	50	114	1.21	1.40
August	450	51	118	1.25	1.44
September	1,280	49	133	1.41	1.57
The year	1,280	34	140	1.48	20.13

SOUTH FORK OF HOLSTON RIVER AT BLUFF CITY, TENN.

LOCATION.—At highway bridge at Bluff City, Sullivan County, 300 feet below Virginia & Southwestern Railway bridge, 1 mile below mouth of Indian Creek, and 10 miles upstream from mouth of Watauga River.

DRAINAGE AREA.—828 square miles.

RECORDS AVAILABLE.—July 17, 1900, to September 30, 1924.

GAGE.—Vertical staff attached to downstream side of bridge pier nearest right bank; read by W. C. Massengill. From March 21, 1920, to October 22, 1923, a chain gage bolted to downstream guardrail was used; datum unchanged.

DISCHARGE MEASUREMENTS.—Made from footway on upstream side of railway bridge 300 feet upstream from gage, from highway bridge, or by wading.

CHANNEL AND CONTROL.—Bed of river very rough. Control consists of a shallow ledge, probably permanent. Depth and velocity of current very irregular.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.1 feet at 7 a. m. June 14 (discharge, 8,540 second-feet); minimum stage, 0.23 foot at 7 a. m. October 23 (discharge, 220 second-feet).

1900–1924: Maximum stage recorded, 150 feet May 22, 1901 (discharge not determined); minimum stage, –0.1 foot October 16–19, 21–25, 27, 29–31, and November 1, 1904 (discharge, 160 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Operation of small mills upstream causes some diurnal fluctuation.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 300 and 6,000 second-feet; extended beyond these limits. Gage read to hundredths once daily, oftener during high water. Daily discharge ascertained by applying daily gage height to rating table. Records good between 300 and 6,000 second-feet; others fair.

Discharge measurements of South Fork of Holston River at Bluff City, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 22	P. P. Livingston.....	0.37	267	Mar 6	Warren Withee.....	5.05	5,060
Feb. 15	do.....	1.34	830	May 18	J. P. Clawson.....	2.36	1,710
21	do.....	5.07	5,200	June 16	D. B. Ventres.....	3.03	2,500

Daily discharge, in second-feet, of South Fork of Holston River at Bluff City, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	305	325	325	6,980	1,160	2,120	2,340	2,340	2,810	962	498	498
2.....	313	297	325	4,150	1,080	2,230	2,120	2,340	2,230	815	555	470
3.....	313	281	321	4,890	1,040	2,230	1,910	2,010	1,810	780	2,120	498
4.....	305	313	321	5,350	962	1,910	1,710	1,510	1,510	745	2,010	615
5.....	305	348	420	3,870	1,000	1,710	1,910	1,330	1,330	780	1,040	525
6.....	297	370	1,000	2,340	1,080	5,190	1,910	1,160	1,200	745	815	445
7.....	281	420	925	1,810	1,040	3,730	1,910	1,040	1,120	745	850	395
8.....	273	445	888	1,610	962	2,690	1,910	1,000	1,040	2,810	1,080	395
9.....	249	395	815	1,280	888	2,120	1,710	1,810	925	2,810	815	498
10.....	265	370	850	1,160	888	1,810	1,810	1,710	1,000	1,810	678	498
11.....	281	325	745	3,590	888	1,710	1,810	1,910	6,310	1,710	555	395
12.....	297	313	710	4,290	850	1,510	1,710	3,820	2,930	1,280	2,570	370
13.....	265	321	615	2,570	815	1,330	1,610	3,870	2,010	2,230	2,340	348
14.....	285	313	645	2,010	780	1,280	1,510	2,810	7,660	2,230	1,330	348
15.....	289	289	745	1,610	780	1,240	1,810	3,060	4,150	1,610	1,280	321
16.....	289	305	585	1,330	815	1,120	1,610	2,450	2,450	1,240	1,000	395
17.....	297	273	555	4,290	745	1,160	1,330	2,120	2,230	1,040	962	848
18.....	297	289	555	3,320	1,810	1,280	1,810	1,710	1,510	615	925	348
19.....	257	289	498	2,340	1,910	1,510	4,440	1,510	1,330	850	780	370
20.....	325	257	470	1,910	4,890	1,510	3,190	1,280	1,200	925	678	348
21.....	273	273	445	1,610	5,350	4,010	2,340	1,710	1,120	1,000	645	498
22.....	249	273	445	1,120	3,320	3,320	1,910	1,910	1,000	1,120	678	1,000
23.....	220	289	525	1,120	2,230	2,340	1,610	1,610	962	888	615	815
24.....	348	325	1,120	1,120	1,810	2,010	1,330	1,420	1,040	925	555	585
25.....	395	395	962	4,010	1,610	2,010	1,200	1,330	1,510	815	745	498
26.....	348	348	780	2,690	1,510	1,910	1,240	1,240	1,080	780	1,040	470
27.....	348	348	745	1,910	2,010	1,910	1,710	1,160	888	678	888	420
28.....	313	348	1,510	1,610	2,340	1,910	1,510	1,910	962	615	780	445
29.....	305	321	2,340	1,420	2,340	2,120	1,510	1,710	815	585	615	4,740
30.....	289	313	2,120	1,280	4,150	1,420	5,350	1,710	555	555	555	8,180
31.....	313	-----	1,510	1,200	-----	2,930	-----	4,740	-----	555	555	-----

Monthly discharge of South Fork of Holston River at Bluff City, Tenn., for the year ending September 30, 1924

[Drainage area, 828 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	395	220	296	0.357	0.41
November.....	445	257	326	.394	.44
December.....	2,340	321	800	.966	1.11
January.....	6,980	1,120	2,570	3.10	3.57
February.....	5,350	745	1,620	1.96	2.11
March.....	5,190	1,120	2,190	2.64	3.04
April.....	4,440	1,200	1,860	2.25	2.51
May.....	5,350	1,000	2,090	2.52	2.90
June.....	7,660	815	1,930	2.33	2.60
July.....	2,810	555	1,140	1.38	1.59
August.....	2,570	498	986	1.19	1.37
September.....	8,180	321	869	1.05	1.17
The year.....	8,180	220	1,390	1.68	22.82

HOLSTON RIVER NEAR ROGERSVILLE, TENN.

LOCATION.—At highway bridge 1,600 feet downstream from Austin mill and dam, half a mile upstream from Virginia & Southwestern Railway bridge and United States Weather Bureau gage, and 3 miles south of Rogersville, Hawkins County.

DRAINAGE AREA.—3,060 square miles.

RECORDS AVAILABLE.—March 10, 1902 (daily-discharge record beginning January 1, 1904) to September 30, 1924.

GAGE.—Chain gage attached to steel highway bridge; installed October 26, 1923; read by Mrs. Ida Mae Woods. Gage used prior to October 26, 1923, was the United States Weather Bureau gage consisting of a vertical staff attached to pier of the Virginia & Southwestern Railway bridge half a mile downstream. New gage is set to an independent datum.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge at gage.

CHANNEL AND CONTROL.—Bed of stream composed of rock and coarse gravel. Right bank high; not subject to overflow. Left bank, subject to overflow at high stages. Control for low water consists of a rock shoal 500 feet downstream from gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.86 feet at 4 p. m. June 14 (discharge, 35,400 second-feet); minimum stage, 1.4 feet October 3-6, 9-18, 20-24 (discharge, 860 second-feet).

1904-1924: Maximum stage recorded, 20 feet at crest on January 29, 1918 (discharge, 70,900 second-feet); minimum stage, 1 foot October 23 to November 3, 1904 (discharge, 490 second-feet).

The United States Weather Bureau reports a stage of 38.4 feet on March 10, 1867 (discharge, not determined).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Some diurnal fluctuation during low water caused by operation of Austin mill power plant a short distance above gage and by several other power plants on tributary streams.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined between 1,000 and 7,000 second-feet; well defined between 7,000 and 35,000 second-feet and extended above. Gage read once daily to tenths prior to October 26 and twice daily to hundredths after that date. Daily discharge determined by applying mean daily gage height to rating table. Records fair prior to October 26, and good after that date.

COOPERATION.—Gage-height record prior to October 26 furnished by United States Weather Bureau.

Discharge measurements of Holston River near Rogersville, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 26	P. P. Livingston.....	0.64	1,390	Feb. 27	P. P. Livingston.....	3.70	8,000
Feb. 11	—do.....	1.76	3,250	May 27	D. B. Ventres.....	2.17	3,960

Daily discharge, in second-feet, of Holston River near Rogersville, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.-----	1,180	1,140	1,440	19,200	4,360	8,140	8,420	7,040	9,600	3,920	1,910	1,630
2.-----	1,020	1,200	1,630	20,000	3,920	7,580	7,300	7,860	7,300	3,100	1,910	1,770
3.-----	860	1,140	1,560	18,800	3,700	7,860	6,780	6,780	6,520	2,920	4,360	1,770
4.-----	860	1,200	1,500	20,000	3,700	7,300	6,000	5,760	5,520	2,920	4,360	1,770
5.-----	860	1,250	1,630	15,400	3,500	7,300	6,000	5,040	4,800	3,100	3,700	1,840
6.-----	860	1,140	3,100	9,600	3,920	16,500	6,260	4,580	4,140	3,100	2,740	1,560
7.-----	1,020	1,500	4,580	6,260	4,140	15,100	6,780	3,920	3,700	3,300	2,560	1,500
8.-----	1,020	1,630	3,500	5,760	3,700	10,500	6,260	3,700	3,500	6,000	3,100	1,500
9.-----	860	1,700	3,100	5,040	3,100	8,140	6,000	3,920	3,500	7,860	2,920	1,310
10.-----	860	1,560	3,100	4,360	2,920	7,040	5,760	5,760	3,500	5,520	2,560	1,500
11.-----	860	1,440	3,100	7,040	3,100	6,780	5,760	5,760	9,600	5,760	2,220	1,500
12.-----	860	1,370	2,740	19,600	3,100	6,000	6,000	10,200	15,100	4,580	2,220	1,310
13.-----	860	1,200	2,560	11,100	2,920	5,520	6,000	12,600	10,800	5,760	5,280	1,310
14.-----	860	1,200	2,740	8,140	2,920	5,040	5,520	11,100	20,000	9,000	3,920	1,310
15.-----	860	1,250	3,100	6,260	2,740	4,800	6,000	9,600	20,800	6,780	3,920	1,310
16.-----	860	1,140	2,920	6,520	2,920	4,580	5,760	9,000	11,100	4,800	2,920	1,250
17.-----	860	1,090	2,560	15,800	2,740	4,140	5,040	7,580	7,860	3,920	2,560	1,250
18.-----	860	1,090	2,560	14,400	4,580	4,140	8,140	6,260	6,260	3,920	3,300	1,310
19.-----	1,020	1,140	2,380	9,900	9,600	4,800	15,800	5,520	5,280	3,300	3,300	1,310
20.-----	860	995	2,220	7,580	15,100	5,760	12,300	5,040	4,360	3,100	2,560	1,370
21.-----	860	1,090	1,910	6,260	18,800	8,420	9,000	4,580	4,140	3,300	2,220	1,500
22.-----	860	1,090	1,910	5,040	13,000	12,300	7,040	5,280	3,700	3,100	2,060	2,740
23.-----	860	1,090	2,740	4,140	9,000	9,300	6,000	4,800	3,700	3,300	2,220	3,700
24.-----	860	1,200	3,920	4,580	7,040	7,300	5,040	4,360	6,520	3,500	1,910	3,300
25.-----	1,180	1,250	4,140	8,140	6,260	6,780	4,580	4,140	5,760	2,920	1,910	2,380
26.-----	1,520	1,560	3,500	9,300	5,760	6,260	4,360	4,140	4,360	2,560	3,100	1,910
27.-----	1,370	1,500	3,300	7,040	8,420	6,000	4,580	3,920	3,500	2,380	3,100	1,770
28.-----	1,370	1,440	5,760	5,520	9,300	6,260	5,040	4,360	3,100	2,220	2,560	1,840
29.-----	1,140	1,440	10,500	5,040	8,420	8,140	4,800	9,600	3,100	2,220	2,060	5,040
30.-----	1,140	1,370	8,700	4,800	-----	13,700	5,520	15,800	3,500	2,060	1,910	20,400
31.-----	1,090	-----	6,780	4,580	-----	9,900	-----	15,100	-----	2,060	1,770	-----

Monthly discharge of Holston River near Rogersville, Tenn., for the year ending September 30, 1924

[Drainage area, 3060 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.-----	1,520	860	981	0.321	0.37
November.-----	1,700	995	1,280	.418	.47
December.-----	10,500	1,440	3,390	1.11	1.28
January.-----	20,000	4,140	9,520	3.11	3.58
February.-----	18,800	2,740	5,960	1.95	2.10
March.-----	16,500	4,140	7,790	2.55	2.94
April.-----	15,800	4,360	6,590	2.15	2.40
May.-----	12,600	3,700	6,870	2.24	2.58
June.-----	20,800	3,100	6,820	2.23	2.49
July.-----	9,000	2,060	3,940	1.29	1.49
August.-----	5,280	1,770	2,810	.918	1.06
September.-----	20,400	1,250	2,470	.808	.90
The year.-----	20,800	860	4,880	1.59	21.66

MIDDLE FORK OF HOLSTON RIVER AT CHILHOWIE, VA.

LOCATION.—At steel highway bridge at Chilhowie, Smyth County, 20 miles above confluence with South Fork.

DRAINAGE AREA.—144 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 8, 1907, to December 31, 1909; November 2, 1920, to September 30, 1924.

GAGE.—Chain gage attached to upstream side of bridge; read by L. B. Ramsey. Datum unchanged since originally installed.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Practically solid rock bottom; banks low and subject to overflow during floods. Channel straight for about 100 feet above and 800 feet below gage. Control is solid rock shoal 50 feet downstream from gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.2 feet at 5.30 p. m. September 30 (discharge, 3,930 second-feet); minimum stage, 0.87 foot at 5.30 p. m. October 7 and 10 (discharge, 28 second-feet).

1907–1909; 1920–1924: Maximum stage recorded, 11.4 feet the evening of June 12, 1923 (discharge, 7,710 second-feet); minimum discharge, 25 second-feet November 22–29, 1908, and October 30 to November 4, 1909.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Operation of small mills upstream causes some diurnal fluctuation.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined between 40 and 5,000 second-feet; extended beyond these limits. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Middle Fork of Holston River at Chilhowie, Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 30	P. P. Livingston.....	0.99	47.7
Feb. 16	do.....	1.24	126
May 15	J. P. Clawson.....	2.08	451

Daily discharge, in second-feet, of Middle Fork of Holston River at Chilhowie, Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	51	51	42	1,480	166	438	438	290	415	139	112	112
2	56	47	47	482	181	438	350	330	330	139	132	126
3	61	53	51	650	166	271	271	330	271	163	237	126
4	47	38	47	750	181	438	241	290	218	139	146	112
5	45	47	51	800	196	905	310	252	188	126	119	76
6	34	49	51	460	188	960	330	188	170	126	132	61
7	29	42	47	482	166	800	370	166	160	1,120	132	66
8	47	42	47	438	166	438	330	160	174	1,660	119	85
9	36	32	82	415	174	438	310	218	290	392	106	88
10	30	42	126	415	163	415	310	241	350	271	100	85
11	49	42	116	392	149	290	290	271	528	241	94	74
12	47	45	100	370	139	248	271	241	905	196	112	94
13	56	42	106	392	119	271	252	233	1,020	196	139	88
14	47	38	109	650	126	290	237	233	905	225	146	71
15	61	40	71	905	119	290	271	330	438	225	119	63
16	63	34	100	1,480	119	271	350	350	370	181	132	56
17	69	42	66	960	126	271	438	330	271	119	112	66
18	61	49	66	850	252	271	505	225	225	61	112	82
19	56	42	63	460	310	310	575	210	196	100	132	94
20	51	42	69	438	1,020	438	482	241	160	100	126	85
21	49	47	82	438	1,020	482	438	248	139	112	152	116
22	61	47	100	415	550	438	415	233	139	119	181	163
23	61	51	119	370	271	438	370	241	181	126	135	152
24	66	47	146	214	350	438	241	210	271	112	225	129
25	51	49	132	350	310	392	188	196	184	106	271	100
26	53	56	139	330	248	438	203	160	142	94	252	82
27	61	47	415	271	290	528	210	170	146	85	188	74
28	61	42	650	233	350	1,240	222	188	119	94	166	575
29	51	47	460	192	392	1,660	237	528	146	88	152	1,660
30	42	47	330	188	-----	1,020	225	1,020	166	94	135	2,990
31	58	-----	750	181	-----	438	-----	550	-----	88	91	-----

Monthly discharge of Middle Fork of Holston River at Chilhowie, Va., for the year ending September 30, 1924

[Drainage area, 144 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	69	29	51.9	0.360	0.42
November	56	32	44.6	0.310	.35
December	750	42	154	1.07	1.23
January	1,480	181	531	3.69	4.25
February	1,020	119	276	1.92	2.07
March	1,660	248	516	3.58	4.13
April	575	188	323	2.24	2.50
May	1,020	160	286	1.99	2.29
June	1,020	119	307	2.13	2.38
July	1,660	85	227	1.58	1.82
August	271	91	145	1.01	1.16
September	2,990	56	258	1.79	2.00
The year	2,990	29	260	1.81	24.60

WATAUGA RIVER AT BUTLER, TENN.

LOCATION.—At county highway bridge at edge of town of Butler, Johnson County, 800 feet upstream from Virginia & Southwestern Railway bridge Roane Creek enters just above gage and Elk Creek enters 1 mile upstream.

DRAINAGE AREA.—427 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 14, 1900, to December 31, 1901; November 1, 1920, to September 30, 1924.

GAGE.—Chain gage attached to downstream side of bridge near right bank pier; read by Paul D. Yonce. Gage used 1900 and 1901 was a vertical staff spiked to a large tree on right bank 200 feet downstream from present site. Present gage set at independent datum.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Stream bed is smooth and uniform; composed of rock and gravel. Channel straight for 1,000 feet above and 500 feet below gage. Control is well-defined rock and gravel shoal about 300 feet below gage; not permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.85 feet at 7 a. m. January 11 (discharge, from extension of rating curve, 10,800 second-feet); minimum stage, 1.40 feet September 13 (discharge, 220 second-feet). 1900-1901; 1920-1924: Maximum stage recorded, 16.27 feet, old gage datum, May 21, 1901 (discharge not determined); minimum stage, 0.6 foot, old gage datum, February 23 and 24, 1901 (discharge, 120 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined below 3,500 second-feet; above that point it is defined by a measurement computed by Kutter's formula at a stage of 5.71 feet (6,480 second-feet) at crest of flood of June 13. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good below 3,500 second-feet; fair above that point.

Discharge measurements of Watauga River at Butler, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 20	P. P. Livingston-----	1.48	260	Feb. 22	P. P. Livingston-----	2.46	1,080
Feb. 14	-----do-----	1.88	505	Mar. 6	Warren Withee-----	3.88	3,000
22	-----do-----	2.51	1,120	May 19	J. P. Clawson-----	2.28	861

Daily discharge, in second-feet, of Watauga River at Butler, Tenn., for the year ending September 30, 1924

Date	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	264	248	395	1,360	530	1,030	1,190	1,420	735	389	323	347
2.....	270	236	329	1,480	605	1,250	1,080	1,190	735	389	359	359
3.....	264	231	305	2,380	568	1,310	828	1,030	605	495	460	389
4.....	258	281	311	2,220	568	1,190	780	875	605	460	395	329
5.....	258	395	530	1,540	875	2,700	1,250	780	530	460	365	305
6.....	258	377	690	690	828	4,120	2,080	735	495	530	329	281
7.....	253	371	495	780	648	2,220	1,480	690	530	2,700	377	275
8.....	253	335	495	735	568	1,480	1,250	828	460	1,610	395	287
9.....	258	287	495	648	495	1,250	1,250	1,080	460	975	329	299
10.....	253	264	460	605	568	1,080	1,480	780	460	780	293	258
11.....	236	275	428	8,100	530	875	1,670	1,480	1,140	648	305	242
12.....	248	258	395	2,380	568	875	1,610	2,700	828	568	428	231
13.....	231	253	389	1,540	495	828	1,360	2,080	735	605	495	220
14.....	226	253	460	1,140	495	780	1,190	1,610	4,310	605	780	242
15.....	226	242	428	925	495	690	1,190	1,480	1,940	495	460	236
16.....	226	253	428	4,310	460	605	1,030	1,300	1,190	428	365	236
17.....	226	253	460	3,560	495	735	925	1,080	875	428	648	242
18.....	226	248	428	2,080	1,420	1,080	1,540	975	735	428	690	264
19.....	253	242	395	1,300	1,300	1,030	2,080	875	605	395	495	248
20.....	275	242	395	1,140	1,670	1,360	1,540	780	568	568	428	287
21.....	253	242	428	780	1,540	2,700	1,250	828	495	460	389	828
22.....	231	236	395	530	1,080	1,610	1,080	780	530	395	365	568
23.....	236	248	495	690	875	1,250	925	690	648	428	389	460
24.....	383	371	605	735	828	1,190	780	648	530	460	1,080	323
25.....	341	305	530	925	780	1,030	735	828	495	395	1,540	281
26.....	353	281	495	690	828	1,190	780	605	428	377	828	530
27.....	305	275	530	460	925	1,190	925	690	460	335	495	735
28.....	281	254	1,300	530	875	1,140	828	780	428	395	395	2,860
29.....	270	268	1,190	568	1,080	1,480	828	828	395	377	377	4,700
30.....	258	347	828	568	-----	1,670	1,080	975	460	317	341	4,310
31.....	264	-----	690	568	-----	1,300	-----	828	-----	305	389	-----

Monthly discharge of Watauga River at Butler, Tenn., for the year ending September 30, 1924

[Drainage area, 427 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	383	226	262	0.614	0.71
November.....	395	231	279	.653	.73
December.....	1,300	305	522	1.22	1.41
January.....	8,100	460	1,480	3.47	4.00
February.....	1,670	460	793	1.85	2.00
March.....	4,120	605	1,360	3.18	3.67
April.....	2,080	735	1,200	2.81	3.14
May.....	2,700	605	1,040	2.44	2.81
June.....	4,310	395	780	1.83	2.04
July.....	2,700	305	587	1.37	1.58
August.....	1,540	293	494	1.16	1.34
September.....	4,700	220	706	1.65	1.84
The year.....	8,100	220	793	1.86	25.27

DOE RIVER AT VALLEY FORGE, TENN.

LOCATION.—At concrete highway bridge, 50 feet downstream from East Tennessee & Western North Carolina Railroad bridge, one-fourth mile from Valley Forge, Carter County, and 4 miles above Elizabethton and mouth of river. Laurel Creek enters at Hampton, 4 miles upstream.

DRAINAGE AREA.—132 square miles (measured on topographic maps).

RECORDS AVAILABLE.—December 11, 1911, to October 23, 1916; November 5, 1920, to September 30, 1924.

GAGE.—Chain gage attached to parapet wall on downstream side of concrete highway bridge; read by R. M. Snyder. Original gage used 1911–1916 was a chain gage attached to ends of ties on downstream side of railroad bridge, 50 feet upstream. Present gage is set to same datum as original gage but reads lower due to slope between the two points.

DISCHARGE MEASUREMENTS.—Made from either highway or railroad bridge or by wading. Both bridges are at a pronounced angle with the stream making corrections for angle necessary.

CHANNEL AND CONTROL.—Bed of stream is smooth and uniform, composed principally of coarse gravel. Channel straight for 500 feet above and below gage. Right bank is low and subject to overflow at stage of about 5 feet; left bank high and not subject to overflow. Control is gravel riffle 200 feet downstream from gage; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.7 feet during flood of June 13, determined by levels from high-water mark (discharge, from Kutter's formula, 5,040 second-feet); minimum stage, 0.92 foot November 22 (discharge, 72 second-feet).

1911–1916; 1920–1924: Maximum stage recorded, that of June 13, 1924; minimum discharge, 35 second-feet November 24, 1914.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined below 800 second-feet; extended above that point on basis of a computed discharge by Kutter's formula at a stage of 6.7 feet (discharge, 5,040 second-feet) and checked by a logarithmic extension of rating curve. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Doe River at Valley Forge, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 18	P. P. Livingston.....	0.94	84	Mar. 7	Warren Withee.....	2.34	614
Feb. 14	do	1.30	179	May 19	J. P. Clawson.....	1.62	285
23	do	1.56	274	June 15	P. P. Livingston.....	2.27	618

Daily discharge, in second-feet, of Doe River at Valley Forge, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	101	80	110	485	168	325	325	368	248	159	108	108
2.....	97	80	95	590	209	368	285	325	248	153	101	115
3.....	97	78	90	800	177	390	248	285	220	171	135	150
4.....	92	82	88	562	165	345	248	223	202	223	106	118
5.....	88	108	153	390	265	1,040	265	230	183	168	103	108
6.....	84	101	159	285	248	970	285	212	171	192	101	99
7.....	88	135	130	285	192	650	265	209	150	325	230	95
8.....	88	97	125	223	180	435	248	212	150	368	223	90
9.....	88	86	132	206	206	368	248	265	159	248	132	115
10.....	88	76	128	192	202	325	305	248	206	216	118	92
11.....	80	82	144	1,040	171	265	345	535	265	198	144	92
12.....	80	82	132	485	192	285	368	800	265	183	192	86
13.....	80	78	122	368	156	265	325	590	265	230	132	80
14.....	80	78	159	285	165	248	285	485	1,780	186	118	82
15.....	76	78	132	230	165	230	285	435	650	162	108	86
16.....	76	78	180	740	165	226	248	390	390	147	106	82
17.....	76	76	174	740	168	265	230	325	305	147	325	78
18.....	80	76	147	485	680	345	435	305	230	156	248	80
19.....	84	80	135	390	460	325	510	265	216	198	162	80
20.....	90	76	132	325	510	368	412	230	206	180	132	97
21.....	80	76	142	202	412	800	325	265	285	153	130	180
22.....	76	72	153	202	345	485	285	230	220	141	130	202
23.....	82	106	164	216	325	390	248	202	248	180	118	223
24.....	115	138	174	212	265	285	230	216	212	186	209	144
25.....	112	99	153	265	230	325	220	230	192	144	206	115
26.....	132	88	141	248	265	325	285	212	174	128	305	120
27.....	103	101	198	99	305	305	230	248	186	122	177	125
28.....	90	90	390	174	305	285	248	265	162	112	150	535
29.....	86	88	325	174	325	460	248	305	165	120	128	740
30.....	82	135	248	186	-----	412	345	325	180	118	122	1,040
31.....	95	-----	285	165	-----	345	-----	305	-----	108	115	-----

NOTE.—Gage not read Dec. 21-23; discharge interpolated.

Monthly discharge of Doe River at Valley Forge, Tenn., for the year ending September 30, 1924

[Drainage area, 132 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	132	76	89.2	0.676	0.78
November.....	138	72	90.0	.682	.76
December.....	390	88	163	1.23	1.42
January.....	1,040	99	363	2.75	3.17
February.....	680	156	263	1.99	2.15
March.....	1,040	226	402	3.05	3.52
April.....	510	220	294	2.23	2.49
May.....	800	202	314	2.38	2.74
June.....	1,780	150	284	2.15	2.40
July.....	368	108	178	1.35	1.56
August.....	325	101	155	1.17	1.35
September.....	1,040	78	179	1.36	1.52
The year.....	1,780	72	231	1.75	23.86

NORTH FORK OF HOLSTON RIVER NEAR SALTVILLE, VA.

LOCATION.—At Cedar Branch Bridge, $1\frac{1}{2}$ miles northeast of Saltville, Smyth County, and 3 miles upstream from mouth of Sturgeon Creek.

DRAINAGE AREA.—228 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 2, 1920, to September 30, 1924, at present site; June 11, 1907, to November 12, 1908, at Mattheson alkali works $1\frac{1}{2}$ miles downstream.

GAGE.—Chain gage bolted to upstream side of bridge, installed November 2, 1920; read by Homer Pendergrass.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading. Section at bridge is rather rough and irregular.

CHANNEL AND CONTROL.—Bed of stream rough and rocky. Right bank high and not subject to overflow; left bank above bridge low and subject to overflow. Control is at boulder rapids about 50 feet downstream from gage; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.1 feet at 8 a. m. September 30 (discharge, 5,120 second-feet); minimum stage, 1.42 feet at 8 a. m. October 5 and 5 p. m. November 2 (discharge, 36 second-feet).

1907–1908; 1920–1924: Maximum stage recorded, 13.97 feet at 2 p. m. February 3, 1923 (discharge, 8,220 second-feet); minimum discharge, 33 second-feet October 5, 1908.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Possibly some regulation from mills above station during extreme low water.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve well defined between 200 and 3,500 second-feet; fairly well defined below and extended above. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good between 200 and 3,500 second-feet; fair below and probably fair above.

Discharge measurements of North Fork of Holston River near Saltville, Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 31	P. P. Livingston	1.53	47.9
Feb. 13	do.	2.80	316
May 15	J. P. Clawson	4.38	925

Daily discharge, in second-feet, of North Fork of Holston River near Saltville, Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	50	48	114	3,600	292	495	975	336	690	152	111	67
2-----	50	42	114	1,510	292	570	975	366	570	142	123	78
3-----	39	42	114	1,260	278	530	735	495	570	152	142	102
4-----	45	53	112	1,380	278	495	610	428	396	152	186	114
5-----	38	66	198	1,380	292	495	610	396	336	142	198	123
6-----	41	111	306	825	306	1,030	610	366	306	132	174	123
7-----	39	123	292	530	264	875	610	278	278	132	152	114
8-----	40	123	292	366	223	780	650	250	264	142	163	114
9-----	38	106	396	321	223	780	650	321	292	174	236	97
10-----	46	64	366	306	321	530	530	366	460	210	152	60
11-----	45	60	336	366	321	530	495	366	610	236	142	64
12-----	45	58	321	366	264	460	460	735	1,030	210	210	74
13-----	53	55	321	396	223	321	351	1,080	975	366	292	91
14-----	42	64	321	366	198	306	351	735	1,380	396	250	62
15-----	41	77	306	366	250	292	321	875	650	336	223	77
16-----	42	66	186	530	250	292	278	825	530	292	186	87
17-----	40	63	174	1,080	264	321	278	735	396	264	152	87
18-----	40	66	174	780	366	495	495	610	396	236	142	68
19-----	41	64	152	610	570	530	925	530	366	198	132	89
20-----	40	57	132	460	2,200	495	690	396	366	132	132	111
21-----	40	50	142	366	1,580	690	570	366	236	123	112	306
22-----	39	47	123	875	780	690	495	366	174	132	99	1,700
23-----	47	73	152	460	650	735	428	321	186	132	109	875
24-----	62	102	142	366	460	530	351	292	198	163	132	780
25-----	54	163	264	610	495	530	336	366	186	142	142	495
26-----	57	142	292	650	460	530	351	366	174	142	142	321
27-----	54	123	321	396	428	570	321	351	174	152	152	292
28-----	107	123	1,140	366	428	530	336	336	163	132	152	530
29-----	89	102	1,200	351	530	3,040	336	351	142	132	132	3,200
30-----	71	114	530	306	-----	1,700	336	1,380	152	104	132	3,440
31-----	45	-----	1,030	321	-----	1,030	-----	925	-----	104	92	-----

Monthly discharge of North Fork of Holston River near Saltville, Va., for the year ending September 30, 1924

[Drainage area, 228 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	107	38	49.0	0.215	0.25
November-----	163	42	81.6	.358	.40
December-----	1,200	112	325	1.43	1.65
January-----	3,600	306	705	3.09	3.56
February-----	2,200	198	465	2.04	2.20
March-----	3,040	292	684	3.00	3.46
April-----	975	278	515	2.26	2.52
May-----	1,380	250	513	2.25	2.59
June-----	1,380	142	422	1.85	2.06
July-----	396	104	182	.798	.92
August-----	292	92	158	.693	.80
September-----	3,440	60	458	2.01	2.24
The year-----	3,600	38	379	1.66	22.65

NORTH FORK OF HOLSTON RIVER AT MENDOTA, VA.

LOCATION.—At highway bridge one-fourth mile east of railway station at Mendota, Washington County, three-fourths mile below Virginia & Southwestern Railway bridge and Abrams Creek.

DRAINAGE AREA.—500 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1920, to September 30, 1924.

GAGE.—Chain gage attached to downstream side of steel highway bridge, installed October 31, 1920; read by Opie Hendricks. Previous to that date the record from the United States Weather Bureau's gage at Barker's mill $1\frac{1}{4}$ miles downstream, was used.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Channel straight for about 1,000 feet above and below gage. Right bank high and not subject to overflow; left bank subject to overflow covering a wide stretch of cultivated land. Bed of river smooth, uniform, and composed of gravel and small boulders. Control for low water is gravel shoal at head of small island 400 feet below gage; high-water control is at Barker's mill dam $1\frac{1}{4}$ miles downstream.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.6 feet at 8.30 a. m. January 1 (discharge, 8,960 second-feet); minimum stage recorded, 1.55 feet at 8.30 a. m. October 5 (discharge, 58 second-feet).

1920-1924: Maximum stage recorded, 14.4 feet at 4.15 p. m. February 3, 1923 (discharge, 19,600 second-feet); minimum discharge, same as for 1924.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Several small mills are located above gage but their effect is believed to be negligible.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve well defined between 100 and 2,500 second-feet; fairly well defined between 2,500 and 16,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good below 2,500 second-feet; fair above that point.

Discharge measurements of North Fork of Holston River at Mendota, Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 29	P. P. Livingston.....	1.80	132	Feb. 19	P. P. Livingston.....	3.61	1,180
Nov. 23	do	1.75	112	May 17	J. P. Clawson.....	3.86	1,270

Daily discharge, in second-feet, of North Fork of Holston River at Mendota, Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	100	118	370	8,220	580	1,040	1,520	1,120	1,440	370	220	154
2.....	97	106	307	3,430	552	1,040	1,520	1,360	1,200	325	232	176
3.....	82	88	272	3,790	525	1,040	1,280	1,200	970	348	272	236
4.....	82	103	248	4,580	525	970	1,120	865	765	289	395	204
5.....	73	224	370	2,860	580	1,040	1,040	700	670	280	325	190
6.....	73	248	1,040	1,280	640	2,640	970	610	580	280	268	168
7.....	88	348	900	970	552	1,960	970	525	525	640	240	151
8.....	79	325	798	865	498	1,520	1,040	498	470	700	260	154
9.....	73	268	830	732	445	1,120	1,040	1,040	445	610	445	151
10.....	82	216	900	525	420	970	900	830	552	580	276	154
11.....	79	196	700	3,430	395	970	798	1,280	2,050	700	248	144
12.....	79	186	610	2,240	420	830	732	1,960	1,690	580	445	137
13.....	82	158	470	1,360	395	700	640	2,640	1,520	1,600	552	137
14.....	79	151	525	970	348	640	420	1,780	2,860	1,780	470	144
15.....	76	140	498	798	370	640	420	1,870	1,600	970	325	137
16.....	76	130	445	1,520	420	552	525	1,780	1,280	700	280	130
17.....	79	130	420	3,180	348	552	470	1,360	900	525	272	127
18.....	70	127	395	1,960	798	1,120	1,440	1,040	700	470	256	137
19.....	79	124	348	1,440	1,040	970	2,050	830	580	395	224	144
20.....	91	127	316	1,040	5,430	1,040	1,600	732	470	445	208	140
21.....	91	130	316	798	3,550	2,240	1,120	798	420	395	216	302
22.....	73	127	298	470	2,050	1,360	900	700	525	395	216	1,600
23.....	85	134	552	1,440	1,360	1,280	732	640	525	370	208	970
24.....	130	248	830	610	970	1,120	610	525	732	348	196	610
25.....	162	325	670	1,440	865	1,040	525	580	640	325	220	370
26.....	130	307	552	1,360	830	1,040	610	525	445	289	190	298
27.....	124	264	552	970	970	1,120	798	525	370	252	208	248
28.....	137	232	2,440	970	1,120	970	765	552	370	240	216	204
29.....	121	212	2,440	670	1,120	4,180	700	865	348	224	193	5,000
30.....	121	264	1,280	610	-----	3,760	765	4,440	445	224	190	7,170
31.....	112	-----	2,970	640	-----	1,960	-----	798	-----	196	172	-----

Monthly discharge of North Fork of Holston River at Mendota, Va., for the year ending September 30, 1924

[Drainage area, 500 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	162	70	93.7	0.187	0.22
November.....	348	88	192	.384	.43
December.....	2,970	248	763	1.53	1.76
January.....	8,220	470	1,780	3.56	4.10
February.....	5,430	348	970	1.94	2.09
March.....	4,180	552	1,340	2.68	3.09
April.....	2,050	420	934	1.87	2.09
May.....	4,440	498	1,130	2.26	2.61
June.....	2,860	348	870	1.74	1.94
July.....	1,780	196	511	1.02	1.18
August.....	552	172	272	.544	.63
September.....	7,170	127	663	1.33	1.48
The year.....	8,220	70	793	1.59	21.62

LITTLE TENNESSEE RIVER AT FRANKLIN, N. C.

LOCATION.—At highway bridge one-fourth mile northeast of Southern Railway station at Franklin, Macon County, and 1 mile below mouth of Cullasaja River.

DRAINAGE AREA.—297 square miles (measured on topographic map).

RECORDS AVAILABLE.—June 12, 1907, to July 12, 1910; February 9, 1921, to September 30, 1924.

GAGE.—Chain gage attached to upstream side of highway bridge; read by H. H. Mashburn.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge.

CHANNEL AND CONTROL.—Channel above and below gage is slightly curved. Bed of stream composed of rock, sand, and gravel; fairly permanent. Banks are steep but extreme floods will overflow both banks and cultivated flats. Control is formed by a boulder riffle just below bridge and another 800 feet below. The remains of an old fish trap about one-fourth mile below will probably have no effect on stage-discharge relation.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.25 feet at 8 a. m. January 11 (discharge, 5,200 second-feet); minimum stage recorded, 0.96 foot at 8 a. m. September 12, (discharge, 183 second-feet).

1907-1910; 1921-1924: Maximum stage recorded, 10 feet at 7 a. m. June 4, 1909 (discharge, 7,950 second-feet); minimum stage, that of September 12, 1924.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—A few small plants on tributaries cause diurnal fluctuations at low stages.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Little Tennessee River at Franklin, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 27	L. J. Hall.....	1.11	227	July 26	L. J. Hall.....	1.58	421
Feb. 28	D. B. Ventres.....	2.98	1,350	Sept. 29	do.....	2.61	1,040
Mar. 13	do.....	2.42	920	30	do.....	2.47	910
May 20	do.....	2.20	747				

Daily discharge, in second-feet, of Little Tennessee River at Franklin, N. C., for the year ending September 30, 1924

Day	Oct.	Nov	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	295	260	570	792	825	1,100	760	1,180	760	420	465	225
2.....	242	242	465	1,180	792	1,030	728	1,030	890	515	420	242
3.....	242	260	442	2,060	760	890	728	960	760	570	515	335
4.....	260	792	570	1,720	728	890	792	890	760	465	420	295
5.....	278	695	1,560	1,180	1,180	2,150	1,640	860	695	542	375	278
6.....	260	398	1,100	890	890	2,060	1,250	890	662	1,400	375	242
7.....	260	335	825	890	792	1,480	1,030	825	630	1,320	355	195
8.....	260	335	662	760	760	1,250	1,030	890	630	825	335	242
9.....	242	355	600	728	792	1,100	890	825	600	960	335	315
10.....	242	335	515	728	728	1,100	960	960	600	728	315	242
11.....	242	315	515	4,150	695	1,030	1,100	1,560	728	600	295	225
12.....	225	315	490	1,890	695	960	1,180	1,180	600	600	490	210
13.....	260	295	490	1,400	662	890	1,030	1,100	600	1,180	355	242
14.....	242	295	825	1,180	630	960	960	960	630	792	315	225
15.....	225	278	600	1,030	630	890	1,180	960	542	570	278	278
16.....	260	295	890	3,230	600	825	1,100	890	630	542	295	242
17.....	242	278	792	2,690	600	825	1,030	825	515	515	278	242
18.....	260	278	662	1,800	662	825	3,500	792	515	490	295	210
19.....	600	278	600	1,400	825	825	2,510	792	490	490	260	242
20.....	398	260	728	890	1,640	960	1,640	728	490	465	295	1,480
21.....	295	260	662	1,100	1,100	1,250	1,480	760	465	420	278	570
22.....	315	278	600	890	890	1,030	1,320	695	442	398	278	2,510
23.....	295	442	1,030	890	825	890	1,180	662	442	398	355	825
24.....	315	398	825	1,100	792	890	1,100	662	465	442	335	542
25.....	260	335	695	1,320	760	825	1,030	695	442	398	278	570
26.....	242	335	662	1,100	1,030	825	1,030	630	442	398	295	1,030
27.....	225	398	630	960	1,890	792	1,030	1,320	442	355	260	890
28.....	242	355	630	890	1,480	760	960	960	420	335	260	792
29.....	242	355	600	890	1,180	825	890	960	662	398	260	960
30.....	242	630	570	890	-----	960	1,400	890	490	398	260	890
31.....	355	-----	570	825	-----	792	-----	825	-----	375	225	-----

NOTE.—Discharge Nov. 4 determined from mean daily gage height obtained from graph constructed on basis of two daily gage readings.

Monthly discharge of Little Tennessee River at Franklin, N. C., for the year ending September 30, 1924

[Drainage area, 297 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	600	225	276	0.929	1.07
November.....	792	242	356	1.20	1.34
December.....	1,560	442	690	2.32	2.68
January.....	4,150	728	1,340	4.51	5.20
February.....	1,860	600	891	3.00	3.24
March.....	2,150	760	1,030	3.47	4.00
April.....	3,500	728	1,220	4.11	4.59
May.....	1,560	630	909	3.06	3.53
June.....	890	420	581	1.96	2.19
July.....	1,400	335	590	1.99	2.29
August.....	515	225	327	1.10	1.27
September.....	2,510	195	526	1.77	1.98
The year.....	4,150	195	727	2.45	33.38

LITTLE TENNESSEE RIVER AT JUDSON, N. C.

LOCATION.—One-fourth mile downstream from concrete highway bridge at Judson railroad station, Swain County, half a mile below mouth of Yalaka Creek, and 3 miles below mouth of Nantahala River.

DRAINAGE AREA.—668 square miles (measured by Knoxville Power Co. on topographic maps).

RECORDS AVAILABLE.—April 16, 1912, to September 30, 1924. June 25, 1896, to September 13, 1913, at old station at Southern Railway bridge 1 mile downstream from present site.

GAGE.—Vertical staff attached to big sycamore tree on right bank; read by an employee of Knoxville Power Co.

DISCHARGE MEASUREMENTS.—Made from concrete highway bridge one-fourth mile above gage.

CHANNEL AND CONTROL.—Channel straight for several hundred feet above and below gage. Bed at bridge consists of gravel and boulders and is rough; at gage, sand; probably shifting. Banks sloping but high and subject to overflow only during extremely high stages. Control formed by a riffle one-fourth mile below gage; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 22.7 feet at 7 a. m. January 11 (discharge, 7,900 second-feet); minimum stage, 17 feet at 5 p. m. October 17, 18, 21, and 22 (discharge, 335 second-feet).

1896–1912 (old station): Maximum stage recorded, 16.19 feet morning reading of February 28, 1902 (discharge, 40,800 second-feet, revised determination); minimum stage, 2.1 feet October 13 to November 1 and December 20, 1904 (discharge, 265 second-feet).

1913–1924: Maximum mean daily discharge, 30,000 second-feet March 4, 1917; minimum mean daily discharge, occurred in 1924.

ICE.—Stage-discharge relation probably not affected by ice.

REGULATION.—Very slight diurnal fluctuations during low stages from small plants on tributaries.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve fairly well defined below 3,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except as stated in footnote to daily-discharge table. Records good.

COOPERATION.—Gage-height record furnished by Knoxville Power Co., a subsidiary of the Aluminum Co. of America.

Discharge measurements of Little Tennessee River at Judson, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
Oct. 25	L. J. Hall.....	<i>Feet</i> 17.44	<i>Sec.-ft.</i> 631	May 2	L. J. Hall.....	<i>Feet</i> 19.18	<i>Sec.-ft.</i> 2,160
Mar. 1	D. B. Ventres.....	19.22	2,370	17	D. B. Ventres.....	18.84	1,950
14	do.....	19.02	2,170				

Daily discharge, in second-feet, of Little Tennessee River at Judson, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	600	465	705	2,560	1,750	2,320	1,750	2,560	1,860	1,010	1,010	600
2.....	530	465	670	3,210	1,330	2,320	1,750	2,320	1,860	1,010	930	740
3.....	498	530	670	4,960	1,430	2,440	1,860	2,080	1,750	1,100	1,330	740
4.....	498	740	970	4,490	1,640	3,340	1,860	1,970	1,750	1,100	890	635
5.....	465	1,530	2,560	1,860	1,530	5,460	1,860	1,860	1,640	1,140	852	565
6.....	446	1,330	2,440	2,320	1,530	4,960	1,860	1,860	1,640	1,640	852	530
7.....	465	1,140	1,640	1,640	1,530	3,340	1,970	1,860	1,430	2,080	815	530
8.....	426	970	1,140	1,750	1,530	2,560	2,080	1,860	1,430	1,330	815	530
9.....	394	890	890	1,750	1,530	2,320	1,970	1,750	1,430	1,330	740	778
10.....	387	815	815	1,640	1,530	2,320	2,200	2,320	1,430	1,230	705	670
11.....	361	815	890	7,310	1,530	2,200	2,560	3,210	1,430	1,230	705	530
12.....	374	705	740	4,340	1,530	2,080	2,690	3,210	1,430	1,280	852	498
13.....	361	600	670	2,820	1,430	2,080	2,440	2,950	1,530	2,320	815	498
14.....	374	530	1,640	1,750	1,430	2,080	2,200	2,440	1,530	1,750	705	498
15.....	387	530	1,330	1,640	1,430	1,970	2,200	2,320	1,530	1,280	670	530
16.....	368	498	1,640	4,500	1,330	1,860	2,080	2,080	1,430	1,140	670	530
17.....	348	530	1,530	4,800	1,430	1,860	3,670	1,970	1,430	1,100	705	530
18.....	368	530	1,430	3,340	1,430	1,970	6,930	1,860	1,330	1,050	670	530
19.....	670	465	1,330	2,950	1,640	1,970	5,460	1,750	1,230	1,050	635	530
20.....	600	498	1,280	2,560	2,560	1,970	4,490	1,750	1,180	970	600	1,220
21.....	368	465	1,230	2,320	2,560	2,200	4,040	1,640	1,100	890	600	2,690
22.....	348	530	1,180	2,200	2,440	2,320	3,620	1,640	1,050	890	600	3,620
23.....	387	970	1,970	1,970	2,080	2,320	3,080	1,530	1,050	852	705	1,970
24.....	400	1,230	1,750	2,560	1,860	2,320	2,320	1,530	1,050	970	815	1,140
25.....	465	890	1,530	3,210	1,860	2,200	2,320	1,530	1,010	890	670	1,010
26.....	465	852	1,330	2,440	2,690	2,080	2,200	1,750	1,010	890	705	1,430
27.....	498	815	1,330	2,200	3,480	1,860	2,200	2,560	1,010	815	635	1,640
28.....	465	705	1,750	2,080	2,560	1,750	2,080	3,080	1,010	778	565	1,330
29.....	413	778	1,640	1,860	2,440	1,860	2,080	2,820	1,010	890	530	1,640
30.....	498	815	1,430	1,860	-----	2,200	2,320	2,320	1,140	890	600	1,860
31.....	530	-----	1,640	1,750	-----	1,970	-----	1,970	-----	852	565	-----

NOTE.—Discharge Jan. 16, Apr. 17, and Sept. 20 determined by approximate integration of graph constructed on basis of two daily gage readings.

Monthly discharge of Little Tennessee River at Judson, N. C., for the year ending September 30, 1924

[Drainage area, 668 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	670	348	444	0.665	0.77
November.....	1,530	465	754	1.13	1.26
December.....	2,560	670	1,350	2.02	2.33
January.....	7,310	1,640	2,790	4.18	4.82
February.....	3,480	1,330	1,830	2.74	2.95
March.....	5,460	1,750	2,400	3.59	4.14
April.....	6,930	1,750	2,670	4.00	4.46
May.....	3,210	1,530	2,140	3.20	3.69
June.....	1,860	1,010	1,360	2.04	2.28
July.....	2,320	778	1,150	1.72	1.98
August.....	1,330	530	741	1.11	1.28
September.....	3,620	498	1,020	1.53	1.71
The year.....	7,310	348	1,550	2.32	31.68

LITTLE TENNESSEE RIVER AT CALDERWOOD, TENN.

LOCATION.—At pump house of Knoxville Power Co. at Calderwood, Blount County, 8 miles below North Carolina-Tennessee State line, 10 miles below mouth of Cheoah River and dam and power house of Aluminum Co. of America.

DRAINAGE AREA.—1,870 square miles (measured on topographic maps).

RECORDS AVAILABLE.—January 1, 1912, to December 31, 1918; January 1, 1921, to January 7, 1922; and April 1, 1922, to September 30, 1924.

GAGE.—After February 5, a 60-day Au recorder in concrete well on right bank 125 feet downstream from pump house, and set to same datum as the pump-house gage; inspected by W. C. Penn. From October 1 to February 5 a vertical staff gage in three sections located at the pump house was used; for description of this and previous gages see Water-Supply Paper 563.

DISCHARGE MEASUREMENTS.—Made from cable 200 feet upstream from gage or from a boat during low water.

CHANNEL AND CONTROL.—Stream bed smooth and uniform; composed of coarse gravel. Both banks subject to overflow above stages of about 10 feet. Control is rock and gravel shoal about 800 feet downstream from gage; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 744.4 feet at 5 p. m. January 11 (discharge, 22,600 second-feet); minimum stage, 739.2 feet at 5 p. m. October 16 (discharge, 390 second-feet, regulated flow).

1912-1918; 1921-1924: Maximum mean daily discharge recorded, 70,000 second-feet March 4, 1917; minimum discharge, 364 second-feet at 8 a. m. November 20, 1922 (regulated flow).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Considerable regulation of flow caused by operation at dam and power house 10 miles upstream.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 1,000 and 25,000 second-feet; extended beyond these limits. Staff gage read to tenths twice daily prior to February 5; thereafter water-stage recorder was used, which operated satisfactorily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good prior to February 5; excellent since that date.

Discharge measurements of Little Tennessee River at Calderwood, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Dec. 3	P. P. Livingston	740.14	2,050	Mar. 31	P. P. Livingston	741.25	5,390
3	do	40.20	2,170	31	do	41.09	4,790
Jan. 11	do	44.30	22,100	May. 1	D. B. Ventres	42.10	8,620
12	do	42.50	11,000	1	do	42.12	8,680
30	do	41.02	4,750	26	J. P. Clawson	41.03	4,610
30	do	41.05	4,680	July 29	do	40.26	2,500
Feb. 5	do	41.14	5,120	Sept. 17	King and Clawson	39.86	1,390
Mar. 5	do	43.22	15,900	18	do	39.80	1,270
6	do	43.24	15,700	24	J. P. Clawson	40.46	2,980
6	do	42.92	13,300				

Daily discharge, in second-feet, of Little Tennessee River at Calderwood, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	2,300	1,600	1,710	5,990	4,020	5,800	4,680	10,400	5,600	2,850	2,330	1,990
2.....	2,430	1,390	1,820	8,170	4,020	5,800	4,510	7,710	5,220	2,770	2,430	2,180
3.....	2,430	1,290	1,940	14,400	4,020	5,220	4,480	6,820	4,860	2,590	2,040	2,400
4.....	2,560	1,600	2,060	14,400	4,020	5,040	4,510	6,610	4,860	2,590	2,280	2,060
5.....	2,560	1,940	5,220	8,640	4,510	10,900	5,600	5,600	4,480	2,960	2,300	2,010
6.....	2,180	1,940	6,820	5,600	4,480	13,800	5,990	5,220	4,180	3,740	2,300	1,990
7.....	2,180	1,820	4,020	4,860	4,480	9,360	5,220	5,220	4,180	8,640	2,850	1,920
8.....	1,940	1,710	3,100	4,860	4,410	7,480	4,860	5,410	4,150	5,990	2,400	1,940
9.....	1,490	1,820	2,690	4,340	3,960	6,610	4,680	5,600	4,120	4,410	2,380	1,710
10.....	1,290	1,940	2,690	4,020	3,400	6,820	5,600	5,600	4,510	4,080	1,940	1,640
11.....	1,010	1,820	2,820	16,200	3,960	5,800	6,610	8,880	5,410	3,830	2,130	1,670
12.....	920	1,940	2,690	11,600	4,150	5,410	7,710	9,860	4,510	3,960	2,360	1,690
13.....	1,010	1,710	2,430	7,710	3,700	5,040	6,610	8,400	4,080	6,610	2,260	1,670
14.....	620	1,390	3,250	5,990	3,100	5,220	5,990	7,260	4,150	5,800	2,380	1,560
15.....	920	1,390	3,250	5,220	2,960	4,860	5,800	6,610	4,020	4,120	2,040	1,390
16.....	500	1,390	3,100	9,120	2,960	4,510	5,600	5,990	4,050	3,640	2,060	1,350
17.....	840	1,390	3,700	13,800	3,100	4,680	5,220	5,410	4,080	3,610	2,080	1,370
18.....	920	1,600	3,400	8,640	3,400	4,860	13,500	5,040	3,990	3,100	2,130	1,450
19.....	920	1,390	3,100	7,260	3,700	4,860	15,000	4,860	3,800	2,910	2,060	1,390
20.....	840	1,390	2,960	6,400	9,360	5,220	10,400	4,860	3,580	2,800	1,990	1,490
21.....	1,200	1,390	2,960	5,600	8,880	7,940	8,640	4,860	3,550	2,960	1,990	1,850
22.....	1,100	1,820	3,400	4,510	5,800	6,610	7,940	4,860	3,220	2,960	2,010	3,190
23.....	760	2,180	4,510	5,220	5,800	5,990	7,260	4,860	3,460	2,990	1,990	5,410
24.....	1,820	1,600	3,860	5,220	5,220	5,600	6,610	4,680	2,800	2,930	1,940	2,690
25.....	1,290	1,390	3,700	7,710	5,040	5,220	6,400	4,680	2,640	2,850	2,130	2,280
26.....	1,200	1,390	3,700	5,220	5,040	5,040	5,990	4,680	2,590	2,690	2,060	2,720
27.....	1,100	1,710	4,510	4,510	6,820	4,860	6,200	4,200	2,850	2,460	1,960	3,610
28.....	1,100	1,600	4,340	4,180	7,040	4,860	5,990	10,600	2,740	2,640	1,990	2,930
29.....	1,200	1,490	3,860	3,700	6,400	5,220	5,600	9,360	2,690	2,260	1,960	2,400
30.....	1,290	1,710	3,860	3,700	-----	6,400	9,610	7,260	3,310	2,230	1,940	2,080
31.....	1,600	-----	3,860	3,700	-----	5,040	-----	5,990	-----	2,330	1,990	-----

NOTE.—Recorder not operating May 25; discharge interpolated.

Monthly discharge of Little Tennessee River at Calderwood, Tenn., for the year ending September 30, 1924

[Drainage area, 1,870 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	2,560	500	1,400	0.749	0.86
November.....	2,180	1,290	1,620	.866	.97
December.....	6,820	1,710	3,400	1.82	2.09
January.....	16,200	3,700	7,110	3.80	4.38
February.....	9,360	2,960	4,750	2.54	2.74
March.....	13,800	4,510	6,130	3.28	3.78
April.....	15,000	4,480	6,760	3.61	4.03
May.....	10,600	4,680	6,430	3.44	3.97
June.....	5,600	2,590	3,920	2.10	2.34
July.....	8,640	2,230	3,560	1.90	2.19
August.....	2,850	1,940	2,150	1.15	1.33
September.....	5,410	1,350	2,130	1.14	1.27
The year.....	16,200	500	4,120	2.20	29.95

LITTLE TENNESSEE RIVER AT MCGHEE, TENN.

LOCATION.—At Louisville & Nashville Railroad bridge, half a mile south of railroad station at McGhee, Monroe County, and half a mile downstream from mouth of Tellico River.

DRAINAGE AREA.—2,470 square miles (measured on topographic maps).

RECORDS AVAILABLE.—January 1, 1905, to December 31, 1913, and October 1, 1918, to September 30, 1924. Gage-height records have been obtained by United States Weather Bureau since November 29, 1904.

GAGE.—Staff gage on pier at left end of first through truss span from right bank; installed October 1, 1923, by United States Weather Bureau, datum unchanged. Previous gage was chain type bolted to ties on upstream side of bridge. Readings on staff gage began October 1, 1923, and were discontinued on the chain gage October 6, 1923. During the period October 1 to 6 both gages were read and readings checked exactly. The chain gage was removed about March 15, 1924.

DISCHARGE MEASUREMENTS.—Made from downstream lower chord members of the 9-span bridge.

CHANNEL AND CONTROL.—Banks slope up to cultivated land and are subject to overflow above a gage height of 12 feet, but all water passes under the bridge and its trestle approaches. Bed is rocky; probably permanent. Control practically permanent although flood stages on Tennessee River may affect gage readings at times.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.7 feet at 7 a. m. April 19 (discharge, from extension of rating curve, 31,200 second-feet); minimum stage, 2.5 feet at 7 a. m. October 15 (discharge, 1,000 second-feet).

1905–1913; 1918–1924: Maximum stage recorded, 30.5 feet at noon April 2, 1920 (discharge, not determined); minimum stage, 2.4 feet (present datum) December 9, 1918 (caused by the closing of Cheoah power dam) and October 2, 1919 (discharge, 720 second-feet.)

The United States Weather Bureau reports a stage of 39 feet March, 1867 (discharge not determined).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Large power development of Knoxville Power Co., 30 miles upstream causes some diurnal fluctuation at gage.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 1,300 and 22,000 second-feet; extended beyond these limits. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except for low stages when discharge for individual days may be somewhat in error because of regulation at power plant above. Also records above 22,000 second-feet may be in error owing to extension of rating curve not being applicable.

Discharge measurements of Little Tennessee River at McGhee, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 25	Ventres and Charlton..	3.23	1,900	Mar. 7	P. P. Livingston	7.70	12,900
Dec. 11	J. P. Clawson	3.92	3,240	May 3	D. B. Ventres	6.05	8,270
Jan. 17	D. B. Ventres	9.76	18,200	30	do	6.91	10,900
Feb. 23	do	5.49	6,860				

Daily discharge, in second-feet, of Little Tennessee River at McGhee, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	2,050	1,740	2,050	6,430	5,450	7,450	5,690	21,100	7,450	4,060	3,200	2,050
2.....	2,790	1,600	1,890	8,230	5,450	6,680	5,690	11,900	6,930	3,200	2,790	2,220
3.....	2,590	1,600	1,890	17,900	5,450	6,430	5,450	8,770	6,080	3,410	3,410	3,200
4.....	2,790	1,600	2,050	28,000	5,210	5,930	4,970	7,450	6,180	2,990	2,400	2,400
5.....	2,790	2,050	2,590	14,000	4,510	6,180	7,190	6,930	5,930	2,790	3,200	2,220
6.....	2,790	2,050	10,200	9,310	4,510	29,200	8,500	6,430	5,690	4,740	2,400	2,200
7.....	2,220	2,050	4,060	5,690	4,740	14,000	6,930	6,180	4,970	8,500	2,590	2,220
8.....	2,050	1,890	2,220	5,690	4,280	11,000	5,930	6,930	4,740	8,230	3,410	2,220
9.....	2,220	1,890	2,590	5,450	4,280	8,500	5,690	7,710	4,280	6,930	2,790	2,400
10.....	2,050	1,890	3,410	4,970	4,060	8,770	7,450	7,190	5,450	4,970	2,590	2,220
11.....	2,050	1,890	3,840	9,870	4,060	8,230	7,450	9,590	7,970	4,970	2,220	2,220
12.....	1,600	1,890	3,410	17,900	4,510	6,930	10,200	14,000	6,180	4,740	2,220	2,050
13.....	1,600	1,890	2,590	10,700	4,510	6,180	9,590	10,200	5,450	9,040	2,590	2,050
14.....	1,600	1,600	4,970	8,230	3,840	5,930	7,710	8,770	4,970	15,000	2,790	1,890
15.....	1,000	1,740	5,210	6,930	3,840	5,930	7,190	8,500	4,970	7,190	2,590	1,890
16.....	1,470	1,600	4,740	7,190	3,620	5,690	7,190	7,450	4,740	4,970	2,590	1,890
17.....	1,470	1,600	5,210	27,200	3,620	5,450	6,180	6,930	4,740	4,740	2,590	1,600
18.....	1,600	1,600	4,280	13,400	3,840	5,930	13,100	6,430	4,740	4,740	2,590	1,600
19.....	1,600	1,470	4,060	9,590	4,740	5,930	31,200	6,180	4,510	3,840	2,590	1,600
20.....	1,600	1,470	3,620	8,230	7,450	6,180	16,900	5,930	4,280	3,840	2,220	1,600
21.....	1,600	1,470	3,620	7,710	14,300	11,000	10,200	5,690	4,060	3,840	2,220	2,050
22.....	1,600	1,470	4,060	5,690	14,000	9,870	9,590	5,450	4,060	3,620	2,220	3,840
23.....	1,470	2,050	5,450	5,690	7,190	7,450	8,770	5,450	4,060	3,410	2,400	8,770
24.....	1,890	2,590	5,690	5,690	5,930	6,930	7,190	4,740	3,840	4,060	2,400	4,510
25.....	1,890	1,740	4,740	9,590	5,690	6,180	6,680	5,690	3,200	3,410	2,400	3,410
26.....	1,470	1,600	4,060	8,230	5,450	5,930	4,060	4,740	3,200	3,410	2,220	2,400
27.....	1,470	1,740	4,280	7,190	7,710	5,930	4,280	5,930	3,840	3,200	2,400	3,620
28.....	1,340	1,890	4,970	5,690	10,700	5,690	6,930	11,900	3,200	2,990	2,220	3,840
29.....	1,340	1,600	5,690	5,690	8,230	5,450	6,180	17,900	2,990	2,790	2,220	3,410
30.....	1,470	1,600	5,210	5,210	-----	7,970	6,930	11,000	3,620	2,790	2,220	5,690
31.....	1,470	-----	4,510	5,690	-----	6,430	-----	8,770	-----	2,790	2,220	-----

Monthly discharge of Little Tennessee River at McGhee, Tenn., for the year ending September 30, 1924

[Drainage area, 2,470 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	2,790	1,000	1,840	0.745	0.86
November.....	2,590	1,470	1,760	.713	.80
December.....	10,200	1,890	4,100	1.66	1.91
January.....	28,000	4,970	9,580	3.88	4.47
February.....	14,300	3,620	5,900	2.39	2.58
March.....	29,200	5,450	7,910	3.20	3.69
April.....	31,200	4,060	8,370	3.39	3.78
May.....	21,100	4,740	8,450	3.42	3.94
June.....	7,970	2,990	4,900	1.98	2.21
July.....	15,000	2,790	4,810	1.95	2.25
August.....	3,840	2,220	2,560	1.04	1.20
September.....	8,770	1,600	2,780	1.13	1.26
The year.....	31,200	1,000	5,250	2.13	28.95

CULLASAJA CREEK AT CULLASAJA, N. C.

LOCATION.—At wooden highway bridge at Cullasaja, Macon County, on road from Franklin to Cullasaja Falls, 1 mile below mouth of Ellijay Creek, and $3\frac{1}{2}$ miles above junction of Cullasaja Creek and Little Tennessee River.

DRAINAGE AREA.—87 square miles (measured on topographic map).

RECORDS AVAILABLE.—June 13, 1907, to December 31, 1909; February 12, 1921, to September 30, 1924.

GAGE.—Enameled staff bolted to face of rock bluff on right bank 50 feet upstream from bridge; read by J. L. Clark.

DISCHARGE MEASUREMENTS.—Made from wooden wagon bridge.

CHANNEL AND CONTROL.—Channel straight for 200 feet above and below gage.

Bed of stream composed of rock and boulders; permanent. Banks high and not subject to overflow. Control is a solid rock ledge and boulders forming a riffle just below bridge; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.6 feet during early morning January 11 (discharge, 3,060 second-feet); minimum stage, 0.78 foot at several readings September 8 and 12-14 (discharge, 67 second-feet).

1907-1909; 1921-1924: Maximum stage recorded, 10.1 feet at 7 a. m. May 23, 1923 (discharge, 3,740 second-feet); minimum stage, 0.66 foot at 7 a. m. November 29, 1922 (discharge, 58 second-feet). A stage of 17.2 feet occurred during the flood in July, 1916, determined by leveling to high-water mark (discharge not determined).

ICE.—No ice effect.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 78 and 770 second-feet; extended above that point. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except as stated in footnote to daily-discharge table. Records good October to July; fair August and September.

Discharge measurements of Cullasaja Creek at Cullasaja, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 27	L. J. Hall.....	0.90	77	Mar. 19	D. B. Ventres.....	1.84	228
Feb. 28	D. B. Ventres.....	2.42	352	July 26	W. E. Hall and L. J. Hall	1.24	111
Mar. 13	—do.....	2.04	276	Sept. 30	L. J. Hall.....	2.30	308

Daily discharge, in second-feet, of Cullasaja Creek at Cullasaja, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	83	83	181	200	250	284	230	322	220	112	126	88
2-----	78	83	148	350	240	296	200	284	181	133	119	83
3-----	78	78	140	680	220	272	200	284	210	181	119	88
4-----	78	550	190	408	220	261	272	261	240	164	112	83
5-----	78	378	408	309	408	824	635	240	181	133	106	78
6-----	78	200	322	210	284	550	408	250	181	990	100	74
7-----	78	140	240	210	250	440	336	240	164	510	100	69
8-----	78	133	210	250	240	378	296	240	172	408	94	69
9-----	78	126	190	210	250	350	272	230	181	322	94	94
10-----	78	119	181	240	220	322	296	284	172	240	94	74
11-----	78	112	172	1,640	210	309	350	550	181	210	119	69
12-----	78	106	148	635	200	272	350	378	172	190	106	67
13-----	78	106	164	474	181	272	309	322	164	474	94	67
14-----	78	100	261	408	190	261	284	296	156	296	94	69
15-----	78	94	190	336	181	250	408	284	148	200	94	69
16-----	74	88	322	1,440	172	240	336	261	140	181	83	69
17-----	74	88	240	815	172	250	309	250	140	164	83	69
18-----	74	88	220	550	190	250	1,070	230	133	156	83	69
19-----	164	88	200	440	309	250	725	220	133	148	83	69
20-----	100	88	250	378	635	378	550	210	133	148	83	677
21-----	94	88	220	336	309	378	440	210	126	140	83	250
22-----	88	83	284	350	261	309	408	200	126	133	88	378
23-----	83	140	309	336	250	296	378	190	119	133	94	140
24-----	78	106	230	378	240	272	350	190	119	126	88	94
25-----	78	100	220	408	230	261	309	181	126	126	88	88
26-----	78	100	200	322	336	240	296	181	126	119	106	190
27-----	78	106	190	309	440	230	296	474	119	119	83	272
28-----	78	94	190	284	350	230	272	322	112	112	78	140
29-----	78	106	181	261	322	296	261	296	119	106	74	230
30-----	88	378	164	261	-----	296	440	250	126	133	74	284
31-----	94	-----	172	240	-----	280	-----	220	-----	133	83	-----

NOTE.—Discharge Nov. 4, Jan. 11, 16, Mar. 5, Apr. 18, July 6, and Sept. 20 determined by approximate integration of graph constructed on basis of three daily gage readings.

Monthly discharge of Cullasaja Creek at Cullasaja, N. C., for the year ending September 30, 1924

[Drainage area, 87 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	164	74	83.1	0.955	1.10
November-----	550	78	138	1.59	1.77
December-----	408	140	217	2.49	2.87
January-----	1,640	200	441	5.07	5.84
February-----	635	172	268	3.08	3.32
March-----	824	230	314	3.61	4.16
April-----	1,070	200	376	4.32	4.82
May-----	550	181	269	3.09	3.56
June-----	240	112	154	1.77	1.98
July-----	990	106	217	2.49	2.87
August-----	126	74	94.4	1.09	1.26
September-----	677	67	139	1.60	1.78
The year-----	1,640	67	226	2.60	35.33

NANTAHALA RIVER AT ALMOND, N. C.

LOCATION.—At Almond, Swain County, 1,000 feet downstream from railroad station and concrete highway bridge and one-fourth mile above junction of Nantahala and Little Tennessee Rivers.

DRAINAGE AREA.—177 square miles (measured on topographic map).

RECORDS AVAILABLE.—April 16, 1912, to November 30, 1917; January 31, 1921, to September 30, 1924.

GAGE.—Enamel-faced staff gage attached to a large blackgum tree on right bank near rear of J. H. Coffey's store; read by Mrs. Coffey.

DISCHARGE MEASUREMENTS.—Made from concrete highway bridge 1,000 feet above gage, opposite railroad station.

CHANNEL AND CONTROL.—Channel straight for several hundred feet above and below gage. Bed consists of gravel and boulders; fairly permanent. Banks slope gradually to river at gage and converge to high, steep banks 600 feet downstream. Control formed by a rocky riffle which breaks off sharply 500 feet below gage. Though the Nantahala joins Tennessee River only one-fourth mile below gage, the fall in that distance is so great that there is little chance of backwater.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.2 feet, crest of flood during early morning of January 11 (discharge, 4,800 second-feet); minimum stage, 0.78 foot at 5. p. m. November 21 (discharge, 143 second-feet).

1912-1917; 1921-1924: Maximum stage recorded, 7.75 feet at 1.30 p. m. January 21, 1922 (discharge, 15,400 second-feet); crest-stage record not available for March 4, 1917, for which mean discharge was 15,240 second-feet. Minimum stage, 0.7 foot at 5. p. m. November 29, 1922 (discharge, 115 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed December 5. Rating curves used before and after change fairly well defined below 3,000 second-feet; extended above that point. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except as stated in footnote to daily-discharge table. Records fair.

Discharge measurements of Nantahala River at Almond, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 25	L. J. Hall.....	0.83	168	Mar. 15	D. B. Ventres.....	1.70	626
Dec. 20	do.....	1.28	324	May 1	L. J. Hall.....	1.84	721
Feb. 29	D. B. Ventres.....	1.84	772	May 16	D. B. Ventres.....	1.74	676

Daily discharge, in second-feet, of Nantahala River at Almond, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	204	174	240	1,280	590	710	590	750	630	305	291	166
2-----	194	162	217	1,530	550	710	550	670	630	300	247	235
3-----	190	158	208	2,800	550	630	515	630	550	296	515	239
4-----	186	358	280	1,960	515	630	590	590	550	350	255	176
5-----	182	318	950	1,280	710	1,940	835	550	515	325	239	166
6-----	182	226	630	970	550	1,600	710	550	480	404	255	159
7-----	182	212	424	880	550	1,170	630	550	466	374	278	156
8-----	178	186	362	710	515	970	590	630	466	356	239	152
9-----	174	170	350	670	466	880	590	550	459	350	231	345
10-----	174	170	310	630	480	880	670	710	515	320	223	184
11-----	174	170	340	2,360	452	790	750	1,170	670	310	208	159
12-----	166	166	296	1,280	480	710	750	1,020	515	368	310	152
13-----	166	166	282	1,020	445	670	670	835	466	880	227	145
14-----	166	158	459	880	431	710	630	790	550	515	212	152
15-----	166	158	340	790	410	630	670	750	452	404	201	159
16-----	166	158	452	1,590	410	590	630	670	466	350	201	152
17-----	174	154	410	1,280	410	590	590	630	410	330	231	152
18-----	182	158	362	1,020	480	630	1,960	590	398	310	201	152
19-----	302	154	335	925	670	630	1,400	550	374	300	184	159
20-----	250	154	335	835	1,530	710	1,070	515	362	305	180	564
21-----	186	146	325	750	925	970	925	550	350	278	180	340
22-----	194	150	310	710	750	790	835	515	340	273	180	1,330
23-----	186	376	710	670	670	710	750	480	340	255	215	466
24-----	174	255	480	790	630	710	710	480	340	286	212	296
25-----	166	186	438	925	590	630	670	515	340	255	180	273
26-----	166	190	398	750	630	630	630	452	330	286	184	417
27-----	162	312	398	670	1,070	590	670	925	404	247	173	410
28-----	166	208	790	630	880	590	590	970	315	239	170	350
29-----	158	204	710	630	790	670	550	835	310	291	166	480
30-----	174	307	550	670	-----	710	1,020	790	424	231	166	480
31-----	240	-----	750	590	-----	590	-----	670	-----	223	162	-----

NOTE.—Discharge Jan. 11, 16, Mar. 5, Apr. 18, Sept. 20, and 21, determined by approximate integration of graph constructed on basis of three daily gage readings.

Monthly discharge of Nantahala River at Almond, N. C., for the year ending September 30, 1924

[Drainage area, 177 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	302	158	185	1.05	1.21
November-----	376	146	202	1.14	1.27
December-----	950	208	434	2.45	2.82
January-----	2,800	590	1,050	5.93	6.84
February-----	1,530	410	625	3.53	3.81
March-----	1,940	590	786	4.44	5.12
April-----	1,960	515	758	4.28	4.78
May-----	1,170	452	674	3.81	4.39
June-----	670	310	447	2.53	2.82
July-----	880	223	333	1.88	2.17
August-----	515	162	223	1.26	1.45
September-----	1,330	145	292	1.65	1.84
The year-----	2,800	145	501	2.83	38.52

TUCKASEGEE RIVER NEAR EAST LAPORT, N. C.

LOCATION.—At steel highway bridge on road between Sylva and East Lapor, 1 mile west of East Lapor, Jackson County, $1\frac{1}{2}$ miles upstream from mouth of Wayehutta Creek and $7\frac{1}{2}$ miles southeast of Sylva.

DRAINAGE AREA.—200 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 27, 1907, to December 31, 1909; December 21, 1920, to September 30, 1924.

GAGE.—Chain gage attached to downstream handrail of bridge; read by W. D. Wike.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Channel straight for 500 feet above and below gage. Bed is rock, sand, and gravel; cross section slightly shifting. Right bank high but is overflowed beyond end of bridge at extremely high stages; left bank high and not subject to overflow. Control formed by a series of solid rock riffles several hundred feet below gage; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11 feet at crest of flood at 5 p. m. July 6 (discharge from extension of rating curve, 10,200 second-feet); minimum stage, 1.22 feet at 5 p. m. October 27 (discharge, 157 second-feet).

1907-1909; 1920-1924: Maximum stage recorded, that of July 6, 1924; minimum stage, 0.99 foot November 29 and 30, 1922 (discharge, 103 second-feet).

ICE.—None during year.

REGULATION.—Practically none.

ACCURACY.—Stage-discharge relation changed on June 16 and August 16 owing to rock being blasted from new highway into control. Rating curve used until June 15 well defined between 150 and 2,000 second-feet; extended above that point. Other two curves poorly defined and merged with first curve at high water. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table, except as stated in footnote to daily-discharge table. Records good up to 2,000 second-feet until June 15; records fair above that stage and after June 15.

Discharge measurements of Tuckasegee River near East Lapor, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 28	L. J. Hall.....	1.21	158	Mar. 8	D. B. Ventres	2.68	746
Jan. 17	do.....	4.05	1,610	May 21	do.....	2.13	506
Jan. 17	do.....	3.96	1,530	July 17	L. J. Hall.....	2.36	506
Mar. 2	D. B. Ventres	2.38	608				

Daily discharge, in second-feet, of Tuckasegee River near East Laport, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	239	239	360	504	620	644	549	800	549	410	428	219
2.....	271	239	360	800	620	746	549	746	549	445	1,040	415
3.....	255	379	341	1,560	1,410	644	549	746	526	570	428	350
4.....	255	1,480	341	855	1,340	644	572	694	596	660	410	260
5.....	255	596	1,140	694	1,270	1,400	1,080	644	549	1,220	410	232
6.....	239	379	800	504	746	1,270	910	644	504	6,420	392	219
7.....	239	360	644	694	694	910	800	620	504	4,640	392	206
8.....	239	305	504	596	644	855	644	644	482	1,830	375	206
9.....	239	288	461	526	644	800	694	596	596	1,040	308	232
10.....	239	288	419	504	694	746	746	694	1,480	980	340	219
11.....	239	288	855	3,600	694	746	965	1,410	1,200	760	340	206
12.....	239	271	855	1,710	694	694	965	910	1,140	815	445	206
13.....	224	288	549	1,270	440	644	746	800	1,080	815	410	194
14.....	224	271	461	965	504	694	855	746	549	760	340	182
15.....	224	271	419	746	504	644	855	746	549	760	340	182
16.....	224	271	440	2,990	461	596	746	694	525	760	260	182
17.....	255	255	461	1,560	596	596	746	694	485	615	206	194
18.....	440	239	482	1,200	549	596	2,100	746	465	615	206	171
19.....	461	239	482	1,080	1,520	620	1,410	694	465	570	206	171
20.....	440	239	482	965	1,020	746	1,140	694	445	570	206	953
21.....	255	239	461	800	855	855	965	549	445	570	232	980
22.....	255	239	461	694	694	694	855	549	410	485	232	920
23.....	239	419	910	800	694	694	855	440	392	485	246	398
24.....	239	239	526	1,020	644	644	800	549	392	392	206	380
25.....	255	255	482	910	596	644	800	549	410	445	206	380
26.....	239	271	461	526	746	504	694	419	428	410	219	380
27.....	157	271	461	800	694	644	746	1,270	445	428	246	380
28.....	271	271	504	746	694	620	694	1,020	760	428	246	865
29.....	239	208	419	644	694	596	1,200	694	710	410	232	810
30.....	239	965	419	644	-----	644	855	620	428	410	232	660
31.....	239	-----	419	644	-----	596	-----	620	-----	485	232	-----

NOTE.—Discharge Jan. 11, 16, Feb. 19, Mar. 5, Apr. 18, July 5-8, and Sept. 20 determined by approximate integration of graph constructed on basis of one or two daily gage readings. Discharge Aug. 16-22 determined from gage heights estimated by observer.

Monthly discharge of Tuckasegee River near East Laport, N. C., for the year ending September 30, 1924

[Drainage area, 200 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	461	157	260	1.30	1.50
November.....	1,480	208	352	1.76	1.96
December.....	1,140	341	528	2.64	3.04
January.....	3,600	504	1,020	5.10	5.88
February.....	1,520	440	758	3.79	4.09
March.....	1,400	504	722	3.61	4.16
April.....	2,100	549	870	4.35	4.85
May.....	1,410	419	717	3.58	4.13
June.....	1,480	392	602	3.01	3.36
July.....	6,420	392	974	4.87	5.62
August.....	1,040	206	323	1.62	1.87
September.....	980	171	378	1.89	2.11
The year.....	6,420	157	625	3.12	42.57

TUCKASEGEE RIVER AT BRYSON, N. C.

LOCATION.—At highway bridge in Bryson, Swain County, on main street between Southern Railway station and county courthouse, half a mile below mouth of Deep Creek.

DRAINAGE AREA.—673 square miles (measured by Knoxville Power Co. on topographic maps).

RECORDS AVAILABLE.—November 7, 1897, to September 30, 1924.

GAGE.—A vertical rod attached to first pier from left bank; read by E. H. Corpening.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed at gage is sand, gravel, and boulders; fairly permanent. Banks are high and not subject to overflow beyond ends of bridge. Control is a riffle of rock, gravel, and sand half a mile downstream; practically permanent.

EXTREMES OF DISCHARGE.—Maximum mean daily stage during year, 4.7 feet January 11 (discharge, 6,920 second-feet); minimum mean daily stage, 1 foot October 15, 17, and 18 (discharge, 435 second-feet).

1898–1924: Maximum stage recorded, 11 feet (old Geological Survey gage) March 19, 1899 (discharge, 38,600 second-feet); minimum discharge, 300 second-feet several days in September, October, and November, 1899, and August 25, 1902.

ICE.—Stage-discharge relation seldom if ever affected by ice.

REGULATION.—Slight diurnal fluctuations caused by small plants upstream during low stages; probably not enough to affect accuracy of records during periods when record is based on two daily rod readings.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 300 and 20,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table.

COOPERATION.—Gage-height record furnished by Knoxville Power Co.

Discharge measurements of Tuckasegee River at Bryson, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 26	L. J. Hall.....	1.05	499	May 1	L. J. Hall.....	2.48	2,530
Feb. 15	.....do.....	1.54	1,080	19	D. B. Ventres.....	1.87	1,570
27	D. B. Ventres.....	2.19	2,200	July 16	L. J. Hall.....	1.60	1,180
Mar. 12	.....do.....	1.99	1,800				

Daily discharge, in second-feet, of Tuckasegee River at Bryson, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	638	677	932	2, 180	1, 310	1, 610	1, 690	2, 430	1, 690	895	962	565
2-----	586	661	716	2, 770	1, 460	1, 610	1, 610	2, 010	1, 610	895	856	715
3-----	573	664	876	4, 640	1, 460	1, 540	1, 460	1, 930	1, 540	895	1, 100	1, 030
4-----	560	664	904	3, 310	1, 460	1, 460	1, 610	1, 610	1, 460	895	895	690
5-----	535	1, 310	2, 820	2, 430	2, 010	3, 870	2, 030	1, 610	1, 460	1, 170	895	640
6-----	510	807	2, 070	1, 690	1, 540	3, 490	1, 530	1, 610	1, 460	3, 130	882	515
7-----	485	660	1, 380	1, 610	1, 380	2, 430	1, 770	1, 610	1, 460	3, 490	843	504
8-----	485	651	1, 100	1, 460	1, 310	2, 010	1, 610	1, 610	1, 460	2, 430	817	540
9-----	472	612	1, 030	1, 460	1, 310	2, 090	1, 690	1, 660	1, 460	1, 610	778	830
10-----	460	586	960	1, 310	1, 310	1, 930	1, 850	2, 010	1, 610	1, 460	728	628
11-----	460	560	960	6, 920	1, 240	1, 770	2, 090	2, 950	1, 930	1, 460	690	492
12-----	460	535	904	2, 950	1, 170	1, 770	2, 010	2, 600	1, 610	1, 610	715	492
13-----	460	560	932	2, 430	1, 170	1, 690	1, 930	2, 260	1, 460	2, 260	752	515
14-----	460	548	1, 310	2, 010	1, 100	1, 540	1, 930	2, 180	1, 460	2, 010	856	504
15-----	435	535	1, 380	1, 770	1, 030	1, 460	2, 090	1, 930	1, 380	1, 540	715	552
16-----	460	535	1, 380	4, 250	1, 030	1, 460	1, 930	1, 770	1, 380	1, 240	615	492
17-----	435	510	1, 380	3, 680	1, 030	1, 460	1, 850	1, 690	1, 310	1, 100	678	492
18-----	435	560	1, 240	2, 430	1, 460	1, 610	5, 640	1, 610	1, 240	1, 030	640	492
19-----	599	535	1, 100	2, 180	1, 540	1, 460	3, 680	1, 540	1, 170	1, 030	615	469
20-----	807	548	1, 100	1, 930	5, 240	1, 690	2, 770	1, 540	1, 100	1, 030	565	492
21-----	638	535	1, 030	1, 850	2, 430	2, 180	2, 430	1, 460	1, 030	962	552	1, 460
22-----	535	664	960	1, 770	1, 850	1, 770	2, 430	1, 460	1, 030	895	540	1, 930
23-----	510	1, 030	1, 830	1, 690	1, 690	1, 610	2, 090	1, 460	1, 030	895	515	1, 810
24-----	485	1, 100	1, 680	1, 690	1, 690	1, 610	1, 930	1, 460	962	962	715	895
25-----	485	664	1, 460	2, 180	1, 690	1, 610	1, 770	1, 610	1, 030	895	615	791
26-----	485	918	1, 100	1, 610	1, 690	1, 540	1, 770	1, 610	1, 030	895	615	1, 460
27-----	485	612	960	1, 460	2, 050	1, 460	1, 770	2, 260	1, 100	804	552	1, 310
28-----	485	586	1, 310	1, 460	1, 770	1, 460	1, 690	2, 770	1, 030	791	515	1, 170
29-----	522	638	1, 030	1, 460	1, 690	2, 430	1, 610	2, 430	1, 030	869	515	1, 610
30-----	599	1, 460	1, 310	1, 460	-----	2, 430	2, 950	2, 010	1, 100	791	515	1, 930
31-----	664	-----	1, 460	1, 460	-----	1, 850	-----	1, 930	-----	869	590	-----

Monthly discharge of Tuckasegee River at Bryson, N. C., for the year ending September 30, 1924

[Drainage area, 673 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	807	435	523	0. 777	0. 90
November-----	1, 460	510	698	1. 04	1. 16
December-----	2, 820	716	1, 250	1. 86	2. 14
January-----	6, 920	1, 310	2, 310	3. 43	3. 95
February-----	5, 240	1, 030	1, 630	2. 42	2. 61
March-----	3, 870	1, 460	1, 870	2. 78	3. 20
April-----	5, 640	1, 460	2, 120	3. 15	3. 51
May-----	2, 950	1, 460	1, 890	2. 81	3. 24
June-----	1, 930	962	1, 320	1. 96	2. 19
July-----	3, 490	791	1, 320	1. 96	2. 26
August-----	1, 100	515	704	1. 05	1. 21
September-----	1, 930	469	850	1. 26	1. 41
The year-----	6, 920	435	1, 370	2. 04	27. 78

OCONALUFTY RIVER AT CHEROKEE, N. C.

LOCATION.—At cable footbridge one-fourth mile upstream from Cherokee Indian School in Cherokee Indian Reservation, three-fourths mile upstream from Cherokee, Swain County, 2 miles upstream from mouth of Soco Creek, and 7 miles upstream from junction of Oconalufly and Tuckasegee Rivers at Elo, N. C.

DRAINAGE AREA.—133 square miles (measured on topographic maps).

RECORDS AVAILABLE.—January 27, 1921, to September 30, 1924, at present site; August 27, 1907, to June 30, 1908, at site just below mouth of Soco Creek, 2 miles downstream from present gage.

GAGE.—Enamel-faced vertical staff attached to a large maple tree on right bank 6 feet below bridge; read by J. L. Walters.

DISCHARGE MEASUREMENTS.—Made from cable footbridge just above gage.

CHANNEL AND CONTROL.—Channel straight for several hundred feet above and below gage. Banks steep and about 11 feet high. Wide cultivated bottoms on both banks are overflowed during extreme flood stages. Bed gravel and small boulders; probably permanent. A rocky riffle 400 feet below gage forms low-water control. 1,000 feet downstream the hills shut in to form bluffs on both banks which will control extreme flood stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7 feet at 12.30 p. m. January 3 (discharge, 3,520 second-feet); minimum stage, 3.60 feet several periods in October and November (discharge, 92 second-feet).

1911–1924: Maximum stage recorded, 9.5 feet at 1 p. m. January 21, 1922 (discharge not determined); minimum stage, 3.55 feet various days in October and November, 1922 (discharge, 78 second-feet).

ICE.—No ice effect.

REGULATION.—A small dam one-fourth mile upstream which operates lighting system for Indian school has very little storage but may cause sufficient diurnal fluctuation during low stages to affect accuracy of daily means.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 100 and 1,500 second-feet; above that point curve is an extension. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except as stated in footnote to daily-discharge table. Records good.

Discharge measurements of Oconalufly River at Cherokee, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 26	L. J. Hall.....	3.65	108	May 1	L. J. Hall.....	4.86	807
Jan. 17	----do.....	4.64	609	18	D. B. Ventres.....	4.35	428
Mar. 1	D. B. Ventres.....	4.21	348	July 16	L. J. Hall.....	3.94	221
10	----do.....	4.47	513				

Daily discharge, in second-feet, of Oconalufy River at Cherokee, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	124	92	210	725	311	367	475	765	475	240	192	142
2	124	92	160	725	300	403	415	610	475	225	192	240
3	124	92	142	2, 140	300	355	403	540	415	200	168	328
4	124	328	180	1, 280	290	355	415	508	403	225	210	192
5	118	210	808	850	445	1, 300	475	475	385	210	168	160
6	108	160	610	685	344	940	445	415	355	250	160	153
7	108	160	355	540	311	685	445	415	344	240	168	142
8	108	142	290	475	300	610	415	475	328	240	168	124
9	108	124	260	415	275	540	415	415	475	225	160	290
10	108	108	250	385	275	540	575	540	445	240	168	168
11	108	108	250	1, 280	250	475	685	985	445	240	142	142
12	92	108	210	808	250	415	685	765	475	225	311	142
13	92	108	200	610	250	415	540	648	415	385	168	124
14	92	108	385	540	250	385	540	610	385	300	160	124
15	92	98	260	475	225	367	475	575	355	260	153	124
16	92	92	328	895	240	344	445	540	367	225	142	124
17	92	92	290	765	250	344	415	475	355	225	142	124
18	92	92	260	610	415	385	2, 380	415	328	200	160	124
19	131	92	225	540	1, 080	355	1, 130	415	311	216	142	124
20	118	92	225	475	2, 030	445	850	415	300	200	124	300
21	108	92	225	445	765	540	725	415	275	192	124	210
22	108	92	225	415	610	445	610	385	250	180	124	765
23	108	300	648	385	540	415	540	355	250	192	131	355
24	108	180	403	475	475	403	508	367	290	192	131	260
25	108	131	344	475	445	367	475	445	275	168	124	225
26	108	131	311	403	475	367	445	385	250	168	311	275
27	108	153	344	367	475	403	475	765	260	160	180	240
28	108	124	685	355	415	403	415	808	250	160	131	275
29	108	142	403	328	415	1, 280	403	685	260	160	124	403
30	108	260	355	344	-----	685	1, 030	610	300	160	131	648
31	108	-----	540	311	-----	540	-----	540	-----	192	160	-----

NOTE.—Discharge Jan. 3, 11, Feb. 20, Mar. 5, and Apr. 18 determined by approximate integration of graph constructed on basis of two daily gage readings.

Monthly discharge of Oconalufy River at Cherokee, N. C., for the year ending September 30, 1924

[Drainage area, 133 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	131	92	108	0.812	0.94
November	328	92	137	1.03	1.15
December	808	142	335	2.52	2.90
January	2, 140	311	630	4.74	5.46
February	2, 030	225	448	3.37	3.64
March	1, 300	344	512	3.85	4.44
April	2, 380	403	608	4.57	5.10
May	985	355	541	4.07	4.69
June	475	250	350	2.63	2.93
July	385	160	216	1.62	1.87
August	311	124	164	1.23	1.42
September	765	124	235	1.77	1.98
The year	2, 380	92	357	2.68	36.52

CHEOAH RIVER AT JOHNSON, N. C.

LOCATION.—One mile above store at Johnson, Graham County, 2 miles below mouth of Santeetlah Creek, 4 miles above Yellow Creek, and 1 mile downstream from site of proposed dam for development No. 2 of Aluminum Co. of America.

DRAINAGE AREA.—175 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 1, 1912, to December 31, 1918 (collected by the Aluminum Co. of America). December 29, 1920, to September 30, 1924.

GAGE.—Vertical staff fastened to large sycamore tree on right bank 100 feet upstream from W. O. Williams' house; installed December 29, 1920; read by W. O. Williams.

DISCHARGE MEASUREMENTS.—Made from cable located three-fourths of a mile downstream from gage. Velocities are somewhat irregular owing to large boulders above, but it is the best section available.

CHANNEL AND CONTROL.—Bed of river is practically solid rock. Control formed by a series of rapids below gage; probably permanent. Left bank high and wooded; right bank is overflowed at a stage of about 8 feet for a distance of 50 feet back from river channel.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.9 feet at 6 a. m. July 13 (discharge from extension of rating curve, 4,350 second-feet); minimum stage, 0.86 foot October 16-18, and November 22 (discharge, 95 second-feet).

1912-1918; 1920-1924: Maximum mean daily stage recorded, 7.25 feet March 4, 1917, referred to gage used by Aluminum Co. of America (discharge from extension of rating curve, 11,400 second-feet); minimum discharge, that of October 16-18 and November 22, 1923.

ICE.—Ice forms on rocks during severe cold spells but seldom is sufficient to affect stage-discharge relation.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined below 1,500 second-feet; extension above that point to 2,200 second-feet is based on a relationship curve between present gage and the one used 1914-1918, for which a rating curve was developed by the Aluminum Co. of America. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good below 2,200 second-feet; others probably fair.

Discharge measurements of Cheoah River at Johnson, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Jan. 14	P. P. Livingston.....	2.08	662	Jan. 15	P. P. Livingston.....	1.98	612
14	.....do.	2.06	610	Sept. 20	J. P. Clawson.....	1.62	368

Daily discharge, in second-feet, of Cheoah River at Johnson, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	126	123	218	1,190	470	595	530	1,190	702	320	320	144
2	123	108	179	2,130	442	630	470	950	665	288	298	302
3	117	105	159	2,850	415	562	470	820	630	280	298	259
4	117	365	271	1,750	530	562	530	740	595	280	239	165
5	111	210	862	1,090	530	2,550	702	665	530	470	224	150
6	111	150	562	780	415	1,460	595	630	500	1,290	224	138
7	111	153	365	740	415	995	530	665	665	530	442	129
8	111	138	302	595	390	820	500	780	530	665	320	132
9	105	132	342	530	390	740	470	665	470	415	263	470
10	105	120	306	500	390	780	562	820	530	442	247	186
11	100	108	320	2,000	365	665	665	1,190	665	415	224	156
12	100	108	271	950	442	595	702	1,040	470	500	365	144
13	100	111	255	780	365	562	630	862	442	3,000	235	132
14	100	105	562	665	342	595	595	780	500	862	218	129
15	100	105	342	562	342	530	595	780	415	630	204	129
16	98	105	365	1,510	342	500	530	665	415	530	200	129
17	95	102	342	1,090	365	500	530	630	390	500	247	153
18	100	100	306	862	442	595	2,410	595	365	442	207	135
19	156	100	275	740	665	595	1,340	562	342	415	193	135
20	138	100	259	665	1,510	780	1,040	530	342	390	182	365
21	114	100	259	562	820	950	820	562	320	342	172	263
22	114	98	263	562	630	740	740	500	320	320	165	1,510
23	111	442	950	500	562	702	665	470	311	342	179	390
24	111	214	500	665	530	630	595	530	320	365	165	239
25	105	165	415	780	500	595	562	562	311	302	162	221
26	105	153	342	595	595	595	530	470	293	298	193	255
27	105	280	470	530	862	562	595	1,140	500	288	159	235
28	102	179	1,340	500	702	562	595	1,400	311	263	147	210
29	100	162	630	470	630	862	530	1,140	306	247	141	530
30	117	415	500	530	-----	665	1,750	905	630	239	135	470
31	193	-----	530	470	-----	562	-----	780	-----	251	138	-----

Monthly discharge of Cheoah River at Johnson, N. C., for the year ending September 30, 1924

[Drainage area, 175 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	193	95	113	0.646	0.74
November	442	98	162	.926	1.03
December	1,340	159	421	2.41	2.78
January	2,850	470	908	5.19	5.98
February	1,510	342	531	3.03	3.27
March	2,550	500	743	4.25	4.90
April	2,410	470	726	4.15	4.63
May	1,400	470	775	4.43	5.11
June	702	293	460	2.63	2.93
July	3,000	239	514	2.94	3.39
August	442	135	223	1.27	1.46
September	1,510	129	267	1.53	1.71
The year	3,000	95	487	2.78	37.93

CLINCH RIVER AT CLEVELAND, VA.

LOCATION.—At steel highway bridge in Cleveland, Russell County, a station on Norton Branch of Norfolk & Western Railway.

DRAINAGE AREA.—536 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 28, 1920, to September 30, 1924.

GAGE.—Chain gage attached to railing on upstream side of bridge; read by Odell Price.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel nearly straight for 1,000 feet above and below gage. Stream is a succession of pools and rock shoals and channel is considered permanent. Right bank high, not subject to overflow; left bank subject to overflow during unusually high floods. Control for low water is a long gravel and rock shoal about 300 feet below gage; reasonably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.0 feet¹ at 8.10 a. m. January 1 (discharge, 11,400 second-feet); minimum stage recorded, 1.95 feet¹ at 5.15 p. m. October 17 (discharge, 98 second-feet).

1920-1924: Maximum stage recorded, 15.9 feet at 7.20 a. m. June 13, 1923 (discharge from extension at rating curve, 15,000 second-feet); minimum stage, 1.80 feet at 7 p. m. September 9 and 8 a. m. September 10, 1922 (discharge, 55 second-feet).

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation practically permanent February 1 to September 30; discharge record not computed October 1 to January 31 because of erroneous gage readings or changing-control conditions. Rating curve well defined between 150 and 5,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Clinch River at Cleveland, Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Nov. 1	P. P. Livingston	2.31	196
Feb. 18	do.....	3.46	732
May 16	J. P. Clawson	5.12	2,020

¹ Observer's records unreliable from Oct. 1 to Jan. 31 and these observations may or may not be correct.

Daily discharge, in second-feet, of Clinch River at Cleveland, Va., for the year ending September 30, 1924

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	880	1,080	1,630	530	1,390	455	300	172
2.....	695	945	1,390	558	1,630	530	320	204
3.....	640	880	1,160	505	1,550	612	300	256
4.....	612	815	1,020	480	1,310	668	320	232
5.....	640	815	1,020	455	1,310	612	340	200
6.....	640	1,310	1,020	408	1,550	585	408	181
7.....	612	1,390	1,080	480	1,310	585	430	163
8.....	585	1,080	1,020	695	1,160	815	408	150
9.....	558	945	880	1,550	815	385	187	187
10.....	530	880	880	1,080	2,790	725	362	172
11.....	530	815	815	1,720	1,990	695	362	184
12.....	585	755	775	2,480	1,720	695	340	178
13.....	558	695	668	2,680	1,900	695	340	150
14.....	558	640	612	1,900	1,630	668	340	148
15.....	585	640	585	1,310	1,470	640	362	145
16.....	612	640	640	1,470	1,310	585	320	145
17.....	585	668	668	1,080	1,080	530	320	142
18.....	668	880	1,020	880	945	480	280	135
19.....	1,080	1,080	1,390	815	815	455	242	160
20.....	2,480	1,470	1,240	755	695	408	222	214
21.....	3,340	3,450	1,020	668	640	362	218	225
22.....	1,810	2,380	945	668	640	300	214	5,640
23.....	1,240	1,720	380	815	695	320	194	1,550
24.....	1,020	1,240	1,020	880	668	385	204	815
25.....	1,240	1,160	1,020	815	612	340	320	585
26.....	1,470	1,080	755	815	585	320	260	455
27.....	1,240	1,020	640	755	585	280	300	385
28.....	1,240	1,080	585	1,020	530	260	256	505
29.....	1,160	4,220	530	1,550	505	236	225	5,160
30.....	-----	3,560	530	1,900	455	232	204	8,740
31.....	-----	2,180	-----	1,630	-----	260	184	-----

NOTE.—Discharge not computed Oct. 1 to Jan. 31 because of unreliable gage readings.

Monthly discharge of Clinch River at Cleveland Va., for the year ending September 30, 1924

[Drainage area, 536 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
February.....	3,340	530	979	1.83	1.97
March.....	4,220	640	1,340	2.50	2.88
April.....	1,630	530	917	1.71	1.91
May.....	2,680	408	1,050	1.96	2.26
June.....	2,790	455	1,170	2.18	2.43
July.....	815	232	502	.937	1.08
August.....	430	184	299	.558	.64
September.....	8,740	135	919	1.71	1.91

NOTE.—See footnote to daily-discharge table.

CLINCH RIVER AT SPEER FERRY, VA.

LOCATION.—At Speer Ferry roller mills, 2,000 feet below mouth of Copper Creek and 1 mile from Speer Ferry railroad station, Scott County.

DRAINAGE AREA.—1,140 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1920, to September 30, 1924. Gage-height record obtained by United States Weather Bureau since December 1, 1895.

GAGE.—Staff gage consisting of 3 by 6 inch pine timber faced with enamel sections and bolted to concrete wheel-pit of B. F. Venable's flour mill; installed April 17, 1921; read by B. W. Price. The wall to which gage is attached has a batter of 3 feet in 20 feet and hence gage readings do not give true vertical heights.

DISCHARGE MEASUREMENTS.—Made from suspension footbridge 500 feet above gage or by wading.

CHANNEL AND CONTROL.—Channel slightly curved at station; bed composed of rock and coarse gravel. Banks low and subject to overflow. Control is a gravelly shoal 500 feet downstream; probably changes during high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 15.2 feet at 3 p. m. January 1 (discharge from extension of rating curve, 20,400 second-feet); minimum stage, 0.2 foot October 12-16, 20, 21, and November 3 (discharge, 220 second-feet).

1920-1924: Maximum stage recorded, 24.35 feet at 11.30 p. m. February 3, 1923 (discharge from extension of rating curve, 37,200 second-feet); minimum stage, -0.28 foot at 8 a. m. December 5, 1922 (discharge, 98 second-feet).

The United States Weather Bureau reports a stage of 26.6 feet February 28, 1902, referred to datum of gage used by that bureau.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—The Speer Ferry roller mill just above gage causes only slight regulation during low water because flow is always more than sufficient to operate the water wheels and no storage is required. Several other small mills are situated on main river and its tributaries above this point, but it is believed that no appreciable regulation is caused by operation of these mills.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve fairly well defined between 250 and 12,000 second-feet; extended beyond these limits. Gage read once daily to tenths prior to November 5 and to hundredths twice daily thereafter. Daily discharge ascertained by applying daily or mean daily gage height to rating table. Records fair.

Discharge measurements of Clinch River at Speer Ferry, Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 29	P. P. Livingston.....	0.64	368	Feb. 20	P. P. Livingston	9.32	10,700
Nov. 22	—do. ....	.36	263	May 13	J. P. Clawson.....	5.16	4,630
Feb. 20	—do.	9.12	10,400				

Daily discharge, in second-feet, of Clinch River at Speer Ferry, Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	375	255	545	19,900	1,160	2,220	3,270	1,800	3,390	955	455	335
2-----	335	255	685	11,200	1,160	2,000	2,550	2,110	2,440	785	455	335
3-----	335	220	685	11,800	1,090	1,800	2,110	1,800	2,000	735	545	355
4-----	295	295	635	12,100	1,160	1,800	1,800	1,510	1,600	735	500	375
5-----	295	295	955	7,500	1,510	1,800	1,800	1,330	1,330	1,020	545	355
6-----	295	355	2,910	3,780	1,700	2,670	1,700	1,090	1,160	2,330	590	355
7-----	295	415	3,030	2,670	1,510	2,670	1,700	955	1,090	2,110	522	335
8-----	255	435	2,110	2,330	1,420	2,330	1,600	955	955	2,440	500	335
9-----	295	840	1,800	1,700	1,240	2,110	1,510	1,160	895	2,330	522	315
10-----	255	635	1,900	1,420	1,020	1,900	1,420	2,110	895	2,220	500	335
11-----	255	545	1,700	6,080	1,020	1,700	1,330	1,900	4,040	2,220	478	375
12-----	220	500	1,510	9,300	955	1,510	1,330	2,670	5,380	2,110	500	375
13-----	220	415	1,420	4,690	895	1,420	1,160	4,560	4,040	1,800	568	355
14-----	220	375	1,420	3,150	840	1,330	1,090	4,300	3,910	1,330	840	335
15-----	220	375	2,110	2,220	840	1,420	1,090	4,430	4,960	1,240	735	315
16-----	220	335	2,790	3,150	840	1,160	1,020	4,170	2,790	1,160	840	315
17-----	255	355	2,790	9,900	785	1,090	955	2,910	2,000	955	785	295
18-----	295	295	1,600	6,220	1,800	1,240	2,790	2,440	1,600	895	635	295
19-----	255	315	1,510	3,780	2,220	1,420	6,640	1,800	1,330	895	545	315
20-----	220	255	1,420	2,790	9,750	1,800	3,650	1,510	1,090	955	500	335
21-----	220	295	1,420	2,110	9,000	3,780	2,550	1,510	955	1,090	455	1,330
22-----	315	295	1,330	1,600	4,690	5,240	1,900	1,600	895	1,020	415	3,390
23-----	295	295	1,240	1,240	3,150	3,650	1,600	1,510	2,000	955	415	6,100
24-----	335	335	1,240	1,240	2,330	2,550	1,330	1,330	2,330	1,020	395	1,510
25-----	295	295	1,160	1,800	2,110	2,110	1,160	1,240	2,440	955	415	1,090
26-----	295	455	1,090	2,000	2,440	1,800	1,090	1,090	1,420	895	415	785
27-----	255	685	1,510	1,800	2,790	1,700	1,160	1,090	1,240	840	415	685
28-----	295	500	3,270	1,510	2,670	1,600	1,020	1,240	1,020	785	395	635
29-----	335	500	4,960	1,330	2,440	6,920	955	1,800	1,020	735	375	840
30-----	295	500	3,650	1,330	-----	10,000	1,090	12,100	1,240	545	355	6,080
31-----	295	-----	5,100	1,330	-----	5,660	-----	7,060	-----	500	335	-----

Monthly discharge of Clinch River at Speer Ferry, Va., for the year ending September 30, 1924

[Drainage area, 1,140 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	375	220	279	0.245	0.28
November-----	840	220	397	.348	.39
December-----	5,100	545	1,920	1.68	1.94
January-----	19,900	1,240	4,610	4.04	4.66
February-----	9,750	785	2,230	1.96	2.11
March-----	10,000	1,090	2,590	2.27	2.62
April-----	6,640	955	1,810	1.59	1.77
May-----	12,100	955	2,490	2.18	2.51
June-----	5,380	895	2,050	1.80	2.01
July-----	2,440	500	1,240	1.09	1.26
August-----	840	335	514	.451	.52
September-----	6,080	295	940	.825	.92
The year-----	19,900	220	1,760	1.54	20.99

CLINCH RIVER NEAR LONE MOUNTAIN, TENN.

LOCATION.—At Southern Railway bridge at Clinch River station, three-fourths mile below mouth of Dutch Creek, $1\frac{1}{4}$ miles above mouth of Big Sycamore Creek, and $3\frac{1}{2}$ miles southeast of Lone Mountain, Claiborne County.

DRAINAGE AREA.—1,560 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 1, 1919, to September 30, 1924.

GAGE.—Chain gage bolted to guardrail at downstream side of Southern Railway bridge; read by S. K. Rosenbalm.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge; section rough.

CHANNEL AND CONTROL.—Bed composed of rock and gravel; fairly permanent. Right bank subject to overflow at extreme stages; left bank not subject to overflow. One channel at all stages. A permanent rock shoal about $1\frac{1}{4}$ miles below gage forms control for ordinary stages, but formation of small gravel bars immediately below gage may cause slight changes in stage-discharge relation for low water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.6 feet at 8.40 a. m. January 2 (discharge, 20,200 second-feet); minimum stage, 2.97 feet October 17, 18, and 21–23 (discharge, 293 second-feet).

1919–1924: Maximum stage recorded, 20.3 feet at 8 a. m. February 4, 1923 (discharge from extension of rating curve, 39,700 second-feet); minimum stage, 2.80 feet at 9 a. m. September 29 and 8.30 a. m. October 4, 11, and 24, 1922 (discharge, 225 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Operation of small mills upstream from gage causes little, if any, fluctuation in stage at gage.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 300 and 25,000 second-feet; extended beyond these limits. Gage read to half-tenths once daily; oftener during extreme high water. Daily discharge ascertained by applying daily gage height to rating table, except as indicated in footnote to daily-discharge table. Records good except for high stages for which they are fair.

Discharge measurements of Clinch River near Lone Mountain, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 1	P. P. Livingston -----	3.29	488	Feb. 29	J. P. Clawson -----	6.78	4,300
Nov. 5	-----do-----	3.22	388	May 10	-----do-----	4.53	1,410

Daily discharge, in second-feet, of Clinch River near Lone Mountain, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	420	395	685	14,300	1,820	3,680	5,870	3,090	8,710	1,610	685	445
2.....	420	372	720	19,700	1,710	3,230	4,150	2,950	4,980	1,410	685	420
3.....	372	372	862	15,300	1,610	2,950	3,380	3,090	3,680	1,100	620	420
4.....	372	420	825	15,600	1,510	2,410	2,810	2,540	3,090	1,020	652	472
5.....	350	420	862	12,800	1,510	2,280	2,670	2,160	2,410	980	620	720
6.....	350	395	2,410	7,430	1,710	3,380	2,540	1,930	2,040	1,320	652	560
7.....	350	395	3,040	4,470	1,930	3,850	2,280	1,710	1,710	2,670	685	472
8.....	328	508	3,680	2,950	1,930	3,530	2,160	1,510	1,610	3,380	790	445
9.....	328	620	2,540	2,670	1,710	3,090	2,040	1,410	1,410	3,380	652	445
10.....	328	790	2,280	2,280	1,510	2,670	2,040	1,320	1,670	2,810	720	445
11.....	328	825	2,280	3,380	1,410	2,540	1,930	2,670	1,930	2,040	755	445
12.....	328	652	2,040	8,930	1,320	2,280	1,820	2,950	5,330	1,930	652	420
13.....	305	560	1,930	9,840	1,320	2,160	1,710	3,380	9,380	2,540	685	395
14.....	301	500	1,820	5,330	1,230	1,930	1,510	4,640	5,510	3,090	620	395
15.....	305	445	2,280	3,830	1,230	1,820	1,610	5,150	5,690	2,810	652	395
16.....	301	445	2,670	3,530	1,140	1,710	1,610	5,510	6,060	2,160	900	372
17.....	293	420	2,670	6,630	1,140	1,610	1,410	4,980	3,680	1,710	720	420
18.....	293	395	2,280	10,800	1,510	1,510	3,090	3,680	2,670	1,410	685	395
19.....	305	395	2,040	7,030	3,990	1,610	8,930	2,950	2,160	1,610	790	372
20.....	301	395	1,710	4,470	7,230	2,160	8,490	2,410	1,930	1,100	652	420
21.....	293	372	1,510	3,530	13,500	3,090	5,330	2,280	1,710	1,410	560	445
22.....	293	372	1,410	2,670	9,840	4,810	3,680	2,410	1,230	1,230	530	1,820
23.....	293	395	1,610	2,160	5,870	5,870	2,810	2,040	2,160	1,320	500	2,540
24.....	328	395	3,090	1,820	3,990	4,150	2,280	2,040	3,090	1,610	515	4,810
25.....	350	395	2,820	2,280	3,230	3,230	1,930	1,930	3,680	1,230	530	2,160
26.....	372	445	2,540	2,540	2,950	2,670	1,710	1,710	3,530	1,410	720	1,410
27.....	395	560	2,160	2,670	4,470	2,410	1,610	1,930	2,160	1,060	620	1,060
28.....	420	720	3,090	2,410	5,150	2,160	1,610	2,410	1,820	900	620	862
29.....	445	652	4,980	2,040	4,310	3,090	1,720	5,150	1,610	790	590	940
30.....	472	620	6,440	1,930	-----	9,610	1,820	10,300	1,510	755	530	1,230
31.....	445	-----	4,310	1,930	-----	10,800	-----	13,500	-----	720	472	-----

NOTE.—Gage not read Nov. 8, Dec. 7, 13, 25, Apr. 29, June 10, and Aug. 24; discharge interpolated.

Monthly discharge of Clinch River near Lone Mountain, Tenn., for the year ending September 30, 1924

[Drainage area, 1,560 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	472	293	348	0.223	0.26
November.....	825	372	488	.313	.35
December.....	6,440	685	2,370	1.52	1.75
January.....	19,700	1,820	6,040	3.87	4.46
February.....	13,500	1,140	3,160	2.03	2.19
March.....	10,800	1,510	3,300	2.12	2.44
April.....	8,930	1,410	2,880	1.85	2.06
May.....	13,500	1,320	3,410	2.19	2.52
June.....	9,380	1,230	3,270	2.10	2.34
July.....	3,380	720	1,690	1.08	1.24
August.....	900	472	647	.415	.48
September.....	4,810	372	872	.559	.62
The year.....	19,700	293	2,380	1.53	20.71

CLINCH RIVER AT CLINTON, TENN.

LOCATION.—At highway bridge at Clinton, Anderson County, 1,000 feet below Southern Railway bridge.

DRAINAGE AREA.—3,090 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1918, to September 30, 1924. Gage readings have been obtained by the United States Weather Bureau since December 1, 1884.

GAGE.—Chain gage bolted to downstream railing of highway bridge; read by J. M. Gamble. Elevation of zero of gage, 776.61 feet above mean sea level, Tennessee River Survey datum.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge at gage.

CHANNEL AND CONTROL.—Left bank high; right bank is overflowed at approximately 30-foot stage. Bed composed of rock and gravel. Control formed by rock shoals about $1\frac{1}{2}$ miles below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 23.5 feet at 7 a. m. January 3 (discharge from extension of rating curve, 38,000 second-feet); minimum stage, 2.6 feet October 21 (discharge, 425 second-feet).

1918-1924: Maximum stage recorded, 32.7 feet at noon February 5, 1923 (discharge from extension of rating curve, 61,000 second-feet); minimum stage, 2.4 feet October 4 and 5, 1919 (discharge, 340 second-feet).

The United States Weather Bureau reports a stage of 45 feet March 31, 1886, which is the maximum since December 1, 1884. The next highest stage is 38 feet which occurred March 5, 1917.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—There are no developments above the gage sufficient to cause any appreciable regulation.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 500 and 30,000 second-feet; extended above that point. Gage read to tenths once daily prior to May 7; to hundredths twice daily after that date. Daily discharge ascertained by applying daily or mean daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by United States Weather Bureau prior to May 7, 1924.

Discharge measurements of Clinch River at Clinton, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Nov. 8	P. P. Livingston	3.32	835	May 7	J. P. Clawson	7.15	4,230
Mar. 1	Duncan Charlton	10.83	9,090	Sept. 4	do.	3.59	990

Daily discharge, in second-feet, of Clinch River at Clinton, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	800	800	1,260	13,400	3,680	9,560	16,600	10,300	23,700	3,350	1,620	1,060
2-----	740	800	1,260	21,600	3,570	8,210	10,400	9,050	13,800	3,140	1,620	925
3-----	740	740	1,260	38,000	3,460	6,800	7,570	8,540	8,880	2,640	1,620	1,060
4-----	680	800	1,260	33,300	3,240	5,790	6,070	7,410	6,950	2,280	1,400	925
5-----	625	860	2,100	30,100	3,040	5,650	5,930	5,930	6,070	2,190	1,330	925
6-----	520	860	2,740	23,700	3,040	6,800	5,510	4,990	5,120	2,190	1,330	860
7-----	625	740	3,680	13,400	3,240	7,250	4,730	4,250	4,250	2,940	1,330	1,060
8-----	625	800	6,800	8,210	3,460	7,730	4,610	3,900	3,680	4,990	1,400	860
9-----	625	625	6,210	5,930	3,790	7,100	4,370	3,570	3,350	4,730	1,550	1,060
10-----	570	740	4,250	5,120	3,350	6,350	4,250	3,240	3,680	4,730	1,400	1,060
11-----	570	1,400	3,680	9,730	2,940	5,510	4,010	3,790	4,490	3,790	1,400	990
12-----	625	1,330	3,240	15,700	2,740	5,120	3,790	5,380	8,370	3,140	1,400	990
13-----	570	1,190	3,460	17,800	2,740	4,730	3,570	5,510	11,900	3,570	1,620	925
14-----	570	990	3,460	15,700	2,640	4,370	3,240	6,350	15,500	4,860	1,330	990
15-----	520	860	3,900	10,300	2,550	4,010	3,240	8,370	9,560	6,650	1,260	990
16-----	520	860	4,370	7,410	2,370	3,790	3,040	8,050	10,300	4,990	1,400	860
17-----	570	860	4,990	15,100	2,370	3,680	3,040	8,710	8,050	3,900	1,480	860
18-----	570	800	4,610	15,700	2,280	3,460	4,730	7,410	5,650	3,680	1,400	1,260
19-----	570	680	4,370	18,300	4,250	3,240	11,000	5,790	4,610	2,940	1,260	1,120
20-----	570	800	3,790	12,100	20,700	3,350	16,100	4,730	3,790	2,640	1,260	990
21-----	425	740	3,240	8,540	25,300	7,100	14,000	4,370	3,350	2,740	1,480	1,700
22-----	570	680	2,840	6,650	28,000	8,540	9,380	5,650	3,040	2,640	1,400	7,250
23-----	570	740	3,140	5,250	20,000	10,300	6,950	4,860	2,640	2,460	1,120	5,930
24-----	570	740	4,990	4,610	11,700	10,100	5,510	4,250	4,610	2,550	1,060	7,730
25-----	570	740	6,350	4,250	8,540	7,890	4,610	4,610	6,950	2,840	1,060	6,500
26-----	520	740	6,950	4,490	6,950	4,990	3,900	4,130	6,800	2,840	1,260	3,790
27-----	625	740	7,100	4,730	11,000	5,380	3,900	4,490	5,120	2,550	1,260	2,740
28-----	625	800	4,730	4,990	13,400	4,730	3,460	7,100	4,010	2,020	1,190	2,190
29-----	680	1,120	5,790	4,370	11,900	4,990	3,460	12,100	3,350	1,480	1,400	1,940
30-----	680	1,260	9,730	3,790	-----	9,730	4,250	31,600	3,350	1,700	1,260	2,020
31-----	740	-----	11,000	3,790	-----	17,000	-----	22,100	-----	1,620	1,120	-----

Monthly discharge of Clinch River at Clinton, Tenn., for the year ending September 30, 1924

[Drainage area, 3,090 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	800	425	606	0.196	0.23
November-----	1,400	625	861	.279	.31
December-----	11,000	1,260	4,400	1.42	1.64
January-----	38,000	3,790	12,500	4.05	4.67
February-----	28,000	2,280	7,460	2.41	2.60
March-----	17,000	3,240	6,560	2.12	2.44
April-----	16,600	3,040	6,170	2.00	2.23
May-----	31,600	3,240	7,440	2.41	2.78
June-----	23,700	2,640	6,830	2.21	2.47
July-----	6,650	1,480	3,190	1.03	1.19
August-----	1,620	1,060	1,360	.440	.51
September-----	7,730	860	2,050	.663	.74
The year-----	38,000	425	4,940	1.60	21.81

POWELL RIVER NEAR PENNINGTON, VA.

LOCATION.—At highway bridge on main road between Pennington and Big Stone Gap, 1,000 feet below mouth of North Fork and 3 miles southeast of Pennington, Lee County.

DRAINAGE AREA.—304 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 27, 1920, to September 30, 1924.

GAGE.—Chain gage attached to bridge; read by Fred Myers.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Channel practically straight for 1,000 feet above and below gage. Bed composed of solid rock and boulders. Control is rocky shoal at head of small island 2,000 feet downstream; remains of old fish-trap dam at this point may cause slight change during high stages. Right bank not subject to overflow; left bank subject to overflow during extreme floods.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.74 feet at 7 a. m. February 20 (discharge, from extension of rating curve, 8,310 second-feet); minimum stage, 1.51 feet at 4.30 p. m. October 15 and 17 (discharge, 14 second-feet).

1920-1924: Maximum stage recorded, 19.46 feet at 10.30 a. m. February 3, 1923 (discharge not determined); minimum stage, that of October 15 and 17, 1923.

DIVERSIONS.—A large steam plant on the North Fork above Pennington uses, practically entire flow of that stream, during low-water season, for condenser and boiler feed water.

REGULATION.—Two small gristmills on main stream above gage cause considerable diurnal fluctuation.

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve well defined between 30 and 1,500 second-feet; extended beyond these limits. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except as indicated in footnote to daily-discharge table. Records fair except for high and low stages for which they are poor.

Discharge measurements of Powell River near Pennington, Va., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Nov. 2	P. P. Livingston.....	1.75	35.5	Feb. 23	J. P. Clawson	3.83	836
21	do	1.75	33.9	May 11	do	3.74	810
Feb. 23	J. P. Clawson	3.85	873				

Daily discharge, in second-feet, of Powell River near Pennington, Va., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	23	34	168	5,590	315	730	850	1,460	910	132	100	52
2.....	27	42	153	2,400	315	675	648	970	648	112	100	56
3.....	20	41	120	5,840	295	565	490	730	490	102	135	183
4.....	23	48	100	3,400	242	540	465	592	375	210	150	141
5.....	22	56	490	1,860	592	730	490	465	335	910	115	86
6.....	21	69	1,860	790	592	1,100	420	398	355	490	105	65
7.....	23	95	850	675	465	1,100	398	335	222	420	108	62
8.....	20	83	490	515	398	675	375	335	242	375	102	54
9.....	18	88	442	420	335	592	355	315	355	242	90	120
10.....	21	62	540	355	335	620	335	278	315	195	73	92
11.....	20	54	465	3,290	295	592	295	730	730	201	69	71
12.....	19	46	490	2,040	335	465	278	1,100	970	141	315	59
13.....	20	42	420	1,540	278	398	260	1,170	910	315	162	60
14.....	17	31	790	790	278	420	225	970	850	295	135	64
15.....	15	24	790	565	260	375	225	1,380	592	260	95	92
16.....	17	25	565	1,460	242	315	222	1,030	442	213	85	78
17.....	15	35	515	2,220	278	335	198	730	315	180	213	64
18.....	17	33	442	1,460	1,780	515	1,100	565	260	183	375	62
19.....	17	48	375	850	1,950	565	1,620	442	225	171	135	56
20.....	21	42	315	730	7,690	648	970	398	183	375	95	195
21.....	23	41	355	620	2,590	1,700	648	465	156	150	79	620
22.....	21	41	355	490	1,240	1,170	540	420	192	222	64	1,860
23.....	27	41	1,380	398	850	850	398	398	465	420	58	850
24.....	33	159	1,380	278	675	730	355	375	315	315	79	490
25.....	44	144	790	540	648	675	315	375	295	195	118	183
26.....	56	153	592	490	730	675	315	335	242	159	260	225
27.....	52	122	648	335	1,030	675	355	515	260	141	144	177
28.....	50	105	2,690	398	970	675	335	565	213	100	105	242
29.....	46	77	1,620	355	850	2,220	335	1,310	177	98	77	398
30.....	38	156	970	355	-----	2,040	910	4,280	168	177	65	1,380
31.....	38	-----	2,890	355	-----	1,100	-----	1,460	-----	122	60	-----

NOTE.—Gage not read Sept. 16; discharge interpolated.

Monthly discharge of Powell River near Pennington, Va., for the year ending September 30, 1924

[Drainage area, 304 square miles]

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	56	15	26.6	May	4,280	278	803
November	159	24	67.9	June	970	156	407
December	2,890	100	776	July	910	98	246
January	5,840	278	1,340	August	375	58	125
February	7,690	242	926	September	1,860	52	271
March	2,220	315	789	The year	7,690	15	522
April	1,620	198	491				

POWELL RIVER NEAR ARTHUR, TENN.

LOCATION.—At county highway bridge at McHenry ford, on Dixie highway, $3\frac{1}{2}$ miles east of Arthur, Claiborne County. Indian Creek enters $3\frac{1}{2}$ miles above gage.

DRAINAGE AREA.—685 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1919, to September 30, 1924. Gage-height record obtained by United States Weather Bureau since September 1, 1904.

GAGE.—Chain gage attached to upstream side of bridge; read by B. M. Richardson.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Right bank rises gradually; left bank is steep up to gage height 20 feet; then flattens out. Banks subject to overflow above a gage height of 20 feet. Channel straight for 500 feet above and below gage;

bed composed of rock and gravel. Control is a rock and gravel shoal at old McHenry ford 500 feet downstream; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.9 feet morning of January 2 (discharge, 10,800 second-feet); minimum stage, 0.11 foot October 18 and 19 (discharge, 83 second-feet).

1919-1924: Maximum stage recorded, 18.7 feet at about noon February 4, 1923 (discharge, 18,300 second-feet); minimum stage, that of October 18 and 19, 1923.

The United States Weather Bureau reports a stage of 27.2 feet January 29, 1918.

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 150 and 6,000 second-feet; extended beyond these limits. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good below 6,000 second-feet; fair above that point.

COOPERATION.—Gage-height record furnished by the United States Weather Bureau.

Discharge measurements of Powell River near Arthur, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge
Nov. 6	P. P. Livingston	<i>Feet</i> 0.33	<i>Sec.-ft.</i> 157
Feb. 22	J. P. Clawson	7.22	5,670
May 8	do	1.81	952

Daily discharge, in second-feet, of Powell River near Arthur, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	120	131	308	5,840	825	1,880	2,430	2,350	4,100	770	440	185
2.....	120	131	324	9,470	770	1,600	1,740	2,700	2,270	632	374	194
3.....	117	131	324	7,710	770	1,400	1,400	1,950	1,670	550	330	212
4.....	114	153	291	9,470	770	1,220	1,220	1,530	1,530	495	296	194
5.....	110	169	715	6,940	770	1,280	1,220	1,280	1,280	522	330	230
6.....	114	165	1,280	3,120	825	1,670	1,160	1,100	1,050	715	352	255
7.....	114	157	2,510	1,880	1,050	2,110	1,050	940	880	995	318	203
8.....	107	161	1,600	1,400	940	1,810	995	880	825	825	308	190
9.....	110	169	995	1,220	825	1,400	940	880	770	715	296	302
10.....	104	169	825	1,050	770	1,280	880	825	1,460	605	280	212
11.....	107	161	825	3,800	715	1,220	825	1,160	1,810	578	270	221
12.....	98	161	770	4,740	715	1,160	770	1,400	3,120	522	324	221
13.....	98	153	715	3,900	688	1,050	770	1,670	6,510	940	286	194
14.....	98	153	940	2,350	688	995	688	1,810	3,400	1,100	550	203
15.....	98	145	1,100	1,670	660	940	660	1,880	2,590	1,160	390	190
16.....	98	134	1,220	2,110	660	880	632	2,110	1,740	880	308	165
17.....	89	124	1,160	3,500	605	880	605	1,810	1,340	715	265	308
18.....	83	120	1,100	4,400	1,280	825	1,340	1,400	1,050	632	250	235
19.....	83	117	940	2,670	3,210	880	2,670	1,160	825	550	380	198
20.....	95	114	770	1,950	7,380	1,050	3,030	1,050	770	522	390	203
21.....	98	114	688	1,530	9,800	1,740	2,110	1,950	688	550	260	291
22.....	98	110	660	1,220	5,510	2,270	1,530	1,460	770	605	240	1,810
23.....	98	134	1,280	995	2,940	2,030	1,220	1,160	1,400	578	280	1,600
24.....	117	157	2,110	940	2,350	1,600	1,050	1,160	1,740	880	230	1,530
25.....	120	157	2,350	1,100	1,740	1,340	880	1,160	1,810	940	235	880
26.....	128	161	1,600	1,220	1,670	1,160	825	1,050	1,220	632	230	660
27.....	131	275	1,220	825	2,030	1,050	825	1,220	1,050	495	440	495
28.....	138	265	1,740	940	2,350	995	770	1,530	825	415	415	440
29.....	138	240	3,300	880	2,190	2,350	715	3,600	770	384	280	550
30.....	131	250	3,120	880	-----	4,100	1,460	4,960	1,050	374	230	940
31.....	131	-----	2,670	825	-----	3,900	-----	6,280	-----	374	203	-----

Monthly discharge of Powell River near Arthur, Tenn., for 1924

[Drainage area, 685 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	138	83	110	0.161	0.19
November.....	275	110	159	.232	.26
December.....	3,300	291	1,270	1.85	2.13
January.....	9,470	825	2,910	4.25	4.90
February.....	9,800	605	1,910	2.79	3.01
March.....	4,100	825	1,550	2.26	2.61
April.....	3,030	605	1,210	1.77	1.98
May.....	6,280	825	1,790	2.61	3.01
June.....	5,510	688	1,640	2.39	2.67
July.....	1,160	374	666	.972	1.12
August.....	1,550	203	316	.461	.53
September.....	1,810	165	450	.657	.73
The year.....	9,800	83	1,170	1.71	23.14

EMERY RIVER AT DEERMONT, TENN.

LOCATION.—At county highway bridge at Deermont siding on Cincinnati, New Orleans & Texas Pacific Railway, 3.2 miles north of Oakdale, Morgan County. Crab Orchard Creek enters 500 feet below and Obed River enters 5 miles above gage.

DRAINAGE AREA.—702 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 15, 1920, to September 30, 1924.

GAGE.—Chain gage bolted to upstream railing of bridge; read by Miss Ruby Davis.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed of river at gage is composed of boulders.

Right bank subject to overflow at gage height of about 10 feet, flooding land for about 400 feet back from river. Left bank not subject to overflow. Control consists of a series of boulder shoals, beginning a short distance below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10 feet at 4 p. m. May 29 (discharge, 14,000 second-feet); minimum stage, -0.11 foot at 4 p. m. August 22 (discharge, 2.2 second-feet).

1920-1924: Maximum stage recorded, 15.6 feet at 3.30 p. m. March 1, 1922 (discharge, 26,400 second-feet); minimum stage, that of August 22, 1924.

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 15 and 8,000 second-feet; extended beyond these limits.

Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good between 15 and 8,000 second-feet; others fair.

Discharge measurements of Emery River at Deermont, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Nov. 10	J. P. Clawson.....	0.70	47.7	May 2	J. P. Clawson.....	5.06	4,160
Feb. 15	do.....	2.14	682	Sept. 5	do.....	.32	15.9
29	Duncan Charlton.....	5.60	5,110	5	do.....	.32	17.0

Daily discharge, in second-feet, of Emery River at Deermont, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	16	5.0	181	6,980	1,030	2,880	1,300	6,600	2,180	100	42	25
2-----	14	5.0	258	5,330	988	2,180	1,160	3,970	1,590	86	112	13
3-----	12	5.0	258	9,130	945	1,810	865	2,590	1,490	78	174	7.7
4-----	16	8.0	236	4,300	825	1,490	905	1,930	1,030	56	254	6.8
5-----	16	12	748	2,450	945	3,650	2,310	1,390	865	60	295	5.0
6-----	16	29	1,590	2,590	1,160	5,690	2,050	1,200	605	147	126	4.5
7-----	16	22	1,590	1,700	1,030	3,650	1,810	1,120	445	418	115	5.6
8-----	16	22	1,070	1,390	905	2,590	1,490	1,590	390	220	91	8.0
9-----	12	12	865	1,200	865	2,050	1,200	1,930	267	262	71	8.0
10-----	8.0	56	675	1,300	865	2,180	1,070	1,390	340	199	128	6.8
11-----	8.0	38	505	6,050	785	1,930	905	1,700	505	150	211	6.8
12-----	8.0	41	445	4,470	710	1,810	865	1,390	675	134	91	6.2
13-----	8.0	29	505	2,310	675	2,050	825	1,200	379	199	115	6.8
14-----	8.0	29	1,590	1,930	675	2,450	675	1,070	267	390	91	7.1
15-----	8.0	31	2,050	1,590	675	1,810	1,120	945	267	445	54	6.8
16-----	8.0	38	2,050	6,230	640	1,200	1,390	825	220	390	42	5.6
17-----	6.5	26	1,810	5,870	710	1,030	1,390	865	262	240	62	5.9
18-----	8.0	19	1,390	4,300	785	865	7,740	785	267	153	285	9.0
19-----	12	23	1,160	3,030	3,490	1,030	4,810	748	185	181	21	8.4
20-----	12	22	1,070	1,930	11,200	988	3,180	640	107	118	28	14
21-----	8.0	18	945	1,590	8,530	3,030	2,050	538	84	73	21	17
22-----	8.0	19	1,070	1,030	4,470	2,450	1,700	570	71	49	4.8	710
23-----	8.0	42	2,050	905	2,450	2,180	1,490	475	54	34	6.2	475
24-----	8.0	26	3,490	945	2,450	1,560	1,390	445	131	28	20	232
25-----	6.5	21	3,180	1,390	2,050	1,300	1,160	505	445	56	27	144
26-----												
27-----	5.0	33	1,490	1,300	3,490	1,200	1,070	945	310	34	27	86
28-----	6.5	50	1,200	1,120	11,600	1,030	1,300	5,150	207	29	7.4	35
29-----	9.8	50	1,800	1,030	9,940	988	1,700	11,600	147	23	7.7	46
30-----	5.0	97	1,490	945	5,150	1,120	2,880	13,600	131	26	6.2	60
31-----	5.0	144	1,390	865	-----	1,200	9,730	5,510	109	34	7.7	68
-----	5.0	-----	1,590	1,160	-----	1,390	-----	3,330	-----	45	18	-----

Monthly discharge of Emery River at Deermont, Tenn., for the year ending September 30, 1924

[Drainage area, 702 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	16	5.0	9.78	0.014	0.02
November-----	144	5.0	32.4	.046	.05
December-----	3,490	181	1,270	1.81	2.09
January-----	9,130	865	2,790	3.97	4.58
February-----	11,600	640	2,760	3.93	4.24
March-----	5,690	865	1,960	2.79	3.22
April-----	9,730	675	2,050	2.92	3.26
May-----	13,600	445	2,470	3.52	4.06
June-----	2,180	54	468	.667	.74
July-----	445	23	144	.205	.24
August-----	295	4.8	74.3	.106	.12
September-----	710	4.5	68.0	.097	.11
The year-----	13,600	4.5	1,170	1.67	22.73

HIWASSEE RIVER AT MURPHY, N. C.

LOCATION.—At highway bridge 300 feet west of Louisville & Nashville Railroad station, four blocks west of courthouse in Murphy, Cherokee County, and half a mile above mouth of Valley River.

DRAINAGE AREA.—410 square miles (measured on topographic map).

RECORDS AVAILABLE.—June 26, 1896, to June 30, 1917; October 27, 1918, to September 30, 1924.

GAGE.—Chain gage attached to downstream handrail of concrete highway bridge; read by Miss Willie Mingus.

DISCHARGE MEASUREMENTS.—Made from bridge to which gage is attached.

CHANNEL AND CONTROL.—Channel straight for several hundred feet above and below gage. Bed is mostly solid rock, and river is confined by concrete abutments. Control formed by rock, boulder, and gravel riffle and by masonry piers of railroad bridge; fairly permanent. A fish trap about 400 feet downstream, constructed about August, 1922, is now a part of control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.35 feet evening reading March 5 (discharge, 7,150 second-feet); minimum stage recorded, 3.30 feet many times in August and September (discharge, 145 second-feet).

1896-1924: Maximum stage recorded, 18.4 feet (old gage) March 19, 1899 (discharge, 23,100 second-feet revised); minimum stage 4.8 feet (old gage) September 18, 1914 (discharge, 140 second-feet).

ICE.—Not affected by ice.

REGULATION.—Negligible.

ACCURACY.—Stage-discharge relation changed October 31 and returned to former relation December 23. Rating curve used from October 1-30 and after December 22 well defined below 5,000 second-feet. Rating curve used October 31 to December 22 fairly well defined. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Hiwassee River at Murphy, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 21	Ventres and Charlton..	3.69	337	Feb. 15	L. J. Hall.....	4.24	681
Nov. 23	D. B. Ventres	4.38	730	26	D. B. Ventres	4.54	1,010
Dec. 9	do	4.27	654	Mar. 14	do	4.82	1,180
22	L. J. Hall.....	4.19	633	16	do	4.63	1,070

Daily discharge, in second-feet, of Hiwassee River at Murphy, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	297	275	444	1,520	960	1,340	870	1,520	1,340	470	438	145
2	285	265	393	2,350	960	1,400	870	1,340	1,280	470	285	145
3	285	250	345	2,350	870	1,220	870	1,170	1,060	470	375	275
4	285	381	505	2,660	870	1,120	960	1,170	1,120	655	285	195
5	315	578	1,770	1,770	960	4,010	1,520	1,060	960	540	260	195
6	315	393	825	1,340	915	3,670	1,220	1,010	870	780	285	165
7	285	363	870	1,220	870	2,350	1,060	1,010	870	615	285	145
8	285	333	738	1,010	780	1,770	1,060	1,060	825	540	315	145
9	285	285	615	960	780	1,640	960	1,010	780	540	275	405
10	285	275	578	870	780	1,520	960	1,170	870	505	225	235
11	285	275	615	2,990	780	1,400	1,120	1,520	1,120	470	195	177
12	285	275	540	2,050	870	1,280	1,170	1,640	870	540	285	153
13	275	265	505	1,520	780	1,220	1,060	1,340	780	695	225	145
14	260	250	780	1,340	738	1,280	960	1,280	825	738	185	145
15	285	265	615	1,170	738	1,170	1,400	1,220	738	540	185	165
16	260	250	960	3,500	695	1,060	1,220	1,170	1,010	505	177	177
17	275	250	915	2,990	695	1,060	1,170	1,060	780	505	185	177
18	315	225	825	2,050	780	1,060	4,540	960	695	470	185	177
19	505	235	695	1,640	825	1,060	3,160	960	695	405	165	185
20	393	235	655	1,400	1,520	1,120	2,050	915	615	405	153	1,220
21	333	235	615	1,220	2,200	1,520	1,770	870	615	375	153	780
22	375	225	615	1,170	1,220	1,340	1,520	870	540	345	153	960
23	345	655	1,520	1,060	1,060	1,220	1,400	780	540	315	153	738
24	333	424	1,170	1,170	960	1,170	1,220	780	615	315	345	405
25	297	321	960	1,520	960	1,060	1,170	825	615	285	210	375
26	285	303	870	1,280	960	1,060	1,120	780	615	275	195	505
27	297	540	825	1,120	2,990	960	1,170	1,400	615	245	177	615
28	285	333	1,120	1,060	1,910	960	1,060	1,520	505	235	153	470
29	315	321	1,220	960	1,520	1,060	1,060	1,770	470	275	145	738
30	315	457	960	1,010	-----	1,120	2,050	2,050	695	235	153	738
31	405	-----	870	960	-----	960	-----	1,460	-----	245	165	-----

Note.—Discharge Apr. 18 determined from mean daily gage height obtained from graph constructed on basis of two daily gage readings.

Monthly discharge of Hiwassee River at Murphy, N. C., for the year ending September 30, 1924

[Drainage area, 410 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	505	260	311	0.759	0.88
November	655	225	325	.793	.88
December	1,770	345	804	1.96	2.26
January	3,500	870	1,590	3.88	4.47
February	2,990	695	1,070	2.61	2.82
March	4,010	960	1,430	3.49	4.02
April	4,540	870	1,390	3.39	3.78
May	2,050	780	1,180	2.88	3.32
June	1,340	470	798	1.95	2.18
July	780	235	452	1.10	1.27
August	438	145	225	.549	.63
September	1,220	145	372	.907	1.01
The year	4,540	145	828	2.02	27.52

HIWASSEE RIVER AT RELIANCE, TENN.

LOCATION.—At county highway bridge at Reliance, Polk County, one-fourth mile below Louisville & Nashville Railroad bridge, $1\frac{1}{4}$ miles below mouth of Lost Creek, and $1\frac{3}{4}$ miles above mouth of Spring Creek.

DRAINAGE AREA.—1,180 square miles.

RECORDS AVAILABLE.—August 17, 1900, to December 31, 1913; February 1, 1919, to September 30, 1924.

GAGE.—Chain gage attached to downstream railing of bridge, installed November 10, 1921; read by Warner Smith.

DISCHARGE MEASUREMENTS.—Made from railroad bridge, 1,000 feet above gage. Bridge makes a decided angle with the current making angle corrections necessary.

CHANNEL AND CONTROL.—Channel is wide and shallow; bed composed of coarse gravel and boulders. Right bank subject to overflow at stages above 8 feet; left bank high and is not overflowed. Control is coarse gravel and rock shoal at head of island 100 feet downstream from gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.8 feet at 5 p. m. April 18 (discharge from extension of rating curve, 18,300 second-feet); minimum stage, 1.09 feet September 16 (discharge, 724 second-feet).

1900–1913; 1919–1924: Maximum stage recorded, 15.2 feet November 19, 1906 (discharge not determined); minimum stage, 0.7 foot October 19–26 1904 (discharge, 380 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—None of any consequence.

ACCURACY.—Stage-discharge relation practically permanent during year. Rating curve well defined below 12,000 second-feet; extended above. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good below 12,000 second-feet; fair above that point.

Discharge measurements of Hiwassee River at Reliance, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 20	Ventres and Charlton	1.32	1,100	Mar. 19	D. B. Ventres	2.09	2,710
Nov. 14	D. B. Ventres	1.20	854	May 4	do	2.44	3,510
Dec. 11	do	1.58	1,480	9	do	2.30	3,100
Jan. 18	do	3.03	5,010	30	do	3.32	5,630
Feb. 15	Warren Withee	1.71	1,860	July 11	do	1.77	1,950

Daily discharge, in second-feet, of Hiwassee River at Reliance Tenn., for the year ending September, 30 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	916	1,060	1,130	3,610	2,280	3,480	2,390	6,260	3,480	1,430	1,130	888
2	916	930	1,100	4,370	2,280	3,240	2,160	4,370	3,240	1,430	1,430	822
3	816	888	1,030	8,700	2,160	3,110	2,040	3,860	2,990	1,340	1,430	1,020
4	916	1,020	1,230	8,380	2,160	2,750	2,510	3,480	2,990	1,340	1,340	944
5	916	1,520	4,110	4,890	2,160	6,260	4,110	3,240	2,870	2,040	1,140	860
6	916	1,230	4,110	3,360	2,280	13,400	3,480	3,110	2,510	5,160	1,110	822
7	902	1,030	2,510	2,750	2,160	6,550	3,110	2,990	2,390	3,240	1,250	810
8	888	958	1,930	2,510	1,930	4,630	2,870	2,990	2,390	2,750	2,160	835
9	888	902	1,620	2,280	1,820	4,110	2,870	3,110	2,280	2,040	1,270	902
10	888	902	1,520	2,160	1,820	3,860	2,750	2,870	3,610	1,620	1,080	1,200
11	888	874	1,430	7,140	1,930	3,610	2,870	4,370	3,860	1,930	1,000	874
12	874	874	1,430	5,700	1,930	3,240	3,240	4,630	2,870	1,720	1,050	798
13	860	874	1,340	3,860	2,040	3,110	2,990	3,860	2,390	2,750	1,060	772
14	860	874	1,720	3,240	1,820	3,110	2,750	3,480	2,350	3,480	1,020	772
15	860	848	2,040	2,750	1,720	3,110	2,870	3,360	2,390	2,510	972	760
16	860	848	1,930	4,630	1,720	2,870	4,370	3,110	2,390	1,930	944	724
17	860	835	3,110	8,700	1,620	2,750	3,860	2,870	2,630	1,720	958	760
18	860	822	2,160	5,160	1,720	2,630	15,000	2,750	2,040	1,720	930	822
19	944	822	1,820	3,860	2,040	2,630	11,100	2,750	2,040	1,520	916	810
20	1,100	822	1,620	3,480	4,370	2,630	6,260	2,510	1,820	1,520	888	888
21	986	822	1,520	3,110	4,370	3,610	4,890	2,390	1,820	1,430	848	4,110
22	1,050	822	1,520	2,630	3,240	3,610	4,110	2,390	1,720	1,300	848	1,720
23	972	1,210	2,750	2,390	2,870	3,110	3,860	2,280	1,620	1,250	848	2,510
24	980	1,520	2,390	2,630	2,630	2,990	3,360	2,280	1,620	1,290	848	1,340
25	916	1,050	2,280	4,110	2,510	2,750	3,240	2,390	1,720	1,250	1,000	1,180
26	902	1,060	1,930	3,360	2,510	2,630	2,990	2,160	1,820	1,160	848	1,110
27	888	1,140	1,930	2,870	6,550	2,510	3,360	3,240	1,930	1,130	874	1,340
28	888	1,180	1,930	2,630	5,980	2,510	3,240	4,890	1,720	1,110	835	1,290
29	902	1,060	2,750	2,390	4,370	2,510	3,110	5,700	1,620	1,080	798	1,430
30	902	1,130	2,160	2,390	-----	2,750	8,380	5,430	1,620	1,080	785	2,040
31	1,100	-----	1,930	2,510	-----	2,510	-----	4,370	-----	1,080	772	-----

Monthly discharge of Hiwassee River at Reliance, Tenn., for the year ending September 30, 1924

[Drainage area, 1,180 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,100	860	918	0.778	0.90
November	1,520	822	998	.846	.94
December	4,110	1,030	2,000	1.69	1.95
January	8,700	2,160	3,950	3.35	3.86
February	6,550	1,620	2,650	2.25	2.43
March	13,400	2,510	3,630	3.08	3.55
April	15,000	2,040	4,140	3.51	3.92
May	6,260	2,160	3,470	2.94	3.39
June	3,860	1,620	2,360	2.00	2.23
July	5,160	1,080	1,820	1.54	1.78
August	2,160	772	1,040	.881	1.02
September	4,110	724	1,170	.992	1.11
The year	15,000	724	2,350	1.99	27.08

HIWASSEE RIVER AT CHARLESTON, TENN.

LOCATION.—At Southern Railway bridge at Charleston, Bradley County, 12 miles below confluence with Ocoee River and 18 miles above mouth of Hiwassee River.

DRAINAGE AREA.—2,300 square miles (measured on topographic maps).

RECORDS AVAILABLE.—January 1, 1899, to December 31, 1902, and October 1, 1920, to September 30, 1924. Gage-height record by United States Weather Bureau since 1893.

GAGE.—Chain gage on downstream side of railroad bridge; read by Neil Parkinson, Thomas Bates, and L. C. Bryan. Gage used previous to September 29, 1922, was a vertical staff located on middle pier of railroad bridge.

CHANNEL AND CONTROL.—Stream bed composed of rock and gravel; slightly shifting. Left bank high and rocky; not subject to overflow. Right bank low, but river at gage section is confined to bridge section by a high earth fill. One channel at all stages. Main control at head of Black Bird shoals, 2½ miles below gage; wing dams are part of control and backwater about half way to gage. During high stages backwater from Tennessee River extends to gage.

DISCHARGE MEASUREMENTS.—Made from downstream side of four-span steel highway bridge 500 feet upstream from railroad bridge.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 20.6 feet at 7 a. m. April 19 (discharge, 33,700 second-feet); minimum stage, -0.41 foot at 7.30 a. m. September 13 (discharge, 896 second-feet).

1920-1924: Maximum stage recorded, 26.7 feet at 1 p. m. January 22, 1922 (discharge, 49,500 second-feet); minimum stage, -0.5 foot at 7 a. m. November 26, 1922 (discharge, 860 second-feet).

The United States Weather Bureau reports a stage of 32.5 feet March 31, 1886.

REGULATION.—Tennessee Electric Power Co.'s hydroelectric plants on Ocoee River cause considerable regulation of flow during low-water seasons. The first of these plants was put in operation in 1912.

ACCURACY.—Stage-discharge relation fairly permanent; possibly affected by backwater from Tennessee River during high stages. Rating curve fairly well defined between 2,500 and 15,000 second-feet; poorly defined above and below. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except as indicated in footnote to daily-discharge table. Records fair between 2,500 and 15,000 second-feet; subject to considerable error above that point, and poor below 2,500 second-feet.

Discharge measurements of Hiwassee River at Charleston, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 22	Warren Withee.....	0.51	1,440	Apr. 2	J. P. Clawson.....	2.51	3,240
Oct. 26	Ventres and Charlton..	.53	1,270	Apr. 2	.....do.....	2.90	4,010
Dec. 15	D. B. Ventres.....	3.18	3,950	May 3	Duncan Charlton.....	6.73	8,890
Jan. 14	King and Ventres.....	5.82	7,790	May 31	D. B. Ventres.....	6.29	8,940
Feb. 15	Warren Withee.....	4.02	5,590	July 12	.....do.....	2.23	2,990
Mar. 21	D. B. Ventres.....	5.78	8,280				

Daily discharge, in second-feet, of Hiwassee River at Charleston, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	1,510	1,750	2,280	6,260	4,460	8,300	4,590	18,000	6,820	2,890	3,110	1,110
2.....	1,920	1,510	2,480	8,450	4,200	5,840	4,330	11,700	5,980	3,000	3,340	1,590
3.....	1,440	1,510	1,670	15,200	3,580	4,860	4,070	9,200	5,560	3,340	2,680	1,830
4.....	1,440	1,670	2,380	18,500	4,200	5,140	4,460	7,400	5,840	1,920	2,280	1,920
5.....	1,670	2,010	4,200	13,600	5,560	11,200	7,550	7,250	5,140	2,480	2,380	1,440
6.....	1,510	2,580	8,750	8,450	4,460	26,100	7,400	6,960	4,460	5,840	2,580	1,230
7.....	1,440	1,750	5,420	6,540	4,200	18,200	6,120	5,560	3,940	7,100	2,280	1,110
8.....	1,510	1,670	3,700	6,400	3,700	12,300	6,400	5,420	4,200	6,960	3,220	1,520
9.....	1,920	1,510	3,000	4,860	3,820	9,800	4,720	6,540	4,330	5,280	2,280	1,920
10.....	1,830	1,440	3,340	4,460	3,580	8,750	5,140	6,540	4,590	3,340	1,670	2,010
11.....	1,920	1,510	3,110	10,700	3,220	7,550	5,980	7,100	6,680	3,580	1,830	1,510
12.....	1,750	1,370	3,110	13,900	4,070	6,960	6,400	8,150	5,700	3,340	1,830	1,170
13.....	1,920	1,750	2,850	9,050	4,330	5,420	4,590	6,400	5,140	3,000	2,190	1,000
14.....	1,300	2,190	4,330	7,850	5,000	5,560	5,280	5,560	5,000	6,680	2,190	1,440
15.....	1,300	2,190	4,590	6,960	5,420	4,860	6,540	5,840	3,460	6,120	1,920	1,370
16.....	1,590	2,190	3,700	9,500	5,000	4,070	8,750	5,280	4,860	4,720	1,670	1,050
17.....	1,670	1,440	4,200	17,800	4,860	4,460	8,150	5,000	5,840	3,700	1,440	1,510
18.....	1,750	1,230	5,560	12,200	4,460	5,700	27,600	4,720	4,720	3,460	1,590	1,370
19.....	1,510	1,300	4,720	9,350	5,560	4,590	31,600	5,280	4,200	3,580	1,830	1,440
20.....	1,540	1,510	3,700	8,080	10,200	5,420	20,000	4,460	3,700	3,110	1,670	1,590
21.....	1,560	1,510	3,220	6,820	9,950	8,000	12,300	4,460	3,340	3,000	1,670	1,750
22.....	1,590	1,830	3,460	6,680	7,550	6,820	9,950	4,590	2,780	3,220	1,670	2,480
23.....	1,830	2,010	3,940	5,280	5,840	6,400	8,600	4,330	3,110	3,220	1,510	2,580
24.....	2,100	3,220	4,860	4,860	5,220	6,260	7,550	4,330	3,220	3,220	1,300	2,100
25.....	1,510	2,190	4,860	6,960	4,590	5,280	5,840	3,820	3,460	3,340	1,300	2,010
26.....	1,510	1,670	4,590	6,960	5,140	5,000	5,000	4,220	3,940	3,460	1,670	1,590
27.....	1,590	2,780	5,140	5,420	9,350	4,720	5,280	7,850	3,820	3,000	1,920	1,920
28.....	1,370	2,680	4,460	5,420	12,800	4,720	6,120	9,500	3,220	2,100	1,510	2,480
29.....	1,230	1,830	4,200	5,140	9,350	5,000	5,840	10,900	2,580	3,460	1,440	2,010
30.....	1,510	2,010	3,580	4,460	-----	4,720	12,600	9,800	2,680	3,340	1,300	2,890
31.....	1,830	-----	3,700	4,590	-----	4,460	-----	8,600	-----	3,110	1,110	-----

NOTE.—Gage not read Oct. 20 and 21, Jan. 20, Feb. 24, and Sept. 8; discharge interpolated.

Monthly discharge of Hiwassee River at Charleston, Tenn., for the year ending September 30, 1924

[Drainage area, 2,300 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	2,100	1,230	1,620	0.704	0.81
November.....	3,220	1,230	1,860	.809	.90
December.....	8,750	1,670	3,970	1.73	1.99
January.....	18,500	4,460	8,410	3.66	4.22
February.....	12,800	3,220	5,640	2.45	2.64
March.....	26,100	4,070	7,310	3.18	3.67
April.....	31,600	4,070	8,620	3.75	4.18
May.....	18,000	3,820	6,930	3.01	3.47
June.....	6,820	2,580	4,410	1.92	2.14
July.....	7,100	1,920	3,800	1.65	1.90
August.....	3,340	1,110	1,950	.848	.98
September.....	2,890	1,000	1,700	.739	.82
The year.....	31,600	1,000	4,690	2.04	27.72

SHOOTING CREEK NEAR HAYESVILLE, N. C.

LOCATION.—At steel highway bridge on new road being built from Hayesville to Franklin, N. C., 100 feet downstream from new concrete highway bridge, 5 miles from Hiwassee River, and $7\frac{1}{2}$ miles southeast of Hayesville, Clay County.

DRAINAGE AREA.—37.9 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 15, 1922, to March 13, 1924, when steel bridge was razed and record discontinued.

GAGE.—Chain gage attached to upstream handrail of bridge; read by Mrs. Lena Kitchens.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed of stream composed of gravel and sand; probably shifting. Left bank is high, rocky, and not subject to overflow. Right bank is fairly high and rarely subject to overflow. Control is a gravel and boulder shoal 75 feet below gage; probably permanent.

EXTREMES OF DISCHARGE.—1922–1924: Maximum stage recorded, 6.80 feet morning reading December 17, 1922 (discharge, 2,380 second-feet); minimum stage, 1.72 feet evening reading October 5, 1922 (discharge, 20 second-feet).

ICE.—Stage-discharge relation probably never affected by ice.

REGULATION.—Probably negligible.

ACCURACY.—Stage-discharge relation probably permanent. Rating curve is well defined between 40 and 300 second-feet and is an extension above. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Shooting Creek near Hayesville, N. C., during the year ending September 30, 1924

[Made by L. J. Hall]

Date	Gage height	Dis-charge	Date	Gage height	Dis-charge	Date	Gage height	Dis-charge
Dec. 23.....	<i>Feet</i> 3.05	<i>Sec.-ft.</i> 225	Dec. 29.....	<i>Feet</i> 2.71	<i>Sec.-ft.</i> 139	Dec. 31.....	<i>Feet</i> 2.50	<i>Sec.-ft.</i> 106
28.....	2.99	198	29.....	2.66	132			

Daily discharge, in second-feet, of Shooting Creek near Hayesville, N. C., for the period October 1, 1923, to March 13, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1.....	27	29	41	133	92	111	16.....	24	28	106	522	69	-----
2.....	27	28	39	256	86	115	17.....	24	28	90	256	69	-----
3.....	27	28	38	270	80	104	18.....	29	28	76	184	78	-----
4.....	27	58	76	230	85	97	19.....	58	28	69	162	86	-----
5.....	28	39	133	162	104	376	20.....	31	27	65	142	133	-----
6.....	28	37	111	133	90	256	21.....	29	27	62	124	111	-----
7.....	27	34	90	113	80	184	22.....	29	27	59	119	106	-----
8.....	26	31	71	106	79	152	23.....	27	78	162	108	96	-----
9.....	25	31	64	94	80	142	24.....	26	39	108	124	90	-----
10.....	24	29	60	94	78	133	25.....	27	33	88	133	88	-----
11.....	24	29	63	314	80	122	26.....	27	41	78	110	173	-----
12.....	24	29	57	110	173	111	27.....	27	47	103	102	142	-----
13.....	24	29	71	152	74	106	28.....	27	38	218	97	142	-----
14.....	24	28	70	133	71	-----	29.....	27	40	142	94	124	-----
15.....	23	28	98	119	69	-----	30.....	42	53	119	92	-----	-----
							31.....	34	-----	98	91	-----	-----

Monthly discharge of Shooting Creek near Hayesville, N. C., for the period October 1, 1923, to March 13, 1924

[Drainage area, 37.9 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	58	23	28.2	0.744	0.86
November.....	78	27	35.0	.923	1.03
December.....	218	38	87.9	2.32	2.68
January.....	522	91	157	4.14	4.77
February.....	173	69	97.5	2.57	2.77
March 1-13.....	376	97	155	4.09	1.98

VALLEY RIVER AT TOMOTLA, N. C.

LOCATION.—At steel highway bridge 600 feet from Tomotla post office, Cherokee County, half a mile upstream from mouth of Rodgers Creek and 5 miles northeast of Murphy.

DRAINAGE AREA.—106 square miles (measured on topographic map).

RECORDS AVAILABLE.—June 29, 1904, to December 31, 1909; January 21, 1914, to April 30, 1917; October 29, 1918, to September 30, 1924.

GAGE.—Chain gage attached to upstream side of bridge; read by J. T. Hayes.

DISCHARGE MEASUREMENTS.—Made from lower side of bridge.

CHANNEL AND CONTROL.—Channel straight for 50 feet above and below gage.

Bed is composed of solid rock, gravel, and boulders; fairly permanent.

Banks are high but left side is subject to overflow at extremely high stages.

Control is a rock, gravel, and boulder riffle just below bridge.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.6 feet at 6 p. m. January 3 (discharge, 2,030 second-feet); minimum stage, 0.82 foot several readings October 13-18, September 7 and 8 (discharge, 48 second-feet).

1904-1909; 1914-1917; 1918-1924: Maximum stage recorded, 17.3 feet November 19, 1906 (estimated discharge, 7,780 second-feet); minimum discharge, 22 second-feet October 28 to November 2, 1904.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Negligible.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined below 4,000 second-feet. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Valley River at Tomotla, N. C., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 21	D. B. Ventres	0.87	51.2	Feb. 25	D. B. Ventres	1.96	266
Nov. 22	do .....	.87	56.7	Mar. 15	do	2.30	359
Dec. 8	do	1.34	133	16	do	1.90	261
27	L. J. Hall.....	1.65	193				

Daily discharge, in second-feet, of Valley River at Tomolla, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	64	58	77	732	267	322	230	488	267	125	93	55
2.....	58	56	71	984	242	294	218	394	242	114	93	92
3.....	56	58	71	1,450	230	267	207	350	254	116	125	76
4.....	56	134	134	948	218	242	280	322	230	125	95	65
5.....	58	71	294	522	267	1,020	322	294	207	120	92	60
6.....	59	65	230	336	230	804	294	308	196	207	105	58
7.....	56	66	185	308	207	556	267	267	185	144	134	51
8.....	56	68	134	254	196	456	242	308	185	154	116	49
9.....	56	59	125	230	196	379	230	267	185	121	90	144
10.....	53	59	116	218	196	394	267	379	242	125	84	70
11.....	52	59	125	732	185	350	308	660	280	154	82	60
12.....	51	59	107	522	207	322	336	556	207	116	111	58
13.....	49	59	107	394	185	294	308	424	196	876	93	58
14.....	48	58	196	322	185	294	280	394	196	280	80	58
15.....	48	56	164	280	174	280	267	364	185	196	80	56
16.....	48	56	164	696	174	254	254	322	322	185	76	60
17.....	48	53	164	624	164	254	267	294	207	207	74	59
18.....	48	53	134	456	196	267	1,170	280	174	164	76	59
19.....	84	53	125	394	267	254	804	267	154	144	74	59
20.....	62	53	120	336	840	336	556	242	154	134	74	394
21.....	53	51	116	280	522	424	456	242	144	123	71	336
22.....	58	52	111	242	379	364	379	218	144	118	71	254
23.....	53	185	294	230	322	336	336	207	134	112	68	144
24.....	53	82	218	322	308	308	294	230	144	134	68	104
25.....	51	71	164	456	267	280	267	230	134	116	68	100
26.....	52	88	154	350	294	267	267	196	134	105	68	123
27.....	55	105	185	294	488	254	294	456	154	100	65	102
28.....	53	90	424	280	394	254	267	394	134	97	62	93
29.....	55	77	294	267	350	308	242	379	134	93	58	218
30.....	82	84	230	280	207	267	804	336	154	92	53	154
31.....	68	-----	379	254	-----	242	-----	280	-----	95	52	-----

Monthly discharge of Valley River at Tomolla, N. C., for the year ending September 30, 1924

[Drainage area, 106 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	84	48	56.2	0.530	0.61
November.....	185	51	71.0	.670	.75
December.....	424	71	175	1.65	1.90
January.....	1,450	218	451	4.25	4.90
February.....	840	164	281	2.65	2.86
March.....	1,020	242	353	3.33	3.84
April.....	1,170	207	357	3.37	3.76
May.....	660	196	334	3.15	3.63
June.....	322	134	189	1.78	1.99
July.....	876	92	161	1.52	1.75
August.....	134	52	82.3	.776	.89
September.....	394	49	109	1.03	1.15
The year.....	1,450	48	218	2.06	23.03

NOTTELY RIVER NEAR RANGER, N. C.

LOCATION.—At steel highway bridge half a mile downstream from Ranger, Cherokee County, which is on Louisville & Nashville Railroad, $7\frac{1}{2}$ miles southwest of Murphy.

DRAINAGE AREA.—272 square miles (measured on topographic maps).

RECORDS AVAILABLE.—February 16, 1901, to December 31, 1905; January 22, 1914, to April 30, 1917; October 20, 1918, to September 30, 1924.

GAGE.—Chain gage attached to downstream side of highway bridge; read by A. D. Kilpatrick.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Channel straight for 50 feet above and below bridge. Current somewhat erratic owing to action of a sharp riffle 100 feet above gage. Bed composed of gravel, sand, and boulders; fairly permanent. Right bank high and not subject to overflow; left bank is overflowed above 18-foot stage. Control is a rock riffle 300 feet downstream and is probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 14 feet March 5 (discharge, 5,350 second-feet); minimum stage, 2.58 feet at 4 p. m. September 14 (discharge, 178 second-feet).

1901–1905; 1914–1917; 1918–1924: Maximum stage recorded, 21 feet February 28, 1902 (discharge not determined); minimum stage, 2.1 feet several periods in 1914 (discharge, 89 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Negligible.

ACCURACY.—Stage-discharge relation did not change during year. Rating curve well defined below 2,500 second-feet and extended above that point. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except as stated in footnote to daily-discharge table. Records good.

Discharge measurements of Nottely River near Ranger, N. C., during the year ending September 30, 1924

[Made by D. B. Ventres]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	<i>Feet</i>	<i>Sec.-ft.</i>		<i>Feet</i>	<i>Sec.-ft.</i>		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 22 -----	3.26	310	Dec. 8 -----	3.90	466	Mar. 14 -----	4.67	683
Nov. 23 -----	3.73	413	Feb. 25 -----	4.08	535	17 -----	4.39	623

Daily discharge, in second-feet, of Nottely River near Ranger, N. C., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	276	266	276	698	489	765	489	1,030	800	364	364	190
2	266	266	276	1,200	489	800	489	874	836	364	319	480
3	266	255	297	1,740	489	731	462	800	800	341	297	235
4	266	411	462	993	462	604	545	698	731	387	297	216
5	266	387	1,560	836	545	2,940	953	666	635	489	276	216
6	266	319	765	574	517	2,470	698	666	604	698	276	207
7	255	319	574	545	489	1,380	635	698	574	489	341	198
8	255	297	489	517	462	1,030	604	635	545	436	297	190
9	255	276	411	489	436	874	574	604	517	387	266	297
10	255	276	387	462	436	800	604	666	489	436	255	226
11	255	276	387	1,520	436	765	604	913	953	411	245	198
12	245	266	364	1,160	436	731	574	800	666	387	245	190
13	245	266	341	913	436	698	545	731	604	387	235	181
14	245	266	666	698	436	666	517	698	604	411	226	181
15	245	255	574	574	436	604	1,880	698	489	387	226	190
16	245	255	1,120	1,350	411	604	1,080	666	1,120	387	216	190
17	245	255	874	1,290	387	574	1,030	604	604	364	216	198
18	245	255	604	993	387	545	3,070	574	517	341	207	198
19	297	276	517	800	574	545	1,920	545	462	364	207	207
20	341	319	462	666	1,200	666	1,200	545	462	319	207	679
21	319	266	436	604	731	731	1,030	545	436	319	198	436
22	319	319	411	574	604	666	953	517	436	319	198	387
23	297	489	874	545	545	635	874	517	411	319	198	319
24	276	341	604	604	517	604	765	517	411	297	198	276
25	266	319	517	874	489	574	698	545	489	297	198	297
26	255	297	489	666	574	545	666	635	436	297	190	364
27	255	341	436	604	1,600	545	800	953	489	276	207	411
28	255	297	436	545	953	545	698	1,650	436	276	198	319
29	255	297	436	517	874	545	666	1,290	387	276	198	489
30	276	276	411	545	-----	545	1,740	1,080	387	255	198	489
31	276	-----	411	545	-----	517	-----	874	-----	411	198	-----

NOTE.—Discharge Jan. 11, 16, Mar. 5, 6, Apr. 18, Sept. 2, and 20 determined by approximate integration of graph constructed on basis of two daily gage readings.

Monthly discharge of Nottely River near Ranger, N. C., for the year ending September 30, 1924

[Drainage area, 272 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	341	245	267	0.982	1.13
November	489	255	300	1.10	1.23
December	1,560	276	544	2.00	2.31
January	1,520	462	795	2.92	3.37
February	1,600	387	581	2.14	2.31
March	2,940	517	813	2.99	3.45
April	3,070	462	912	3.35	3.74
May	1,650	517	749	2.75	3.17
June	1,120	387	578	2.12	2.36
July	698	255	371	1.36	1.57
August	364	190	239	.879	1.01
September	679	181	288	1.06	1.18
The year	3,070	181	536	1.97	26.83

TOCCOA RIVER NEAR DIAL, GA.

LOCATION.—Half a mile above Shallow Ford, 1 mile above Stanley Creek, 2½ miles below Big Creek, and 4 miles northwest of Dial, Fannin County.

DRAINAGE AREA.—175 square miles (measured on topographic maps).

RECORDS AVAILABLE.—January 1, 1913, to September 30, 1924. Records were obtained at Butts Bridge, 2 miles above Dial, May 17, 1907, to June 30, 1908.

GAGE.—Bristol water-stage recorder. Sea-level elevation of auxiliary staff gage, 1,781.13 feet.

DISCHARGE MEASUREMENTS.—Made from cable 1,000 feet upstream from gage.

CHANNEL AND CONTROL.—Bed of stream consists of gravel and boulders; fairly smooth. Left bank subject to overflow at a stage of about 12 feet. Control is at head of rapids just below gage; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6 feet at 2.30 p. m. March 5 (discharge, 4,100 second-feet); minimum stage, 0.85 foot September 6–8 and 13 (discharge, 170 second-feet).

1913–1924: Maximum stage recorded, 10 feet at 6 p. m. July 9, 1916 (discharge, 9,200 second-feet); minimum stage, 0.55 foot October 13, 29, and 30, 1914 (discharge, 109 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—There are slight diurnal fluctuations due to operation of small mills upstream.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve well defined below 4,000 second-feet. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting gage-height graphs, except for days of considerable fluctuation in stage, for which it was ascertained by averaging hourly discharge. Records good.

COOPERATION.—Gage-height record furnished by Tennessee Electric Power Co.

Discharge measurements of Toccoa River near Dial, Ga., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 23	Ventres and Charlton	1.23	254	Mar. 18	D. B. Ventres	2.18	655
Nov. 28	D. B. Ventres	1.26	275	May 12	do	2.20	675
Dec. 6	do	2.10	594	Sept. 30	do	1.40	314

Daily discharge, in second-feet, of Toccoa River near Dial, Ga., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	245	238	274	403	572	703	515	806	728	340	304	180
2.....	240	230	253	872	572	703	500	728	697	340	280	184
3.....	240	238	248	1, 190	562	638	500	715	661	354	280	190
4.....	242	572	630	945	578	606	691	703	633	368	280	186
5.....	240	392	1, 150	774	667	2, 390	832	673	589	340	274	182
6.....	248	298	633	562	589	1, 690	667	655	562	490	277	176
7.....	250	277	459	535	550	1, 160	616	661	525	414	334	174
8.....	250	268	410	486	525	910	584	673	505	389	304	174
9.....	245	256	386	482	495	832	562	638	594	350	280	262
10.....	238	238	368	614	495	838	594	667	562	350	280	200
11.....	235	235	372	1, 760	495	760	594	734	515	347	271	186
12.....	235	232	347	980	505	709	562	655	482	347	265	180
13.....	232	232	364	786	486	685	550	644	472	482	250	176
14.....	228	230	490	691	468	697	545	633	545	418	238	184
15.....	230	230	403	650	450	655	760	606	482	386	225	196
16.....	245	235	786	1, 550	442	600	679	567	644	354	200	198
17.....	277	232	638	1, 190	430	589	742	545	594	350	198	194
18.....	274	225	490	910	454	606	2, 710	530	545	344	192	196
19.....	418	228	434	845	594	611	1, 600	505	510	328	190	196
20.....	292	230	438	806	584	691	1, 080	500	442	347	184	652
21.....	250	238	410	734	703	741	945	505	410	325	180	354
22.....	280	242	414	679	589	685	910	495	400	310	205	502
23.....	262	512	722	655	530	691	832	482	386	310	198	376
24.....	268	265	562	878	520	667	780	486	396	304	208	295
25.....	259	238	472	945	510	644	734	468	382	286	215	286
26.....	250	268	434	679	597	638	715	438	368	280	250	301
27.....	230	286	426	638	1, 520	622	734	796	372	280	208	295
28.....	228	248	486	616	945	606	715	780	361	280	194	295
29.....	232	253	442	594	780	589	703	1, 190	354	280	190	310
30.....	265	361	410	606	-----	600	980	1, 080	350	277	190	304
31.....	271	-----	430	589	-----	556	-----	812	-----	274	184	-----

NOTE.—Recorder not operating July 19 to Aug. 22 and Sept. 27-30; discharge for these periods determined from mean of two daily staff-gage readings.

Monthly discharge of Toccoa River near Dial, Ga., for the year ending September 30, 1924

[Drainage area, 175 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	418	228	255	1.46	1.68
November.....	572	225	274	1.57	1.75
December.....	1, 150	248	477	2.73	3.15
January.....	1, 760	403	795	4.54	5.23
February.....	1, 520	430	593	3.39	3.66
March.....	2, 390	556	778	4.45	5.13
April.....	2, 710	500	794	4.54	5.06
May.....	1, 190	438	687	3.75	4.32
June.....	728	350	502	2.87	3.20
July.....	490	274	343	1.96	2.26
August.....	334	180	236	1.35	1.56
September.....	652	174	253	1.45	1.62
The year.....	2, 710	174	496	2.83	38.62

TOCCOA RIVER NEAR MORGANTON, GA.

LOCATION.—One-fourth mile below highway bridge on road from Blairidge to Morganton, Ga., seven-eighths mile downstream from mouth of Star Creek, and 2 miles west of Morganton, Fannin County.

DRAINAGE AREA.—231 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 25, 1898, to March 31, 1903, and April 1, 1913, to September 30, 1924. Records 1898 to 1903 published in Water-Supply Paper 197, under "Toccoa River near Blairidge, Ga."

GAGE.—Bristol water-stage recorder installed in 1914 on right bank one-fourth mile downstream from relocated bridge and 150 feet downstream from old vertical staff which was used from 1898 to 1903. Zero of both gages, 1,544.5 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from bridge or from cable 800 feet upstream from gage.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders. Banks high; left bank subject to overflow at about gage height of 15 feet; right bank not subject to overflow. Low-water control is a low shoal just below gage; high-water control is combination of shoals and banks. Control subject to small shifts.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year from water-stage recorder, 8.3 feet at 1.30 p. m. March 5 (discharge, 6,370 second-feet); minimum mean daily stage, 2.42 feet September 7 (discharge, 232 second-feet).

1913-1924: Maximum stage recorded, 13 feet at 9 p. m. July 9, 1916 (discharge, from extension of rating curve, 13,900 second-feet); minimum stage, 1.8 feet September 10, 14-17, 23, 29, 30, and October 1, 1914 (discharge, 129 second feet).

REGULATION.—Slight diurnal fluctuations probably caused by operation of small mills upstream.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 200 and 3,500 second-feet. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting gage-height graph, except for days of considerable fluctuation in stage, for which it is ascertained by averaging hourly discharge, and except as indicated in footnote to table of daily discharge. Records good below 3,500 second-feet and fair to poor for higher stages.

COOPERATION.—Gage-height record furnished by Tennessee Electric Power Co.

Discharge measurements of Toccoa River near Morganton, Ga., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 24	Ventres and Charlton	2.70	312	Feb. 24	D. B. Ventres	3.40	725
Nov. 21	D. B. Ventres	2.61	284	Mar. 18	do	3.54	803
Dec. 29	do	2.75	367	May 11	do	3.62	791
	do	3.31	643	Sept. 29	do	2.87	447

Daily discharge, in second-feet, of Toccoa River near Morganton, Ga., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	372	324	440	706	765	935	652	970	935	455	362	250
2-----	362	320	390	1,220	746	900	634	935	865	440	385	253
3-----	349	324	390	1,680	700	830	629	872	778	435	362	260
4-----	344	646	674	1,420	700	784	844	830	739	470	316	250
5-----	354	558	1,610	1,000	810	3,320	1,080	830	676	455	308	242
6-----	354	398	935	810	713	1,920	837	791	658	607	296	238
7-----	354	367	658	810	670	1,300	765	824	682	558	358	232
8-----	349	340	574	720	640	1,120	706	804	664	510	340	236
9-----	344	332	515	682	634	1,040	688	765	739	450	372	349
10-----	340	336	485	726	646	1,040	694	830	765	435	328	264
11-----	332	328	495	2,050	629	935	713	970	700	445	312	242
12-----	332	332	455	1,260	646	893	688	858	670	455	300	236
13-----	336	324	455	1,000	602	865	658	791	612	558	292	242
14-----	340	316	629	900	612	879	640	778	706	525	280	238
15-----	336	316	546	824	590	830	1,110	778	618	470	276	246
16-----	340	312	1,090	1,690	585	791	872	732	875	426	276	246
17-----	367	312	935	1,500	585	798	1,040	700	634	416	284	246
18-----	372	308	706	1,150	624	784	3,210	688	585	416	284	236
19-----	530	308	612	1,040	784	765	1,800	676	558	421	272	246
20-----	421	304	602	970	1,260	837	1,300	664	530	426	260	581
21-----	354	304	585	851	886	935	1,080	664	541	408	256	435
22-----	398	312	590	810	758	810	1,000	652	515	394	253	430
23-----	362	625	1,000	784	713	765	900	618	505	380	300	426
24-----	340	435	804	1,000	694	758	844	624	510	385	280	300
25-----	328	358	670	1,190	682	720	810	624	500	372	272	304
26-----	324	376	602	935	817	732	830	634	480	390	324	324
27-----	320	430	596	837	1,970	720	844	1,000	485	367	264	344
28-----	324	354	694	810	1,260	700	817	1,140	495	362	253	292
29-----	324	349	652	778	1,040	752	824	1,550	470	390	250	376
30-----	336	480	602	791	-----	765	1,190	1,420	460	358	264	390
31-----	380	-----	646	765	-----	688	-----	1,000	-----	340	253	-----

NOTE.—Discharge, May 2-7, determined from morning reading of staff gage; May 8-23, from mean of two daily readings of staff gage; recording gage not operating for these periods.

Monthly discharge of Toccoa River near Morganton, Ga., for the year ending September 30, 1924

[Drainage area, 231 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	530	320	355	1.54	1.78
November-----	646	304	371	1.61	1.80
December-----	1,610	390	666	2.88	3.32
January-----	2,050	682	1,020	4.42	5.10
February-----	1,970	585	785	3.40	3.67
March-----	3,320	688	965	4.18	4.82
April-----	3,210	629	957	4.14	4.62
May-----	1,550	618	839	3.63	4.18
June-----	935	460	632	2.74	3.06
July-----	607	340	436	1.89	2.18
August-----	385	290	298	1.29	1.49
September-----	581	232	298	1.29	1.44
The year-----	3,320	232	635	2.75	37.46

OCOEE RIVER AT COPPERHILL, TENN.

LOCATION.—Half a mile below highway bridge in Copperhill, Polk County, one-eighth mile above mouth of Fightingtown Creek.

DRAINAGE AREA.—374 square miles.

RECORDS AVAILABLE.—March 21, 1903, to December 31, 1913; and October 1, 1918, to September 30, 1924.

GAGE.—Staff gage on right bank at pump house of Tennessee Copper Co.; read by L. V. Curran.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed of stream is not permanent at gage. Control is practically permanent.

EXTREMES OF STAGE.—Maximum stage recorded during year, 5.8 feet at 5 p. m.

March 5; minimum stage, 0.80 foot August 29, September 7, 8, 13, and 14.

1903-1913; 1918-1924: Maximum stage recorded, 18.5 feet November 19, 1906.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—There is a slight diurnal fluctuation during extremely low stages caused by operation of a few small water-power plants above gage.

COOPERATION.—Gage-height record furnished by L. V. Curran.

Data inadequate for determination of discharge.

No discharge measurements were made at this station during year.

Daily gage height, in feet, of Ocoee River at Copperhill, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	0.94	1.3	1.85	1.7	2.0	1.55	2.3	2.0	1.3	1.2	0.83
2	1.0	.50	1.1	2.6	1.7	2.0	1.55	2.1	2.0	1.3	1.35	.98
3	1.05	.98	1.1	3.1	1.65	1.9	1.5	2.0	1.9	1.3	1.2	1.0
4	1.0	1.35	1.45	2.2	1.65	1.8	1.9	1.9	1.9	1.35	1.15	.90
5	.97	1.55	3.0	2.2	1.8	4.0	2.4	1.9	1.8	2.2	1.2	.90
6	.97	1.2	2.2	1.8	1.65	3.3	1.95	1.8	1.7	2.4	1.1	.85
7	.95	1.1	1.6	1.8	1.6	2.6	1.8	1.8	1.7	2.3	1.2	.82
8	.95	1.05	1.4	1.7	1.55	2.2	1.7	1.9	1.7	1.75	1.2	.82
9	.94	1.0	1.3	1.65	1.5	2.1	1.7	1.85	1.75	1.6	1.15	1.4
10	.91	.95	1.3	1.6	1.55	2.2	1.7	1.95	1.9	1.5	1.05	1.0
11	.90	.85	1.3	3.3	1.5	2.1	1.75	2.2	1.95	1.4	1.0	.88
12	.87	.95	1.2	2.0	1.5	2.0	1.75	1.95	1.7	1.5	1.0	.84
13	.87	.95	1.25	2.0	1.5	1.9	1.65	1.8	1.6	1.7	.98	.80
14	.85	.90	1.7	1.9	1.5	1.9	1.65	1.8	1.8	1.65	.95	.80
15	.88	.99	1.4	1.8	1.5	1.9	2.2	1.8	1.65	1.5	.90	.84
16	.88	.90	2.3	2.4	1.45	1.8	2.2	1.75	2.1	1.4	.90	.86
17	.90	.90	2.1	2.7	1.45	1.8	2.0	1.7	1.65	1.3	.90	.87
18	.92	.90	1.85	2.2	1.5	1.75	4.8	1.7	1.6	1.45	.93	.88
19	1.1	.90	1.6	2.2	1.7	1.75	3.2	1.65	1.55	1.3	.86	.89
20	1.15	.88	1.4	2.0	2.6	1.8	2.6	1.6	1.5	1.3	.86	1.4
21	.92	.88	1.4	1.85	2.5	2.0	2.3	1.6	1.5	1.3	.84	1.6
22	.98	.88	1.4	1.75	1.8	1.8	2.2	1.6	1.45	1.25	.88	1.3
23	1.05	1.7	2.0	1.7	1.7	1.75	2.1	1.55	1.4	1.2	1.0	1.6
24	.95	1.3	1.8	2.0	1.65	1.7	2.0	1.6	1.4	1.2	.85	1.3
25	.85	1.05	1.6	2.4	1.6	1.7	1.95	1.6	1.4	1.2	.90	1.15
26	.85	1.05	1.5	1.95	1.8	1.65	1.9	1.5	1.6	1.2	.85	1.15
27	.85	1.3	1.4	1.85	3.7	1.6	2.0	2.3	1.45	1.1	.90	1.3
28	.85	1.1	1.6	1.8	2.5	1.6	1.95	2.4	1.4	1.1	.83	1.35
29	.95	1.1	1.5	1.75	2.2	1.7	1.9	2.8	1.35	1.15	.82	1.35
30	1.2	1.4	1.45	1.8	-----	1.75	3.0	2.7	1.35	1.1	.82	1.5
31	1.15	-----	1.45	1.7	-----	1.6	-----	2.2	-----	1.2	.84	-----

OCOEE RIVER AT McHARGE, TENN.

LOCATION.—At county highway bridge half a mile downstream from McHarge railroad siding, Polk County, 2½ miles downstream from Copperhill, Tenn. Potato Creek enters half a mile above gage.

DRAINAGE AREA.—451 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 1, 1917, to September 30, 1924.

GAGE.—Vertical staff bolted to left downstream side of concrete bridge pier at left bank; read by Leslie Rogers.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Right bank high; left bank subject to overflow at extreme stages, but all water is confined to bridge. Control consists of solid rock riffle 300 feet below gage; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.6 feet at 4.30 p. m. March 5 (discharge, 8,140 second-feet); minimum stage, 0.58 foot September 17 (discharge, 409 second-feet).

1917-1924: Maximum stage recorded, 11.4 feet at 3.30 p. m. January 21, 1922 (discharge, 13,100 second-feet); minimum stage, 0.23 foot November 25-27 and December 1, 1922 (discharge, 311 second-feet).

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve fairly well defined between 350 and 1,500 second-feet and well defined between 1,500 and 5,000 second-feet; extended above 5,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good between 1,500 and 5,000 second-feet; fair above and below.

COOPERATION.—Gage-height record furnished by Tennessee Electric Power Co.

Discharge measurements of Ocoee River at McHarge, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 22	Ventres and Charlton—	0.99	730	Mar. 19	D. B. Ventres ————	1.80	1,330
Nov. 15	D. B. Ventres ————	.72	534	May. 10	—do— ————	2.11	1,510
Dec. 10	—do ————	1.18	825	Sept. 28	—do ————	1.02	678

Daily discharge, in second-feet, of Ocoee River at McHarge, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	670	540	605	1,440	1,190	918	1,270	2,170	1,620	845	775	638
2	670	540	572	1,620	1,190	775	1,190	1,620	1,620	845	810	705
3	670	605	572	3,020	992	1,360	1,190	1,620	1,440	845	810	670
4	638	810	845	2,370	992	1,270	1,700	1,620	1,440	810	775	670
5	638	670	1,620	1,880	1,190	5,280	1,620	1,520	1,360	810	740	605
6	605	670	1,520	1,360	1,190	3,500	1,520	1,440	1,270	810	740	450
7	605	638	1,270	1,360	1,190	2,170	1,360	1,440	1,190	1,620	670	420
8	605	605	775	1,190	1,030	1,620	1,270	1,440	1,190	3,020	670	775
9	605	540	670	1,360	955	1,800	1,270	1,440	1,270	1,980	670	705
10	572	510	810	1,110	992	1,800	1,270	1,800	1,270	1,620	670	605
11	572	510	845	3,500	992	1,700	1,440	1,800	1,360	1,360	670	572
12	572	510	775	1,980	955	1,620	1,270	1,700	1,270	992	638	540
13	540	480	1,440	1,880	955	1,520	1,190	1,440	1,190	992	638	480
14	510	480	1,440	1,440	918	1,440	1,190	1,440	1,440	955	605	480
15	480	480	1,620	1,360	918	1,360	1,270	1,360	1,360	955	605	420
16	480	510	1,800	3,500	880	1,270	1,620	1,360	2,080	918	572	420
17	540	480	1,440	2,170	880	1,360	1,800	1,270	1,440	918	605	420
18	572	480	1,360	1,800	880	1,270	6,840	1,270	1,270	955	605	450
19	572	480	1,270	1,620	1,030	1,440	3,380	1,190	1,110	880	572	480
20	540	480	1,270	1,520	2,170	1,440	3,260	1,190	1,110	845	540	740
21	540	450	1,190	1,440	1,980	1,440	2,080	1,190	1,030	810	605	740
22	605	450	1,030	1,440	1,270	1,270	1,980	1,110	955	810	605	740
23	605	1,030	1,110	1,270	1,190	1,270	1,800	1,110	955	810	572	705
24	540	845	1,270	2,170	1,110	1,270	1,620	1,110	918	810	572	705
25	540	605	1,190	1,880	1,190	1,270	1,620	1,110	918	775	572	670
26	540	638	1,030	1,520	1,980	1,190	1,520	1,030	2,080	740	670	670
27	480	670	992	1,270	4,500	1,190	1,620	2,170	1,440	740	670	670
28	480	638	992	1,270	2,080	1,190	1,520	2,800	1,270	705	670	705
29	480	605	955	1,190	1,620	1,360	1,440	2,580	880	705	670	880
30	845	605	918	1,270	1,270	1,360	3,020	2,470	880	670	638	775
31	670	-----	1,030	1,190	-----	1,270	-----	1,700	-----	845	605	-----

Monthly discharge of Ocoee River at McHarge, Tenn., for the year ending September 30, 1924

[Drainage area, 451 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	845	480	580	1.29	1.49
November.....	1,030	450	585	1.30	1.45
December.....	1,800	572	1,100	2.44	2.81
January.....	3,500	1,110	1,720	3.81	4.39
February.....	4,500	880	1,320	2.93	3.16
March.....	5,280	775	1,580	3.50	4.04
April.....	6,840	1,190	1,840	4.08	4.55
May.....	2,800	1,030	1,560	3.46	3.99
June.....	2,080	880	1,290	2.86	3.19
July.....	3,020	670	1,010	2.24	2.58
August.....	810	540	653	1.45	1.67
September.....	880	420	617	1.37	1.53
The year.....	6,840	420	1,160	2.57	34.85

OCOEE RIVER AT EMF, TENN.

LOCATION.—700 feet below Tennessee Electric Power Co.'s plant No. 2, known as Caney Creek plant, half a mile upstream from Emf, Polk County, and 1½ miles downstream from mouth of Goforth Creek.

DRAINAGE AREA.—530 square miles (determined by Tennessee Electric Power Co.).

RECORDS AVAILABLE.—January 1, 1913, to September 30, 1924.

GAGES.—Stevens seven-day recorder in concrete stilling well on left bank, installed June 19, 1924. Prior to that date gage was a Bristol water-stage recorder 100 feet upstream. Datum unchanged. Sea-level elevation of zero of gage 830.00 feet.

DISCHARGE MEASUREMENTS.—Made from suspension footbridge 900 feet downstream from gage.

CHANNEL AND CONTROL.—Bed of stream, for several hundred feet below gage, is composed of boulders, gravel, and solid rock. Banks high; subject to small overflow. Control is a shoal and island 600 feet downstream from gage; permanent for long periods.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.4 feet at 8 a. m. April 18 (discharge, 9,470 second-feet); minimum mean daily stage, 3.39 feet September 13 (discharge, 448 second-feet).

1913-1924: Maximum stage recorded, 13.7 feet at 12.30 a. m. July 10, 1916 (discharge, 21,400 second-feet); minimum stage, 2.77 feet September 15-17, 1914 (discharge, 285 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Operation of plant No. 2 causes considerable fluctuation at times but, as a rule, this plant runs on a steady load, the quantity of water used depending largely on the stage of river. Storage at diversion dam is very small. When plant is shut down water overflows the dam in a short time so that periods of fluctuation are short.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 400 and 4,000 second-feet; extended above 4,000 second-feet. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspecting gage-height graph, except for days of considerable fluctuation in stage, for which it is ascertained by averaging hourly discharge. Records good below 4,000 second-feet; fair to poor above.

COOPERATION.—Gage-height record furnished by Tennessee Electric Power Co.

Discharge measurements of Ocoee River at Emf, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 17	W. R. King-----	3.58	569	June 5	P. P. Livingston-----	4.50	1,440
Jan. 21	D. B. Ventres-----	4.60	1,600	July 10	D. B. Ventres-----	4.24	1,230
May 1	Duncan Charlton-----	5.42	2,740	Sept. 28	-----do-----	3.71	760
31	P. P. Livingston-----	4.98	1,900				

Daily discharge, in second-feet, of Ocoee River at Emf, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	560	710	878	1,970	1,300	1,850	1,250	2,540	1,910	938	878	504
2-----	525	632	750	2,670	1,250	1,740	1,300	1,970	1,800	912	912	610
3-----	525	595	670	3,870	1,250	1,580	1,200	1,800	1,520	903	920	602
4-----	525	878	1,010	2,959	1,250	1,525	1,850	1,680	1,580	947	801	546
5-----	525	1,100	2,880	1,800	1,410	4,440	2,540	1,630	1,410	2,200	734	518
6-----	525	750	2,340	1,410	1,300	4,030	1,800	1,580	1,410	2,900	767	497
7-----	525	670	1,410	1,360	1,200	2,670	1,580	1,580	1,360	2,670	801	511
8-----	525	595	1,100	1,410	1,150	2,280	1,410	1,630	1,300	1,580	852	490
9-----	525	595	1,060	1,300	1,100	2,090	1,410	1,580	1,300	1,280	767	886
10-----	525	560	965	1,150	1,100	2,030	1,410	1,740	1,460	1,140	726	602
11-----	525	560	878	3,870	1,100	1,910	1,630	2,030	1,800	1,110	670	504
12-----	490	560	878	2,600	1,150	1,740	1,630	1,970	1,410	1,360	625	504
13-----	490	525	835	1,910	1,100	1,680	1,410	1,630	1,360	1,390	618	448
14-----	490	560	1,360	1,580	1,100	1,580	1,410	1,520	1,580	1,460	602	469
15-----	490	560	1,200	1,520	1,060	1,520	2,090	1,520	1,410	1,200	581	497
16-----	490	560	1,910	3,240	1,060	1,410	2,090	1,580	1,970	1,060	581	518
17-----	560	525	2,090	2,880	1,010	1,410	2,670	1,460	1,060	1,030	632	504
18-----	595	560	1,460	2,210	1,060	1,410	7,880	1,460	1,200	1,050	625	525
19-----	710	490	1,200	1,740	1,300	1,410	3,470	1,360	1,360	956	595	553
20-----	835	490	1,150	1,630	2,740	1,520	2,810	1,360	1,250	929	567	826
21-----	632	525	1,100	1,520	1,910	1,740	2,470	1,300	1,250	894	574	938
22-----	750	490	1,100	1,410	1,360	1,520	2,150	1,300	1,090	835	567	1,050
23-----	710	965	1,630	1,410	1,360	1,460	1,910	1,250	1,100	852	610	894
24-----	670	920	1,410	2,880	1,300	1,460	1,740	1,360	1,100	852	581	886
25-----	595	750	1,150	2,210	1,300	1,410	1,630	1,360	1,100	826	574	640
26-----	595	595	1,060	1,740	1,520	1,410	1,630	1,250	1,450	801	560	655
27-----	595	710	1,010	1,520	4,440	1,300	1,740	2,150	1,200	784	567	662
28-----	595	670	1,010	1,410	2,740	1,300	1,630	2,280	1,060	767	511	694
29-----	595	632	1,100	1,410	2,030	1,410	1,580	2,670	1,010	767	504	835
30-----	835	835	1,150	1,410	-----	1,460	3,950	2,810	965	776	511	894
31-----	750	-----	1,360	1,300	-----	1,300	-----	2,150	-----	852	504	-----

NOTE.—Recorder did not operate Sept. 21; discharge interpolated.

Monthly discharge of Ocoee River at Emf, Tenn., for the year ending September 30, 1924

[Drainage area, 530 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	835	490	590	1.11	1.28
November-----	1,100	490	652	1.23	1.37
December-----	2,880	670	1,260	2.38	2.74
January-----	3,870	1,150	1,980	3.74	4.31
February-----	4,440	1,010	1,480	2.79	3.01
March-----	4,440	1,300	1,790	3.38	3.90
April-----	7,880	1,200	2,110	3.98	4.44
May-----	2,810	1,250	1,730	3.26	3.78
June-----	1,970	965	1,370	2.58	2.88
July-----	2,900	767	1,160	2.24	2.52
August-----	920	504	655	1.24	1.43
September-----	1,050	448	642	1.21	1.35
The year-----	7,880	448	1,280	2.42	32.99

OCOEE RIVER AT PARKSVILLE, TENN.

LOCATION.—1,500 feet downstream from dam and power plant No. 1 of Tennessee Electric Power Co. at Parksville, Polk County, and 6 miles east of Ocoee station on main line of Louisville & Nashville Railroad.

DRAINAGE AREA.—600 square miles (measured by Tennessee Electric Power Co.).

RECORDS AVAILABLE.—January 1, 1911, to September 30, 1916; March 22, 1921, to September 30, 1924.

GAGES.—Gurley seven-day water-stage recorder in concrete stilling well on right bank 1,500 feet downstream from dam, installed July 9, 1924. From February 13 to June 5, gage was a Stevens eight-day recorder at same location. A Stevens long-distance sender and indicator, was used for periods during which the recording gages were not in operation. The sender is located at the same site as given above; the indicator is in the power house and is read hourly to half-tenths. All gages referred to a rod gage in the stilling well.

DISCHARGE MEASUREMENTS.—Made from cable 100 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed of stream for several hundred feet above and below gage is composed of rock. Banks high but right bank is overflowed at extreme high stages. Control formed by a rock and gravel riffle and two islands 800 feet downstream; control for low and medium stages fairly permanent; for high stages may be variable as the islands are mostly sand.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 12.7 feet at 11.30 a. m. April 18 (discharge, 11,300 second-feet); minimum mean daily stage, 2.80 feet September 14 (discharge, 45 second-feet).

1911-1916; 1921-1924: Maximum stage recorded, 15.75 feet at 3 a. m. July 10, 1916 (discharge, 17,000 second-feet); minimum mean daily discharge, 13 second-feet September 17, 1922.

REGULATION.—Large diurnal fluctuation caused by operation of power plant at No. 1.

ACCURACY.—Stage-discharge relation changed during high water April 18. Rating curves used before and after April 18 well defined between 50 and 5,500 second-feet. Daily discharge ascertained by averaging hourly discharge except as indicated in footnote to daily-discharge table. Records good.

COOPERATION.—Gage-height record furnished by Tennessee Electric Power Co.

Discharge measurements of Ocoee River at Parksville, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Dec. 16	D. B. Ventres	2.87	54	May 8	Ventres and Livingston.	6.14	2,880
Jan. 19	do	6.40	2,980	July 9	D. B. Ventres	6.04	2,680
Feb. 14	Warren Withee	6.40	2,950	July 19	do	5.33	2,020
May 1	Duncan Charlton	7.45	4,410	Sept. 28	do	2.82	53
May 2	do	6.44	3,300				

Daily discharge, in second-feet, of Ocoee River at Parksville, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	1,050	522	1,080	1,840	1,250	1,030	1,350	4,010	1,670	1,160	1,960	170
2.....	729	434	89	2,110	860	220	1,410	2,930	2,440	1,450	1,080	643
3.....	593	396	1,030	3,300	503	1,550	1,480	2,300	2,090	1,180	156	828
4.....	819	74	827	3,980	2,090	1,490	1,880	2,310	1,950	156	523	691
5.....	798	1,060	1,260	2,920	2,360	3,050	1,990	2,710	2,010	612	877	575
6.....	297	887	1,460	1,350	1,450	6,620	1,090	2,230	1,620	2,250	1,480	242
7.....	74	607	1,180	2,030	1,360	4,340	2,590	1,640	1,240	2,980	440	80
8.....	895	744	865	2,230	1,480	3,790	1,800	1,990	1,100	2,740	452	568
9.....	1,080	590	774	1,670	1,330	3,170	1,250	2,030	1,730	1,660	202	394
10.....	1,240	728	1,220	2,150	457	2,760	1,820	1,790	1,900	1,300	281	752
11.....	1,160	385	1,140	2,670	1,690	2,170	2,030	2,480	1,880	1,470	601	289
12.....	1,070	848	1,150	2,480	1,810	1,390	1,620	2,050	1,880	542	748	505
13.....	663	1,210	1,310	1,890	2,080	1,470	781	1,500	1,890	760	835	599
14.....	134	1,340	1,260	2,590	2,700	1,370	2,200	2,010	1,250	1,900	735	45
15.....	723	1,560	976	2,520	2,910	616	2,540	1,830	155	1,390	802	623
16.....	784	1,020	66	2,570	2,800	118	2,510	1,620	2,270	1,430	363	819
17.....	626	228	1,980	2,860	2,400	1,480	2,540	1,590	2,410	1,480	94	532
18.....	906	90	2,120	2,710	2,740	1,830	9,220	1,410	2,130	1,420	706	653
19.....	720	524	1,650	2,500	2,260	1,240	7,050	1,740	1,570	1,430	711	680
20.....	509	870	1,540	1,150	1,790	2,420	4,300	1,450	1,420	347	876	351
21.....	162	1,170	1,610	2,580	1,680	2,250	3,500	1,490	622	1,500	1,110	79
22.....	738	1,120	539	2,430	1,720	1,430	3,080	1,460	817	1,650	844	232
23.....	914	865	245	1,850	986	884	2,710	1,770	1,270	1,530	407	358
24.....	637	1,370	805	1,850	189	1,810	2,170	903	1,470	1,530	123	711
25.....	567	530	813	2,100	1,940	1,320	1,070	672	1,360	1,770	489	564
26.....	591	995	2,090	1,550	1,740	1,420	433	1,540	1,700	1,690	1,260	703
27.....	384	1,200	2,350	94	1,650	1,340	1,940	1,770	1,400	250	733	945
28.....	72	1,000	1,890	1,870	1,950	1,260	2,120	2,670	772	1,950	570	127
29.....	659	160	1,040	1,580	1,910	1,920	2,030	2,970	404	1,900	492	1,120
30.....	920	950	335	1,270	-----	1,130	3,340	3,080	1,250	1,980	274	1,260
31.....	738	-----	1,670	1,390	-----	1,220	-----	2,830	-----	1,730	84	-----

NOTE.—No gage-height record Oct. 9-11, Nov. 11, 24-30, Dec. 1, June 6, and July 16-18; discharge estimated by comparison with records of flow at Emf.

Monthly discharge of Ocoee River at Parksville, Tenn., for the year ending September 30, 1924

[Drainage area, 600 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	1,240	72	686	1.14	1.31
November.....	1,560	74	783	1.30	1.45
December.....	2,350	66	1,170	1.95	2.25
January.....	3,980	94	2,130	3.55	4.09
February.....	2,910	189	1,730	2.88	3.11
March.....	6,620	118	1,870	3.12	3.60
April.....	9,220	433	2,460	4.10	4.57
May.....	4,010	672	2,020	3.37	3.88
June.....	2,440	155	1,520	2.53	2.82
July.....	2,980	156	1,460	2.43	2.80
August.....	1,960	84	655	1.09	1.26
September.....	1,260	45	538	.897	1.00
The year.....	9,220	45	1,420	2.37	32.14

SEQUATCHIE RIVER NEAR WHITWELL, TENN.

LOCATION.—At highway bridge on Nashville branch of Dixie Highway, 2 miles east of Whitwell, Marion County.

DRAINAGE AREA.—389 square miles (measured on topographic maps).

RECORDS AVAILABLE.—December 7, 1920, to September 30, 1924.

GAGE.—Vertical staff in two sections spiked to trees on right bank; lower section is 15 feet downstream from bridge and upper section 10 feet upstream from bridge; read by A. J. Bailey.

CHANNEL AND CONTROL.—Stream bed is principally hard clay. Right bank not subject to overflow; water overflows left bank at stage of about 15 feet and covers wide valley. There are very abrupt bends in river 300 feet above and below gage. Control for low water is gravelly shoal about 300 feet below gage; practically permanent.

DISCHARGE MEASUREMENTS.—Made from highway bridge at gage or by wading.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.5 feet at 7.30 a. m. May 1 (discharge, 5,640 second-feet); minimum stage, 0.9 foot October 17 (discharge, 45 second-feet).

1920-1924: Maximum stage recorded, 15.5 feet at 7.45 a. m. March 2, 1922 (discharge, 6,740 second-feet); minimum stage, 0.8 foot November 6, 7, 30, and December 1, 1922 (discharge, 40 second-feet).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Two small mills are situated above gage but as they have little or no storage, regulation is negligible.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined below 5,500 second-feet. Gage read once daily to half-tenths.

Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Sequatchie River near Whitwell, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Dec. 19	J. P. Clawson	3.27	782	Feb. 19	Duncan Charlton.....	3.11	721
Jan. 10	D. B. Ventres	3.35	786	20	do	9.04	3,000
12	do	7.65	2,340	20	do	9.24	3,310
23	do	3.55	853	Apr. 3	D. B. Ventres	2.92	644
27	do	3.08	688	5	do	4.62	1,280
Feb. 19	Duncan Charlton.....	2.88	643	July 21	do	1.68	189

Daily discharge, in second-feet, of Sequatchie River near Whitwell, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	90	52	400	1,240	530	2,280	890	5,640	1,030	165	135	90
2	75	60	298	1,480	530	1,420	750	4,270	820	178	135	90
3	75	52	280	3,750	468	1,300	715	2,420	680	178	610	105
4	68	105	230	4,870	468	1,100	680	1,620	610	178	422	90
5	75	190	1,420	3,700	490	1,910	1,170	1,300	530	178	215	98
6	68	155	1,690	1,830	530	5,050	1,170	1,100	445	165	202	90
7	52	145	1,360	1,450	468	4,090	1,100	960	422	178	178	90
8	60	115	925	1,100	468	2,420	890	960	422	178	155	90
9	52	105	680	890	422	1,620	820	1,030	378	178	155	82
10	60	98	530	785	422	1,420	750	890	378	178	145	90
11	60	105	530	1,990	378	1,300	680	750	530	178	155	82
12	52	82	530	2,700	378	1,100	750	680	422	202	155	82
13	60	90	490	1,800	378	960	715	680	400	230	155	82
14	52	82	750	1,360	378	890	680	610	400	230	135	75
15	60	82	1,270	1,100	378	820	680	610	378	335	125	82
16	60	90	1,170	1,760	355	820	750	530	378	245	135	75
17	45	82	1,100	4,750	355	750	750	530	378	215	135	82
18	60	90	925	3,860	335	680	4,090	530	335	202	125	75
19	52	82	750	2,330	468	680	5,570	530	298	202	115	82
20	115	82	680	1,580	2,750	680	4,390	468	245	282	98	82
21	75	90	610	1,240	3,000	960	2,240	468	230	215	115	82
22	68	82	530	995	2,150	1,100	1,550	422	202	202	135	90
23	75	90	890	890	1,550	1,030	1,240	378	190	190	125	90
24	68	82	1,100	750	1,170	890	1,030	335	215	190	115	98
25	75	82	820	1,060	820	890	890	335	230	202	105	98
26	75	105	855	820	890	750	750	335	202	178	98	90
27	68	115	680	750	3,000	680	750	680	202	165	98	98
28	75	155	680	680	4,330	680	890	2,700	190	155	98	90
29	60	155	610	680	3,640	680	960	2,240	190	145	98	98
30	60	262	610	610	-----	1,100	3,000	2,240	178	135	90	98
31	60	-----	570	610	-----	1,060	-----	1,690	-----	105	98	-----

Monthly discharge of Sequatchie River near Whitwell, Tenn., for the year ending September 30, 1924

[Drainage area, 389 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	115	45	66.1	0.170	0.20
November	262	52	105	.270	.30
December	1,690	230	780	2.01	2.32
January	4,870	610	1,720	4.42	5.10
February	4,330	335	1,060	2.80	3.02
March	5,050	680	1,320	3.39	3.91
April	5,570	680	1,380	3.55	3.96
May	5,640	335	1,220	3.14	3.62
June	1,030	178	384	.987	1.10
July	335	105	192	.494	.57
August	610	90	157	.404	.47
September	105	75	88.2	.227	.25
The year	5,640	45	709	1.82	24.82

ELK RIVER AT ESTILL SPRINGS, TENN.

LOCATION.—At county highway bridge, 400 feet downstream from Nashville, Chattanooga & St. Louis Railway bridge, 800 feet downstream from Estill Springs plant of the Southern Cities Power Co., and three-fourths mile south-east of Estill Springs, Franklin County. Rock Creek enters $1\frac{1}{2}$ miles below gage.

DRAINAGE AREA.—263 square miles (measured on map compiled by United States Geological Survey; scale 1:500,000).

RECORDS AVAILABLE.—December 9, 1920, to September 30, 1924.

GAGE.—Vertical staff in three sections, fastened to trees on left bank, 100 feet below highway bridge; read by Albert Gillian and Dock Brown.

CHANNEL AND CONTROL.—Channel straight for 300 feet above and 100 feet below gage. Bed composed of rock and gravel. Banks subject to overflow for short distances back from channel. Control is rock and gravel shoal 50 feet downstream from gage; fairly permanent.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading at control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.7 feet at 4 p. m. February 27 (discharge, 4,120 second-feet); minimum stage, 0.4 foot September 3, 4, 23, and 29 (discharge, 12 second-feet).

1920-1924: Maximum stage recorded, 13.5 feet at 9 a. m. March 2, 1922 (discharge, 8,890 second-feet); minimum stage, that of September 3, 4, 23, and 29, 1924.

REGULATION.—Large diurnal fluctuation during periods of low-water flow caused by operation of water-power plant 800 feet upstream, which began operating in August, 1923.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 30 and 6,500 second-feet. Gage read to tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records for low and medium stages subject to considerable error because of regulation at power plant; others fair.

Discharge measurements of Elk River at Estill Springs, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Dec. 18	J. P. Clawson	2.45	621	Apr. 3	D. B. Ventres	1.64	326
Jan. 12	D. B. Ventres	4.13	1,500	May 2	P. P. Livingston	4.94	2,060
24	do	2.35	569	July 27	D. B. Ventres	1.36	194

Daily discharge, in second-feet, of Elk River at Estill Springs, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	48	48	440	1,220	460	1,000	400	3,560	618	108	175	55
2	145	48	482	1,220	440	890	460	2,140	595	132	175	55
3	48	40	690	3,080	440	840	400	1,060	505	190	160	12
4	75	205	890	3,080	460	690	400	740	420	190	160	12
5	85	132	1,220	2,210	460	2,280	640	690	400	190	132	20
6	48	75	1,220	1,000	380	3,240	460	572	175	235	160	75
7	40	65	1,110	790	400	1,930	528	740	400	220	190	40
8	160	55	690	740	380	1,220	505	618	235	190	145	55
9	95	48	528	690	380	890	440	740	360	235	160	108
10	48	40	460	690	340	790	440	505	340	190	190	85
11	65	120	505	1,690	380	790	440	420	380	235	190	75
12	40	120	482	1,280	400	690	460	420	322	220	160	55
13	160	48	890	890	380	690	205	440	288	220	160	65
14	40	85	1,220	790	380	690	360	380	175	235	160	65
15	120	95	1,110	690	340	640	220	380	145	252	132	65
16	48	30	595	1,570	340	460	380	400	252	252	120	65
17	40	48	690	2,490	360	482	690	400	220	190	75	65
18	55	40	618	1,570	360	482	2,070	235	252	220	95	85
19	48	205	550	1,060	550	690	2,770	270	252	270	95	65
20	48	95	440	890	2,770	572	1,330	270	220	270	85	48
21	40	40	380	730	2,070	505	840	190	190	270	95	25
22	55	48	790	650	1,110	690	690	380	190	252	75	48
23	48	55	1,330	550	945	595	440	288	220	252	75	16
24	55	48	1,280	690	1,000	505	440	190	175	205	75	65
25	48	85	690	740	890	505	440	205	190	190	75	85
26	40	40	690	650	1,930	505	440	235	190	180	75	55
27	40	132	790	618	3,800	400	420	1,330	220	205	75	35
28	48	235	790	482	3,320	420	640	1,930	190	190	75	25
29	40	288	618	460	1,930	305	505	1,600	190	175	75	16
30	48	95	528	420	-----	740	2,490	1,220	270	160	75	108
31	40	-----	505	505	-----	690	-----	890	-----	160	55	-----

Monthly discharge of Elk River at Estill Springs, Tenn., for the year ending September 30, 1924

[Drainage area, 263 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	160	40	63.2	0.240	0.28
November	288	30	90.3	.343	.38
December	1,330	380	749	2.85	3.29
January	3,080	420	1,110	4.22	4.86
February	3,800	340	945	3.59	3.87
March	3,240	305	833	3.17	3.66
April	2,770	205	698	2.65	2.96
May	3,560	190	759	2.89	3.33
June	618	145	286	1.09	1.22
July	270	108	209	.795	.92
August	190	55	121	.460	.53
September	108	12	54.9	.209	.23
The year	3,800	12	493	1.87	25.53

ELK RIVER NEAR ELKMONT, ALA.

LOCATION.—At steel highway bridge, 3 miles below Louisville & Nashville Railroad bridge (near Alabama-Tennessee boundary line) and 5 miles northwest of Elkmont, Limestone County.

DRAINAGE AREA.—1,700 square miles.

RECORDS AVAILABLE.—July 1, 1904, to February 2, 1908; January 20, 1919, to September 30, 1924.

GAGE.—Chain gage attached to upstream side of bridge; read by Dr. W. E. Maples.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed composed chiefly of rock. Banks are subject to overflow at stages above 16 feet. Control is well-defined rock and gravel ledge about 400 feet below gage; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, estimated by observer, 23.5 feet at 4 p. m. January 4 (discharge, 29,300 second-feet); minimum stage, 1.4 feet September 5-8 (discharge, 220 second-feet).

1904-1908; 1919-1924: Maximum stage, estimated by observer, 26.5 feet March 13, 1920 (discharge, 33,300 second-feet); minimum stage, 1.2 feet September 19, October 18, 24, 27, 28, 30, 31, and November 2, 1904 (discharge, 165 second-feet).

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation changed during high water January 4. Rating curves used before and after change, well defined below 10,000 second-feet; fairly well defined between 10,000 and 24,000 second-feet. Gage read to half-tenths once daily; gage heights above 20 feet, estimated by observer because gage is inaccessible. Daily discharge ascertained by applying daily gage height to rating table. Records good below 24,000 second-feet; others fair.

Discharge measurements of Elk River near Elkmont, Ala., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 29	J. P. Clawson-----	1.50	247	Feb. 28	Warren Withee-----	18.31	22,200
Jan. 26	D. B. Ventres-----	4.57	3,650	28	----do-----	18.11	22,400

Daily discharge, in second-feet, of Elk River near Elkmont, Ala., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1-----	485	280	2,000	12,700	2,410	10,100	2,410	14,200	4,840	1,180	385	245
2-----	448	340	1,700	18,900	2,410	6,190	2,140	11,200	4,030	920	482	245
3-----	375	448	1,400	25,900	2,280	5,650	1,870	8,760	3,360	872	1,180	245
4-----	340	1,340	2,750	29,300	2,140	4,300	1,870	5,380	2,680	740	782	245
5-----	310	1,160	9,300	27,900	3,760	15,800	2,680	4,160	2,410	700	700	220
6-----	280	850	7,810	9,700	3,080	16,200	3,080	3,620	2,280	700	660	220
7-----	280	855	5,920	6,730	2,280	13,300	2,950	3,360	2,140	782	1,240	220
8-----	280	525	4,440	5,110	2,140	8,890	2,680	2,950	2,140	872	1,020	220
9-----	280	410	3,260	4,300	1,870	6,730	2,410	3,220	2,410	782	700	1,070
10-----	280	340	3,390	4,030	1,740	5,380	2,680	2,950	4,840	740	660	740
11-----	280	310	3,780	11,300	1,600	4,570	3,220	2,680	2,820	700	825	515
12-----	375	340	3,520	9,160	1,600	4,030	3,080	2,140	2,540	660	660	385
13-----	340	340	3,520	7,400	1,740	3,490	2,820	2,140	2,410	660	622	325
14-----	310	375	12,100	5,520	1,600	3,220	2,680	1,870	2,820	740	585	325
15-----	280	375	8,080	4,300	1,540	3,220	2,410	2,140	3,760	872	585	325
16-----	252	340	6,320	8,350	1,480	2,820	2,280	1,870	2,410	782	550	418
17-----	252	340	5,110	14,300	1,410	2,540	3,220	1,600	2,000	700	515	325
18-----	375	340	4,040	10,900	1,410	2,820	4,980	1,540	1,870	660	450	325
19-----	410	310	3,520	8,350	5,520	2,950	7,810	1,480	1,870	1,410	385	288
20-----	485	310	3,260	7,270	17,700	8,620	5,920	1,410	1,480	1,070	325	355
21-----	610	310	3,000	6,730	13,800	8,620	4,570	1,350	1,280	920	270	2,540
22-----	448	310	5,650	5,780	9,430	5,780	4,300	1,280	1,180	700	270	825
23-----	375	1,160	11,700	4,570	7,270	4,840	3,360	1,240	1,120	660	270	515
24-----	340	1,060	9,300	3,360	6,460	4,030	2,680	1,180	1,020	622	270	450
25-----	340	850	6,730	4,030	5,650	3,490	2,410	1,120	970	585	270	385
26-----	310	850	5,110	3,760	9,300	2,950	2,280	1,120	1,020	550	270	355
27-----	310	1,000	4,300	3,220	21,700	2,950	2,410	12,100	1,020	515	270	325
28-----	280	1,280	3,780	2,950	22,100	2,680	3,220	13,300	970	482	270	325
29-----	280	2,250	3,260	2,820	16,200	2,680	2,950	12,400	920	450	270	385
30-----	280	2,500	3,000	2,680	-----	2,540	13,300	11,200	1,540	418	270	325
31-----	280	-----	5,240	2,410	-----	2,540	-----	6,730	-----	385	270	-----

NOTE.—Gage height estimated by observer Jan. 4 and 5 as gage was inaccessible owing to high water.

Monthly discharge of Elk River near Elkmont, Ala., for the year ending September 30, 1924

[Drainage area, 1,700 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October-----	610	252	341	0.201	0.23
November-----	2,500	280	710	.418	.47
December-----	12,100	1,400	5,040	2.96	3.41
January-----	29,300	2,410	8,850	5.19	5.98
February-----	22,100	1,410	5,920	3.48	3.75
March-----	16,200	2,540	5,610	3.30	3.80
April-----	13,300	1,870	3,490	2.05	2.29
May-----	14,200	1,120	4,570	2.69	3.10
June-----	4,840	920	2,200	1.29	1.44
July-----	1,410	385	736	.433	.50
August-----	1,240	270	525	.309	.36
September-----	2,540	220	457	.269	.30
The year-----	29,300	220	3,200	1.88	25.63

DUCK RIVER AT NORMANDY, TENN.

LOCATION.—At county highway bridge, half a mile north of Normandy, Bedford County, 2 miles above Nashville, Chattanooga & St. Louis Railway bridge.

DRAINAGE AREA.—214 square miles (measured on map compiled by Geological Survey; scale 1:500,000).

RECORDS AVAILABLE.—December 10, 1920, to September 30, 1924.

GAGE.—Vertical staff fastened to large pine tree on right bank, 200 feet downstream from bridge; read by W. E. Russell.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—River bed composed of rock and gravel; uniform bottom. Right bank is high and is not overflowed; left bank is overflowed at stage of about 9 feet, covering a wide stretch of bottom land. Control for low water is gravel shoal 800 feet downstream. High-water control probably formed by Cortner Mills dam 2 miles downstream.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.4 feet at 2.45 p. m. January 3 (discharge, 5,120 second-feet); minimum stage, 0.8 foot August 18–23, 25–30, September 4–6, 8, 11–13, 15–19, 22–27, and 29 (discharge, 65 second-feet).

1920–1924: Maximum stage recorded, 13.5 feet probably March 2, 1922, determined from high-water mark on gage (discharge not determined); minimum discharge, 50 second-feet numerous times in September and October, 1921, and September, October, and November, 1922.

REGULATION.—Operation of Manchester hydroelectric plant 15 miles upstream causes some diurnal fluctuation during low water. Storage capacity however is small, therefore, no great error in records results from regulation.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve well defined below 4,000 second-feet; extended above that point. Gage read to half-tenths once daily, except Sundays and holidays; oftener during high water. Daily discharge ascertained by applying daily gage height to rating table except as indicated in footnote to table of daily discharge. Records good below 4,000 second-feet; others fair.

Discharge measurements of Duck River at Normandy, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Dec. 18	J. P. Clawson.....	2.26	467	May 2	P. P. Livingston.....	3.38	865
Jan. 11	D. B. Ventres.....	4.71	1,470	May 2	do.....	3.32	820
Jan. 24	do.....	1.92	344	July 26	D. B. Ventres.....	1.61	8
Apr. 4	do.....	1.72	302				

Daily discharge, in second-feet, of Duck River at Normandy, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	95	80	140	1,430	315	650	300	1,310	* 512	115	88	95
2	95	80	* 134	1,020	255	* 580	225	790	375	105	95	95
3	95	80	128	4,900	* 240	510	225	615	330	95	* 95	80
4	95	* 110	128	2,680	225	440	285	475	270	95	95	65
5	95	140	940	* 1,960	315	980	685	405	255	95	88	65
6	88	115	1,100	* 1,230	285	2,580	* 538	345	255	* 95	80	65
7	80	95	720	510	255	1,020	390	315	225	95	80	* 65
8	80	95	440	440	210	720	345	1,650	* 210	95	80	65
9	80	88	* 362	390	195	* 632	315	1,310	195	95	80	165
10	80	80	285	375	* 202	545	255	720	315	95	* 80	80
11	80	* 80	255	1,310	210	510	270	* 548	255	95	80	65
12	80	80	225	1,250	240	440	270	375	255	95	115	65
13	80	80	210	* 915	240	375	* 255	360	210	* 100	95	65
14	* 80	80	1,150	580	240	375	240	315	195	105	80	* 65
15	80	80	980	440	225	345	225	285	* 188	115	80	65
16	80	80	* 806	2,000	225	* 345	195	285	180	140	80	65
17	80	80	* 632	2,480	* 195	345	225	285	165	95	* 72	65
18	88	* 80	458	1,020	165	345	1,020	* 270	140	95	65	65
19	95	80	375	720	440	345	790	255	140	95	65	65
20	95	80	315	* 615	2,000	510	* 582	240	140	* 95	65	72
21	* 95	80	375	510	1,150	860	375	225	140	95	65	* 68
22	95	80	375	405	720	580	345	225	* 122	88	65	65
23	80	105	1,150	345	545	* 492	315	195	105	88	65	65
24	80	128	1,020	345	* 562	405	255	195	105	80	* 65	65
25	80	* 116	650	580	580	375	225	* 195	115	80	65	65
26	80	105	510	580	650	315	195	195	195	80	65	65
27	80	140	375	* 455	4,180	315	375	3,680	115	* 80	65	65
28	* 80	115	375	330	2,000	300	475	2,480	115	80	65	* 65
29	80	140	375	330	825	315	475	1,200	* 110	80	65	65
30	80	165	* 345	330	-----	* 308	1,910	980	105	80	65	72
31	80	-----	315	330	-----	300	-----	650	-----	80	* 80	-----

* Discharge interpolated; gage not read.

Monthly discharge of Duck River at Normandy, Tenn., for the year ending September 30, 1924

[Drainage area, 214 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	95	80	84.9	0.397	0.46
November	165	80	97.9	.457	.51
December	1,150	128	505	2.36	2.72
January	4,900	330	994	4.64	5.38
February	4,180	165	617	2.88	3.11
March	2,580	300	553	2.58	2.97
April	1,910	195	419	1.96	2.19
May	3,680	195	689	3.22	3.71
June	512	105	201	.939	1.05
July	140	80	94.2	.440	.51
August	115	65	77.0	.360	.42
September	165	65	71.9	.336	.37
The year	4,900	65	368	1.72	23.37

DUCK RIVER AT COLUMBIA, TENN.

LOCATION.—At highway bridge two blocks north of public square at Columbia, Maury County, and three-fourths mile below Mount Pleasant Electric Co.'s dam and power plant.

DRAINAGE AREA.—1,210 square miles (measured on map compiled by United States Geological Survey; scale 1: 500,000).

RECORDS AVAILABLE.—October 21, 1904, to December 31, 1908; April 27, 1920, to September 30, 1924.

GAGE.—Chain gage bolted to downstream side of bridge, installed April 1, 1922; read by F. J. Beard. For description of previous gages see Water-Supply Paper 543. All gages referred to same datum.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Banks high and fringed with trees. Right bank subject to overflow at 32-foot stage; left bank not subject to overflow. Current sluggish at low stages. Bed of stream is smooth and uniform, composed of solid rock and gravel. Low-water control is rocky shoal 1,000 feet below gage, permanent; high-water control not determined.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 30 feet at 7.30 a. m. January 4 (discharge, from extension of rating curve, 25,900 second-feet); minimum stage, 0.16 foot at 6.30 a. m. September 30 (discharge, 27 second-feet.)

1904–1908; 1920–1924: Maximum stage recorded, 32.05 feet at 7 a. m. March 3, 1922 (discharge, from extension of rating curve, 27,800 second-feet); minimum stage, –0.03 foot at 9 a. m. October 22, 1922 (no flow).

The United States Weather Bureau reports a stage of 45.6 feet March 30 1902 (discharge not determined).

REGULATION.—Low-water flow is completely regulated at Mount Pleasant Electric Co.'s dam. Flow is almost completely cut off at times. There are three other dams above this station.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 100 and 20,000 second-feet; fairly well defined below and extended above. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except as indicated in footnote to table of daily discharge. Records good above 250 second-feet; fair to poor below that point owing to regulation, and fair above 20,000 second-feet.

Discharge measurements of Duck River at Columbia, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
Oct. 27	J. P. Clawson	<i>Feet</i>	<i>Sec.-ft.</i>	July 29	D. B. Ventres	<i>Feet</i>	<i>Sec.-ft.</i>
Jan. 19	-----do-----	0. 79	271	30	-----do-----	0. 58	159
25	D. B. Ventres	6. 50	4, 660			. 41	46. 2
		2. 71	1, 680				

Daily discharge, in second-feet, of Duck River at Columbia, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	185	111	725	8,440	1,200	5,500	1,020	7,270	2,780	298	88	70
2	165	124	435	9,610	980	3,720	868	4,820	2,280	348	160	165
3	138	129	495	24,100	980	2,700	725	2,960	1,850	370	282	292
4	152	77	528	25,700	868	2,190	830	2,400	1,440	185	405	205
5	160	160	3,040	21,400	868	2,530	1,200	1,850	1,200	220	331	106
6	134	190	4,910	7,540	1,130	7,990	1,520	1,440	2,100	273	287	70
7	124	358	1,940	3,640	1,020	6,460	1,440	1,200	1,130	326	358	97
8	134	276	2,440	2,700	905	3,980	1,130	1,060	1,020	353	276	124
9	147	195	1,520	2,190	830	2,870	1,020	2,360	725	560	342	250
10	134	205	1,200	1,850	795	2,360	942	3,120	1,360	375	261	230
11	93	196	1,200	8,350	725	2,190	942	1,600	1,520	292	180	93
12	88	180	1,200	9,160	725	1,850	830	1,360	868	320	235	195
13	142	185	1,130	5,760	725	1,520	795	1,020	795	405	200	235
14	115	156	6,100	3,640	760	1,440	760	942	2,700	320	314	235
15	115	120	6,460	2,620	690	1,280	725	830	1,760	905	314	285
16	111	160	4,660	5,000	625	980	680	760	980	495	160	250
17	124	138	3,210	10,200	942	1,060	625	760	725	348	147	111
18	147	80	2,360	7,720	625	1,060	760	725	625	282	97	190
19	134	138	1,850	4,660	1,060	1,680	1,130	658	560	309	210	138
20	170	111	1,440	3,300	10,400	2,780	1,440	592	495	296	97	63
21	102	124	1,520	2,440	11,500	8,170	1,200	528	435	282	106	70
22	84	50	7,360	1,850	6,100	4,400	980	495	402	465	124	77
23	120	152	11,100	1,520	4,140	3,340	795	465	370	348	80	225
24	97	134	7,090	1,360	3,380	2,280	725	465	348	320	86	170
25	73	60	4,910	1,940	4,910	2,020	658	496	280	358	93	102
26	152	250	3,210	2,190	6,460	1,680	658	528	342	220	88	106
27	138	220	2,700	1,940	15,200	1,440	642	5,340	287	168	97	48
28	195	370	1,850	1,520	17,900	1,280	625	13,300	336	115	46	77
29	134	465	1,520	1,280	11,300	1,200	868	14,600	336	129	70	106
30	142	592	1,280	1,200	-----	1,200	4,320	12,400	405	106	37	50
31	120	-----	1,440	1,200	-----	1,130	-----	5,250	-----	210	54	-----

NOTE.—Gage not read Nov. 11, Mar. 23, May 4, 25, June 22, July 6, 20, 27, Aug. 3, 10, 24, 31, Sept. 7, 14, 21, 28; discharge interpolated. Gage height doubtful Apr. 27; discharge interpolated.

Monthly discharge of Duck River at Columbia, Tenn., for the year ending September 30, 1924

[Drainage area, 1,210 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	195	73	131	0.108	0.12
November	592	50	190	.157	.18
December	11,100	435	2,930	2.42	2.79
January	26,700	1,200	6,000	4.96	5.72
February	17,900	625	3,720	3.07	3.31
March	8,170	980	2,720	2.25	2.59
April	4,320	625	1,030	.851	.95
May	14,600	465	2,950	2.44	2.81
June	2,780	260	1,010	.835	.93
July	905	106	323	.267	.31
August	405	37	181	.150	.17
September	292	48	146	.121	.14
The year	25,700	37	1,780	1.47	20.02

DUCK RIVER AT CENTERVILLE, TENN.

LOCATION.—At old county highway bridge half a mile from courthouse at Centerville, Hickman County, and 1 mile above Nashville, Chattanooga & St. Louis Railway bridge. Swan Creek enters from south 5 miles above gage.

DRAINAGE AREA.—2,070 square miles (measured on State geologic map).

RECORDS AVAILABLE.—March 6 to December 31, 1919; March 2, 1920, to September 30, 1924.

GAGE.—Chain gage bolted to floor on downstream side of old highway bridge, installed March 2, 1920; read by D. J. Hudspeth. A chain gage on new highway bridge three-fourths of a mile downstream from present location, set to an independent datum, was used March 6 to December 31, 1919.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge at gage.

CHANNEL AND CONTROL.—Stream bed uniform and smooth. Right bank high, steep, and wooded; left bank low and fringed with trees; water overflows left bank at average stage above 22 feet and covers the flat for a distance of 400 feet. Control is gravel and rock shoal 600 feet below gage. During low water an island is formed here and at extremely low stages all water flows to right bank. Control is reasonably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 21.9 feet morning of January 4 (discharge, 34,300 second-feet); minimum stage, -0.23 foot afternoon of August 31 (discharge, 203 second-feet).

1919-1924: Maximum stage, estimated, 28 feet April 2, 1920 (discharge, 44,700 second-feet); minimum discharge, 198 second-feet September 20, 1919.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—See description of regulation at Columbia. Regulation greatly damped by many long pools above Centerville.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve well defined below 35,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Duck River at Centerville, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 25	J. P. Clawson.....	0.18	393	Jan. 27	J. P. Clawson.....	3.41	3,200
26	.....do.....	.12	338	July 31	D. B. Ventres.....	.14	375
Jan. 21	.....do.....	4.50	4,800				

Daily discharge, in second-feet, of Duck River at Centerville, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	528	345	1, 170	4, 030	2, 180	11, 500	1, 870	8, 750	5, 340	585	345	215
2.....	445	345	1, 250	10, 800	2, 070	6, 910	1, 680	8, 930	4, 030	528	395	227
3.....	420	345	1, 100	27, 600	1, 870	5, 190	1, 500	6, 270	3, 220	528	528	278
4.....	395	472	1, 100	34, 100	1, 780	4, 310	1, 500	4, 310	2, 620	472	675	472
5.....	370	528	1, 970	33, 100	1, 870	3, 890	1, 870	3, 610	2, 180	472	675	420
6.....	395	420	5, 490	20, 900	1, 970	5, 190	2, 500	3, 090	1, 870	472	645	395
7.....	420	445	5, 790	8, 070	2, 070	9, 100	2, 500	2, 500	2, 620	472	615	282
8.....	395	528	4, 170	5, 640	1, 870	7, 070	2, 280	2, 500	1, 780	500	645	231
9.....	370	528	2, 730	4, 450	1, 680	4, 310	1, 970	2, 180	1, 500	500	645	251
10.....	322	528	2, 180	3, 750	1, 590	3, 750	1, 780	4, 030	1, 330	805	528	278
11.....	322	445	2, 620	8, 410	1, 500	3, 350	1, 680	3, 450	1, 780	645	528	420
12.....	322	420	2, 500	12, 900	1, 500	3, 090	1, 590	2, 500	1, 870	500	420	395
13.....	322	395	2, 500	9, 610	1, 500	2, 730	1, 420	2, 070	1, 870	1, 250	395	395
14.....	300	445	7, 730	7, 390	1, 420	2, 500	1, 420	1, 780	4, 030	945	395	500
15.....	322	420	10, 600	5, 190	1, 330	2, 280	1, 330	1, 590	3, 750	615	445	500
16.....	345	420	7, 390	5, 640	1, 250	2, 070	1, 330	1, 420	2, 500	1, 020	500	370
17.....	345	370	6, 110	10, 300	1, 330	1, 970	1, 330	1, 330	1, 680	772	420	370
18.....	445	395	4, 590	12, 200	1, 420	1, 970	1, 500	1, 250	1, 330	615	345	370
19.....	555	420	3, 610	9, 100	1, 680	1, 970	1, 870	1, 170	1, 170	555	322	300
20.....	500	370	2, 970	5, 190	8, 930	2, 970	2, 070	1, 100	1, 020	528	322	345
21.....	472	370	2, 620	4, 590	16, 600	6, 110	2, 280	1, 420	945	555	322	291
22.....	445	370	5, 640	3, 750	11, 800	9, 610	1, 780	1, 100	805	500	273	345
23.....	395	472	24, 700	3, 220	7, 900	5, 490	1, 500	945	740	500	255	322
24.....	370	585	17, 000	2, 850	6, 910	4, 590	1, 330	1, 020	1, 020	500	260	322
25.....	345	500	9, 780	2, 970	8, 070	3, 750	1, 250	1, 020	805	472	247	395
26.....	370	555	7, 070	3, 220	8, 750	3, 220	1, 170	945	740	445	264	395
27.....	370	472	5, 190	3, 090	16, 800	2, 730	1, 100	2, 850	740	420	247	322
28.....	395	585	4, 170	2, 850	23, 600	2, 500	1, 170	10, 500	645	395	231	300
29.....	395	615	3, 350	2, 500	21, 800	2, 280	1, 170	17, 700	585	395	215	291
30.....	345	1, 250	2, 970	2, 280	-----	2, 070	3, 890	17, 300	555	345	215	273
31.....	345	-----	2, 620	2, 180	-----	1, 970	-----	11, 700	-----	370	203	-----

Monthly discharge of Duck River at Centerville, Tenn., for the year ending September 30, 1924

[Drainage area, 2,070 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October.....	555	300	390	0.188	0.22
November.....	1, 250	345	479	.231	.26
December.....	24, 700	1, 100	5, 280	2.55	2.94
January.....	34, 100	2, 180	8, 770	4.24	4.89
February.....	23, 600	1, 250	5, 620	2.71	2.92
March.....	11, 500	1, 970	4, 210	2.03	2.34
April.....	3, 890	1, 100	1, 720	.831	.93
May.....	17, 700	945	4, 210	2.03	2.34
June.....	5, 340	555	1, 840	.889	.99
July.....	1, 250	345	570	.275	.32
August.....	675	203	404	.195	.22
September.....	500	215	342	.165	.18
The year.....	34, 100	203	2, 820	1.36	18.55

BUFFALO RIVER NEAR FLATWOODS, TENN.

LOCATION.—At Belsha farm, $1\frac{1}{2}$ miles northwest of Flatwoods, Wayne County, and 1 mile north of Wayne-Perry County line. Little Opossum Creek enters half a mile above gage.

DRAINAGE AREA.—439 square miles (measured on map compiled by United States Geological Survey; scale, 1: 500,000).

RECORDS AVAILABLE.—May 29, 1920, to September 30, 1924.

GAGE.—Vertical staff in two sections spiked to large trees on right bank, 300 feet downstream from ranch house of W. N. Belsha, and a quarter of a mile upstream from County bridge on Flatwoods-Linden road; read by Mrs. W. N. Belsha.

DISCHARGE MEASUREMENTS.—Made from highway bridge a quarter of a mile below gage or by wading.

CHANNEL AND CONTROL.—Gravel bar a third of a mile downstream from gage forms control; changes somewhat for low stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 17.7 feet at 5 p. m. January 3 (discharge from extension of rating curve, 12,200 second-feet); minimum stage, 1.38 feet September 11–13 (discharge, 114 second-feet).

1920–1924: Maximum stage recorded, 18 feet at 7 a. m. March 11, 1922 (discharge from extension of rating curve, 12,500 second-feet); minimum discharge, that of September 11–13, 1924.

ACCURACY.—Stage-discharge relation not permanent. Rating curve used prior to November 21 fairly well defined between 150 and 1,600 second-feet; curve used since that date well defined between 130 and 1,600 second-feet; above 895 second-feet the two curves are identical. Gage read to hundredths twice daily. Prior to November 21 daily discharge ascertained by indirect method for shifting channel; since that date by applying mean daily gage height direct to rating table. Records fair prior to November 21; others good below 2,000 second-feet, subject to error above that point owing to lack of high-water measurements.

Discharge measurements of Buffalo River near Flatwoods, Tenn., during the year ending September 30, 1924

Date	Made by—	Gage height	Dis-charge	Date	Made by—	Gage height	Dis-charge
		<i>Feet</i>	<i>Sec.-ft.</i>			<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 25	J. P. Clawson	1.55	209	Jan. 25	J. P. Clawson	2.70	700
Jan. 22	do	2.84	761	Aug. 1	D. B. Ventres	1.59	189
22	do	2.87	772	1	do	1.58	182
25	do	2.70	725				

Daily discharge, in second-feet, of Buffalo River near Flatwoods, Tenn., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	210	195	400	690	468	1,670	445	2,390	1,060	254	186	141
2	208	195	355	1,230	468	1,290	400	1,670	840	242	258	155
3	205	202	310	10,600	445	1,060	378	1,290	740	234	230	156
4	202	245	355	8,550	445	950	422	1,060	640	230	218	148
5	200	292	565	2,870	468	840	565	895	565	226	194	146
6	198	245	740	1,740	468	790	540	740	490	234	180	138
7	195	215	640	1,290	422	740	515	690	490	234	355	134
8	195	212	540	1,060	422	640	490	740	468	222	332	130
9	195	205	468	950	400	615	460	690	422	218	290	127
10	195	202	468	895	400	615	490	615	445	210	262	120
11	190	198	2,160	1,950	400	565	468	565	445	206	332	114
12	190	195	1,880	2,090	400	540	445	515	400	206	400	114
13	190	195	1,350	1,530	400	515	422	468	690	206	266	144
14	190	195	3,510	1,230	378	490	422	445	1,170	206	222	290
15	190	192	2,630	1,060	378	468	422	422	895	198	202	250
16	185	188	1,670	1,120	355	445	468	422	640	190	190	183
17	188	188	1,290	1,470	355	445	540	400	565	183	190	166
18	230	188	1,060	1,290	378	445	740	355	490	210	158	158
19	365	188	840	1,170	422	445	740	332	445	258	172	162
20	345	188	740	1,060	895	540	640	332	400	310	166	158
21	250	182	690	895	1,230	790	590	355	378	270	162	155
22	230	198	1,670	790	1,120	790	565	332	355	218	158	176
23	215	310	10,100	690	1,000	740	515	310	332	202	144	180
24	208	355	3,990	690	1,170	690	490	355	332	186	138	162
25	205	270	2,230	690	1,670	690	445	400	310	172	134	152
26	205	254	1,530	640		640	422	378	332	169	138	148
27	205	262	1,170	565	1,880	590	422	1,290	310	162	134	144
28	205	254	950	540	4,150	565	468	2,020	290	155	130	148
29	205	270	840	515	4,150	540	515	2,950	266	152	127	152
30	205	422	740	490	2,710	515	1,470	1,950	262	148	120	148
31	202		690	490		490		1,410		166	210	

Monthly discharge of Buffalo River near Flatwoods, Tenn., for the year ending September 30, 1924

[Drainage area, 439 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	365	185	213	0.485	0.56
November	422	182	230	.524	.58
December	10,100	310	1,500	3.42	3.94
January	10,600	490	1,640	3.74	4.31
February	4,150	355	960	2.19	2.36
March	1,670	445	682	1.55	1.79
April	1,470	378	531	1.21	1.35
May	2,950	310	864	1.97	2.27
June	1,170	262	516	1.18	1.32
July	310	148	209	.476	.55
August	400	120	207	.472	.54
September	290	114	157	.358	.40
The year	10,600	114	644	1.47	19.97

CACHE RIVER BASIN

CACHE RIVER AT FORMAN, ILL.

LOCATION.—In NE. $\frac{1}{4}$ sec. 31, T. 13 S., R. 3 E., at Chicago, Burlington & Quincy Railroad bridge at Forman, Johnson County, 1 mile below mouth of Dutchman Creek.

RECORDS AVAILABLE.—October 26, 1922, to September 30, 1924.

DRAINAGE AREA.—240 square miles.

GAGE.—Chain gage attached to bridge, read by A. A. Burris.

CHANNEL AND CONTROL.—Channel is heavy clay; banks wooded. Right bank subject to overflow; left bank leveed. Low-water control is small loose rock dam about 30 feet below gage; affected by drift.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.90 feet on December 14 and 24 (discharge, 3,460 second-feet); minimum stage, 1.36 feet September 27 (discharge, 10 second-feet).

1922-1924: Maximum stage recorded, 13.30 feet February 3, 1923 (discharge, 3,820 second-feet); no flow July 31 and August 1, 1923.

ACCURACY.—Stage-discharge relation changed during December. Rating curve used October 1 to December 15 well defined between 325 and 1,000 second-feet; fairly well defined below and extended above. Rating curve used December 16 to September 30 well defined between 32 and 1,000 second-feet; extended above. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair for low and medium stages; poor for high stages.

Discharge measurements of Cache River at Forman, Ill., during the year ending September 30, 1924

[Made by H. E. Grosbach]

Date	Gage height	Discharge
	<i>Feet</i>	<i>Sec.-ft.</i>
May 22.....	8.61	924
Sept. 25.....	2.48	70.8

Daily discharge, in second-feet, of Cache River at Forman, Ill., for the year ending September 30, 1924

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Sept.
1	261	53	660	746	477	190	180	68	714	312	-----
2	215	47	600	570	522	150	132	96	522	201	-----
3	183	60	510	522	462	150	114	180	342	80	-----
4	153	435	450	462	402	132	123	123	271	60	-----
5	134	765	420	432	201	327	190	76	190	57	-----
6	107	690	480	372	312	284	132	100	170	47	-----
7	98	645	378	312	284	234	96	132	141	41	-----
8	86	570	273	246	223	190	88	190	123	33	-----
9	67	495	351	234	190	160	72	327	110	-----	-----
10	56	465	799	223	170	150	60	212	160	-----	-----
11	47	435	1,220	372	141	170	60	170	246	-----	-----
12	41	226	1,710	864	160	271	50	132	327	-----	-----
13	41	193	2,170	746	190	372	47	123	554	-----	-----
14	38	173	3,460	570	271	462	60	110	940	-----	-----
15	35	143	3,010	477	234	402	72	160	1,260	-----	-----
16	41	125	2,650	417	212	160	88	212	1,130	-----	-----
17	50	90	2,650	372	271	327	80	100	682	-----	-----
18	273	74	2,170	312	387	402	88	68	554	-----	-----
19	750	47	1,220	284	387	462	80	41	447	-----	-----
20	645	30	960	271	507	327	57	246	271	-----	-----
21	540	41	1,100	271	570	387	37	882	212	-----	-----
22	435	60	1,780	234	538	382	57	794	271	-----	-----
23	351	82	2,010	212	462	882	72	650	212	-----	-----
24	237	74	3,460	190	372	538	88	680	372	-----	-----
25	163	67	2,490	223	327	312	60	746	327	-----	72
26	134	67	1,780	212	284	150	37	714	170	-----	50
27	107	86	1,160	246	271	132	37	538	150	-----	10
28	98	74	1,060	284	258	180	37	586	110	-----	13
29	82	116	940	327	201	180	26	714	223	-----	20
30	82	480	882	372	-----	234	37	846	492	-----	16
31	67	-----	864	447	-----	190	-----	900	-----	-----	-----

NOTE.—No records July 9 to Sept. 24 on account of gage being removed for repairs to bridge.

Monthly discharge of Cache River at Forman, Ill., for the year ending September 30, 1924

[Drainage area, 240 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	750	35	181	0.754	0.87
November	765	30	230	.958	1.07
December	3,460	273	1,410	5.88	6.78
January	864	190	381	1.59	1.83
February	570	141	320	1.33	1.43
March	882	132	297	1.24	1.43
April	180	26	78.6	.328	.37
May	900	41	351	1.46	1.68
June	1,260	110	390	1.62	1.81
July 1-8	312	33	104	.433	.13
September 25-30	72	10	30.2	.126	.03

MISCELLANEOUS DISCHARGE MEASUREMENTS

Discharge measurements of streams in the Ohio River Basin at points other than regular gaging stations are listed in the following table:

Miscellaneous discharge measurements in the Ohio River Basin during the year ending September 30, 1924

Date	Stream	Tributary to—	Location	Gage height	Discharge
				<i>Feet</i>	<i>Sec.-ft.</i>
Apr. 18	Pymatuning Creek	Shenango River	Orangeville, Ohio		218
Oct. 20	Ohio Canal	Tuscarawas River	Crystal Spring, 4 miles north of Massillon, Ohio		5.9
Jan. 16	do	do	do		7.0
Mar. 15	do	do	do		11.1
Apr. 28	do	do	do		5.8
May 12	do	do	do		31.9
July 23	do	do	do		65.3
Aug. 19	do	do	do		6.9
Sept. 13	do	do	do		27.7
July 31	Elk Eye mill race	Muskingum River	Dam No. 7, McConnellsville, Ohio		28.5
Aug. 30	do	do	do		0
Mar. 12	Miami River	Ohio River	Highway bridge in Miamisburg, Ohio	2.840	90.5
Oct. 11	Miami & Erie Canal feeder	Miami River	Court Street Bridge, Sidney, Ohio		10.0
Mar. 14	do	do	do		10.8
Apr. 31	do	do	do		0
May 7	do	do	do		10.7
July 25	do	do	do		0
Aug. 11	do	do	do		0
Oct. 1	Stillwater River	do	Englewood Dam, 10 miles northwest of Dayton, Ohio		92.5
Dec. 12	do	do	do		53.1
Dec. 10	do	do	do		2,060
Mar. 14	do	do	do		4,630
Mar. 26	do	do	do		3,880
Apr. 31	do	do	do		8,330
Apr. 1	do	do	do		6,780
June 9	do	do	do		9,430
July 10	do	do	do		10,200
Aug. 12	do	do	do		154
Aug. 26	do	do	do		85.8
Sept. 9	do	do	do		69.8
Oct. 1	Mad River	do	do		68.3
Oct. 15	do	do	Huffman Dam, 6 miles northeast of Dayton, Ohio		178
Dec. 10	do	do	do		185
June 9	do	do	do		2,280
Aug. 14	do	do	do		13,900
Aug. 27	do	do	do		289
Sept. 10	do	do	do		246
Mar. 31	Buck Creek	Mad River	Plum Street Bridge, Springfield, Ohio	2.40	232
May 6	do	do	do	1.31	407
Oct. 15	Miami & Erie Canal	Miami River	Warren Street Bridge, Dayton, Ohio		139
Mar. 12	do	do	do		79.9
July 23	do	do	do		105
Aug. 14	do	do	do		102
Sept. 11	do	do	do		103
Dec. 11	Twin Creek	do	Dam 2 miles northwest of Germantown, Ohio		97.1
Jan. 11	do	do	do		285
Jan. 16	do	do	do		5,610
June 6	do	do	do		3,640
Aug. 15	do	do	do		5,070
Sept. 23	do	do	do		32.1
Sept. 12	do	do	do		26.0
Oct. 17	Miami & Erie Canal	do	Lindenwald, 1 mile south of Hamilton, Ohio		14.9
Mar. 12	do	do	do		64.0
July 25	do	do	do		66.6
Aug. 16	do	do	do		53.6
Sept. 12	do	do	do		65.0
					52.6

Miscellaneous discharge measurements in the Ohio River basin during the year ending September 30, 1924—Continued

Date	Stream	Tributary to—	Location	Gage height	Dis-charge
				<i>Feet</i>	<i>Sec.-ft.</i>
Apr. 17	Pigeon River.....	French Broad River..	Below Big Creek at Water-ville, Tenn.	-----	1,400
18	....do.....	....do.....	Highway bridge at Hart-ford, Tenn.	-----	4,350
Aug. 27	....do.....	....do.....	....do.....	-----	383
Sept. 19	....do.....	....do.....	....do.....	-----	257
Apr. 18	Big Creek.....	Pigeon River.....	Bridge at Mount Sterling, N. C.	-----	85.3
Oct. 24	South Fork of Hols-ton River	Holston River.....	Bridge at Kingsport, Tenn.	-----	1,030
19	Watauga River.....	South Fork of Hols-ton River.	Bridge at Elizabethton, Tenn.	2.58	381
Feb. 13	....do.....	....do.....	....do.....	3.47	941
23	....do.....	....do.....	....do.....	4.27	1,620
May 19	....do.....	....do.....	....do.....	4.24	1,570
June 15	....do.....	....do.....	....do.....	5.66	3,530
May 2	Little Tennessee River	Tennessee River.....	Above Alarka Creek near Judson, N. C.	19.16	2,150
May 17	....do.....	....do.....	Above Alarka Creek near Judson, N. C.	18.86	1810
Apr. 4	Duck River.....	....do.....	Bridge at Shelbyville, Tenn.	1.85	535
July 28	....do.....	....do.....	....do.....	-0.75	86
Oct. 27	....do.....	....do.....	Howards Bridge near Co-lumbia, Tenn.	-----	130
July 30	....do.....	....do.....	....do.....	-----	120
Nov. 22	Big Sandy River.....	....do.....	Bridge near mouth near Springville, Tenn.	-----	248

INDEX

A	Page
Accuracy of data and results, degrees of.....	4-5
Acre-foot, definition of.....	2
Adams, Tenn., Red River near.....	171-172
Adamsville, Ohio, Raccoon Creek at.....	95-101
Alabama, cooperation by.....	9
Alderson, W. Va., Greenbrier River at.....	93-95
Allegheny River at Red House, N. Y.....	10-12
Almond, N. C., Nantahala River at.....	233-234
Alum Creek at Columbus, Ohio.....	112-113
Appropriations, record of.....	1
Arthur, Tenn., Powell River near.....	252-254
Asheville, N. C., French Broad River at.....	175-176
Athens, Ohio, Hocking River at.....	88-90
Au water-stage recorder, plate showing.....	2

B	Page
Bainbridge, Ohio, Paint Creek at.....	115-116
Barbourville, Ky., Cumberland River at.....	143-144
Barrackville, W. Va., Buffalo Creek at.....	38-39
Beaver River Basin, Ohio, gaging-station records in.....	59-62
Belington, W. Va., Tygart River at.....	13-15
Bellevue, Tenn., Harpeth River at.....	169-170
Bemis, W. Va., Shavers Fork at.....	52-53
Big Creek at Mount Sterling, N. C.....	294
Big Sandy Creek at Rockville, W. Va.....	56-59
Big Sandy River near Springville, Tenn.....	294
Big Walnut Creek at Rees, Ohio.....	110-111
Biltmore, N. C., Swannanoa River at.....	193-194
Blackwater River at Davis, W. Va.....	46-50
Blantyre, N. C., French Broad River at.....	173-174
Bluff City, Tenn., South Fork of Holston River at.....	209-210
Boom, Tenn., Obey River near.....	162-163
Bourneville, Ohio, Paint Creek near.....	116-117
Bridge measurement, typical gaging station for, plate showing.....	2
Brevard, N. C., Davidson River near.....	191-192
Bryson, N. C., Tuckasegee River at.....	237-238
Buck Creek at Springfield, Ohio.....	293
Buckhannon River at Hall, W. Va.....	26-27
Buffalo Creek at Barrackville, W. Va.....	38-39
Buffalo River near Flatwoods, Tenn.....	289-290
Burnside, Ky., Cumberland River at.....	147-148
Butcherville, W. Va., West Fork at.....	27-35
Butler, Tenn., Watauga River at.....	215-216

C	Page
Cache River at Forman, Ill.....	291-292
Calderwood, Tenn., Little Tennessee River at.....	227-228
Caney Fork near Rock Island, Tenn.....	163-165
near Silver Point, Tenn.....	165-167
Carthage, Tenn., Cumberland River at.....	151-153

	Page
Celina, Tenn., Cumberland River at.....	149-151
Centerville, Tenn., Duck River at.....	287-288
Charleston, Tenn., Hiwassee River at.....	260-261
Chattanooga, Tenn., Tennessee River at.....	184-187
Cheat Bridge, W. Va., Shavers Fork at.....	50-51
Cheat River at Rowlesburg, W. Va.....	41-43
near Morgantown, W. Va.....	44-46
near Parsons, W. Va.....	40-41
Cheeah River at Johnson, N. C.....	241-242
Cherokee, N. C., Oconalufy River at.....	239-240
Chilhowie, Va., Middle Fork of Holston River at.....	213-214
South Fork of Holston River near.....	207-209
Chillicothe, Ohio, Scioto River at.....	105-106
Clarksburg Water Board, cooperation by.....	9
Clarksburg, W. Va., West Fork at.....	36-37
Clinch River at Cleveland, Va.....	243-244
at Clinton, Tenn.....	249-250
at Speer Ferry, Va.....	245-246
near Lone Mountain, Tenn.....	247-248
Clinton, Tenn., Clinch River at.....	249-250
Collins River near Rowland, Tenn.....	167-168
Columbia, Tenn., Duck River at.....	285-286
Duck River near.....	294
Columbus, Ohio, Alum Creek at.....	112-113
Scioto River at.....	103-105
Computations, results of, accuracy of.....	4-5
Control, definition of.....	2
Cooperation, record of.....	9
Copperhill, Tenn., Ocoee River at.....	270-271
Crabtree, N. C., Pigeon River near.....	195-196
Crystal Spring, Ohio, Tuscarawas River at.....	64-66
Cullasaja Creek at Cullasaja, N. C.....	231-232
Cumberland Falls, Ky., Cumberland River at.....	145-146
Cumberland Hydroelectric Co., cooperation by.....	9
Cumberland River at Barbourville, Ky.....	143-144
at Burnside, Ky.....	147-148
at Carthage, Tenn.....	151-153
at Celina, Tenn.....	149-151
at Cumberland Falls, Ky.....	145-146
at Nashville, Tenn.....	153-155
South Fork of, at Nevelsville, Ky.....	160-161
Cumberland River Basin, Ky.-Tenn., gaging-station records in.....	143-172
Current meters, Price, plate showing.....	2

D	Page
Dailey, W. Va., Tygart River near.....	12-13
Dandridge, Tenn., French Broad River at.....	179-180
Darby Creek at Darbyville, Ohio.....	114-115
Darbyville, Ohio, Darby Creek at.....	114-115
Data, accuracy of.....	4-5
explanation of.....	3-4
Davidson River near Brevard, N. C.....	191-192

	Page
McHarge, Tenn., Ocoee River at.....	271-273
McKinneysburg, Ky., Licking River at.....	121-122
Mad River near Dayton, Ohio.....	293
near Springfield, Ohio.....	133-135
Mahoning River at Youngstown, Ohio.....	60-62
near Deerfield, Ohio.....	59-60
Marion, Ohio, Little Scioto River near.....	106-108
Massillon, Ohio, Ohio Canal near.....	293
Mendota, Va., North Fork of Holston River at.....	221-222
Miami & Erie Canal at Dayton, Ohio.....	293
at Hamilton, Ohio.....	293
Miami & Erie Canal feeder at Sidney, Ohio.....	293
Miami Conservancy District, cooperation by.....	9
Miami River at Dayton, Ohio.....	126-127
at Miamisburg, Ohio.....	293
at Sidney, Ohio.....	122-123
at Taylorsville, Ohio.....	124-125
at Venice, Ohio.....	128-129
Miami River Basin, Ohio, gaging-station records in.....	122-137
Middle Fork at Midvale, W. Va.....	25
Millwood, Ohio, Kokosing River near.....	82-83
Mohican River at Greer, Ohio.....	79-80
Monongahela River at Lock 15, Houlst, W. Va.....	16-24
Monongahela River Basin, W. Va., gaging- station records in.....	12-59
Morgan, J. H., work of.....	10
Morganton, Ga., Toccoa River near.....	269-270
Morgantown, W. Va., Cheat River near.....	44-46
Morristown, Tenn., Nolichucky River near.....	204-205
Mount Sterling, N. C., Big Creek at.....	294
Murphy, N. C., Hiwassee River at.....	256-257
Muskingum River at Dresden, Ohio.....	69-71
at McConnelville, Ohio.....	71-73
Muskingum River Basin, Ohio, gaging- station records in.....	64-87

N

Nantahala River at Almond, N. C.....	233-234
Nashville, Tenn., Cumberland River at.....	153-155
Nevelsville, Ky., South Fork of Cumberland River at.....	160-161
Newcomerstown, Ohio, Tuscarawas River at.....	67-69
Newport, Tenn., French Broad River near.....	177-178
Pigeon River at.....	197-198
New River at Eggleston, Va.....	90-91
near Hinton, W. Va.....	92-93
near New River, Tenn.....	158-160
New York, cooperation by.....	9
Nimishillen Creek at North Industry, Ohio.....	75-76
Nolichucky River at Embreeville, Tenn.....	200-202
near Greeneville, Tenn.....	202-204
near Morristown, Tenn.....	204-205
Normandy, Tenn., Duck River at.....	283-284
North Carolina, cooperation by.....	9
North Industry, Ohio, Nimishillen Creek at.....	75-76
North Toe River at Spruce Pine, N. C.....	199-200
Nottely River near Ranger, N. C.....	265-267

O

Obey River near Boom, Tenn.....	162-163
Ocoee River at Copperhill, Tenn.....	270-271
at Emf, Tenn.....	273-274
at McHarge, Tenn.....	271-273
at Parksville, Tenn.....	275-276

Oconalufly River at Cherokee, N. C.....	239-240
Ohio Canal near Massillon, Ohio.....	293
Ohio, cooperation by.....	9
Olentangy River near Delaware, Ohio.....	108-110
Orangeville, Ohio, Pymatuning Creek at.....	293
Otas, Ky., Laurel River near.....	155-156

P

Paint Creek at Bainbridge, Ohio.....	115-116
near Bourneville, Ohio.....	116-117
Parksville, Tenn., Ocoee River at.....	275-276
Parsons, W. Va., Cheat River near.....	40-41
Shavers Fork at.....	53-56
Pennington, Va., Powell River near.....	251-252
Petersen, B. J., work of.....	10
Pigeon River at Newport, Tenn.....	197-198
at Waterville, Tenn.....	294
near Crabtree, N. C.....	195-196
Pleasant Hill, Ohio, Stillwater River at.....	132-133
Pomerene, Ohio, Walhonding River at.....	81-82
Powell River near Arthur, Tenn.....	252-254
near Pennington, Va.....	251-252
Price current meters, plate showing.....	2
Publications, information concerning.....	5-8
obtaining or consulting of.....	6
on stream flow, list of.....	7
Pymatuning Creek at Orangeville, Ohio.....	293

R

Raccoon Creek at Adamsville, Ohio.....	95-101
Ranger, N. C., Nottely River near.....	265-267
Red House, N. Y., Allegheny River at.....	10-12
Red River near Adams, Tenn.....	171-172
Rees, Ohio, Big Walnut Creek at.....	110-111
Reliance, Tenn., Hiwassee River at.....	258-259
Rockcastle River at Rockcastle Springs, Ky.....	157-158
Rock Island, Tenn., Caney Fork near.....	163-165
Rockville, W. Va., Big Sandy Creek at.....	56-59
Rogersville, Tenn., Holston River near.....	211-212
Rowland, Tenn., Collins River near.....	167-168
Rowlesburg, W. Va., Cheat River at.....	41-43
Run-off in inches, definition of.....	2

S

Ste. Marie, Ill., Embarrass River at.....	138-140
Saline River, Middle Fork of, near Harris- burg, Ill.....	141-143
Saltville, Va., North Fork of Holston River near.....	219-220
Sandy Creek at Sandyville, Ohio.....	73-74
Sandyville, Ohio, Sandy Creek at.....	73-74
Scioto River at Chillicothe, Ohio.....	105-106
at Columbus, Ohio.....	103-105
near Dublin, Ohio.....	101-102
Scioto River Basin, Ohio, gaging-station records in.....	101-117
Second-feet, definition of.....	2
Second-feet per square mile, definition of.....	2
Sequatchie River near Whitwell, Tenn.....	277-278
Sevierville, Tenn., Little Pigeon River at.....	206-207
Shavers Fork at Bemis, W. Va.....	52-53
at Cheat Bridge, W. Va.....	50-51
at Parsons, W. Va.....	53-56
Shelbyville, Tenn., Duck River at.....	294

	Page		Page
Shooting Creek near Hayesville, N. C.....	262-263	U	
Sidney, Ohio, Miami & Erie Canal feeder at...	293	Uhrichsville, Ohio, Stillwater Creek at.....	77-79
Miami River at.....	122-123	United States Engineer Corps, cooperation	
Silver Point, Tenn., Caney Fork near.....	165-167	by.....	9
Southern Cities Power Co., cooperation by...	9	V	
Speer Ferry, Va., Clinch River at.....	245-246	Valley Forge, Doe River at.....	217-218
Springfield, Ohio, Buck Creek at.....	293	Valley River at Tomotla, N. C.....	263-264
Mad River near.....	133-135	Venice, Ohio, Miami River at.....	128-129
Springville, Tenn., Big Sandy River near...	294	W	
Spruce Pine, N. C., North Toe River at....	199-200	Wabash River Basin, Ill., gaging-station	
Stage-discharge relation, definition of.....	2	records in.....	138-141
Stevens water-stage recorder, plate showing..	2	Wading measurement, typical gaging station	
Stillwater Creek at Uhrichsville, Ohio.....	77-79	for, plate showing.....	2
Stillwater River at Pleasant Hill, Ohio.....	132-133	Walhonding River at Pomerene, Ohio.....	81-82
near Dayton, Ohio.....	293	Watauga River at Butler, Tenn.....	215-216
Swannanoa River at Biltmore, N. C.....	193-194	at Elizabethton, Tenn.....	294
T		Water-stage recorders, plate showing.....	2
Taylorville, Ohio, Miami River at.....	124-125	Waterville, Tenn., Pigeon River at.....	294
ennessee, cooperation by.....	9	West Fork at Butcherville, W. Va.....	27-35
Tennessee Electric Power Co., cooperation		at Clarksburg, W. Va.....	36-37
by.....	9	West Penn Power Co., cooperation by.....	9
Tennessee River at Chattanooga, Tenn.....	184-187	West Virginia, cooperation by.....	9
at Florence, Ala.....	187-188	West Virginia Power Co., cooperation by....	9
at Johnsonville, Tenn.....	189-190	Whiteoak Creek near Georgetown, Ohio....	118-119
at Knoxville, Tenn.....	181-182	Whitwell, Tenn., Sequatchie River near....	277-278
at Loudon, Tenn.....	183-184	Wilcox, Ill., Little Wabash River at.....	140-141
Tennessee River Basin, N. C.-Tenn.-Va.-Ga.-		Wilmington, Ohio, Todd Fork near.....	120-121
Ala., gaging-station records in.....	173-290	Winchester, Ky., Kentucky River near.....	137-138
Terms, definition of.....	2-3	Winchester Water Works Co., cooperation	
Toboso, Ohio, Licking River at.....	85-87	by.....	9
Toccoa River near Dial, Ga.....	267-268	Work, authorization of.....	1
near Morganton, Ga.....	269-270	division of.....	9-10
Todd Fork near Wilmington, Ohio.....	120-121	scope of.....	1-2
Tomotla, N. C., Valley River at.....	263-264	Y	
Tuckasegee River at Bryson, N. C.....	237-238	Yellow Creek at Hammondsville, Ohio.....	63-64
near East Laport, N. C.....	235-236	Youngstown, Ohio, Mahoning River at.....	60-62
Tuscarawas River at Crystal Spring, Ohio..	64-66	Z	
at Newcomerstown, Ohio.....	67-69	Zero flow, point of, definition of.....	3
near Dover, Ohio.....	66-67		
Twin Creek at Germantown, Ohio.....	293		
near Germantown, Ohio.....	136-137		
Tygart River at Belington, W. Va.....	13-15		
at Fetterman, W. Va.....	15-16		
near Dailey, W. Va.....	12-13		