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

Water-Supply Paper 644

SURFACE WATER SUPPLY *of the* UNITED STATES

1927

PART IV

ST. LAWRENCE RIVER BASIN

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Prepared in cooperation with the States of
WISCONSIN, ILLINOIS, OHIO, and NEW YORK

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON: 1930

For sale by the Superintendent of Documents, Washington, D. C. - - - Price 25 cents

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SURFACE WATER SUPPLY OF ST. LAWRENCE RIVER BASIN, 1927

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, 1927.

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

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

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

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

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

1895	$12,500.00	1907	$150,000.00	1921–1923	$180,000.00
1896	24,500.00	1908–1910	100,000.00	1924–1925	170,000.00
1897–1899	50,000.00	1911–1917	150,000.00	1926	165,000.00
1900	70,000.00	1918	175,000.00	1927	151,000.00
1901–1902	100,000.00	1919	148,244.10	1928	147,000.00
1903–1906	200,000.00	1920	175,000.00		

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 10.

Measurements of stream flow have been made at about 5,330 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1927, 1,750 gaging stations were being maintained by the Geological Survey and the cooperating organizations. Many miscellaneous discharge measurements were made at other points. In connection with this work data were also collected in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country and will be made available in water-supply papers from time to time.

DEFINITION OF TERMS

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

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

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

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

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

The following terms not in common use are here defined:

"Stage-discharge relation," an 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 determine the stage-discharge relation at the gage. It should be noted that the control may not be the same section or sections at all stages.

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

EXPLANATION OF DATA

The data presented in this report cover the year beginning October 1, 1926, and ending September 30, 1927. At the beginning of January in most parts of the United States much of the precipitation in the preceding three months is stored as ground water, in the form of snow or ice, or in ponds, lakes, and swamps, 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. The general methods are outlined in standard textbooks on the measurement of river discharge.

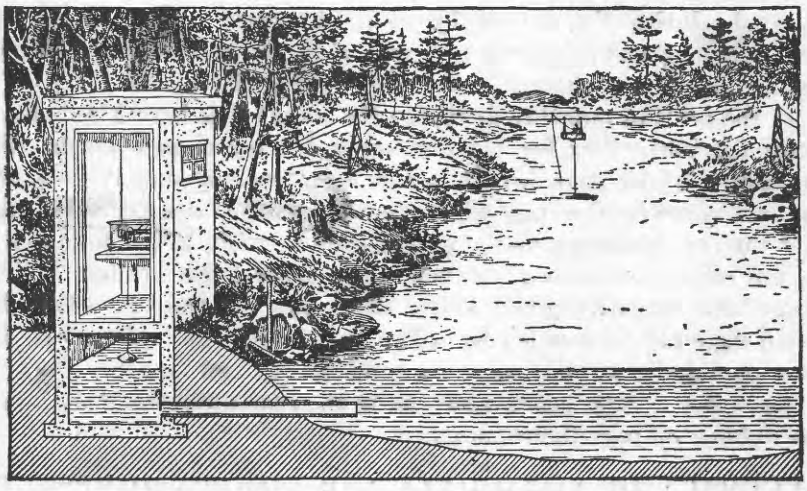

FIGURE 1.—Typical gaging station

A typical gaging station, equipped with water-stage recorder and measuring cable and car, is shown in Figure 1.

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

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 heights 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 con-

dition that may affect the permanence of the stage-discharge relation, covering such subjects as the occurrence of ice, the use of the streams 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 fluctuations 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 using 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 computations recorded in the remaining columns, which are defined on page 2, are based.

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, and (4) frequency of gage readings, and (5) methods of applying daily gage height to the rating table to obtain the daily discharge.

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

The monthly means for any station may represent with high accuracy the quantity of water flowing past the gage, but the figures showing discharge per square mile and run-off in inches may be 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 in the earlier reports by the Geological Survey should be used with caution because of possible but unknown inherent sources of error.

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

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

PUBLICATIONS

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

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

Part I. North Atlantic slope basins (St. John River to York River).

II. South Atlantic slope and eastern Gulf of Mexico basins (James River to the Mississippi).

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

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

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

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

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

Augusta, Me., Statehouse.
Boston, Mass., 2500 Customhouse.
Hartford, Conn., 64 State Capitol.
Albany, N. Y., 506 Broadway-Arcade Building.
Trenton, N. J., 423 Statehouse Annex.
Charlottesville, Va., Brooks Museum, University of Virginia.
South Charleston, W. Va., Naval Ordnance Plant.
Asheville, N. C., 608 City Hall.
Chattanooga, Tenn., 630 Power Building.
Tuscaloosa, Ala., Post Office Building.
Columbus, Ohio, Engineering Experiment Station, Ohio State University.
Chicago, Ill., 1503 Consumers Building.
Madison, Wis., 337N State Capitol.
St. Paul, Minn., 202 Old State Capitol.
Topeka, Kans., 23 Federal Building.
Rolla, Mo., Rolla Building, School of Mines and Metallurgy.
Fort Smith, Ark., Post Office Building.
Austin, Tex., State Capitol.
Tucson, Ariz., 104 Agricultural Building, University of Arizona.
Denver, Colo., 403 Post Office Building.
Salt Lake City, Utah, 313 Federal Building.
Idaho Falls, Idaho, 228 Federal Building.
Boise, Idaho, Federal Building.
Helena, Mont., 45–46 Federal Building.
Tacoma, Wash., 406 Federal Building.
Portland, Oreg., 606 Post Office Building.
San Francisco, Calif., 303 Customhouse.

Los Angeles, Calif., 751 South Figueroa Street.
Honolulu, Hawaii, Territorial Office Building.

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

Stream-flow records have been obtained at about 5,330 points in the United States, and the data obtained have been published in the reports tabulated below and on page 9.

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

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

Report	Character of data	Year
10th A, pt. 2	Descriptive information only	
11th A, pt. 2	Monthly discharge and descriptive information	1884 to Sept., 1890.
12th A, pt. 2	do	1884 to June 30, 1891.
13th A, pt. 3	Mean discharge in second-feet	1884 to Dec. 31, 1892.
14th A, pt. 2	Monthly discharge (long-time records, 1871 to 1893)	1888 to Dec. 31, 1893.
B 131	Descriptions, measurements, gage heights, and ratings	1893 and 1894.
16th A, pt. 2	Descriptive information only	
B 140	Descriptions, measurements, gage heights, ratings, and monthly discharge (also many data covering earlier years).	1895.
W 11	Gage heights (also gage heights for earlier years)	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years).	1895 and 1896.
W 15	Descriptions, measurements, and gage heights, eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas.	1897.
W 16	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte, 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	1900.
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	1919–27.
W 521 to 534	do	1921.
W 541 to 554	do	1922.
W 561 to 574	do	1923.
W 581 to 594	do	1924.
W 601 to 614	do	1925.
W 621 to 634	do	1926.
W 641 to 654	do	1927.

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

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

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.

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

[For basins included see p. 5]

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII–A	XII–B	XII–C
1899[a]	35	[b]35, 36	36	36	36	[c]36, 37	37	37	[d]37, 38	38, [e]39	38, [f]39	38	38	38
1900[g]	47, [h]48	48	48, [i]49	49	49	49, [j]50	50	50	50	51	51	51	51	51
1901	65, 75	65, 75	65, 75	65, 75	[k]65, 66, 75	66, 75	[k]65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902	82	[b]82, 83	83	[l]82, 83	[k]83, 85	84	[k]83, 84	84	85	85	85	85	85	85
1903	97	[b]97, 98	98	97	[k]98, 99, [m]100	99	[k]98, 99	99	100	100	100	100	100	100
1904	[n]124, [o]125, [p]126	[p]126, 127	128	129	[k]128, 130	130, [q]131	[k]128, 131	132	133	133, [r]134	134	135	135	135
1905	[n]165, [o]166 [p]167	[p]167, 168	169	170	171	172	[k]169, 173	174	175, [s]177	176, [r]177	177	178	178	[l]177, 178
1906	[n]201, [o]202, [p]203	[p]203, 204	205	206	207	208	[k]205, 209	210	211	212, [r]213	213	214	214	214
1907–8	241	242	243	244	245	246	247	248	249	250, [r]251	251	252	252	252
1909	261	262	263	264	265	266	267	268	269	270, [r]271	271	272	272	272
1910	281	282	283	284	285	286	287	288	289	290	291	292	292	292
1911	301	302	303	304	305	306	307	308	309	310	311	312	312	312
1912	321	322	323	324	325	326	327	328	329	330	331	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
1925	601	602	603	604	605	606	607	608	609	610	611	612	613	614
1926	621	622	623	624	625	626	627	628	629	630	631	632	633	634
1927	641	642	643	644	645	646	647	648	649	650	651	652	653	654

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

COOPERATION

The work in Wisconsin during the year ending September 30, 1927, was done in cooperation with the Railroad Commission of Wisconsin, C. M. Larson, chief engineer, and at certain stations in cooperation with the following organizations: Wisconsin Michigan Power Co., D. W. Mead, consulting engineer; Menominee & Marinette Light & Traction Co., Edward Daniell, general manager; and United States Engineer Corps.

The work in Minnesota was done in cooperation with the Pigeon River Lumber Co.

In Illinois the station on Little Calumet River at Harvey, was maintained in cooperation with the Illinois Department of Purchases and Construction, division of waterways, Wm. F. Mulvihill, superintendent; the gage reader was paid by the Sanitary District of Chicago.

The work in Ohio was done in cooperation with the Ohio Cooperative Topographic Survey, C. E. Sherman, inspector. Financial assistance was also rendered by the Michigan Gas & Electric Co.

The work in New York was carried on in cooperation with the State and at certain stations in cooperation with the following organizations: Rochester Gas & Electric Corporation, city of Rochester, Cornell University, Utica Gas & Electric Co., Black River Pegulating District, Otter Creek Power Corporation, Northern New York Utilities Inc. The Commission for the Improvement of the Oswegatchie River, International Paper Co., Malone Light & Power Co., New York & Pennsylvania Co., J. & J. Rogers Co., and Plattsburg Gas & Electric Co.

In Vermont the station on Green River at Garfield was maintained in cooperation with Charles T. Middlebrook.

DIVISION OF WORK

Data for stations in Minnesota and Wisconsin and for the stations on Menominee River at Twin Falls, near Iron Mountain, Mich., and Menominee River below Koss, Mich., were collected and prepared for publication under the direction of S. B. Soulé, district engineer, assisted by W. J. Parsons and George W. Martin.

Data for the station in Illinois were collected and prepared for publication by H. E. Grosbach, district engineer.

Data for stations on Huron River at Barton, Mich., and Tittabawassee River at Freeland, Mich., were prepared for publication under the direction of A. H. Horton, district engineer, assisted by J. W. Mangan.

Data for stations in Ohio and the station on St. Joseph River at Mottville, Mich., were collected and prepared for publication under the direction of Lasley Lee, district engineer, assisted by E. E. R.

Dornbach, W. S. Frame, R. G. Kasel, E. H. Markel, J. I. Perrey, E. P. Coady, and C. H. Wall.

Data for stations in New York were collected and prepared for publication under the direction of Arthur W. Harrington, district engineer, assisted by B. L. Bigwood, J. H. Morgan, A. E. Johnson, K. K. Hoyt, F. H. Harrington, and Agnes D. Buchanan.

Data for stations in Vermont were collected and prepared for publication under the direction of H. B. Kinnison, district engineer, assisted by H. F. Hill, jr., J. H. Morgan, and Louise M. McGovern.

The manuscript was assembled and reviewed by Warren Withee.

GAGING-STATION RECORDS

STREAMS TRIBUTARY TO LAKE SUPERIOR

PIGEON RIVER ABOVE MOUTH OF ARROW RIVER, MINN.

LOCATION.—In lot 5, sec. 19, T. 64 N., R. 6 E., Cook County, 1,500 feet above mouth of Arrow River, which enters from left.

DRAINAGE AREA.—338 square miles.

RECORDS AVAILABLE.—September 5, 1924, to September 30, 1927.

EQUIPMENT.—Au water-stage recorder installed in wooden well and shelter on right bank. Discharge measurements made from boat or by wading.

CHANNEL AND CONTROL.—Bed composed of cobblestones and heavy gravel; not permanent. Banks of medium height; overflowed at flood stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.44 feet at 2 a. m. April 20 (discharge, 1,060 second-feet); minimum mean daily stage, 1.37 feet September 27 and 28 (discharge, 60 second-feet).

1924–1927: Maximum stage, that of April 20, 1927; minimum stage, 1.10 feet at 7 a. m. September 1, 1926 (discharge, 31 second-feet).

REGULATION.—For a short period in the spring the discharge is regulated by dams at the headwaters in the interest of log driving.

ACCURACY.—Stage-discharge relation not permanent, seriously affected by ice; data insufficient to warrant estimates of flow. Rating curve poorly defined by five discharge measurements between 45 and 774 second-feet. One of these measurements at 774 second-feet was made during the current year. Operation of water-stage recorder satisfactory during period for which discharge was computed except for 11 days in June and July. Daily discharge ascertained by applying to rating table mean daily gage height obtained by by inspection of recorder graph. Records poor.

102060—30——2

Daily discharge, in second-feet, of Pigeon River above mouth of Arrow River, Minn., for the year ending September 30, 1927

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	209	129	------	745	314	243	154	91
2	229	121	------	745	314	250	146	90
3	219	114	------	807	314	257	146	88
4	314	129	------	870	292	265	137	85
5	360	137	------	934	281	272	137	84
6	337	98	------	870	270	279	129	83
7	314	121	------	745	270	286	129	81
8	270	137	------	745	270	293	129	80
9	249	154	------	626	249	300	129	78
10	239	------	------	626	239	307	121	77
11	219	------	------	685	249	314	129	77
12	249	------	460	685	229	292	121	77
13	249	------	486	655	229	292	120	77
14	239	------	515	655	209	314	120	77
15	229	------	540	685	209	314	120	76
16	219	------	540	626	209	281	114	72
17	209	------	486	568	200	260	114	70
18	200	------	540	513	190	249	106	69
19	190	------	967	460	200	229	106	67
20	181	------	1,060	434	314	209	106	64
21	181	------	1,000	409	409	200	106	64
22	172	------	870	384	360	190	106	63
23	163	------	745	384	314	181	106	63
24	163	------	626	360	314	172	106	62
25	154	------	597	384	314	172	104	62
26	146	------	626	409	281	163	103	62
27	137	------	655	409	249	163	100	60
28	137	------	715	409	239	154	98	60
29	137	------	745	360	229	154	97	62
30	137	------	745	337	236	146	96	62
31	137	------	------	314	------	154	94	------

NOTE.—Stage-discharge relation affected by ice Nov. 10, 1926, to Apr. 11, 1927; discharge not determined.

Monthly discharge of Pigeon River above mouth of Arrow River, Minn., for the year ending September 30, 1927

[Drainage area, 338 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	360	137	213	0.630	0.73
November 1-9	154	98	127	.376	.13
April 12-30	1,060	460	680	2.01	1.42
May	934	314	575	1.70	1.96
June	409	190	267	.790	.88
July	314	146	237	.701	.81
August	154	94	117	.346	.40
September	91	60	72.8	.215	.24

PIGEON RIVER AT INTERNATIONAL BRIDGE, MINN.

LOCATION.—In lot 3, sec. 20, T. 64 N., R. 6 E., Cook County, 100 feet upstream from bridge on trunk highway connecting Duluth, Minn., with Port Arthur and Fort William, Ont., 9.3 miles above mouth.

DRAINAGE AREA.—580 square miles.

RECORDS AVAILABLE.—April 17, 1924, to September 30, 1927.

EQUIPMENT.—Staff gage bolted to vertical rock ledge on right bank, 100 feet above bridge. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of solid rock and large boulders. Control is head of rapids a short distance below gage; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.5 feet April 20 (discharge, 6,850 second-feet); minimum stage, 0.7 foot September 26–28 (discharge, 170 second-feet).

1924–1927: Maximum stage recorded, that of April 20, 1927; minimum discharge, 38 second-feet, measured by current meter February 5, 1926.

DIVERSION AND REGULATION.—For a short period in spring discharge is regulated by dams at headwaters in interest of log driving.

ACCURACY.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 38 and 7,040 second-feet by eight discharge measurements, four of which were made during the current year and ranged from 236 to 7,040 second-feet. In addition 25 measurements between 76 and 1,770 second-feet were made by the Dominion Water Power Branch of Canada from May, 1921, to September, 1924. Gage read to half-tenths once daily. Daily discharge ascertained by applying gage readings to rating table. Records good.

Daily discharge, in second-feet, of Pigeon River at International Bridge, Minn., for the year ending September 30, 1927

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	978	540	-------	3,040	1,440	1,280	540	282
2	1,020	540	-------	2,910	1,440	855	502	282
3	895	502	-------	3,180	1,440	815	502	282
4	1,520	502	-------	4,100	1,520	775	465	265
5	1,690	465	-------	4,100	1,360	735	465	265
6	1,520	465	-------	3,780	1,360	1,780	432	265
7	1,280	465	-------	3,180	1,280	1,970	432	265
8	1,110	432	-------	2,780	1,190	1,690	432	265
9	1,020	432	-------	3,180	1,190	1,520	432	248
10	935	432	-------	3,470	1,280	2,410	432	248
11	1,020	400	-------	3,180	1,280	1,690	432	248
12	1,110	400	-------	3,040	1,190	1,190	400	282
13	1,110	372	-------	3,040	1,020	1,280	400	265
14	1,020	-------	-------	3,320	1,020	1,520	400	248
15	1,020	-------	-------	2,910	1,020	1,440	372	248
16	935	-------	-------	2,780	1,020	1,440	372	248
17	895	-------	3,320	2,780	935	1,280	345	248
18	855	-------	3,780	2,410	935	1,110	345	248
19	815	-------	5,640	2,290	895	1,020	345	215
20	775	-------	6,850	2,290	855	1,020	345	215
21	775	-------	5,880	1,970	1,610	935	345	215
22	775	-------	4,690	1,870	1,610	855	345	200
23	775	-------	3,780	1,870	1,610	775	345	200
24	735	-------	2,650	1,780	1,610	695	345	200
25	695	-------	2,910	1,870	1,520	655	322	185
26	615	-------	2,530	2,070	1,440	655	322	170
27	615	-------	3,040	1,970	1,280	615	300	170
28	578	-------	3,040	1,870	1,280	615	300	170
29	578	-------	3,180	1,780	1,280	615	300	185
30	578	-------	3,040	1,780	1,280	578	300	265
31	578	-------	-------	1,690	-------	578	300	-------

NOTE.—Stage-discharge relation affected by ice Nov. 14 to Apr. 16; discharge not determined.

Monthly discharge of Pigeon River at International Bridge, Minn., for the year ending September 30, 1927

[Drainage area, 580 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,690	578	930	1.61	1.86
November 1–13	540	372	457	.788	.38
April 17–30	6,850	2,530	3,880	6.69	3.48
May	4,100	1,690	2,650	4.57	5.27
June	1,610	855	1,270	2.19	2.44
July	1,970	578	1,110	1.91	2.22
August	540	300	384	.662	.76
September	282	170	236	.407	.45

STREAMS TRIBUTARY TO LAKE MICHIGAN

MENOMINEE RIVER AT TWIN FALLS, NEAR IRON MOUNTAIN, MICH.

LOCATION.—In sec. 12, T. 40 N., R. 31 W., at power plant of Peninsular Power Co., 3½ miles north of Iron Mountain, Dickinson County, and 3 miles above mouth of Pine River.

DRAINAGE AREA.—1,790 square miles.

RECORDS AVAILABLE.—January 1, 1914, to September 30, 1927.

EQUIPMENT.—Staff and float gages used to determine effective head on water wheels.

DISCHARGE.—Daily discharge was computed from hourly determinations of flow through turbines computed from a record of the number of wheels in operation, kilowatt output, and effective head. To the average flow through turbines is added the water passing over spillway, through gates, down the log sluice, and leakage through the idle wheels and through dam.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge recorded during year, 7,400 second-feet March 19; minimum mean daily discharge, 624 second-feet September 11.

1914–1927: Maximum mean daily discharge recorded, 16,700 second-feet April 23 and 24, 1916; minimum mean daily discharge, 154 second-feet August 9, 1925.

REGULATION.—Besides regulation at this power plant, flow is regulated by power plant on Brule River about 5 miles above station; plants owned by same company. Owing to variations in demand daily discharge will bear no relation to the natural flow, but monthly discharge probably corresponds closely to natural flow.

ACCURACY.—Discharge records published in the following tables were obtained by adding 10 per cent to discharge as computed from power-plant records. This correction is based upon the results of five current-meter measurements made in 1919 and 1922 by the United States Geological Survey at a point about 1 mile downstream from power plant.

COOPERATION.—Daily-discharge records furnished by Mead & Seastone, consulting engineers, Madison, Wis.

Daily discharge, in second-feet, of Menominee River at Twin Falls, near Iron Mountain, Mich., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,240	1,730	1,950	1,380	1,210	1,160	2,590	3,500	3,390	1,590	1,970	1,000
2	2,250	1,790	2,150	896	1,150	1,100	2,490	3,530	3,360	1,540	1,910	1,110
3	2,200	1,880	1,950	1,600	1,140	1,140	1,970	3,380	3,240	1,280	1,590	947
4	2,150	1,900	1,520	1,450	1,130	1,180	2,100	3,290	2,950	1,380	1,660	1,110
5	2,220	1,890	1,520	1,550	1,230	1,160	2,290	3,730	2,710	1,380	1,620	869
6	2,220	1,870	1,720	1,640	913	953	3,140	4,010	2,180	1,610	1,250	1,010
7	2,190	1,050	1,790	1,480	1,160	1,120	3,460	3,730	2,220	1,910	994	1,120
8	2,090	1,860	1,820	1,520	1,170	1,190	3,460	3,270	2,200	1,990	1,410	1,120
9	1,940	1,950	2,020	991	1,210	1,100	3,120	3,730	2,200	1,920	1,300	962
10	2,130	1,690	1,940	1,450	1,150	1,250	3,160	3,560	2,190	1,860	1,360	820
11	1 570	1,560	2,050	1,330	1,220	1,350	3,170	3,510	2,180	1,640	1,310	624
12	1,980	1,810	1,570	1,330	1,240	1,480	3,130	4,070	2,090	2,260	1,310	898
13	2,250	2,220	1,790	1,330	913	1,880	3,330	3,690	3,030	2,640	1,200	882
14	2,260	2,220	1,690	1,330	1,240	2,110	3,600	3,480	2,180	2,100	901	932
15	2,240	2,270	1,530	1,220	1,170	2,170	3,670	4,250	2,190	2,090	1,100	986
16	2,260	3,900	1,660	1,010	1,210	2,610	3,820	3,660	2,160	2,410	1,120	993
17	2,240	4,620	1,460	1,190	1,170	4,590	4,240	3,430	2,030	4,480	1,200	898
18	2,130	4,800	1,430	1,260	1,120	6,430	5,040	3,870	1,880	7,130	1,220	811
19	2,250	4,070	1,350	1,320	1,060	7,400	5,250	3,480	1,520	6,880	1,120	879
20	2,260	3,580	1,510	1,060	895	6,050	5,880	3,150	1,600	7,370	1,080	874
21	2,490	3,360	1,540	1,460	1,140	5,860	6,170	3,210	1,970	5,260	1,030	849
22	2,250	2,390	1,660	1,310	1,190	4,470	5,970	5,170	2,180	4,620	976	855
23	2,250	2,210	1,760	790	1,200	4,700	5,560	6,780	2,260	3,300	1,120	967
24	2,240	2,300	1,480	1,220	1,320	3,760	5,370	6,810	2,200	2,920	1,110	942
25	2,180	2,270	1,560	1,220	1,120	3,430	4,730	6,920	2,220	2,780	1,030	704
26	2,180	2,090	1,100	1,050	1,250	3,630	4,520	7,190	2,080	2,640	1,120	840
27	2,200	2,210	1,370	1,170	1,240	3,140	4,360	6,170	2,150	2,220	1,020	1,050
28	2,220	1,930	1,500	1,080	1,110	2,570	4,220	5,340	1,980	1,980	1,170	1,330
29	2,210	1,920	1,540	1,210	-------	2,860	4,010	4,440	1,810	2,000	1,020	1,380
30	2,160	2,140	1,540	824	-------	2,880	3,260	4,080	1,750	1,980	1,020	2,040
31	1,250	-------	1,480	1,110	-------	2,670	-------	3,850	-------	1,780	906	-------

NOTE.—Discharge computed by Peninsular Power Co. and corrected on basis of discharge measurements made by engineers of U. S. Geol. Survey.

Monthly discharge of Menominee River at Twin Falls, near Iron Mountain, Mich., for the year ending September 30, 1927

[Drainage area, 1,790 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,490	1,250	2,150	1.20	1.38
November	4,800	1,050	2,380	1.33	1.48
December	2,150	1,100	1,640	.916	1.06
January	1,640	790	1,250	.698	.80
February	1,320	895	1,150	.642	.67
March	7,400	953	2,820	1.58	1.82
April	6,170	1,970	3,900	2.18	2.43
May	7,190	3,150	4,270	2.39	2.76
June	3,390	1,520	2,240	1.25	1.40
July	7,370	1,280	2,800	1.56	1.80
August	1,970	901	1,230	.687	.79
September	2,040	624	993	.555	.62
The year	7,400	624	2,240	1.25	17.01

MENOMINEE RIVER BELOW KOSS, MICH.

LOCATION.—In sec. 9, T. 34 N., R. 27 W. at power plant of Menominee & Marinette Light & Traction Co., 3 miles west of Ingalls, and 4 miles below Koss, Marinette County. Little Cedar River, draining an area entirely in Michigan, enters half a mile below station.

DRAINAGE AREA.—3,790 square miles.

RECORDS AVAILABLE.—July 1, 1913, to September 30, 1927.

DISCHARGE.—Daily discharge was computed from hourly determinations of the flow through turbines (from kilowatt output and effective head) plus discharge through gates and over spillway. No account was taken of water passing through the exciter turbine, nor waste over the "trash gates" at power house. This amount was, however, relatively small.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge during year, 13,500 second-feet March 20; minimum mean daily discharge, 995 second-feet September 20.

1913–1927: Maximum mean daily discharge recorded, 23,200 second-feet April 23 and 25, 1916; minimum mean daily discharge, 706 second-feet January 13, 1926.

REGULATION.—Above station are the following power plants: Sturgeon Falls, owned by Pennsylvania Iron Mining Co., 50 miles; Little Quinnesec, owned by Kimerly Clark, 57 miles; Upper Quinnesec, owned by Oliver Iron Mining Co., 62 miles; Ford plant, owned by Ford Hydro-Electric Co., 68 miles; Twin Falls, owned by Peninsular Power Co., 75 miles. With the exception of the Kimberly Clark Dam at Little Quinnesec and the Ford Dam, the dams furnish power for utility and mining uses so that the flow past the dams is comparatively uniform. Kimberly Clark Dam is used for paper mills and the Ford Dam for operating a sawmill, and they regulate the flow on Sundays and holidays. The effect of this regulation is generally felt at the station on Tuesdays. The monthly flow probably represents the natural flow.

ACCURACY.—A discharge measurement made on September 12, 1922, at the highway bridge about 4 miles below station checked the discharge as computed from the power-plant records within 4 per cent. See Water-Supply Paper 524 for statement regarding earlier measurements. Records good.

COOPERATION.—Daily-discharge records furnished monthly by Edward Daniell, general manager of Menominee & Marinette Light & Traction Co.

Daily discharge, in second-feet, of Menominee River below Koss, Mich., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,900	3,180	2,350	2,370	1,770	2,210	4,760	4,700	4,930	3,110	3,100	1,690
2	3,080	3,160	3,190	2,410	1,750	2,000	4,080	4,660	4,590	2,780	2,140	1,120
3	3,060	3,120	3,590	2,580	1,940	2,230	3,440	3,810	4,440	1,230	2,510	1,960
4	2,890	3,260	3,290	2,360	2,010	2,180	4,220	3,960	4,300	1,160	2,760	1,350
5	3,700	3,250	2,700	2,670	1,710	2,100	3,560	4,680	3,470	2,120	2,510	1,500
6	3,170	3,360	2,540	2,810	1,790	1,810	3,700	4,940	3,650	2,350	1,970	1,180
7	3,660	3,220	2,540	2,570	2,100	2,240	5,160	5,520	3,000	2,790	1,690	1,250
8	3,330	3,210	2,560	2,600	1,830	2,000	5,630	4,470	2,840	2,560	2,320	1,680
9	3,780	2,440	2,880	2,500	1,980	2,350	5,520	5,280	2,990	2,230	1,720	1,750
10	2,770	3,430	3,010	2,510	2,010	2,310	5,210	4,180	2,670	2,120	1,640	1,860
11	3,230	3,020	3,190	2,160	1,960	2,490	4,760	5,700	3,890	2,720	2,040	1,170
12	3,720	2,380	3,140	2,180	2,110	2,570	4,570	5,350	3,340	2,640	2,120	1,480
13	3,670	3,140	3,270	2,340	1,910	3,110	4,650	5,320	2,870	2,580	1,900	1,330
14	3,520	2,770	2,640	2,400	2,070	3,920	4,410	6,890	2,900	3,810	1,750	1,600
15	3,960	3,550	2,430	2,360	2,020	4,410	4,350	6,350	3,080	3,080	1,850	1,560
16	2,350	3,770	2,510	2,050	1,860	5,660	4,460	5,940	3,200	3,490	1,450	1,480
17	3,350	5,070	2,500	2,050	2,010	8,060	4,930	6,120	3,170	3,430	1,590	1,410
18	4,450	5,720	2,330	2,100	1,980	10,200	6,510	5,600	2,900	5,380	1,880	1,150
19	3,950	6,150	2,400	2,020	2,020	12,600	5,600	5,080	2,970	7,560	1,680	1,230
20	3,910	6,020	2,320	2,150	2,080	13,500	6,320	5,490	2,740	8,690	1,660	995
21	4,350	4,520	2,550	2,260	1,920	10,300	7,660	5,530	2,530	8,910	1,320	1,260
22	4,390	3,540	2,430	2,290	1,750	12,500	8,720	5,820	2,880	9,030	1,470	1,460
23	4,080	3,260	2,550	1,820	1,890	10,700	8,910	5,400	2,310	7,640	1,480	1,240
24	3,680	3,000	2,470	2,110	2,150	8,160	9,070	6,940	3,510	5,390	1,750	1,250
25	3,830	2,570	2,300	1,770	2,180	7,270	8,450	8,600	3,720	4,290	1,590	1,200
26	3,720	2,200	2,150	1,940	1,910	6,260	7,500	8,400	3,590	4,160	1,540	1,220
27	4,110	2,840	2,370	2,020	1,980	5,460	6,150	8,530	3,430	3,320	1,470	1,220
28	4,170	1,800	2,420	1,940	2,250	5,780	5,500	8,240	3,500	3,100	1,500	1,450
29	4,190	2,330	2,440	1,930	-------	5,060	5,390	7,990	3,510	2,880	1,620	2,260
30	4,180	3,460	2,480	1,890	-------	4,350	5,160	7,290	3,220	2,040	1,330	2,410
31	3,030	-------	2,590	2,070	-------	4,610	-------	5,300	-------	2,470	1,250	-------

Monthly discharge of Menominee River below Koss, Mich., for the year ending September 30, 1927

[Drainage area, 3,790 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	4,450	2,350	3,650	0.963	1.11
November	6,150	1,800	3,420	.902	1.01
December	3,590	2,150	2,650	.699	.80
January	2,810	1,770	2,230	.588	.68
February	2,250	1,710	1,960	.517	.54
March	13,500	1,810	5,430	1.43	1.65
April	9,070	3,440	5,610	1.48	1.65
May	8,600	3,810	5,870	1.55	1.79
June	4,930	2,310	3,340	.881	.98
July	9,030	1,160	3,840	1.01	1.16
August	3,100	1,250	1,830	.483	.56
September	2,410	995	1,460	.385	.43
The year	13,500	995	3,450	.910	12.36

NOTE.—Monthly discharge computed by U. S. Geol. Survey from daily discharge records furnished by Menominee & Marinette Light & Traction Co.

PINE RIVER AT PINE RIVER POWER PLANT, NEAR FLORENCE, WIS.

LOCATION.—In sec. 28, T. 39 N., R. 18 E., at power plant of Peninsular Power Co., 6½ miles south of Florence, Florence County.

DRAINAGE AREA.—520 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—October 1, 1923, to September 30, 1927, at present site; January 22, 1914, to September 30, 1923, at site 4 miles upstream, where drainage area is 488 square miles.

DISCHARGE.—The daily discharge is computed from hourly determinations of the flow through turbines based on kilowatt output to which is added the quantity wasted.

EXTREMES OF DISCHARGE.—Maximum mean discharge recorded during year, 1,740 second-feet March 18; minimum mean daily discharge, zero on September 4.

1924–1927: Maximum mean daily discharge recorded, 1,870 second-feet May 11, 1924; minimum mean daily discharge, zero on January 29, 1924, February 28, 1926, and September 4, 1927.

REGULATION.—Discharge is subject to diurnal fluctuation by the operation of the plant at which the station is located, but the pondage at the plant is not large and the monthly discharge is very nearly the natural flow. There are no power plants above.

ACCURACY.—The rating of the wheels and development of curves were done by Mead & Seastone, hydraulic engineers. The records at the plant are carefully taken, and results are considered reliable. The formula for the discharge through the waste gates is probably not as accurate as that for the discharge through the wheels. Medium and low-water records good; high-water records fair.

COOPERATION.—Records of daily discharge are furnished by Peninsular Power Co.

Daily discharge, in second-feet, of Pine River at Pine River power plant, near Florence, Wis., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	468	500	488	363	246	284	605	590	590	429	430	159
2	555	467	427	331	246	255	605	589	590	437	338	160
3	592	452	460	362	260	259	601	830	588	376	351	187
4	594	444	411	366	250	262	594	970	588	275	285	0
5	595	444	334	367	250	246	670	1,030	579	396	261	123
6	555	405	393	368	242	230	838	835	508	378	246	288
7	553	428	430	371	245	282	840	835	476	486	244	188
8	504	491	430	392	262	297	842	745	432	427	311	158
9	533	553	393	234	248	277	770	748	437	484	264	159
10	463	359	487	391	250	289	604	908	435	502	210	150
11	576	479	475	298	283	364	595	896	393	575	188	156
12	594	540	359	341	250	370	599	920	295	572	191	186
13	597	591	483	297	300	576	756	828	409	849	215	254
14	598	591	390	298	162	609	834	921	362	671	159	194
15	594	760	390	253	284	770	829	1,060	326	829	188	182
16	597	911	368	295	274	955	822	1,070	234	880	216	164
17	604	890	384	345	270	1,450	954	965	346	1,530	192	133
18	600	590	330	334	270	1,740	1,020	830	192	1,500	175	50
19	600	590	333	248	270	1,730	1,210	680	344	1,240	192	214
20	601	592	400	296	215	1,460	1,270	593	400	1,010	179	169
21	600	590	359	268	250	1,300	1,290	593	487	1,060	86	188
22	600	590	361	202	200	1,060	1,140	747	740	962	264	147
23	598	590	412	270	287	1,030	1,060	820	993	805	203	150
24	591	590	398	318	287	842	1,040	830	816	621	201	150
25	592	590	383	233	287	831	912	940	815	570	247	120
26	595	590	356	328	300	763	825	1,070	813	567	196	246
27	592	423	360	194	185	603	817	1,070	574	574	196	227
28	592	503	362	282	300	602	762	940	569	564	24	282
29	590	528	363	233	------	604	587	763	562	430	187	363
30	574	479	364	220	------	605	588	591	560	390	215	572
31	437	------	366	283	------	605	------	595	------	295	255	------

Monthly discharge of Pine River at Pine River power plant, near Florence, Wis., for the year ending September 30, 1927

[Drainage area, 520 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	604	437	572	1.10	1.27
November	911	359	552	1.06	1.18
December	488	330	395	.760	.88
January	392	194	303	.583	.67
February	300	162	256	.492	.51
March	1,740	230	695	1.34	1.54
April	1,290	587	829	1.59	1.77
May	1,070	589	832	1.60	1.84
June	993	192	515	.990	1.10
July	1,530	275	667	1.28	1.48
August	430	24	223	.429	.49
September	572	0	191	.367	.41
The year	1,740	0	504	.969	13.14

PIKE RIVER AT AMBERG, WIS.

LOCATION.—In sec. 15, T. 35 N., R. 20 E., at Chicago, Milwaukee, St. Paul & Pacific Railway bridge half a mile south of Amberg, Marinette County, 1 mile below junction of two branches of Pike River, and 11 miles above mouth.

DRAINAGE AREA.—240 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—February 26, 1914, to September 30, 1927.

EQUIPMENT.—Chain gage fastened to guard rail on upstream side of bridge. Discharge measurements made from highway bridge a quarter of a mile downstream from gage or by wading.

CHANNEL AND CONTROL.—Solid rock and some loose granite boulders: channel permanent but very rough at gage. Banks of medium height; not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.30 feet at noon March 18 (discharge, 1,040 second-feet); minimum stage, 1.50 feet at 4 p. m. September 2 (discharge, 100 second-feet).

1914–1927: Maximum stage recorded, 7.68 feet at 5 p. m. April 10, 1922 (discharge, 2,730 second-feet); minimum discharge, 26 second-feet December 27, 1925 (stage, 1.30 feet).

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent; seriously affected by ice. Rating curve well defined between 135 and 1,010 second-feet by 27 measurements, none of which were made during the current year. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table except as indicated in footnote to table of daily discharge. Open-water records excellent; winter records fair.

Daily discharge, in second-feet, of Pike River at Amberg, Wis., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	192	381	364	195	110	185	348	318	258	180	180	109
2	180	318	364	200	120	190	348	318	258	192	180	100
3	204	255	372	200	130	195	348	348	348	180	158	118
4	258	192	380	205	140	200	380	348	230	158	148	100
5	288	198	380	205	150	205	444	348	217	180	148	109
6	258	204	380	205	140	218	412	318	204	192	158	118
7	244	380	370	205	130	230	380	318	204	192	158	118
8	476	319	365	205	125	259	348	288	192	180	148	138
9	444	258	360	205	115	288	288	318	204	192	138	138
10	230	244	350	205	110	351	318	444	217	180	118	128
11	444	230	335	205	105	414	318	582	204	204	128	128
12	230	337	320	190	100	476	318	510	192	230	118	138
13	204	444	300	180	100	529	318	396	180	258	118	128
14	180	396	280	180	100	582	288	412	180	273	118	128
15	192	348	260	170	100	701	288	493	169	258	118	118
16	204	348	245	160	115	820	318	444	169	230	118	118
17	258	348	230	160	135	947	348	428	169	444	128	109
18	348	364	240	150	155	1,040	380	412	180	620	138	109
19	288	356	250	140	170	820	412	412	180	510	138	109
20	273	348	260	140	175	701	412	428	180	396	128	118
21	273	348	250	140	180	582	444	412	180	380	118	128
22	273	348	245	140	190	510	444	380	303	396	118	128
23	288	348	240	140	205	476	412	348	288	204	128	128
24	318	348	230	130	210	444	380	348	258	204	118	128
25	288	348	230	120	210	412	380	348	244	192	118	138
26	273	348	230	115	215	444	380	348	230	180	118	118
27	258	348	220	115	200	444	348	318	204	192	118	118
28	258	348	215	110	180	444	348	288	192	192	118	109
29	244	356	200	110	------	348	318	273	180	158	118	118
30	244	364	190	110	------	318	318	273	180	138	118	138
31	444	------	195	110	------	348	------	258	------	138	109	------

NOTE.—Stage-discharge relation affected by ice Dec. 6 to Mar. 5; discharge based on gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records. Gage not read Oct. 15, Dec. 1, 3, 5, Mar. 6, 8, 10, 11, 13, 15, 20, Apr. 1, 2, and May 17; discharge interpolated. Gage read only every other day Dec. 6 to Mar. 5.

Monthly discharge of Pike River at Amberg, Wis., for the year ending September 30, 1927

[Drainage area, 240 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	476	180	276	1.15	1.33
November	444	192	326	1.36	1.52
December	380	190	285	1.19	1.37
January	205	110	163	.679	.78
February	215	100	147	.612	.64
March	1,040	185	456	1.90	2.19
April	444	288	360	1.50	1.67
May	582	258	370	1.54	1.78
June	348	169	213	.888	.99
July	620	138	246	1.02	1.18
August	180	109	132	.550	.63
September	138	100	121	.504	.56
The year	1,040	100	259	1.08	14.64

PESHTIGO RIVER AT HIGH FALLS, NEAR CRIVITZ, WI

LOCATION.—In sec. 1, T. 32 N., R. 18 E., at power house of Wisconsin Public Service Corporation, at High Falls, 1 mile upstream from Thunder River and 15 miles by road northwest of Crivitz, Marinette County.

DRAINAGE AREA.—520 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—August 3, 1912, to September 30, 1927.

DISCHARGE.—Daily discharge is computed from hourly flow through turbines based on load on generators, head on turbines, and over-all efficiency of the plant, to which is added the water wasted through gates or over spillway.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge recorded during year, 1,790 second-feet March 21; minimum mean daily discharge, 12 second-feet June 5.

1912–1927: Maximum stage, from water-stage recorder, 7.80 feet at 4.30 p. m. April 11, 1922 (discharge, 3,860 second-feet); minimum discharge, zero on several days during 1925. Owing to artificial regulation extremes given do not represent natural flow.

REGULATION.—Considerable diurnal fluctuation is caused by operation of power plant and during log-driving season by manipulation of the gates. Mean monthly flow does not represent natural flow because of storage in the service reservoir.

ACCURACY.—Daily discharge is computed from hourly records at the power plant and results are considered fair.

COOPERATION.—Records of daily discharge furnished by the Wisconsin Public Service Corporation; monthly and yearly discharge computed by engineers of the United States Geological Survey.

Daily discharge, in second-feet, of Peshtigo River at High Falls, near Crivitz, Wis. for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	368	454	403	81	480	462	725	270	818	561	465	320
2	670	285	412	50	303	344	680	655	732	219	767	462
3	276	676	420	505	283	331	388	923	660	102	363	472
4	546	766	310	716	239	323	591	733	512	105	410	264
5	501	421	455	620	309	493	792	634	12	519	390	177
6	856	584	420	418	192	154	706	592	539	793	330	521
7	742	425	450	399	314	504	752	413	744	450	112	381
8	683	50	369	364	325	664	830	245	644	512	212	425
9	512	390	605	50	330	656	897	739	346	196	332	408
10	856	518	415	324	350	745	580	793	399	348	365	411
11	390	397	483	428	308	769	874	692	297	478	281	311
12	413	450	226	300	440	669	707	699	404	674	289	260
13	403	484	530	331	165	356	640	709	330	579	290	305
14	395	122	640	247	340	681	667	865	299	788	288	235
15	424	442	454	327	274	566	706	434	342	284	385	384
16	475	574	220	313	393	703	742	1,070	161	674	502	321
17	50	575	300	299	441	643	288	764	318	321	245	206
18	586	506	156	290	378	862	1,070	674	318	995	336	144
19	570	632	418	295	404	1,460	672	876	224	1,050	379	413
20	650	614	512	310	239	1,710	1,200	452	378	794	325	390
21	732	311	450	320	410	1,790	733	601	560	1,310	139	320
22	743	510	239	368	474	1,310	1,050	584	561	907	412	354
23	650	710	303	314	445	1,040	600	732	506	664	193	231
24	376	910	300	312	369	1,310	669	775	612	655	675	320
25	640	285	156	390	404	951	873	747	628	803	253	264
26	830	444	110	320	377	1,300	718	797	378	615	318	320
27	667	445	418	300	286	576	782	839	552	574	330	380
28	492	326	590	313	298	739	844	600	801	476	90	341
29	535	566	512	360	-------	614	665	561	674	532	414	424
30	530	434	435	325	-------	688	426	813	617	437	379	654
31	492	-------	337	324	-------	670	-------	631	-------	207	228	------

Monthly discharge of Peshtigo River at High Falls, near Crivitz, Wis., for the year ending September 30, 1927

[Drainage area, 520 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	856	50	550	1.06	1.22
November	910	50	477	.917	1.02
December	640	110	389	.748	.86
January	716	50	333	.640	.74
February	480	165	342	.658	.69
March	1,790	154	777	1.49	1.72
April	1,200	288	729	1.40	1.56
May	1,070	245	675	1.30	1.50
June	818	12	479	.921	1.03
July	1,310	102	568	1.09	1.26
August	767	90	339	.652	.75
September	654	144	347	.667	.74
The year	1,790	12	502	.965	13.09

OCONTO RIVER NEAR GILLETT, WIS.

LOCATION.—In sec. 34, T. 28 N., R. 18 E., at highway bridge 2½ miles southeast of Gillett, Oconto County.

DRAINAGE AREA.—678 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—June 7, 1906, to March 30, 1909; January 6, 1914, to September 30, 1927.

EQUIPMENT.—Chain gage attached to iron railing on upstream side of bridge. Zero of gage was raised 4 feet January 6, 1914. Discharge measurements made from upstream side of bridge.

CHANNEL AND CONTROL.—Gravel; permanent. Left bank of medium height and not subject to overflow; right bank is overflowed at a stage of 5 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.2 feet at 6 p. m. March 26 (discharge, 2,320 second-feet); minimum stage, 0.75 foot at 6 p. m. July 31 (discharge, 246 second-feet).

1906–1927: Maximum stage recorded, 9.1 feet at 3 p. m. April 11, 1922, caused by failure of a dam at Pulcifer, 4 miles upstream (discharge, 6,470 second-feet); minimum stage, 0.1 foot June 3 and 6, 1907 (discharge, 95 second-feet).

DIVERSIONS AND REGULATION.—Operation of a power plant at Pulcifer, 5 miles above, causes some irregularities in flow.

ACCURACY.—Stage-discharge relation practically permanent; seriously affected by ice. Rating curve well defined from 320 second-feet to 1,570 second-feet and fairly well defined above 1,570 second-feet by 21 discharge measurements made during period 1914 to 1926 and one measurement made during current year. Gage read to quarter-tenths once daily. Discharge obtained by applying daily gage height to rating curve except for period when stage-discharge was affected by ice, for which it was obtained as indicated in footnote to table of daily discharge. Open-water records good; records for winter fair.

Daily discharge, in second-feet, of Oconto River near Gillett, Wis., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	827	741	555	445	370	415	1,020	741	633	387	260	290
2	686	659	535	435	370	385	1,020	741	607	387	260	290
3	352	557	535	425	380	385	1,020	769	582	387	290	290
4	510	659	510	435	385	385	950	713	510	387	406	290
5	510	827	510	445	395	450	1,080	713	510	406	290	290
6	557	557	490	425	405	510	1,020	769	488	387	290	290
7	659	659	490	405	405	585	1,080	769	466	387	320	290
8	659	607	465	405	405	660	1,150	741	466	387	582	305
9	686	557	465	405	405	715	1,020	827	466	387	406	290
10	607	488	465	405	405	770	1,020	887	466	387	352	370
11	557	320	465	405	395	925	887	950	466	387	320	352
12	582	607	465	395	385	1,080	887	950	466	406	320	320
13	607	557	465	385	380	1,620	827	950	466	406	320	290
14	713	659	490	360	370	2,160	827	887	466	406	305	305
15	582	713	490	335	370	2,160	406	887	446	425	320	290
16	582	769	490	360	370	2,320	305	887	446	466	320	276
17	713	769	465	385	370	2,000	887	887	446	466	352	276
18	713	769	445	395	370	1,850	827	741	425	488	352	290
19	534	769	425	405	370	1,710	887	713	446	510	370	276
20	1,020	741	405	395	370	1,640	887	713	425	488	352	260
21	887	769	415	385	370	1,570	1,020	686	425	425	352	260
22	769	769	425	385	370	1,430	1,150	713	446	406	305	633
23	659	740	425	385	410	1,290	1,150	769	446	387	290	260
24	769	715	425	385	445	1,290	1,080	827	488	352	276	276
25	827	685	425	385	455	1,150	1,020	887	488	352	276	607
26	827	660	425	380	465	1,080	887	887	466	406	276	260
27	769	635	425	370	455	1,020	827	827	446	387	276	406
28	769	605	425	370	445	1,020	827	769	488	370	276	370
29	713	580	425	370	-------	1,020	769	741	488	352	276	352
30	686	555	425	370	-------	1,020	769	713	406	290	290	290
31	713	-------	435	370	-------	1,020	-------	686	-------	246	276	------

NOTE.—Stage-discharge relation affected by ice Nov. 23 to Mar. 14; daily discharge based on gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records.

Monthly discharge of Oconto River near Gillett, Wis., for the year ending September 30, 1927

[Drainage area, 678 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,020	352	679	1.000	1.15
November	827	320	657	.969	1.08
December	555	405	461	.680	.78
January	445	335	394	.581	.67
February	465	370	396	.584	.61
March	2,320	385	1,150	1.70	1.96
April	1,150	305	917	1.35	1.51
May	950	686	798	1.18	1.36
June	633	406	476	.702	.78
July	510	246	397	.586	.68
August	582	260	321	.473	.55
September	633	260	321	.473	.53
The year	2,320	246	582	.858	11.66

FOX RIVER AT BERLIN, WIS.

LOCATION.—In sec. 16, T. 17 N., R. 13 E., at Government lock and dam 2½ miles upstream from Berlin, Green Lake County.

DRAINAGE AREA.—1,430 square miles (measured on map issued by the Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—January 1, 1898, to September 30, 1927.

EQUIPMENT.—Staff gage in pool immediately below dam. Discharge measurements made from downstream side of Huron Street highway bridge in Berlin or by boat a short distance below gage. Rating curves for gage corrected for any small inflow between gage and measuring section.

CHANNEL AND CONTROL.—Sand and gravel, one channel at all stages; banks low and subject to overflow.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge recorded during year, 3,170 second-feet March 12; minimum mean daily discharge, 510 second-feet September 6.

1898–1927: Maximum mean daily discharge, 6,400 second-feet March 28 and 30, 1916; minimum mean daily discharge, 250 second-feet, February 1–4, 1900.

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent except for effect of ice. Rating curve well defined between 800 and 6,000 second-feet. Gage read to tenths thrice daily. Daily discharge ascertained by applying mean daily gage height to rating table except for periods when stage-discharge relation was affected by ice, for which it was ascertained as indicated in footnote to table of daily discharge. Open-water records good; winter records fair.

COOPERATION.—Records have been collected and computations of daily discharge made by United States Engineer Corps. Open-water records obtained from rating curves based on discharge measurements made by United States Geological Survey.

Daily discharge, in second-feet, of Fox River at Berlin, Wis., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,140	975	1,380	665	605	1,720	2,040	1,320	2,830	940	940	590
2	1,180	975	1,350	665	610	1,750	1,910	1,270	2,910	905	865	590
3	1,270	1,020	1,330	665	620	1,750	1,850	1,270	2,910	865	905	590
4	1,520	1,020	1,260	660	690	1,760	1,800	1,270	2,830	865	905	560
5	1,620	1,020	1,200	660	750	1,730	1,800	1,220	2,750	765	865	535
6	1,680	1,060	1,150	660	775	1,740	1,800	1,140	2,600	830	865	510
7	1,680	1,020	1,140	660	825	1,780	1,740	1,100	2,520	830	830	560
8	1,620	1,020	1,200	660	865	1,950	1,680	1,060	2,450	800	800	615
9	1,620	975	1,190	650	915	2,190	1,620	1,270	2,310	765	765	615
10	1,620	940	1,170	640	920	2,710	1,520	1,570	2,240	800	765	645
11	1,570	940	1,220	635	925	2,960	1,460	1,620	2,100	765	735	675
12	1,520	1,020	1,140	635	930	3,170	1,420	1,620	2,040	800	705	645
13	1,460	1,020	1,130	635	930	3,080	1,320	1,620	1,910	1,020	705	615
14	1,460	1,100	1,160	630	930	3,080	1,220	1,680	1,800	1,020	705	645
15	1,360	1,220	1,150	620	930	3,000	1,220	1,680	1,620	940	645	645
16	1,360	1,320	1,200	590	930	2,910	1,220	1,620	1,520	905	615	615
17	1,270	1,320	1,180	570	930	2,830	1,270	1,570	1,420	1,180	615	615
18	1,270	1,320	1,090	560	975	2,750	1,320	1,570	1,360	1,140	645	615
19	1,180	1,270	1,040	540	930	2,670	1,270	1,420	1,270	1,060	645	615
20	1,180	1,270	1,000	525	905	2,520	1,320	1,320	1,220	975	645	615
21	1,140	1,270	955	535	915	2,450	1,360	1,320	1,270	940	645	615
22	1,180	1,330	915	540	1,020	2,380	1,420	1,320	1,420	940	645	615
23	1,180	1,380	915	535	1,220	2,310	1,460	1,460	,420	940	645	615
24	1,140	1,380	915	560	1,320	2,240	1,460	1,570	1,320	940	615	615
25	1,100	1,400	900	560	1,400	2,170	1,460	1,680	1,270	940	615	590
26	1,060	1,480	840	550	1,520	2,240	1,460	1,740	1,220	905	590	675
27	1,060	1,160	790	535	1,660	2,170	1,420	1,680	1,140	940	590	765
28	1,220	1,240	730	530	1,680	2,170	1,420	1,850	1,060	1,020	560	800
29	1,060	1,300	700	525	-------	2,100	1,420	2,240	1,060	1,020	590	865
30	1,020	1,340	670	575	-------	2,100	1,320	2,520	975	1,020	590	940
31	975	-------	670	600	-------	2,100	-------	2,670	-------	975	590	-------

NOTE.—Winter discharge based on gage heights corrected for ice effect by means of one discharge measurement and observer's notes.

Monthly discharge of Fox River at Berlin, Wis., for the year ending September 30, 1927

[Drainage area, 1,430 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,680	975	1,310	0.916	1.06
November	1,480	940	1,170	.818	.91
December	1,380	670	1,050	.734	.85
January	665	525	599	.419	.48
February	1,680	605	987	.690	.72
March	3,170	1,720	2,340	1.64	1.89
April	2,040	1,220	1,500	1.05	1.17
May	2,670	1,060	1,560	1.09	1.26
June	2,910	975	1,830	1.28	1.43
July	1,180	765	927	.648	.75
August	940	560	705	.493	.57
September	940	510	640	.448	.50
The year	3,170	510	1,220	.853	11.59

FOX RIVER AT RAPIDE CROCHE DAM, NEAR WRIGHTSTOWN, WIS.

LOCATION.—At Rapide Croche Dam in sec. 4, T. 21 N., R. 19 E., 2 miles from Wrightstown, Brown County, 19 miles downstream from Lake Winnebago.

DRAINAGE AREA.—6,150 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—March 3, 1896, to September 30, 1927.

EQUIPMENT.—The dam owned by the United States Government and operated by the United States Engineer Corps to aid navigation is made of timber and is equipped with four needle sluice gates, which are used only in times of high water. A vertical staff gage at the lower end of the canal leading to the lock and a quarter of a mile below dam is read five times daily at 7 a. m., 9 a. m., 12 m., 3 p. m., and 6 p. m. The mean flow for the day is computed from a formula, using the five gage heights for the day, assuming gradual changes in gage height between the readings and weighting the different gage heights by elapsed time.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge during year, 13,300 second-feet March 30; minimum mean daily discharge, 1,520 second-feet September 4.

1918–1927: Maximum mean daily discharge, 20,100 second-feet April 23, 1922; minimum mean daily discharge, 742 second-feet August 15, 1921.

REGULATION.—Flow past the station is controlled by regulation in Lake Winnebago, which has an area of 215 square miles, and to some extent by dams between the outlet of Lake Winnebago and the station. The dams are operated for power purposes and in the interests of navigation. The same storage conditions have existed throughout the period covered by the records.

ACCURACY.—Records good.

COOPERATION.—The records were collected and computations of daily discharge made by the United States Engineer Corps based on curves which were developed by current-meter measurements made by engineers of the United States Geological Survey.

Daily discharge, in second-feet, of Fox River at Rapide Croche Dam, near Wrightstown, Wis., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,910	5,960	4,860	5,000	5,320	4,930	11,200	5,290	10,800	4,980	4,190	2,530
2	4,760	5,640	4,790	4,530	5,340	5,210	11,200	5,360	10,800	4,750	3,650	1,860
3	4,040	5,910	4,880	5,130	5,330	5,150	10,700	6,060	10,500	2,860	3,280	1,640
4	6,100	6,170	4,070	5,110	5,270	4,670	11,000	5,970	9,170	3,950	3,240	1,520
5	8,010	5,800	3,830	5,130	5,210	4,700	11,000	5,810	6,930	4,680	3,280	1,600
6	10,000	5,130	4,700	5,330	4,480	4,490	10,400	5,820	6,900	4,640	3,410	1,820
7	7,310	4,800	4,700	5,380	4,750	5,500	9,900	5,440	6,820	4,360	2,980	2,110
8	6,910	5,540	4,880	5,280	4,990	5,690	6,910	4,230	5,760	4,380	3,770	2,100
9	7,000	5,300	5,090	5,330	4,960	5,540	6,140	6,740	6,020	4,610	3,660	2,080
10	6,340	5,630	4,810	4,870	4,720	5,530	5,840	6,550	5,950	2,450	3,170	1,940
11	6,790	5,360	4,350	4,930	4,750	5,350	5,610	5,830	5,580	4,420	3,300	1,700
12	7,070	5,220	4,200	5,290	4,670	5,730	5,110	5,980	4,580	3,850	3,520	2,090
13	6,790	4,730	4,890	5,360	4,160	5,510	5,150	6,280	5,250	4,140	3,310	1,990
14	6,850	3,550	4,420	5,600	4,980	5,080	5,230	6,150	5,300	3,340	2,570	2,270
15	6,650	4,600	4,280	5,700	4,730	5,380	5,220	5,180	5,320	3,920	3,140	2,130
16	5,280	5,020	4,420	5,070	4,670	5,650	5,320	5,500	5,330	3,390	2,870	2,440
17	3,850	4,810	4,440	5,190	4,760	5,610	4,560	6,390	5,190	3,030	3,250	2,280
18	5,030	5,280	4,770	5,650	4,510	5,620	5,760	6,050	4,870	3,970	3,150	1,610
19	5,660	4,720	2,980	5,910	4,740	5,510	6,110	5,840	4,600	3,680	3,220	2,250
20	5,720	4,380	4,770	5,890	3,470	4,200	5,960	5,910	5,010	4,010	2,960	2,270
21	5,420	2,800	4,200	5,840	5,040	5,560	6,150	5,920	5,370	3,970	1,830	1,880
22	5,620	4,820	4,220	5,990	4,360	6,230	6,770	4,460	5,500	3,590	3,000	2,070
23	6,380	4,770	4,760	5,250	5,640	8,090	7,600	6,600	5,040	3,880	2,180	2,280
24	5,330	5,020	4,410	5,320	5,550	7,800	7,260	7,220	5,420	2,780	2,650	1,850
25	5,500	4,850	3,960	5,800	5,680	7,650	7,250	9,030	5,300	3,980	3,110	1,880
26	5,780	3,820	4,320	5,400	5,180	7,720	7,770	9,500	4,260	3,540	2,440	2,110
27	5,940	4,020	5,010	5,400	3,700	7,030	7,400	10,800	5,240	3,770	2,370	2,200
28	5,910	4,080	5,270	5,610	4,830	10,800	6,160	9,800	5,520	4,020	2,550	2,090
29	5,940	4,900	5,140	5,680	-------	11,600	6,010	9,990	5,240	3,580	2,940	2,600
30	5,590	4,910	5,110	5,230	-------	13,300	5,550	10,500	4,870	3,500	2,410	2,910
31	5,150	-------	5,010	4,870	-------	13,200	-------	10,400	-------	2,390	3,350	------

Monthly discharge of Fox River at Rapide Croche Dam, near Wrightstown, Wis., for the year ending September 30, 1927

[Drainage area, 6,150 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	10,000	3,850	6,050	0.984	1.13
November	6,170	2,800	4,920	.800	.89
December	5,270	2,980	4,570	.743	.86
January	5,990	4,530	5,360	.872	1.00
February	5,680	3,470	4,850	.789	.82
March	13,300	4,200	6,580	1.07	1.23
April	11,200	4,560	7,210	1.17	1.30
May	10,800	4,230	6,790	1.10	1.27
June	10,800	4,260	6,080	.989	1.10
July	4,980	2,390	3,820	.621	.72
August	4,190	1,830	3,060	.498	.57
September	2,910	1,520	2,070	.337	.88
The year	13,300	1,520	5,110	.831	11.27

WOLF RIVER AT KESHENA, WIS.

LOCATION.—In sec. 26, T. 28 N., R. 15 E. at highway bridge at Keshena, Shawano County, 3 miles below junction with West Branch of Wolf River.

DRAINAGE AREA.—840 square miles.

RECORDS AVAILABLE.—May 9, 1907, to March 31, 1909; February 10, 1911, to September 30, 1927.

EQUIPMENT.—Chain gage fastened to downstream side of bridge. Elevation of zero, 815.97 feet above sea level. Discharge measurements made from bridge to which gage is attached.

CHANNEL AND CONTROL.—Gravel; smooth and practically permanent. Banks of medium height; overflow improbable.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.40 feet at 5 p. m. March 18 (discharge, 2,210 second-feet); minimum stage, 1.19 feet at 5 p. m. August 29 (discharge, 440 second-feet).

1907–1909, 1911–1927: Maximum stage recorded, 7.30 feet at 6.30 p. m. April 10, 1922 (discharge, 4,390 second-feet); minimum discharge during open-water periods, 275 second-feet September 26, 1908.

REGULATION.—The river and its main tributaries above Keshena are controlled to some extent by logging dams.

ACCURACY.—Stage-discharge relation permanent; seriously affected by ice. Rating curve well defined by 24 discharge measurements between 414 and 3,090 second-feet. Two of the measurements, discharge 868 and 522 second-feet, respectively, made in May and August of current year. 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. Open-water records good; winter records fair.

Daily discharge, in second-feet, of Wolf River at Keshena, Wis., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	925	720	720	530	500	720	1,220	925	815	870	720	530
2	925	720	720	530	500	720	1,160	925	815	870	680	500
3	980	720	720	500	500	720	1,220	925	765	815	640	500
4	1,040	720	720	500	530	720	1,280	925	765	765	600	470
5	995	720	720	500	530	720	1,650	870	720	720	565	470
6	950	680	680	500	565	720	1,650	870	720	765	565	470
7	905	680	640	500	565	765	1,520	815	680	765	640	470
8	860	680	640	500	600	1,100	1,340	870	680	680	600	530
9	815	720	640	500	600	1,100	1,160	980	680	680	600	530
10	870	640	640	500	640	1,160	1,160	1,160	765	720	600	530
11	870	600	640	470	640	1,160	1,100	1,220	815	765	565	530
12	815	600	640	470	640	1,280	1,100	1,160	720	765	640	500
13	870	720	600	470	680	1,580	1,100	1,100	720	925	640	500
14	870	870	600	470	680	1,520	1,100	1,160	640	925	720	500
15	815	925	565	470	680	1,460	980	1,160	640	980	680	565
16	815	870	565	470	720	1,720	1,040	1,100	600	925	640	565
17	870	870	565	470	720	2,000	1,100	1,040	600	1,100	640	530
18	870	815	565	470	720	2,140	1,160	980	565	1,220	640	500
19	870	765	600	470	720	1,860	1,160	925	600	1,160	600	500
20	925	720	600	470	720	1,790	1,340	870	640	1,160	600	470
21	870	680	600	440	720	1,660	1,280	870	765	1,160	565	500
22	925	680	600	440	720	1,520	1,220	925	980	1,220	530	470
23	925	680	600	440	720	1,460	1,160	1,040	1,160	1,220	530	440
24	925	680	600	440	720	1,460	1,100	1,100	1,220	1,160	500	470
25	870	680	600	440	720	1,400	1,160	1,100	1,220	1,160	500	470
26	870	720	565	440	720	1,460	1,100	1,100	1,160	1,160	500	530
27	815	720	565	440	720	1,650	1,040	1,040	980	1,100	470	565
28	815	720	530	440	720	1,520	1,040	925	980	980	440	640
29	815	720	530	470	-------	1,220	980	925	980	925	440	765
30	765	720	530	470	-------	1,220	980	925	870	765	470	870
31	720	-------	530	470	-------	1,280	-------	870	-------	765	530	-------

NOTE.—Stage-discharge relation affected by ice Dec. 7 to Mar. 5; discharge based on gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records.

Monthly discharge of Wolf River at Keshena, Wis., for the year ending September 30, 1927

[Drainage area, 840 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,040	720	876	1.04	1.20
November	925	600	725	.863	.96
December	720	530	614	.731	.84
January	530	440	474	.564	.65
February	720	500	650	.774	.81
March	2,140	720	1,320	1.57	1.81
April	1,650	980	1,190	1.42	1.58
May	1,220	815	994	1.18	1.36
June	1,220	565	809	.963	1.07
July	1,220	680	942	1.12	1.29
August	720	440	582	.693	.80
September	870	440	529	.630	.70
The year	2,140	440	809	.963	13.07

WOLF RIVER AT NEW LONDON, WIS.

LOCATION.—In sec. 12, T. 22 N., R. 14 E., at Pearl Street highway bridge, New London, Waupaca County. Embarrass River enters three-fourths mile above station; Little Wolf River 5 miles below.

DRAINAGE AREA.—2,240 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—October 1, 1913, to September 30, 1927. Unpublished gage heights March 1, 1899, to September 30, 1913, are in files of office of United States Engineer Corps, Milwaukee, Wis.

EQUIPMENT.—Staff gage fastened to right-hand downstream pier of Pearl Street bridge. Elevation of zero of gage, 748.87 feet above mean sea level, New York City datum. Discharge measurements made from Shawano Street Bridge, four blocks below gage.

CHANNEL AND CONTROL.—Sand, hardpan, and mud; not permanent; control not well defined. Banks at gage fairly high; during flood stages water from Embarrass River flows across New London into channel of Wolf River below gage.

EXTREME OF DISCHARGE.—Maximum stage recorded during year, 8.9 feet March 16–19 (discharge, 6,340 second-feet); minimum stage, 0.8 foot September 21 (discharge, 720 second-feet).

1914–1927: Maximum stage recorded, 11.4 feet at 8 a. m. April 13, 1922 (discharge, 15,500 second-feet); minimum discharge, 550 second-feet December 29, 1925. Office of the United States Engineer Corps reports a stage of 11.6 feet on April 16, 1888.

DIVERSION AND REGULATION.—Little if any diurnal fluctuation, owing to operation of power plants above station, has been observed at gage; monthly flow natural.

ACCURACY.—Stage-discharge relation permanent; seriously affected by ice. Rating curve fairly well defined by 51 measurements between 868 and 8,920 second-feet. One measurement of 2,540 second-feet was made May 9 of the current year. Gage read to tenths once daily. Daily discharge ascertained by applying gage height to rating table except as indicated in footnote to table of daily discharge. Open-water records fair; winter records poor.

Daily discharge, in second-feet, of Wolf River at New London, Wis., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,080	2,010	1,620	1,200	910	1,530	4,370	3,020	2,720	1,910	1,400	780
2	2,900	1,900	1,620	1,200	910	1,530	4,370	2,900	2,600	1,660	1,280	780
3	2,780	1,910	1,580	1,200	910	1,440	4,270	2,840	2,420	1,530	1,200	780
4	3,020	1,860	1,530	1,200	980	1,440	4,170	2,720	2,260	1,440	1,120	810
5	3,220	1,810	1,530	1,200	980	1,400	4,170	2,600	2,110	1,360	1,080	810
6	3,290	1,810	1,480	1,200	980	1,480	4,170	2,420	1,910	1,400	1,050	840
7	3,360	1,810	1,480	1,200	980	1,620	4,170	2,310	1,760	1,360	1,050	910
8	3,360	1,810	1,440	1,200	1,050	1,960	4,170	2,160	1,620	1,320	1,050	980
9	3,290	1,760	1,440	1,200	1,050	2,210	3,990	2,420	1,530	1,280	1,050	1,020
10	3,220	1,760	1,440	1,160	1,050	2,540	3,900	2,900	1,440	1,280	1,020	1,020
11	3,080	1,710	1,440	1,120	1,050	2,840	3,820	3,220	1,440	1,280	1,020	1,050
12	3,020	1,580	1,440	1,120	980	3,430	3,740	3,360	1,580	1,240	980	1,050
13	3,020	1,660	1,400	1,120	980	5,150	3,660	3,500	1,660	1,530	980	1,050
14	2,960	1,760	1,400	1,120	980	5,600	3,500	3,580	1,580	1,530	945	1,020
15	2,840	1,860	1,480	1,080	980	6,140	3,360	3,660	1,480	1,530	945	1,020
16	2,720	2,110	1,480	1,050	910	6,340	3,220	3,660	1,400	1,580	945	980
17	2,600	2,360	1,480	1,050	980	6,340	3,150	3,660	1,400	1,710	945	980
18	2,480	2,480	1,440	1,050	980	6,340	3,020	3,580	1,320	1,810	945	945
19	2,310	2,480	1,360	980	980	6,340	2,960	3,430	1,320	1,760	945	810
20	2,310	2,540	1,280	980	980	6,140	2,960	3,220	1,280	1,810	875	780
21	2,210	2,420	1,240	980	980	5,950	3,020	3,080	1,200	1,760	875	720
22	2,260	2,260	1,200	980	980	5,770	3,080	2,900	1,530	1,860	910	810
23	2,480	2,160	1,240	980	980	5,440	3,150	2,840	1,810	1,760	875	780
24	2,540	2,010	1,280	980	1,120	5,290	3,220	2,960	2,060	1,760	840	750
25	2,540	1,760	1,280	980	1,280	5,020	3,220	3,150	2,310	1,710	840	750
26	2,480	1,620	1,320	945	1,440	4,790	3,220	3,150	2,420	1,660	780	780
27	2,420	1,710	1,280	910	1,440	4,570	3,220	3,220	2,420	1,620	840	875
28	2,360	1,760	1,280	945	1,530	4,470	3,220	3,150	2,480	1,620	840	980
29	2,260	1,710	1,200	945	-------	4,370	3,150	3,150	2,420	1,660	810	1,120
30	2,160	1,710	1,280	945	-------	4,370	3,080	3,080	2,310	1,530	780	1,360
31	2,060	-------	1,280	945	-------	4,370	-------	3,020	-------	1,440	780	------

NOTE.—Stage-discharge relation affected by ice Nov. 25 to Mar. 12; daily discharge estimated on basis of gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records.

Monthly discharge of Wolf River at New London, Wis., for the year ending September 30, 1927

[Drainage area, 2,240 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,360	2,060	2,730	1.22	1.41
November	2,540	1,580	1,940	.866	.97
December	1,620	1,200	1,390	.621	.72
January	1,200	910	1,070	.478	.55
February	1,530	910	1,050	.469	.49
March	6,340	1,430	4,070	1.82	2.10
April	4,370	2,960	3,560	1.59	1.77
May	3,660	2,160	3,060	1.37	1.58
June	2,720	1,200	1,860	.830	.93
July	1,910	1,240	1,570	.701	.81
August	1,400	780	968	.432	.50
September	1,360	720	911	.407	.45
The year	6,340	720	2,020	.902	12.28

EMBARRASS RIVER NEAR EMBARRASS, WIS.

LOCATION.—At highway bridge on line between T. 26 N., R. 14 E., and T. 26 N., R. 15 E., in Shawano County, 1 mile downstream from mouth of Mill Creek, which enters from left, 4 miles above Embarrass, Waupaca County.

DRAINAGE AREA.—395 square miles (measured on map issued by Wisconsin Geological and Natural History Survey, edition of 1911).

RECORDS AVAILABLE.—June 5, 1919, to September 30, 1927.

EQUIPMENT.—Chain gage fastened to downstream handrail of bridge. Discharge measurement made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed of channel at gage and downstream heavy gravel. Riffle 100 feet downstream forms control. Right bank not subject to overflow; left bank of medium height and will be overflowed at a stage of about 9 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.75 feet at 5.10 p. m. March 15 (discharge, 1,590 second-feet); minimum stage, 2.44 feet at 7.20 a. m. September 16 (discharge, 43 second-feet).

1919–1927: Maximum stage recorded, 11.50 feet at 4 p. m. April 10, 1922 (discharge, 6,760 second-feet); minimum discharge, estimated 30 second-feet February 2 and 3, 1926 (gage-height, 3.42 feet); stage-discharge relation affected by ice.

REGULATION.—Several dams above station create head for development of power, but they do not have enough storage to cause any but a slight daily fluctuation.

ACCURACY.—Stage-discharge relation permanent; seriously affected by ice. Rating curve well defined by 24 measurements ranging from 162 to 2,730 second-feet; one of the measurements at discharge 421 second-feet was made during current year. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except during period when stage-discharge relation was affected by ice, for which it was obtained as indicated in footnote to table of daily discharge. Open-water records excellent; winter records fair.

Daily discharge, in second-feet, of Embarrass River near Embarrass, Wis., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	305	268	305	180	135	215	672	385	344	213	175	169
2	344	250	305	155	135	215	672	385	296	233	161	163
3	450	188	305	180	150	205	672	385	296	223	172	175
4	496	226	200	150	150	225	594	344	250	203	155	163
5	428	216	225	170	175	175	672	324	250	200	149	178
6	385	268	180	165	145	190	780	324	250	203	123	163
7	344	364	180	145	165	225	1,110	305	233	210	113	188
8	344	268	170	165	170	305	780	344	200	210	105	169
9	364	268	180	200	155	428	569	646	230	223	108	158
10	473	268	160	155	155	344	473	780	250	230	110	184
11	473	250	190	155	185	569	450	890	344	230	136	194
12	428	210	190	130	180	725	473	780	324	250	141	197
13	428	230	170	195	115	1,000	473	672	268	268	152	197
14	385	268	155	170	170	1,230	428	620	250	305	152	163
15	344	268	145	145	185	1,470	406	520	250	406	158	213
16	344	305	140	140	130	1,410	428	473	250	385	149	54
17	286	428	135	155	170	1,350	473	385	273	324	158	68
18	286	496	110	145	210	1,290	569	344	273	324	144	125
19	305	406	155	135	155	1,170	569	344	203	344	133	118
20	286	385	160	140	140	1,000	569	305	220	344	144	169
21	385	268	170	155	155	835	672	250	268	305	138	155
22	473	268	135	150	155	569	672	305	646	286	93	155
23	428	268	140	160	165	520	620	385	890	233	108	161
24	344	250	155	150	185	520	569	620	1,000	250	120	138
25	344	286	140	140	225	520	520	725	890	226	87	158
26	305	250	165	135	200	520	473	780	725	226	83	161
27	305	305	170	130	205	450	428	725	594	213	93	194
28	286	305	135	130	205	450	473	569	385	197	103	216
29	268	385	150	140	-------	473	428	496	268	200	110	286
30	268	344	150	145	-------	520	406	344	216	194	135	305
31	268	-------	170	115	-------	620	-------	364	-------	191	163	-------

NOTE.—Stage-discharge relation affected by ice Dec. 2 to Mar. 8; daily discharge estimated on basis of gage heights corrected for ice effect by means of three discharge measurements, observer's notes, and weather records.

Monthly discharge of Embarrass River near Embarrass, Wis., for the year ending September 30, 1927

[Drainage area, 395 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	496	268	360	0.911	1.05
November	496	188	292	.739	.82
December	305	110	175	.443	.51
January	200	115	152	.385	.44
February	225	115	167	.423	.44
March	1,470	175	637	1.61	1.86
April	1,110	406	570	1.44	1.61
May	890	250	488	1.24	1.43
June	1,000	200	367	.929	1.04
July	406	191	253	.641	.74
August	175	83	131	.332	.38
September	305	54	171	.433	.48
The year	1,470	54	314	.795	10.80

LITTLE WOLF RIVER AT ROYALTON, WIS.

LOCATION.—In sec. 1, T. 22 N., R. 13 E., at highway bridge at Royalton, Waupaca County, 4 miles above mouth of river.

DRAINAGE AREA.—485 square miles (measured on Wisconsin Geological and Natural History Survey map, edition of 1911).

RECORDS AVAILABLE.—January 13, 1914, to September 30, 1927.

EQUIPMENT.—Sloping gage on left bank 150 feet upstream from highway bridge. Discharge measurements made from cable, 1,500 feet upstream from gage or by wading.

CHANNEL AND CONTROL.—Bed at gage section consists of heavy gravel and rock; fairly permanent. At measuring section bed is fine, smooth gravel. Neither bank is overflowed to any extent at flood stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.83 feet at 1 p. m. March 11 (discharge, 1,870 second-feet); minimum stage, 1.18 feet at 7 a. m. August 21 and 23 (discharge, 167 second-feet).

1914–1927: Maximum discharge recorded, 5,780 second-feet at 7 a. m. April 10 and 5 p. m. April 11, 1922 (gage height, 6.92 feet); minimum discharge, about 120 second-feet January 20, 1922, and January 28, 1926.

REGULATION.—The few power plants above station have little storage and very little diurnal fluctuation has been observed at gage.

ACCURACY.—Stage-discharge relation permanent; seriously affected by ice. Rating curve well defined by 32 measurements between 183 and 3,050 second-feet made 1916–1927; two of these measurements at 1,040 and 168 second-feet, were made in May and August of current year. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except as indicated in footnote to table of daily discharge. Open-water records good; winter records fair.

Daily discharge, in second-feet, of Little Wolf River at Royalton, Wis., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	710	530	740	220	355	830	970	620	530	376	269	197
2	650	502	770	205	460	740	970	680	475	376	233	194
3	770	475	650	220	530	865	1,050	710	502	330	210	210
4	970	450	620	205	460	865	1,010	650	450	330	194	213
5	830	376	530	230	620	900	1,010	560	424	309	216	188
6	800	400	620	265	330	1,010	970	560	400	288	216	204
7	710	424	530	230	405	1,300	970	502	376	250	204	204
8	650	450	500	245	355	1,480	935	502	353	269	233	213
9	590	450	420	220	355	1,670	935	800	330	424	185	288
10	650	424	470	205	300	1,670	900	1,050	376	424	204	424
11	590	450	530	220	280	1,870	865	1,210	400	475	204	376
12	650	400	530	195	300	1,770	770	1,210	376	560	204	424
13	590	475	395	195	405	1,670	740	1,050	353	590	233	424
14	560	530	300	195	460	1,670	650	1,010	330	650	216	376
15	530	590	370	205	500	1,770	620	970	353	560	204	330
16	502	650	395	205	460	1,770	650	900	376	530	210	330
17	560	620	345	220	530	1,670	590	830	376	620	194	309
18	530	650	300	205	460	1,670	710	620	309	590	185	330
19	560	560	280	245	500	1,670	680	530	330	620	204	309
20	590	530	265	265	530	1,570	650	530	376	590	185	330
21	560	590	265	230	590	1,480	590	530	475	475	174	309
22	590	650	265	230	500	1,210	650	530	590	400	194	309
23	620	560	345	220	590	1,130	710	770	590	424	180	309
24	680	590	300	265	710	1,130	770	830	590	376	204	309
25	710	650	245	265	865	1,050	680	865	620	376	185	288
26	590	590	230	330	800	935	680	830	530	353	194	309
27	680	650	245	265	865	1,010	650	710	475	330	197	330
28	475	680	265	280	900	970	710	800	376	475	213	424
29	450	740	300	230	-------	1,010	680	710	353	376	207	590
30	475	770	245	265	-------	970	650	680	309	330	207	590
31	502	-------	230	210	-------	970	-------	620	-------	330	204	-------

NOTE.—Stage-discharge relation affected by ice Dec. 3 to Mar. 10. Discharge estimated on basis of gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records.

Monthly discharge of Little Wolf River at Royalton, Wis., for the year ending September 30, 1927

[Drainage area, 485 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	970	450	623	1.28	1.48
November	770	376	547	1.13	1.26
December	770	230	403	.831	.96
January	330	195	232	.478	.55
February	900	280	515	1.06	1.10
March	1,870	740	1,300	2.68	3.09
April	1,050	590	780	1.61	1.80
May	1,210	502	754	1.55	1.79
June	620	309	423	.872	.97
July	650	250	432	.891	1.03
August	269	174	205	.423	.49
September	590	188	321	.662	.74
The year	1,870	174	545	1.12	15.22

WAUPACA RIVER NEAR WAUPACA, WIS.

LOCATION.—Near north line of sec. 1, T. 21 N., R. 12 E. at Waupaca County highway bridge, 4 miles below Waupaca, Waupaca County.

DRAINAGE AREA.—305 square miles (measured on Wisconsin Geological and Natural History Survey map, edition of 1911).

RECORDS AVAILABLE.—October 18, 1917, to September 30, 1927. June 28, 1916, to October 18, 1917, records were obtained at a station near Weyauwega, 1 mile below present site.

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

CHANNEL AND CONTROL.—Bed consists of fine gravel and clay; free from vegetation. Control not well defined and is not permanent. Right bank is high and is seldom overflowed; left bank of medium height and is overflowed at a stage of about 6 feet.

EXTREMES OF DISCHARGE.—Maximum discharge during year, 485 second-feet March 13 and May 10 (gage height, 2.58 feet) minimum stage, 1.40 feet, September 5 (discharge, 123 second-feet).

1918–1927: Maximum stage recorded, 5.6 feet March 17, 1919 (discharge, 2,600 second-feet); minimum discharge, 35 second-feet, January 22 and 28, 1926 (stage-discharge relation affected by ice).

DIVERSIONS AND REGULATION.—Power plants at Waupaca and above on the main stream and also several on Crystal River may cause slight fluctuations during low stages. The pondage at the various plants is small so that mean monthly discharge represents closely the natural flow.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined by 33 discharge measurements made from 1918 to 1927, and covering a range from 166 to 692 second-feet. One measurement at 452 second-feet was made during the current year and checks the curve closely. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table except for period when stage-discharge relation was affected by ice, for which it was determined as indicated in footnote to table of daily discharge. Open-water records fair; winter records subject to considerable error.

Daily discharge, in second-feet, of Waupaca River near Waupaca, Wis., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	270	240	350	200	300	315	332	255	270	198	198	212
2	285	240	350	210	285	365	316	270	226	198	198	212
3	285	285	330	185	300	300	285	270	226	226	198	185
4	348	226	330	210	300	270	270	270	240	172	198	154
5	332	240	315	210	300	300	285	240	240	185	185	123
6	316	255	315	200	285	270	316	226	255	198	226	255
7	300	262	300	200	315	364	300	240	212	212	198	226
8	270	270	300	200	315	381	285	328	226	185	185	226
9	270	255	285	225	255	381	300	415	270	185	240	255
10	270	270	285	155	210	381	270	485	226	240	212	285
11	332	285	285	180	210	381	240	381	226	226	226	240
12	316	270	270	210	210	433	270	364	226	212	185	198
13	300	255	240	210	225	485	270	348	212	316	226	240
14	300	270	210	170	255	450	270	300	240	270	226	212
15	285	300	145	150	270	432	285	285	226	212	226	212
16	270	332	150	225	285	364	285	285	240	240	172	192
17	270	300	225	210	285	364	255	270	198	240	185	212
18	270	300	225	240	185	348	262	226	255	233	226	148
19	226	285	185	255	210	332	270	226	226	226	212	158
20	285	270	240	200	270	300	285	226	255	240	226	190
21	270	270	270	255	330	285	300	226	285	240	198	198
22	255	255	255	255	315	285	285	226	381	185	198	125
23	300	255	240	225	380	285	300	316	340	198	226	218
24	240	255	255	270	485	285	270	364	300	198	240	212
25	270	255	210	270	415	270	255	332	270	198	198	241
26	270	255	170	265	330	285	285	300	270	198	185	270
27	255	380	240	260	270	316	300	270	226	198	198	270
28	270	380	240	255	285	348	255	285	212	185	212	285
29	240	380	240	285	-------	348	285	285	212	212	198	285
30	240	365	185	285	-------	348	255	300	198	198	240	300
31	240	-------	240	270	-------	364	-------	255	-------	198	212	-------

NOTE.—Stage-discharge relation affected by ice Nov. 20 to Mar. 2. Discharge estimated on basis of gage heights corrected for ice effect by means of two discharge measurements, observer's notes, and weather records. Gage not read Nov. 7, Mar. 12, Apr. 7, 18, May 8, June 23, July 18, Sept. 4, and 25; discharge interpolated.

Monthly discharge of Waupaca River near Waupaca, Wis., for the year ending September 30, 1927

[Drainage area, 305 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	348	226	279	0.915	1.05
November	380	226	282	.925	1.03
December	350	145	254	.833	.96
January	285	150	224	.734	.85
February	485	185	289	.948	.99
March	485	270	343	1.12	1.29
April	332	240	281	.921	1.03
May	485	226	293	.961	1.11
June	381	198	246	.807	.90
July	316	172	214	.702	.81
August	240	172	208	.682	.79
September	300	123	220	.721	.80
The year	485	123	261	.856	11.61

MILWAUKEE RIVER NEAR MILWAUKEE, WIS.

LOCATION.—In NW. ¼ sec. 5, T. 7 N., R. 22 E., immediately above an old quarry near north limits of Milwaukee, Milwaukee County, half a mile below concrete highway bridge, 1 mile above Mineral Spring Road, and 5½ miles above confluence with Menominee River.

DRAINAGE AREA. —661 square miles (measured on Wisconsin Geological and Natural History Survey map, edition of 1911).

RECORDS AVAILABLE.—April 30, 1914, to September 30, 1927.

EQUIPMENT.—Vertical staff gage on left bank; installed July 16, 1927. Previous to July 16, 1927, a slope gage 30 feet downstream from present gage was used; datum unchanged. Discharge measurements made by wading or from railroad bridge 400 feet below gage.

CHANNEL AND CONTROL.—Bed of heavy gravel at gage. About 200 feet below gage is a rock outcrop with a 4-foot fall which forms control; changed somewhat the later part of summer of 1924 by breaking down of a small portion of the rock ledge. Below the control the river flows in an artificial channel, which at one time was a quarry. Left bank above and below control high and not subject to overflow; right bank of medium height and is seldom overflowed.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.56 feet at 3 p. m. March 13 (discharge, 3,740 second-feet); minimum stage, 0.20 foot at 8 a. m. and 3 p. m. August 21 (discharge, 38 second-feet).

1914–1927: Maximum stage recorded, 9.00 feet March 20, 1918 (discharge, 15,100 second-feet, revised); minimum discharge, about 26 second-feet August 2, 1916.

DIVERSION AND REGULATION.—No diurnal fluctuation at gage resulting from operation of small plants above.

ACCURACY.—Stage-discharge relation probably permanent except as affected by ice for five days. Rating curve fairly well defined by four discharge measurements between 130 and 1,600 second-feet; extended beyond these limits. Gage read to quarter-tenths twice daily. Discharge ascertained by applying mean daily gage heights to rating table. Records poor below 300 second-feet and fair above.

Daily discharge, in second-feet, of Milwaukee River near Milwaukee, Wis., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	255	174	1,290	388	360	665	620	580	920	89	71	71
2	334	209	1,040	360	505	334	580	540	865	96	82	80
3	334	243	810	405	760	310	620	344	469	80	93	71
4	310	209	388	437	1,820	334	665	300	865	80	93	80
5	360	174	286	405	2,000	334	1,100	255	760	69	93	57
6	310	158	388	388	2,160	324	865	236	665	80	89	57
7	334	174	920	388	1,740	388	810	255	469	96	89	84
8	310	192	1,040	388	1,160	1,160	665	980	344	89	89	103
9	239	209	920	405	1,160	1,740	620	1,040	344	82	89	118
10	209	158	1,040	394	920	1,430	580	865	247	80	93	171
11	239	142	1,100	310	665	1,740	278	760	264	89	71	161
12	228	291	264	310	365	2,970	255	710	224	80	89	168
13	209	334	209	286	360	3,740	300	665	216	80	89	174
14	181	1,290	286	286	334	3,350	255	371	192	103	67	118
15	181	1,430	334	286	286	2,970	324	437	164	151	64	108
16	209	1,430	345	247	247	2,160	980	371	202	148	142	103
17	216	1,290	350	310	247	1,580	865	344	185	118	148	103
18	255	1,220	360	286	360	1,430	920	371	127	148	64	98
19	209	920	370	286	437	1,290	1,040	344	118	161	60	98
20	224	920	375	305	388	1,040	1,820	324	103	161	60	98
21	224	388	388	286	247	810	2,160	437	192	148	38	93
22	228	437	388	286	286	760	1,740	399	206	148	53	93
23	174	388	505	388	580	1,160	1,500	371	185	148	80	93
24	148	620	388	334	1,160	1,040	1,220	1,160	168	148	60	93
25	158	710	334	388	2,160	1,160	1,100	1,040	151	174	60	93
26	174	1,160	580	334	1,740	1,660	865	865	136	174	53	113
27	148	1,290	505	388	1,820	1,500	665	760	118	181	53	168
28	158	1,290	580	388	865	1,220	665	1,040	103	148	60	278
29	113	1,100	505	388	-------	980	620	1,160	95	148	60	405
30	142	1,040	334	405	-------	810	580	1,040	95	118	60	620
31	158	-------	360	360	-------	710	-------	1,100	-------	93	93	------

NOTE.—Stage-discharge relation affected by ice Dec. 16–20; discharge estimated on basis of gage heights corrected for effect of ice by means of observer's notes and weather records.

Monthly discharge of Milwaukee River near Milwaukee, Wis., for the year ending September 30, 1927

[Drainage area, 661 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	360	113	22.5	0.340	0.39
November	1,430	142	653	.988	1.10
December	1,290	209	548	.829	.96
January	437	247	349	.528	.61
February	2,160	247	898	1.36	1.42
March	3,740	310	1,330	2.01	2.32
April	2,160	255	843	1.28	1.43
May	1,160	236	628	.950	1.10
June	920	95	306	.463	.52
July	181	69	120	.182	.21
August	148	38	77.6	.117	.13
September	620	57	139	.210	.23
The year	3,740	38	505	.764	10.42

LITTLE CALUMET RIVER AT HARVEY, ILL.

LOCATION.—In NW. ¼ sec. 9, T. 36 N., R. 14 E., at Illinois Central Railroad bridge at north boundary of Harvey, Cook County, 3.8 miles above point of diversion to the Calumet-Sag Channel of the Sanitary District of Chicago and 11 miles above mouth of river.

DRAINAGE AREA.—570 square miles (measured on base map of Illinois).

RECORDS AVAILABLE.—October 1, 1916, to September 30, 1927. Daily gage heights were collected by Sanitary District of Chicago, June 10, 1907, to September 30, 1916.

EQUIPMENT.—Vertical staff gage attached to bridge pier. Discharge measurements made from highway bridge 2,500 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of clay and gravel. Low-water control composed of gravel and boulders; practically permanent. Banks are not overflowed.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.40 feet May 24 (discharge, 3,100 second-feet); minimum stage, 2.66 feet September 6, 7, and 26 (discharge, 13 second-feet).

1916–1927: Maximum stage recorded, 10.28 feet at 9 a. m. March 18, 1919 (discharge, 3,750 second-feet); minimum stage, that of September 6, 7, and 26, 1927.

The sanitary district of Chicago reports a stage of 13.4 feet on March 6, 1908 (discharge not determined).

DIVERSION.—The flood discharge and part of the low-water flow from the upper 330 square miles of drainage area of Little Calumet River lying in Indiana has been diverted since the summer of 1925 through a drainage ditch, which carries the flow directly to Lake Michigan.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined by 11 discharge measurements between 18 and 3,700 second-feet. Measurements at 770 and 18 second-feet in February and August check the curve fairly well. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table except for ice periods. Records good for open water, fair for period of ice effect.

Daily discharge, in second-feet, of Little Calumet River at Harvey, Ill., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	307	63	353	58	710	170	195	790	420	43	50	20
2	369	63	292	56	790	152	790	595	322	56	43	20
3	525	66	249	56	870	146	525	490	249	40	35	16
4	670	63	212	56	960	134	525	420	1,560	37	30	15
5	560	56	182	54	1,350	123	490	322	2,610	34	30	14
6	438	56	182	53	1,800	130	490	263	1,250	40	30	13
7	353	56	157	51	1,050	170	385	212	915	40	27	13
8	292	56	182	48	830	525	268	182	595	56	70	14
9	249	70	208	46	750	490	268	182	438	40	53	16
10	208	104	208	45	630	385	385	235	353	40	39	16
11	182	104	235	40	490	307	307	235	263	34	30	15
12	170	92	235	39	420	438	235	182	212	34	27	14
13	170	92	322	36	322	1,450	235	157	212	34	35	16
14	146	268	292	35	268	1,680	438	150	170	48	40	16
15	134	1,100	263	34	235	1,350	338	146	146	56	32	16
16	123	1,350	249	34	263	710	560	123	123	48	27	16
17	119	870	157	34	292	560	1,560	112	112	40	27	16
18	112	830	123	40	338	438	870	108	92	56	27	50
19	112	710	112	48	182	338	1,920	353	82	45	25	46
20	104	560	110	54	112	338	2,470	490	73	40	23	32
21	92	455	104	59	235	630	2,160	369	92	34	20	25
22	82	385	100	63	182	560	1,620	263	182	27	20	20
23	82	307	96	64	182	420	1,150	1,000	134	40	20	16
24	84	263	90	64	182	338	870	3,100	96	27	32	16
25	84	249	84	64	182	292	790	2,820	73	27	20	14
26	84	307	81	63	235	268	670	1,980	64	27	20	13
27	81	490	77	58	249	235	595	1,150	56	27	20	20
28	73	455	71	71	208	212	490	870	56	25	18	92
29	73	420	66	92	-------	195	595	710	56	157	18	123
30	73	402	63	385	-------	170	1,350	595	48	146	25	249
31	70	-------	59	750	-------	157	-------	490	-------	77	20	-------

NOTE.—Discharge Dec. 14 to Jan. 31 estimated on account of ice from gage-height record, results of discharge measurement, observer's notes, and weather records.

Monthly discharge of Little Calumet River at Harvey, Ill., for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	670	70	207	May	3,100	108	616
November	1,350	56	345	June	2,610	48	368
December	353	59	168	July	157	25	47.5
January	750	34	85.5	August	70	18	30.1
February	1,800	112	511	September	249	13	32.7
March	1,680	123	436				
April	2,470	195	785	The year	3,100	13	300

ST. JOSEPH RIVER AT MOTTVILLE, MICH.

LOCATION.—In NE. ¼ sec. 6, T. 8 S., R. 12 W., at hydroelectric plant of Michigan Gas & Electric Co. at Mottville, St. Joseph County, 5 miles below mouth of Fawn River.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—December 13, 1923, to September 30, 1927.

EQUIPMENT.—Float gage in tailwater at power plant. Zero of gage, 759.5 feet above mean sea level. Discharge measurements made by wading 200 feet below gage or from concrete highway bridge 3,200 feet below gage.

CHANNEL AND CONTROL.—Channel straight for a quarter of a mile above and below gage. Banks high. At medium and high stages water flows in secondary channel around small island just below dam. Control for low water is riffle composed of gravel and small boulders 300 feet below dam; for medium and high stages is long stretch of channel below gage. Zero flow would occur at gage height −2.3 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.7 feet at 9 p. m. April 23 (discharge, 5,040 second-feet); minimum stage, −1.82 feet 1 to 5 a. m. August 4 and 1 a. m. September 13 (discharge, 30 second-feet).

1924–1927: Maximum stage recorded, 4.4 feet at 11 a. m. April 20, 1926 (discharge, 8,250 second-feet); minimum discharge, that of August 4 and September 13, 1927.

DIVERSIONS AND REGULATION.—Diversions probably negligible. Flow regulated for power purposes at gage and possibly at other points above station.

ACCURACY.—Stage-discharge relation permanent; not seriously affected by ice. Rating curve well defined. Two discharge measurements at 1,930 and 965 second-feet were made during the current year and check the curve closely. Gage read to hundredths every hour day and night. Daily discharge ascertained by applying mean daily gage height to rating table. Records excellent.

COOPERATION.—Gage-height records furnished by Michigan Gas & Electric Co.

Daily discharge, in second-feet, of St. Joseph River at Mottville, Mich., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,350	1,810	2,070	955	2,070	1,680	1,810	1,940	2,630	1,010	810	615
2	2,070	1,940	1,940	955	1,810	1,420	1,680	2,210	2,350	1,010	810	512
3	1,940	1,480	1,620	1,360	1,940	1,300	1,680	2,070	2,210	545	650	391
3	2,490	1,680	1,810	1,300	2,350	1,060	2,210	1,810	2,070	650	580	420
5	2,490	1,300	1,240	1,300	2,630	1,060	1,810	1,810	1,480	955	545	480
6	2,350	1,180	1,360	1,240	2,780	905	1,550	1,810	1,940	855	650	810
7	2,350	1,120	1,810	1,120	3,380	1,680	1,940	1,550	1,680	765	450	650
8	2,210	1,620	1,420	1,210	3,380	1,550	1,810	1,120	1,810	650	810	615
9	2,070	1,550	1,360	650	3,230	1,550	1,620	1,480	1,550	765	855	545
10	1,480	1,360	1,360	1,010	3,230	1,240	1,360	1,680	1,480	420	615	650
11	2,210	1,360	1,680	1,300	2,930	1,300	1,550	1,550	1,550	725	580	725
12	1,810	1,480	1,240	1,010	2,780	1,480	1,680	1,300	725	725	512	955
13	1,940	1,550	1,810	905	2,630	1,480	1,360	1,240	1,680	765	480	545
14	1,810	1,240	1,620	1,010	2,070	2,070	1,480	1,120	1,420	650	580	725
15	1,810	1,810	1,620	340	2,070	2,350	1,300	1,180	1,300	615	905	615
16	1,480	1,810	1,550	480	1,940	1,940	1,120	1,550	1,180	765	650	615
17	1,120	1,550	1,060	650	1,940	2,490	955	1,550	1,120	480	725	512
18	1,620	1,550	1,300	905	2,070	2,210	1,810	1,620	1,060	1,120	580	580
19	1,810	1,420	1,180	1,010	1,810	2,210	1,810	1,360	512	905	685	955
20	1,680	1,680	1,180	855	1,480	1,940	2,350	1,420	955	905	512	955
21	1,550	1,360	1,300	1,010	1,810	1,810	3,230	1,420	1,060	725	545	615
22	1,550	1,810	1,360	1,010	1,940	2,350	3,230	1,300	1,010	905	765	855
23	1,550	1,680	1,550	725	1,810	1,940	3,540	1,620	1,300	765	725	765
24	1,620	1,480	1,550	1,060	1,620	1,810	3,230	1,810	1,060	450	685	685
25	1,550	1,360	855	1,010	1,550	1,810	2,930	2,070	1,060	810	545	580
26	1,810	1,620	1,360	1,240	1,620	1,810	3,080	2,210	545	905	615	810
27	1,680	1,940	1,360	955	1,240	1,680	2,630	2,630	1,060	810	480	650
28	1,680	1,620	1,620	905	1,680	1,810	2,780	2,490	1,010	512	420	650
29	1,550	2,070	1,420	1,010	-------	1,940	2,490	2,070	855	545	1,060	324
30	1,550	2,070	1,300	650	-------	1,680	2,630	2,210	1,060	512	725	955
31	1,060	-------	1,180	1,480	-------	1,810	-------	2,210	-------	420	615	------

Monthly discharge of St. Joseph River at Mottville, Mich., for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	2,490	1,060	1,810	May	2,630	1,120	1,720
November	2,070	1,120	1,580	June	2,630	512	1,360
December	2,070	855	1,450	July	1,120	420	730
January	1,480	340	989	August	1,060	420	650
February	3,380	1,210	2,210	September	955	324	659
March	2,490	905	1,720				
April	3,540	955	2,090	The year	3,540	324	1,410

STREAM TRIBUTARY TO LAKE HURON

TITTABAWASSEE RIVER AT FREELAND, MICH.

LOCATION.—At highway bridge at Freeland, Saginaw County.

DRAINAGE AREA.—2,530 square miles.

RECORDS AVAILABLE.—August 22, 1903, to December 31, 1909; January 1, 1912, to September 30, 1927.

COOPERATION.—Daily-discharge record furnished by G. S. Williams, consulting engineer, Ann Arbor, Mich.

Daily discharge, in second-feet, of Tittabawassee River at Freeland, Mich., for the year ending September 30 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	700	1,110	1,780	1,050	930	1,410	3,760	1,340	2,960	489	295	244
2	990	1,140	1,600	1,050	900	1,300	3,280	1,380	2,570	416	269	244
3	2,060	1,170	2,740	960	930	1,240	2,840	1,450	1,940	368	244	269
4	1,600	1,110	2,400	900	1,600	1,080	1,860	1,480	1,560	368	269	269
5	1,340	1,020	2,230	815	1,480	930	2,400	1,450	1,600	344	295	244
6	1,270	930	1,900	786	1,380	1,450	3,480	1,240	1,980	344	319	269
7	620	930	2,400	750	930	1,740	3,660	1,080	2,400	368	295	244
8	620	1,020	2,740	821	1,140	2,400	3,280	815	1,600	368	295	269
9	513	1,410	2,610	750	1,240	3,280	3,020	930	1,170	368	269	269
10	592	1,780	2,400	577	1,520	4,550	1,600	4,450	1,050	392	244	295
11	566	1,700	2,230	648	1,600	5,280	1,240	10,200	960	416	244	319
12	540	1,450	2,100	770	1,240	6,140	1,170	10,200	870	392	269	319
13	513	1,110	1,900	838	1,050	10,200	1,240	6,590	675	368	295	319
14	513	960	1,820	750	1,020	12,500	1,200	4,750	730	269	269	295
15	513	1,940	1,900	750	930	16,800	1,270	4,300	700	295	269	269
16	513	2,840	1,860	770	960	13,800	1,020	6,860	592	269	295	244
17	540	2,840	1,900	821	3,960	8,820	1,050	5,060	700	295	269	244
18	566	2,610	1,820	838	3,660	7,860	930	5,280	646	319	269	269
19	592	2,660	928	770	3,280	5,800	990	5,480	540	319	187	319
20	675	2,840	866	750	2,520	5,280	2,400	5,060	489	295	187	319
21	815	2,700	866	700	2,940	4,800	3,810	4,750	489	269	187	295
22	730	2,400	891	648	1,830	4,250	4,050	4,250	540	392	215	319
23	620	2,020	928	577	1,980	3,760	4,000	2,740	592	416	244	319
24	646	2,150	1,980	596	3,280	3,380	2,840	5,700	620	392	244	295
25	786	2,020	2,150	577	3,570	3,330	3,570	7,160	646	392	269	295
26	930	1,900	1,240	612	3,280	4,250	2,660	6,930	592	368	215	295
27	990	1,780	870	663	2,570	6,420	3,660	6,360	566	392	244	392
28	1,020	2,400	930	700	1,640	5,980	2,320	5,800	513	416	269	675
29	1,080	2,360	870	750	-------	5,280	1,480	4,250	489	392	269	1,240
30	1,080	1,980	930	930	-------	4,450	1,410	3,620	416	368	244	1,050
31	1,110	-------	990	900	-------	4,100	-------	2,840	-------	319	269	-------

Monthly discharge of Tittabawassee River at Freeland, Mich., for the year ending September 30, 1927

[Drainage area, 2,530 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,060	513	827	0.327	0.38
November	2,840	930	1,810	.715	.80
December	2,740	866	1,700	.672	.77
January	1,050	577	768	.304	.35
February	3,960	900	1,910	.755	.79
March	16,800	930	5,220	2.06	2.38
April	4,050	930	2,380	.941	1.05
May	10,200	815	4,320	1.71	1.97
June	2,960	416	1,040	.411	.46
July	489	269	361	.143	.16
August	319	187	259	.102	.12
September	1,240	244	357	.141	.16
The year	16,800	187	1,750	.692	9.39

NOTE.—Monthly and yearly discharge computed by U. S. Geol. Survey from daily-discharge record furnished by G. S. Williams, consulting engineer, Ann Arbor, Mich.

STREAMS TRIBUTARY TO LAKE ERIE

HURON RIVER AT BARTON, MICH.

LOCATION.—At dam and power plant of Eastern Michigan Edison Co. at Barton, Washtenaw County, near Ann Arbor.

DRAINAGE AREA.—723 square miles.

RECORDS AVAILABLE.—January 1, 1914, to September 30, 1927.

DETERMINATION OF DISCHARGE.—Flow computed from records of operation of power plant, the flow through undersluice during floods, and the depth of flow over dam. Flow through power house is determined from a calibration of the turbines by means of a specially constructed weir, the crest of which was formed by a ¼ by 5 inch milled plate, the discharge over weir being computed by Bazin's formula for free overflow. Greater part of flood water passes through undersluices in power-house foundations, and this flow is determined from a weir calibration of the sluices. Water flows over crest of dam only a few days during year.

COOPERATION.—Daily-discharge record furnished by G. S. Williams, consulting engineer, Ann Arbor, Mich.

Daily discharge, in second-feet, of Huron River at Barton, Mich., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	471	384	574	243	635	527	617	355	538	258	173	55
2	424	378	472	275	617	493	566	298	618	245	178	86
3	479	339	522	315	686	584	638	332	493	172	78	95
4	471	388	453	294	749	304	561	338	562	182	125	89
5	413	333	383	267	704	508	534	302	514	168	108	88
6	479	301	367	223	673	407	524	292	479	205	129	95
7	429	357	384	223	814	614	474	284	479	191	109	114
8	420	299	453	234	918	543	498	272	407	195	117	188
9	370	418	389	224	916	615	437	266	397	189	114	194
10	358	453	444	243	834	618	402	268	393	193	132	294
11	304	452	452	230	756	595	399	251	356	161	91	258
12	384	455	456	231	657	744	363	301	375	185	95	130
13	302	454	449	231	677	820	396	169	336	206	105	189
14	355	443	465	246	575	904	372	265	309	206	104	184
15	305	378	468	229	563	902	362	250	311	248	104	150

Daily discharge, in second-feet, of Huron River at Barton, Mich., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	375	458	282	211	735	892	349	344	263	302	98	151
17	299	456	505	225	921	592	398	238	212	214	97	144
18	400	454	356	229	795	899	369	290	302	164	105	161
19	301	457	306	277	683	888	374	296	230	195	91	164
20	356	451	382	199	574	888	439	244	232	168	91	143
21	376	449	360	264	582	867	444	311	359	259	108	127
22	334	450	361	292	600	825	342	287	597	343	93	121
23	351	447	367	216	596	820	412	367	526	201	82	139
24	463	373	424	222	675	769	342	523	524	273	157	133
25	468	440	358	232	682	754	362	770	495	285	98	123
26	387	597	325	203	622	763	379	775	420	210	57	81
27	435	594	364	216	602	758	389	757	450	210	90	99
28	390	596	331	225	552	760	376	720	354	223	112	127
29	373	583	311	388	-------	675	362	747	356	181	88	202
30	416	549	278	927	-------	674	339	674	230	169	71	280
31	428	-------	373	499	-------	629	-------	678	-------	193	126	------

Monthly discharge of Huron River at Barton, Mich., for the year ending September 30, 1927

[Drainage area, 723 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	479	299	391	0.541	0.62
November	597	299	440	.609	.68
December	547	278	400	.553	.64
January	927	199	275	.380	.44
February	921	552	693	.959	1.00
March	904	304	698	.965	1.11
April	638	339	427	.591	.66
May	775	169	396	.548	.63
June	618	212	404	.559	.62
July	343	161	213	.295	.34
August	178	57	107	.148	.17
September	294	55	147	.203	.23
The year	927	55	380	.526	7.14

NOTE.—Monthly and yearly discharge computed by U. S. Geol. Survey from daily-discharge record furnished by G. S. Williams, consulting engineer, Ann Arbor, Mich.

ST. JOSEPH RIVER NEAR BLAKESLEE, OHIO

LOCATION.—In SE. ¼ sec. 36, T. 7 N., R. 1 E., at highway bridge 1¾ miles east of Blakeslee, Williams County, and 1 mile above mouth of Bear Creek.

DRAINAGE AREA.—369 square miles (area in Ohio measured on topographic maps; area in Michigan and Indiana measured on post-route maps).

RECORDS AVAILABLE.—August 27, 1926, to September 30, 1927.

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

CHANNEL AND CONTROL.—Channel straight for 500 feet below gage; slightly curved above. Right bank high and clean; left bank low and wooded. One channel at all stages. Bed composed of coarse gravel. Control for low water is riffle just below gage; high-water control 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 and period of record, 10.6 feet at 7 a. m. February 8 (discharge, 2,500 second-feet); minimum stage, 1.20 feet at 6 p. m. September 6 (discharge, 17 second-feet).

DIVERSIONS AND REGULATION.—Negligible.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve, based on six discharge measurements ranging from 23 to 600 second-feet, well defined up to 800 second-feet; extended for extremely high stages. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except those for period of ice effect, which are fair.

Daily discharge, in second-feet, of St. Joseph River near Blakeslee, Ohio, for the years ending September 30, 1926 and 1927

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1926			1926			1926		
1		41	11		43	21		35
2		101	12		40	22		41
3		91	13		42	23		101
4		128	14		37	24		244
5		129	15		52	25		838
6		106	16		86	26		894
7		76	17		68	27	28	628
8		63	18		63	28	29	428
9		55	19		49	29	27	304
10		49	20		41	30	45	244
						31	53	

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1926-27												
1	244	274	320			244	352	352	180	106	33	28
2	678	215	259			215	490	274	154	96	31	24
3	704	180	215			215	490	229	154	96	37	20
4	428	160	187		1,500	229	370	215	922	76	30	19
5	320	141	147	100		229	756	187	894	68	28	18
6	274	135	166			244	950	173	428	68	27	17
7	229	123	187			304	580	141	244	76	27	22
8	201	128	180		2,450	534	408	154	201	81	27	21
9	166	128	187		2,000	678	336	135	428	63	26	27
10	147	160	173		1,280	556	274	123	534	55	25	31
11	129	201	173		756	428	244	141	304	51	25	31
12	128	173	180		490	490	201	128	201	45	25	30
13	112	147	259		408	1,070	215	112	166	46	23	28
14	106	141	556		304	1,360	215	128	135	41	31	35
15	96	135	468	80	320	1,400	215	129	129	51	27	31
16	96	147			468	1,040	201	141	106	63	27	27
17	101	141			628	704	229	154	96	68	32	25
18	96	244			580	580	289	160	86	55	28	26
19	101	370			980	628	652	180	96	44	28	28
20	101	336	150		534	1,010	866	201	147	41	26	32
21	96	274			352	1,320	730	187	173	38	24	33
22	96	229			370	1,160	534	160	866	44	24	30
23	123	201			352	810	408	147	1,100	45	24	28
24	154	187			352	628	336	215	1,190	47	27	26
25	229	187		120	580	468	304	336	782	41	28	25
26	215	408			448	408	448	448	428	34	28	24
27	173	782	100		336	448	678	352	244	31	26	24
28	147	730			289	408	678	259	187	31	24	28
29	135	512			-------	352	512	215	141	32	24	52
30	147	388		500	-------	304	428	180	123	31	24	129
31	320	-------	------	900	-------	289	-------	141	-------	38	28	------

NOTE.—Discharge Dec. 16 to Feb. 7 estimated because of ice.

Monthly discharge of St. Joseph River near Blakeslee, Ohio, for the years ending September 30, 1926 and 1927

[Drainage area, 369 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1926					
August 27-31	53	27	36.4	0.099	0.02
September	894	35	171	.463	.52
1926-27					
October	704	96	203	.550	.63
November	782	123	253	.686	.77
December	556	----------	182	.493	.57
January	900	----------	138	.374	.43
February	2,450	289	885	2.40	2.50
March	1,400	215	605	1.64	1.89
April	950	201	446	1.21	1.35
May	448	112	197	.534	.62
June	1,190	86	361	.978	1.09
July	106	31	54.9	.149	.17
August	37	23	27.2	.074	.09
September	129	17	30.6	.083	.09
The year	2,450	17	277	.750	10.20

MAUMEE RIVER AT ANTWERP, OHIO

LOCATION.—1,000 feet below highway bridge 1 mile north of Antwerp, Paulding County, and 7 miles downstream from State boundary.

DRAINAGE AREA.—2,050 square miles (revised; area in Ohio measured on topographic maps, area in Michigan and Indiana measured on post-route maps).

RECORDS AVAILABLE.—September 1, 1921, to September 30, 1927.

EQUIPMENT.—An water-stage recorder on left bank 1,000 feet below bridge. Discharge measurements made from bridge above gage or by wading.

CHANNEL AND CONTROL.—Channel straight for 500 feet above and 1,000 feet below gage. One channel at all stages. Left bank high; right bank fairly high. Control for low water is rock and gravel riffle 1½ miles below gage; control for high water is long stretch of river below gage. Zero flow would occur at zero gage height.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 18.1 feet at 11 a. m. February 1 (discharge, 16,400 second-feet); minimum stage, 0.63 foot 5 a. m. to 3 p. m. September 28 (discharge, 74 second-feet).

1921–1927: Maximum stage recorded, that of February 1, 1927; minimum stage, that of September 28, 1927.

DIVERSIONS AND REGULATION.—Negligible.

ACCURACY.—Stage-discharge relation for low water changed during high water of March 22–24; seriously affected by ice. Rating curves well defined up to 13,000 second-feet and fairly well defined above. Four measurements made during year range from 178 to 3,380 second-feet and check the curves. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage-height obtained from gage-height graph by inspection, balancing areas above and below the mean height, or, for days when there was considerable fluctuation, by averaging discharges for shorter intervals. Records excellent except those for periods of ice effect and for periods when recorder was not operating, which are fair.

Daily discharge, in second-feet, of Maumee River at Antwerp, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		3,650	2,240		16,200	1,960	1,510	5,300	2,310	444	226	173
2		2,980	1,750		11,300	1,960	3,380	3,920	1,820	141	212	162
3		2,310	1,450		9,300	1,750	5,100	2,660	1,570	240	256	151
4		1,960	1,210		8,820	1,570	4,730	2,240	1,700	340	141	151
5		1,750	1,050		8,700	1,330	5,460	1,820	4,450	340	212	151
6		1,570	900		9,300	1,330	7,050	1,450	7,380	1,780	256	151
7	3,700	1,330	800		9,420	1,800	6,500	1,210	6,720	457	114	
8		1,100	705		8,700	3,560	4,730	1,000	3,830	521	186	140
9		950	800		7,710	4,190	3,830	900	2,310	416	322	
10		900	1,100	400	6,610	3,380	4,550	900	1,630	340	500	
11		900	1,150		5,350	2,740	4,280	744	1,390	322	358	
12		850	1,050		4,010	2,380	3,140	457	1,390	241	192	
13		850	1,150		2,660	3,310	2,450	568	1,150	106	272	
14	1,270	788			2,030	5,600	2,660	1,260	950	480	122	160
15	1,100	800			1,820	5,340	2,820	700	800	256	151	
16	950	750			2,520	4,190	2,240	655	700	305	226	
17	900	750			3,300	3,560	2,740	655	655	256	322	173
18	850	446			3,650	3,300	3,300	655	610	198	340	173
19	800	690			4,010	3,830	6,630	2,440	610	1,020	186	186
20	800	1,620			3,470	7,060	8,150	5,300	700	377	212	226
21	750	1,150		1,150	2,660	11,600	7,380	5,000	700	305	256	256
22	705	1,050	850	2,030	2,100	12,400	5,890	4,730	1,320	272	122	212
23	705	900		2,450	1,690	12,400	3,560	4,820	2,170	241	141	198
24	705	802		2,660	1,510	12,500	2,740	5,000	2,170	241	241	186
25	800	800		2,520	1,570	11,500	2,170	6,460	1,890	226	272	173
26	950	1,230		2,280	1,820	8,820	1,820	7,490	1,690	212	122	106
27	1,100	2,100		1,750	2,240	5,660	1,690	5,560	1,450	256	122	78
28	1,150	2,520		2,240	2,100	3,300	2,240	3,650	1,050	256	151	75
29	1,270	2,380		2,660	-------	2,310	3,400	2,590	800	114	162	90
30	1,600	2,310		8,300	-------	1,890	6,100	2,240	655	83	162	269
31	3,480	-------	-------	15,900	-------	1,570	-------	2,240	-------	141	173	-------

NOTE.—Discharge Oct. 1-13 and Sept. 7-16 estimated because recorder was not operating satisfactorily. Discharge Dec. 14 to Jan. 20 estimated because of ice.

Monthly discharge of Maumee River at Antwerp, Ohio, for the year ending September 30, 1927

[Drainage area, 2,050 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	----------	705	2,190	1.07	1.23
November	3,650	446	1,410	.688	.77
December	----------	----------	989	.482	.56
January	15,900	----------	1,680	.820	.95
February	16,200	1,510	5,160	2.52	2.62
March	12,500	1,330	4,780	2.33	2.69
April	8,150	1,510	4,070	1.99	2.22
May	7,490	457	2,730	1.33	1.53
June	7,380	610	1,890	.922	1.03
July	1,780	83	352	.172	.20
August	500	114	217	.106	.12
September	269	75	162	.079	.09
The year	16,200	75	2,110	1.03	14.01

MAUMEE RIVER NEAR DEFIANCE, OHIO

LOCATION.—In NW. ¼ sec. 22, T. 4 N., R. 5 E., at Independence Dam, 5 miles east of Defiance, Defiance County, and mouth of Auglaize River.

DRAINAGE AREA.—5,530 square miles (area in Ohio measured on topographic maps, area in Michigan and Indiana measured on post-route maps).

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

EQUIPMENT.—Au water-stage recorder on left bank just above Independence Dam. Zero of gage, 659.12 feet above mean sea level. Discharge measurements made by wading or from highway bridge at Florida, 5 miles below gage.

CHANNEL AND CONTROL.—Channel straight for 1 mile above and below gage. Banks high and not subject to overflow. Control for all stages is concrete dam. Zero flow would occur at about gage height 1.1 feet.

EXTREMES OF DISCHARGE.—Maximum combined daily discharge of river and canal during year, 59,800 second-feet March 22; minimum combined daily discharge, 256 second-feet September 5.

1924–1927: Maximum combined daily discharge of river and canal, 64,600 second-feet April 9, 1926; minimum combined daily discharge, 157 second-feet September 4, 1925.

DIVERSIONS AND REGULATION.—The Miami & Erie Canal diverts water a quarter of a mile above dam and carries it around the station. See record of flow of canal on page 57. Flow at extremely low water affected by regulation of Auglaize River at dam of Toledo Edison Co. 3 miles south of Defiance.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve well defined below 21,000 second-feet. Three measurements made during year well distributed over a range of discharge from 329 second-feet to 8,710 second-feet and check the curve. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height obtained from gage-height graph by inspection, balancing areas above and below mean height, or, for days of considerable fluctuation, by averaging discharges for shorter intervals. Records excellent.

Daily discharge, in second-feet, of Maumee River near Defiance, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19,700	6,280	5,140	763	32,300	5,360	3,290	14,500	4,920	845	2,400	190
2	18,100	10,000	4,490	824	32,300	4,700	7,540	9,450	4,080	532	3,680	180
3	15,200	9,450	3,100	980	26,200	4,280	12,500	6,040	3,290	238	4,280	152
4	13,200	7,270	2,070	1,120	25,200	3,880	11,900	4,490	5,090	171	3,880	114
5	11,200	5,360	1,640	1,170	23,300	3,480	18,100	3,680	11,000	415	2,740	82
6	10,000	4,490	1,530	1,230	28,200	4,280	22,300	3,100	13,800	478	1,790	152
7	8,330	3,480	1,440	1,170	30,200	7,270	18,900	2,400	11,900	1,000	1,410	133
8	6,770	2,740	1,410	1,100	26,200	11,900	13,200	1,760	7,790	604	1,440	415
9	5,810	2,230	1,300	784	18,900	12,500	9,450	1,670	4,700	514	604	286
10	5,140	1,610	1,910	912	14,500	10,000	13,200	1,440	3,290	415	430	226
11	4,700	1,360	2,400	1,000	11,200	7,270	12,500	1,360	2,570	430	550	214
12	4,080	1,300	2,070	958	8,330	5,580	8,880	1,230	2,070	415	415	262
13	3,290	1,410	3,680	912	5,580	7,270	6,540	1,000	1,820	340	274	514
14	2,230	1,070		845	4,700	13,200	6,680	1,100	1,550	214	298	355
15	1,850			568	4,490	14,500	5,580	1,580	1,300	340	226	415
16	1,730		3,900	681	8,330	11,200	5,580	1,250	1,050	274	226	496
17	1,530	1,350		568	12,500	8,330	4,920	1,250	980	262	262	622
18	1,850			660	12,500	7,270	5,810	1,250	890	340	400	430
19	2,740		1,330	763	10,000	9,450	12,600	4,780	1,730	340	496	370
20	1,820	1,670	1,610	1,100	7,270	25,200	15,200	16,000	1,640	784	250	400
21	1,230	1,910		2,400	5,810	45,800	13,200	21,400	1,440	400	214	310
22	1,120	1,880		5,580	4,280	59,600	10,000	16,600	2,400	325	250	262
23	980	1,850	1,700	7,790	3,880	53,000	6,770	10,000	4,920	370	226	180
24	845	1,390		9,450	3,680	35,600	4,490	8,880	4,700	958	190	190
25	1,470	1,100		9,450	4,080	22,300	4,080	10,000	4,280	824	202	274
26	3,680	3,480	1,070	7,790	5,580	14,500	3,680	11,200	3,480	784	238	262
27	4,490	5,810	1,150	5,580	7,790	9,450	3,880	9,450	2,400	550	152	274
28	3,880	6,040	1,120	3,880	6,770	6,280	3,880	6,770	1,850	478	124	226
29	3,680	6,280	1,170	4,280	-------	4,280	5,360	4,700	1,390	415	124	104
30	3,880	5,580	1,170	11,900	-------	3,480	11,500	4,700	1,020	496	190	114
31	3,880	-------	980	23,300	-------	3,100	-------	5,140	-------	1,120	180	------

NOTE.—Recorder not operating Nov. 15–19, Dec. 14–18, and Dec. 21–25 (range in stage only indicated); discharge estimated.

Monthly discharge, in second-feet, of Maumee River and Miami & Erie Canal near Defiance, Ohio, for the year ending September 30, 1927

Month	Maximum (combined)	Minimum (combined)	Mean		
			River	Canal	Combined
October	19,900	1,010	5,430	175	5,600
November	10,200	----------	3,390	176	3,570
December	----------	1,170	2,250	178	2,430
January	23,500	747	3,530	183	3,710
February	32,500	3,860	13,700	187	13,900
March	59,800	3,280	14,000	185	14,200
April	22,500	3,480	9,380	195	9,580
May	21,600	1,190	6,070	190	6,260
June	14,000	1,090	3,780	200	3,980
July	1,330	353	506	201	707
August	4,470	301	908	193	1,100
September	820	256	273	172	445
The year	59,800	256	5,210	186	5,400

MAUMEE RIVER AT WATERVILLE, OHIO

LOCATION.—At highway bridge at Waterville, Lucas County, 3 miles below mouth of Tontogany Creek.

DRAINAGE AREA.—6,310 square miles (area in Ohio measured on topographic maps, area in Michigan and Indiana measured on post-route maps).

RECORDS AVAILABLE.—November 19, 1898, to December 31, 1901; August 26, 1921, to September 30, 1927.

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

CHANNEL AND CONTROL.—Bed is rock ledge. One channel at all stages. Channel straight for half a mile above and below gage. Island one-eighth mile above gage. Control permanent. Zero flow would occur at gage height 0.9 foot.

EXTREMES OF DISCHARGE.—Maximum combined discharge of river and canal during year, 52,400 second-feet March 23; minimum combined discharge, 259 second-feet August 25.

1921–1927: Maximum combined discharge of river and canal, 56,200 second-feet April 9, 1926; minimum combined discharge, 195 second-feet October 27, 1924.

DIVERSIONS AND REGULATION.—Water is diverted into Miami & Erie Canal at Grand Rapids, 10 miles upstream, and carried past station. See record of Miami & Erie Canal at Waterville (p. 57). Flow at extremely low water may be slightly affected by regulation of Auglaize River at dam of Toledo Edison Co., 3 miles south of Defiance.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined and checked closely by a measurement made on July 20. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except those for periods of ice effect, which are fair.

Daily discharge, in second-feet, of Maumee River at Waterville, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17,000	11,700	6,750	850	30,400	6,750	3,460	15,300	5,600	762	910	70
2	18,800	11,200	5,600	624	36,400	5,980	3,310	13,700	4,530	624	2,780	70
3	18,800	8,860	4,870	910	27,500	4,870	11,200	7,560	3,750	174	3,750	70
4	20,000	6,750	2,530	1,270	26,800	4,530	14,800	5,980	4,530	102	3,750	70
5	24,000	4,870	2,530	1,100	24,700	3,900	18,200	4,210	13,700	66	3,040	70
6	24,000	3,900	1,840		31,100	5,230	24,700	3,460	14,800	66	2,060	70
7	22,600	3,180	1,950		31,100	7,980	24,000	2,780	14,200	142	1,360	70
8	18,800	3,180	1,640		28,900	13,700	17,000	2,780	10,200	572	1,000	70
9	13,200	2,180	1,840		23,300	15,300	12,200	1,640	6,360	448	1,270	70
10	10,200	1,450	2,060	900	18,200	13,700	10,200	1,540	3,900	290	400	110
11	6,750	1,450	3,180		13,700	10,200	14,800	880	2,780	142	190	110
12	5,230	1,640	2,910		10,200	7,560	11,700	1,040	2,290	190	210	66
13	4,210	1,840	2,660		7,560	6,360	7,980	880	1,740	134	126	94
14	3,040	1,360			5,980	13,200	8,860	762	1,740	220	110	102
15	2,060	762			5,230	16,400	5,980	1,070	1,360	126	190	102
16	1,840	1,740	3,700	500	6,360	14,800	6,750	1,070	1,150	82	86	70
17	1,640	1,170			13,700	11,200	5,230	1,100	972	78	70	110
18	1,540	1,360			13,700	8,860	5,230	1,240	940	102	78	110
19	1,840	1,640			13,200	8,860	7,980	2,060	748	56	70	58
20	2,530	1,270	1,840		9,780	7,560	15,300	11,200	1,450	78	70	70
21	1,640	1,840	2,060	3,200	7,560	38,700	15,900	22,000	1,540	190	110	66
22	1,270	1,640	2,060		5,600	48,700	13,200	20,700	1,360	312	58	66
23	940	1,840	1,840	11,700	4,530	51,900	9,320	13,700	2,660	1,000	70	70
24	940	1,450	1,640	13,200	4,210	41,700	6,750	10,700	4,870	1,270	126	70
25	1,000	1,270	1,740	14,200	4,530	28,200	4,530	13,200	4,530	1,100	78	70
26	1,450	1,180	1,740	14,200	4,870	20,700	4,530	12,700	3,750	820	110	50
27	4,210	5,980	1,240	11,700	7,560	15,300	4,210	11,200	2,780	734	126	50
28	4,210	7,560	1,640	6,360	8,420	10,700	4,530	8,860	1,950	356	142	70
29	3,750	7,560	1,640	4,210	-------	6,750	4,210	6,360	1,450	290	70	90
30	3,750	7,150	734	13,200	-------	5,230	6,360	4,530	1,070	210	90	86
31	7,980	-------	1,100	26,100	-------	4,530	-------	7,980	-------	190	70	-------

NOTE.—Discharge Dec. 14–19, Dec. 31 to Jan. 1, and Jan. 6–22 estimated because of ice.

Monthly discharge, in second-feet, of Maumee River and Miami & Erie Canal at Waterville, Ohio, for the year ending September 30, 1927

Month	Maximum (combined)	Minimum (combined)	Mean		
			River	Canal	Combined
October	24,500	1,420	8,040	472	8,510
November	12,200	1,210	3,630	450	4,080
December	----------	1,230	2,640	430	3,070
January	26,600	----------	4,500	481	4,980
February	36,900	4,660	15,200	467	15,700
March	52,400	4,360	14,800	464	15,300
April	25,200	3,760	10,100	472	10,600
May	22,500	1,240	6,840	473	7,310
June	15,300	1,210	4,090	470	4,560
July	1,720	502	352	451	803
August	4,230	259	728	391	1,120
September	560	418	77.3	396	473
The year	52,400	259	5,850	452	6,300

ST. MARYS RIVER NEAR WILLSHIRE, OHIO

LOCATION.—In sec. 34, T. 3 S., R. 1 E., at highway bridge three-fourths mile above mouth of Black Creek and 3 miles southeast of Willshire, Van Wert County.

DRAINAGE AREA.—355 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 23, 1925, to September 30, 1927.

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

CHANNEL AND CONTROL.—Channel straight for 300 feet above and below gage. Banks high and wooded. One channel at all stages. Control for low water is riffle 500 feet below gage. Control for high water is long stretch of channel. Zero flow would occur at gage height —0.9 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year and period of record, 16.1 feet at 6.30 a. m. March 22 (discharge, 3,960 second-feet); minimum discharge during year and period of record (14 second-feet) occurred at gage height 1.08 feet at 6.15 p. m. August 13.

DIVERSIONS AND REGULATION.—Water flows from Lake St. Marys at the head of this stream into the Wabash River Basin. Some water is diverted by the Miami & Erie Canal into Auglaize River. Flow regulated to some extent at Lake St. Marys.

ACCURACY.—Stage-discharge relation for low water changed during high water on March 21–23; affected by ice. Rating curves fairly well defined. Five discharge measurements, ranging from 28 to 731 second-feet, were made during year and check the curves. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except those for period of ice effect, which are fair.

Daily discharge, in second-feet, of St. Marys River near Willshire, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,460	755	229		2,160	583	493	1,050	655	50	40	22
2	1,340	755	193		2,040	475	1,180	915	637	50	50	30
3	1,730	735	164		1,640	349	1,280	795	443	50	40	30
4	2,040	601	146		1,410	265	1,420	547	815	40	40	24
5	2,080	443	129		1,380	217	1,480	307	915	53	30	22
6	2,010	335	113	70	1,640	229	1,220	183	675	46	24	18
7	1,700	229	105		1,670	335	935	146	529	46	18	18
8	1,360	183	113		1,610	511	775	121	321	46	17	19
9	1,100	164	155		1,310	529	1,020	113	173	43	17	21
10	795	146	173		943	547	955	113	129	37	17	21
11	529	137	173		655	443	895	113	105	33	21	26
12	335	137	173		427	335	895	105	97	37	18	28
13	229	129	205		293	475	775	97	93	37	16	26
14	183	113	217		253	619	583	97	81	32	18	28
15	164	105	205	70	443	655	427	93	78	29	17	27
16	155	113	183		619	715	427	89	85	24	17	26
17	155	105	173		735	655	379	85	85	26	19	26
18	173	105	121		795	565	475	146	85	24	20	26
19	173	113	86		675	965	1,300	1,300	85	29	19	24
20	146	105	76	363	493	2,240	1,000	2,180	85	34	19	21
21	129	86	69	493	349	3,700	835	2,900	81	37	19	20
22	113	83	69	775	217	3,900	675	2,500	93	21	19	20
23	129	76	69	899	193	3,350	493	1,690	85	24	18	19
24	155	76	72	943	183	2,340	349	1,180	97	113	18	17
25	279	72	76	1,100	205	1,540	253	875	97	93	23	16
26	379	173	83	1,340	349	975	205	895	85	50	20	16
27	427	307	80	1,210	493	583	565	775	81	34	17	17
28	459	265	76	965	565	395	529	695	64	29	20	18
29	675	253	72	921	-------	253	835	529	53	23	20	21
30	655	241	76	1,700	-------	193	1,050	565	53	21	20	21
31	775	-------	76	1,940	-------	155	-------	637	-------	28	18	------

NOTE.—Discharge Jan. 1-19 estimated because of ice.

Monthly discharge of St. Marys River near Willshire, Ohio, for the year ending September 30, 1927

[Drainage area, 355 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,080	113	711	2.00	2.31
November	755	72	238	.670	.75
December	229	69	127	.358	.41
January	1,940	70	451	1.27	1.46
February	2,160	183	848	2.39	2.49
March	3,900	155	938	2.64	3.04
April	1,480	205	790	2.23	2.49
May	2,900	85	704	1.98	2.28
June	915	53	232	.654	.73
July	113	21	40.0	.113	.13
August	50	16	22.2	.062	.07
September	30	16	22.3	.063	.07
The year	3,900	16	425	1.20	16.23

TIFFIN RIVER NEAR STRYKER, OHIO

LOCATION.—In sec. 17, T. 6 N., R. 4 E., at highway bridge 2 miles southwest of Stryker, Williams County. Beaver Creek enters on right 2 miles below gage.

DRAINAGE AREA.—450 square miles (area in Ohio measured on topographic maps, area in Michigan measured on post-route map).

RECORDS AVAILABLE.—September 1, 1921, to September 30, 1927.

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

CHANNEL AND CONTROL.—Channel straight for 400 feet above and below gage. One channel at all stages. Banks high and brushy. Control for low water is ruins of old timber dam half a mile below gage; control for high water is long stretch of river below gage. Zero flow would occur at zero gage height.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.9 feet at 5 p. m. February 8 (discharge, 1,650 second-feet); minimum stage, 1.12 feet September 5–6 (discharge, 12 second-feet).

1921–1927: Maximum stage recorded, 13.0 feet at 5.30 p. m. April 1, 1922, and at 4 p. m. March 7, 1924 (discharge, 2,070 second-feet; minimum stage, 0.92 foot August 29 and 30, 1925 (discharge, 10 second-feet).

ACCURACY.—Stage-discharge relation changed gradually from June 27 to September 19; seriously affected by ice January 15–26. Rating curve used prior to change well defined. Four well-distributed discharge measurements made during year check that curve. A measurement made on September 19 indicates the amount of change in control. Curve parallel to previous curve used September 20–30. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table or by shifting-control method. Records good except those for period of ice effect and for extremely low water, which are fair.

Daily discharge, in second-feet, of Tiffin River near Stryker, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	335	565	425	169	1,480	278	264	208	85	74	33	14
2	970	365	320	222	1,520	250	335	182	74	68	27	14
3	1,110	278	236	107	1,460	222	440	150	80	57	20	14
4	989	208	222	107	1,380	222	425	137	788	55	21	14
5	717	182	182	107	1,360	250	970	125	806	49	17	12
6	565	156	150	119	1,480	335	1,170	119	335	45	17	13
7	440	150	131	131	1,520	632	989	113	143	48	18	13
8	306	137	169	102	1,650	1,010	517	102	113	44	17	14
9	236	131	195	102	1,540	1,090	350	96	380	41	23	13
10	195	156	169	119	1,380	860	264	96	365	38	21	17
11	169	195	182	74	842	565	222	96	137	36	20	28
12	143	195	182	90	549	598	169	85	102	35	17	37
13	137	169	264	74	395	951	169	80	90	31	16	31
14	131	169	683	68	306	1,250	182	80	74	32	17	31
15	125	156	581		292	1,330	195	90	74	35	16	43
16	113	156	440		365	1,270	169	102	63	32	23	32
17	113	156	470		649	914	182	96	59	44	18	25
18	119	222	440	60	896	598	208	113	74	46	16	26
19	143	306	365		914	615	365	137	90	36	18	32
20	156	278	278		666	806	455	150	85	32	16	30
21	143	222	195		533	1,290	395	131	80	30	16	25
22	131	182	169		425	1,360	320	113	1,050	34	16	26
23	143	169	143		425	1,210	278	102	1,360	35	17	23
24	169	156	156		440	788	236	107	1,170	31	18	20
25	264	169	278	90	734	501	208	131	649	30	19	20
26	264	517	455		700	440	292	143	410	28	19	22
27	208	1,070	335		410	485	485	182	169	23	18	21
28	169	1,130	222	74	320	485	501	131	119	23	16	20
29	156	878	182	156	-------	395	365	113	102	25	15	29
30	306	565	208	1,290	-------	335	278	102	80	21	15	59
31	615	-------	182	1,460	-------	278	-------	96	-------	28	15	-------

NOTE.—Discharge Jan. 15–27 estimated because of ice.

Monthly discharge of Tiffin River near Stryker, Ohio, for the year ending September 30, 1927

[Drainage area, 450 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,110	113	315	0.700	0.81
November	1,130	131	313	.696	.78
December	683	131	278	.618	.71
January	1,460	----------	178	.396	.46
February	1,650	292	880	1.96	2.04
March	1,360	222	697	1.55	1.79
April	1,170	169	380	.844	.94
May	208	80	120	.267	.31
June	1,360	59	307	.682	.76
July	74	21	38.3	.085	.10
August	33	15	18.5	.041	.05
September	59	12	23.9	.053	.06
The year	1,650	12	291	.647	8.81

AUGLAIZE RIVER NEAR FORT JENNINGS, OHIO

LOCATION.—In SE. ¼ sec. 15, R. 5 E., T. 1 S., at highway bridge 3½ miles northeast of Fort Jennings, Putnam County, and 6 miles above mouth of Ottawa River.

DRAINAGE AREA.—333 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 31, 1921, to September 30, 1927.

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

CHANNEL AND CONTROL.—Channel straight for 300 feet above and 1,000 feet below gage. Right bank high; left bank fairly high, subject to overflow at extremely high water. One channel at all stages. Control for extremely low water is submerged quarry cofferdam 500 feet below gage. Control for medium stages is loose rock dam 800 feet below gage. 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 year, 16.4 feet at 12.15 p. m. March 21 (discharge, 7,400 second-feet); minimum stage, 1.26 feet July 8, 9, and September 26 (discharge, 26 second-feet).

1921–1927: Maximum stage recorded, that of March 21, 1927; minimum stage, 1.10 feet November 26, 1923, and August 9 and 11, 1924 (discharge, 12 second-feet).

DIVERSIONS AND REGULATION.—Some water is diverted from Lake St. Marys by Miami & Erie Canal and discharged into Jennings Creek, a tributary of Auglaize River, above station. Regulation of this diversion may have some effect on flow at low water.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined up to 3,000 second-feet. Four discharge measurements made during year at low and medium stages check the curve. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except those for period of ice effect, which are fair.

Daily discharge, in second-feet, of Auglaize River near Fort Jennings, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	960	1,350	188		3,310	435	226	1,140	338	33	170	55
2	840	750	153		1,020	338	2,660	540	188	32	386	55
3	900	460	145		840	246	1,660	338	137	33	246	49
4	2,660	338	130		1,280	268	750	257	291	31	226	46
5	2,880	257	64		1,420	246	1,560	207	690	27	122	30
6	2,560	216	36	60	2,880	386	1,020	170	257	27	108	28
7	1,630	207	76		1,940	780	780	137	162	28	90	43
8	810	170	96		990	1,080	435	130	122	26	68	38
9	460	162	145		660	780	1,080	137	108	26	49	36
10	338	145	188		460	435	2,280	137	85	36	64	46
11	246	145	188		338	291	1,020	115	80	36	61	49
12	198	153	188		268	236	540	108	76	29	55	52
13	179	137	268		246	485	386	108	61	55	52	58
14	162	122	435		216	1,490	600	108	64	55	52	68
15	153	122	207	60	1,420	930	460	108	52	58	49	68
16	137	122			1,210	485	338	108	58	61	43	55
17	291	122			870	338	291	122	61	49	40	52
18	291	130			600	410	268	130	80	36	52	46
19	207	115			435	1,350	1,110	1,940	72	31	55	43
20	170	108	130	660	170	3,910	720	5,650	52	36	61	40
21	145	96		1,740	145	7,400	386	4,960	68	36	61	31
22	137	72		2,230	207	6,730	338	1,020	68	55	38	38
23	145	80		2,610	179	3,310	246	510	55	76	40	38
24	188	76		2,560	226	1,020	198	386	145	226	55	43
25	1,420	76		1,660	246	720	170	338	108	145	55	52
26	1,240	96		840	1,320	268	153	314	80	90	55	26
27	780	153	80	540	960	386	162	435	49	90	55	38
28	410	170		540	485	268	435	236	46	72	52	40
29	960	188		750	-------	226	660	188	46	80	36	43
30	1,210	198		3,380	-------	198	2,230	188	43	226	33	49
31	1,520	-------		4,720	-------	179	-------	600	-------	162	52	-------

NOTE.—Discharge Dec. 16 to Jan. 19 estimated because of ice.

Monthly discharge of Auglaize River near Fort Jennings, Ohio, for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	2,880	782	772	May	5,650	108	673
November	1,350	72	218	June	690	43	125
December	435	36	135	July	226	26	64.6
January	4,720		754	August	386	33	83.3
February	3,310	145	869	September	68	26	45.2
March	7,400	179	1,150				
April	2,660	153	772	The year	7,400	26	471

AUGLAIZE RIVER NEAR DEFIANCE, OHIO

LOCATION.—In NE. ¼ sec. 9, T. 3 N., R. 4 E., at dam and power plant of Toledo Edison Co., 3 miles south of Defiance, Defiance County, and just below mouth of Beetree Creek.

DRAINAGE AREA.—2,330 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 13, 1915, to September 30, 1927.

EQUIPMENT.—Vertical staff gage on upstream side of power plant at right end of dam. Auxiliary staff gage in tailwater. Gages set to mean sea level datum. Crest of dam is 688.00 feet above mean sea level. Height of flashboards 2.00 feet. Discharge measurements made from highway bridge 1¾ miles below dam or by wading.

CHANNEL AND CONTROL.—Channel slightly curved above and below dam. Banks high and not subject to overflow. One channel at all stages. The dam and power plant are the control.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge during year, 32,400 second-feet March 22; minimum mean daily discharge, 39 second-feet August 14.

1915–1927: Maximum mean daily discharge, 36,100 second-feet March 18, 1919; minimum mean daily discharge, 6 second-feet October 17, 1923.

DIVERSIONS AND REGULATION.—Some water is diverted from Lake St. Marys by Miami & Erie Canal and discharged into Jennings Creek, a tributary of Auglaize River, above station. Flow regulated by the power company at this point. Record of discharge not corrected for storage.

ACCURACY.—Daily discharge ascertained by power company from readings on head and tail gages and ratings of crest. Taintor gates and turbines have been checked and verified by current-meter measurements at various stages. Two discharge measurements during year at medium stages check the discharge computed by power company. Leakage through dam and plant has been determined for various stages below crest level by current-meter measurements made by wading below dam when power plant was not operating. Leakage ranged from 34 second-feet at headwater elevation of 686.2 feet to 57 second-feet at headwater elevation of 689.7 feet. Daily discharge below 500 second-feet corrected for leakage. Records good.

COOPERATION.—Record of daily discharge, not corrected for leakage, furnished by Toledo Edison Co., Defiance Division.

Daily discharge, in second-feet, of Auglaize River near Defiance, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,490	5,070	2,310	250	17,800	2,290	1,860	8,280	2,050	241	2,460	159
2	4,850	4,400	2,280	291	15,400	1,790	2,790	4,910	1,680	41	3,020	154
3	5,210	3,290	1,090	511	11,000	1,700	7,980	2,910	1,140	42	3,680	122
4	5,460	2,530	656	508	9,180	1,520	4,730	1,890	1,130	42	3,820	42
5	10,600	2,050	492	535	9,450	1,600	6,350	1,500	2,830	244	2,370	42
6	10,200	1,450	643	524	11,900	1,580	11,300	1,410	4,340	251	1,440	247
7	9,390	833	626	523	13,600	3,540	8,040	912	3,020	284	1,160	53
8	6,290	862	596	523	10,000	5,180	5,050	637	1,760	241	1,190	68
9	4,580	529	517	55	6,490	5,370	3,370	672	862	40	240	42
10	2,820	561	1,260	512	4,460	3,850	7,170	589	538	41	182	186
11	2,240	639	1,260	534	2,970	2,520	5,650	582	517	247	168	42
12	1,960	812	960	498	2,100	1,750	3,350	582	410	284	146	315
13	1,420	473	1,490	523	1,790	1,760	2,980	575	527	173	216	533
14	655	132	2,160	487	1,890	4,140	3,270	520	521	168	39	326
15	635	706	2,610	437	2,180	5,030	2,550	505	365	172	248	460
16	667	476	1,150	216	5,070	3,590	2,790	571	363	41	183	538
17	528	522	982	328	6,180	2,490	2,510	463	361	41	150	622
18	1,200	606	927	396	5,060	1,980	2,300	521	518	198	243	194
19	1,810	474	627	483	3,640	3,950	5,450	2,980	1,230	219	215	445
20	764	362	808	869	2,480	14,300	6,040	12,000	712	139	40	386
21	488	44	672	2,330	2,060	25,000	3,760	15,300	705	171	40	226
22	376	715	512	4,580	1,560	32,400	3,310	10,200	901	99	41	79
23	253	705	504	6,750	1,410	29,700	2,170	4,580	673	522	159	79
24	42	474	834	6,830	1,180	16,100	1,460	2,680	532	830	41	160
25	1,020	273	53	6,540	1,390	7,480	1,790	2,570	776	716	42	42
26	2,870	1,140	57	5,060	2,180	3,720	1,520	2,490	555	684	42	185
27	3,100	1,660	508	3,220	3,770	2,140	1,480	2,450	338	489	122	303
28	2,530	2,110	531	2,620	3,220	1,900	1,270	1,920	363	418	44	86
29	2,440	2,700	530	2,330	-------	1,690	1,630	1,230	364	286	99	140
30	2,830	2,320	420	5,800	-------	1,740	5,920	1,260	279	797	207	202
31	4,120	-------	407	12,500	-------	1,710	-------	1,920	-------	1,400	174	-------

Monthly discharge of Auglaize River near Defiance, Ohio, for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	10,600	42	3,120	May	15,300	463	2,890
November	5,070	44	1,300	June	4,340	279	1,010
December	2,610	53	918	July	1,400	40	308
January	12,500	55	2,180	August	3,820	39	717
February	17,800	1,180	5,690	September	622	42	216
March	32,400	1,520	6,240				
April	11,300	1,270	3,990	The year	32,400	39	2,360

OTTAWA RIVER AT ALLENTOWN, OHIO

LOCATION.—In NW. ¼ sec. 29, T. 3 S., R. 6 E., at highway bridge at Allentown, Allen County.

DRAINAGE AREA.—168 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 15, 1923, to September 30, 1927.

EQUIPMENT.—Au water-stage recorder at highway bridge. Discharge measurements made from bridge at gage or by wading.

CHANNEL AND CONTROL.—Channel curved above but straight for 500 feet below gage. Banks fairly high and brushy. Control is a flat bar of boulders and coarse gravel 75 feet below gage. Zero flow would occur at zero gage height.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 9.0 feet at 10.30 p. m. March 20 (discharge, 3,100 second-feet); minimum discharge, 10 second-feet from 8 to 9 p. m. September 30 (gage-height, 0.77 foot).

1923–1927: Maximum stage recorded, that of March 20, 1927; minimum stage, 0.63 foot at 8.30 a. m. June 2, 1925 (discharge, 6.5 second-feet).

DIVERSIONS AND REGULATION.—Negligible.

ACCURACY.—Stage-discharge relation permanent October 1 to July 15, shifting July 16 to September 15. Parallel rating curve used September 16–30. Seriously affected by ice as indicated in footnote to table of daily discharge. Rating curve used before period of shifting control well defined up to 2,000 second-feet. Five discharge measurements, ranging from 14 to 245 second-feet, were made during year. Recorder operated satisfactorily except as indicated in footnote to table of daily discharge. Daily discharge October 1 to July 15 ascertained by applying to rating table mean daily gage height obtained from gage-height graph by inspection or, for days when there was considerable range in stage, by averaging discharges for shorter intervals; determined by shifting-control method July 16 to September 15 and from parallel curve September 16–30. Records excellent except those for extremely high and low stages, which are good, and those for periods of ice effect and of missing gage-height record, which are fair.

Daily discharge, in second-feet, of Ottawa River at Allentown, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Jnly	Aug.	Sept.
1	290	490	55	31	655		476	328	102	24	244	14
2	254	278	41	29	370		880	161	60	18	142	14
3	465	170	47	31	342		400	109	42	16	45	14
4	512	134	42	39	520		210	76	185	14	42	20
5	1,900	102	36	45	872	170	746	55	356	14	26	11
6	800	84	32	30	1,080		638	43	232	16	23	11
7	520	71	38	25	655		278	35	102	31	20	13
8	290	60	61	23	342		152	39	63	17	22	13
9	180	57	77	19	232		872	34	46	14	22	33
10	125	56	72	20	170		640	47	35	13	24	16
11	102	59	61	31	117	300	266	34	31	12	23	17
12	86	46	60	26	102		152	33	29	14	20	12
13	87	41	125	46	76		143	29	25	14	18	14
14	76	44	302		396		221	38	26	17	22	13
15	63	43	109		800	243	161	30	20	23	18	13
16	81	47	80	35	690	161	117	40	18	16	18	13
17	102	51			490	117	109	45	17	16	17	13
18	68	52	50		342	194	102	210	23	13	18	23
19	56	46		342	232	1,020	161	2,210	23	15	18	14
20	55	43		690	102	2,400	125	1,390	17	14	16	13
21	50	40	44	840	102	2,580	87	725	18	18	15	13
22	60	33	38	1,120	87	1,420	70	342	43	191	13	12
23	71	38	33	840	94	880	54	180	80	164	16	12
24	459	34	34	550	190	550	52	152	47	40	31	12
25	800	35	38	328	232	342	42	152	31	23	17	12
26	550	57	40	221		232	48	152	25	20	15	11
27	290	68	37	490	400	170	63	102	20	19	14	12
28	196	117	36	585		125	61	68	20	126	14	15
29	820	83	23	470	-------	94	510	60	19	300	13	16
30	690	68	33	1,640	-------	79	868	244	19	214	25	16
31	840	-------	34	1,330	-------	72	-------	200	-------	415	17	------

NOTE.—Recorder not operating Feb. 26 to Mar. 14; stage-discharge relation affected by ice Dec. 17–20 and Jan. 14–18; discharge estimated.

Monthly discharge of Ottawa River at Allentown, Ohio, for the year ending September 30, 1927

[Drainage area, 168 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,900	50	353	2.10	2.42
November	490	33	84.9	.505	.56
December	302	----------	59.3	.353	.41
January	1,640	----------	323	1.92	2.21
February	1,080	76	375	2.23	2.32
March	2,580	72	451	2.68	3.09
April	880	42	290	1.73	1.93
May	2,210	29	238	1.42	1.64
June	356	17	59.1	.352	.39
July	415	12	60.0	.357	.41
August	244	13	31.9	.190	.22
September	33	11	14.5	.086	.10
The year	2,580	11	194	1.15	15.70

BLANCHARD RIVER NEAR FINDLAY, OHIO

LOCATION.—On east line of sec. 10, T. 1 N., R. 10 E., at highway bridge 2 miles northwest of Findlay, Hancock County.

DRAINAGE AREA.—343 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 14, 1923, to September 30, 1927.

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

CHANNEL AND CONTROL.—Channel curved above but straight for 400 feet below gage. Banks high and brushy. Control for extremely low water is concrete protection wall for pipe line beneath bridge. Control for medium and high stages is long stretch of channel below gage. Zero flow would occur at gage height 0.3 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.2 feet at 5 p. m. March 21 (discharge, 5,890 second-feet); minimum stage, 0.98 foot at 6 a. m. July 19 (discharge, 13 second-feet).

1924–1927: Maximum stage recorded, that of March 21, 1927; minimum stage, 0.68 foot at 6.30 p. m. September 6 and 8 and 8.45 a. m. September 11, 1925 (discharge, 3.6 second-feet).

DIVERSIONS AND REGULATION.—Negligible.

ACCURACY.—Stage-discharge relation permanent except as affected by moss and scum lodged on control; not seriously affected by ice. Rating curve well defined below 4,000 second-feet. Four discharge measurements during year closely check the rating for clean control; one measurement made on July 12 indicates amount of backwater from moss and scum lodged on control. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except for May 23 to July 12, when shifting-control method was used, and July 13–29, when parallel rating curve was used. Records good except those for extremely high and low stages and those for period during which moss and scum were lodged on control, which are fair.

Daily discharge, in second-feet, of Blanchard River near Findlay, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	480	539	310	52	2,450	310	346	179	114	22	1,830	27
2	864	460	310	54	2,010	275	1,420	197	151	19	1,740	23
3	741	346	480	49	1,470	200	1,070	194	135	24	1,070	24
4	700	241	197	44	1,420	194	421	191	188	26	480	25
5	1,780	191	138	38	1,700	225	990	141	741	29	225	21
6	2,450	157	107	41	2,950	990	1,700	86	364	33	146	20
7	2,060	138	88	50	1,740	1,120	619	65	173	120	157	18
8	1,380	118	107	60	1,030	782	364	65	130	120	241	60
9	499	146	185	54	741	421	421	56	98	67	179	310
10	275	130	176	49	440	364	579	86	79	36	114	402
11	225	116	125	54	275	310	499	75	56	32	74	275
12	191	100	100	58	209	292	310	59	75	25	58	165
13	165	92	104	50	209	440	292	84	125	23	53	460
14	151	92	165	49	499	864	383	157	86	22	82	619
15	138	111	179	44	1,780	659	310	194	50	29	54	310
16	128	120	209	68	1,740	346	292	241	52	26	46	241
17	130	92	151	88	990	328	225	258	54	20	45	130
18	109	79	114	77	782	1,200	151	579	67	15	54	79
19	84	65	84	96	402	3,500	209	2,400	67	14	38	72
20	90	54	67	191	209	4,450	203	2,700	80	16	32	68
21	96	49	60	1,380	206	5,610	188	1,920	84	20	41	52
22	128	46	46	2,060	194	4,210	168	741	328	146	35	40
23	102	49	38	1,880	165	1,420	133	275	460	225	38	35
24	782	54	42	1,700	194	659	109	258	292	292	41	28
25	1,240	74	50	1,380	402	460	88	421	182	135	28	25
26	1,070	539	58	1,120	310	383	100	499	107	75	25	25
27	619	782	72	823	310	310	109	275	52	37	24	27
28	402	364	88	364	346	258	94	197	26	28	26	32
29	579	346	77	948	-------	241	123	194	29	56	23	50
30	823	328	70	3,750	-------	225	185	154	28	1,160	29	45
31	823	-------	56	3,650	-------	197	-------	133	-------	4,030	27	------

Monthly discharge of Blanchard River near Findlay, Ohio, for the year ending September 30, 1927

[Drainage area, 343 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,450	84	623	1.82	2.10
November	782	46	201	.586	.65
December	480	38	131	.382	.44
January	3,750	38	656	1.91	2.20
February	2,950	165	899	2.62	2.73
March	5,610	194	1,010	2.94	3.39
April	1,700	88	403	1.17	1.30
May	2,700	56	422	1.23	1.42
June	741	26	149	.434	.48
July	4,030	14	223	.650	.75
August	1,830	23	228	.665	.77
September	619	18	124	.362	.40
The year	5,610	14	420	1.22	16.63

BLANCHARD RIVER AT GLANDORF, OHIO

LOCATION.—In NE. ¼ sec. 17, T. 1 N., R. 7 E., at highway bridge three-fourths mile northeast of Glandorf, Putnam County, and 1¼ miles above mouth of Cranberry Creek.

DRAINAGE AREA.—643 square miles (measured on topographic maps).

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

EQUIPMENT.—Chain gage on highway bridge. 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 stretch of channel below gage; practically permanent. Zero flow would occur at gage height 0.7 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 24.4 feet at 6 a. m. and 6 p. m. March 22 (discharge, 7,480 second-feet); minimum stage, 1.76 feet at 6 a. m. July 20 (discharge, 18 second-feet).

1921–1927: Maximum stage recorded, that of March 22, 1927; minimum stage, 1.53 feet at 10 a. m. September 11, 1925 (discharge, 6.6 second-feet).

ACCURACY.—Stage-discharge relation permanent, except as affected by ice. Rating curve well defined below 1,500 second-feet; checked by two discharge measurements made during year at low and medium stages. Gage read to hundredths once or twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

Daily discharge, in second-feet, of Blanchard River at Glandorf, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,400	546	388		6,220	269	212	810	212	149	1,480	32
2	1,430	486	300		5,140	226	186	630	199	143	1,320	31
3	1,680	426	269		4,120	186	161	506	186	161	1,110	30
4	2,630	350	254		2,760	254	149	388	125	149	860	28
5	5,090	254	240		2,970	369	316	316	388	137	672	27
6	4,260	240	254	180	3,040	885	1,340	284	860	77	609	43
7	2,910	226	254		2,570	1,080	1,210	226	546	63	446	98
8	2,480	226	284		2,120	910	695	199	388	54	388	114
9	1,880	226	269		1,370	718	1,010	199	240	149	284	77
10	1,400	226	254		764	486	910	173	199	161	240	63
11	672	226	240		466	269	672	143	149	108	212	63
12	407	226	254		254	226	588	125	137	82	173	50
13	254	226	240		226	350	672	254	149	40	125	44
14	199	212	226		407	526	860	240	173	37	120	333
15	173	212	240	200	718	764	741	226	143	27	114	284
16	161	161	269		1,040	960	506	350	137	25	92	254
17	125	149	609		985	1,450	269	426	131	23	82	199
18	120	149	546		718	2,420	254	546	131	21	68	186
19	120	143	426		486	3,610	388	810	131	20	54	149
20	173	131	407	1,110	388	4,590	226	3,040	125	18	50	137
21	186	125	369	2,450	254	5,810	161	3,070	120	28	44	131
22	173	125	316	2,600	212	7,480	131	2,540	120	284	44	125
23	186	137	240	2,630	333	6,280	149	2,120	143	284	44	131
24	240	149	212	2,600	546	4,230	143	1,570	426	199	43	137
25	350	173	212	2,510	835	2,360	125	1,210	388	149	40	137
26	333	173		2,030	935	1,190	125	935	284	137	38	125
27	269	186		1,620	672	526	131	630	199	125	35	143
28	254	173		1,450	546	369	125	466	173	114	32	149
29	486	316	140	2,150	-------	300	199	407	161	149	30	173
30	741	426		3,680	-------	284	672	269	149	173	29	149
31	718	-------		4,630	-------	240	-------	240	-------	4,020	32	-------

NOTE.—Discharge Dec. 26 to Jan. 19 estimated because of ice.

Monthly discharge of Blanchard River at Glandorf, Ohio, for the year ending September 30, 1927

[Drainage area, 643 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	5,090	120	1,020	1.59	1.83
November	546	125	234	.364	.41
December	609	----------	271	.421	.49
January	4,630	----------	1,070	1.66	1.91
February	6,220	212	1,470	2.29	2.38
March	7,480	186	1,600	2.49	2.87
April	1,340	125	444	.691	.77
May	3,070	125	753	1.17	1.35
June	860	120	230	.358	.40
July	4,020	18	236	.367	.42
August	1,480	29	287	.446	.51
September	333	27	121	.188	.21
The year	7,480	18	642	.998	13.55

MIAMI & ERIE CANAL NEAR DEFIANCE, OHIO

LOCATION.—In NW. ¼ sec. 22, T. 4 N., R. 5 E., a quarter of a mile below head gate at Independence, 5 miles east of Defiance, Defiance County, and directly opposite gaging station on Maumee River.

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

EQUIPMENT.—Water-stage recorder on right bank. Zero of gage, 658.81 feet above mean sea level. Discharge measurements made from highway bridge at Florida, 5 miles below gage, or by wading.

CHANNEL AND CONTROL.—Channel straight. Banks high and clean. Control is long stretch of channel below gage; shifting. Zero flow would occur at about gage height −3.0 feet.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 238 second-feet at 10.50 a. m. April 30 (gage height, 2.33 feet); minimum discharge, 78 second-feet April 2 and 3 (gage height, 0.21 foot).

1924–1927: Maximum stage recorded, 3.25 feet at 4.30 a. m. February 25, 1926 (discharge, 367 second-feet); minimum discharge, 52 second-feet from 9 p. m. April 20 to 3 p. m. April 21, 1925. (Gage height, −0.4 foot).

REGULATION.—Flow regulated at headgates a quarter of a mile, and at spillway one-eighth mile above gage. Water is used for power at Napoleon.

ACCURACY.—Stage-discharge relation not permanent; not seriously affected by ice. Rating curve used as standard for shifting-control method fairly well defined. Six discharge measurements, well distributed throughout year and ranging from 176 to 198 second-feet, were made. Operation of water-stage recorder satisfactory except as stated in footnote to table of daily discharge. Daily discharge ascertained by shifting-control method. Records fair.

Daily discharge, in second-feet, of Miami & Erie Canal near Defiance, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	193	173	175	184	194	186	191	208	209	200	226	181
2	185	185	174	185	186	185	171	209	204	197	221	181
3	176	189	172	187	189	184	90	216	194	182	194	17[illegible]
4	168	177	170	185	204	184	182	207	211	182	186	174
5	173	174	169	185	200	184	206	204	204	198	197	174
6	180	169	168	185	172	183	189	198	210	199	200	177
7	179	165	163	184	177	187	206	191	219	220	204	178
8	186	161	160	181	181	187	191	181	228	210	208	190
9	180	171	162	173	178	187	215	177	215	203	194	186
10	175	182	177	183	185	186	209	193	203	201	194	181
11	184	186	184	187	181	186	180	197	190	204	200	181
12	192	182	181	188	190	186	200	194	181	202	197	185
13	191	179	189	189	188	186	204	193	177	197	189	197
14	181	174	183	188	188	192	209	190	173	192	193	192
15	174	175	160	179	187	191	194	200	193	196	189	195
16	172	177	126	184	197	193	203	192	199	193	189	193
17	169	176	164	179	186	193	197	169	201	191	191	198
18	171	181	185	181	191	186	204	90	203	196	197	192
19	182	176	186	187	190	185	208	94	222	194	203	189
20	173	177	191	192	189	183	189	154	204	216	191	187
21	162	181	195	188	183	167	205	198	198	202	187	184
22	162	179	191	182	185	175	207	189	191	197	191	179
23	161	177	187	196	177	181	201	189	197	195	187	177
24	161	179	192	193	182	180	195	189	196	212	184	169
25	165	178	184	181	186	185	198	178	193	211	184	93
26	173	182	184	176	189	178	196	222	189	216	187	92
27	175	173	190	166	204	189	200	213	181	206	181	99
28	177	162	189	166	186	192	193	212	201	200	177	110
29	174	178	190	185	-------	189	209	210	206	199	177	169
30	160	174	190	161	-------	181	215	215	201	199	180	169
31	176	-------	186	182	-------	179	-------	218	-------	214	179	-------

NOTE.—Recorder not operating satisfactorily Oct. 1, 2, 16, 22, 23, Nov. 29, Dec. 2-4, Mar. 1-5, and 8-12 (range in stage only recorded); discharge interpolated.

Monthly discharge of Miami & Erie Canal near Defiance, Ohio, for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	193	160	175	May	222	90	190
November	189	161	176	June	228	173	200
December	195	126	178	July	220	182	201
January	196	161	183	August	226	177	193
February	204	172	187	September	198	92	172
March	193	167	185				
April	215	90	195	The year	228	90	186

MIAMI & ERIE CANAL AT WATERVILLE, OHIO

LOCATION.—At highway bridge at Waterville, Lucas County, opposite gaging station on Maumee River at Waterville.

RECORDS AVAILABLE.—August 27, 1921, to September 30, 1927.

EQUIPMENT.—Vertical staff gage on downstream wing wall of left abutment. Discharge measurements made from footbridge below gage.

CHANNEL AND CONTROL.—Channel straight for a quarter of a mile above and below gage. One channel at all stages. Control is long stretch of channel below gage; shifting. Zero flow occurs at gage height 0.86 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.0 feet February 5 and 21 (discharge, 595 second-feet); minimum stage, 1.30 feet December 11 (discharge, 20 second-feet).

1921–1927: Maximum stage recorded, 7.07 feet March 2, 1922 (discharge, 610 second-feet). No flow in canal March 15, 1923, January 8–10, 12–16, and March 6–21, 1924.

REGULATION.—Flow in canal is regulated at the head gate at Grand Rapids, 10 miles upstream. The water is used for power at Maumee.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve fairly well defined. Six measurements ranging from 426 to 533 second-feet, were made during year and check the curve. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except those for periods of ice effect, which are fair.

Daily discharge, in second-feet, of Miami & Erie Canal at Waterville, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	464	506	464	492	492	450	461	478	450	464	464	423
2	478	464	450	492	535	436	450	464	478	478	464	410
3	478	423	464	478	535	492	478	450	464	464	478	410
4	478	360	504	506	535	464	478	450	535	450	478	397
5	478	423	464	506	595	464	520	478	423	436	478	384
6	478	464	436	478	506	478	478	478	478	436	478	372
7	464	464	492	478	535	436	492	478	478	450	478	360
8	450	464	464	478	423	436	478	464	478	450	478	348
9	450	464	423	478	397	478	464	464	478	450	478	348
10	478	464	218	478	450	450	450	478	478	450	464	360
11	464	450	20	478	436	450	464	478	464	450	450	360
12	464	450	84	478	423	478	450	478	450	450	450	360
13	450	450	384	478	464	450	478	478	450	450	450	372
14	464	450	492	478	450	506	478	478	450	450	450	372
15	464	450	492	478	436	478	464	464	464	450	450	397
16	464	450	492	464	464	464	478	450	464	450	450	397
17	464	450	450	464	464	450	492	464	464	450	450	410
18	464	450	384	464	336	450	478	464	464	450	397	450
19	464	450	464	464	450	492	492	492	464	450	303	436
20	464	450	464	464	520	492	506	506	478	436	281	436
21	464	450	464	478	595	478	464	478	478	450	281	423
22	478	450	478	506	360	450	464	478	478	464	238	423
23	478	450	478	506	410	464	464	478	478	450	208	423
24	478	450	478	478	450	492	478	506	492	450	208	423
25	478	450	478	478	450	464	478	478	478	464	181	410
26	478	450	478	478	450	450	478	436	464	450	181	410
27	492	450	478	478	450	478	450	478	464	450	181	397
28	492	450	478	478	464	450	436	464	464	450	450	397
29	492	450	492	478	------	450	464	478	478	450	450	397
30	492	464	492	506	------	450	464	478	464	450	450	384
31	492	------	492	478	------	478	------	478	------	450	423	------

NOTE.—Gage heights Dec. 19–25 and Dec. 29 to Feb. 4 corrected for thickness of ice cover on basis of observer's notes and weather records and applied to open-water rating curve.

Monthly discharge of Miami & Erie Canal at Waterville, Ohio, for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	492	450	472	May	506	436	473
November	506	360	450	June	535	423	470
December	492	20	430	July	478	436	451
January	506	464	481	August	478	181	391
February	595	336	467	September	450	348	396
March	506	436	464				
April	520	436	472	The year	595	20	452

NORTH BRANCH OF PORTAGE RIVER NEAR BOWLING GREEN, OHIO

LOCATION.—In SE. ¼ sec. 14, T. 5 N., R. 11 E., at highway bridge half a mile below mouth of Poe ditch and 5 miles northeast of Bowling Green, Wood County.

DRAINAGE AREA.—54.0 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 10, 1923, to September 30, 1927.

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

CHANNEL AND CONTROL.—Channel curved above gage, straight for 150 feet below gage. Banks fairly high and clean. One channel at all stages. Control is rock ledge 100 feet below gage. Zero flow would occur at gage height 0.3 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year ending September 30, 1927, 5.5 feet at 6.25 a. m. July 23 (discharge, 642 second-feet; minimum discharge, 0.5 second-foot at 6.15 p. m. July 13 (gage height, 0.64 foot).

1923–1927: Maximum stage recorded, 5.9 feet at 6 p. m. April 8, 1926 (discharge, 756 second-feet; revised); minimum discharge, 0.2 second-foot July 31, August 8 and 9, 1926.

DIVERSIONS AND REGULATION.—Some water which otherwise might not reach this stream above gage is diverted into this stream by drainage ditches.

ACCURACY.—Stage-discharge relation permanent during years ending September 30, 1926 and 1927, except as affected by ice, débris, and aquatic vegetation. Rating curve fairly well defined. Nine discharge measurements during 2-year period at high and low stages check the curve for clean control or indicate amount of backwater. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, using shifting-control method May 1 to September 26 and October 1 to December 15, 1926, January 19–29, and April 1 to September 18, 1927, except as indicated in footnote to daily-discharge table. Records fair.

Daily discharge, in second-feet, of North Branch of Portage River near Bowling Green, Ohio, for the years ending September 30, 1926 and 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1925–26												
1	1.4	2.2	32	3.7	44	96	107	18	2.6	0.7	3.5	2.4
2	1.9	2.2	23	9.5	35	74	85	15	2.2	.7	5.8	8.0
3	2.2	1.9	20	19	28	68	243	12	1.3	.7	2.6	4.6
4	7.1	2.2	20	23	26	72	243	10	1.3	.6	1.7	7.6
5	5.0	2.2	52	27	25	72	166	9.5	1.3	.5	1.3	17
6	4.1	1.9	72		26	43	124	8.5	1.2	.3	.7	41
7	3.0	3.7	55		35	37	204	7.6	1	.3	.3	44
8	2.8	36	32	20	45	62	708	5.8	1	.3	.2	36
9	5.0	39	23		44	71	686	4.1	1	.3	.2	30
10	2.6	28	24		40	32	494	3.7	1	5.0	.5	27
11	1.9	19	24		38	23	217	3.3	1.2	1.4	.4	23
12	1.9	22	25		37	21	142	2.8	1.4	.9	.3	19
13	1.5	118	17	15	38	17	90	2.8	1.0	18	.6	19
14	1.4	112	7.6		59	15	72	3.0	9.5	49	1.1	15
15	1.4	112			71	13	51	3.3	19	29	1.4	12
16	1.5	154		23	80	22	46	3.0	24	22	1.0	20
17	3.0	102	7	46	90	14	37	2.8	17	17	.8	15
18	2.2	62		124	191	12	27	2.8	14	11	.7	6.7
19	1.4	48		284	204	12	22	6.3	12	8	.7	4.1
20	1.4	39		298	166	38	20	3.3	11	4.6	.6	4.1
21	1.4	32		191	154	55	18	2.6	5.4	3.7	118	3.5
22	2.2	26		178	107	56	19	2.2	3.7	1.3	107	2.2
	2.4	22	6	166	34	270	21	2.2	2.2	.7	74	34
24	3.5	24		154	32	256	19	1.9	1.7	.5	46	204
25	5.0	15		64	438	178	18	1.5	1.4	.4	22	312

Daily discharge, in second-feet, of North Branch of Portage River, near Bowling Green, Ohio, for the years ending September 30, 1926 and 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
26	2.2	14		45	474	118	16	2.4	1.2	0.3	13	326
27	1.7	26		37	256	102	17	2.4	1.2	.3	8.5	230
28	2.2	64		33	124	74	23	2.6	1.2	.8	6.3	191
29	2.6	54	4	32	-------	52	23	4.1	.9	.6	3.7	154
30	2.6	37		34	-------	39	22	3.3	1.0	.3	3.0	102
31	2.6	-------		37	-------	54	-------	2.8	-------	.2	2.4	------
1926–27												
1	112	37	43		371	48	38	12	178	1.4	38	2.8
2	284	31	35		166	58	52	10	130	1.1	243	3.0
3	204	25	31		154	51	50	9.0	107	1.1	124	2.8
4	148	20	27		178	44	38	7.6	256	1.0	58	3.7
5	136	17	26	10	256	52	284	6.3	284	1.2	32	3.3
6	130	14	28		341	166	312	3.7	191	1.0	15	4.1
7	118	12	22		270	178	142	5.4	148	1.1	12	4.1
8	80	10	24		178	178	85	5.8	124	1.4	85	3.7
9	60	17	27		130	112	63	6.3	102	1.5	112	4.1
10	44	20	29		96	74	47	12	80	1.0	74	4.6
11	37	16	30		74	59	34	8.0	67	1.1	38	3.7
12	31	12	31		56	52	28	8.0	61	1.4	22	4.1
13	28	10	39		49	80	25	7.6	38	.9	15	4.1
14	22	9.0	49	10	74	154	22	14	26	2.6	14	4.6
15	17	11	62		63	102	19	22	20	1.3	12	4.1
16	15	18			85	71	26	22	15	2.8	10	3.7
17	14	15			166	59	16	28	12	2.8	8.0	1.9
18	16	14			166	85	17	33	14	1.7	5.8	3.5
19	14	12		58	191	178	16	178	16	1.4	5.4	3.5
20	10	11	17	112	217	387	15	243	9.5	1.2	5.4	2.8
21	10	8.5		136	191	598	15	124	10	1.2	3.7	2.6
22	12	7.6		191	118	514	14	96	21	204	2.6	1.5
23	10	5.4		204	53	326	12	85	15	598	5.0	1.9
24	14	4.1		178	42	178	9.5	90	7.1	371	8.5	1.7
25	18	5.4		148	80	118	12	136	6.7	148	8.0	1.1
26	20	6.1		148	85	102	15	130	7.6	85	6.7	1.4
27	15	102	12	166	71	80	21	107	5.4	43	3.7	2.6
28	13	85		178	52	61	19	90	3.3	25	3.3	3.3
29	16	72		217	-------	51	18	85	2.4	20	3.7	3.5
30	18	51		554	-------	46	17	130	1.5	14	3.7	4.1
31	36	-------		514	-------	30	-------	178	-------	10	3.0	------

NOTE.—The above records of daily discharge for 1925–26 supersede those published in Water-Supply Paper 624. Stage-discharge relation affected by ice Dec. 10, 11, 15–31, 1925, Jan. 6–15, Dec. 16–31, 1926, and Jan. 1–18, 1927; discharge estimated from weather records and by comparison with flow of near-by streams.

Monthly discharge of North Branch of Portage River near Bowling Green, Ohio, for the years ending September 30, 1926 and 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
1925–26				1926–27			
October	7.1	1.4	2.62	October	284	10	54.9
November	154	1.9	40.7	November	102	4.1	22.6
December	72	4	16.9	December	62	----------	23.7
January	298	3.7	64.6	January	554	----------	96.3
February	474	25	105	February	371	42	142
March	270	12	66.7	March	598	30	138
April	708	16	133	April	312	9.5	49.4
May	18	1.5	5.02	May	243	3.7	61.1
June	24	.9	4.80	June	284	1.5	65.3
July	49	.2	5.79	July	598	.9	49.9
August	118	.2	13.8	August	243	2.6	31.6
September	326	2.2	63.8	September	4.6	1.1	3.20
The year	708	.2	42.8	The year	598	.9	61.2

NOTE.—The above records of monthly discharge for 1925–26 supersede those published in Water-Supply Paper 624.

SANDUSKY RIVER NEAR BUCYRUS, OHIO.

LOCATION.—In NE. ¼ sec. 10, T. 3 S., R. 16 E., at highway bridge 1½ miles west of Bucyrus, Crawford County.

DRAINAGE AREA.—89.8 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 20, 1925, to September 30, 1927.

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

CHANNEL AND CONTROL.—Channel straight for 300 feet above and below gage. Right bank high and wooded; left bank fairly high. Control is riffle of boulders and coarse gravel at remains of old dam 100 feet below gage. Zero flow would occur at gage height 0.4 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.0 feet at 8.30 a. m. March 21 (discharge, 2,430 second-feet); minimum stage, 0.72 foot at 5.45 p. m. September 4 (discharge, 0.9 second-foot).

1925–1927: Maximum and minimum stages, same as given above.

DIVERSIONS AND REGULATION.—Negligible.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined by 11 discharge measurements, four of which, ranging from 6 to 531 second-feet, were made during the year. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Daily discharge, in second-feet, of Sandusky River near Bucyrus, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	38	242	96	27	96	76	160	58	64	5.7	7.0	2.7
2	200	142	64	25	82	37	322	37	41	12	5.7	2.7
3	134	103	48	24	96	45	151	31	31	11	5.1	3.0
4	118	76	41	27	220	36	103	26	58	10	4.4	.9
5	1,320	58	32	31	655	39	373	24	82	9.7	4.4	1.4
6	1,360	50	37	31	620	242	200	20	34	7.7	3.9	2.0
7	400	40	28	35	347	310	96	17	24	14	3.9	11
8	180	35	40	34	210	430	70	17	21	7.0	5.7	9.0
9	103	48	53	31	160	160	170	20	17	6.0	4.2	12
10	70	103	38	18	126	96	170	27	15	5.7	4.4	43
11	53	58	37	17	76	76	82	27	13	118	3.9	24
12	43	40	32	16	47	70	58	21	12	22	3.9	14
13	38	34	170	12	53	82	58	17	11	12	3.9	29
14	35	32	298	21	70	550	70	19	12	14	4.4	64
15	30	38	58	20	347	200	51	17	11	14	3.7	21
16	26	151	70	20	200	103	47	26	9.4	8.4	3.7	11
17	34	126	37	16	210	76	46	40	8.4	8.4	3.4	8.4
18	37	89	22	15	160	110	41	37	29	6.7	3.2	7.7
19	28	89	16	220	76	430	35	1,320	17	6.0	3.4	7.0
20	26	58	21	1,660	53	1,460	29	690	14	5.1	3.2	5.7
21	23	51	23	585	49	2,070	27	190	11	7.4	3.0	5.7
22	33	45	23	1,410	38	620	24	89	21	134	3.0	6.7
23	58	38	22	400	82	253	23	347	14	70	3.0	5.7
24	134	40	53	180	242	160	20	430	11	29	3.9	4.4
25	1,320	41	118	118	275	118	20	373	9.7	17	3.4	3.7
26	430	231	34	110	373	103	27	253	8.4	11	3.2	3.4
27	180	430	49	96	151	89	31	118	7.4	9.7	3.4	3.0
28	110	134	37	46	82	70	32	70	7.0	8.4	3.0	3.2
29	805	103	33	134	-------	58	64	103	6.4	8.7	3.0	5.7
30	520	151	37	690	-------	51	151	160	6.4	9.0	3.9	4.4
31	690	-------	29	220	-------	45	-------	126	-------	7.7	3.0	-------

NOTE.—Discharge Dec. 18–20 and Jan. 12–18 determined from mean daily gage heights corrected for ice effect.

Monthly discharge of Sandusky River near Bucyrus, Ohio, for the year ending September 30, 1927

[Drainage area, 898 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,360	23	277	3.08	3.55
November	430	32	95.9	1.07	1.19
December	298	16	54.7	.609	.70
January	1,660	12	203	2.26	2.61
February	655	38	186	2.07	2.16
March	2,070	36	267	2.97	3.42
April	373	20	91.7	1.02	1.14
May	1,320	17	153	1.70	1.96
June	82	6.4	20.9	.233	.26
July	134	5.1	19.8	.220	.25
August	7.0	3.0	3.91	.044	.05
September	64	.9	10.8	.120	.13
The year	2,070	.9	115	1.28	17.42

SANDUSKY RIVER NEAR UPPER SANDUSKY, OHIO

LOCATION.—In sec. 21, T. 2 S., R. 14 E., at highway bridge 2 miles northeast of Upper Sandusky, Wyandot County. Rock Run enters on right three-fourths mile below gage.

DRAINAGE AREA.—299 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 20, 1921, to September 30, 1927.

EQUIPMENT.—Au water-stage recorder on left bank at highway bridge. Discharge measurements made from bridge at gage or by wading.

CHANNEL AND CONTROL.—Channel is straight for 400 feet above gage but is divided by island; straight for 1,000 feet below gage. One channel at all stages. Banks are low and wooded. All water flows under bridge up to gage height 11.3 feet when road leading to bridge on right bank is overflowed. Control for low water is riffle 200 feet below gage, composed of rock ledge and gravel. At high stages control is long stretch of channel below gage. Zero flow would occur at gage height 0.55 foot.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 10.3 feet at 9 p. m. March 21 (discharge, 6,530 second-feet); minimum stage, from recorder, 1.08 feet at 2 p. m. August 13 (discharge, 7.4 second feet).

1921–1927: Maximum stage recorded, that of March 21, 1927; minimum stage, from recorder, 1.05 feet from noon to midnight September 5, 1925 (discharge, 3.8 second-feet).

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined. Four discharge measurements, ranging from 20 to 5,000 second-feet, were made during year and check the curve closely. Operation of recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting gage-height graph, balancing the areas above and below the mean height or, for days of considerable fluctuation in stage, by averaging results for shorter intervals. Records excellent except those for periods of ice effect or missing gage-height record, which are fair.

Daily discharge, in second-feet, of Sandusky River near Upper Sandusky, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	241	1,060	330		745	293	304	293	330	22	25	
2	484	555	258		465	224	1,120	177	196	21	26	
3	600	406	192		445	196	745	134	134	22	33	
4	465	311	160		745	171	425	116	132	28	21	
5	2,150	241	132	100	1,320	177	730	97	258	24	16	10
6	4,470	205	102		2,160	465	578	86	202	21	13	
7	3,200	177	162		1,420	950	488	75	121	22	11	
8	895	154	129		845	845	311	77	95	22	12	
9	532	154	148		600	645	465	88	79	21	10	
10	367	224	160		465	348	745	86	67	20	10	76
11	293	241	132		330	258	445	90	60	18	9.3	
12	224	168	124		241	224	293	88	54	73	8.4	
13	196	143	209		205	258	258	82	50	46	11	56
14	171	132	745	60	278	745	293	77	46	29	13	64
15	154	129			845	695	258	77	46	28	14	99
16	137	177			745	367	224	88	41	29	14	56
17	129	330			695	258	241	121	36	24	13	34
18	124	275			578	275	224	137	36	17	10	28
19	116	241			425	894	205	1,840	56	14	10	25
20	99	208			182	3,320	189	3,010	52	14	10	22
21	95	168		2,850	232	6,190	162	1,210	41	13	11	18
22	93	140			189	4,730	151	600	337	32	12	16
23	143	137	140		196	1,400	134	386	180	258	11	15
24	278	132		1,060	425	745	119	848	90	151	19	13
25	1,740	132		695	645	532	109	1,180	60	66	31	13
26	2,100	326		695	1,240	406	102	845	48	37		14
27	795	1,040		1,420	745	348	107	600	37	27		12
28	445	695		1,420	386	293	116	348	31	21	10	12
29	868	386		895	-------	241	177	293	27	20		14
30	1,480	348		2,250	-------	202	406	406	26	25		20
31	1,550	-------		2,160	-------	177	-------	367	-------	27		------

NOTE.—Water-stage recorder not operating Jan. 19–23 and Aug. 26 to Sept. 12; stage-discharge relation affected by ice Dec. 15 to Jan. 18; discharge estimated.

Monthly discharge of Sandusky River near Upper Sandusky, Ohio, for the year ending September 30, 1927

[Drainage area, 299 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	4,470	93	795	2.66	3.07
November	1,060	129	301	1.01	1.13
December	745	----------	173	.579	.67
January	----------	----------	848	2.84	3.27
February	2,160	182	635	2.12	2.21
March	6,190	171	867	2.90	3.34
April	1,120	102	337	1.13	1.26
May	3,010	75	449	1.50	1.73
June	337	26	98.9	.331	.37
July	258	13	38.5	.129	.15
August	----------	----------	14.0	.047	.05
September	----------	----------	30.5	.102	.11
The year	6,190	----------	382	1.28	17.36

SANDUSKY RIVER NEAR MEXICO, OHIO

LOCATION.—In sec. 13, T. 1 N., R. 14 E., at highway bridge 4¼ miles north of Mexico, 5 miles south of Tiffin, Seneca County, and 3 miles above mouth of Honey Creek.

DRAINAGE AREA.—776 square miles (measured on topographic maps).

RECORDS AVAILABLE.—March 1, 1923, to September 30, 1927, at present site; November 17, 1898, to November 17, 1900, at highway bridge at Mexico.

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

CHANNEL AND CONTROL.—Channel straight for 800 feet above and below gage. Right bank high and wooded; left bank fairly high and wooded, subject to overflow at extremely high water. One channel at all stages. Control for low water is riffle of boulders on rock ledge 100 feet below gage; fairly permanent. Control at high stages is long stretch of channel below gage. Zero flow would occur at gage height 1.1 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 19.9 feet at 1.30 p. m. March 22 (discharge, 13,900 second-feet); minimum stage, 1.80 feet August 27, 28, 30, September 2, 4, 7, and 30 (discharge, 24 second-feet).

1923–1927: Maximum stage recorded, that of March 22, 1927; minimum stage, 1.52 feet at 12.30 p. m. September 12, 1925 (discharge, 6 second-feet).

DIVERSIONS AND REGULATION.—Negligible.

ACCURACY.—Stage-discharge relation for low water changed during high water on March 22; affected by ice as indicated in footnote to table of daily discharge. Rating curve well defined. Two discharge measurements during year at low water check the curve closely. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except those for period of ice effect, which are fair.

Daily discharge, in second-feet, of Sandusky River near Mexico, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	595	1,930	805		7,300	770	456	1,230	805	56	181	26
2	2,100	1,530	560		5,500	595	2,520	560	525	45	181	24
3	1,430	965	393		2,640	490	2,640	456	334	54	181	30
4	1,730	560	278		2,220	560	1,680	334	252	43	181	24
5	1,980	490	252		2,950	1,330	2,520	252	1,280	34	101	28
6	5,680	456	252	200	5,000	2,340	3,090	181	665	45	69	26
7	6,040	424	252		4,760	2,520	1,880	159	490	56	84	24
8	6,130	334	278		3,510	2,760	885	159	278	84	138	28
9	2,460	306	320		1,880	1,880	1,930	148	228	69	101	69
10	965	292	306		1,430	1,140	1,880	138	159	56	69	334
11	735	278	306		1,140	735	1,430	138	138	54	52	204
12	560	393	320		665	735	770	128	119	49	56	181
13	456	334	560		630	700	595	119	101	56	52	101
14	393	306	1,680		595	1,780	700	119	87	56	54	456
15	334	278	1,140	150	2,640	1,930	630	159	75	56	56	424
16	292	265			2,820	1,430	595	170	84	54	43	204
17	252	292			2,280	770	665	240	81	56	38	138
18	334	278			1,480	630	560	306	101	49	41	101
19	204	393			1,180	595	424	2,340	159	47	41	87
20	193	348	250	1,230	845	5,860	334	5,240	159	41	43	78
21	182	306			4,440	424	10,100	306	6,310	159	36	38	61
22	193	278			7,400	393	13,900	278	2,640	393	56	34	52
23	204	252			7,900	560	11,000	252	925	630	69	30	43
24	595	227	204		5,860	845	3,440	228	1,180	845	595	26	36
25	2,640	227			3,650	1,730	1,680	204	1,680	525	334	30	38
26	3,510	965			3,090	2,460	1,090	148	2,340	204	181	28	43
27	3,020	1,530			2,520	1,780	1,000	181	1,680	192	138	24	36
28	1,330	1,880	200		2,220	1,280	770	192	965	138	112	24	30
29	1,530	1,730			1,930	-------	665	216	925	101	91	26	26
30	2,820	1,180			5,860	-------	525	525	885	84	78	24	24
31	3,300	-------			7,700	-------	490	-------	925	-------	265	28	------

NOTE.—Discharge Dec. 16-23 and Dec. 25 to Jan. 19 estimated because of ice.

Monthly discharge of Sandusky River near Mexico, Ohio, for the year ending September 30, 1927

[Drainage area, 776 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	6,130	182	1,680	2.16	2.49
November	1,930	227	634	.817	.91
December	1,680	----------	365	.470	.54
January	7,900	----------	1,840	2.37	2.73
February	7,300	393	2,180	2.81	2.93
March	13,900	490	2,390	3.08	3.55
April	3,090	148	957	1.23	1.37
May	6,310	119	1,070	1.38	1.59
June	1,280	75	313	.403	.45
July	595	34	97.3	.125	.14
August	181	24	66.9	.086	.10
September	456	24	99.2	.128	.14
The year	13,900	24	970	1.25	16.94

SANDUSKY RIVER NEAR FREMONT, OHIO

LOCATION.—In sec. 17, T. 4 N., R. 15 E., at highway bridge 2½ miles below mouth of Wolf Creek and 3½ miles southwest of Fremont, Sandusky County.

DRAINAGE AREA.—1,250 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 8, 1923, to September 30, 1927. November 18, 1898, to March 9, 1901, 4 miles below present site.

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

CHANNEL AND CONTROL.—Channel curved above but straight for 1,500 feet below gage. Banks high and wooded. Control for low water is rock ledge just below gage. Control for high 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, 9.1 feet at 5 p. m. March 22 (discharge, 13,500 second-feet); minimum stage, 1.00 foot August 26, September 1, 2, 9, and 29 (discharge, 29 second-feet).

1923–1927: Maximum stage recorded, that of March 22, 1927; minimum stage, 0.90 foot at 7 a. m. September 1, 1925 (discharge, 15 second-feet; revised).

DIVERSIONS AND REGULATION.—Negligible.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined. Two discharge measurements during year at low and medium stages check the curve closely. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except those for period of ice effect, which are fair.

Daily discharge, in second-feet, of Sandusky River near Fremont, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,320	3,740	1,120		6,850	1,540	775	1,320	1,250	178	592	33
2	2,240	2,560	935		4,970	1,180	2,890	1,250	935	146	392	31
3	2,400	1,770	725		3,400	1,060	2,720	725	635	88	430	63
4	2,000	1,180	592		3,400	880	3,060	550	1,250	43	297	45
5	4,430	825	518		4,430	880	3,230	469	2,240	63	222	97
6	6,850	725	377	350	6,470	3,230	4,610	400	1,320	129	190	80
7	6,280	635	446		6,090	4,610	3,230	355	825	69	184	43
8	6,280	550	454		4,970	4,250	1,840	325	592	92	88	37
9	4,250	510	635		3,400	3,230	1,180	325	461	162	156	29
10	1,840	534	680		2,400	2,240	2,080	362	377	156	276	92
11	1,250	680	592		1,770	1,390	2,080	377	304	162	168	325
12	880	635	550		1,180	1,120	1,390	362	262	73	162	255
13	775	542	725		935	1,060	935	370	242	59	92	304
14	680	423	2,890		880	2,240	825	385	222	76	59	400
15	635	423	1,920	300	4,610	2,560	880	446	210	156	124	518
16	518	454			4,430	2,000	825	592	190	124	73	477
17	469	592			4,250	1,390	725	680	197	52	41	290
18	446	1,250	400		2,890	1,120	725	680	216	73	83	197
19	400	680			2,080	2,560	635	3,060	173	76	69	140
20	385	592		2,000	1,250	7,230	592	5,710	178	83	47	134
21	348	550		7,000	825	12,000	550	6,280	248	76	43	111
22	362	501		11,400	775	13,300	501	4,790	340	80	111	106
23	415	423		9,600	825	11,600	430	2,240	635	392	97	47
24	725	400		8,000	1,620	6,470	400	1,320	1,120	370	47	83
25	3,910	385		5,710	2,000	2,890	385	2,890	825	775	37	41
26	4,430	1,180		3,740	3,400	2,240	362	2,890	454	469	43	97
27	3,910	3,570	350	3,230	3,400	1,700	392	2,080	297	269	56	140
28	2,240	2,890		2,240	2,400	1,250	392	1,620	229	190	37	41
29	1,770	2,080		1,180	-------	1,120	438	995	216	190	69	37
30	2,890	1,390		8,400	-------	935	542	1,250	197	140	73	56
31	3,910	-------		9,600	-------	825	-------	1,390	-------	534	41	------

NOTE.—Discharge Dec. 16 to Jan. 21 estimated because of ice.

Monthly discharge of Sandusky River near Fremont, Ohio, for the year ending September 30, 1927

[Drainage area, 1,250 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	6,850	348	2,230	1.78	2.05
November	3,740	385	1,090	.872	.97
December	2,890	----------	618	.494	.57
January	11,400	----------	2,530	2.02	2.33
February	6,850	775	3,070	2.46	2.56
March	13,300	825	3,230	2.58	2.97
April	4,610	362	1,320	1.06	1.18
May	6,280	325	1,500	1.20	1.38
June	2,240	173	555	.444	.50
July	775	43	179	.143	.16
August	592	37	142	.114	.13
September	518	29	145	.116	.13
The year	13,300	29	1,380	1.10	14.93

EAST BRANCH OF HURON RIVER NEAR NORWALK, OHIO

LOCATION.—At highway bridge 1¾ miles northwest of Norwalk, Huron County, and 1½ miles below mouth of Cole Creek.

DRAINAGE AREA.—84.9 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 7, 1923, to September 30, 1927.

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

CHANNEL AND CONTROL.—Channel curved above but straight for 500 feet below gage. Banks fairly high and brushy. Control is rock ledge 75 feet below gage. Zero flow would occur at gage height 0.4 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.4 feet at 4 p. m. October 5 (discharge, 3,810 second-feet); minimum stage, 0.94 foot September 1 and 24–26 (discharge, 4.2 second-feet).

1923–1927: Maximum stage recorded, that of October 5, 1926; minimum stage, 0.84 foot August 30 and 31, 1925 (discharge, 2.5 second-feet).

DIVERSIONS AND REGULATION.—Negligible.

ACCURACY.—Stage-discharge relation for low water changed slightly during high water on October 5; affected by ice. Rating curves well defined below 1,600 second-feet and extended above. Three discharge measurements during year at low and medium stages check the curves closely. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except those for periods of ice effect and extremely high and low water, which are fair.

Daily discharge, in second-feet, of East Branch of Huron River near Norwalk, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	63	175	81		153	114	38	22	30	7.6	24	4.5
2	578	103	50		132	81	117	16	18	8.0	13	4.8
3	249	74	39		147	62	60	16	14	13	9.6	4.8
4	177	52	50		313	23	60	16	72	11	8.0	6.0
5	3,210	42	60	20	645	60	129	14	58	8.4	6.4	5.7
6	645	36	60		645	930	120	13	25	8.0	5.7	5.1
7	277	33	33		313	408	50	12	19	18	5.1	4.8
8	147	27	64		178	369	33	13	16	13	40	5.4
9	79	46	79		132	135	33	13	14	11	25	6.4
10	58	89	46		97	67	30	12	13	8.8	18	6.8
11	50	58	39		44	52	25	13	12	7.6	12	8.8
12	44	40	38		28	40	22	13	12	6.4	10	9.2
13	40	28	369		27	40	24	13	12	6.0	9.2	11
14	46	32	277	20	469	175	24	14	12	6.8	8.4	6.8
15	36	33	67		555	89	22	18	10	9.2	7.6	6.4
16	26	86			388	56	18	39	11	8.8	7.2	6.4
17	25	103			277	42	18	52	10	7.6	6.4	7.6
18	25	84			211	106	18	32	12	8.0	5.7	7.2
19	30	62		260	86	428	17	490	12	6.8	6.0	6.4
20	34	48	25	1,340	74	2,150	17	260	12	6.0	5.4	5.7
21	36	40		645	50	1,130	16	74	11	5.7	5.7	6.0
22	39	39		1,340	44	369	16	30	16	14	6.0	6.0
23	84	27		600	369	192	16	25	13	18	5.1	6.0
24	578	39		388	332	156	17	26	12	11	8.4	5.4
25	1,290	36		192	242	100	19	222	12	9.2	6.4	4.8
26	408	408		108	388	92	32	81	13	8.0	5.7	4.2
27	166	388	20	64	239	81	58	42	10	7.2	5.1	4.2
28	106	166		39	129	67	56	21	9.2	6.4	5.1	4.2
29	132	123		185	-------	54	36	20	8.0	8.4	5.4	5.1
30	690	114		1,460	-------	44	34	21	7.6	13	6.4	6.0
31	448	-------		350	-------	39	-------	94	-------	18	6.0	-------

NOTE.—Gage not read Dec. 4; discharge interpolated. Discharge Dec. 16 to Jan. 18 estimated because of ice.

Monthly discharge of East Branch of Huron River near Norwalk, Ohio, for the year ending September 30, 1927

[Drainage area, 84.9 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,210	25	317	3.73	4.30
November	408	27	87.7	1.03	1.15
December	369		55.2	.650	.75
January	1,460		236	2.78	3.20
February	645	27	240	2.83	2.95
March	2,150	23	250	2.95	3.40
April	129	16	39.2	.462	.52
May	490	12	56.4	.664	.77
June	72	7.6	16.9	.199	.22
July	18	5.7	9.64	.114	.13
August	40	5.1	9.61	.113	.13
September	11	4.2	6.06	.071	.08
The year	3,210	4.2	110	1.30	17.60

EAST BRANCH OF BLACK RIVER AT ELYRIA, OHIO

LOCATION.—At Fuller Street Bridge, 1¼ miles southeast of center of Elyria, Lorain County, and 3 miles by river above junction with West Branch.

DRAINAGE AREA.—211 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 8, 1922, to September 30, 1927.

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

CHANNEL AND CONTROL.—Channel straight for 1,000 feet above and 700 feet below gage. Banks high and clean; not subject to overflow. One channel at all stages. Bed is solid rock ledge extending diagonally across channel about 25 feet below gage. Control for high 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, 6.7 feet at 5.30 p. m. March 21 (discharge, 4,770 second-feet); minimum stage, 0.60 foot July 21, August 31, September 1, 2, and 5 (discharge, 0.3 second-foot).

1922–1927: Maximum stage recorded, 9.9 feet at 5.30 a. m. June 29, 1924 (backwater caused by tornado); maximum discharge, 4,770 second-feet February 26, 1926, and March 21, 1927 (gage height, 6.7 feet). Minimum stage recorded, 0.57 foot October 5 and 6, 1922 (discharge, 0.2 second-foot).

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined below 3,000 second-feet and extended above. Two discharge measurements, made at low and medium stages during year, check the curve. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except those for periods of ice effect and extremely high water, which are fair.

Daily discharge, in second-feet, of East Branch of Black River at Elyria, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	141	860	198		75	211	69	93	30	5.5	3.9	0.3
2	940	580	203		134	168	77	69	28	6	5.5	.3
3	825	280	164		295	128	131	52	19	5	.6	.4
4	510	228	175		445	106	117	45	183	3.9	.5	.4
5	1,190	172	98	40	1,020	685	198	39	207	3.9	.5	.3
6	1,370	106	22		2,420	1,020	175	36	128	3.4	.6	.4
7	720	74	27		1,020	1,020	117	32	62	2.8	.6	.6
8	363	41	28		510	510	114	24	38	3.9	6	.6
9	106	73	36		261	385	128	22	22	2.8	4.9	.7
10	68	98	33		232	150	86	22	22	3.4	2.8	1.8
11	68	106	41		215	128	69	30	22	4.9	1.8	2.8
12	73	73	37		183	108	71	49	20	2.8	1.8	3.9
13	71	20	33		190	100	66	38	17	2.8	3.9	10
14	66	16	59	40	198	1,550	53	33	22	2.8	4.4	19
15	60	13			1,190	1,370	50	49	19	2.8	4.9	10
16	57	825			940	650	42	73	14	2.8	3.9	9.4
17	59	790			650	164	33	330	14	2.8	2.8	7.7
18	55	720			1,460	270	33	825	16	2.8	2.8	14
19	125	300	70	352	1,100	900	30	1,640	14	3.4	1.8	21
20	157	172		1,020	720	3,120	28	2,320	11	.5	.7	12
21	128	122		1,920	77	4,440	28	2,220	9.4	.3	1.8	9.4
22	100	80		1,820	98	3,120	28	190	12	2.3	.7	11
23	545	39		2,320	415	1,550	32	117	16	21	2.3	10
24	900	30		1,370	825	940	36	415	15	8.6	1.8	6.8
25	2,520	15		860	860	300	36	478	11	4.9	.7	3.9
26	2,020	310		755	1,020	157	57	242	9.4	3.9	.7	4.4
27	755	363	50	270	650	147	75	237	9.4	3.9	1.8	3.9
28	305	246		141	237	164	71	147	9.4	4.9	3.4	4.9
29	374	232		190	-------	175	194	69	7.7	7.7	1.8	5.5
30	755	246		1,730	-------	117	141	42	6.8	15	.5	4.9
31	1,100	-------		790	-------	71	-------	36	-------	7.7	.3	------

NOTE.—Discharge Dec. 5 interpolated because of slush. Discharge Dec. 15 to Jan. 18 estimated because of ice.

Monthly discharge of East Branch of Black River at Elyria, Ohio, for the year ending September 30, 1927

[Drainage area, 211 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,520	55	533	2.53	2.92
November	860	13	241	1.14	1.27
December	----------	----------	70.5	.334	.38
January	2,320	----------	460	2.18	2.51
February	2,420	75	623	2.95	3.07
March	4,440	71	772	3.66	4.22
April	198	28	79.5	.377	.42
May	2,320	22	323	1.53	1.76
June	207	6.8	33.8	.160	.18
July	21	.3	4.81	.023	.03
August	6.0	.3	2.27	.011	.01
September	21	.3	6.01	.028	.03
The year	4,440	.3	261	1.24	16.80

ROCKY RIVER NEAR BEREA, OHIO

LOCATION.—At highway bridge just below junction of East and West Branches, 3 miles northwest of Berea, Cuyahoga County.

DRAINAGE AREA.—269 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 2, 1923, to September 30, 1927.

EQUIPMENT.—Chain gage on highway bridge. Discharge measurements made from bridge at gage or by wading. Zero of gage is 650.52 feet above mean sea level.

CHANNEL AND CONTROL.—Channel straight for 1,000 feet below gage. Branches join just above gage. Banks fairly high and clean. Control is rock ledge and large flat stones 150 feet below gage. Zero flow would occur at gage height 0.4 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.6 feet at 5.30 p. m. March 20 (discharge, 7,420 second-feet); minimum stage, 0.76 foot at 5 p. m. September 2 and 6 p. m. September 6 (discharge, 8 second-feet).

1923–1927: Maximum stage recorded, 18.6 feet at 6 a. m. June 29, 1924 (backwater caused by tornado). Maximum discharge, 8,160 second-feet at 6.15 p. m. April 8, 1926 (gage height, 8.0 feet); minimum stage, 0.43 foot at 6.15 p. m. September 2, 1925 (discharge, 3 second-feet).

The flood of March, 1913, reached a stage corresponding to gage height 20.9 feet.

DIVERSIONS AND REGULATION.—Negligible.

ACCURACY.—Stage-discharge relation for low water changed during high water on March 21; seriously affected by ice. Rating curves fairly well defined below 6,000 second-feet; extended above. Two measurements made during the year at medium stages and two at low stages check the curves closely. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except those for periods of ice effect, which are fair.

Daily discharge, in second-feet, of Rocky River near Berea, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	143	665	318		395	255	103	60	50	13	22	9
2	1,710	595	190		365	217	136	48	34	14	18	9
3	1,910	365	133		428	175	146	42	25	13	15	9
4	1,420	240	182		815	98	122	43	72	12	13	9
5	2,230	182	245		1,330	156	610	57	409	12	13	9
6	1,610	143			2,340	1,330	423	43	98	12	12	8
7	1,330	114			1,020	1,240	162	34	58	13	12	10
8	454	88			492	1,150	108	30	38	13	85	12
9	230	149	150		421	560	80	28	28	12	85	60
10	171	1,060		150	308	204	82	31	22	16	31	33
11	240	1,100			160	171	70	39	23	14	20	28
12	217	525	190		136	149	55	34	21	12	16	21
13	160	190	525		109	130	55	29	20	12	14	18
14	153	130	1,610		275	2,940	68	36	20	11	15	14
15	123	101	975		1,150	630	64	58	20	13	14	13
16	123	2,690	280		630	330	52	1,130	23	12	13	14
17	127	1,020			815	217	66	1,130	18	12	12	13
18	139	702	150		560	428	62	690	20	12	12	24
19	665	428		560	230	1,020	53	3,330	28	11	11	64
20	447	291		3,330	230	4,340	45	1,180	25	11	11	27
21	313	245	153	1,510	230	6,160	39	430	23	11	10	18
22	383	164	156	4,190	212	1,280	43	159	20	17	10	14
23	778	133	133	1,510	740	500	40	200	20	116	10	13
24	1,420	175	130	702	1,060	312	39	1,040	19	76	11	12
25	4,810	335	217	440	702	218	46	1,180	19	30	10	12
26	2,230	815	560	250	975	192	85	570	19	22	10	12
27	595	1,060	308	168	341	256	181	222	18	17	11	11
28	280	492		123	240	204	430	127	18	16	11	11
29	1,060	492	150	136	-------	192	130	96	16	13	10	12
30	1,610	702		2,940	-------	143	82	66	15	22	10	11
31	1,910	-------		1,100	-------	143	-------	58	-------	33	9	-------

NOTE.—Discharge Dec. 6-11, 17-20, and Dec. 28 to Jan. 18 estimated because of ice.

Monthly discharge of Rocky River near Berea, Ohio, for the year ending September 30, 1927

[Drainage area, 269 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	4,810	123	935	3.48	4.01
November	2,690	88	513	1.91	2.13
December	1,610		271	1.01	1.16
January	4,190		634	2.36	2.72
February	2,340	109	597	2.22	2.31
March	6,160	98	817	3.04	3.50
April	610	39	123	.457	.51
May	3,330	28	394	1.46	1.68
June	409	15	41.3	.154	.17
July	116	11	20.1	.075	.09
August	85	9	17.9	.067	.08
September	64	8	17.7	.066	.07
The year	6,160	8	365	1.36	18.43

CUYAHOGA RIVER AT OLD PORTAGE, OHIO

LOCATION.—At highway bridge at Old Portage, Summit County, 4 miles northwest of Akron. Little Cuyahoga River enters 1¼ miles above station.

DRAINAGE AREA.—405 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 27, 1921, to September 30, 1927.

EQUIPMENT.—Au recorder on right bank just below bridge. Discharge measurements made from bridge at gage or by wading.

CHANNEL AND CONTROL.—Channel straight for 300 feet above and below gage. Banks fairly high and wooded. At extremely high stages water flows through second channel on right bank. Bed composed of sand and gravel. Control for low water is riffle 50 feet below gage; control for high water is long stretch of channel below gage.

EXTREMES OF STAGE.—Maximum stage during year, from water-stage recorder, 8.8 feet from 8 to 11 p. m. March 21 (discharge, 3,100 second-feet); minimum stage, from recorder, 1.03 feet from 7 to 9 a. m. September 25 (discharge, 70 second-feet).

1921–1927: Maximum stage, from recorder, 10.8 feet at 9 p. m. June 28, 1924 (discharge, about 3,540 second-feet); minimum stage, from recorder, 0.94 foot at 11.30 a. m. June 13, 1926 (discharge, 40 second-feet).

DIVERSIONS AND REGULATION.—Municipal water supply for Akron is diverted from headwaters of this stream. Return water from Akron enters above this station. A small amount of water is diverted into this stream from Tuscarawas River by Ohio Canal. Flow regulated at reservoir above Akron and at hydroelectric plants at Cuyahoga Falls.

ACCURACY.—Stage-discharge relation for low water changed during high water on March 22; not affected by ice. Rating curve used prior to the change well defined below 2,000 second-feet; extended for higher stages by logarithmic plotting. Rating curve used after change fairly well defined below 300 second-feet; well defined from 300 to 2,000 second-feet; extended for higher stages. Four discharge measurements made during year and ranging from 92 to 1,710 second-feet check respective curves. Operation of water-stage recorder satisfactory except as stated in footnote to table of daily discharge. Daily discharge ascertained by means of discharge integrator. Records good except for period when recorder was not operating, for which they are fair.

Daily discharge, in second-feet, of Cuyahoga River at Old Portage, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,560	1,750	907	380	1,060	1,050	761	469	432	210		130
2	1,410	1,580	878	376	1,010	989	736	452	370	210		120
3	1,280	1,410	839	376	1,030	872	716	440	330	82		114
4	1,120	1,270	789	402	1,080	765	696	427	447	182		85
5	1,100	1,110	709	408	1,140	684	698	410	434	202	240	94
6	1,460	974	586	402	1,460	668	714	374	448	224		196
7	1,470	844	522	386	1,550	853	690	331	435	231		210
8	1,300	764	538	378	1,460	1,090	686	308	358	244		205
9	1,180	762	597	348	1,370	1,270	706	364	352	215	275	259
10	1,160	747	580	363	1,280	1,380	687	366	335	152	253	184
11	1,220	692	558	380	1,150	1,460	630	358	256	229	223	102
12	1,260	630	532	378	1,000	1,380	574	353	178	198	205	158
13	1,130	610	602	351	875	1,200	535	302	211	227	180	202
14	986	588	823	380	832	1,330	502	258	309	179	122	133
15	864	596	830	360	922	1,420	484	208	290	178	220	124
16	762	953	646	304	952	1,280	458	484	206	174	240	96
17	683	1,120	536	251	976	1,180	471	520	230	108	198	107
18	756	1,030	530	315	1,010	1,130	470	655	207	197	193	266
19	788	966	514	765	1,010	1,270	450	1,440	184	222	188	266
20	720	984	490	1,320	916	2,000	454	1,320	262	215	192	224
21	656	944	496	1,330	808	2,000	425	1,100	242		114	180
22	636	872	467	2,180	731	3,010	430	1,020	276		123	186
23	668	778	426	2,450	740	2,910	418	990	290		194	179
24	763	710	414	2,060	974	2,630	402	948	350		211	156
25	1,700	637	420	1,740	1,070	2,150	398	1,070	338		216	86
26	1,880	666	432	1,590	1,230	1,700	450	948	292	230	204	119
27	1,640	733	417	1,370	1,190	1,380	494	853	370		152	159
28	1,700	708	438	1,160	1,120	1,170	548	720	358		87	168
29	1,870	772	430	1,000	-------	1,020	526	568	301		160	176
30	1,760	872	414	1,010	-------	910	506	495	250		192	134
31	1,860	-------	402	1,140	-------	838	-------	466	-------		181	------

NOTE.—No gage-height record July 21 to Aug. 8; flow estimated by comparison with record of flow at new station on Cuyahoga River at Kent, Ohio.

Monthly discharge of Cuyahoga River at Old Portage, Ohio, for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	1,880	636	1,200	May	1,440	208	613
November	1,750	588	902	June	448	178	311
December	907	402	573	July	----------	82	207
January	2,450	251	828	August	----------	87	201
February	1,550	731	1,070	September	266	85	161
March	3,010	668	1,420				
April	761	398	557	The year	3,010	82	669

LITTLE CUYAHOGA RIVER AT AKRON, OHIO

LOCATION.—At foot of Seiberling Street, Akron, Summit County, and half a mile below mouth of Springfield Lake outlet.

DRAINAGE AREA.—42.0 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 10, 1920, to September 30, 1927.

EQUIPMENT.—Friez water-stage recorder on right bank at foot of Seiberling Street. Discharge measurements made by wading or from footbridge below gage.

CHANNEL AND CONTROL.—Channel straight above and below gage. Banks fairly high. One channel at all stages. Control is 32-foot sharp-edged steel weir just below gage. Zero flow would occur at zero gage height.

EXTREMES OF DISCHARGE.—Maximum stage during year occurred on March 22 while water-stage recorder was not operating (estimated discharge, 400 second-feet); minimum mean daily discharge, 10.1 second-feet August 28 and September 5.

1920–1927: Maximum stage not recorded; minimum stage, zero gage height from 8 to 9 p. m. June 24 and 4 p. m. July 14, 1923 (no discharge, on account of regulation above station).

DIVERSIONS AND REGULATION.—Diversion negligible. Flow regulated to some extent at reservoir above station.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve based on weir formula and checked by five current-meter measurements made during year and ranging from 26 to 97 second-feet. Operation of water-stage recorder satisfactory except as stated in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height obtained from gage-height graph by inspection. Records excellent except those for periods during which recorder was not operating, which are fair.

COOPERATION.—Gage-height record furnished by Goodyear Tire & Rubber Co.

The following tables of daily and monthly discharge for the years ending September 30, 1920–1926, are revised data and supersede those published in Water Supply Paper 624.

Daily discharge, in second-feet, of Little Cuyahoga River at Akron, Ohio, for the years ending September 30, 1920–1927

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1920				1920			
1		28	41	16	26	38	26
2		33	32	17	22	36	25
3		18.6	27	18	18.6	40	14.0
4		19.6	26	19	28	35	9.4
5		17.6	32	20	22	50	10.1
6		18.6	36	21	19.6	40	10.8
7		21	29	22	26	47	10.1
8		17.6	26	23	32	42	9.4
9		35	26	24	24	38	8.7
10	23	88	44	25	18.6	37	9.4
11	18.6	51	47	26	26	33	8.7
12	24	32	32	27	26	104	11.6
13	15.8	38	28	28	17.6	160	12.4
14	41	44	26	29	16.7	113	10.8
15	54	40	24	30	21	79	10.8
				31	18.6	68	

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1920–21												
1	27	14.0	32	37	32	46	131	38		18.6		19.6
2	26	21	60	50	27	122	79	36	30	18.6		15.8
3	16.7	21	40	40	26	126	60	37		17.6	20	3.6
4	14.9	17.6	28	32	26	64	54	40	88	17.6		8.0
5	23	15.8	32	33	82	113	46	34	38	18.6		11.6
6	21	16.7	32	30	106	146	44	30	26	18.6	18.6	32
7	27	17.6	25	32	131	170	41	28	22	18.6	32	27
8	28	24	22	76	131	104	45	26	21	27	23	26
9	11.6	23	19.6	44	113	122	57	24	22	32	14.9	26
10	13.2	21	22	26	79	96	56	24	23	18.6	11.6	11.6

Daily discharge, in second-feet, of Little Cuyahoga River at Akron, Ohio for the years ending September 30, 1920–1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1920–21												
11	14.0	18.6	26	22	54	61	53	28	32	17.6	29	14.0
12	22	15.8	26	19.6	47	57	44	28	45	41	19.6	13.2
13	23	14.9	22	16.7	57	78	40	29	24	27	13.2	17.6
14	22	12.4	45	18.6	76	61	50	29	18.6	25	12.4	16.7
15	16.7	13.2	50	18.6	88	50	113	26	15.8	17.6	13.2	23
16	24	16.7	32	15.8	113	49	53	33	26	16.7	12.4	15.8
17	17.6	32	27	14.9	93	44	150	33	17.6	15.8	40	21
18	21	32	22	14.0	40	44	113	32	12.4	16.7	26	18.6
19	21	35	19.6	21	37	37	64	26	15.8	26	22	15.8
20	21	64	15.8	25	32	47	50	25	14.0	24	13.2	41
21	22	96	15.8	32	29	57	44	22	25	18.6	10.8	46
22	22	82	24	79	27	64	57	21	27	17.6	11.6	28
23	11.6	61	79	104	33	45	70	27	17.6	16.7	22	14.9
24	9.4	42	41	50	32	50	57	37	11.6	14.9	21	10.1
25	11.6	46	21	27	27	73	46	113	11.6	26	12.4	32
26	16.7	38	16.7	21	51	44	40	37	16.7	15.8	11.6	23
27	34	32	17.6	15.8	47	113	37	24	23	18.6	10.8	14.0
28	22	28	14.0	21	58	410	36		22	21	10.1	11.6
29	35	24	14.0	21	------	226	34	25	22	28	10.8	11.6
30	26	22	14.9	50	------	104	45		21	15.8	24	26
31	14.0	------	15.8	56	------	113	------		------	15.8	16.7	------
1921–22												
1	11.6	72	32	15.8	23	25	140	38	22	15.8	21	64
2	10.8	113	37	14.9	25	23	89	37	23	14.0	16.7	214
3	26	53	45	15.8	26	23	63	57	28	37	15.8	140
4	35	23	33	35	28	26	63	81	21	28	15.8	113
5	40	14.9	30	117	26	37	63	57	21	21	26	73
6	35	11.6	26	73	26	51	50	60	21	17.6	15.8	61
7	35	11.6	26	33	26	118	44	117	21	21	26	50
8	64	14.0	25	26	26	96	45	73	24	29	44	40
9	40	21	24	25	26	56	45	54	23	28	32	32
10	26	61	21	25	28	50	44	61	28	27	21	32
11	21	50	19.6	25	76	140	140	41	22	26	19.6	50
12	18.6	60	27	23	82	104	113	35	21	24	5.1	72
13	15.8	36	28	24	72	70	73	29	17.6	23	5.1	50
14	14.9	33	28	15.8	36	62	160	27	17.6	22	5.1	44
15	11.6	45	26	14.9	26	55	291	26	24	21	5.1	50
16	11.6	50	25	14.9	17.6	47	150	25	21	26	5.1	44
17	14.0	160	50	14.0	15.8	40	122	26	21	21	8.0	26
18	14.9	144	74	26	21	32	177	36	21	72	11.6	50
19	16.7	120	50	61	61	34	104	91	32	131	32	32
20	32	79	32	42	72	41	74	104	17.6	72	18.6	28
21	28	50	27	29	41	36	72	64	15.8	32	9.4	23
22	21	37	17.6	23	50	35	79	44	15.8	15.8	26	19.6
23	15.8	32	21	11.6	84	37	66	33	32	26	26	14.0
24	15.8	51	57	12.9	70	40	58	28	26	26	26	14.0
25	15.8	57	50	14.3	37	44	58	54	11.6	21	26	15.8
26	14.9	45	30	15.6	29	38	58	54	15.8	15.8	16.7	19.6
27	14.0	61	25	17.0	32	73	57	42	21	21	15.8	21
28	14.0	64	21	18.3	33	108	50	32	37	32	15.8	21
29	14.0	46	19.6	19.6	------	79	47	28	37	26	21	18.6
30	13.2	36	13.2	21	------	131	40	24	15.8	10.1	28	15.8
31	14.0	------	19.6	22	------	203	------	23	------	32	24	------
1922–23												
1	15.8	26	27	37	30	20	10.1	6.8	6.8	2.8	2.4	15.8
2	17.6	28	27	21	46	25	10.8	6.8	8.0	2.8	2.1	12.4
3	26	26	22	16.7	50	26	14.0	7.4	4.6	5.1	26	13.2
4	22	21	18.6	14.0	29	50	37	12.4	6.2	35	24	24
5	15.8	21	33	10.8	29	33	140	11.6	6.2	13.2	13.2	29
6	18.6	44	32	8.0	29	22	96	5.1	5.1	10.1	9.4	25
7	11.6	26	23	8.7	24	15.8	32	6.8	23	8.0	10.1	28
8	11.6	29	37	13.2	13.2	13.2	27	10.8	13.2	3.6	10.1	17.6
9	10.1	29	12.4	14.0	14.0	11.6	22	21	6.2	3.2	10.8	11.6
10	6.8	33	6.8	12.4	8.7	79	17.6	15.8	4.1	5.1	11.6	12.4
11	16.7	21	5.1	17.6	8.6	88	15.8	19.6	4.1	23	11.6	11.6
12	6.2	21	6.8	15.8	9.4	88	13.2	237	4.1	10.1	14.9	18.6
13	4.1	26	5.1	10.1	45	64	13.2	210	4.1	4.1	16.7	18.6
14	6.2	28	5.1	76	32	32	14.0	79	4.1	1.5	14.9	17.6
15	8.0	50	15.8	127	11.6	22	22	53	5.6	1.5	13.2	18.6

Daily discharge, in second-feet, of Little Cuyahoga River at Akron, Ohio, for the years ending September 30, 1920–27—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1922–23												
16	8.0	34	21	64	15.8	79	25	60	5.1	4.1	13.2	10.1
17	8.0	26	19.6	32		50	16.7	54	3.6	3.2	15.8	13.2
18	9.4	23	26	42		28	13.2	40	4.1	4.6	19.6	17.6
19	9.4	24	26	66		22	11.6	26	5.1	5.1	14.9	21
20	9.4	35	8.7		10	15.8	10.8	14.0	6.2	5.1	18.6	51
21	11.4	30	9.4			12.4	9.4	28	4.1	3.2	21	60
22	13.3	29	11.6			44	11.6	18.6	5.1	2.1	23	35
23	15.2	26	12.4	40		57	8.7	11.6	4.1	2.8	19.6	18.6
24	17.2	30	8.0			35	8.0	9.4	1.8	5.1	18.6	18.6
25	19.2	30	9.4			26	8.0	8.0	5.1	4.6	17.6	17.6
26	21	29	21		15	18.6	8.0	6.2	8.0	3.6	12.4	16.7
27	23	29	23	15.8		15.8	7.4	5.6	6.2	3.6	16.7	21
28	25	28	96	57		11.6	6.8	5.6	6.8	5.1	35	24
29	25	28	57	44	-------	9.4	7.4	7.4	5.6	3.2	22	19.6
30	26	28	15.8	28	-------	10.1	6.8	6.2	4.1	4.6	15.8	10.1
31	21	-------	15.8	24	-------	10.1	-------	6.2	-------	4.1	15.8	------
1923–24												
1	14.9	16.7	76	72	50	49	73	67	37	73	9.4	19.6
2	17.6	14.0	38	47	40	57	70	42	42	50	17.6	49
3	17.6	13.2	27	96	40	61	68	46	42	37	15.8	29
4	17.6	16.7	30	72	53	101	58	93	58	42	21	21
5	16.7	29	88	63	101	142	51	53	40	46	28	21
6	12.4	22	106	54	79	96	51	41	35	51	19.6	18.6
7	10.1	22	81	46	49	64	54	35	32	56	18.6	14
8	15.8	35	61	37	40	46	70	33	72	50	17.6	22
9	18.6	29	68	28	32	42	89	47	103	33	17.6	89
10	19.6	21	86	40	34	44	72	44	99	28	17.6	96
11	19.6	16.7	56	286	33	45	54	45	232	28	17.6	60
12	19.6	14.0	54	199	34	47	47	94	113	35	17.6	30
13	19.6	11.6	53	99	33	47	44	96	74	47	21	84
14	14.9	16.7	52	53	34	44	41	137	57	33	24	60
15	21	18.6	50	44	32	35	37	232	45	26	19.6	38
16	19.6	16.7	38	118	28	29	35	131	45	21	15.8	27
17	18.6	18.6	36	177	30	28	34	81	44	17.6	7.4	22
18	18.6	15.8	36	93	30	29	72	89	76	15.8	14.9	19.6
19	18.6	17.6	32	50	32	28	101	111	82	17.6	21	18.6
20	17.6	14.9	29	45	46	29	57	74	50	10.8	18.6	35
21	10.1	13.2	41	40	40	33	50	57	41	14.0	17.6	57
22	15.8	13.2	113	40	37	51	82	49	41	19.6	21	44
23	15.8	21	133	32	29	93	63	42	42	18 6	29	27
24	22	29	88	26	23	104	47	57	41	14.0	25	21
25	22	22	68	26	24	76	40	57	47	13.2	24	17.6
26	15.8	36	54	19.6	23	99	33	50	47	12.4	25	17.6
27	12.4	53	51	19.6	27	126	32	44	40	12.4	25	15.8
28	10.1	33	96	21	30	106	34	44		10.8	23	28
29	12.4	24	54	37	29	78	37	46	350	10.8	21	150
30	21	99	45	96	-------	54	46	57		10.8	19.6	156
31	18.6	-------	76	86	-------	70	-------	44	-------	10.1	8.0	------
1924–25												
1	113	14.9	14.0	25	12.4	47	29	29	16.7	11.6	14.9	12.4
2	72	11.6	16.7	25	25	49	28	22	12.4	10.1	11.6	13.2
3	44	15.8	19.6	17.6	24	50	25	19.6	9.4	12.4	14.0	21
4	32	15.8	22	13.2	25	52	23	51	8.7	14.1	44	8.7
5	24	15.8	28	19.6	27	53	19.6	67	9.4	15.9	18.6	8.0
6	19.6	15.8	40	19.6	34	55	22	50	9.4	17.6	14.9	6.8
7	18.6	15.8	28	21	89	56	24	34	10.8	19.6	14.9	13.2
8	18.6	14.9	32	21	152	58	24	27	10.8	17.6	14.0	15.8
9	17.6	13.2	53	21	188	58	17.6	24	9.4	14.9	13.2	14.0
10	18.6	15.8	23	18.6	160	58	16.7	27	8.0	61	11.6	14.0
11	17.6	16.7	17.6	14.9	162	113	22	51	10.8	26	11.6	12.4
12	16.7	16.7	16.7	21	86	79	19.6	32	11.6	10.8	11.6	23
13	19.6	18.6	42	22	64	50	19.6	24	14.0	10.8	14.0	76
14	17.6	21	32	21	44	104	26	21	14.9	10.1	13.2	58
15	16.7	17.6	17.6	19.6	41	85	64	24	16.7	11.6	11.6	34
16	16.7	13.2	16.7	24	41	66	37	13.2	14.9	14.0	9.4	23
17	18.6	15.8	76	22	42	47	28	15.8	11.6	14.9	14.0	13.2
18	19.6	15.8	115	14.0	30	50	25	15.8	11.6	13.2	14.9	10.8
19	17.6	14.9	133	18.6	28	162	23	17.6	11.6	10.8	14.9	11.6
20	21	15.8	90	19.6	26	101	21	18.6	10.8	9.4	14.0	16.7

Daily discharge, in second-feet, of Little Cuyahoga River at Akron, Ohio, for the years ending September 30, 1920–1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1924–25												
21	21	19.6		18.6	32	57	19.6	17.6	8.0	14.9	15.8	21
22	21	27		19.6	66	44	23	17.6	9.4	28	15.8	18.6
23	19.6	21		17.6	223	37	28	17.6	10.1	12.4	14.0	17.6
24	21	18.6		18.6	185	34	24	26	11.6	10.8	14.0	16.7
25	19.6	16.7		16.7	96	32	22	30	17.6	12.4	13.2	16.7
26	14.9	14.0	30	26	84	30	24	21	13.2	17.6	14.0	13.2
27	18.6	14.0		26	44	37	22	17.6	14.0	16.7	14.0	15.3
28	17.6	14.4		24	46	37	21	17.6	9.4	14.9	13.2	17.5
29	16.7	14.9		23		32	22	15.8	16.7	13.2	11.6	19.6
30	16.7	10.8		23		32	32	16.1	13.2	13.2	10.8	18.6
31	15.8			19.6		30		16.4		15.8	12.4	
1925–26												
1	16.7		27		88	79	47	25	40	15.8	15.8	15.8
2	17.6		26		74	73	33	25	24	13.2	8.7	113
3	16.7		27		50	57	72	38	15.8	10.8	8.7	96
4	44		32		34	51	67	40	14.9	8.7	10.1	
5	37	33	54	23	29	42	45	33	10.8	10.1	10.8	
6	26		70		26	40	38	30	14.0	45	11.6	100
7			41		26	88	79	27	17.6	37	17.6	
8			26		26	63	203	24	14.0	21	25	
9			27	25	25	49	214	21	14.9	12.4	16.7	
10		24	25	23	21	47	113	21	14.9	10.8	15.8	
11		19.6	26	22	32	54	66	26	14.0	11.6		88
12		34	29	21	32	47	49	26	15.8	15.8		54
13		89	22	27	28	43	44	26	13.2	74		46
14		60	15.8	26	24	39	40	27	72	66	27	37
15		38	15.8	27	26	36	37	27	67	37		34
16		33	14.9	30	21	32	36	26	34	19.6		44
17		26	16.7	27	24	28	33	29	21	12.4	50	40
18		22	14.0	64	32	30	29	29	73	10.8	32	35
19	30	22	18.6	122	60	46	27	34		14.0	22	29
20		22	18.6	79		70	26	24		12.4	18.6	29
21		18.6	23	57		56	30	19.6		14.9	32	27
22		16.7	22			49	29	18.6		14.9	45	26
23		21	17.6		55	98	32	19.6	39	15.8	35	47
24		17.6	16.7			113	33	25		14.0	29	88
25		19.6	13.2			73	35	27		9.4	19.6	79
26		18.6		50		50	34	27		16.7	14.9	72
27		79			96	35	33	23		15.5	9.4	51
28		82	13		88	28	44	21	16.7	14.4	10.8	54
29		50				27	40	14	18.6	13.2	8.7	54
30		28				27	35	22	18.6	13.2	13.2	42
31						35		53		13.2	12.4	
1926–27												
1	44	179	53		57		64	36	38	17.6	76	18.6
2	45	154	46		53		79	35	37	17.6	50	16.7
3	46	130	42		56		81	36	35	17.6	24	15.8
4	46	106	42		72		73	37	60	21	18.6	10.8
5	47	81	35	30		55	72	36	64	24	16.7	10.1
6	48	57	36				70	34	44	29	14.9	16.7
7	48	57	35				60	32	41	30	13.2	17.6
8	49	54	50		110		56	30	40	34	38	19.6
9	50	73	51			74	47	30	38	21	40	26
10	42	72	49	33		61	45	35	37	16.7	26	27
11	47	60	47	30		58	42	33	37	21	17.6	26
12	45	53	44	28		50	41	32	37	22	15.8	22
13	40	51	81	33		53	44	33	36	22	14.0	24
14	37	52	96	36		162	42	41	36	22	16.7	22
15	33	53	53	30		122	38	51	34	21	18.6	17.6
16	29	152		22	80	79	38	103	32	21	16.7	15.8
17	33	120		33		67	44	78	30	15.8	16.7	13.2
18	56	86		34		79	41	96	30	19.6	15.8	37
19	66	68		226			40	192	35	21	15.8	41
20	47	57		304			37	160	38	21	15.8	17.6
21	40	49	35	203		180	36	79	34	21	13.2	15.8
22	40	46		304			34	53	42	35	16.7	14.9
23	47	46		168	95		34	51	93	49	17.6	14.9
24	79	49		124			35	73	57	32	19.6	14.0
25	237	49		81			41	152	38	22	17.6	13.2

Daily discharge, in second-feet, of Little Cuyahoga River at Akron, Ohio, for the years ending September 30, 1920–1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1926–27												
26	150	73		37		93	47	104	73	17.6	15.8	16.7
27	96	72		32	95	91	79	76	56	21	14.0	17.6
28	64	49	35	32		88	64	54	26	18.6	10.1	18.6
29	79	57		64	-------	74	48	40	23	17.6	17.6	22
30	141	64		122	-------	66	32	44	23	18.6	19.6	17.6
31	203	-------		88	-------	64	-------	42	-------	37	19.6	-------

NOTE.—No gage-height record Aug. 13, Nov. 28, 1920, Feb. 6, 1921, Jan. 24–29, Feb. 2, 3, 6–8, Mar. 14–17, July 9–14, Oct. 21–27, Nov. 25 to Dec. 1, 1922, Dec. 12–14, 1923, Jan. 5–8, July 4–6, Nov. 28, 1924, Jan. 28, Feb. 28 to Mar. 7, Mar. 15, 16, May 30, 31, July 4, 5, Sept. 27, 28, 1925, Mar. 13–16, July 27 and 28, Oct. 2–8, 30, Nov. 1–5, 14, 1926, Jan. 24–25, Apr. 29, June 12–13, July 22, 1927; discharge interpolated after comparison with records of flow at near-by gaging stations. No gage-height record May 28 to June 3, July 31 to Aug. 5, 1921, Jan. 20–26, Feb. 17 to Mar. 2, 1923, June 28–30, Dec. 20–31, 1924, Jan. 1, 2, Oct. 7 to Nov. 9, Dec. 26–31, 1925, Jan. 1–8, 22–31, Feb. 20–26, June 19–27, Aug. 11–16, Sept. 4–10, Dec. 16–31, 1926, Jan. 1–9, Feb. 5 to Mar. 8, Mar. 19–25, 1927; discharge estimated by comparison with records of flow at near-by gaging stations. Braced figures show mean discharge for periods indicated.

Monthly discharge, in second-feet, of Little Cuyahoga River at Akron, Ohio, for the years ending September 30, 1920–1927

Month	Maximum	Minimum	Mean
1920			
July	54	15.8	24.5
August	160	17.6	47.2
September	47	8.7	22.1
1920–21			
October	35	9.4	20.5
November	96	12.4	30.6
December	79	14	28.1
January	104	14	34.3
February	131	26	60.5
March	410	37	94.7
April	150	34	60.3
May	113	21	31.8
June	-------	11.6	25.0
July	41	14.9	20.7
August	40	10.1	18.2
September	46	3.6	19.8
The year	410	3.6	36.9
1921–22			
October	64	10.8	21.8
November	160	11.6	55
December	74	13.2	31
January	117	11.6	27.3
February	84	15.8	39.8
March	203	23	63
April	291	40	87.8
May	117	23	48.4
June	37	11.6	22.5
July	131	10.1	30.1
August	44	5.1	18.8
September	214	14.0	48.2
The year	291	5.1	41.0
1922–23			
October	26	4.1	14.8
November	50	21.	28.6
December	96	5.1	21.2
January	127	8.0	34.0
February	50	8.0	19.3
March	88	9.4	33.4
April	140	6.8	21.5
May	237	5.1	32.6
June	23	1.8	6.01
July	35	1.5	6.23
August	35	2.1	15.8
September	60	10.1	20.9
The year	237	1.5	21.2
1923–24			
October	22	10.1	16.9
November	99	11.6	24.1
December	133	27	61.8
1923–24			
January	286	19.6	69.7
February	101	23	38.3
March	142	28	63.0
April	101	32	54.7
May	232	33	69.0
June	-------	32	90.9
July	73	10.1	27.9
August	29	7.4	19.3
September	156	14	43.6
The year	-------	7.4	48.3
1924–25			
October	113	14.9	24.6
November	27	10.8	16.2
December	-------	14	37.5
January	26	13.2	20.4
February	223	12.4	74.2
March	162	30	57.9
April	64	16.7	25.1
May	67	13.2	25.7
June	17.6	8.0	11.9
July	61	9.4	16.0
August	44	9.4	14.5
September	76	6.8	19.4
The year	223	6.8	28.3
1925–26			
October	-------	-------	29.3
November	89	16.7	34.6
December	70	-------	23.1
January	122	-------	39.8
February	-------	21	44.5
March	113	27	51.8
April	214	26	54.8
May	53	14	26.7
June	-------	10.8	29.9
July	74	8.7	19.8
August	-------	8.7	21.1
September	-------	15.8	63.4
The year	-------	8.7	36.4
1926–27			
October	237	29	66.9
November	-------	46	75.6
December	-------	-------	42.6
January	304	-------	75.3
February	-------	-------	89.9
March	-------	-------	96.2
April	81	32	50.1
May	192	30	62.2
June	93	23	41.5
July	49	15.8	23.4
August	76	10.1	21.4
September	41	10.1	19.3
The year	-------	10.1	55.2

CHAGRIN RIVER AT WILLOUGHBY, OHIO

LOCATION.—At dam nine-tenths mile southeast of Willoughby, Lake County, one-sixth mile below mouth of East Branch, and 5 miles above mouth.

DRAINAGE AREA.—251 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 9, 1925, to September 30, 1927.

EQUIPMENT.—Vertical staff gage in two sections on left bank at dam and pumping station. Discharge measurements made from cable above gage or by wading.

CHANNEL AND CONTROL.—Channel straight for several hundred feet above and below gage. Banks fairly high and wooded. Control is concrete dam in good condition; left end of crest lower than right end. Zero flow would occur at gage height 0.1 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.5 feet at 8.15 a. m. October 7, 10 a. m. January 22, and 2.45 p. m. March 20 (discharge, 5,860 second-feet); minimum stage, 0.26 foot at 6 a. m. and 2 p. m. September 6 and 7 a. m. September 7 (discharge, 21 second-feet).

1925–1927: Maximum stage recorded, 5.3 feet at 6.30 p. m. February 25, 1926 (discharge, 7,720 second-feet); minimum stage, 0.26 foot July 26, 1926, and September 6 and 7, 1927 (discharge, 21 second-feet).

DIVERSIONS AND REGULATION.—Municipal water supply for Willoughby is diverted above gage. Regulation negligible.

ACCURACY.—Stage-discharge relation permanent; affected by ice in January. Rating curve well defined by 12 discharge measurements, ranging from 20 to 6,300 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except those for period of ice effect, which are fair.

Daily discharge, in second-feet, of Chagrin River at Willoughby, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	269	680	479	251	571	428	205	108	148	46	40	40
2	1,240	780	321	228	496	251	228	123	108	49	37	30
3	479	470	269	251	453	239	251	136	101	49	37	26
4	321	343	251	239	730	234	262	152	308	57	35	30
5	1,440	275	144	211	1,060	262	1,640	166	176	44	30	25
6	1,440	282	140	195	1,640	1,930	780	123	166	44	30	21
7	4,790	195	148	180	945	1,710	366	112	131	46	40	23
8	1,440	156	388	166	524	2,240	251	112	104	51	37	35
9	680	680	445	185	403	890	211	94	98	54	74	30
10	428	630	321		315	524	166	123	80	42	51	30
11	1,000	308	269		222	428	166	112	80	30	42	51
12	453	222	239		190	358	127	112	71	54	35	37
13	336	176	780	200	123	288	136	101	74	46	42	46
14	216	176	1,060		445	2,730	131	112	94	37	37	42
15	205	200	234		890	780	131	176	80	30	30	35
16	200	2,730	90		630	462	119	3,610	66	37	44	35
17	166	835	144		835	336	140	1,300	51	51	30	37
18	479	479	144	260	580	487	140	730	57	84	33	33
19	487	534	180		295	730	119	1,300	80	54	30	46
20	315	373	245	2,240	140	3,610	123	1,000	94	49	35	37
21	534	336	282	1,440	190	2,900	98	396	63	35	42	40
22	680	315	256	4,790	205	1,370	140	205	71	98	33	42
23	730	295	239	1,440	1,060	730	152	239	63	112	30	54
24	1,120	350	234	730	1,000	479	101	470	63	176	35	46
25	5,210	487	262	358	730	373	156	1,370	71	71	33	28
26	1,500	1,570	205	205	780	350	195	445	119	68	42	28
27	780	1,120	211	144	524	487	275	561	94	51	26	28
28	552	496	256	239	437	380	275	288	68	42	25	30
29	730	945	239	262	-------	315	185	148	51	37	49	37
30	524	890	222	3,250	-------	269	115	161	49	37	66	44
31	1,500	-------	239	1,240	-------	228	-------	176	-------	37	42	-------

NOTE.—Discharge Jan. 10–19 estimated because of ice.

Monthly discharge of Chagrin River at Willoughby, Ohio, for the year ending September 30, 1927

[Drainage area, 251 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	5,210	166	976	3.89	4.48
November	2,730	156	578	2.30	2.57
December	1,060	90	288	1.15	1.33
January	4,790	----------	659	2.63	3.03
February	1,640	123	586	2.33	2.43
March	3,610	228	864	3.44	3.97
April	1,640	98	246	.980	1.09
May	3,610	94	460	1.83	2.11
June	308	49	96.0	.382	.43
July	176	30	55.4	.221	.25
August	74	25	38.5	.153	.18
September	54	21	35.5	.141	.16
The year	5,210	21	407	1.62	22.03

GRAND RIVER NEAR MADISON, OHIO

LOCATION.—At highway bridge 2 miles south of Madison, Lake County. Griswold Creek enters from left half a mile below station.

DRAINAGE AREA.—587 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 7, 1922, to September 30, 1927.

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

CHANNEL AND CONTROL.—Channel straight for 500 feet above and below gage. Left bank high and clean; right bank fairly high and brushy. One channel at all stages. Control for low water is riffle 150 feet below gage; control at high stages is long stretch of channel below gage; shifts during high water. Zero flow would occur at gage height 0.5 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.2 feet at 4 p. m. October 25 (discharge, 9,140 second-feet); minimum stage, 1.10 feet at 5 p. m. September 11 (discharge, 6 second-feet).

1922–1927: Maximum stage recorded, 11.1 feet at 4 p. m. September 25, 1926 (discharge, from extension of rating curve, 14,300 second-feet); minimum stage, 1.10 feet at 5.30 p. m. August 27, 1923 (discharge, 1.5 second-feet).

ACCURACY.—Stage-discharge relation for low water changed during high water on October 25; affected by ice. Rating curves well defined. Four discharge measurements made during year range from 9 to 966 second-feet and check the curves. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except those for periods of ice effect, which are fair.

Daily discharge, in second-feet, of Grand River near Madison, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,600	2,620	1,600		4,040	1,600	290	205	238	9.4	18	10
2	1,090	1,600	820		2,620	880	360	205	190	12	28	10
3	950	1,420	700		2,240	620	378	158	142	11	16	11
4	700	1,250	430		2,000	470	325	176	255	12	9.4	10
5	880	1,090	325		1,700	395	1,420	155	342	10	10	7.8
6	2,480	820		350	1,800	950	1,090	205	510	11	9.4	7.6
7	3,520	572			2,620	4,040	1,250	137	395	14	11	7.4
8	3,860	490			2,240	5,600	820	94	272	14	16	9.0
9	2,760	530			1,700	2,360	645	102	135	9.8	12	11
10	2,000	1,600	450		1,420	2,360	430	135	102	9.0	23	9.0
11	2,480	1,250			950	1,700	255	145	79	8.7	62	6.6
12	1,420	820			645	1,170	220	118	64	10	57	7.4
13	880	595			360	880	168	109	49	34	54	8.7
14	470	430	1,330		470	2,000	158	130	54	26	46	9.4
15	342	308	1,800	250	1,420	2,120	150	185	40	9.8	34	7.8
16	325	2,620	1,020		1,900	1,420	142	290	32	8.4	13	8.4
17	378	4,600	820		2,900	1,020	137	672	23	12	10	7.8
18	430	2,480			2,900	950	255	950	16	14	11	8.0
19	950	2,000		1,000	2,360	1,420	220	1,510	21	25	12	8.4
20	1,090	1,800		2,360	1,330	3,360	176	1,420	31	35	14	9.4
21	1,090	1,250	350	2,240	645	7,760	190	1,020	37	18	11	8.7
22	1,020	1,090		5,800	325	6,000	220	700	45	21	9.8	11
23	2,480	820		5,000	412	4,040	158	645	33	24	11	14
24	2,480	645		4,040	1,700	3,040	150	1,420	26	28	12	11
25	8,660	645		3,040	1,800	1,510	155	2,900	31	65	10	10
26	7,540	1,600		2,620	2,240	820	342	2,480	31	48	8.7	10
27	5,200	2,360	500	2,000	2,240	820	700	1,800	31	35	9.0	11
28	5,200	1,700		1,170	2,240	760	450	1,020	32	24	120	11
29	3,680	1,900		730	-------	620	308	470	16	18	125	12
30	3,520	2,000		4,600	-------	470	255	325	12	18	11	11
31	3,680	-------		4,800	-------	360	-------	308	-------	14	11	------

NOTE.—Discharge Dec. 6–13 and Dec. 18 to Jan. 19 estimated because of ice.

Monthly discharge of Grand River near Madison, Ohio, for the year ending September 30, 1927

[Drainage area, 587 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	8,660	325	2,360	4.02	4.64
November	4,600	308	1,430	2.44	2.72
December	1,800	----------	593	1.01	1.16
January	5,800	----------	1,450	2.47	2.85
February	4,040	325	1,760	3.00	3.12
March	7,760	360	1,980	3.37	3.88
April	1,420	137	394	.671	.75
May	2,900	94	651	1.11	1.28
June	510	12	109	.186	.21
July	65	8.4	19.6	.033	.04
August	125	8.7	25.9	.044	.05
September	14	6.6	9.48	.016	.02
The year	8,660	6.6	896	1.53	20.72

CONNEAUT CREEK AT AMBOY, OHIO

LOCATION.—At highway bridge half a mile east of Amboy, Ashtabula County, 3 miles southwest of Conneaut, and 6 miles above mouth.

DRAINAGE AREA.—178 square miles (measured on topographic maps).

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

EQUIPMENT.—Au water-stage recorder on right bank just below bridge. Discharge measurements made from bridge at gage or by wading.

CHANNEL AND CONTROL.—Channel straight for 300 feet above and 1,000 feet below gage. One channel at all stages. Left bank high and clean; right bank fairly high and brushy. The flood of March, 1913, flowed over right bank and across the road leading to bridge at a point some distance from bridge. Control for low water is rock ledge 75 feet below gage. Control for high water is long stretch of channel below gage. Zero flow would occur at gage height 0.7 foot.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 6.5 feet at 2 a. m. October 26 (discharge, 3,960 second-feet); minimum stage, from recorder, 1.20 feet several times in July, August, and September (discharge, 4.1 second-feet).

1922–1927: Maximum stage recorded, 8.1 feet at 4 a. m. September 25, 1926 (discharge, about 6,030 second-feet); minimum stage, 1.06 feet at 6 p. m. October 20, 1923 (discharge, 1.6 second-feet).

DIVERSIONS AND REGULATION.—Diversions negligible. Slight daily regulation during low water at flour mill several miles above station.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined below 1,500 second-feet. Four discharge measurements made during year range from 18 to 900 second-feet and check the curve closely. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection, or, for days of considerable fluctuation in stage, by averaging discharges for shorter intervals. Records good except those for periods of ice effect and extremely high water, which are fair.

Daily discharge, in second-feet, of Conneaut Creek at Amboy, Ohio, for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	163	980	715		910	301	117	106	88	15	17	12
2	141	550	379		462	213	125	81	78	13	26	13
3	315	520	245		389	163	174	70	62	20	22	11
4	267	434	180		376	151	205	76	84	6.9	18	8.6
5	348	462	120	100	582	125	514	86	251	7.2	13	6.3
6	1,410	520	196		352	269	1,120	100	379	23	5.6	4.7
7	1,600	406	301		520	945	434	74	180	17	6	7.2
8	1,350	267	301		462	1,380	213	56	106	14	8.9	7.9
9	541	335	301		286	1,040	144	53	72	13	23	6.6
10	285	648	352		224	406	111	53	56	11	51	13
11	818	550	291		213	276	90	56	46	5.3	36	9.9
12	830	352	241		220	236	76	58	39	9.9	21	5.3
13	372	276	423		237	217	74	60	39	8.6	13	16
14	232	286	1,200	70	224	349	70	62	35	11	13	17
15	170	286	721		364	615	72	98	33	13	15	15
16	134	1,080	179		550	331	66	232	31	13	33	22
17	120	2,610			750	221	86	490	28	17	23	14
18	296	854			680	202	114	434	28	6.6	20	11
19	758	615		352	520	326	122	406	32	12	6.9	13
20	814	615		980	232	543	95	434	36	12	14	14
21	550	379	110	1,560	240	1,490	88	301	54	16	11	6.3
22	603	347		1,650	187	1,700	95	167	46	17	6	5.6
23	1,000	321		2,300	312	550	72	147	33	24	6.9	17
24	1,300	347		1,270	899	296	62	1,060	26	78	12	11
25	2,700	490		698	750	221	66	1,310	23	111	6.9	11
26	2,950	680		551	825	194	78	1,080	18	56	5.3	6
27	1,300	1,220	140	495	688	205	225	506	20	29	5	7.2
28	1,140	1,020		529	379	232	524	321	20	20	5.6	12
29	900	1,220		254	-------	184	352	174	20	21	6	11
30	715	825		589	-------	150	160	120	17	15	12	7.9
31	806	-------		1,640	-------	125	-------	103	-------	12	13	------

NOTE.—Discharge Dec. 17 to Jan. 18 estimated because of ice.

Monthly discharge of Conneaut Creek at Amboy, Ohio, for the year ending September 30, 1927

[Drainage area, 178 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,950	120	804	4.52	5.21
November	2,610	267	650	3.65	4.07
December	1,200	----------	258	1.45	1.67
January	2,300	----------	464	2.61	3.01
February	910	187	462	2.60	2.71
March	1,700	125	441	2.48	2.86
April	1,120	62	191	1.07	1.19
May	1,310	53	270	1.52	1.75
June	379	17	66.0	.371	.41
July	111	5.3	20.9	.117	.13
August	51	5.0	15.3	.086	.10
September	22	4.7	10.8	.061	.07
The year	2,950	4.7	304	1.71	23.18

STREAMS TRIBUTARY TO LAKE ONTARIO

LITTLE TONAWANDA CREEK AT LINDEN, N. Y.

LOCATION.—At stone-arch highway bridge in Linden, Genesee County, 8 miles upstream from junction with Tonawanda Creek.

DRAINAGE AREA.—22.0 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 8, 1912, to September 30, 1927.

EQUIPMENT.—Vertical staff gage in two sections on upstream side of right bridge abutment. Discharge measurements made by wading near gage.

CHANNEL AND CONTROL.—Bed of stream composed of gravel. Narrow channel at ordinary stages; flood channel much wider although water is confined at all stages. Control is a timber weir 13 feet long between bridge abutments. Crest of weir 2 inches wide with a standard Francis notch 2.01 feet long and 8 inches deep; permanent unless damaged.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.9 feet at 5 p. m. November 16 (discharge, 436 second-feet); minimum stage, 0.28 foot several times September 26–30 (discharge, 0.6 second-foot).

1912–1927: Maximum stage, determined by leveling from floodmarks, 14.6 feet during flood of April 22, 1916 (discharge, about 2,400 second-feet); minimum discharge, 0.4 second-foot several times in September and October, 1921.

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation changed presumably on March 14, owing to flood damage to weir; affected by ice for short periods from December to March. Weir restored to original condition on August 28. Standard rating curve well defined by many discharge measurements below 800 second-feet. Seven discharge measurements were made during current year, five of them while the weir was in a damaged condition. Two measurements made after the weir was repaired check the standard curve. Gage read to hundredths twice daily. Daily discharge October 1 to March 13 and August 29 to September 30 ascertained by applying mean daily gage height to rating table or, for days of considerable fluctuation in stage, by constructing a gage-height graph on basis of daily gage readings and averaging discharge for intervals of the day, except for periods of ice effect as indicated in footnote to table of daily discharge. For the period March 14 to August 28, during which weir remained in damaged condition, gage heights were corrected on basis of the five discharge measurements before applying them to rating table. Records good except those for periods of ice effect, which are fair.

Daily discharge, in second-feet, of Little Tonawanda Creek at Linden, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.7	57	46	17	46	34	36	12	17	2.8	18	1.4
2	6.4	49	29	16	32	30	34	12	13	2.7	7.8	1.4
3	6.4	39	26	15	32	26	36	11	11	2.5	4.7	1.2
4	6.1	32	22	16	50	20	53	23	9.2	2.4	3.3	1.1
5	16	49	18	16	60	22	98	31	17	2.4	2.8	1.1
6	89	65	18	10	42	29	70	20	14	2.4	2.5	1.1
7	61	73	22	13	34	103	46	14	9.6	2.8	2.4	1.0
8	31	46	41	12	26	193	34	12	8.0	2.4	2.2	1.0
9	20	42	42	12	26	69	29	38	8.8	2.2	2.1	.9
10	16	61	38	12	21	69	27	34	7.8	2.2	2.0	.9
11	17	36	34	12	16	96	23	32	6.9	2.4	1.8	1.0
12	14	30	28	10	16	115	22	23	5.6	2.1	1.7	9
13	14	29	60	10	9	166	20	20	5.2	1.9	1.6	1.0
14	15	31	155	11	13	290	17	17	4.8	2.1	1.7	.9
15	14	27	73	12	41	98	16	34	4.7	2.2	1.7	.9
16	11	282	41	10	117	60	16	24	4.1	2.6	1.5	.9
17	38	126	36	9	105	51	41	21	3.8	2.1	1.4	.8
18	34	67	32	9	53	72	28	20	3.4	1.8	1.4	.8
19	57	93	26	21	32	62	21	17	4.8	1.8	1.4	.8
20	38	53	26	107	11	43	17	32	5.9	1.8	1.4	.7
21	46	49	42	77	11	132	15	20	4.8	1.7	1.7	.7
22	48	42	34	267	23	111	23	15	3.6	1.8	1.8	.7
23	86	39	29	116	167	63	20	19	3.4	2.7	1.8	.8
24	52	49	29	90	131	54	19	115	3.6	2.4	1.6	.8
25	268	42	53	70	73	68	16	97	3.5	3.8	1.5	.7
26	102	76	50	38	42	55	21	47	18	2.4	1.4	.6
27	57	73	40	18	42	93	27	49	7.2	2.6	1.4	.6
28	41	42	24	15	40	80	22	32	5.0	2.6	1.4	.6
29	38	69	20	30	-------	53	17	23	3.6	2.4	1.5	.6
30	36	61	19	187	-------	46	14	23	3.3	3.1	1.8	.6
31	112	-------	20	78	-------	43	-------	20	-------	46	1.4	-------

NOTE.—Discharge Dec. 4–7, 17–20, 26–31, Jan. 1–8, 24–27, Feb. 1–7, 19–21, 27, 28, and Mar. 1–3 determined from gage heights corrected for ice effect on basis of observer's notes and weather records.

Monthly discharge of Little Tonawanda Creek at Linden, N. Y., for the year ending September 30, 1927

[Drainage area, 22.0 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	268	6.1	45.1	2.05	2.36
November	282	27	61.0	2.77	3.09
December	155	18	37.8	1.72	1.98
January	267	9	43.1	1.96	2.26
February	167	9	46.8	2.13	2.22
March	290	20	78.9	3.59	4.14
April	98	14	29.3	1.33	1.48
May	115	11	29.3	1.33	1.53
June	18	3.3	7.35	.334	.37
July	46	1.7	3.78	.172	.20
August	18	1.4	2.60	.118	.14
September	1.4	.6	.883	.040	.04
The year	290	.6	32.1	1.46	19.81

GENESEE RIVER AT SCIO, N. Y.

LOCATION.—At steel highway bridge half a mile upstream from Vandermark Creek, three-quarters of a mile upstream from Scio, Allegany County, and 1 mile upstream from Knight Creek.

DRAINAGE AREA.—288 square miles (measured on topographic maps and base map of Pennsylvania).

RECORDS AVAILABLE.—June 12, 1916, to September 30, 1927.

EQUIPMENT.—Vertical staff gage attached to downstream face of left bridge abutment. Discharge measurements made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed of stream and control composed of coarse gravel; shifts occasionally. Banks comparatively high; right bank brush covered; left bank clean.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.6 feet at 5.30 p. m. March 21 (discharge, 6,090 second-feet); minimum stage, 0.04 foot at 8 a. m. and 5 p. m. September 29 (discharge, 16 second-feet).

1916–1927: Maximum stage recorded, 9.1 feet at noon May 22, 1919 (discharge, about 10,600 second-feet); minimum discharge, 15 second-feet at 8.45 a. m. September 3, 1925 (gage height, 0.12 foot).

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined by 21 discharge measurements between 25 and 2,000 second-feet; extended beyond these limits. Six of the measurements, ranging from 30 to 880 second-feet, were made during current year and, with one exception, check the curve closely. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table or, for days of considerable fluctuation in stage, by constructing a gage-height graph on basis of daily readings and averaging discharge for intervals of the day, except for periods of ice effect or of no record as indicated in footnote to table of daily discharge. Records good except those for periods of ice effect or of no record and those for extremely high stages, which are fair.

Daily discharge, in second-feet, of Genesee River at Scio, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	159	885	380	130	620	358	405	455	508	51	239	36
2	151	780	294	120	562	275	358	405	405	50	159	34
3	148	590	260	110	480	256	450	380	314	46	103	33
4	133	480	260	120	748	206	1,000	1,190	294	43	82	30
5	121	455	220	120	508	294	1,900	1,210	358	41	69	29
6	535	430	180	110	480	335	1,570	590	314	41	63	27
7	314	405	200	100	430	464	1,310	508	256	71	60	26
8	256	335	240	95	380	2,540	958	480	222	79	84	25
9	206	314	300	90	335	1,040	748	648	191	55	73	23
10	239	600	240	85	335	780	562	605	170	46	60	23
11	275	380	240	80	314	850	480	535	150	42	52	23
12	206	335	220	75	275	1,070	455	455	140	42	48	23
13	191	314	380	80	256	1,570	405	405	130	40	43	26
14	174	314	550	85	239	3,070	358	380	120	38	75	30
15	148	294	360	75	455	2,320	294	973	110	50	88	27
16	151	1,840	240	70	405	1,310	275	620	100	47	55	25
17	148	2,040	220	70	1,570	1,150	335	562	96	65	45	23
18	151	1,320	190	65	1,310	1,070	294	562	90	68	42	21
19	304	1,740	170	75	620	1,310	256	590	146	43	40	19
20	256	995	190	220	562	1,460	256	620	125	35	45	22
21	335	815	190	700	508	4,430	222	535	103	41	43	22
22	239	748	180	2,600	455	3,390	358	480	86	121	42	21
23	256	620	170	1,600	995	1,570	275	600	80	103	40	19
24	275	535	160	900	1,150	1,150	256	5,000	75	162	38	19
25	748	}	150	650	1,070	780	239	2,690	73	79	35	19
26	885	550	140	550	920	850	416	3,230	103	60	33	19
27	620	}	140	500	590	780	1,070	1,590	90	50	31	18
28	480	}	150	500	480	715	898	1,140	68	65	31	17
29	430	275	140	535	-------	650	620	832	57	54	31	16
30	533	620	130	1,760	-------	562	510	715	52	300	47	18
31	1,170	-------	140	885	-------	480	-------	620	-------	400	41	-------

NOTE.—Discharge Dec. 3 to Jan. 28 determined from gage heights corrected for ice effect on basis of one discharge measurement, observer's notes, weather records, and comparative studies. Gage not read Nov. 1, 2, 10, 25–28, Dec. 5, 12, Jan. 9, 16, Feb. 6, Apr. 3–5, 30, May 23, 24, 30, June 10–16, July 17, 30, 31, Aug. 7, 28, and Sept. 10 and 11; discharge estimated by comparative studies with records from adjacent stations. Braced figure shows mean discharge for period indicated.

Monthly discharge of Genesee River at Scio, N. Y., for the year ending September 30, 1927

[Drainage area, 288 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,170	121	330	1.15	1.33
November	2,040	275	689	2.39	2.67
December	550	130	227	.788	.91
January	2,600	65	424	1.47	1.70
February	1,570	239	609	2.11	2.20
March	4,430	206	1,200	4.17	4.81
April	1,900	222	584	2.03	2.26
May	5,000	380	955	3.32	3.83
June	508	52	168	.583	.65
July	400	35	78.3	.272	.31
August	239	31	62.5	.217	.25
September	36	16	23.8	.083	.09
The year	5,000	16	445	1.55	21.01

GENESEE RIVER AT ST. HELENA, N. Y.

LOCATION.—At steel highway bridge in St. Helena, Wyoming County, 1½ miles downstream from mouth of Wolf Creek, 8 miles downstream from Portageville, and 14 miles upstream from mouth of Canaseraga Creek.

DRAINAGE AREA.—992 square miles (furnished by New York State Conservation Commission).

RECORDS AVAILABLE.—August 14, 1908, to September 30, 1927.

EQUIPMENT.—Stevens continuous water-stage recorder on left bank 20 feet downstream from highway bridge, and chain gage on upstream side of middle span of bridge. Discharge measurements made from upstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of coarse gravel and some rocks. Right bank is a high rock cliff above bridge; below bridge it is fairly high and lined with brush. Left bank fairly high and lined with brush. Below gage banks may be overflowed at very high stages. Control composed of gravel; shifts.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 9.0 feet at 4 p. m. May 24 (discharge, 15,800 second-feet); minimum stage, from water-stage recorder, 2.05 feet at 2 p. m. September 26 (discharge, 68 second-feet).

1908–1927: Maximum stage, from water-stage recorder, 12.81 feet at 8 a. m. May 17, 1916 (discharge, about 44,400 second-feet); minimum stage, 1.70 feet at 5 p. m. October 5 and 8 a. m. October 17, 1913 (discharge, about 18 second-feet).

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during flood and ice jam of January 22; affected by ice. Rating curve used prior to change well defined by 24 discharge measurements above 40 second-feet. One of the measurements (545 second-feet) made during current year prior to change checks this curve closely. Curve used subsequent to change is fairly well defined by six discharge measurements above 40 second-feet. Five measurements were made during the current year subsequent to change and, with one exception, check this curve closely. Operation of water-stage recorder satisfactory except that lower stilling-well intake was obstructed. Chain gage read twice daily to hundredths as a basis for determining discharge for periods of obstructed

intake. Daily discharge ascertained by applying to rating table mean daily gage height as observed or as obtained from recorder graph by inspection or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day, except for periods of ice effect or of no record as indicated in footnote to table of daily discharge. Records good except those for periods of ice effect or of no record, which are fair.

Daily discharge, in second-feet, of Genesee River at St. Helena, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	550	3,240	1,910	440	2,620	1,280	1,380	1,020	1,320	266		141
2	525	2,140	1,290	400	1,820	1,030	1,250	902	1,010	223		131
3	500	1,880	970	380	1,500	937	1,280	850	842	223		119
4	550	1,530	970	400	3,010	850	1,320	900	769	195		110
5	480	1,360	668	400	1,800	825	4,280	2,540	859	198	440	99
6	2,230	1,350	620	380	1,380	991	6,660	1,860	842	202		91
7	2,090	1,530	650	340	2,040	1,470	5,140	1,220	800	187		96
8	1,380	1,220	750	320	1,320	5,700	2,940	946	650	176		99
9	960	1,090	800	300	1,070	4,190	2,180	3,260	600	214		91
10	800	2,250	1,000	280	964	2,780	1,760	3,740	550	219	345	86
11	700	1,700	750	260	850	3,110	1,440	2,550	460	187	262	86
12	775	1,200	700	240	703	4,280	1,230	1,900	440	172	235	88
13	675	1,020	900	260	738	5,120	1,080	1,440	400	151	210	99
14	600	960	2,000	280	708	9,500	982	1,170	380	154	198	99
15	550	911	1,300	240	1,510	7,270	876	1,980	360	158	202	96
16	525	5,730	850	240	1,320	4,060	801	2,180	320	198	214	91
17	500	7,970	600	240	4,480	3,110	910	1,820	289	262	202	91
18	525	3,620	550	240	4,360	2,910	991	1,500	266	289	154	86
19	600	5,310	550	280	2,240	4,040	801	1,380	285	223	144	83
20	1,040	3,260	650	700	1,140	3,180	722	1,320	442	198	144	86
21	1,180	2,360	650	2,400	632	10,500	685	1,220	418		154	88
22	1,220	1,990	600	7,500	991	9,340	1,210	955	378		202	86
23	1,220	1,780	550	6,130	2,120	4,650	1,130	1,000	335		179	83
24	1,080	1,590	500	3,300	5,370	3,200	928	12,700	300		158	83
25	5,090	1,530	500	2,260	4,270	2,660	842	8,660	270		144	72
26	5,020	1,450	480	1,560	3,720	2,260	817	7,750	310	550	134	70
27	2,950	2,420	460	1,500	2,110	2,040	1,980	6,000	500		128	78
28	2,230	1,480	480	1,500	1,620	2,660	2,710	3,960	442		122	76
29	1,780	1,200	460	1,380	-------	1,960	1,810	2,650	340		122	81
30	1,470	2,510	460	3,110	-------	1,620	1,300	2,040	294		131	74
31	2,840	-------	480	6,130	-------	1,500	-------	1,690	-------		134	-------

NOTE.—Discharge Dec. 7 to Jan. 22 determined from gage heights corrected for ice effect on basis of weather records and comparative studies with records for other stations in same drainage basin. Chain gage readings used Dec. 5–7, 16–31, Jan. 1, 9, and 10. Reliable gage-height record lacking Oct. 1–5, 10–19, Jan. 27, 28, Feb. 13, 14, 21, Apr. 20, 21, June 7–15, 24–27, and July 21 to Aug. 9; discharge determined by comparative studies. Braced figures show mean discharge for periods indicated.

Monthly discharge of Genesee River at St. Helena, N. Y., for the year ending September 30, 1927

[Drainage area, 992 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	5,090	480	1,380	1.39	1.60
November	7,970	911	2,250	2.27	2.53
December	2,000	460	777	.783	.90
January	7,500	240	1,400	1.41	1.63
February	5,370	632	2,020	2.04	2.12
March	10,500	825	3,520	3.55	4.09
April	6,660	685	1,710	1.72	1.92
May	12,700	850	2,680	2.70	3.11
June	1,320	266	516	.520	.58
July	-------	151	327	.330	.38
August	-------	122	254	.256	.30
September	141	70	92.0	.093	.10
The year	12,700	70	1,410	1.42	19.26

GENESEE RIVER AT JONES BRIDGE, NEAR MOUNT MORRIS, N. Y.

LOCATION.—At highway bridge known as Jones Bridge, 1½ miles downstream from mouth of Canaseraga Creek, 2¼ miles upstream from mouth of Beards Creek and 4½ miles downstream from Mount Morris, Livingston County.

DRAINAGE AREA.—1,400 square miles (furnished by New York State Conservation Commission).

RECORDS AVAILABLE.—May 22, 1903, to April 30, 1906; August 12, 1908, to December 31, 1913; July 12, 1915, to September 30, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder on right bank 50 feet downstream from highway bridge. Discharge measurements made from footbridge on lower chord of upstream truss of bridge or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of sandy clay and gravel. Right bank high and quite clean; not subject to overflow. Left bank lower and more or less brush covered; subject to overflow during unusually high stages, the flood plain extending back from the bank for about a mile. Control composed of sandy clay and gravel; shifts within narrow limits.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 21.8 feet at 7 p. m. May 24 (discharge, 16,600 second-feet); minimum stage, from water-stage recorder, 0.29 foot at 10 a. m. September 26 (discharge, 54 second-feet; result of regulation).

1903–1906, 1908–1913, 1915–1927: Maximum open-water stage recorded, 25.44 feet at noon May 17, 1916 (discharge, 55,100 second-feet); minimum discharge, about 18 second-feet at 6 p. m. August 29, 1909.

DIVERSIONS AND REGULATION.—During low water considerable diurnal fluctuation is caused by operation of mills at Mount Morris.

ACCURACY.—Stage-discharge relation changed slightly for low stages during flood of March 23; affected by ice. Rating curve used prior and subsequent to change well defined throughout by many discharge measurements. One of the measurements (1,240 second-feet) made prior to the change checks the old curve closely. Five of the measurements, covering a range from 195 to 5,500 second-feet, made after change, check the new curve closely. Operation of water-stage recorder unsatisfactory at times. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day, except for periods of ice effect or of no record as indicated in footnote to table of daily discharge. Records good except those for periods of ice effect or of no record, which are fair.

Daily discharge, in second-feet, of Genesee River at Jones Bridge, near Mount Morris, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	720	4,550	2,390	600	3,800	2,000	2,060	1,450	1,800	360	2,810	206
2	670	3,720	1,640	500	2,600	1,580	1,930	1,240	1,500	348	1,510	238
3	670	3,100	1,220	500	2,000	1,430	1,930	1,160	1,200	316	1,180	241
4	720	2,320	1,200	550	3,600	1,370	2,180	1,180	1,160	309	715	220
5	645	1,940	900	550	2,400	1,310	5,050	2,810	1,160	276	566	195
6	2,200	1,760	800	500	1,900	1,400	8,560	2,790	1,240	243	440	182
7	2,700	1,760	800	460	2,600	1,760	7,000	1,690	1,100	299	375	148
8	1,840	1,640	950	420	1,700	5,330	4,300	1,360	935	299	345	164
9	1,340	1,340	1,100	400	1,400	6,000	3,020	3,010	825	299	352	169
10	1,020	2,150	1,200	380	1,200	3,510	2,460	6,060	770	282	394	166
11	912	2,230	1,000	340	1,100	3,580	2,060	3,720	665	299	371	141
12	995	1,520	1,000	320	1,000	5,090	1,750	2,740	615	282	320	148
13	858	1,280	1,400	360	950	6,110	1,570	2,000	566	250	279	148
14	748	1,160	3,200	380	900	10,500	1,390	1,690	538	241	266	152
15	695	1,100	1,800	360	1,900	10,100	1,270	2,600	519	272	285	152

Daily discharge, in second-feet, of Genesee River at Jones Bridge, near Mount Morris, N. Y., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	670	3,870	1,100	340	2,000	5,740	1,180	3,000	478	279	279	154
17	645	10,400	800	320	5,500	4,280	1,240	2,400	419	320	282	154
18	670	5,070	700	320	6,000	3,720	1,390	2,000	398	410	269	157
19	760	5,990	700	440	2,800	5,180	1,180	1,800	410	367	260	145
20	1,280	4,530	800	1,600	1,500	3,950	1,100	1,700	561	306	253	157
21	1,420	3,100	900	3,400	850	10,400	1,000	1,600	590	272	256	182
22	1,580	2,580	800	9,500	1,300	12,800	1,800	1,330	514	269	289	166
23	1,430	2,260	750	8,000	3,600	7,500	1,600	1,350	474	357	313	159
24	1,430	2,000	700	4,200	7,000	4,360	1,360	13,800	427	912	272	141
25	4,220	1,940	700	3,000	6,000	3,580	1,210	11,500	402	770	253	60
26	6,630	1,700	650	2,400	5,000	3,230	1,130	9,880	520	640	250	58
27	4,300	2,520	600	2,000	3,000	3,090	2,010	7,840	690	514	226	110
28	3,040	2,060	600	1,800	2,460	3,670	3,090	5,570	590	410	214	139
29	2,260	1,460	650	1,700	-------	2,950	2,460	3,780	510	356	209	143
30	1,880	2,650	600	4,000	-------	2,460	1,690	2,900	406	519	200	143
31	2,050	-------	650	7,500	-------	2,190	-------	2,300	-------	1,020	915	------

NOTE.—Discharge Dec. 4 to Feb. 27 determined from gage heights corrected for ice effect on basis of one discharge measurement, weather records, and comparative studies with records from other stations in the same drainage basin. Gage-height record incomplete or lacking Oct. 27 to Nov. 6, Nov. 21–30, Dec. 2–6, 8, 9, 15–18, 20, 21, 25–29, Jan. 24, 25, Feb. 13–17, 26, 27, Mar. 23–26, Apr. 20–23, 29, 30, May 6, 7, 15–21, 28, 30, 31, June 1–4, 14, 29, 30, July 27, 28, and Aug. 1; discharge determined from comparative studies.

Monthly discharge of Genesee River at Jones Bridge, near Mount Morris, N. Y., for the year ending September 30, 1927

[Drainage area, 1,400 square miles.]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	6,630	645	1,650	1.18	1.36
November	10,400	1,100	2,790	1.99	2.22
December	3,200	600	1,040	.743	.86
January	9,500	320	1,840	1.31	1.51
February	7,000	850	2,720	1.94	2.02
March	12,800	1,310	4,520	3.23	3.72
April	8,560	1,000	2,330	1.66	1.85
May	13,800	1,160	3,490	2.49	2.87
June	1,800	398	731	.522	.58
July	1,020	241	390	.279	.32
August	2,810	195	459	.328	.38
September	241	58	158	.113	.13
The year	13,800	58	1,840	1.31	17.82

GENESEE RIVER AT DRIVING PARK AVENUE, ROCHESTER, N. Y.

LOCATION.—40 feet downstream from plant No. 5 of Rochester Gas & Electric Corporation, 100 feet upstream from Driving Park Avenue Bridge in Rochester, Monroe County, and 6 miles upstream from mouth.

DRAINAGE AREA.—2,460 square miles.

RECORDS AVAILABLE.—December 17, 1919, to September 30, 1927.

EQUIPMENT.—Au 7-day water-stage recorder on right bank; installed April 4, 1927. Gurley 7-day water-stage recorder in old power house used prior to December 15, 1926. Temporary chain gage read December 15, 1926, to April 4, 1927. All gages referred to same datum. Discharge measurements made from cable a quarter of a mile downstream from gage.

CHANNEL AND CONTROL.—Bed of stream composed of gravel and rock. River flows through a deep gorge with steep, wooded banks. Control composed of coarse gravel and shale rock; probably shifting.

EXTREMES OF DISCHARGE.—Maximum stage during year, observed on temporary chain gage, 11.8 feet at 8 a. m. January 24 (discharge, 22,400 second-feet); minimum discharge of a few second-feet occurs nearly every day during low-water periods when power plant is shut down.

1919–1927: Maximum discharge recorded, about 26,000 second-feet at 2.30 p. m. March 17, 1920 (observed at Court Street Dam).

DIVERSIONS AND REGULATION.—The Barge Canal crosses the river near the southern boundary of Rochester. It discharges water from Lake Erie into Genesee River and diverts, in general, a smaller amount of water to the east for canal purposes. Large diurnal fluctuation during medium and low stages due to operation of plant No. 5. Operation of other plants at Rochester and upstream may also affect daily flow. Seasonal distribution of flow probably not greatly affected by storage.

ACCURACY.—Stage-discharge relation not permanent; not affected by ice. Standard rating curve used October 1 to March 23 well defined by many discharge measurements. Curve used March 24 to September 30 fairly well defined by six discharge measurements between 500 and 25,000 second-feet. Four of the measurements, covering a range from 810 to 6,750 second-feet, were made during current year and check this curve closely. Operation of water-stage recorders satisfactory at both old and new locations. Chain gage read to tenths three times daily during construction of new recorder well and shelter December 15 to April 4. Daily discharge October 1 to December 14, ascertained by averaging discharge for intervals of the day after applying a shifting-control correction to the rating table on basis of a discharge measurement made in September, 1926. Discharge for days of no spilling at diversion dam, during the period December 16 to January 15, ascertained from power-plant operating records; for days of spilling (December 15–19, 25, and 26) it was ascertained by comparative studies. For the period January 16 to April 4 discharge ascertained from chain gage readings. Subsequent to April 4 discharge ascertained by averaging discharge for intervals of day using new rating table direct. Records reasonably good.

Daily discharge, in second-feet, of Genesee River at Driving Park Avenue, Rochester, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,690	5,150	3,640	1,650			3,450	3,100	3,960	920	2,440	873
2	1,350	4,840	3,110	1,550			3,250	2,600	3,310	800	3,150	954
3	1,020	3,760	2,120	1,700			3,250	2,300	2,440	852	2,360	357
4	1,260	3,240	1,670	1,450			3,500	2,300	2,340	907	974	520
5	1,360	2,910	1,780	1,300			4,430	2,680	2,300	863	633	594
6	1,360	2,720	1,340	1,150			9,630	4,940	2,330	883	573	858
7	2,810	2,930	1,170	1,000			11,700	3,820	2,400	864	399	1,120
8	2,820	2,710	1,020	790			9,840	2,880	2,190	847	452	797
9	2,150	2,460	1,620	900			7,630	2,540	2,030	797	439	788
10	1,970	2,440	1,830	860			6,560	7,250	2,040	839	451	678
11	1,850	3,340	1,720	850			5,700	7,200	1,670	839	431	18
12	1,700	2,870	2,520	880			4,800	5,330	1,480	823	404	859
13	1,700	2,090	2,270	900			4,000	4,300	1,430	826	340	878
14	1,600	2,520	2,640	950			3,310	3,570	1,400	825	219	948
15	1,350	1,800	4,000	970	4,370		2,840	3,290	1,450	825	312	850
16	1,350	2,100	3,000			6,990	2,780	4,040	1,320	765	346	779
17	1,300	8,940	2,600				2,830	4,380	1,270	972	348	779
18	1,310	11,700	2,000				2,920	3,750	1,020	939	329	889
19	1,490	8,520	1,850				2,960	3,190	775	986	354	821
20	1,500	8,910	1,750				2,820	3,140	1,320	950	353	925
21	1,600	6,280	1,850				2,160	2,920	1,330	943	328	922
22	1,690	4,150	2,100				2,540	3,420	1,470	937	560	939
23	1,930	3,680	2,200	4,580			3,560	2,600	1,410	869	883	930
24	2,400	3,430	2,150				3,770	6,470	1,260	952	862	832
25	2,770	3,440	2,050				3,070	16,200	1,160	1,710	943	814
26	8,040	2,760	2,050				2,810	16,200	1,410	1,430	730	814
27	7,460	3,320	2,050				2,720	14,380	1,410	1,300	679	685
28	4,930	3,980	1,850				4,240	11,300	1,480	1,000	885	737
29	3,600	2,740	1,700		-------		5,030	7,750	1,420	1,050	891	630
30	3,470	2,620	1,750		-------		3,910	5,700	1,370	1,050	866	795
31	3,400	-------	1,750		-------		-------	4,460	-------	1,580	979	------

NOTE.—Discharge ascertained from records of operation at plant No. 5 Oct. 11–16, Dec. 20–24, Dec. 27 to Jan. 15, July 1, 2; from chain-gage readings at plant No. 5 Jan. 16 to Mar. 31; and by comparison with records from other stations in this same drainage basin Dec. 15–19, 25, 26, Apr. 2–4, and 11–13. Braced figures show mean discharge for periods indicated.

Monthly discharge of Genesee River at Driving Park Avenue, Rochester, N. Y., for the year ending September 30, 1927

[Drainage area, 2,460 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	8,040	1,020	2,390	0.972	1.12
November	11,700	1,800	4,080	1.66	1.85
December	4,000	1,020	2,100	.854	.98
January	----------	790	2,910	1.18	1.36
February	----------	----------	4,370	1.78	1.85
March	----------	----------	6,990	2.84	3.27
April	11,700	2,160	4,400	1.79	2.00
May	16,200	2,300	5,420	2.20	2.54
June	3,960	775	1,740	.707	.79
July	1,710	765	972	.395	.46
August	3,150	219	771	.313	.36
September	1,120	357	806	.328	.37
The year	16,200	219	3,070	1.25	16.95

NOTE.—The discharge and run-off given above do not represent the natural flow from the drainage basin owing to inflow and diversion at the crossing of the Barge Canal during the navigation season.

CANASERAGA CREEK NEAR DANSVILLE, N. Y.

LOCATION.—At highway bridge 1 mile west of Dansville, Livingston County, half a mile downstream from mouth of Mill Brook, and 22 miles upstream from mouth.

DRAINAGE AREA.—148 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 21, 1910, to December 31, 1912; July 10, 1915, to June 30, 1917; March 10, 1919, to September 30, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder on downstream side of left bridge abutment. During winter a vertical staff at the same location is read owing to unsatisfactory operation of water-stage recorder. Discharge measurements made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of gravel and sand. Banks fairly low and brush covered; subject to overflow during floods but at measuring section all water is confined between bridge abutments. Channel section below gage acts as control during high stages; low-water control composed of gravel; shifting.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 9.95 feet at 6 a. m. May 24 (discharge, 2,600 second-feet); minimum stage uncertain owing to obstructed well intake, minimum daily discharge, 29 second-feet September 9.

1910–1912, 1915–1917, 1919–1927: Maximum stage recorded, 13.0 feet at 9.30 p. m. May 16, 1916 (discharge, from logarithmic extension of rating curve, about 6,600 second-feet); minimum discharge, 14 second-feet at 4 p. m. September 10, 1921.

DIVERSIONS AND REGULATIONS.—None.

ACCURACY.—Stage-discharge relation changed slightly during high water of July 31; affected by ice. Standard rating curve well defined by 16 discharge measurements between 20 and 2,500 second-feet. Eight of the measurements, ranging from 73 to 2,240 second-feet, were made during the current year and with one exception, a measurement made during a rapidly changing stage, check the curve. A parallel curve, based on one discharge measurement made during the current year, was used August 1 to September 30. Staff gage read to half-tenths once daily December 6 to March 5; operation of water-stage recorder unsatisfactory during a great part of remainder of

year owing to partly obstructed well intake. Daily discharge ascertained by applying to rating table mean daily gage height as observed or as obtained from recorder graph by inspection or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day, except for periods of ice effect or for estimated periods as indicated in footnote to daily-discharge table. Records fair.

Daily discharge, in second-feet, of Canaseraga Creek near Dansville, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	61	255	165	60	210	98	195	110	172	58	160	38
2	54	206	105	48	172	98	199	105	159	59	98	46
3	72	180	70	50	172	86	199	100	149	54	72	39
4	76	142	60	65	232	80	268	167	142	51	59	34
5	82	130	50	65	139	124	743	271	165	48	54	33
6	272	124	48	60	172	139	942	165	156	54	49	33
7	199	136	46	50	139	222	662	136	142	59	45	32
8	130	124	55	48	110	567	400	119	124	54	43	30
9	98	113	65	44	100	294	310	784	110	49	63	29
10	84	175	75	40	85	234	242	684	105	48	48	
11	88	152	85	38	75	312	202	424	98	46	43	
12	78	119	120	36	66	424	187	316	91	45	41	
13	64	103	300	42	66	402	172	246	88	42	38	
14	63	91	700	55	66	1,100	156	210	82	42	35	
15	58	86	140	50	139	617	146	242	78	45	45	
16	52	348	50	42	282	400	142	228	74	54	38	
17	46	596	48	36	430	328	159	195	72	103	34	
18	49	352	44	42	110	385	136	172	68	88	34	
19	63	462	42	100	85	388	130	156	99	59	34	
20	74	328	42	500	75	390	122	162	110	52	36	30
21	91	260	85	600	75	1,220	119	136	88	51	48	
22	108	232	75	1,130	100	810	187	122	72	58	52	
23	108	210	65	648	730	487	152	353	68	161	43	
24	93	191	65	172	819	370	139	2,260	66	129	39	
25	256	180	65	160	370	310	127	1,410	69	88	38	
26	322	165	60	120	310	260	133	980	122	63	36	
27	237	195	48	85	210	288	176	823	86	61	36	
28	180	122	36	75	191	304	176	462	70	63	41	
29	146	119	65	100	------	246	139	288	61	83	48	
30	127	176	50	500	------	219	124	210	59	114	42	
31	265	------	48	260	------	224	------	191	------	329	39	------

NOTE.—Discharge Dec. 3 to Jan. 21, Jan. 25–31, Feb. 9–11, and 19–22 determined from gage heights corrected for ice effect on basis of one discharge measurement, observer's notes, weather records, and comparison with flow at adjacent stations. Gage-height record lacking or useless owing to obstructed well intake Dec. 12–14, 26, Jan. 21, Mar. 4, 6, June 4–7, July 3–6, 17, 18, Aug. 28 to Sept. 1, and Sept. 10–30; discharge estimated by comparison with flow at adjacent stations. Braced figure shows mean discharge for period indicated.

Monthly discharge of Canaseraga Creek near Dansville, N. Y., for the year ending September 30, 1927

[Drainage area, 148 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	322	46	119	0.804	0.93
November	596	86	202	1.36	1.52
December	700	36	95.9	.648	.75
January	1,130	36	172	1.16	1.34
February	819	66	205	1.39	1.45
March	1,220	80	369	2.49	2.87
April	942	119	239	1.61	1.80
May	2,260	100	394	2.66	3.07
June	172	59	102	.689	.77
July	329	42	74.5	.503	.58
August	160	34	49.4	.334	.39
September	46	29	31.5	.213	.24
The year	2,260	29	171	1.16	15.71

KESHEQUA CREEK AT CRAIG COLONY, SONYEA, N. Y.

LOCATION.—200 feet downstream from private bridge on grounds of Craig Colony at Sonyea, Livingston County, and 2½ miles upstream from mouth.

DRAINAGE AREA.—69 square miles (revised measurement on topographic maps).

RECORDS AVAILABLE.—October 31, 1917, to September 30, 1927. July 22, 1910, to December 31, 1912, at a site 200 feet upstream; August 29, 1915, to October 31, 1917, at a site 1 mile downstream.

EQUIPMENT.—Vertical staff gage on face of retaining wall on left bank 10 feet upstream from concrete diversion dam for pumping plant of Craig Colony. Discharge measurements made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of gravel. Banks formed by vertical concrete retaining walls. Control formed by a low concrete dam with two parallel crests separated by a trough 18 inches wide which serves as an intake for the Craig Colony pumping plant. The upstream crest, which is the actual control, is several inches higher than the downstream, crest; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.2 feet at 3 and 4 p. m. May 9 (discharge, 1,990 second-feet); minimum stage, 0.24 foot at 8 a. m. and 4 p. m. September 12 (discharge, corrected for backwater from sandbag on control, 1.5 second-feet).

1917–1927: Maximum stage recorded, 5.9 feet at 10 a. m. May 22, 1919 (discharge beyond limits of rating curve); minimum discharge, 0.7 second-foot at 8 a. m. August 20, 1918, and 5 p. m. August 24, 1923.

DIVERSIONS AND REGULATION.—Village of Nunda diverts water for domestic supply from tributary streams 1 mile south of village. Part of this is returned to the stream in form of sewage. Operation of small plants upstream causes some diurnal fluctuation during low water.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice and by backwater from sandbag on control. Rating curve well defined by 20 discharge measurements between 5 and 1,400 second-feet; extended beyond these limits. Eight of the measurements, ranging from 5 to 735 second-feet, were made during the current year and indicate that the curve is correct. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table or, for days of considerable fluctuation in stage, by constructing a gage-height graph on basis of daily readings and averaging discharge for intervals of the day, except for periods of ice effect and periods during which sandbag was on control as indicated in footnote to daily-discharge table. Records fair.

Daily discharge, in second-feet, of Keshequa Creek at Craig Colony, Sonyea, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	64	48	24	51	56	50	24	40	7.6	49	6.3
2	9.1	46	29	15	48	23	50	24	34	6.7	23	5.1
3	11	41	15	26	40	32	57	24	28	5.9	15	6.7
4	9.7	30	13	24	69	26	299	25	29	5.1	11	5.1
5	7.6	35	12	25	46	30	418	75	30	4.8	9.1	4.5
6	120	43	11	21	43	48	235	41	28	4.8	8.1	5.1
7	51	38	11	18	53	64	128	33	25	7.6	7.1	3.2
8	28	26	18	16	38	203	75	26	23	8.1	6.3	2.7
9	20	26	22	14	35	71	66	470	20	6.7	7.6	3.0
10	17	69	22	12	33	54	54	215	18	5.1	7.6	3.2

Daily discharge, in second-feet, of Keshequa Creek at Craig Colony, Sonyea, N. Y., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
11	21	39	28	11	32	71	46	132	17	4.5	7.6	3.8
12	16	28	33	10	23	121	41	84	13	4.5	7.6	1.5
13	13	23	83	16	16	390	39	66	13	3.8	6.7	5.1
14	11	23	373	20	35	453	36	57	13	6.7	7.6	4.8
15	9.7	25	66	16	93	148	33	75	13	8.6	6.3	3.5
16	9.1	315	28	13	96	93	28	64	12	15	5.5	3.0
17	7.6	187	20	12	155	75	40	54	11	29	5.9	5.1
18	11	86	17	16	115	78	35	44	11	26	4.8	3.5
19	16	210	15	27	43	86	30	39	10	11	4.1	2.0
20	18	78	16	242	32	62	28	40	21	7.1	4.5	3.5
21	38	61	40	216	23	612	24	33	16	6.7	6.7	2.7
22	34	56	32	548	35	292	82	40	12	6.3	12	3.0
23	30	48	24	109	524	128	43	52	13	23	6.7	3.0
24	23	51	25	71	270	99	35	909	11	35	5.1	3.0
25	172	51	40	54	145	91	35	474	11	23	5.1	4.8
26	104	54	24	35	145	75	36	282	24	15	4.5	1.8
27	89	75	13	28	69	93	53	191	15	24	5.5	2.5
28	62	30	19	24	64	89	47	99	11	15	5.5	1.6
29	40	35	27	32	-------	68	34	68	8.6	19	4.8	2.5
30	36	66	26	236	-------	59	28	54	7.1	24	6.7	2.5
31	84	-------	19	100	-------	54	-------	47	-------	108	6.7	-------

NOTE.—Discharge Dec. 4–11, 16–20, Jan. 7–18, and 27–29 determined from gage heights corrected for ice effect on basis of observer's notes and weather records. Discharge Oct. 14–24 and Sept. 12–30 determined from gage heights corrected for backwater from sandbag on control on basis of one discharge measurement and comparative studies.

Monthly discharge of Keshequa Creek at Craig Colony, Sonyea, N. Y., for the year ending September 30, 1927

[Drainage area, 69 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	172	7.6	36.4	0.528	0.61
November	315	23	65.3	.946	1.06
December	373	11	37.7	.546	.63
January	548	10	65.5	.949	1.09
February	524	16	84.7	1.23	1.28
March	612	23	124	1.80	2.08
April	418	24	73.5	1.07	1.1
May	909	24	125	1.81	2.09
June	40	7.1	17.9	.259	.29
July	108	3.8	15.4	.223	.26
August	49	4.1	8.83	.128	.15
September	6.7	1.5	3.60	.052	.06
The year	909	1.5	54.7	.793	10.79

CONESUS CREEK NEAR LAKEVILLE, N. Y.

LOCATION.—At highway bridge known locally as Millville Bridge, 1½ miles downstream from Lakeville, Livingston County, and outlet of Conesus Lake.

DRAINAGE AREA.—71 square miles (furnished by New York State Conservation Commission).

RECORDS AVAILABLE.—November 13, 1919, to September 30, 1927.

EQUIPMENT.—Vertical staff gage attached to piling 3 feet upstream from right bridge abutment. Discharge measurements made from highway bridge about a quarter of a mile downstream from Millville Bridge or by wading.

CHANNEL AND CONTROL.—Gage is located at outlet of a pond formed by an artificial control which is a parabolic concrete weir 25.33 feet long at upstream edge of concrete apron under bridge. Elevation of center of weir, 0.37 foot gage datum. Elevations of right and left ends of weir, 1.11 feet and 1.19 feet gage datum respectively.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.1 feet at 3.30 p. m. March 21 (discharge, 188 second-feet); minimum stage, 0.70 foot at 5.30 p. m. September 29 (discharge, 5.3 second-feet).

1919–1927: Maximum stage recorded, 2.6 feet April 9 and 10, 1926 (discharge, 308 second-feet); minimum discharge, 0.45 second-foot at 5 p. m. November 22, 1923.

DIVERSIONS AND REGULATION.—Water supply for villages of Avon and Geneseo is taken from Conesus Lake; amount diverted not known. Natural storage and regulation is afforded by Conesus Lake (area, 5.08 square miles).

ACCURACY.—Stage-discharge relation practically permanent during year except as affected by ice. Rating curve well defined by 25 discharge measurements between 1 and 300 second-feet. Five of the measurements, ranging from 16 to 135 second-feet, were made during current year. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except for periods of ice effect or of no record as indicated in footnote to table of daily discharge. Records good except those for periods of ice effect, which are fair.

Daily discharge, in second-feet, of Conesus Creek near Lakeville, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	16	31	39	64	100	139	78	82	31	23	13
2	12	15	31	40	64	98	139	75	81	32	20	17
3	11	14	30	38	68	96	149	75	77	29	20	13
4	12	14	32	38	64	95	136	78	82	28	20	13
5	12	16	31	39	64	93	153	78	74	27	20	12
6	14	18	30	37	67	93	139	77	72	26	20	12
7	13	17	30	36	64	93	136	78	70	27	23	12
8	12	17	32	34	59	98	134	75	70	26	19	11
9	12	18	33	34	59	93	132	75	67	24	17	11
10	12	18	33	34	59	93	126	74	64	24	16	11
11	11	17	32	34	58	95	123	75	62	23	17	12
12	12	17	31	36	57	96	121	75	59	23	18	11
13	12	16	35	36	56	98	114	72	56	22	16	12
14	12	17	40	34	59	112	108	74	54	25	18	13
15	12	18	38	34	60	114	108	74	51	25	17	13
16	12	33	36	32	67	110	105	72	50	22	16	13
17	11	26	32	32	68	112	103	72	48	22	15	12
18	12	28	30	36	70	112	103	71	46	23	16	13
19	12	33	30	40	65	112	102	70	48	23	15	12
20	12	31	34	49	65	112	100	71	46	21	15	12
21	12	31	39	56	65	161	95	68	45	22	17	11
22	13	32	38	81	65	149	98	65	44	21	15	11
23	13	32	38	71	72	153	93	65	43	21	15	9.7
24	13	31	37	65	105	149	92	78	40	22	14	9.7
25	22	31	37	65	100	155	90	81	39	22	14	9.2
26	14	36	40	65	107	157	93	86	38	21	14	8.7
27	14	31	39	65	103	161	87	90	37	23	13	7.3
28	15	31	37	70	103	157	87	90	35	22	14	8.7
29	14	32	39	64	-------	151	78	88	35	22	14	6.9
30	14	32	39	72	-------	147	78	88	32	22	15	7.3
31	18	-------	39	65	-------	141	-------	86	-------	24	12	-------

NOTE.—Discharge Dec. 6–8, 16–20, Jan. 7–17, 24–27, and Feb. 19–22 determined from gage heights corrected for ice effect on basis of observer's notes and weather records. Discharge Jan. 6 and Feb. 20 estimated; no gage-height record.

Monthly discharge of Conesus Creek near Lakeville, N. Y., for the year ending September 30, 1927

[Drainage area, 71 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	22	11	13.0	0.183	0.21
November	36	14	23.9	.337	.38
December	40	30	34.6	.487	.56
January	81	32	47.5	.669	.77
February	107	56	70.6	.994	1.04
March	161	93	120	1.69	1.95
April	153	78	112	1.58	1.76
May	90	65	76.6	1.08	1.24
June	82	32	54.9	.773	.86
July	32	21	24.0	.338	.39
August	23	12	16.7	.235	.27
September	17	6.9	11.2	.158	.18
The year	161	6.9	50.2	.707	9.61

CANADICE LAKE OUTLET NEAR HEMLOCK, N. Y.

LOCATION.—At foot of Canadice Lake, Ontario County, 4 miles southeast of Hemlock, Livingston County. Outlet is tributary to Genesee River through Honeoye Creek.

DRAINAGE AREA.—12.6 square miles, of which 1.0 square mile is lake surface.

RECORDS AVAILABLE.—April, 1903, to September 30, 1927.

EQUIPMENT.—Hook gage in channel above weir.

CHANNEL AND CONTROL.—Outflow is measured over a standard thin-edged weir with a 5-foot crest and two end contractions so arranged with needle timbers at the ends that the length may be increased to 14.96 feet. No end contractions during high water. The weir crest stands 3.14 feet above stream channel, which is artificial with a plank bottom and vertical sides, and the crest is never submerged by backwater. In addition there are two rectangular gates, each 1 foot square with three complete contractions and a fourth incomplete contraction at the bottom.

DIVERSIONS AND REGULATION.—No diversion from lake above gage. Outflow is regulated by bulkhead and gates at dam above weir.

ACCURACY.—Stage-discharge relation permanent; never affected by ice. Rating curve used is expressed by Francis formula. Corrections are made for velocity of approach for high stages. Gage read to hundredths once daily. Records good.

COOPERATION.—Data collected, computed, and furnished for publication by the city engineer of Rochester, N. Y.

Monthly discharge of Canadice Lake outlet near Hemlock, N. Y., for the year ending September 30, 1927

[Drainage area, 12.6 square miles]

Month	Mean elevation of lake above low-water mark	Discharge in second-feet		Run-off in inches
		Mean	Per square mile	
October	0.232	4.050	0.322	0.370
November	.579	11.405	.905	1.010
December	.603	11.895	.944	1.088
January	.571	11.190	.888	1.024
February	.872	15.754	1.250	1.302
March	2.133	11.521	.914	1.054
April	3.119	14.635	1.162	1.296
May	3.203	16.016	1.271	1.465
June	2.756	10.933	.868	.968
July	2.092	5.589	.443	.511
August	1.802	.621	.049	.057
September	1.678	.111	.009	.010
The year	1.637	9.477	.752	10.155

NOTE.—Terminal water surface elevation for the year was 1.24 feet higher than that of preceding year, corresponding to a gain in storage of 36,142,155 cubic feet or a discharge of 1.146 second-feet for the year. This correction applied to the above, gives 10.623 second-feet, equivalent to 0.843 second-foot per square mile or a run-off of 11.390 inches from the drainage area.

FALL CREEK NEAR ITHACA, N. Y.

LOCATION.—At Forest Home, half a mile upstream from Cornell University dam at foot of Beebe Lake and 1½ miles northwest of center of Ithaca, Tompkins County.

DRAINAGE AREA.—126 square miles (measured on topographic maps).

RECORDS AVAILABLE.—February 15, 1925, to September 30, 1927. July 12, 1908, to June 30, 1909, at steel highway bridge 1¼ miles below present site.

EQUIPMENT.—Au 60-day water-stage recorder on left bank. Discharge measurements made from cable 50 feet upstream from gage or by wading.

CHANNEL AND CONTROL.—Bed of stream composed principally of solid rock. Banks steep and wooded; not subject to overflow. Control formed by a broad-crested concrete weir 90 feet long with a 20-foot rectangular notch 1 foot deep; permanent when in proper repair.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 5.6 feet at 7 p. m. November 16 (discharge, 5,320 second-feet); minimum stage, from water-stage recorder, 0.18 foot at 5 p. m. August 25 (discharge, about 3 second-feet; result of regulation).

1925–1927: Maximum stage recorded, that of November 16, 1926; minimum discharge, that of August 25, 1927.

DIVERSIONS AND REGULATION.—Some diurnal fluctuation during low stages caused by operation of small power plants upstream.

ACCURACY.—Stage-discharge relation permanent after completion of repairs to weir on October 23, except as affected by ice; backwater from cofferdam October 1–23. Nine discharge measurements made after weir was repaired give a rating curve which is fairly well defined for ordinary stages; extended for extremely high and low stages. Shifting-control method used October 1–5. Backwater curve based on two discharge measurements used October 6–23. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day, except for period during which shifting-control method was used and except for periods of ice effect as noted in footnote to table of daily discharge. Records fair.

Daily discharge, in second-feet, of Fall Creek near Ithaca, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	154	480	396	80	334	223	227	149	223	47	151	40
2	174	291	252	75	260	182	227	150	174	42	122	181
3	207	235	188	75	239	164	244	121	157	36	78	146
4	143	200	160	80	374	174	345	149	149	37	68	78
5	142	185	130	90	244	152	393	231	154	41	50	53
6	282	174	110	85	215	164	446	160	164	37	42	42
7	280	157	100	80	196	298	431	124	135	44	37	38
8	206	143	100	80	174	1,060	269	106	118	65	49	33
9	155	161	100	75	178	644	235	138	108	50	58	31
10	170	352	100	70	182	498	208	227	102	38	53	28
11	287	196	100	65	168	592	185	234	95	37	42	35
12	183	140	100	65	143	847	168	219	88	80	36	97
13	150	135	110	70	124	1,360	157	174	85	46	31	50
14	138	137	220	70	110	1,790	146	151	79	36	27	48
15	122	140	150	70	120	1,190	132	390	82	72	32	37
16	114	2,040	120	70	120	681	129	359	74	97	30	35
17	122	2,280	100	70	190	531	140	282	69	59	34	32
18	143	700	95	75	396	550	135	273	72	47	38	23
19	199	1,040	90	90	270	617	122	248	56	38	30	32
20	187	576	85	120	162	494	120	196	99	35	30	23
21	330	435	100	160	140	1,340	102	174	77	33	22	23
22	203	364	110	340	130	1,020	714	154	64	33	30	29
23	152	329	100	600	140	475	483	209	129	49	22	20
24	146	310	95	400	220	401	291	1,720	84	164	24	18
25	363	287	100	260	360	319	227	991	68	106	17	20
26	439	260	95	190	698	301	293	652	85	70	17	19
27	235	334	85	140	334	330	398	621	76	49	20	19
28	188	269	85	150	273	422	273	418	61	51	29	20
29	168	244	80	174	-------	314	196	305	45	58	84	22
30	164	580	80	415	-------	260	160	248	53	70	96	18
31	459	-------	85	590	-------	260	-------	256	-------	126	60	-------

NOTE.—Discharge Dec. 4 to Jan. 28, Feb. 14–17, and 21–25 determined from gage heights corrected for ice effect on basis of one discharge measurement, observer's notes, and comparative studies with adjacent stations. Record trace faint Dec. 30, 31, and Jan. 2; discharge estimated from comparative studies.

Monthly discharge of Fall Creek near Ithaca, N. Y., for the year ending September 30, 1927

[Drainage area, 126 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	459	114	207	1.64	1.89
November	2,280	135	439	3.48	3.88
December	396	80	123	.976	1.13
January	600	65	160	1.27	1.46
February	698	110	232	1.84	1.92
March	1,790	152	569	4.52	5.21
April	714	102	253	2.01	2.24
May	1,720	106	320	2.54	2.93
June	223	45	101	.802	.89
July	164	33	57.8	.459	.53
August	151	17	47.1	.374	.43
September	181	18	43.0	.341	.38
The year	2,280	17	213	1.69	22.89

OWASCO LAKE OUTLET NEAR AUBURN, N. Y.

LOCATION.—On farm of Charles H. Pearce, 2½ miles downstream from center of Auburn, Cayuga County, and 4 miles downstream from State dam at outlet of Owasco Lake.

DRAINAGE AREA.—206 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 17, 1912, to September 30, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder on left bank. Discharge measurements made from cable at gage or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of coarse gravel overlying soft mud. Banks of ordinary channel comparatively low but seldom overflowed owing to regulation of flow. Flood channel banks slope upward gradually to a considerable height; fairly clean. Control is a low, broad-crested concrete dam 100 feet long 25 feet below gage. Elevation of crest of left half of dam is 1.28 feet, gage datum; crest of right half of dam is at elevation 2.13 feet.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 3.53 feet at 5 p. m. March 23 (discharge, 1,110 second-feet); minimum stage, from water-stage recorder, 1.46 feet at 7 a. m. July 1 (discharge, 10 second-feet; result of regulation).

1912–1927: Maximum stage, determined by leveling from floodmarks, 6.4 feet during period March 25–30, 1913 (discharge, 2,750 second-feet); minimum discharge, 3.8 second-feet at 7 p. m. August 21, 1920.

DIVERSIONS AND REGULATION.—An average of about 10 second-feet of water is pumped from Owasco Lake for municipal supply for the city of Auburn. Proportion returning to stream as sewage above gaging station is not known. Large diurnal fluctuation caused during low water by operation of several mills in the city of Auburn; seasonal flow regulated at State dam.

ACCURACY.—Stage-discharge relation permanent during year; not affected by ice. Rating curve well defined by many discharge measurements below 1,500 second-feet. Five of the measurements, ranging from 250 to 810 second-feet, were made during the current year and check the curve. Operation of water-stage recorder unsatisfactory at times. Daily discharge ascertained by averaging discharge for intervals of the day or, for a few days during which diurnal fluctuation was small, by applying to rating table mean daily gage height obtained from recorder graph by inspection, except for periods of no record as indicated in footnote to table of daily discharge. Records good except those estimated, which are fair.

Daily discharge, in second-feet, of Owasco Lake outlet near Auburn, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	186	376		230	458	616	732	183	624	141	183	201
2	212	401		230	452	589	712		580	140	175	183
3	260	438		252	464	567	688		533	143	167	181
4	278	432		242	460	542	584		537	134	178	117
5	325	408		234	460	535	537	190	526	153	166	156
6	289	415		241	452	498	518		433	143	159	189
7	288	408	560	243	447	486	511		346	143	142	180
8	270	422		235	447	481	470	170	303	136	184	187
9	264	415		230	432	542	434	182	269	139	187	178
10	265	408		264	428	612	408	180	292	132	165	177
11	288	394		248	416	641	418	183	276	174	172	165
12	278	394		234	398	700	358	179	260	149	161	189
13	282	394		233	377	771	318	178	252	151	170	180
14	278	309		230	388	883	286	175	167	152	128	156
15	283	256	401	230	370	940	226	176	160	148	180	168

Daily discharge, in second-feet, of Owasco Lake outlet near Auburn, N. Y., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	275	393	332	208	362	946	199	293	156	142	180	169
17	254	636	279	233	366	935	201	348	163	157	171	131
18	273	760	274	192	370	910	201	412	155	158	166	99
19	222	818	265	197	374	890	190	374	150	168	167	173
20	186	845	258	192	387	872	183	321	156	159	168	171
21	193		225	200	416	917	199	414	152	156	162	154
22	198		229	288	423	935	189	403	148	163	186	157
23	176		225	320	438	947	200	387	135	181	186	149
24	158		214	340	456	922	205	498	134	148	193	116
25	183		200	350	471	879	209	720	139	175	183	112
		810										
26	168		204	360	500	865		720	123	173	184	152
27	171		229	370	553	863		756	144	164	188	139
28	171		232	379	629	838	200	776	144	175	184	124
29	165		226	387	-------	812		744	143	172	206	120
30	167		238	408	-------	791		728	142	160	198	137
31	214	-------	252	441	-------	752	-------	696	-------	174	186	------

NOTE.—Water-stage recorder did not operate satisfactorily Nov. 21 to Dec. 15, Jan. 14, 15, 23–27, 29, Feb. 5, Apr. 23, 26–30, and May 2–7; discharge estimated mainly on basis of record of Owasco Lake levels during the periods. Braced figures show mean discharge for periods indicated.

Monthly discharge of Owasco Lake outlet near Auburn, N. Y., for the year ending September 30, 1927

[Drainage area, 206 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	325	158	233	1.13	1.30
November	845	256	581	2.82	3.15
December	-------	200	391	1.90	2.19
January	441	192	272	1.32	1.52
February	629	362	436	2.12	2.21
March	947	481	757	3.67	4.23
April	732	183	339	1.65	1.84
May	776	170	369	1.79	2.06
June	624	123	258	1.25	1.40
July	181	132	155	.752	.87
August	206	128	175	.850	.98
September	201	99	157	.762	.85
The year	947	99	343	1.67	22.60

NOTE.—Elevation of water surface of Owasco Lake decreased from 708.02 feet on Oct. 1 to 706.30 feet on Sept. 30. This indicates a net draft on the lake of 493,900,000 cubic feet, equivalent to an average flow for the year of 15.7 second-feet, 0.076 second-foot per square mile or 1.03 inches on drainage area.

EAST BRANCH OF FISH CREEK AT FISH CREEK, NEAR CONSTABLEVILLE, N. Y.

LOCATION.—At highway bridge half a mile west of Fish Creek, Lewis County, half a mile downstream from mouth of Alder Creek, and 6½ miles southwest of Constableville.

DRAINAGE AREA.—75 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 18, 1923, to September 30, 1927.

EQUIPMENT.—Chain gage attached to downstream guard rail of right span of bridge near right abutment. Discharge measurements made from upstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of boulders and gravel. One channel at bridge at low stages; two channels during floods. Banks not subject to overflow. Control composed of boulders, gravel, and some solid ledge; shifts between narrow limits.

EXTREMES OF DISCHARGE.—Maximum discharge during year, 2,560 second-feet at 7.30 a. m. November 17 (gage height, 4.4 feet); minimum stage, 1.20 feet several times August 14 and 23–26 (discharge, 26 second-feet).

1923–1927: Maximum discharge, about 4,280 second-feet at 8.50 a. m. November 14, 1925, and 6.45 a. m. April 25, 1926 (gage height, 5.1 feet); minimum discharge, 21 second-feet at 11.30 a. m. October 18, 1923 (gage height, 1.28 feet).

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve fairly well defined by 14 discharge measurements between 40 and 2,500 second-feet; extended beyond these limits. Six of the measurements, ranging from 60 to 710 second-feet, were made during the current year and, with one exception, check the curve closely. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table or, for days of considerable fluctuation in stage, by constructing a gage-height graph on basis of daily readings and averaging discharge for intervals of the day, except for period of ice effect as indicated in footnote to table of daily discharge. Records probably good except those for period of ice effect, which are fair.

Daily discharge, in second-feet, of East Branch of Fish Creek at Fish Creek, near Constableville, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	583	421	65	200	110	300	223	175	40	204	60
2	378	451	261	65	170	100	280	240	143	36	82	314
3	462	361	200	65	170	90	421	257	120	37	52	227
4	216	284	160	65	160	80	394	257	135	38	43	105
5	268	240	140	60	140	80	421	361	307	35	37	64
6	697	216	120	55	140	95	428	266	227	33	35	49
7	451	275	110	50	130	110	680	216	152	50	33	41
8	288	341	100	48	130	200	427	158	115	90	46	37
9	197	510	95	44	120	240	395	146	96	59	67	33
10	158	1,160	90	42	110	260	451	208	84	46	60	30
11	162	583	90	42	95	280	394	284	80	40	38	165
12	128	366	90	42	90	320	481	248	67	35	31	96
13	110	293	100	42	80	500	451	186	59	33	30	64
14	112	248	110	46	80	950	421	172	54	52	26	62
15	98	270	100	48	85	1,100	421	451	57	50	64	118
16	78	1,270	90	44	90	1,000	514	658	54	162	42	122
17	118	2,160	85	42	110	1,100	619	514	48	100	37	66
18	118	697	75	40	140	2,000	781	583	48	175	30	51
19	122	782	65	48	180	1,900	965	547	46	92	29	80
20	112	583	65	160	160	1,300	918	514	54	54	30	72
21	131	421	80	360	120	1,200	739	356	48	43	28	54
22	207	341	80	360	100	1,000	781	298	46	38	27	48
23	604	311	85	260	85	650	547	288	47	124	26	44
24	542	257	95	190	130	480	366	421	44	421	27	64
25	826	223	100	160	180	400	284	481	60	212	27	54
26	739	328	95	140	200	360	394	619	149	102	26	46
27	481	1,590	90	120	160	340	870	394	86	67	29	41
28	366	739	85	110	130	320	451	298	58	57	35	38
29	421	697	80	100	-------	260	321	219	50	49	90	38
30	421	658	75	130	-------	280	266	182	44	43	82	38
31	704	-------	75	190	-------	340	-------	162	-------	152	88	------

NOTE.—Discharge Dec. 3 to Apr. 2 determined from gage heights corrected for ice effect on basis of one discharge measurement, observer's notes, weather records, and comparative flow studies.

Monthly discharge of East Branch of Fish Creek at Fish Creek, near Constableville, N. Y., for the year ending September 30, 1927

[Drainage area, 75 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	826	60	315	4.20	4.84
November	2,160	216	575	7.67	8.56
December	421	65	113	1.51	1.74
January	360	40	104	1.39	1.60
February	200	80	132	1.76	1.83
March	2,000	80	563	7.51	8.66
April	965	266	506	6.75	7.53
May	658	146	329	4.39	5.06
June	307	44	91.8	1.22	1.36
July	421	33	82.7	1.10	1.27
August	204	26	48.4	.645	.74
September	314	30	77.4	1.03	1.15
The year	2,160	26	245	3.27	44.34

EAST BRANCH OF FISH CREEK AT TABERG, N. Y.

LOCATION.—At steel highway bridge in Taberg, Oneida County, a short distance downstream from mouth of Furnace Creek, and 2¾ miles upstream from confluence of East and West Branches near Blossvale.

DRAINAGE AREA.—188 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 1, 1923, to September 30, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder on downstream side of left bridge abutment. Discharge measurements made from downstream side of highway bridge or by wading.

CHANNEL AND CONTROL.—Bed of stream covered with boulders. Banks high and wooded; not subject to overflow. Water swift and turbulent. Control composed of large and small boulders 100 feet downstream from gage; shifting.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 6.15 feet at midnight November 16 (discharge, 7,350 second-feet); minimum stage, from water-stage recorder, 0.28 foot at 1 a. m. September 9 (discharge, 26 second-feet; result of regulation).

1923–1927: Maximum stage, from water-stage recorder, 8.2 feet at 11 p. m. April 6, 1924 (discharge, about 16,200 second-feet); minimum stage, from water-stage recorder, 0.12 foot at 10 p. m. September 26, 1924 (discharge, 24 second-feet).

DIVERSIONS AND REGULATION.—A small amount of water is diverted just above Glenmore for domestic supply for the city of Oneida. Operation of mills upstream causes some diurnal fluctuation of flow during extremely low water.

ACCURACY.—Stage-discharge relation changed during flood of March 18; affected by ice. Rating curve used October 1 to March 18, fairly well defined by eight discharge measurements between 175 and 3,500 second-feet; curve used March 19 to September 30 fairly well defined by four discharge measurements between 100 and 1,000 second-feet; both curves extended beyond these limits on basis of form of previous curves. Five discharge measurements, ranging from 110 to 975 second-feet, were made during the current year and check the respective curves. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection or, for days of considerable fluctuation in stage, by averaging discharge for intervals of

the day, except for periods of ice effect as indicated in footnote to table of daily discharge. Records for ordinary stages good; extremely low and high records and those for periods of ice effect, fair.

Daily discharge, in second-feet, of East Branch of Fish Creek at Taberg, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	177	1,180	1,040	220	494	260	762	415	348	93	576	198
2	724	1,040	595	200	440	240	671	475	296	79	251	528
3	1,080	915	410	200	450	220	846	525	255	75	144	425
4	534	690	360	200	547	200	798	540	248	81	106	233
5	680	619	300	220	638	200	870	786	550	75	102	142
6	1,750	559	280	220	583	220	840	537	462	70	93	114
7	1,070	677	280	200	472	278	1,320	395	311	99	81	78
8	730	798	280	200	395	517	932	327	241	195	226	84
9	505	1,120	280	200	341	613	816	304	211	138	286	56
10	425	2,130	280	190	312	619	854	415	195	100	189	72
11	415	1,170	260	180	285	658	769	604	192	86	117	267
12	341	746	260	180	260	768	854	537	161	73	86	241
13	301	644	280	180	240	1,270	822	437	138	86	81	150
14	289	577	320	220	220	2,270	798	385	121	110	78	123
15	274	583	320	240	220	2,710	769	1,080	126	166	126	146
16	246	2,440	280	220	220	2,560	910	1,420	123	290	110	205
17	278	4,500	260	200	282	2,710	1,040	1,060	112	261	86	138
18	308	1,480	240	200	363	4,030	1,220	1,280	104	373	78	95
19	329	1,900	220	240	415	3,960	1,420	1,180	106	213	70	93
20	320	1,320	220	480	395	2,810	1,320	950	121	128	69	115
21	391	899	220	750	350	2,750	1,130	762	112	93	65	91
22	509	711	240	750	316	2,490	1,480	579	106	81	63	79
23	1,190	658	240	650	308	1,490	1,060	580	145	296	60	75
24	1,180	613	240	480	386	1,210	699	950	128	1,130	58	78
25	2,190	535	260	420	445	995	525	1,140	123	548	58	91
26	1,800	625	260	380	500	950	771	1,310	402	276	58	78
27	1,040	3,670	240	340	400	838	1,800	798	231	175	65	70
28	820	1,680	240	320	320	790	958	585	148	140	78	65
29	760	1,250	240	320	-------	638	630	437	117	148	215	63
30	775	1,580	220	360	-------	650	492	365	98	117	248	62
31	1,280	-------	220	472	-------	838	-------	331	-------	297	331	-------

NOTE.—Discharge Dec. 4 to Jan. 30, Feb. 12–16, and Feb. 27 to Mar. 6 determined from gage heights corrected for ice effect on basis of two discharge measurements, weather records, and comparative flow studies.

Monthly discharge of East Branch of Fish Creek at Taberg, N. Y., for the year ending September 30, 1927

[Drainage area, 188 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,190	177	733	3.90	4.50
November	4,500	535	1,240	6.60	7.36
December	1,040	220	303	1.61	1.86
January	750	180	311	1.65	1.90
February	638	220	378	2.01	2.09
March	4,030	200	1,310	6.97	8.04
April	1,800	492	939	4.99	5.57
May	1,420	304	693	3.69	4.25
June	550	98	201	1.07	1.19
July	1,130	70	197	1.05	1.21
August	576	58	137	.729	.84
September	528	56	142	.755	.84
The year	4,500	56	550	2.93	39.65

BLACK RIVER NEAR BOONVILLE, N. Y.

LOCATION.—At highway bridge three-quarters of a mile upstream from mouth of Sugar River, 2 miles northeast of Boonville, Oneida County, and 2½ miles downstream from Hawkinsville.

DRAINAGE AREA.—303 square miles (measured on topographic maps).

RECORDS AVAILABLE.—February 16, 1911, to September 30, 1927.

EQUIPMENT.—Chain gage near center of left span, downstream side of bridge. Staff gage on right abutment used for high-water readings. Discharge measurements made from cable 1,200 feet upstream from gage or by wading near gage.

CHANNEL AND CONTROL.—Bed of stream rough and boulder strewn. Right bank clean in vicinity of gage; overflowed slightly during floods. Left bank high and wooded. Both banks high and wooded at cable section. Control composed of solid rock and boulders; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.8 feet at 5 p. m. March 19 (discharge, 3,880 second-feet); minimum stage, 3.7 feet at 5 p. m. September 29 and 8 a. m. and 5 p. m. September 30 (discharge, 97 second-feet).

1911–1927: Maximum stage, determined by leveling from floodmarks, about 12.5 feet during night of March 28, 1913 (discharge, about 10,000 second-feet); minimum stage, 2.40 feet at 5 p. m. August 26, 1918 (discharge, about 5 second-feet).

DIVERSIONS AND REGULATION.—Water is diverted at Forestport during the navigation season, and to a lesser extent during the remainder of the year, through Forestport feeder, flowing west, to a basin in Boonville. Black River Canal flows north from this basin entering Black River at the foot of Lyons Falls. A spillway from the basin overflows into Mill Creek, a tributary of Black River. Water flowing through these two channels returns to the river below the gaging station, thus passing around it. Black River Canal also flows south from Boonville, passing out of the Black River Basin and entering the summit level of the Erie Canal (Barge Canal) at Rome.

A continuous record of the amount of diversion through the Forestport feeder from Black River at Forestport during navigation season is published as a separate station, "Forestport feeder near Boonville, N. Y." A continuous record of the amount of diversion out of the Black River Basin is published as a separate station, "Black River Canal (flowing south) near Boonville, N. Y." The difference in discharge between these two records doubtless indicates very nearly the amount of water diverted around this station and returned to Black River.

The State Pond at Forestport, 8 miles upstream, impounds 13,068,000 cubic feet; another State dam 1½ miles upstream from Forestport provides a reservoir with a capacity of about 213,440,000 cubic feet and receives storage from headwater reservoirs with total capacity of about 1,800,000,000 cubic feet, from which 1,397,000,000 cubic feet may be drawn each year.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined by 54 discharge measurements between 30 and 4,500 second-feet. Two of the measurements, ranging from 245 to 800 second-feet, were made during the current year and indicate that the curve is correct. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table or, for days of considerable fluctuation in stage, by constructing a gage-height graph on basis of daily readings and averaging discharge for intervals of the day, except for period of ice effect as indicated in footnote to table of daily discharge. Records good except those for period of ice effect, which are fair.

Daily discharge, in second-feet, of Black River near Boonville, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	305	990	1,060	360	400	380	990	855	920	227	238	410
2	605	1,060	1,060	340	380	340	920	680	855	227	227	370
3	735	1,210	920	340	380	320	920	630	795	227	205	335
4	735	1,540	795	340	340	300	920	580	580	227	205	410
5	795	1,540	680	340	320	280	990	795	630	227	194	390
6	1,210	1,290	580	320	340	280	990	735	558	238	164	370
7	1,140	920	535	320	320	300	1,140	680	512	275	145	352
8	1,060	795	500	320	340	400	1,060	630	490	305	250	320
9	855	990	500	300	340	600	1,060	512	450	275	275	290
10	630	1,960	480	300	340	550	1,140	680	450	262	290	275
11	580	1,640	480	280	340	550	1,060	795	410	250	275	238
12	535	1,210	480	280	320	650	1,060	795	370	227	250	216
13	470	990	500	280	300	990	990	795	335	238	216	238
14	450	920	500	300	300	1,290	920	680	352	250	205	275
15	430	1,340	550	300	320	1,640	990	1,100	352	275	205	320
16	410	2,000	480	280	340	2,160	990	2,060	335	275	194	305
17	390	2,980	460	280	380	2,160	1,370	1,640	320	335	184	275
18	410	2,500	440	260	440	2,380	1,460	1,540	305	352	184	250
19	410	2,050	420	380	440	3,880	1,370	1,540	305	320	174	227
20	370	1,840	420	550	420	3,620	1,290	1,460	320	275	164	194
21	410	1,740	420	650	400	2,620	1,540	1,370	335	262	174	164
22	450	1,640	440	650	400	2,050	1,640	1,210	335	275	184	145
23	470	1,540	460	550	420	1,740	1,940	1,290	320	305	164	154
24	535	1,460	460	550	460	1,540	1,740	1,370	335	370	164	145
25	1,310	1,370	440	480	550	1,210	1,370	1,540	352	335	164	145
26	1,740	1,140	420	400	550	920	1,140	1,210	370	352	145	127
27	1,780	1,210	420	360	460	860	1,740	1,210	335	335	164	119
28	1,060	1,640	400	360	440	920	1,640	1,140	320	320	194	111
29	920	1,210	400	340	-------	1,060	1,210	1,210	335	305	290	97
30	795	1,140	380	460	-------	920	1,060	1,210	250	275	370	97
31	795	-------	360	440	-------	990	-------	1,140	-------	250	410	-------

NOTE.—Discharge Dec. 8 to Mar. 12 determined from gage heights corrected for ice effect on basis of two discharge measurements, observer's notes, weather records, and comparative flow studies.

Monthly discharge of Black River near Boonville, N. Y., for the year ending September 30, 1927

[Drainage area, 303 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,780	305	735	2.43	2.80
November	2,980	795	1,460	4.82	5.38
December	1,060	360	530	1.75	2.02
January	650	260	378	1.25	1.44
February	550	300	385	1.27	1.32
March	3,880	280	1,220	4.03	4.65
April	1,940	920	1,220	4.03	4.50
May	2,060	512	1,070	3.53	4.07
June	920	250	431	1.42	1.58
July	370	227	280	.924	1.07
August	410	145	215	.710	.82
September	410	97	245	.809	.90
The year	3,880	97	682	2.25	30.55

NOTE.—Water diverted past this station by the Forestport feeder is not included in the above table.

BLACK RIVER AT WATERTOWN, N. Y.

LOCATION.—At Vanduzee Street bridge in Watertown, Jefferson County, 8 miles above mouth near Dexter.

DRAINAGE AREA.—1,880 square miles (measured on topographic maps by Black River Regulating District).

RECORDS AVAILABLE.—July 18, 1920, to September 30, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder on downstream side of right bridge abutment. Discharge measurements made from cable 150 feet downstream from gage.

CHANNEL AND CONTROL.—Bed of stream rocky and rough. Banks high and lined with some brush and trees; not subject to overflow. Control composed largely of solid rock; seldom shifts.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 7.2 feet at 9 a. m. March 21 (discharge, 16,600 second-feet); minimum stage, from water-stage recorder, 0.79 foot at 11 a. m. August 15 (discharge, 442 second-feet).

1920–1927: Maximum stage, from water-stage recorder, 10.3 feet at 9 p. m. April 26, 1926 (discharge, 31,900 second-feet); minimum stage, from water-stage recorder, 0.30 foot from 1 to 5 a. m. August 6, 1923 (discharge, 155 second-feet).

DIVERSIONS AND REGULATION.—Water is diverted from Black River into Forestport feeder at Forestport. Part of this water returns to the river through various spillways and through Black River Canal (flowing north); the remainder passes out of the drainage basin through Black River Canal (flowing south). The record from the station on Black River Canal (flowing south) near Boonville indicates the amount of this diversion. See also "Diversions and Regulation" in description of station on Black River near Boonville (p. 104).

Seasonal distribution of flow is regulated by Stillwater Reservoir, Fulton Chain Lakes, Forestport Reservoir, and other storage reservoirs in the upper drainage basin. During medium and low stages there is considerable diurnal fluctuation in flow, caused by operation of mills and plants at Watertown and above.

ACCURACY.—Stage-discharge relation permanent during year; not affected by ice. Rating curve well defined by 21 discharge measurements between 700 and 26,000 second-feet; extended beyond these limits. Seventeen of the measurements, covering a range from 840 to 7,900 second-feet, were made during the current year and with two exceptions check the curve closely. Operation of water-stage recorder satisfactory except for a few short periods. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day. Records excellent.

Daily discharge, in second-feet, of Black River at Watertown, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,320	7,460	8,520	2,730	4,080	2,880	4,890	5,210	4,300	1,390	1,300	2,500
2	2,400	7,460	7,300	2,200	3,750	2,720	4,540	4,300	3,860	1,120	1,910	2,280
3	2,940	7,720	5,010	2,180	3,340	2,530	4,220	4,190	3,540	1,080	1,780	2,370
4	3,640	7,200	4,650	2,430	3,580	2,320	4,220	4,540	3,450	776	1,730	2,340
5	3,640	6,810	4,540	2,610	3,620	2,150	4,340	4,300	3,370	1,360	1,780	1,790
6	5,420	6,290	4,220	2,610	2,940	1,900	4,480	4,540	3,280	1,350	1,350	2,450
7	6,940	5,510	3,970	2,700	2,740	2,200	4,540	4,300	3,200	1,460	1,230	1,710
8	6,940	4,890	3,970	2,860	2,750	2,890	5,010	3,640	2,990	1,620	1,100	1,600
9	6,680	5,510	4,080	2,490	2,610	3,950	4,720	3,460	2,530	1,570	1,310	1,570
10	5,510	6,420	3,860	2,340	2,580	4,280	4,300	3,340	2,130	1,230	1,680	1,600
11	4,650	7,200	3,970	2,900	2,430	4,420	4,080	3,750	2,400	1,330	1,470	1,520
12	4,540	7,980	3,500	2,860	2,580	4,960	4,300	4,300	1,860	1,410	1,460	1,260
13	3,970	7,980	3,380	2,480	2,260	7,500	4,080	4,540	1,790	1,360	1,500	1,620
14	3,440	7,070	3,750	2,570	1,970	12,000	3,970	4,420	1,850	1,570	981	1,710
15	3,240	6,680	4,080	2,520	2,340	12,800	3,860	3,730	1,920	1,510	1,150	1,760
16	3,140	6,890	3,970	2,710	2,190	14,800	3,590	5,760	2,020	1,420	1,260	1,740
17	2,480	11,000	3,440	2,420	2,400	15,300	3,110	6,940	1,810	1,600	1,420	1,580
18	2,400	11,300	3,260	2,130	2,580	14,800	4,420	7,460	1,480	2,020	1,550	1,060
19	2,580	14,000	2,880	2,100	2,710	15,700	5,130	7,980	1,430	2,180	1,260	1,820
20	2,670	13,600	2,550	2,420	2,280	16,600	5,510	7,980	1,520	2,150	1,300	1,660
21	2,950	12,100	2,780	3,020	2,810	16,100	5,900	8,250	1,500	2,170	1,060	1,720
22	3,440	11,000	3,000	3,730	2,600	14,800	6,160	7,720	1,470	1,980	1,110	1,360
23	4,080	9,680	3,260	4,250	2,400	13,200	6,290	7,070	1,440	1,410	1,350	1,750
24	4,890	8,520	2,850	4,300	2,540	11,700	6,290	6,810	1,410	1,560	1,430	1,430
25	5,470	7,460	2,430	3,970	3,110	10,000	6,420	6,420	1,380	1,960	1,240	1,000
26	7,460	6,680	2,940	4,080	3,420	8,800	5,770	6,680	1,310	1,960	1,360	1,670
27	8,250	8,250	3,170	3,680	2,940	7,720	5,640	6,810	1,630	1,890	1,330	1,390
28	9,380	8,250	2,580	2,770	3,410	6,810	6,160	6,680	2,030	1,770	800	1,780
29	9,380	8,800	2,580	2,860	-------	6,160	6,420	5,900	1,750	1,760	1,040	1,660
30	8,520	8,800	2,760	2,910	-------	5,510	6,680	4,890	1,440	1,650	1,710	1,600
31	7,720	-------	2,670	3,570	-------	4,770	-------	4,650	-------	1,210	2,650	------

NOTE.—Gage-height record lacking Mar. 4, 5, June 4–6, and 22–24; discharge estimated or interpolated on basis of comparative flow studies.

Monthly discharge of Black River at Watertown, N. Y., for the year ending September 30, 1927

[Drainage area, 1,880 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	9,380	2,320	4,870	2.59	2.99
November	14,000	4,890	8,280	4.40	4.91
December	8,520	2,430	3,740	1.99	2.29
January	4,300	2,100	2,880	1.53	1.76
February	4,080	1,970	2,820	1.50	1.56
March	16,600	1,900	8,140	4.33	4.99
April	6,680	3,110	4,970	2.64	2.94
May	8,250	3,340	5,500	2.93	3.38
June	4,300	1,310	2,200	1.17	1.30
July	2,180	776	1,580	.840	.97
August	2,650	800	1,410	.750	.86
September	2,500	1,000	1,710	.910	1.02
The year	16,600	776	4,020	2.14	28.97

NOTE.—See "Diversions and regulation" in station description.

FORESTPORT FEEDER NEAR BOONVILLE, N. Y.

LOCATION.—Slope station at lower end of feeder, above point where it enters the basin at Boonville, Oneida County.

RECORDS AVAILABLE.—October 30, 1915, to September 30, 1927. Occasional discharge measurements 1900 and 1905–1915.

EQUIPMENT.—Two Gurley 7-day water-stage recorders, 2.53 miles apart. Gage No. 1 is at downstream end of left abutment of steel highway bridge in village of Hawkinsville; gage No. 2 is on left bank, just downstream from a farm bridge 1 mile upstream from the basin at Boonville. These gages and the two on Black River Canal (flowing south) near Boonville are set to the same datum. Discharge measurements made from steel highway bridge at gage No. 1 in Hawkinsville.

DETERMINATION OF DISCHARGE.—Daily discharge determined by use of Chezy formula. The coefficient "C," computed from each current meter measurement, is plotted against a time scale. A curve drawn through the plotted points shows the variation of "C" throughout the season and indicates the coefficients for intervening days. The other factors in the Chezy formula are obtained from gage-height records and cross section of canal.

DIVERSIONS AND REGULATION.—One spillway takes water from the Forestport feeder just below gage No. 2 and a second spillway takes water from the basin in Boonville. Both discharge into Mill Creek, which enters Black River below the Boonville gaging station. No spillway between gage No. 1 and gage No. 2. Other spillways in the feeder above gage No. 1 discharge into Black River above gaging station. Therefore, this station indicates the total amount of water diverted past the gaging station on Black River near Boonville, and the sum of this record and the record for Black River near Boonville indicates the total run-off of the Black River Basin above these gaging stations. Flow in the feeder is regulated at the outlet of Forestport Reservoir.

WINTER FLOW.—There is usually at least 35 second-feet flowing in canal during winter, and occasional current-meter measurements of the discharge have been made.

ACCURACY.—Operation of water-stage recorders satisfactory except for a few short periods. Records good except those for periods of unsatisfactory gage-height record, which are fair.

Daily discharge, in second-feet, of Forestport feeder near Boonville, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	June	July	Aug.	Sept.	Day	Oct.	Nov.	June	July	Aug.	Sept.
1	207	149	------	89	119	114	16	154	105	------	124	119	104
2	208	170	------	106	121	115	17	154	144	------	125	117	107
3	194	178	------	108	121	112	18	154	92	------	128	115	107
4	191	164	------	106	120	104	19	156	75	------	125	113	95
5	201	157	------	109	119	101	20	156	50	------	116	85	97
6	231	157	------	109	118	101	21	156	------	------	114	89	99
7	198	150	------	114	116	100	22	167	------	------	112	89	100
8	182	155	------	122	121	100	23	191	------	------	117	81	100
9	174	157	------	115	125	100	24	175	------	80	125	80	98
10	170	136	------	112	121	100	25	221	------	80	123	90	96
11	166	99	------	112	124	104	26	196	------	82	119	98	96
12	162	83	------	113	123	102	27	166	------	78	118	102	96
13	160	70	------	114	121	109	28	152	------	68	118	109	95
14	159	55	------	123	120	108	29	124	------	63	117	119	94
15	158	45	------	124	121	107	30	125	------	74	116	112	94
							31	150	------	------	115	118	------

NOTE.—Gage-height record unsatisfactory Oct 29–31, Nov. 13–15, 19, 20, June 24–29, July 3–5, Aug. 9, and Sept. 13–18; discharge estimated by comparative flow studies.

Monthly discharge of Forestport feeder near Boonville, N. Y., for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	231	124	173	July	128	89	116
November 1–20	178	45	120	August	125	80	111
June 24–30	82	63	75.0	September	115	94	102

BLACK RIVER CANAL (FLOWING SOUTH) NEAR BOONVILLE, N. Y.

LOCATION.—Slope station in summit level of Black River Canal, near Boonville, Oneida County.

RECORDS AVAILABLE.—September 16, 1915, to September 30, 1927. Occasional discharge measurements, 1900 and 1905–1915.

EQUIPMENT.—Two Gurley 7-day water-stage recorders, 1.81 miles apart. Gage No. 1 is on right bank about 500 feet upstream from steel and concrete highway bridge in Boonville. Gage No. 2 is on right bank 1,000 feet upstream from Lock 70 and 150 feet upstream from spillway into Lansing Kill. These gages and the two gages on Forestport feeder near Boonville are set to the same datum. Discharge measurements made from highway bridge in Boonville 500 feet downstream from gage No. 1.

DETERMINATION OF DISCHARGE.—Daily discharge determined by use of Chezy formula. The coefficient "C" is computed for each current-meter measurement and plotted against a time scale. A curve, drawn as nearly as possible through the plotted points, shows the variation of "C" throughout the season and indicates the coefficients for intervening days. The other factors in the Chezy formula are obtained from gage-height records and cross section of canal.

DIVERSIONS AND REGULATION.—No diversion between gage No. 1 and gage No. 2. Records obtained at this station indicate the quantity of water diverted from the Black River Basin into the Mohawk River Basin. Flow in canal is regulated by operation of spillway and sluice gates at Lock 70 and also by discharge of Forestport feeder into the basin at Boonville.

WINTER FLOW.—No flow in canal during winter.

ACCURACY.—Operation of water-stage recorders satisfactory except for a few short periods; discharge for these periods based upon comparative studies of flow. Records good.

Daily discharge, in second-feet, of Black River Canal (flowing south) near Boonville, N. Y., for the year ending September, 30, 1927

Day	Oct.	Nov.	June	July	Aug.	Sept.	Day	Oct.	Nov.	June	July	Aug.	Sept.
1	152	110	------	60	106	102	16	125	85	------	120	109	99
2	162	148	------	80	99	92	17	112	125	------	119	106	102
3	158	154	------	79	102	80	18	117	82	------	117	108	98
4	149	134	------	78	102	88	19	111	50	------	108	104	74
5	150	125	------	80	98	90	20	117	20	------	94	75	77
6	145	129	------	77	98	91	21	121	------	------	97	80	82
7	140	126	------	107	99	88	22	138	------	------	95	71	82
8	134	123	------	97	103	86	23	159	------	------	99	50	84
9	123	138	------	90	101	88	24	142	------	60	102	41	85
10	124	112	------	91	110	87	25	156	------	64	99	64	79
11	118	80	------	92	112	82	26	154	------	58	105	84	75
12	120	62	------	97	111	107	27	144	------	57	102	88	78
13	114	50	------	111	103	108	28	118	------	52	101	85	83
14	114	35	------	126	108	92	29	82	------	50	96	76	79
15	111	20	------	112	109	82	30	107	------	55	96	107	86
							31	106	------	------	97	100	------

NOTE.—Gage-height record unsatisfactory Oct. 27, 31, Nov. 13–16, 19, and 20; discharge estimated from comparative studies of flow.

Monthly discharge of Black River Canal (flowing south) near Boonville, N. Y., for the year ending September 30, 1927

Month	Discharge in second-feet			Month	Discharge in second-feet		
	Maximum	Minimum	Mean		Maximum	Minimum	Mean
October	162	82	130	July	126	60	97.5
November 1-20	154	20	95.4	August	112	41	93.8
June 24-30	64	50	56.6	September	108	74	87.5

SUGAR RIVER AT TALCOTTVILLE, N. Y.

LOCATION.—At Talcottville, Lewis County, 150 feet upstream from crest of falls, 250 feet downstream from steel highway bridge, and 4½ miles northwest of Boonville.

DRAINAGE AREA.—42 square miles (measured on topographic maps).

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

EQUIPMENT.—Staff gage in two sections on left bank; lower section inclined, upper vertical. Discharge measurements made from steel highway bridge 250 feet upstream from gage or by wading.

CHANNEL AND CONTROL.—Bed of stream is solid rock ledge overlain in places with boulders. Right bank steep and wooded. Left bank rises abruptly for about 10 feet to a level plain; clean. Control at crest of falls is solid rock ledge; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period of record, 4.5 feet at 5 p. m. November 16, 1926 (discharge, 1,840 second-feet); minimum stage, 0.88 foot at 8 a. m. and 5 p. m. July 27 and 8 a. m. July 28, 1926, and at 5 p. m. August 26, 1927 (discharge, 6.5 second-feet).

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during period of record except as affected by ice. Rating curve well defined between 8 and 1,000 second-feet by 13 discharge measurements made during period. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table or, for days of considerable fluctuation, by constructing a gage-height graph on basis of daily readings and averaging discharge for intervals of the day, except for periods of ice effect as indicated in footnote to table of daily discharge. Records good except those for periods of ice effect, which are fair.

Daily discharge, in second-feet, of Sugar River at Talcottville, N. Y., for the years ending September 30, 1926 and 1927

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1926				1926				1926			
1		8.7	20	11		21	84	21	10	11	20
2		14	18	12		20	44	22	11	48	18
3		54	16	13		20	36	23	8.7	66	19
4		32	14	14		16	29	24	8.1	682	146
5		16	33	15		16	27	25	7.5	149	169
6		14	70	16		14	36	26	7.0	84	99
7		329	79	17	14	15	39	27	6.5	62	58
8		77	34	18	13	13	32	28	8.7	51	51
9		40	233	19	11	11	27	29	16	32	46
10		25	206	20	11	11	22	30	13	25	37
								31	10	22	

Daily discharge, in second-feet, of Sugar River at Talcottville, N. Y., for the years ending September 30, 1926 and 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1926–27												
1	34	194	191		150	65	191	56	64	13	127	20
2	408	243	86		110	60	225	84	54	11	33	113
3	220	194	74		100	55	229	74	44	12	20	56
4	94	155	70		240	55	229	120	44	13	16	27
5	384	129	64		200	55	198	114	111	10	14	18
6	552	136	64		130	50	184	74	66	10	13	14
7	216	258	64		94	51	278	54	47	20	11	13
8	136	270	64		84	169	142	47	37	18	25	11
9	94	278	72		70	214	136	49	32	13	27	10
10	99	462	62	36	60	210	129	105	32	10	16	9.3
11	94	237	56		54	184	94	155	30	9.3	13	48
12	79	180	58		51	198	99	111	25	8.7	11	23
13	70	146	54		46	270	99	86	22	9.3	10	20
14	58	123	54		40	866	86	69	21	14	8.7	17
15	52	114	58		50	885	84	435	20	21	11	86
16	47	910	54		44	802	84	386	18	39	10	34
17	62	500	51		44	938	155	216	18	23	8.7	21
18	54	229	51		79	1,370	123	477	16	42	8.7	17
19	58	513	51	49	89	929	111	218	17	18	7.5	16
20	60	258	58	240	70	488	102	306	18	13	7.5	14
21	79	191	58	240	55	557	84	149	16	11	7.5	13
22	352	155	54	180	50	513	206	105	18	9.3	7.5	13
23	554	142	50	160	60	413	105	206	18	24	7.5	14
24	441	139	48	120	89	300	72	321	16	82	7.5	13
25	746	129	44	100	99	321	66	414	18	32	7.5	11
26	410	226	40	90	102	278	326	218	44	18	6.5	10
27	258	736	37	80	89	237	318	169	22	16	9.3	11
28	169	237	37	75	74	206	129	111	17	14	12	11
29	206	258	37	65	-------	191	89	79	14	13	45	11
30	129	278	37	60	-------	198	70	66	14	11	27	11
31	368	-------	37	190	-------	344	-------	70	-------	182	29	------

NOTE.—Discharge Dec. 23–26, Jan. 20 to Feb. 6, Feb. 13–15, 20–22, and Mar. 1–6, determined from gage heights corrected for ice effect on basis of two discharge measurements and weather records. Gage readings incorrectly made Jan. 1–18; mean discharge estimated as indicated by braced figure.

Monthly discharge of Sugar River at Talcottville, N.Y., for the years ending September 30, 1926 and 1927

[Drainage area, 42 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1926					
July 17–31	16	6.5	10.4	0.248	0.14
August	682	8.7	64.5	1.54	1.78
September	233	14	58.7	1.40	1.56
1926–27					
October	746	34	212	5.05	5.82
November	910	114	267	6.36	7.10
December	191	37	59.2	1.41	1.63
January	240	----------	74.1	1.76	2.03
February	240	40	86.5	2.06	2.14
March	1,370	50	370	8.81	10.16
April	326	66	148	3.52	3.93
May	477	47	166	3.95	4.55
June	111	14	31.1	.740	.83
July	82	8.7	23.9	.569	.66
August	127	6.5	18.2	.433	.50
September	113	9.3	23.5	.560	.62
The year	1,370	6.5	124	2.95	39.97

MOOSE RIVER AT McKEEVER, N. Y.

LOCATION.—Half a mile downstream from dam of Gould Paper Co. at McKeever, Herkimer County, and 2 miles downstream from mouth of South Branch of Moose River.

DRAINAGE AREA.—366 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 28, 1922, to September 30, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder on left bank. Discharge measurements made from cable 250 feet upstream from gage or by wading.

CHANNEL AND CONTROL.—Channel smooth and straight in vicinity of gage. Banks fairly high and wooded; subject to overflow only at extremely high stages. Low-water control, about 600 feet downstream from gage, composed of coarse gravel and boulders. As the stage rises the control moves downstream until at flood stages the control section is probably about 1 mile downstream.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 8.7 feet at 9 a. m. November 17 (discharge, 5,240 second-feet); minimum stage, from water-stage recorder, 1.70 feet at 11 a. m. August 14 (discharge, 129 second-feet; result of regulation).

1922–1927: Maximum stage recorded, 12.9 feet at about 10 p. m. June 22, 1922 (discharge, about 11,000 second-feet); minimum stage, from water-stage recorder, 1.37 feet at 3 a. m. September 2, 1925 (discharge, 64 second-feet; result of regulation).

DIVERSIONS AND REGULATION.—Flow greatly regulated for short periods at dam of Gould Paper Co. half a mile upstream. Seasonal distribution of flow ordinarily slightly affected by operation of State dam at Old Forge. See under "Diversions and regulation" in station description for station on Middle Branch of Moose River at Old Forge, N. Y.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined by 20 discharge measurements between 100 and 7,500 second-feet. Two measurements, ranging from 585 to 890 second-feet, made during current year check the curve closely. Two other measurements, made during rapidly changing stages, have been disregarded. Operation of water-stage recorder unsatisfactory at times. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day, except for periods of ice effect or of no record as indicated in footnote to table of daily discharge. Records good except those estimated or those for period of ice effect, which are fair.

Daily discharge, in second-feet, of Moose River at McKeever, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	536	1,350	1,390	420	550	440	966	998		288	325	708
2	517	1,450	1,150	320	550	420	722	912		262	406	701
3	818	1,600	945	500	500	420	708	996		238	363	840
4	865	1,950	850	420	500	400	990	886	1,200	270	291	695
5	898	2,250	750	400	500	400	794	1,100		314	241	556
6	2,320	1,000	700	400	500	380	774	1,170		295	224	486
7	2,270	926	650	380	500	380	879	1,000	665	273	221	402
8	1,530	1,120	750	400	480	420	1,000	840	585	280	224	348
9	1,380	1,140	750	300	480	500	933	907	487	306	238	321
10	1,170	3,030	700	460	460	550	750	805	464	306	291	288
11	1,160	2,000	700	500	460	550	899	1,090	439	280	321	299
12	1,000	1,500	550	500	440	600	736	1,420	347	291	284	398
13	856	1,250	750	500	440	600	914	1,190	390	273	245	438
14	740	1,150	650	360	440	1,650	794	1,180	340	245	234	418
15	740	1,080	500	380	480	2,450	898	1,040		245	214	394

Daily discharge, in second-feet, of Moose River at McKeever, N. Y., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	718	1,360	550	260	500	2,720	892	1,630		336	238	375
17	508	4,410	550	300	480	2,450	1,190	1,550		414	245	371
18	706	2,640	550	400	550	2,910	1,590	1,600		500	228	371
19	551	2,210	500	380	550	4,130	2,130	2,010		600	214	367
20	686	2,370	700	400	550	3,720	2,940	1,870		510	208	367
21	595	2,130	600	440	550	2,870	2,810	1,700		422	202	386
22	618	1,680	550	500	500	2,720	2,390		340	340	202	430
23	855	1,520	550	550	480	2,270	2,690			295	234	446
24	1,260	1,390	460	600	480	2,050	1,710			317	248	470
25	2,310	1,210	400	550	500	1,800	1,490	1,750		394	208	450
26	3,980	1,210	460	550	480	1,550	1,390			422	195	422
27	2,160	2,020	550	500	480	1,330	1,690			398	211	406
28	1,570	2,010	480	480	480	1,240	1,660	1,430		351	255	394
29	1,390	1,580	400	420	-------	870	1,110	1,120	310	325	597	359
30	1,330	1,550	420	440	-------	918	1,130	1,400	295	291	1,330	382
31	1,300	-------	420	500	-------	1,100	-------	1,500	-------	273	920	------

NOTE.—Discharge Dec. 4 to Mar. 13 determined from gage heights corrected for ice effect on basis of two discharge measurements, observer's notes, and weather records. Discharge estimated by comparative studies owing to unsatisfactory operation of recorder Oct. 31 to Nov. 6, Nov. 11–14, 21, Jan. 21–23, Apr. 8, May 20–27, 30, 31, June 1–6, and 14–29.

Monthly discharge of Moose River at McKeever, N. Y., for the year ending September 30, 1927

[Drainage area, 366 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,980	508	1,200	3.28	3.78
November	4,410	926	1,740	4.75	5.30
December	1,390	400	643	1.76	2.03
January	600	260	436	1.19	1.37
February	550	440	495	1.35	1.41
March	4,130	380	1,450	3.96	4.56
April	2,940	708	1,320	3.61	4.03
May	2,010	805	1,350	3.69	4.25
June	----------	295	543	1.48	1.65
July	600	238	334	.913	1.05
August	1,330	195	318	.869	1.00
September	840	288	443	1.21	1.35
The year	4,410	195	857	2.34	31.78

NOTE.—See under "Diversions and regulation" in station description. See also footnote to monthly discharge table for Middle Branch of Moose River at Old Forge, N. Y.

MIDDLE BRANCH OF MOOSE RIVER AT OLD FORGE, N. Y.

LOCATION.—At Old Forge, Herkimer County, 300 feet downstream from highway bridge and 400 feet downstream from State dam.

DRAINAGE AREA.—51.5 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 9, 1911, to September 30, 1927.

EQUIPMENT.—Vertical staff gage on left bank. Discharge measurements made from highway bridge or by wading.

CHANNEL AND CONTROL.—Bed of stream near gage and low-water control composed of coarse gravel. Primary control is rock ledge extending across channel 300 feet downstream from gage. Backwater from dam at Thendara frequently occurs.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.1 feet at 5 p. m. September 22 (discharge, 350 second-feet); minimum discharge, 38 second-feet July 12–17 (stage-discharge relation affected by varying amounts of backwater from Thendara Dam).

1911–1927: Maximum discharge recorded, 862 second-feet morning and afternoon of March 23, 1921; minimum discharge, 16 second-feet several times in October and November, 1919.

DIVERSIONS AND REGULATION.—Flow controlled by gates in State dam 400 feet upstream from gage. At this dam storage in First, Second, Third, and Fourth Lakes of Fulton Chain of Lakes is regulated. Further regulation of storage in the Fulton Chain is obtained by a dam at the outlet of Sixth Lake near Inlet.

ACCURACY.—Stage-discharge relation throughout most of the year affected by backwater from Thendara Dam; not affected by ice. Standard rating curve well defined by 19 discharge measurements below 400 second-feet. One measurement made during current year at a stage of 1.96 feet was unaffected by backwater and checks the standard curve closely. Gage read to hundredths twice daily. Daily discharge ascertained by applying to rating table mean daily gage height corrected for backwater from Thendara Dam on basis of six discharge measurements and record of lake elevations and gate openings at dam, except for period October 20–25, May 14 to June 5, August 12–20, and September 12–28, for which the standard rating was used direct, there being no evidence of backwater. Records fair.

Daily discharge, in second-feet, of Middle Branch of Moose River at Old Forge, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	170	140	120	120	150	130	55	170	40	40	90
2	70	170	140	120	120	150	130	55	138	40	40	90
3	70	190	140	120	120	150	130	55	138	40	40	90
4	75	220	120	120	120	150	130	55	124	40	40	90
5	75	200	120	120	120	150	130	55	92	40	40	90
6	85	200	120	120	120	150	130	55	90	40	40	90
7	100	200	120	120	120	150	95	55	90	40	40	90
8	110	180	120	120	120	150	50	55	65	40	40	90
9	130	170	120	120	120	150	50	55	40	40	40	85
10	150	170	120	120	120	150	50	55	40	40	50	85
11	150	170	120	120	120	150	50	60	40	40	60	140
12	150	170	120	120	120	150	50	60	40	38	64	197
13	150	170	120	120	150	150	50	85	40	38	61	197
14	150	160	120	120	160	150	50	110	40	38	59	197
15	150	150	120	120	160	150	50	104	40	38	65	206
16	150	140	120	120	150	150	50	170	40	38	65	216
17	150	190	120	120	150	150	50	162	40	38	62	216
18	140	220	120	120	150	150	50	257	40	40	62	216
19	130	240	120	120	150	150	55	314	40	40	60	216
20	124	260	120	120	150	160	55	314	40	40	76	268
21	124	260	120	120	150	160	55	302	40	40	95	302
22	124	260	120	120	150	170	55	206	40	40	95	326
23	124	260	120	120	150	190	55	206	40	40	95	326
24	124	260	120	120	150	190	55	197	40	40	90	314
25	146	260	120	120	150	180	55	197	40	40	90	302
26	170	200	120	120	150	180	55	197	40	40	90	290
27	180	140	120	120	150	180	55	197	40	40	90	268
28	170	140	120	120	150	180	55	197	40	40	90	246
29	170	140	120	120	-------	150	55	197	40	40	90	260
30	170	140	120	120	-------	130	55	188	40	40	90	260
31	170	-------	120	120	-------	130	-------	188	-------	40	90	------

Monthly discharge of Middle Branch of Moose River at Old Forge, N. Y., for the year ending September 30, 1927

[Drainage area, 51.5 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	180	70	131	2.54	2.93
November	260	140	193	3.75	4.18
December	140	120	122	2.37	2.73
January	120	120	120	2.33	2.69
February	160	120	138	2.68	2.79
March	190	130	156	3.03	3.49
April	130	50	69.5	1.35	1.51
May	314	55	144	2.80	3.23
June	170	40	59.6	1.16	1.29
July	40	38	39.6	.769	.89
August	95	40	66.1	1.28	1.48
September	326	85	195	3.79	4.23
The year	326	38	119	2.31	31.44

NOTE.—Lake levels drawn down during September in order to install new gates in State Dam. Net draft during year equivalent to 19.2 second-feet, or 0.373 second-foot per square mile, corresponding to 5.06 inches on drainage area.

MIDDLE BRANCH OF MOOSE RIVER NEAR McKEEVER, N. Y.

LOCATION.—Half a mile upstream from confluence of Middle and South Branches of Moose River, 1 mile downstream from dam at Nelson Lake, and 1½ miles northeast of McKeever, Herkimer County.

DRAINAGE AREA.—147 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1925, to September 30, 1927.

EQUIPMENT.—Au 7-day water-stage recorder on right bank. Discharge measurements made from cable 75 feet downstream from gage or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of boulders. Channel straight in vicinity of gage. Banks fairly high and wooded. Control composed of boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 5.35 feet at 4 a. m. March 22 (discharge, 1,200 second-feet); minimum stage, from water-stage recorder, 2.40 feet at 2 a. m. August 9 (discharge, 91 second-feet).

1925–1927: Maximum stage, from water-stage recorder, 6.6 feet at 7 a. m. April 27, 1926 (discharge, 2,100 second-feet); minimum stage recorded on August 9, 1927.

DIVERSIONS AND REGULATION.—Seasonal distribution of flow ordinarily slightly affected by storage operations in Fulton Chain of Lakes. See under "Diversions and regulation" in station description for Middle Branch of Moose River at Old Forge, N. Y.

ACCURACY.—Stage-discharge relation changed for low stages March 22; seriously affected by ice. Rating curve used October 1 to March 22, well defined by 11 discharge measurements between 150 and 2,500 second-feet. A measurement made October 25 at a stage of 4.1 feet checks this curve closely. Four measurements, ranging from 190 to 640 second-feet, made during period April to September define the new low-water curve for use after March 22, which taken in conjunction with previous high-water rating gives a curve well defined between 175 and 2,500 second-feet. Operation of water-stage recorder unsatisfactory at times, particularly during winter. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection or, for days of considerable fluctuation in

stage, by averaging discharge for intervals of the day, except for periods of ice effect or of no record as indicated in footnote to table of daily discharge. Records good except those for periods of ice effect or of no records, which are fair.

Daily discharge, in second-feet, of Middle Branch of Moose River near McKeever, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	289		657	220	280	260	442	417	506	140	129	189
2	312		550	220	280	240	438	396	449	131	121	245
3	361		460	220	280	240	446	375	366	133	107	239
4	377		400	220	260	220	423	343	369	138	104	203
5	470		340	220	240	220	392	366	377	133	102	207
6	724		280	220	260	220	413	343	274	124	97	210
7	679	700	260	200	240	220	446	334	279	128	96	174
8	724		260	200	260	240	375	331	293	126	99	184
9	724		260	190	260	260	366	325	252	128	101	182
10	724		260	190	260	280	366	322	237	135	104	157
11	701		280	180	240	280	353	334	198	137	114	209
12	636		280	180	240	300	337	340	205	163	109	266
13	552		280	200	240	320	334	334	229	131	107	296
14	512	724	280	220	240	500	340	362	203	119	109	266
15	481	636	260	240	260	593	322	403	196	112	121	263
16	444	642	260	240	300	679	325	442	187	153	119	266
17	413	771	240	260	320	724	343	518	174	163	116	274
18	387	820	240	260	320	895	389	558	161	207	109	277
19	371	978	220	260	300	1,000	413	738	178	163	107	279
20	361	1,030	220	280	280	1,060	446	788	184	191	109	282
21	340	1,030	240	280	280	1,170	495	814	161	169	114	332
22	354	1,000	260	280	260	1,170	579	763	157	144	131	372
23	462	950	260	280	260	1,120	644	644	155	137	161	389
24	413	870	260	280	280	1,060	622	622	153	161	152	396
25	550	795	260	260	280	950	644	644	152	152	122	372
26	657	747	260	240	260	840	714	644	159	144	137	331
27	636	771	240	220	260	788	622	644	153	138	153	346
28	657	679	240	220	260	667	538	644	153	121	174	319
29	657	679	240	220	-------	600	310	622	152	119	178	293
30	636	679	240	240	-------	518	472	600	150	122	228	346
31	657	-------	220	260	-------	491	-------	558	-------	131	258	------

NOTE.—Discharge Dec. 2 to Mar. 13 determined from gage heights corrected for ice effect on basis of two discharge measurements, weather records, and comparative studies with records from other stations in Moose River drainage basin. Water-stage recorder did not operate satisfactorily Oct. 31 to Nov. 14, Dec. 6–11, 20–25, 27–31, Jan. 1, 10–15, 17–22, 24–29, 31, Feb. 1–5, 7–12, 14–18, 21–24, and Mar. 2–13; discharge estimated by comparative studies. Braced figure shows mean discharge for period indicated.

Monthly discharge of Middle Branch of Moose River near McKeever, N. Y., for the year ending September 30, 1927

[Drainage area, 147 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	724	289	525	3.57	4.12
November	1,030	636	763	5.19	5.79
December	657	220	291	1.98	2.28
January	280	180	232	1.58	1.82
February	320	240	268	1.82	1.90
March	1,170	220	585	3.98	4.59
April	714	310	445	3.03	3.38
May	814	322	502	3.41	3.93
June	506	150	229	1.56	1.74
July	207	112	142	.966	1.11
August	258	96	129	.878	1.01
September	396	157	272	1.85	2.06
The year	1,170	96	365	2.48	33.73

NOTE.—See "Diversions and regulation" in station description. See also footnote to monthly discharge table for Middle Branch of Moose River at Old Forge, N. Y.

OTTER CREEK NEAR GLENFIELD, N. Y.

LOCATION.—A quarter of a mile upstream from dam of Otter Creek Power Corporation, 1¾ miles upstream from mouth, and 2½ miles northeast of Glenfield, Lewis County.

DRAINAGE AREA.—62 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 16, 1924, to September 30, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder on left bank. Discharge measurements made from cable 250 feet upstream from gage or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of boulders and outcropping ledge rock. Banks fairly high and clean; not subject to overflow. Control is a timber weir with a 30-foot spillway, the crest of which is the edge of a 2-inch plank protruding about 1 inch above a 10-inch timber sill; not permanent owing to varying amounts of leakage through and under weir. Elevation of crest of spillway, 1.08 feet gage datum. Overflow around right end of weir begins at gage height 4.6 feet.

EXTREMES OF DISCHARGE.—Maximum stage during year ending September 30, 1927, from water-stage recorder, 4.8 feet at 4 p. m. March 19 (discharge, 810 second-feet); minimum stage, from water-stage recorder, 1.47 feet at noon September 30 (discharge, 28 second-feet).

1924–1927: Maximum stage, from water-stage recorder, 6.8 feet at 4 p. m. April 25, 1926 (discharge, about 1,920 second-feet); minimum discharge, 27 second-feet at 8 p. m. September 2, 1925 (gage height, 1.49 feet).

DIVERSIONS AND REGULATION.—None.

ACCURACY.—Stage-discharge relation during year ending September 30, 1927, not permanent; affected by ice, by log on control weir, and by leakage through weir. Two standard rating curves used, both fairly well defined. Seven open-water discharge measurements made during year check the respective curves or indicate shifts in control. Operation of water-stage recorder satisfactory except for two short periods. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day, except for period of ice effect and periods of no record as indicated in footnote to table of daily discharge. Shifting-control method or parallel curves used March 20 to September 30. Records fair.

The following tables of daily and monthly discharge for the years ending September 30, 1924–1926, are revised data and supersede those published in Water-Supply Papers 604 and 624.

Daily discharge, in second-feet, of Otter Creek near Glenfield, N. Y., for the years ending September 30, 1924-1927

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1924				1924			
1		36	30	16	44	44	77
2		34	40	17	44	41	69
3		32	57	18	44	36	62
4		30	52	19	41	41	56
5		59	46	20	39	36	53
6		68	49	21	39	46	50
7		86	57	22	36	46	46
8		94	57	23	36	54	47
9		77	72	24	34	56	46
10		68	101	25	39	49	42
11		62	103	26	39	44	42
12		59	103	27	39	41	40
13		49	98	28	36	39	39
14		49	103	29	32	36	47
15		46	89	30	32	34	336
				31	36	35	

Daily discharge, in second-feet, of Otter Creek near Glenfield, N. Y., for the years ending September 30, 1924–1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1924–25												
1	610	45	80	55	36	200	340	208	85	52	75	28
2	450	47	80	55	38	180	305	218	98	47	72	28
3	305	44	75	55	36	170	294	214	110	45	63	32
4	220	44	75	55	36	160	294	204	105	44	57	34
5	177	44	70	60	36	160	294	218	96	44	56	31
6	148	42	83	60	38	150	269	220	88	42	68	29
7	125	42	89	60	42	148	250	206	80	41	128	38
8	113	42	105	60	59	148	245	194	74	40	116	38
9	101	41	157	60	83	154	245	179	72	38	107	33
10	91	41	174	55	122	170	245	161	66	44	168	33
11	85	41	148	55	218	258	245	154	60	39	163	34
12	78	40	143	50	525	328	252	152	59	35	138	54
13	75	40	130	48	462	305	294	150	53	34	120	88
14	68	40	106	48	438	305	316	138	50	32	103	202
15	64	38	98	44	376	328	364	125	53	30	89	174
16	62	36	95	44	316	294	388	116	69	51	83	183
17	60	36	95	42	260	256	352	123	60	106	73	239
18	59	36	90	42	202	243	305	125	59	103	78	219
19	56	36	90	42	180	328	282	123	56	78	68	181
20	54	38	90	40	160	458	275	115	53	63	60	150
21	53	42	85	40	159	400	241	108	50	57	55	144
22	53	81	80	38	175	376	260	105	47	150	51	126
23	52	202	75	38	233	340	340	106	46	234	47	112
24	52	210	75	38	364	294	376	122	44	165	45	103
25	52	163	75	38	388	278	352	111	57	129	41	96
26	50	136	75	38	364	282	340	105	60	141	40	88
27	49	110	70	38	278	328	294	98	60	132	38	83
28	47	95	70	38	220	625	258	93	59	110	36	88
29	47	85	65	36	------	595	222	91	57	94	33	88
30	46	80	60	36	------	462	200	89	54	86	32	86
31	46	------	60	36	------	425	------	88	------	75	29	------
1925–26												
1	83	187	148	75	90	100	126	395	116	75	37	59
2	78	168	150	80	90	90	122	479	160	64	39	56
3	98	156	142	80	90	75	118	745	154	56	40	52
4	112	146	152	80	85	70	118	900	128	52	40	46
5	118	138	177	85	80	70	111	650	112	47	39	47
6	122	138	271	95	80	80	105	462	101	48	38	50
7	122	150	344	100	75	80	112	382	96	62	68	52
8	116	177	307	95	75	70	186	344	114	56	84	46
9	112	185	241	90	70	65	274	305	136	52	81	56
10	120	194	202	85	70	65	387	285	134	103	68	87
11	116	183	183	85	70	65	462	281	118	148	60	81
12	118	175	187	80	65	60	456	271	103	122	54	66
13	122	215	162	80	65	60	448	244	96	93	53	60
14	124	346	150	80	65	60	475	215	89	50	50	54
15	124	517	142	80	65	60	534	196	229	70	47	50
16	116	517	130	80	65	60	493	183	448	71	43	50
17	153	489	130	80	70	60	421	164	318	68	42	52
18	210	395	120	84	70	65	340	150	235	66	39	52
19	211	317	120	146	70	65	293	138	198	59	37	52
20	198	290	120	164	70	70	259	142	148	53	32	50
21	198	269	132	183	65	88	269	140	126	50	29	49
22	198	241	148	160	65	103	406	132	111	45	37	45
23	187	226	136	140	65	120	738	138	100	43	43	45
24	175	206	146	130	65	134	1,070	132	89	40	137	88
25	214	191	126	110	65	142	1,700	122	84	38	185	125
26	425	175	105	100	70	142	1,380	112	91	35	125	123
27	385	177	96	90	85	140	799	105	105	33	99	105
28	312	181	90	80	100	154	552	101	98	33	101	94
29	276	160	85	75	------	124	462	94	86	39	87	87
30	237	144	80	80	------	120	408	93	73	37	74	78
31	206	------	75	85	------	122	------	100	------	37	68	------

Daily discharge, in second-feet, of Otter Creek near Glenfield, N. Y., for the years ending September 30, 1924–1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1926–27												
1	73	392	257	55	80	85	163	146	121	53	68	79
2	86	354	190	55	80	75	151	142	110	53	60	92
3	115	318	150	50	75	70	146	163	101	53	53	91
4	115	270	130	50	70	60	148	165	92	62	46	79
5	112	226	120	50	65	55	146	173	98	60	46	66
6	258	195	109	55	65	55	146	151	98	56	45	56
7	318	183	100	55	65	55	181	134	94	54	40	50
8	261	177	95	50	60	70	197	125	89	59	38	45
9	210	194	95	48	60	80	183	121	82	58	53	42
10	179	356	90	48	55	80	155	123	79	53	56	38
11	161	379	90	48	55	90	144	138	74	50	49	56
12	146	297	95	48	55	100	138	144	68	50	43	59
13	130	243	100	48	55		132	134	65	47	39	58
14	121	216	100	50	50		128	125	62	46	35	53
15	110	193	95	48	55		127	159	59	56	59	47
16	99	249	90	48	60	460	130	235	56	91	70	49
17	94	597	80	50	65		138	279	53	101	60	45
18	92	508	75	55	85		153	265	50	99	53	40
19	92	483	70	60	100		157	268	50	103	46	39
20	96	497	70	80	85	683	155	265	50	86	42	35
21	103		70	100	70	553	151	254	49	71	38	32
22	112		70	100	55	553	171	222	47	62	39	31
23	161		65	90	55	443	197	201	47	66	39	32
24	187	300	65	80	75	342	189	210	46	81	39	32
25	254		65	70	85	272	165	205	56	81	37	32
26	434		60	70	95	233	161	208	68	78	35	32
27	385		60	60	90	210	231	193	65	70	37	31
28	306	354	60	55	90	187	233	179	58	62	39	29
29	268	306	60	55	------	171	197	153	53	58	62	29
30	263	285	60	60	------	159	173	140	50	52	105	31
31	316	------	55	75	------	167	------	132	------	60	91	------

NOTE.—Stage-discharge relation affected by ice Nov. 14–21, and Nov. 27, to Dec. 3, 1924; Dec. 16, 1924, to Feb. 7, 1925; Feb. 19, 20, Feb. 28 to Mar. 6, and Dec. 16–20, 1925; Dec. 28, 1925, to Jan. 17, 1926; Jan. 23 to Mar. 19, 1926; Dec. 2, 1926, to Mar. 12, 1927; and gage-height record missing Aug. 22, 1924, Nov. 20–27, 1926, and Mar. 12–19, 1927. Discharge for these periods estimated from study of observer's notes. Weather conditions and hydrographs of near-by streams.

Monthly discharge of Otter Creek near Glenfield, N. Y., for the years ending September 30, 1924-1927

[Drainage area, 62 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1924					
July 16–31	44	32	38.1	0.615	0.37
August	94	30	49.3	.795	.92
September	336	30	70.3	1.13	1.26
1924–25					
October	610	46	114	1.84	2.12
November	210	36	67.2	1.08	1.20
December	174	60	92.4	1.49	1.72
January	60	36	46.6	.752	.87
February	525	36	209	3.37	3.51
March	625	148	294	4.74	5.46
April	388	200	291	4.69	5.23
May	220	88	144	2.32	2.68
June	110	44	66.0	1.06	1.18
July	234	30	76.8	1.24	1.43
August	168	29	75.2	1.21	1.40
September	239	28	95.4	1.54	1.72
The year	625	28	130	2.10	28.52

Monthly discharge of Otter Creek near Glenfield, N. Y., for the years ending September 30, 1924–1927—Continued

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1925–26					
October	425	78	174	2.81	3.24
November	517	138	235	3.79	4.23
December	344	75	155	2.50	2.88
January	183	75	98.6	1.59	1.83
February	100	65	73.6	1.19	1.24
March	142	60	89.0	1.44	1.66
April	1,700	105	454	7.32	8.17
May	900	93	265	4.27	4.92
June	448	73	140	2.26	2.52
July	148	33	60.4	.974	1.12
August	185	29	63.7	1.03	1.19
September	125	45	65.2	1.05	1.17
The year	1,700	29	156	2.52	34.17
1926–27					
October	434	73	182	2.94	3.39
November	597	177	312	5.03	5.61
December	257	55	93.0	1.50	1.73
January	100	48	60.2	.971	1.12
February	100	50	69.8	1.13	1.18
March	683	55	260	4.19	4.83
April	233	127	163	2.63	2.93
May	279	121	179	2.89	3.33
June	121	46	69.7	1.12	1.25
July	103	46	65.5	1.06	1.22
August	105	35	50.4	.813	.94
September	92	29	47.7	.769	.86
The year	683	29	130	2.10	28.39

BEAVER RIVER BELOW STILLWATER DAM, NEAR BEAVER RIVER, N. Y.

LOCATION.—1,000 feet downstream from Stillwater Dam at outlet of Beaver River Flow, 7½ miles west of Beaver River post office, Herkimer County, and 6½ miles upstream from Beaver Lake at Number Four.

DRAINAGE AREA.—178 square miles (revised measurement on topographic maps by Black River Regulating District).

RECORDS AVAILABLE.—June 1, 1924, to September 30, 1927. Comparable records from station at State Dam from May 11, 1908, to May 31, 1924.

EQUIPMENT.—Inclined staff gage in three sections on left bank. Reservoir elevation recorded on a float-and-dial gage in gate house at dam. Discharge measurements made from cable 75 feet downstream from gage.

CHANNEL AND CONTROL.—Bed of stream heavily boulder strewn. Banks slope upward gradually and are heavily wooded. One channel at all stages. Control of large boulders; seldom shifts.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.75 feet at 7.45 a. m. May 21 (discharge, 1,180 second-feet); minimum stage, 1.05 feet at 6.30 p. m. September 5 (discharge, 2 second-feet; gates in Stillwater Dam closed). Maximum stage of reservoir during year, 1,679.40 feet at 8 and 9 a. m. May 20; minimum stage, 1,670.66 feet at 4 p. m. March 10 and 11 a. m. March 11.

1924–1927: Maximum stage recorded, about 7.1 feet during afternoon of May 3, 1926 (discharge, about 3,700 second-feet); minimum discharge, practically no flow, occurs when gates in Stillwater Dam are closed and no water is spilling.

DIVERSIONS AND REGULATION.—Seasonal distribution of flow is under almost complete regulation by operation of gates at Stillwater Dam.

ACCURACY.—Stage-discharge relation permanent during year; not affected by ice. Rating curve well defined between 55 and 1,100 second-feet by 18 discharge measurements made during current year; extended beyond these limits on basis of form of previous curve. Gage read to hundredths before each change in gate openings at dam; on days of no change in gate openings gage was read to hundredths once daily. Daily discharge, for days of no change in gate openings, ascertained by applying mean daily gage height to rating table or, for days when spilling occurred, by constructing a gage-height graph on basis of the daily readings and averaging discharge for intervals of the day when necessary. For days when gate openings were changed discharge was averaged for intervals of the day on basis of gage readings made before each change in gate openings. Records probably good.

Daily discharge, in second-feet, of Beaver River below Stillwater Dam, near Beaver River, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	333	229	772	565	300	192	217	416	403	366	384	26
2	350	376	738	559	350	121	157	384	390	154	384	26
3	350	440	641	588	350	150	78	384	316	48	452	26
4	350	394	610	603	350	244	244	418	328	194	500	26
5	350	402	565	610	304	302	244	520	384	366	500	13
6	274	440	565	635	275	333	208	429	210	366	500	222
7	167	440	520	635	350	333	180	384	117	366	500	333
8	167	440	606	610	350	333	180	384	132	366	474	365
9	167	465	710	610	350	333	134	319	168	197	421	402
10	167	630	591	610	350	303	56	273	192	141	421	402
11	167	758	426	675	350	118	167	377	243	306	421	402
12	270	765	412	765	350	12	204	504	366	402	421	402
13	350	731	472	765	350	12	302	565	366	402	391	536
14	350	648	515	765	408	16	256	444	366	402	421	635
15	350	610	480	765	470	19	180	432	366	402	421	635
16	350	674	455	765	542	16	71	560	327	301	421	635
17	350	964	426	725	542	14	14	685	329	140	421	220
18	350	1,100	402	614	542	15	105	765	366	379	421	87
19	350	1,140	384	542	447	15	180	831	366	288	421	457
20	397	1,140	497	461	347	12	153	1,050	366	342	421	542
21	421	1,090	565	366	542	420	196	890	366	366	421	412
22	421	994	565	182	542	873	230	491	366	366	440	151
23	354	910	565	12	542	765	244	601	366	216	460	204
24	344	814	565	219	470	765	138	806	366	98	460	487
25	381	752	565	333	384	568	209	850	311	377	460	567
26	230	710	565	333	230	170	294	650	288	421	460	635
27	230	758	565	318	73	4	391	520	334	421	460	635
28	230	820	565	278	192	4	460	475	366	421	472	635
29	187	792	565	138	-------	115	480	366	366	421	500	635
30	116	813	565	94	-------	217	480	366	366	333	473	635
31	132	-------	565	258	-------	217	-------	366	-------	235	175	-------

Monthly discharge of Beaver River below Stillwater Dam, near Beaver River, N. Y., for the year ending September 30, 1927

[Drainage area, 178 square miles]

Month	Observed discharge in second-feet			Gain or loss in storage in Stillwater Reservoir (millions of cubic feet)	Discharge corrected for storage (second-feet)		Run-off in inches
	Maximum	Minimum	Mean		Mean	Per square mile	
October	421	116	290	+739.0	566	3.18	3.67
November	1,140	229	708	+240.5	801	4.50	5.02
December	772	384	548	−618.0	317	1.78	2.05
January	765	12	497	−814.0	193	1.08	1.25
February	542	73	380	−401.0	214	1.20	1.25
March	873	4	226	+1,298.0	711	3.99	4.60
April	480	14	215	+796.0	522	2.93	3.27
May	1,050	273	532	.0	532	2.99	3.45
June	403	117	320	−325.0	195	1.10	1.23
July	421	48	310	−397.0	162	.910	1.05
August	500	175	435	−713.0	169	.949	1.09
September	635	13	380	−643.5	132	.742	.83
The year	1,140	4	404	−838.0	377	2.12	28.76

STREAMS TRIBUTARY TO ST. LAWRENCE RIVER

EAST BRANCH OF OSWEGATCHIE RIVER AT CRANBERRY LAKE, N. Y.

LOCATION.—At Cranberry Lake, St. Lawrence County, 850 feet downstream from concrete dam at outlet of Cranberry Lake and 10½ miles upstream from Newton Falls.

DRAINAGE AREA.—144 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 5, 1923, to September 30, 1927. Comparable records at station at Newton Falls, October 6, 1912, to May 4, 1923.

EQUIPMENT.—Inclined staff gage on left bank. Discharge measurements made from cable 250 feet downstream from gage or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of boulders and gravel. Banks heavily wooded. Control composed of large boulders and gravel; probably permanent but backwater occurs frequently from jammed logs.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge during year, 680 second-feet March 26–30; minimum mean daily discharge, 200 second-feet November 4–11.

1923–1927: Maximum stage recorded, 7.50 feet from 7 a. m May 15 to 9 a. m. May 21, 1924 (discharge, 1,590 second-feet); minimum discharge occurs when gates in dam are closed and there is no discharge over spillway of dam.

DIVERSIONS AND REGULATION.—Discharge is regulated by operation of sluice gates at Cranberry Lake Dam.

ACCURACY.—Stage-discharge relation affected by logs on control throughout year. Standard rating curve well defined by 31 discharge measurements between 40 and 1,400 second-feet. Three measurements, ranging from 240 to 300 second-feet, were made during the current year and all indicate presence of backwater from logs. Gage read once daily. Owing to unreliability of gage-height record and effect of logs on control, daily discharge for entire year was ascertained from a record of gate openings and reservoir gage heights at Cranberry Lake Dam. Records fair.

Daily discharge, in second-feet, of East Branch of Oswegatchie River at Cranberry Lake, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	280	250	215	250	300	290	490	310	380	360	280	220
2	280	250	215	250	300	290	490	310	360	340	280	220
3	280	235	215	280	300	290	490	320	380	340	290	220
4	280	200	215	300	300	290	490	320	420	340	280	220
5	280	200	215	300	300	290	360	320	310	350	280	220
6	280	200	215	300	300	290	300	320	340	330	280	220
7	280	200	225	300	300	290	300	310	310	310	280	220
8	280	200	250	300	300	290	300	380	310	290	280	220
9	280	200	250	300	300	290	300	320	330	310	270	220
10	280	200	250	300	300	290	300	310	330	290	270	220
11	280	200	250	300	300	290	300	320	340	290	270	220
12	280	205	250	300	300	290	300	340	310	300	270	220
13	280	205	250	300	300	290	300	340	320	290	270	220
14	280	205	250	290	300	250	300	330	370	300	270	215
15	280	205	250	290	300	205	300	310	370	310	270	215
16	280	205	250	290	300	205	300	350	310	300	270	215
17	280	205	250	290	300	210	300	340	320	290	270	215
18	270	210	250	290	300	210	300	320	320	290	270	215
19	235	210	250	290	300	215	300	390	310	300	270	215
20	235	210	250	300	300	215	300	330	310	290	260	215
21	235	210	250	310	290	215	300	360	310	290	260	215
22	235	215	250	310	290	215	300	310	350	290	260	215
23	235	215	250	300	290	390	300	410	310	290	260	215
24	235	215	250	300	290	560	310	370	300	290	260	215
25	235	215	250	300	290	640	310	360	300	290	260	210
26	235	215	250	300	290	680	310	390	300	290	260	210
27	240	215	250	300	290	280	310	410	310	290	260	210
28	240	215	250	300	290	680	340	390	320	290	260	210
29	240	215	250	300	------	680	370	310	300	290	260	220
30	245	215	250	300	------	680	320	400	360	290	250	230
31	245	------	250	300	------	560	------	310	------	280	220	------

Monthly discharge of East Branch of Oswegatchie River at Cranberry Lake. N. Y., for the year ending September 30, 1927

[Drainage area, 144 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	280	235	262	1.82	2.10
November	250	200	211	1.47	1.64
December	250	215	242	1.68	1.94
January	310	250	295	2.05	2.36
February	300	290	297	2.06	2.14
March	680	205	363	2.52	2.90
April	490	300	333	2.31	2.58
May	410	310	342	2.38	2.74
June	420	300	330	2.29	2.56
July	360	280	303	2.10	2.42
August	290	220	267	1.85	2.13
September	230	210	217	1.51	1.68
The year	680	200	289	2.01	27.19

NOTE.—Elevation of water surface in Cranberry Lake at end of year was exactly the same as at beginning of year. The yearly run-off in second-feet per square mile and depth in inches on drainage area as given in the above table therefore represent the natural flow. Daily and monthly discharge values are, however, greatly affected by regulation.

EAST BRANCH OF OSWEGATCHIE RIVER NEAR OSWEGATCHIE, N. Y.

LOCATION.—At Flat Rock hydroelectric plant of Northern New York Utilities (Inc.), a quarter of a mile downstream from Skate Creek, 2¾ miles north of Oswegatchie, St. Lawrence County, and 4 miles upstream from Fine.

DRAINAGE AREA.—262 square miles (measured on topographic maps).

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

EQUIPMENT.—Au 7-day drum water-stage recorder on left bank 300 feet downstream from Flat Rock power plant; installed July 27, 1927. Gurley 7-day water-stage recorder at same location used prior to July 27, 1927. Discharge measurements made from cable 10 feet upstream from gage.

CHANNEL AND CONTROL.—Bed of stream composed of small boulders and gravel covered with silt. Banks very high and steep; not subject to overflow. Right bank fairly clean; left bank heavily wooded. Control composed of boulders of varying sizes; shifts occasionally.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 5.9 feet at 7 a. m. March 15 (discharge, 2,270 second-feet); minimum discharge, approaching no flow, frequently occurs following complete shutdown of power plant.

1924–1927: Maximum stage, from water-stage recorder, 7.3 feet at 8 a. m. April 26, 1926 (discharge, 3,730 second-feet); minimum discharge, approaching no flow, frequently occurs following complete shutdown of power plant.

DIVERSIONS AND REGULATION.—Large diurnal fluctuation caused by operation of power plants at Flat Rock just above station, at Browns Falls and Newton Falls upstream, and by operation of gates in dam at Cranberry Lake. Seasonal distribution of flow affected by storage and release of water at Cranberry Lake.

ACCURACY.—Stage-discharge relation permanent during year; not affected by ice. Rating curve well defined by 13 discharge measurements between 200 and 2,500 second-feet; extended beyond these limits. Six of the measurements, ranging from 230 to 1,030 second-feet, were made during the current year and check the curve closely. Operation of water-stage recorder unsatisfactory at times. Daily discharge ascertained by averaging discharge for intervals of the day, except for periods of no record as indicated in footnote to table of daily discharge. Records excellent, except those for periods of no record, which are fair.

Daily discharge, in second-feet, of East Branch of Oswegatchie River near Oswegatchie, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	563	787	684	150	632	452	910	130	634	362	421	526
2	334	536	662	110	526	532	735	550	643	220	376	401
3	31	787	700	486	625	613	555	600	648	157	324	368
4	371	712	500	672	577	596	514	650	529	109	413	53
5	455	615	90	479	400	322	809	650	236	462	358	138
6	517	297	750	468	180	100	607	750	446	602	407	452
7	581	353	700	424	550	370	652	420	516	469	421	480
8	615	623	750	320	540	466	629	240	432	360	438	388
9	387	464	420	25	584	388	712	550	428	370	393	418
10	449	664	800	550	558	318	279	650	576	446	487	223
11	621	603	221	650	499	726	506	600	404	376	372	68
12	547	542	104	440	250	384	498	650	110	313	94	432
13	557	549	341	480	216	780	499	665	404	340	26	288
14	470	430	399	360	501	1,500	475	600	410	441	130	259
15	527	517	529	300	526	1,660	513	320	385	367	277	263
16	345	558	487	25	600	1,420	293	650	476	478	490	244
17	150	973	504	410	472	1,250	250	750	389	499	507	135
18	581	854	390	291	424	1,450	542	900	292	889	432	141
19	522	1,000	47	334	368	1,620	459	1,200	171	501	567	266
20	463	1,050	63	408	335	1,370	210	1,100	286	480	197	353
21	426	718	549	501	352	1,220	325	850	231	500	218	409
22	500	813	453	539	501	1,130	415	700	380	550	326	494
23	337	605	331	416	496	924	327	600	480	550	501	372
24	213	607	222	460	403	797	110	650	360	141	397	159
25	696	227	63	600	359	844	396	900	200	553	460	43
26	676	610	235	719	403	844	384	800	296	463	321	350
27	806	808	412	582	335	996	612	800	290	404	206	191
28	549	700	510	571	340	1,080	383	622	365	469	109	221
29	558	788	502	304	-------	999	398	462	303	389	556	241
30	425	610	460	166	-------	963	396	238	352	239	601	176
31	484	-------	346	556	-------	965	-------	647	-------	148	676	-------

NOTE.—Gage-height record faulty or lacking Nov. 14, Dec. 3–10, Jan. 8–16, 24, 25, Feb. 5, 6, May 1–12, 14–27, June 22–25, July 2, and 20–23; discharge based upon power-plant operating records.

Monthly discharge of East Branch of Oswegatchie River near Oswegatchie, N. Y., for the year ending September 30, 1927

[Drainage area, 262 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	806	31	476	1.82	2.10
November	1,050	227	647	2.47	2.76
December	800	47	427	1.63	1.88
January	719	25	413	1.58	1.82
February	632	180	448	1.71	1.78
March	1,660	100	874	3.34	3.85
April	910	110	480	1.83	2.04
May	1,200	130	642	2.45	2.82
June	648	110	389	1.48	1.65
July	889	109	408	1.56	1.80
August	676	26	371	1.42	1.64
September	526	43	285	1.09	1.22
The year	1,660	25	489	1.87	25.36

NOTE.—Determinations of daily and monthly discharge and run-off given in the above table do not necessarily represent the natural flow from the drainage basin, owing to artificial storage in Cranberry Lake. However, at the end of the year the elevation of water surface in Cranberry Lake was exactly the same as at beginning of year, and therefore the yearly mean discharge and run-off doubtless represent the natural flow.

OSWEGATCHIE RIVER NEAR HEUVELTON, N. Y.

LOCATION.—2½ miles upstream from Heuvelton, St. Lawrence County, 4 miles downstream from Rensselaer Falls, 7 miles upstream from confluence with Indian River (outlet of Black Lake), and 14 miles upstream from mouth at Ogdensburg.

DRAINAGE AREA.—967 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 23, 1916, to September 30, 1927.

EQUIPMENT.—Stevens continuous water-stage recorder on right bank. Discharge measurements made from cable 20 feet downstream from gage or by wading.

CHANNEL AND CONTROL.—Bed of stream largely solid rock overlain with boulders. Banks fairly high and clean; subject to overflow at extremely high stages only. Control largely solid rock; permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 7.2 feet at 1.30 p. m. March 17 (discharge, 10,700 second-feet); minimum stage, from water-stage recorder, 0.81 foot at 9 a. m. September 22 (discharge, 240 second-feet).

1916–1927: Maximum stage, from water-stage recorder, 7.9 feet at 5 p. m. April 15, 1926 (discharge, 12,400 second-feet); minimum stage, from water-stage recorder, 0.67 foot from 9 to 11 p. m. September 2, 1925 (discharge, about 211 second-feet).

DIVERSIONS AND REGULATION.—Operation of power plants at Browns Falls and Flat Rock on the East Branch of this stream has a marked effect on the flow at this station. Flow is probably also regulated in a lesser degree by operation of other plants on the East Branch and plants on the main stream above station. Seasonal flow is regulated by storage in Cranberry Lake.

ACCURACY.—Stage-discharge relation permanent during year; ice effect practically negligible. Rating curve well defined by 28 discharge measurements between 450 and 12,000 second-feet; fairly well defined below 450 second-feet. Four of the measurements, ranging from 700 to 3,400 second-feet, were made during the current year and check the curve. Operation of water-stage recorder unsatisfactory at times. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection or

for days of considerable fluctuation in stage, by averaging discharge for intervals of the day, except for periods of missing or faulty records as indicated in footnote to table of daily discharge. Records good except those estimated and those for extremely low stages, which are fair.

Daily discharge, in second-feet, of Oswegatchie River near Heuvelton, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,010	2,790	3,220	1,000	2,650	1,840	2,240	1,170	1,380	573	532	741
2	924	3,110	3,000	900	2,370	1,680	2,170	990	1,490	589	440	895
3	877	3,460	2,300	868	2,240	1,500	2,040	1,000	1,480		490	850
4	814	3,220	2,100	788	1,980	1,460	1,780	1,110	1,410		550	823
5	628	3,000	2,170	832	2,100	1,430	1,600	1,260	1,360		527	643
6	925	2,860	1,700	1,070	1,910	1,340	1,610	1,310	1,220		504	504
7	1,990	2,580	1,520	1,120	1,630	1,090	1,710	1,320	1,020		497	454
8	2,300	2,170	1,560	971	1,460	1,650	1,640	1,300	990		448	412
9	2,300	1,980	1,720	914	1,480	3,340	1,610	1,070	914		331	534
10	2,170	2,440	1,660	868	1,480	3,620	1,640	962	942		393	581
11	1,840	2,580	1,530	694	1,430	3,700	1,460	1,170	980	750	461	527
12	1,500	2,580	1,560	686	1,420	4,120	1,220	1,280			512	393
13	1,530	2,510	1,350	950	1,260	5,120	1,280	1,380			504	325
14	1,320	2,300	1,260	1,050	1,030	6,850	1,180	1,430			520	354
15	1,230	2,170	1,770	900	886	8,510	1,160	1,460			468	374
16	1,160	2,150	1,780	850	1,010	9,370	1,120	1,420	700		342	447
17	1,070	3,220	1,780	800	1,170	10,200	1,100	1,480			336	393
18	971	4,040	2,170	620	1,200	9,250	962	1,840			380	331
19	779	5,050	2,040	620	1,210	8,330	887	2,760			447	331
20	823	6,050	1,780	1,030	1,140	7,670	1,130	3,540			612	279
21	1,010	6,030	1,420	1,800	990	7,240	1,160	3,780		1,660	581	302
22	1,150	5,360		2,040	952	6,610	1,060	3,460	557	1,440	542	279
23	1,270	4,380		2,650	1,020	6,000	1,220	3,000	385	1,130	393	482
24	1,320	3,640		2,580	1,020	5,020	1,340	2,580	426	971	406	636
25	1,970	3,000		2,170	1,400	4,200	1,180	2,300	653	831	475	589
26	3,310	2,650	1,100	2,170	1,780	3,460	1,130		686	788	527	427
27	3,700	2,580		2,040	2,100	3,000	1,260		559	753	497	307
28	3,380	2,930		1,910	1,980	2,720	1,320	2,100	504	832	527	336
29	3,150	3,000		1,900	-------	2,650	1,550		497	745	504	313
30	2,860	3,220		1,970	-------	2,510	1,310		512	702	336	313
31	2,790	-------		2,810	-------	2,370	-------		-------	653	462	-------

NOTE.—Gage-height record faulty or lacking Dec. 22 to Jan 1, Jan. 13–17, 29, May 26 to June 1, June 11–22, and July 3–21; discharge estimated by comparison with flow at other stations in this drainage basin. Braced figures show mean discharge for periods indicated.

Monthly discharge of Oswegatchie River near Heuvelton, N. Y., for the year ending September 30, 1927

[Drainage area, 967 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,700	628	1,680	1.74	2.01
November	6,050	1,980	3,240	3.35	3.74
December	3,220	----------	1,630	1.69	1.95
January	2,810	620	1,340	1.39	1.60
February	2,650	886	1,510	1.56	1.62
March	10,200	1,090	4,450	4.60	5.30
April	2,240	877	1,400	1.45	1.62
May	3,780	962	1,840	1.90	2.19
June	1,490	385	832	.860	.96
July	1,660	573	812	.840	.97
August	612	331	469	.485	.56
September	895	279	472	.488	.54
The year	10,200	279	1,640	1.70	23.06

NOTE.—See "Diversions and regulation" in station description.

WEST BRANCH OF OSWEGATCHIE RIVER NEAR HARRISVILLE, N. Y.

LOCATION.—At highway bridge half a mile northeast of Geers Corners, 4 miles downstream from Harrisville, Lewis County, and 15 miles upstream from confluence of East and West Branches near Talcville.

DRAINAGE AREA.—256 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 1, 1916, to September 30, 1927.

EQUIPMENT.—Vertical staff gage in three sections on right bank. Lower section 25 feet downstream from highway bridge; middle and upper sections attached to downstream side of bridge abutment. Discharge measurements made from cable 200 feet upstream from gage, from downstream side of highway bridge, or by wading.

CHANNEL AND CONTROL.—Bed of stream rocky. Right bank high and comparatively clean. Left bank high; wooded below bridge, open pasture upstream. One channel at all stages. Control is rocky, rough rapids 75 feet downstream from gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.0 feet at 5 p. m. March 15 (discharge, 3,600 second-feet); minimum stage, 1.34 feet at 8 a. m. and 6 p. m. August 27 and 8 a. m. September 18 (discharge, 66 second-feet).

1916–1927: Maximum stage recorded, 8.8 feet at 7 a. m. April 26, 1926 (discharge, 5,760 second-feet); minimum stage, 0.90 foot several times during August and October, 1923 (discharge, 27 second-feet).

DIVERSIONS AND REGULATION.—During low water some diurnal fluctuation is caused by operation of pulp mill at Harrisville.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined by 37 discharge measurements between 50 and 3,500 second-feet; extended beyond these limits. Five of the measurements, covering a range from 220 to 1,210 second-feet, were made during current year and with one exception, check the curve. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table or, for days of considerable fluctuation in stage, by constructing a gage-height graph on basis of daily readings and averaging discharge for intervals of the day except for periods of ice effect or of no record, as indicated in footnote to table of daily discharge. Open-water records good except those for extremely low stages which are subject to error owing to possibility of diurnal fluctuation; winter records fair.

Daily discharge, in second-feet, of West Branch of Oswegatchie River near Harrisville, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	270	1,370	1,100	170	485	505	585	445	465	108	124	202
2	270	1,370	700	100	485	485	545	385	425	100	124	202
3	270	1,300	500	132	405	385	505	405	405	115	115	191
4	255	1,100	400	180	405	325	505	425	325	124	108	191
5	288	925	340	227	465	270	485	425	305	150	93	170
6	545	765	320	227	485	240	505	445	270	150	93	141
7	925	670	300	220	425	255	505	425	270	141	100	124
8	1,040	585	280	200	385	385	545	405	255	170	93	108
9	980	585	280	190	365	505	545	385	240	227	100	100
10	715	765	260	190	325	505	505	385	214	227	100	86
11	585	1,040	260	180	325	545	465	465	191	170	93	85
12	485	1,100	280	180	288	670	425	505	202	180	86	83
13	385	980	360	180	240	1,040	405	505	191	141	83	80
14	365	815	400	190	240	2,000	385	465	180	141	83	78
15	385	715	550	200	240	3,490	385	485	170	170	80	82

Daily discharge, in second-feet, of West Branch of Oswegatchie River near Harrisville, N. Y., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	365	670	480	190	240	3,270	385	585	160	255	82	85
17	270	1,230	400	180	240	2,750	385	815	150	425	93	77
18	180	2,000	360	180	270	2,550	425	1,100	141	670	93	69
19	160	2,000	340	190	270	2,850	485	1,300	132	765	93	100
20	214	2,000	340	220	270	2,950	545	1,510	132	625	93	170
21	270	1,830	360	280	270	2,550	585	1,440	132	425	100	141
22	325	1,440	400	420	270	2,090	585	1,160	124	305	100	108
23	425	1,100	380	550	288	1,750	585	925	124	240	86	108
24	545	1,040	340	600	325	1,300	545	815	115	214	85	108
25	715	765	320	500	405	1,100	505	765	115	240	83	100
26	925	625	300	440	465	925	485	670	132	227	74	100
27	1,160	870	280	360	465	765	485	715	132	191	66	93
28	1,230	1,100	280	320	485	670	545	715	132	170	71	86
29	1,100	1,370	260	300	-------	625	505	670	124	150	100	76
30	1,100	1,100	240	360	-------	585	505	585	115	132	170	73
31	1,230	-------	227	485	-------	585	-------	505	-------	124	214	-------

NOTE.—Discharge Dec. 2-30 and Jan. 7-30 determined from gage heights corrected for ice effect on basis of one discharge measurement, observer's notes, weather records, and comparative studies with records from other stations in this same drainage basin. Discharge interpolated Oct. 21, owing to lack of gage readings.

Monthly discharge of West Branch of Oswegatchie River near Harrisville, N. Y., for the year ending September 30, 1927

[Drainage area, 256 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,230	160	580	2.27	2.62
November	2,000	585	1,110	4.34	4.84
December	1,100	227	375	1.46	1.68
January	600	100	269	1.05	1.21
February	485	240	351	1.37	1.43
March	3,490	240	1,260	4.92	5.67
April	585	385	495	1.93	2.15
May	1,510	385	672	2.62	3.02
June	465	115	202	.789	.88
July	765	100	241	.941	1.08
August	214	66	99.3	.388	.45
September	202	69	114	.445	.50
The year	3,490	66	481	1.88	25.53

GRASS RIVER AT PYRITES, N. Y.

LOCATION.—1,000 feet downstream from lower highway bridge in Pyrites, St. Lawrence County, half a mile upstream from mouth of Harrison Creek, and three-quarters of a mile downstream from dam of DeGrasse Paper Co.

DRAINAGE AREA.—334 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 4, 1924, to September 30, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder on left bank. Discharge measurements made from cable 175 feet downstream from gage or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of coarse gravel. Banks subject to overflow during unusually high stages. Right bank clean; left bank lined with trees and brush. Control composed of coarse gravel and small boulders; shifts during heavy floods.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 7.8 feet at 10.35 a. m. March 19 (discharge, 3,740 second-feet); minimum stage, from inclined reference gage, 1.20 feet at 7 a. m. August 20 (discharge, 45 second-feet).

1924–1927: Maximum stage, from water-stage recorder, 11.5 feet at 1 a. m. April 26, 1926 (discharge, about 6,790 second-feet); minimum stage, from water-stage recorder, 1.10 feet at 11 a. m. September 28, 1924 (discharge, 40 second-feet).

DIVERSIONS AND REGULATION.—Some diurnal fluctuation during low water caused by operation of power plant of DeGrasse Paper Co.

ACCURACY.—Stage-discharge relation changed during flood of November 19, and again during flood of May 20; affected by ice. Rating curve used October 1 to November 19 well-defined by six discharge measurements between 150 and 2,000 second-feet; extended beyond these limits on basis of form of previous curve. One measurement made during current year prior to November 19 checks this curve. Standard curve, used November 20 to September 30, fairly well defined by three discharge measurements made during the current year between November 19 and May 20, and by form of previous curves. Shifting-control correction, based on one measurement made during current year subsequent to May 20, applied May 21 to September 30. Operation of water-stage recorder unsatisfactory mainly owing to partial obstruction of well intake during a large part of year. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection and corrected for shifting control subsequent to May 20 or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day, except for periods of ice effect or of unsatisfactory operation of recorder as indicated in footnote to table of daily discharge. Records fair.

Daily discharge, in second-feet, of Grass River at Pyrites, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	218	960	1,020	320	760	360	820	480	492		188	409
2	202	995	711	300	670	300	760	460	520		178	290
3	218	928	577	300	599	260	700	440	447		155	183
4	263	769	460	300	550	240	700	420	381		135	127
5	276	686	400	280	525	260	670	505	401	200	129	155
6	790	609	380	280	505	280	700	577	447		127	191
7	928	561	360	280	482	320	756	520			135	155
8	800	561	340	270	430	550	955	464			131	131
9	585	585	340	267	385	850	885	447			121	117
10	429	830	340	261	347	850	730	464		188	123	110
11	362	1,060	340	258	332	820	640	584		159	127	108
12	312	995	360	254	325	920	588	730		129	117	115
13	282	800	474	254	321	1,300	588	670		119	112	125
14	292	659	566	270	310	2,110	588	582		125	101	131
15	315	609	588	293	303	2,920	550	540		210	115	131
16	305	704	535	280	293	3,160	525	678		280	108	123
17	270	1,480	469	273	347	3,090	555	885		409	106	127
18	273	1,740	434	273	440	2,950	640	1,180		588	103	127
19	254	2,300	389	339	360	3,660	730	1,770	230	766	103	131
20	245	2,210	393	505	320	3,580	790	2,050		496	101	141
21	270	1,850	397	670	280	3,090	820	1,640		300	103	159
22	308	1,440	426	760	260	2,600	790	1,260		205	115	157
23	389	1,140	409	920	240	2,150	820	1,070		171	113	146
24	548	920	389	800	420	1,790	790	1,070		159	113	133
25	936	708	380	650	550	1,470	700	927		183	115	117
26	1,330	760	360	550	600	1,140	577	796		251	115	117
27	1,360	1,180	360	500	500	990	555	766		248	110	108
28	1,140	1,410	340	460	420	920	560	706		202	104	103
29	895	1,320	340	420	-------	820	510	588		186	236	99
30	769	1,220	320	460	-------	760	500	496		181	688	121
31	830	-------	320	650	-------	790	-------	451	-------	178	588	-------

NOTE.— Discharge Dec. 4–12, Dec. 25 to Jan. 7, Jan. 24–31, and Feb. 18 to Mar. 8 determined from gage heights corrected for ice effect on basis of two discharge measurements, weather records, and comparative flow studies. Gage-height record lacking or useless owing to partial obstruction of well intake Dec. 27, 28, Jan. 1–19, 24–31, Feb. 1–7, 17–19, 23–28, Mar. 1–4, 12, 19–30, Apr. 30, May 1–4, 8–10, June 4, 5, 7–30, July 1–9, and Sept. 2 and 3, discharge estimated by means of slope-gage readings, usable portions of automatic record, and comparative studies of flow. Braced figures show mean discharge for periods indicated.

Monthly discharge of Grass River at Pyrites, N. Y., for the year ending September 30, 1927

[Drainage area, 334 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,360	202	529	1.58	1.82
November	2,300	561	1,070	3.20	3.57
December	1,020	320	436	1.31	1.51
January	920	254	410	1.23	1.42
February	760	240	424	1.27	1.32
March	3,660	240	1,460	4.37	5.04
April	955	500	683	2.04	2.28
May	2,050	420	781	2.34	2.70
June	520		274	.820	.91
July	766	119	243	.728	.84
August	688	101	159	.476	.55
September	409	99	146	.437	.49
The year	3,660	99	552	1.65	22.45

NORTH BRANCH OF GRASS RIVER NEAR SOUTH COLTON, N. Y.

LOCATION.—At Gleason's mill, 3½ miles upstream from mouth of Gulf Creek, 4¼ miles southwest of South Colton, St. Lawrence County, and 11 miles upstream from junction with Grass River.

DRAINAGE AREA.—25.8 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 22, 1924, to September 30, 1927.

EQUIPMENT.—Inclined and vertical staff gage in two sections on right bank 700 feet downstream from sawmill dam. Discharge measurements made from highway bridge half a mile downstream from gage or by wading.

CHANNEL AND CONTROL.—Bed of stream covered with small boulders. Left bank high and wooded. Right bank low and wooded; subject to overflow during high floods. Control, 25 feet downstream from gage, composed of gravel and small boulders; seldom shifts.

EXTREMES OF DISCHARGE.—Maximum discharge during year, 350 second-feet at 6 p. m. March 19 (gage height, 3.0 feet); minimum stage recorded, 0.73 foot at 6 p. m. August 20 (discharge, 2.3 second-feet).

1924–1927: Maximum stage recorded, 4.3 feet at 6 a. m. April 25, 1926 (discharge, about 700 second-feet); minimum stage, that of August 20, 1927.

DIVERSIONS AND REGULATION.—None. Sawmill 700 feet upstream from gage is seldom operated.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined by 11 discharge measurements between 8 and 400 second-feet. Three of the measurements, covering a range from 11 to 62 second-feet, were made during the current year and check the curve. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except for periods of ice effect, as indicated in footnote to table of daily discharge. Records good except those for periods of ice effect, which are fair.

Daily discharge, in second-feet, of North Branch of Grass River near South Colton, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	117	57	24	70	20	59	45	54	10	18	28
2	16	89	44	24	60	17	54	40	54	8.5	16	23
3	24	80	36	22	50	16	56	41	40	7.6	10	21
4	23	66	32	24	46	16	55	37	29	13	7.6	18
5	23	54	30	24	40	16	56	46	40	17	6.8	16
6	95	46	30	24	36	18	56	46	51	12	7.6	12
7	95	50	28	22	32	20	83	46	43	13	9.3	9.3
8	57	55	26	22	28	38	90	42	29	20	7.2	7.6
9	37	56	26	22	26	75	72	42	23	18	6.5	6.8
10	28	106	26	20	24	70	59	46	26	11	6.5	6.8
11	25	131	28	20	24	50	51	59	31	8.9	6.2	6.8
12	23	72	36	19	22	65	59	72	28	7.2	6.2	6.8
13	21	54	48	19	20	90	59	57	21	6.2	5.6	11
14	26	46	55	20	20	190	54	49	18	16	4.9	12
15	26	49	48	19	20	320	51	49	17	28	3.7	11
16	24	59	42	18	22	300	54	80	16	23	2.9	11
17	21	190	34	18	22	288	59	95	15	26	3.3	11
18	20	190	32	17	28	325	72	114	12	50	3.7	10
19	20	180	32	24	22	330	86	190	12	64	2.9	15
02	20	190	36	34	22	262	83	150	12	28	2.5	20
21	23	122	42	60	18	210	82	90	11	17	3.5	13
22	28	86	41	90	17	150	75	70	11	11	5.6	10
23	45	64	37	65	17	150	76	66	11	9.7	6.2	9.3
24	80	51	35	55	30	128	66	46	11	11	6.5	8.9
25	106	48	33	50	42	83	54	46	9.3	20	6.8	7.6
26	170	54	31	46	40	72	45	50	10	24	6.8	6.5
27	150	128	29	42	32	66	49	46	13	15	6.2	5.9
28	90	150	26	42	24	56	44	45	11	11	6.2	6.2
29	56	90	25	44	------	54	43	44	9.3	16	6.8	6.2
30	49	66	24	46	------	56	49	37	10	31	40	8.5
31	77	------	24	70	------	69	------	35	------	20	37	------

NOTE.—Discharge Dec. 2-21 and Dec. 30 to Mar. 16 determined from gage heights corrected for ice effect on basis of two discharge measurements, observer's notes, weather records, and comparison with flow at stations on Grass and St. Regis Rivers.

Monthly discharge of North Branch of Grass River near South Colton, N. Y., for the year ending September 30, 1927

[Drainage area, 25.8 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	170	14	48.8	1.89	2.18
November	190	46	91.3	3.54	3.95
December	57	24	34.6	1.34	1.54
January	90	17	33.7	1.31	1.51
February	70	17	30.5	1.18	1.23
March	350	16	117	4.54	5.23
April	90	43	61.7	2.39	2.67
May	190	35	62.0	2.40	2.77
June	54	9.3	22.6	.876	.98
July	64	6.2	18.5	.717	.83
August	40	2.5	8.68	.336	.39
September	28	5.9	11.5	.446	.50
The year	350	2.5	45.2	1.75	23.78

RAQUETTE RIVER AT PIERCEFIELD, N. Y.

LOCATION.—Half a mile downstream from dam of International Paper Co. at Piercefield, St. Lawrence County, and three-quarters of a mile upstream from head of Black Rapids.

DRAINAGE AREA.—723 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 20, 1908, to September 30, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder on left bank. Discharge measurements made from cable three-quarters of a mile downstream from gage.

CHANNEL AND CONTROL.—Gage located on a large, deep pond, through which there is no perceptible flow. Bed of stream at cable composed of rock ledge and large boulders; banks high and wooded. Control, at head of Black Rapids, composed of ledge rock and large boulders; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 8.3 feet at 10 a. m. May 23 (discharge, 3,150 second-feet); minimum stage, from water-stage recorder, 2.07 feet at 7 p. m. September 25 (discharge, 80 second-feet; result of regulation).

1908–1927: Maximum stage, from water-stage recorder, 11.82 feet from 6 to 8 p. m. April 17, 1922 (discharge, 7,580 second-feet); minimum stage, from water-stage recorder, 0.85 foot at 11 a. m. September 2, 1913 (discharge, about 10 second-feet).

DIVERSIONS AND REGULATION.—Large diurnal fluctuation in flow during low and medium stages caused by operation of paper mill. Numerous lakes in upper part of drainage basin afford considerable natural regulation, greatly affecting the seasonal distribution of flow.

ACCURACY.—Stage-discharge relation permanent during year; not affected by ice. Rating curve well defined by 24 discharge measurements between 50 and 7,000 second-feet. Five of the measurements, covering a range from 120 to 2,000 second-feet, were made during the current year and check the curve closely. Operation of water-stage recorder unsatisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day, except for periods of no record as indicated in footnote to table of daily discharge. Records good except those for periods of no record, which are fair.

Daily discharge, in second-feet, of Raquette River at Piercefield, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	930	2,140	2,490	975		715	2,490	2,040	2,400	643	592	604
2	975	2,140	2,400	564		622	2,400	2,220	2,310	696		640
3		2,220	2,310	780		640	2,220	2,140	2,220	350		658
4		2,220	2,220	975		658	2,310	2,140	2,140	227		398
5		2,220	2,060	952		696	2,220	2,140	1,870	720		214
6		2,220	2,220	804		436	2,060	2,060	1,940	755		559
7		1,980	2,140	599	640	574	1,980	1,980	1,830	658		696
8		2,220	1,980	755		640	1,940	1,700	1,760	658		658
9	1,100	2,220	1,940	527		640	1,940	1,970	1,690	640		622
10		2,220	1,800	633		640	1,640	1,980	1,690	358		622
11		2,220	1,760	696		696	1,720	1,980	1,590	564	500	323
12		2,220	1,590	652		696	1,720	1,980	1,270	658		518
13		2,220	1,720	608	440	465	1,690	1,980	1,550	521		677
14		2,140	1,720	560	602	715	1,660	1,980	1,470	537		557
15		2,400	1,620		715	908	1,620	1,560	1,380	554		518
16	1,320	2,490	1,530		715	1,120	1,590	1,760	1,320	554		538
17	1,140	2,580	1,470		640	1,320	1,410	1,980	1,300	370		612
18	1,270	2,670	1,380		622	1,590	1,590	2,310	1,220	555		394
19	1,190	2,850	1,020		603	1,900	1,690	2,580	673	622		558
20	1,220	2,850	1,300		412	2,060	1,800	2,670	1,090	587		632
21	1,220	2,950	1,270		584	2,490	1,860	2,760	1,140	604	313	604
22	1,220	3,050	1,220		658	2,670	1,980	2,670	1,120	658	446	587
23	1,220	2,950	1,200	590	658	2,760	2,140	3,050	1,100	677	459	537
24	1,030	2,950	945		640	2,850	2,060	3,050	998	374		570
25	1,270	2,850	798		640	2,950	2,490	3,050	930	534		283
26	1,440	2,760	1,160		640	2,950	2,580	2,950	485	622	400	465
27	1,620	2,670	1,160		448	2,760	2,580	2,760	752	570		554
28	1,760	2,580	1,140		593	2,760	2,580	2,670	975	570		474
29	1,860	2,670	1,120		-------	2,760	2,490	2,490	753	640		444
30	1,940	2,580	1,060		-------	2,670	2,490	2,670	604	658	374	430
31	1,940	-------	998		-------	2,580	-------	2,580	-------	331	514	-------

NOTE.—Water-stage recorder did not operate satisfactorily Oct. 2-16, Nov. 14-20, 25-27, Dec. 3-11, Jan. 15 to Feb. 12, Mar. 14-19, July 29, 30, Aug. 2-20, 24-29, and Sept. 1-3; discharge estimated. Braced figures show mean discharge for periods indicated.

Monthly discharge of Raquette River at Piercefield, N. Y., for the year ending September 30, 1927

[Drainage area, 723 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,940	930	1,250	1.73	1.99
November	3,050	1,980	2,480	3.43	3.83
December	2,490	798	1,570	2.17	2.50
January	975	527	649	.898	1.04
February	715	412	618	.855	.89
March	2,950	436	1,550	2.14	2.47
April	2,580	1,410	2,030	2.81	3.14
May	3,050	1,560	2,320	3.21	3.70
June	2,400	485	1,390	1.92	2.14
July	755	227	563	.779	.90
August	592	313	471	.651	.75
September	696	214	532	.736	.82
The year	3,050	214	1,290	1.78	24.17

ST. REGIS RIVER AT BRASHER CENTER, N. Y.

LOCATION.—600 feet upstream from steel highway bridge in Brasher Center, St. Lawrence County, 6½ miles downstream from junction of East and West Branches at Winthrop and 7 miles upstream from mouth of Deer River.

DRAINAGE AREA.—616 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 22, 1910, to November 10, 1917; January 1, 1919, to September 30, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder on left bank. Discharge measurements made from cable at gage or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of boulders and coarse gravel. Banks comparatively high and not subject to overflow; right bank wooded and rocky; left bank clean. Control, about 100 feet downstream from gage, composed of rock ledge and boulders; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 9.2 feet at 10 a. m. March 19 (discharge, 5,350 second-feet); minimum stage, from water-stage recorder, 5.86 feet at 7 p. m. September 12 (discharge, 219 second-feet).

1910–1927: Maximum stage recorded, 9.1 feet (old datum) at 7 a. m. March 27, 1914 (discharge, about 16,200 second-feet); minimum stage, 5.25 feet at 5 p. m. August 8, 1917 (discharge, about 34 second-feet).

DIVERSIONS AND REGULATION.—Some diurnal fluctuation during low water is caused by operation of power plants upstream, mainly on East and West Branches of St. Regis River.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined by 16 discharge measurements between 200 and 10,000 second-feet. Three of the measurements, covering a range from 620 to 1,800 second-feet, were made during the current year and check the curve closely. Operation of water-stage recorder unsatisfactory during winter. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day, except for periods of ice effect or of no record as indicated in footnote to table of daily discharge. Records good except those for periods of ice effect or of no record, which are fair.

Daily discharge, in second-feet, of St. Regis River at Brasher Center, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	550	2,110	1,580		950	650	1,380	980	900	309	551	309
2	477	1,950	1,100			550	1,230	936	1,000	296	468	332
3	443	1,840	925			480	1,140	881	900	296	486	369
4	460	1,660	807			440	1,100	838	860	477	434	354
5	596	1,470	750			460	1,090	892	881	542	392	309
6	2,060	1,310	700			500	1,060	1,030	1,000	451	376	276
7	1,800	1,180	650			600	1,190	958	969	418	362	242
8	1,340	1,220	650			1,300	1,370	870	849	460	339	242
9	1,030	1,260	650			1,600	1,310	849	754	590	346	236
10	960	1,840	650	550		1,300	1,150	849	734	496	339	236
11	720	1,920	650			1,200	1,060	1,000	640	376	324	236
12	670	1,580	700			1,700	1,030	1,200	630	316	316	230
13	590	1,480	1,000			2,290	1,020	1,190	570	302	296	249
14	620	1,380	1,200			4,090	1,000	1,000	532	309	302	242
15	670	1,400	1,300		750	4,450	980	1,020	496	369	309	249
16	650	1,500	1,100			3,860	969	1,230	468	496	309	269
17	590	2,600	850			4,060	1,050	1,510	451	542	302	324
18	542	2,430	800			4,680	1,220	1,720	409	590	282	309
19	532	3,610	800	600		5,350	1,330	2,090	384	670	269	309
20	505	3,390	800	800		4,720	1,500	2,430	369	754	269	302
21	560	2,860	900	1,200		3,860	1,510	2,430	384	702	269	289
22	660	2,270	1,000	1,700		3,120	1,510	2,050	369	600	289	282
23	892	1,860	850	2,000		2,310	1,520	1,830	324	532	276	276
24	1,000	1,620	800	1,700		2,100	1,470	1,680	324	496	269	276
25	1,990	1,480	750			1,940	1,340	1,550	346	486	269	309
26	3,210	1,470	700			1,760	1,240	1,440	332	542	309	262
27	2,600		700		900	1,650	1,200	1,370	362	570	276	262
28	2,110	2,200	650	900	750	1,500	1,130	1,300	354	610	249	255
29	1,800		650		-------	1,340	1,080	1,100	332	580	255	249
30	1,610		600		-------	1,260	1,100	950	324	600	376	249
31	2,020	-------	600		-------	1,380	-------	870	-------	600	339	------

NOTE.—Discharge Dec. 5 to Mar. 12 determined from gage heights corrected for ice effect on basis of two discharge measurements, weather records, and comparative flow studies. Gage-height record faulty or lacking Oct. 1, 2, Nov. 27 to Dec. 4, Dec. 25 to Jan. 19, Jan. 21, 25–31, Feb. 1–27, Mar. 17, 18, May 12, 13, 28–31, and June 2 and 3; discharge estimated by comparative flow studies. Braced figures show mean discharge for periods indicated.

Monthly discharge of St. Regis River at Brasher Center, N. Y., for the year ending September 30, 1927

[Drainage area, 616 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,210	443	1,110	1.80	2.08
November	3,610	1,180	1,920	3.12	3.48
December	1,580	600	834	1.35	1.56
January	2,000	----------	781	1.27	1.46
February	950	----------	762	1.24	1.29
March	5,350	440	2,150	3.49	4.02
April	1,520	969	1,210	1.96	2.19
May	2,430	838	1,290	2.09	2.41
June	1,000	324	575	.933	1.04
July	754	296	496	.805	.93
August	551	249	331	.537	.62
September	369	230	278	.451	.50
The year	5,350	230	979	1.59	21.58

SALMON RIVER AT CHASM FALLS, N. Y.

LOCATION.—At Chasm Falls, Franklin County, a quarter of a mile downstream from Chasm Falls power plant of Malone Light & Power Co., and 8 miles upstream from Malone.

DRAINAGE AREA.—131 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 24, 1925, to September 30, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder on right bank. Discharge measurements made from cable 500 feet downstream from gage or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of boulders. Right bank fairly high and lined with trees; subject to some overflow at extremely high stages. Left bank slopes upward gradually and is heavily wooded. Boulder-strewn channel forms the control; shifts occasionally.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 3.5 feet at 1 p. m. March 19 (discharge, 1,300 second-feet); minimum stage, from water-stage recorder, 0.74 foot at 9 a. m. August 14 (discharge, 24 second-feet; result of regulation).

1925–1927: Maximum stage, from water-stage recorder, 5.0 feet at 4 p. m. April 25, 1926 (discharge, about 2,890 second-feet); minimum stage recorded on August 14, 1927.

DIVERSIONS AND REGULATION.—A small, fairly constant amount of water is diverted for domestic supply for the city of Malone from a small stream which enters the river just upstream from gage. Some diurnal fluctuation is caused by operation of Chasm Falls power plant a quarter of a mile upstream.

ACCURACY.—Stage-discharge relation changed slightly for low stages during high water of March 19; not affected by ice. Rating curves used before and after March 19 well defined by 12 discharge measurements between 125 and 500 second-feet; extended beyond these limits on basis of form of previous curve. Seven of the measurements, covering a range from 170 to 285 second-feet, were made during the current year and check the respective curves closely. Operation of water-stage recorder satisfactory except for a few short periods. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection, or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day, except for periods of no record as indicated in footnote to tables of daily discharge. Records good.

Daily discharge, in second-feet, of Salmon River at Chasm Falls, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	144	447	251	141	191	165	254	240	274	66		117
2	152	360	160	165	182	165	244	222	226	93		93
3	171	333	202	168	165	160	229	206	196	126		102
4	156	277	240	157	177	163	226	202	192	287		113
5	186	261	188	154	185	144	215	236	254	187		118
6	373	243	157	146	174	160	233	236	254	148		121
7	308	251	146	141	197	165	301	219	206	200		102
8	240	268	152	152	180	177	266	196	180	244		106
9	213	248	163	129	174	188	233	196	171	177		98
10	188	446	163	157	160	168	215	222	174	148	93	102
11	182	376	163	154	154	185	212	251	154	135	74	65
12	168	269	150	152	160	243	222	240	148	132	80	95
13	165	251	160	149	144	394	236	244	140	132	69	118
14	188	278	180	146	177	638	226	233	135	161	68	63
15	171	258	163	146	149	759	222	265	143	174	136	55

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Daily discharge, in second-feet, of Salmon River at Chasm Falls, N. Y., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	165	289	160	118	146	714	254	371	143	189	115	126
17	160	470	160	149	146	606	281	344	130	156	109	113
18	164	386	152	141	160	797	318	364	122	256	109	94
19	170	401	108	144	152	1,140	371	445	122	242	108	135
20	139	405	144	180	125	990	390	420	137	175	76	124
21	144	342	146	185	200	750	371	410	132	143	64	106
22	168	300	154	203	168	574	339	326	102	135	123	100
23	243	277	144	163	157	409	362	410	136	135	116	106
24	256	261	131	188	171	380	314	368	122	174	106	116
25	479	233	90	143	188	335	297	310	122	177	91	56
26	636	243	102	116	194	310	270	297	80	146	85	125
27	480	292	125	148	174	293	262	293	122	132	79	122
28	338	224	127	174	168	281	247	278	131	156	73	118
29	296	273	163	173	-------	258	251	247	135	146	139	106
30	284	277	163	170	-------	251	266	222	121	159	135	100
31	416	-------	157	211	-------	281	-------	222	-------	140	120	------

NOTE.—Gage-height record faulty or lacking Jan. 11–13, 17, and July 31 to Aug. 9; discharge estimated from comparative studies.

Monthly discharge of Salmon River at Chasm Falls, N. Y., for the year ending September 30, 1927

[Drainage area, 131 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	636	139	243	1.85	2.13
November	470	224	308	2.35	2.62
December	251	90	157	1.20	1.38
January	211	116	157	1.20	1.38
February	200	125	168	1.28	1.33
March	1,140	144	395	3.02	3.48
April	390	212	271	2.07	2.31
May	445	196	282	2.15	2.48
June	274	80	157	1.20	1.34
July	287	66	164	1.25	1.44
August	139	64	99.0	.756	.87
September	135	55	104	.794	.89
The year	1,140	55	209	1.60	21.65

CHATEAUGAY RIVER NEAR CHATEAUGAY, N. Y.

LOCATION.—150 feet downstream from dam of High Falls Pulp & Paper Co., 1 mile south of Chateaugay, Franklin County, 7 miles downstream from Lower Chateaugay Lake, and 7½ miles upstream from international boundary line between Canada and United States.

DRAINAGE AREA.—114 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1926, to September 30, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder on right bank. Discharge measurements made from cable 400 feet downstream from gage or by wading.

CHANNEL AND CONTROL.—Bed of stream rough and boulder strewn. Banks high and wooded; not subject to overflow. Gage is located in pool at foot of High Falls. Control, at outlet of pool, composed of large boulders; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 4.15 feet at 3 p. m. May 20 (discharge, 595 second-feet); minimum stage, from water-stage recorder, 0.83 foot from 7 to 10 p. m. October 17 (discharge, 26 second-feet; result of regulation).

DIVERSIONS AND REGULATION.—Large diurnal fluctuation caused by operation of pulp mill at gage and Johnson's Mill three-quarters of a mile upstream. Seasonal distribution of flow affected by storage in Upper and Lower Chateaugay Lakes which is controlled by a dam at The Forge. Total water-surface area of lakes is about 4¾ square miles.

ACCURACY.—Stage-discharge relation permanent during year; not affected by ice. Rating curve well defined between 90 and 400 second-feet by 10 discharge measurements made during the current year; extended beyond these limits. Operation of water-stage recorder satisfactory except for a few short periods. Temporary staff gage read several times daily October 1–8. Daily discharge ascertained by averaging discharge for intervals of the day or, for a few days of slight diurnal fluctuation, by applying to rating table mean daily gage height obtained from recorder graph by inspection, except for days of no record as indicated in footnote to table of daily discharge. Records good except those estimated and those for extremely low stages, which are subject to error.

Daily discharge, in second-feet, of Chateaugay River near Chateaugay, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	120	131	188	130	175	137	121	180	136	99	120	112
2	120	121	176	120	170	138	115	176	137	92	119	113
3	110	129	184	128	170	142	116	160	133	93	119	112
4	110	129	174	133	170	171	118	173	162	96	116	105
5	110	123	125	126	177	156	116	190	137	94	121	111
6	140	124	187	124	125	135	112	200	122	96	114	107
7	110	126	184	123	151	138	110	150	128	110	116	169
8	110	133	183	121	176	141	110	135	122	152	138	118
9	122	134	188	136	174	134	111	178	119	180	93	119
10	94	153	192	127	172	138	108	186	119	174	91	113
11	108	146	192	125	170	141	106	195	112	163	170	117
12	120	136	139	132	173	161	108	177	117	156	119	117
13	118	130	135	139	130	326	106	177	100	152	120	118
14	129	106	141	131	144	324	96	198	103	161	129	113
15	119	148	127	128	198	229	96	161	103	153	123	112
16	123	173	120	129	177	198	102	233	96	154	122	113
17	95	164	129	158	180	175	103	260	98	153	122	112
18	126	157	121	159	176	189	110	254	100	156	118	115
19	114	166	125	176	172	162	119	283	103	159	121	117
20	117	164	130	181	116	147	130	284	99	153	123	114
21	118	119	140	177	151	143	141	279	91	148	119	112
22	120	169	133	195	169	147	290	118	92	132	123	108
23	121	179	121	128	175	147	430	258	86	132	219	114
24	116	180	135	159	167	147	385	263	78	133	109	119
25	141	186	135	178	147	148	356	278	96	135	108	112
26	136	174	129	169	144	150	342	135	102	136	104	113
27	125	176	141	169	120	151	252	123	100	134	114	115
28	120	122	137	174	137	153	214	128	97	135	107	111
29	122	177	128	185	-------	149	214	138	99	124	114	110
30	120	189	130	125	-------	119	197	141	94	125	111	116
31	133	-------	135	155	-------	121	-------	143	-------	120	109	------

NOTE.—Discharge Oct. 1-8 determined from temporary staff gage readings. Gage-height record faulty or lacking Jan. 29 to Feb. 4, Apr. 3, May 5 and 6; discharge estimated from comparative studies.

Monthly discharge of Chateaugay River near Chateaugay, N. Y., for the year ending September 30, 1927

[Drainage area, 114 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	141	94	119	1.04	1.20
November	189	106	149	1.31	1.46
December	192	120	149	1.31	1.51
January	195	120	146	1.28	1.48
February	198	116	161	1.41	1.47
March	326	119	163	1.43	1.65
April	430	96	168	1.47	1.64
May	284	118	192	1.68	1.94
June	162	78	109	.956	1.07
July	180	92	135	1.18	1.36
August	219	91	121	1.06	1.22
September	169	105	115	1.01	1.13
The year	430	78	144	1.26	17.13

NOTE.—Determinations of daily and monthly discharge and run-off given in above table do not necessarily represent the natural flow from the drainage basin owing to artificial storage in Upper and Lower Chateaugay Lakes. However, the elevation of water surface in the lakes at end of year was the same as at beginning of year and therefore the yearly mean discharge and run-off doubtless represents the natural flow.

RICHELIEU RIVER AT ROUSES POINT, N. Y.

LOCATION.—At Rutland Railroad Bridge in Rouses Point, Clinton County, 1 mile south of Fort Montgomery, 1½ miles above head of Richelieu River, the outlet of Lake Champlain, and 1½ miles south of international boundary.

DRAINAGE AREA.—7,870 square miles, including 436 square miles of water surface (from annual report of State engineer and surveyor).

RECORDS AVAILABLE.—1875, to September 30, 1927.

EQUIPMENT.—Vertical staff gage in two sections attached to piles just below Rutland Railroad Bridge and about 25 feet from shore. This gage was set by water level to same datum as the one inside of fort which was formerly used. Elevation of zero of gage, 92.50 feet above mean sea level. Gage read to hundredths once daily.

EXTREMES OF STAGE.—Maximum elevation recorded during year, 97.05 feet at 10 a. m. March 24; minimum elevation, 93.18 feet at 10 a. m. September 27.

1869–1927: Maximum elevation recorded, 103.28 feet April, 1869;[1] minimum elevation, 91.9 feet November 13, 1908.

COOPERATION.—Gage heights observed under direction of the Corps of Engineers of the United States Army and reported monthly to the United States Geological Survey.

[1] Hoyt, J. C., U. S. Geol. Survey Water-Supply Paper 97, p. 340.

Daily gage height, in feet, of Richelieu River at Rouses Point, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.30	2.08	3.07	2.15	2.00	1.95	4.25	3.08	3.10	1.95	1.62	1.20
2	1.80	2.22	2.85	2.08	2.02	1.95	4.10	3.07	3.10	1.95	1.40	1.20
3	1.25	2.20	2.95	2.05	2.05	1.93	4.15	2.97	3.07	1.95	1.58	1.32
4	1.48	2.20	2.80	2.10	2.05	1.93	4.15	3.00	3.22	1.86	1.62	1.15
5	1.45	2.35	2.95	2.15	2.03	1.92	4.20	3.08	2.97	1.77	1.50	1.13
6	1.42	2.52	2.97	2.10	2.02	1.90	4.07	2.87	2.90	1.85	1.45	1.25
7	1.53	2.48	3.00	2.07	2.00	1.90	3.85	2.83	2.95	1.85	1.57	1.13
8	1.62	2.20	2.92	2.02	2.00	1.95	3.80	2.90	2.90	1.80	1.50	1.05
9	1.65	2.62	2.95	2.00	1.95	2.04	3.73	2.82	2.82	1.82	1.20	1.10
10	1.70	2.30	2.90	1.98	1.90	2.15	3.65	3.50	2.90	1.75	1.25	1.20
11	1.65	2.42	2.83	1.95	1.92	2.20	3.52	2.80	2.78	1.78	1.30	1.03
12	1.75	2.47	2.78	1.95	1.92	2.23	3.55	2.80	2.67	1.80	1.27	.98
13	1.90	2.45	2.78	1.95	1.95	2.47	3.55	2.73	2.64	1.75	1.22	1.07
14	1.70	2.48	2.75	1.93	1.88	2.68	3.53	2.80	2.60	1.70	1.45	1.00
15	1.60	2.70	2.77	1.92	1.90	3.00	3.60	2.80	2.55	1.65	1.23	1.03
16	1.87	2.78	2.70	1.92	1.90	3.42	3.57	2.85	2.58	1.70	1.15	1.00
17	1.48	2.80	2.65	1.90	1.90	3.62	3.50	2.83	2.52	1.80	1.22	1.10
18	1.55	2.88	2.58	1.90	1.90	3.80	3.38	3.05	2.50	1.68	1.23	1.12
19	1.50	2.97	2.55	1.92	1.90	4.08	3.35	2.92	2.47	1.78	1.20	.97
20	1.55	3.40	2.55	1.90	1.92	4.37	3.27	2.85	2.40	1.65	1.18	1.00
21	1.50	3.18	2.50	1.90	1.92	4.45	3.35	3.07	2.40	1.63	1.18	.95
22	1.77	3.42	2.45	1.88	1.92	4.45	3.37	3.50	2.45	1.72	1.23	.97
23	1.55	2.95	2.42	1.92	1.90	4.48	3.35	3.18	2.30	1.72	1.35	.92
24	1.52	3.50	2.45	2.03	1.90	4.55	3.38	3.20	2.18	1.70	1.08	.90
25	1.58	3.15	2.40	2.03	1.90	4.50	3.45	3.80	2.50	1.60	1.17	1.15
26	1.85	3.70	2.38	2.02	1.92	4.52	3.42	3.22	1.98	1.68	1.08	.93
27	1.87	3.08	2.40	2.00	1.93	4.46	3.25	3.12	2.07	1.67	1.00	.68
28	2.15	3.10	2.43	1.98	1.95	4.43	3.08	3.18	2.03	1.65	1.07	1.20
29	1.95	3.75	2.30	1.98	-------	4.38	3.05	3.23	2.12	1.63	1.12	1.07
30	2.00	2.98	2.30	2.04	-------	4.43	3.17	3.18	2.08	1.60	1.43	1.00
31	1.95	-------	2.28	1.98	-------	4.28	-------	3.35	-------	1.55	1.22	------

LAKE CHAMPLAIN AT BURLINGTON, VT.

LOCATION.—On south side of roadway leading to dock of Champlain Transportation Co., at foot of King Street, Burlington, Chittenden County.

RECORDS AVAILABLE.—May 1, 1907, to September 30, 1927.

EQUIPMENT.—Staff gage. Comparisons of gage readings indicate that zero of gage at Burlington is at practically the same elevation as that of gage at Rouses Point, 92.5 feet above mean sea level.

EXTREMES OF STAGE.—Maximum stage recorded during year, 4.90 feet March 23 and 24; minimum stage, 1.00 foot September 29 and 30.

1907–1927: Maximum stage recorded, 8.22 feet April 19, 1922; minimum stage, —0.25 foot December 4, 1908.

ICE.—Wider parts of Lake Champlain not usually frozen over until the later part of January. Occasionally closure does not occur until February, and in some years it lasts only for a few days. The northern end of the lake above the outlet is usually covered with ice from the middle of December to the middle of April.

ACCURACY.—Gage read to hundredths at irregular intervals. Gage readings made when the lake is rough are subject to inaccuracies due to wave action.

COOPERATION.—Records furnished by D. A. Loomis, general manager of the Champlain Transportation Co.

102060—30——10

Daily gage height, in feet, of Lake Champlain at Burlington, Vt., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	2.40	3.34	------	------	------	4.57	------	3.50	2.26	1.88	1.56
2	------	2.48	------	------	------	------	4.57	3.45	3.45	2.24	------	1.52
3	------	2.56	3.34	2.46	------	------	------	3.40	3.42	2.18	1.78	------
4	------	------	------	2.44	------	2.28	4.43	3.35	------	------	1.76	------
5	------	------	------	------	------	------	------	3.30	3.25	2.16	------	------
6	------	------	------	------	------	------	4.30	------	------	2.12	------	1.48
7	1.88	------	3.20	------	------	2.28	------	3.26	3.20	2.10	------	------
8	2.02	2.52	------	------	------	2.32	4.26	------	------	2.08	------	1.44
9	2.02	------	------	------	------	------	4.18	3.20	3.16	2.06	------	1.44
10	------	------	------	------	2.32	2.46	------	------	3.08	------	1.64	------
11	2.00	------	------	------	------	2.54	------	3.12	------	2.02	1.62	------
12	1.98	2.68	------	------	------	2.58	3.95	3.12	3.00	------	1.60	------
13	------	2.67	3.06	------	------	------	3.92	3.12	2.92	1.98	1.58	------
14	------	------	3.06	------	------	2.96	3.88	3.12	2.94	------	------	1.36
15	------	------	3.02	------	------	3.25	3.82	------	------	1.96	1.57	------
16	------	------	------	------	------	3.65	------	3.10	2.88	------	------	1.32
17	------	------	------	2.36	------	3.96	------	3.12	2.82	1.96	1.54	------
18	1.86	3.26	------	------	------	4.10	3.65	------	2.78	------	1.52	------
19	------	3.30	------	2.34	------	4.35	3.63	3.24	2.68	1.96	1.52	1.30
20	1.84	------	------	------	------	------	3.60	3.44	2.64	1.96	------	1.25
21	------	------	2.80	------	------	4.76	------	3.46	------	------	------	------
22	1.83	------	2.82	------	------	4.85	3.60	------	------	------	1.50	1.20
23	------	3.30	2.80	------	------	4.90	3.70	3.50	2.56	1.92	1.48	------
24	------	------	------	------	------	4.90	------	3.56	2.54	------	1.45	------
25	1.89	------	------	------	------	4.87	3.65	------	------	1.90	------	------
26	------	------	------	------	------	4.85	------	3.54	2.40	------	------	------
27	2.20	3.34	2.60	------	------	------	3.56	3.60	2.36	1.90	1.47	------
28	------	------	------	------	2.28	4.76	3.60	------	2.34	1.90	------	1.14
29	2.26	------	2.64	------	------	4.73	3.56	------	2.26	------	1.50	1.00
30	------	3.34	2.60	------	------	4.72	3.52	------	2.30	------	1.50	1.00
31	------	------	2.56	------	------	4.66	------	------	------	1.88	1.46	------

SARANAC RIVER NEAR PLATTSBURG, N. Y.

LOCATION.—At Indian Rapids power plant (formerly known as Lozier Dam) of Plattsburg Gas & Electric Co., 4½ miles upstream from mouth of river at Plattsburg, Clinton County.

DRAINAGE AREA.—607 square miles (measured on topographic maps).

RECORDS AVAILABLE.—March 27, 1903, to September 30, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder on retaining wall above power house on right side of river records elevation of water surface in forebay of plant. Tailrace gage is a vertical staff spiked to cribwork in dike between tailrace and river about 50 feet downstream from power house. Records of kilowatt output are obtained at half-hour intervals from watt meters on switchboard. Discharge measurements made from cable at head of Indian Rapids a quarter of a mile downstream from dam or by wading under cable or in tailrace.

DETERMINATION OF DISCHARGE.—Records include the discharge over concrete spillway of dam which has been rated by current-meter measurements; the discharge through two power units equipped with 300-kilowatt generators which have also been rated by current-meter measurements; and the discharge through two 5-foot waste gates when open, the rating for which is theoretical and poor.

EXTREMES OF DISCHARGE.—Maximum daily discharge during year, 3,000 second-feet March 19; minimum daily discharge, 158 second-feet January 4.

1903–1927: Maximum daily discharge, 7,200 second-feet April 25, 1926; minimum daily discharge, 15 second-feet August 4, 1908.

DIVERSIONS AND REGULATION.—The lakes and ponds on the main stream and tributaries above the station comprise a water surface area of about 25.5 square miles. The actual storage afforded by these reservoirs has been largely increased by the State dam at Lower Saranac Lake, the operation of which affects distribution of flow during the year.

ACCURACY.—Stage-discharge relation may have changed slightly during year owing to spawling of concrete on crest of spillway, but no change in rating curve has been made on this account. Ice effect is negligible since crest of spillway is usually kept free of ice. Rating curve for spillway fairly well defined between 100 and 5,000 second-feet but subject to some error owing to possible change in crest of spillway noted above; turbine ratings fairly well defined throughout. No discharge measurements were made at this station during year. Operation of water-stage recorder unsatisfactory at times. Daily discharge over spillway ascertained by averaging discharge for intervals of the day or, for days during which recorder did not operate, by applying mean of observer's gage readings to rating table. Daily discharge through turbines ascertained by applying to their ratings mean kilowatt output and head for periods of run. Records fair.

COOPERATION.—Gage-height records and wattmeter readings furnished by Plattsburg; Gas & Electric Co., Herbert A. Stutchbury, superintendent.

Daily discharge, in second-feet, of Saranac River near Plattsburg, N. Y., for the year ending September 30 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	530	1,140	1,020	530	660	650	1,200	890	1,060	530	560	430
2	610	1,100	790	320	660	650	1,160	770	1,000	530	630	350
3	560	1,120	680	315	600	610	1,020	910	920	540	650	370
4	650	1,060	700	158	640	620	950	840	840	425	580	330
5	510	1,000	570	285	580	670	860	890	860	435	580	188
6	610	940	700	248	580	700	860	1,000	820	410	580	285
7	660	790	700	360	560	570	1,000	930	830	430	495	320
8	660	880	920	440	780	710	940	790	800	485	640	320
9	660	930	820	490	910	880	880	810	770	495	580	320
10	650	1,140	860	590	880	710	740	740	740	350	610	325
11	670	1,140	770	485	720	710	700	890	680	425	590	315
12	610	960	730	620	770	850	860	950	680	360	580	310
13	680	930	810	640	580	1,040	850	940	670	470	600	300
14	650	820	790	670	590	1,760	880	890	690	340	530	310
15	640	860	740	670	680	2,460	860	820	700	475	540	310
16	600	1,060	660	640	640	2,320	910	1,060	680	560	465	385
17	475	1,880	640	640	650	2,100	900	1,260	660	570	590	365
18	630	1,800	700	500	660	2,480	1,000	1,320	620	640	590	260
19	600	1,780	590	610	620	3,000	1,200	1,560	540	690	610	320
20	600	1,680	740	800	620	2,750	1,360	1,420	560	680	640	355
21	630	1,480	700	740	560	2,340	1,320	1,560	600	580	550	375
22	620	1,240	700	770	570	2,200	1,340	1,520	580	570	550	365
23	670	1,280	590	750	680	1,840	1,440	1,580	610	580	350	375
24	510	1,180	590	590	800	1,500	1,220	1,580	590	850	300	395
25	950	1,100	660	660	910	1,400	1,080	1,380	530	750	345	510
26	1,240	1,060	630	700	800	1,420	1,080	1,360	540	680	320	375
27	1,120	1,120	570	580	800	1,360	1,060	1,280	520	670	330	455
28	1,040	770	610	640	590	1,260	1,040	1,240	370	600	260	520
29	950	850	640	720	-------	1,240	1,020	1,100	580	620	370	480
30	970	1,000	620	780	-------	1,200	1,020	1,000	570	620	365	620
31	1,040	-------	610	580	-------	1,260	-------	1,120	----	530	490	------

NOTE.—Water-stage recorder did not operate satisfactorily Oct. 16, Dec. 7, 11, 16, 20–22; Jan. 4–8, 21, 27, 31, Feb. 1–7, 26, Mar. 5–12, 23–26, Apr. 2, May 8–11, 19, 20, June 12–15, 18, 21–24, July 14–16, 23, 28–31, Aug. 1 and 4–20; discharge over spillway determined from observer's gage readings.

Monthly discharge of Saranac River near Plattsburg, N. Y., for the year ending September 30, 1927

[Drainage area, 607 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,240	475	710	1.17	1.35
November	1,880	770	1,140	1.88	2.10
December	1,020	570	705	1.16	1.34
January	800	158	565	.931	1.07
February	910	560	682	1.12	1.17
March	3,000	570	1,400	2.31	2.66
April	1,440	700	1,020	1.68	1.87
May	1,580	740	1,110	1.83	2.11
June	1,060	370	687	1.13	1.26
July	850	340	545	.898	1.04
August	650	260	512	.844	.97
September	620	188	365	.601	.67
The year	3,000	158	787	1.30	17.61

NOTE.—The monthly discharge in second-feet per square mile and run-off in depth in inches shown by the table do not necessarily represent the natural flow from the basin because of artificial storage in the upper part of the basin. The yearly mean doubtless represents very nearly the natural flow.

WEST BRANCH OF AUSABLE RIVER NEAR NEWMAN, N. Y.

LOCATION.—On farm formerly owned by James Dudley, 4 miles northeast of Newman, Essex County, 5 miles downstream from mouth of Lake Placid outlet, and 17 miles upstream from confluence with East Branch at Ausable Forks.

DRAINAGE AREA.—116 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 7, 1916, to December 31, 1917; July 15, 1919, to September 30, 1927.

EQUIPMENT.—Au 60-day water-stage recorder on right bank; installed July 14, 1927. Staff gage about 50 feet downstream previously used. Discharge measurements made from cable 250 feet upstream from gage or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of sand, gravel, and solid rock. Right bank comparatively low and lined with brush; overflowed in vicinity of gage at very high stages. Left bank slopes up gradually and is wooded; not subject to overflow. Control is solid rock ledge 150 feet downstream from gage; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.4 feet at 8 a. m. November 17 (discharge, 3,210 second-feet); minimum discharge recorded, 26 second-feet, as indicated by discharge measurements on March 2 (result of regulation).

1916–1917, 1919–1927: Maximum discharge, 5,150 second-feet at 7 a. m. October 1, 1924 (gage height, 9.0 feet); minimum stage, caused by closing gates in logging dam above gage, 1.60 feet at 7.30 p. m. September 13, 1920 (practically no flow).

DIVERSIONS AND REGULATION.—Some diurnal fluctuation during medium and low stages is caused probably by operation of sawmill at Newman and power plant at outlet of Lake Placid. Seasonal distribution of flow is not greatly affected by artificial storage in Lake Placid.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined by 18 discharge measurements between 40 and 4,000 second-feet; extended beyond these limits. Four of the measurements, covering a range from 60 to 400 second-feet, were made during the current year and check the curve. Staff gage read to quarter-tenths once or twice daily October 1 to May 7 and to hundredths June 28 to July 13. Operation of water-stage recorder satisfactory after July 13. Daily discharge ascertained by applying to rating table mean daily gage height as observed or as obtained from recorder graph by inspection or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day, except for periods of ice effect or of no record as indicated in footnote to table of daily discharge. Records fair prior to installation of water-stage recorder; good thereafter.

Daily discharge, in second-feet, of West Branch of Ausable River near Newman, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	104		200	60	160		145	214		84	115	144
2	132		132	55	140		132	214		74	101	124
3	132		108	55	130		108	214		100	82	164
4	120	210	100	55	110		98	246		180	73	143
5	101		95	60	110		71	354		172	74	113
6	776		90	55	100	140	74	440		145	72	95
7	580	132	90	55	90		145	316		102	63	87
8	316	127	85	50	85		91			172	61	86
9	230	271	85	50	85		158			132	70	72
10	132	852	80	50	80		71			98	73	62
11	158	399	80	48	75		132			79	69	106
12	113	298	80	48	70		185			74	63	116
13	132	214	80	46	65	246	145			71	55	91
14	158	214	90	50	60	1,060	145		120	79	65	83
15	132	200	95	50	60	925	158			83	285	120
16		1,060	80	48	65	580	185			193	171	156
17		2,300	75	46	75	485	230			253	124	110
18		780	75	44	85	860	395			284	98	91
19	100	555	75	50	80	1,060	800	410		211	95	134
20		462	70	90	75	685	1,130			149	70	110
21		335	70	130	70	418	800			118	79	92
22		280	70	160	75	354	462			104	208	86
23	132	230	70	130	80	263	508			98	146	77
24	294	185	70	110	85	246	354			432	88	75
25	595	145	75	85	85	185	280			366	84	69
26	836	172	70	80	95	145	280			280	74	67
27	860	289	70	75	80	132	298			194	60	64
28	400	280	70	80	70	87	298		145	163	98	64
29	240	263	65	80	-------	108	246		158	137	340	61
30	220	280	65	120	-------	145	185		132	115	301	61
31	280	-------	65	170	-------	185	-------		-------	104	194	------

NOTE.—Discharge Dec. 4 to Feb. 28 determined from gage heights corrected for ice effect on basis of two discharge measurements, observer's notes, weather records, and comparative studies with records from other stations in same drainage basin. Gage-height record faulty or lacking Oct. 16–22, Oct. 28 to Nov. 6, Dec. 4, 10, 18, 19, 23, Jan. 5, 14, Feb. 2, 3, 12, 20, 26, 27, Mar. 1–12, Apr. 14, 17, 22, May 8 to June 27, July 3, 4, 10, and 14; discharge estimated by comparative studies. Braced figures show mean discharge for periods indicated.

Monthly discharge of West Branch of Ausable River near Newman, N. Y., for the year ending September 30, 1927

[Drainage area, 116 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	860		254	2.19	2.52
November	2,300	127	386	3.33	3.72
December	200	65	84.7	.730	.84
January	170	44	73.7	.635	.73
February	160	60	87.1	.751	.78
March	1,060	87	318	2.74	3.16
April	1,130	71	277	2.39	2.67
May			382	3.29	3.79
June			122	1.05	1.17
July	432	71	156	1.34	1.54
August	340	55	115	.991	1.14
September	164	61	97.4	.840	.94
The year	2,300	44	197	1.70	23.00

NOTE.—See "Diversions and Regulation" in station description.

AUSABLE RIVER NEAR AUSABLE FORKS, N. Y.

LOCATION.—1¾ miles downstream from junction of East and West Branches of Ausable River at Ausable Forks, Clinton County, and 17 miles upstream from mouth of river.

DRAINAGE AREA.—446 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 22, 1924, to September 30, 1927.

EQUIPMENT.—Au 60-day water-stage recorder on left bank. Discharge measurements made from cable 200 feet upstream from gage or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of coarse gravel and small boulders. Right bank high, steep, and wooded. Left bank subject to overflow during high floods; lined with trees. Control, at head of island 800 feet downstream from gage, composed of coarse gravel and boulders; seldom shifts.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 8.7 feet at 1.30 a. m. November 17 (discharge, 13,300 second-feet); minimum stage, from water-stage recorder, 1.22 feet from noon to 2 p. m. August 7 (discharge, 128 second-feet).

1924–1927: Maximum stage, from water-stage recorder, 10.55 feet at 3 a. m. October 1, 1924 (discharge, about 19,100 second-feet); minimum stage, from water-stage recorder, 1.08 feet at 7.15 p. m. November 9, 1924 (discharge, 93 second-feet).

DIVERSIONS AND REGULATION.—Considerable diurnal fluctuation due to power operations at Ausable Forks and above. Seasonal distribution of flow only slightly affected by small storage reservoirs above station.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined by 13 discharge measurements between 125 and 10,000 second-feet. Four of the measurements, ranging from 290 to 800 second-feet, were made during the current year and check the curve closely. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day, except for periods of ice effect or of no record as indicated in footnote to table of daily discharge. Records good except those for periods of ice effect or of no record, which are fair.

Daily discharge, in second-feet, of Ausable River near Ausable Forks, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	263	884	626	200	600	300	474	522	640	259	280	462
2	259	717	468	200	550	300	439	540	605	236	259	368
3	263	633	416	200	500	280	405	564	591	226	239	537
4	276	528	380	200	440	260	400	570	462	315	212	498
5	284	462	360	220	380	260	411	897	657	358	192	389
6	1,160	428	340	200	340	280	400	1,030	745	289	188	306
7	1,230	379	320	200	320	340	570	940	570	251	168	266
8	808	394	300	190	300	700	486	780	450	280	175	247
9	577	527	300	190	300	985	444	724	405	301	181	236
10	462	2,080	280	190	280	654	422	908	416	243	209	216
11	405	1,180	280	180	280	710	379	2,060	580	239	188	212
12	358	696	280	180	260	958	405	1,410	516	216	181	
13	343	591	280	180	260	1,260	428	1,070	414	236	172	
14	338	480	320	190	260	2,920	405	916	343	306	156	
15	334	492	340	190	240	3,160	384	1,170	320	255	538	330
16	311	2,050	300	180	260	2,130	456	1,810	334	343	418	
17	284	7,910	280	180	280	1,690	633	2,450	310	480	297	
18	297	2,750	260	170	300	2,980	1,240	2,710	272	528	251	
19	297	1,870	260	190	280	4,290	2,540	3,140	254	480	216	
20	284	1,580	240	320	260	2,400	3,480	2,500	306	389	209	368
21	311	1,110	240	460	260	1,580	2,770	2,010	311	405	195	297
22	311	892	240	550	260	1,190	2,560	1,360	272	293	410	243
23	368	759	240	500	280	823	2,070	2,380	263	272	394	224
24	450	668	240	380	320	772	1,280	1,630	255	908	263	216
25	1,320	564	260	300	380	700	916	1,310	255	1,010	234	198
26	1,980	534	240	280	460	611	759	1,410	418	780	239	206
27	1,090	848	240	260	420	558	710	1,160	472	546	198	188
28	736	752	240	280	360	516	675	985	353	444	228	181
29	591	724	220	300	-------	498	626	804	315	353	823	188
30	570	745	220	440	-------	456	577	703	289	306	993	188
31	754	-------	220	650	-------	510	-------	640	-------	255	626	------

NOTE.—Discharge Dec. 4 to Mar. 8 determined from gage heights corrected for ice effect on basis of two discharge measurements, weather records, and comparative studies of flow. Gage-height record faulty or lacking July 12 and Sept. 11–20; discharge estimated by comparative studies of flow. Braced figure shows mean discharge for period indicated.

Monthly discharge of Ausable River near Ausable Forks, N. Y., for the year ending September 30, 1927

[Drainage area, 446 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,980	259	559	1.25	1.44
November	7,910	379	1,140	2.56	2.86
December	626	220	298	.668	.77
January	650	170	269	.603	.70
February	600	240	337	.756	.79
March	4,290	260	1,130	2.53	2.92
April	3,480	379	925	2.07	2.31
May	3,140	522	1,330	2.98	3.44
June	745	254	413	.926	1.03
July	1,010	216	381	.854	.98
August	993	156	301	.675	.78
September	537	181	296	.664	.74
The year	7,910	156	616	1.38	18.76

BLACK BROOK AT BLACK BROOK, N. Y.

LOCATION.—100 feet downstream from hydroelectric plant of J. & J. Rogers Co., three-quarters of a mile downstream from Black Brook, Clinton County, 1¼ miles upstream from junction with West Branch of Ausable River, and 3½ miles west of Ausable Forks.

DRAINAGE AREA.—47.2 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 7, 1924, to September 30, 1927.

EQUIPMENT.—Slope gage on right bank. Discharge measurements made from footbridge 10 feet downstream from gage or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of gravel and small boulders. Banks comparatively clean; left bank subject to overflow during extremely high stages. Control composed of gravel and boulders; shifts occasionally.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.6 feet at 5 p. m. March 19 (discharge, 277 second-feet); minimum discharge, about 6 second-feet, occurred frequently when power plant was shut down.

1924–1927: Maximum discharge recorded, 720 second-feet at 2 p. m. April 25, 1926 (gage height, 5.6 feet); minimum discharge, approaching 5 second-feet, occurs frequently when power plant is shut down.

DIVERSIONS AND REGULATION.—During low flow some water is diverted from Little Black Brook through a flume half a mile above East Kilns. Diurnal distribution of flow during low water completely controlled by operation of power plant. Seasonal distribution of flow largely regulated by storage in Fern Lake and Taylor Pond.

ACCURACY.—Stage-discharge relation permanent during year; not affected by ice. Rating curve well defined by nine discharge measurements between 10 and 500 second-feet. Five of the measurements, covering a range from 14 to 87 second-feet, were made during the current year and, with one exception, check the curve closely. Gage read to hundredths after each change in gate opening at power plant. Daily discharge ascertained by averaging discharge for intervals of day. Records good except those for period of missing record which are fair.

Daily discharge, in second-feet, of Black Brook at Black Brook, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	49	25	52	88	54	62		35	31	18	48
2	31	37	38	74	88	54	62		30	33	22	41
3	18	43	47	50	88	59	13		24	10	15	55
4	12	32	46	50	83	55	57	42	24	6	23	41
5	28	36	13	51	77	53	54		30	16	28	40
6	33	44	52	51	41	29	53		49	18	22	41
7	48	19	66	49	98	54	82	68	24	16	6	47
8	39	25	63	44	83	62	61		19	19	22	48
9	34	27	65	20	73	64	54		20	16	32	35
10	20	32	68	56	70	60	29		17	6	33	26
11	39	41	68	53	66	62	52		19	18	39	49
12	26	39	57	45	64	55	48	95	23	20	34	46
13	30	31	61	47	38	24	48		14	20	34	48
14	31	11	58	45	80	93	50		14	27	19	45
15	34	33	57	48	70	142	48		14	46	39	59
16	25	38	64	31	53	181	47		16	55	33	62
17	23	92	64	59	52	173	48	114	14	22	32	57
18	40	116	61	64	54	198	55		12	38	28	32
19	31	94	46	56	51	268	57		12	31	34	35
20	29	80	58	61	20	173	62		13	26	43	44
21	45	43	56	62	75	165	55	110	21	31	43	44
22	44	58	27	63	56	114	35		38	30	46	34
23	47	46	27	57	58	55			35	34	46	33
24	32	44	21	70	56	62			39	10	49	35
25	52	39	11	56	58	58		60	37	49	49	26
26	85	33	11	52	46	51	10	60	34	23	49	51
27	58	49	40	48	72	62		51	43	23	49	32
28	43	28	64	47	75	71		43	31	18	38	34
29	45	34	76	66	-------	62		37	35	11	60	47
30	31	32	72	49	-------	56		37	22	10	34	49
31	21	-------	58	107	-------	62	-------	28	-------	14	42	------

NOTE.—Power plant not operating and gage not read Apr. 23 to May 6, May 8–16, and 18–24; discharge estimated by comparative studies.

Monthly discharge of Black Brook at Black Brook, N. Y., for the year ending September 30, 1927

[Drainage area, 47.2 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	85	12	35.7	0.756	0.87
November	116	11	44.2	.936	1.04
December	76	11	49.7	1.05	1.21
January	107	20	54.3	1.15	1.33
February	98	20	65.5	1.39	1.45
March	268	24	88.1	1.87	2.16
April	82		40.4	.856	.96
May	114	28	76.6	1.62	1.87
June	49	12	25.3	.536	.60
July	55	6	23.5	.498	.57
August	60	6	34.2	.725	.84
September	62	26	42.8	.907	1.01
The year	268	6	48.3	1.02	13.91

NOTE.—Discharge and run-off determinations in the above table do not necessarily represent the natura flow from the drainage basin owing to artificial storage in Fern Lake and Taylor Pond and diversion from Little Black Brook.

EAST BRANCH OF AUSABLE RIVER AT AUSABLE FORKS, N. Y.

LOCATION.—At lower steel highway bridge in Ausable Forks, Essex County, 100 feet upstream from low dam, 250 feet upstream from hydroelectric plant of J. & J. Rogers Co., and 400 feet upstream from confluence with West Branch of Ausable River.

DRAINAGE AREA.—199 square miles (from annual report of State engineer and surveyor).

RECORDS AVAILABLE.—September 5, 1924, to September 30, 1927.

EQUIPMENT.—Vertical staff gage on downstream side of left bridge abutment. Discharge measurements made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of gravel. Left bank high; right bank subject to slight overflow below control. Control is crest of low timber dam 100 feet downstream from gage; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.6 feet at 7 a. m. November 17 (discharge, 6,310 second-feet); minimum stage, 0.58 foot several times August 12–14 and September 30 (discharge, 46 second-feet.

1924–1927: Maximum stage, determined by leveling from floodmarks, 11.4 feet during afternoon of March 28, 1925 (discharge not determined); minimum stage, 0.55 foot at 7 a. m. July 23, 1926 (discharge, 38 second-feet).

DIVERSIONS AND REGULATION.—None of consequence.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined by 20 discharge measurements between 40 and 7,500 second-feet. Three of the measurements, ranging from 107 to 440 second-feet, were made during the current year and check the curve closely. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table or, for days of considerable fluctuation in stage, by constructing a gage-height graph on basis of daily readings and averaging discharge for intervals of the day, except for period of ice effect as indicated in footnote to table of daily discharge. Records good except those for period of ice effect, which are fair.

Daily discharge, in second-feet, of East Branch of Ausable River at Ausable Forks, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	99	392	327	90	280	110	180	226	294	116	107	220
2	91	301	301	85	260	95	171	220	270	103	103	180
3	91	275	242	85	200	90	171	220	236	107	95	314
4	107	226	200	85	180	85	171	231	202	149	79	264
5	112	184	170	90	140	85	166	392	348	132	83	193
6	420	175	140	85	100	90	171	457	366	107	64	149
7	457	166	120	85	90	150	253	418	282	91	56	112
8	288	175	120	85	85	300	193	398	211	116	52	103
9	211	266	110	80	85	440	180	353	188	128	64	87
10	175	985	110	80	80	280	184	443	198	103	68	75
11	158	575	110	80	80	301	175	955	282	91	56	68
12	136	340	110	75	75	412	175	610	226	87	46	99
13	128	264	120	75	75	810	184	526	188	95	46	95
14	124	220	140	80	75	1,830	171	444	202	112	56	83
15	120	211	160	80	75	1,340	171	641	166	83	179	91
16	116	1,000	140	75	80	830	175	910	158	99	154	149
17	107	4,570	120	75	90	645	395	1,550	141	141	124	120
18	99	1,290	120	70	110	1,340	664	1,620	124	171	95	103
19	107	955	110	80	95	1,500	1,290	1,470	112	158	79	220
20	112	750	110	140	85	955	1,600	1,260	162	149	64	158
21	120	519	100	200	80	645	1,460	871	158	206	52	116
22	128	405	100	240	85	540	1,380	662	136	128	180	87
23	154	334	100	220	95	431	1,090	1,120	124	99	132	79
24	171	282	95	170	110	346	645	750	120	482	103	68
25	575	231	110	140	150	270	464	610	103	477	87	64
26	906	248	100	120	180	231	405	790	211	372	79	56
27	519	470	100	110	160	216	282	610	253	264	60	52
28	340	392	95	120	130	188	258	526	171	198	79	52
29	253	327	95	140	-------	193	275	398	145	145	480	52
30	242	379	90	190	-------	184	264	334	128	120	533	46
31	340	-------	90	300	-------	206	-------	308	-------	95	334	-------

NOTE.—Discharge Dec. 4 to Mar. 10 determined from gage heights corrected for ice effect on basis of two discharge measurements, observer's notes, weather records, and comparative studies.

Monthly discharge of East Branch of Ausable River at Ausable Forks, N. Y., for the year ending September 30, 1927

[Drainage area, 199 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	906	91	226	1.14	1.31
November	4,570	166	564	2.83	3.16
December	327	90	134	.673	.78
January	300	70	117	.588	.68
February	280	75	119	.598	.62
March	1,830	85	488	2.45	2.82
April	1,600	166	445	2.24	2.50
May	1,620	220	656	3.30	3.80
June	366	103	197	.990	1.10
July	482	83	159	.799	.92
August	533	46	122	.613	.71
September	314	46	118	.593	.66
The year	4,570	46	280	1.41	19.06

BOUQUET RIVER AT WILLSBORO, N. Y.

LOCATION.—Half a mile southwest of Willsboro, Essex County, 2½ miles downstream from confluence with North Branch of Bouquet River, and 3 miles upstream from mouth in Lake Champlain.

DRAINAGE AREA.—271 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 23, 1923, to September 30, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder on right bank. Discharge measurements made from upstream side of highway bridge in Willsboro or by wading.

CHANNEL AND CONTROL.—Bed of stream covered with small boulders in vicinity of gage; solid rock downstream. Banks high and for the most part wooded. Control composed of coarse gravel and boulders; permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 8.8 feet at 9.30 a. m. November 17 (discharge, 7,690 second-feet); minimum stage, from water-stage recorder, 2.34 feet at 8 a. m. September 23 (discharge, 55 second-feet).

1923–1927: Maximum stage, from water-stage recorder, 10.85 feet at 10 a. m. October 1, 1924 (discharge, about 11,800 second-feet); minimum stage, from water-stage recorder, 2.17 feet at 9 a. m. October 23, 1923 (discharge, 30 second-feet).

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

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined by 24 discharge measurements between 35 and 4,500 second-feet; extended beyond these limits. Three of the measurements, covering a range from 93 to 305 second-feet, were made during the current year and check the curve. Operation of water-stage recorder unsatisfactory at times. Daily-discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection or, for days of considerable fluctuation in stage, by averaging discharge for intervals of the day, except for periods of ice effect or of no record as indicated in footnote to table of daily discharge. Records good except those for periods of ice effect or of no record, which are fair.

Daily discharge, in second-feet, of Bouquet River at Willsboro, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	81	236	334			160	339	245	273	110	114	206
2	73	245	241			130	313	227	264	100	117	173
3	85	264	206		240	120	303	245	236	93	108	270
4	83	227	180			110	298	241	219	154	102	292
5	93	193	170	105		100	298	241	236	139	90	193
6	218	177	160		130	110	318	303	303	105	88	146
7	293	166	150		120	130	393	278	259	98	92	117
8	230	162	150		110	400	376	264	227	95	88	114
9	173	205	140		110	600	328	232	198	98	88	105
10	158	692	140		100	400	293	255	189	83	88	95
11	139	462	140	100	100	400	268	448	189	81	92	92
12	124	273	140	95	95	500	273	432	185	85	88	88
13	114	245	140	95	95	800	293	344	154	83	83	92
14	110	214	160	100	95	1,200	288	298	150	100	83	85
15	110	193	200	100	95	1,680	273	298	150	108	266	92
16	110	511	190	100	100	1,410	288	666	150	114	226	105
17	110	5,070	150	95	120	1,110	350	1,090	139	132	154	108
18	105	1,250	140	90	140	1,360	444	987	128	135	139	75
19	108	792	140	100	120	2,050	633	1,070	110	128	117	75
20	108	770	150	180	110	1,230	755	815	110	110	100	77
21	139	607	150	260	100	770	689	831	146	92	88	83
22	146	474	130	300	100	633	573	594	124	81	178	73
23	162	404	130	320	120	436	778	634	110	85	198	73
24	177	365	120	240	140	404	486	622	102	259	142	75
25	344	328	130	180	200	382	387	498	92	432	110	
26	649	283	120	160	260	350	323	555	121	278	95	
27	372	358	120	140	240	355	313	474	150	247	90	75
28	264	456	120	150	190	334	293	404	135	206	98	
29	219	322	110	170	-------	334	283	355	128	150	219	
30	198	365	110	240	-------	313	268	318	124	128	468	
31	202	-------	110	380	-------	313	-------	288	-------	105	283	-------

NOTE.—Discharge Dec. 4–31, Jan. 11–31, and Feb. 6 to Mar. 13 determined from gage heights corrected for ice effect on basis of two discharge measurements, weather records, and comparative studies with records from adjacent stations. Gage-height record faulty or lacking Nov. 20, Dec. 30 to Jan. 11, Jan. 18, 19, 29–31, Feb. 1–6, 13, Aug. 14, Sept. 11, 18, and 25–30; discharge estimated by comparative studies. Braced figures show mean discharge for periods indicated.

Monthly discharge of Bouquet River at Willsboro, N. Y., for the year ending September 30, 1927

[Drainage area, 271 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	649	73	177	0.653	0.75
November	5,070	162	544	2.01	2.24
December	334	110	154	.568	.65
January	380	90	150	.554	.64
February		95	150	.554	.58
March	2,050	100	601	2.22	2.56
April	778	268	384	1.42	1.58
May	1,090	227	469	1.73	1.99
June	303	92	170	.627	.70
July	432	81	136	.502	.58
August	468	83	138	.509	.59
September	292	73	112	.413	.46
The year	5,070	73	266	.982	13.32

LAKE GEORGE AT ROGERS ROCK, N. Y.

LOCATION.—At Hoopers Dock on south side of Stones Bay, Rogers Rock, Essex County.

RECORDS AVAILABLE.—July 10, 1913, to September 30, 1927.

EQUIPMENT.—Vertical staff gage attached to dock structure; set by water level to same datum as former gage near steamboat landing. Datum, 3.15 feet below crest of dam at outlet of lake. Gage read to hundredths once daily.

EXTREMES OF STAGE.—Maximum stage recorded during year, 4.20 feet May 31 and June 6; minimum stage, 2.42 feet October 20.

1913–1927: Maximum stage recorded, 5.07 feet April 18, 1922; minimum stage, 1.06 feet December 29, 1922.

REGULATION.—Elevation of lake surface is regulated by operation of gates and wheels at dam at outlet of lake at Ticonderoga.

COOPERATION.—Gage-height record furnished by Mr. C. S. Colson, hydraulic engineer, International Paper Co.

Daily gage height, in feet, of Lake George at Rogers Rock, N. Y., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.55	2.50	3.12	2.85	2.70	2.62	3.75	3.85	4.18	3.78	3.68	3.25
2	2.52	2.52	3.10	2.82	2.68	2.60	3.78	3.80	4.15	3.78	3.65	3.20
3	2.50	2.55	3.15	2.80	2.65	2.58	3.80	3.85	4.10	3.75	3.62	3.15
4	2.50	2.58	3.12	2.82	2.62	2.60	3.82	3.80	4.12	3.72	3.65	3.15
5	2.52	2.55	3.10	2.80	2.62	2.62	3.85	3.88	4.18	3.70	3.60	3.12
6	2.50	2.55	3.12	2.78	2.60	2.65	3.82	3.80	4.20	*3.72	3.58	3.10
7	2.52	2.52	3.10	2.72	2.60	2.62	3.80	3.82	4.18	3.70	3.55	3.08
8	2.58	2.50	3.08	2.75	2.58	2.60	3.78	3.80	4.15	3.68	3.52	3.00
9	2.62	2.50	3.05	2.78	2.60	2.62	3.75	3.80	4.10	3.65	3.55	3.00
10	2.60	2.52	3.02	2.78	2.58	2.65	3.72	3.82	4.05	3.62	3.52	3.02
11	2.60	2.55	3.00	2.75	2.55	2.68	3.70	3.88	4.02	3.65	3.50	2.98
12	2.55	2.60	3.05	2.72	2.58	2.70	3.68	3.90	4.00	3.65	3.50	2.95
13	2.55	2.58	3.02	2.70	2.55	2.72	3.72	3.92	4.02	3.78	3.48	2.92
14	2.52	2.60	3.00	2.68	2.52	2.80	3.70	3.95	4.00	3.70	3.45	2.90
15	2.52	2.58	3.02	2.70	2.55	2.90	3.68	4.00	3.98	3.72	3.40	2.88
16	2.48	2.75	3.05	2.75	2.58	3.00	3.78	4.02	3.95	3.70	3.38	2.90
17	2.45	2.85	3.02	2.70	2.60	3.20	3.82	4.05	3.92	3.72	3.35	2.88
18	2.48	2.90	3.02	2.68	2.62	3.30	3.82	4.08	3.92	3.75	3.30	2.85
19	2.45	2.92	2.95	2.70	2.60	3.40	3.80	4.10	3.88	3.72	3.28	2.78
20	2.42	2.98	2.98	2.72	2.52	3.45	3.78	4.08	3.88	3.68	3.25	2.75

Daily gage height, in feet, of Lake George at Rogers Rock, N. Y., for the year ending September 30, 1927—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	2.45	3.00	2.95	2.75	2.50	3.50	3.75	4.10	3.88	3.70	3.25	2.72
22	2.48	3.02	2.92	2.78	2.50	3.65	3.75	4.15	3.85	3.72	3.22	2.70
23	2.50	3.00	2.90	2.75	2.52	3.70	3.78	4.05	3.82	3.70	3.25	2.70
24	2.52	3.02	2.85	2.78	2.55	3.78	3.80	4.08	3.80	3.75	3.15	2.68
25	2.58	3.05	2.82	2.75	2.58	3.75	3.78	4.05	3.80	3.72	3.18	2.65
26	2.55	3.02	2.80	2.72	2.60	3.72	3.75	4.08	3.72	3.68	3.10	2.60
27	2.50	3.00	2.90	2.68	2.62	3.70	3.78	4.18	3.75	3.65	3.08	2.55
28	2.48	3.02	2.88	2.65	2.65	3.72	3.80	4.15	4.78	3.65	3.10	2.60
29	2.48	3.12	2.88	2.60	-------	3.75	3.82	4.12	3.82	3.65	3.20	2.55
30	2.50	3.10	2.90	2.70	-------	3.80	3.82	4.18	3.80	3.60	3.22	2.52
31	2.52	-------	2.88	2.72	-------	3.78	-------	4.20	-------	3.70	3.30	------

NOTE.—Levels of July 31, 1927, indicate that gage reads 0.045 foot high. Levels in 1926 showed gage to be reading 0.015 foot high. No corrections have been applied owing to uncertainty regarding their magnitude and duration.

GREEN RIVER AT GARFIELD, VT.

LOCATION.—At site of old dam above highway bridge at Garfield, town of Hyde Park, Lamoille County. Green River enters Lamoille River 4 miles east of Morrisville.

DRAINAGE AREA.—18 square miles; revised (from survey by C. T. Middlebrook, consulting engineer).

RECORDS AVAILABLE.—January 23, 1915, to March 16, 1921; December 3, 1922, to September 30, 1927.

EQUIPMENT.—Inclined staff gage on left bank in pool back of weir. Discharge measurements made from footbridge half a mile downstream from weir or from old bridge half a mile above weir.

CHANNEL AND CONTROL.—Control is sharp-crested weir of compound section installed December, 1922; length of crest at gage height, 0.00 foot is 9.0 feet; at gage height, 0.83 foot, length of crest is increased 11.17 feet. A pool of considerable size is formed by the old mill dam on which the weir is built; at ordinary stages the velocity of approach to the weir is very small.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.78 feet at 5 p. m. March 19 (discharge, 280 second-feet); minimum stage, 0.19 foot at 5 p. m. August 12, 9 a. m. September 28, and 5 p. m. September 29 (discharge, 2.8 second-feet).

1915–1921, 1922–1927: Maximum discharge (determined from high-water marks and extension of rating curve) 710 second-feet April 12, 1919; minimum discharge, 2.2 second-feet August 11 and 12, 1923, and September 6, 1925.

DIVERSIONS AND REGULATION.—An old timber dam 2 miles upstream affects flow to some extent. The dam leaks by an amount somewhat greater than the low-water flow. During prolonged low stages the surface of water in pond (103 acres) falls below crest of dam; subsequent increased flow into pond is retained until water again flows over crest, when the increased flow is apparent at gaging station.

ACCURACY.—Stage-discharge relation assumed permanent; not affected by ice because weir is kept clear. Rating curve based on weir formula with correction determined from current-meter measurements and with logarithmic extension above gage height 3.5 feet. Two discharge measurements made August 24, 1927, check the curve closely. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

Daily discharge, in second-feet, of Green River at Garfield, Vt., for the year ending September 30, 1927

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.3	48	37	7.7	16	8.0	35	24	29	6.3	11	11
2	6.0	35	24	7.7	15	7.7	40	21	24	5.2	10	11
3	15	34	21	7.4	12	7.4	39	19	18	4.4	7.4	12
4	12	29	19	7.4	11	7.4	35	18	14	6.3	5.7	29
5	10	23	16	7.1	9.0	7.4	48	32	17	6.0	4.8	24
6	114	20	15	7.1	9.0	7.4	47	37	23	5.2	4.4	14
7	161	19	15	7.1	10	7.4	84	36	29	5.7	4.0	8.6
8	78	21	14	6.8	10	8.6	48	35	21	9.2	3.5	6.8
9	47	37	14	6.8	10	8.6	46	20	16	9.8	4.6	5.2
10	25	85	13	6.8	10	8.6	39	18	12	6.8	4.4	4.4
11	20	67	13	6.8	11	11	37	27	11	5.2	3.5	6.3
12	16	36	13	6.8	10	11	42	27	9.8	4.4	3.0	5.7
13	14	29	13	6.8	10	16	45	23	8.6	4.0	4.0	5.0
14	16	23	13	6.6	11	34	40	18	7.4	9.8	3.7	4.6
15	17	27	13	6.6	11	78	36	23	9.2	11	8.9	8.6
16	14	29	12	6.3	10	146	47	42	14	20	9.5	9.2
17	13	121	11	6.3	10	160	71	40	11	24	7.7	7.4
18	19	102	11	6.3	9.0	176	78	63	8.0	29	6.3	6.6
19	18	99	11	6.3	9.0	260	80	180	7.4	17	5.2	6.3
20	16	98	10	6.8	8.0	196	72	125	6.6	9.8	4.4	5.7
21	15	52	10	7.4	8.0	114	57	118	5.4	6.3	5.2	5.2
22	15	42	10	11	8.0	64	46	67	5.2	5.0	5.7	4.4
23	23	32	9.8	24	8.0	52	76	99	6.0	4.2	7.4	4.0
24	37	25	9.5	37	8.0	40	63	98	5.4	4.2	25	3.5
25	106	22	9.2	39	8.0	33	41	55	5.7	4.8	24	3.5
26	196	20	8.9	31	8.0	26	37	94	7.4	5.2	11	3.3
27	86	32	8.6	24	8.0	30	36	55	6.8	9.2	9.2	3.0
28	45	36	8.3	17	8.0	25	32	42	5.7	8.0	10	3.0
29	33	32	8.0	13	-------	30	29	33	7.4	9.5	27	3.0
30	27	35	8.0	14	-------	29	30	25	6.8	32	45	3.5
31	37	-------	8.0	16	-------	35	-------	27	-------	20	19	------

NOTE.—No record Jan. 23 to Feb. 26; discharge estimated from climatic data.

Monthly discharge of Green River at Garfield, Vt., for the year ending September 30, 1927

[Drainage area, 18 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	196	6.0	40.6	2.26	2.61
November	121	19	43.7	2.43	2.71
December	37	8.0	13.1	.728	.84
January	39	6.3	12.0	.667	.77
February	16	8.0	9.82	.546	.57
March	260	7.4	53.0	2.94	3.39
April	84	29	48.5	2.69	3.00
May	180	18	49.7	2.76	3.18
June	29	5.2	11.9	.661	.74
July	32	4.0	9.92	.551	.64
August	45	3.0	9.82	.546	.63
September	29	3.0	7.59	.422	.47
The year	260	3.0	25.9	1.44	19.55

MISCELLANEOUS DISCHARGE MEASUREMENTS

In addition to the records of flow obtained at the gaging stations and reported in the preceding pages, measurements were made at other points, as shown by the following table:

Miscellaneous discharge measurements in the St. Lawrence River Basin during the year ending September 30, 1927

Date	Stream	Tributary to—	Locality	Gage height	Discharge
				Feet	*Sec. ft.*
June 3	Black River	Lake Ontario	Highway bridge in Deferiet, N. Y.		3,480
7	do	do	do		3,550
3	Deer Lick Creek	Black River	Highway bridge in Felts Mills, N. Y.		20.7
7	do	do	Above intake to water-supply pipe lines near Felts Mills, N. Y.		5.4
7	do	do	Mouth, Felts Mills, N. Y.		17.3

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