UNITED STATES DEPARTMENT OF THE INTERIOR
Ray Lyman Wilbur, Secretary

GEOLOGICAL SURVEY
George Otis Smith, Director

WATER-SUPPLY PAPER 604

# SURFACE WATER SUPPLY OF THE UNITED STATES

## 1925

## PART IV. ST. LAWRENCE RIVER BASIN

NATHAN C. GROVER, Chief Hydraulic Engineer
S. B. SOULÉ, H. E. GROSBACH, LASLEY LEE, A. W. HARRINGTON
C. H. PIERCE, and H. B. KINNISON, District Engineers

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

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# SURFACE WATER SUPPLY OF ST. LAWRENCE RIVER BASIN, 1925

## 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, 1925.

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, 1895–1925*

| | | | | | |
|---|---|---|---|---|---|
| 1895 | $12,500.00 | 1903–1906 | $200,000.00 | 1919 | $148,244.10 |
| 1896 | [1] 24,500.00 | 1907 | 150,000.00 | 1920 | 175,000.00 |
| 1897–1899 | 50,000.00 | 1908–1910 | 100,000.00 | 1921–1923 | 180,000.00 |
| 1900 | [2] 70,000.00 | 1911–1917 | 150,000.00 | 1924–1925 | 170,000.00 |
| 1901–1902 | 100,000.00 | 1918 | 175,000.00 | 1926 | 165,000.00 |

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 2.

Measurements of stream flow have been made at about 5,120 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1925, 1,710 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

[1] Includes $4,500 appropriated in act of Apr. 25, 1896.
[2] Includes $20,000 appropriated in deficiency act of Mar. 30, 1900.

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, 1924, and ending September 30, 1925. 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

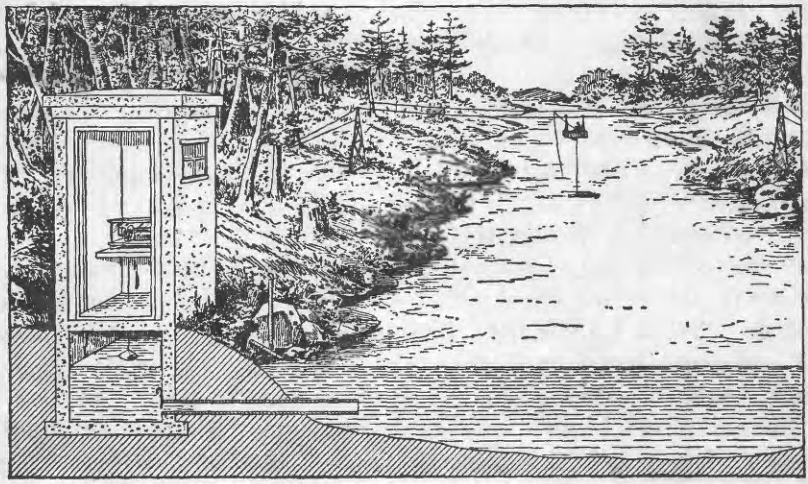

FIGURE 1.—Typical gaging station

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. 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 condition 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 inherent but unknown sources of error.

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

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

## PUBLICATIONS

Investigation of water resources by the United States Geological Survey has consisted in large part of measurements of the volume of flow of streams and studies of the conditions affecting that flow, but it has comprised also investigation of such closely allied subjects as irrigation, water storage, water powers, 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. Upper Mississippi River and Hudson Bay Basins.
VI. Missouri River Basin.
VII. Lower Mississippi River Basin.
VIII. Western Gulf of Mexico Basins.
IX. Colorado River Basin.
X. Great Basin.
XI. Pacific slope basins in California.
XII. North Pacific slope basins, in three parts:
A, Pacific slope basins in Washington and Upper Columbia River Basin.
B, Snake River Basin.
C, Pacific slope basins in Oregon and lower Columbia River Basin.

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

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

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

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

Augusta, Me., Statehouse.
Boston, Mass., 2500 Customhouse.
Albany, N. Y., 904 Home Savings Bank Building.
Trenton, N, J., Statehouse.
Charlottesville, Va., in care of University of Virginia.
Asheville, N. C., 608 City Hall.
Chattanooga, Tenn., 630 Power Building.
Tuscaloosa, Ala., Post Office Building.
Columbus, Ohio, Engineering Experiment Station, Ohio State University.
Chicago, Ill., 1510 Consumers Building.
Madison, Wis., care of Railroad Commission of Wisconsin.
Rolla, Mo., Rolla Building, School of Mines and Metallurgy.
Topeka, Kans., 23 Federal Building.
Helena, Mont., 45–46 Federal Building.
Denver, Colo., 403 Post Office Building.
Salt Lake City, Utah, 313 Federal Building.
Idaho Falls, Idaho, 228 Federal Building.
Boise, Idaho, Federal Building.
Tacoma, Wash., 404 Federal Building.
Portland, Oreg., 606 Post Office Building.
San Francisco, Calif., 303 Customhouse.

Los Angeles, Calif., 600 Federal Building.
Tucson, Ariz., 106 College of Law Building, University of Arizona.
Austin, Tex., State Capitol.
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 5,120 points in the United States, and the data obtained have been published in the reports tabulated below:

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

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

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

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, 1899–1925*

[For basins included see pp. 6 and 7]

| Year | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | A | B | C |
| 1899[a] | 35 | [b]35, 36 | 36 | 36 | 36 | [c]36, 37 | 37 | 37 | [d]37, 38 | 38, [e]39 | 38, [f]39 | 38 | 38 | 38 |
| 1900[a] | 47, [h]48 | 48 | 48, [i]49 | 49 | 49 | 49, [j]50 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 51 |
| 1901 | 65, 75 | 65, 75 | 65, 75 | 65, 75 | [k]65, 66, 75 | 66, 75 | [k]65, 66, 75 | 66, 75 | 66, 75 | 66, 75 | 66, 75 | 66, 75 | 66, 75 | 66, 75 |
| 1902 | 82 | [b]82, 83 | 83 | [l]82, 83 | [k]83, 85 | 84 | [k]83, 84 | 84 | 85 | 85 | 85 | 85 | 85 | 85 |
| 1903 | 97 | [b]97, 98 | 98 | 97 | [k]98, 99, [m]100 | 99 | [k]98, 99 | 99 | 100 | 100 | 100 | 100 | 100 | 100 |
| 1904 | [n]124, [o]125, [p]126 | [p]126, 127 | 128 | 129 | [k]128, 130 | 130, [q]131 | [k]128, 131 | 132 | 133 | 133, [r]134 | 134 | 135 | 135 | 135 |
| 1905 | [n]165, [o]166 [p]167 | [p]167, 168 | 169 | 170 | 171 | 172 | [k]169, 173 | 174 | 175, [s]177 | 176, [r]177 | 177 | 178 | 178 | [t]177, 178 |
| 1906 | [n]201, [o]202, [p]203 | [p]203, 204 | 205 | 206 | 207 | 208 | [k]205, 209 | 210 | 211 | 212, [r]213 | 213 | 214 | 214 | 214 |
| 1907–8 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250, [r]251 | 251 | 252 | 252 | 252 |
| 1909 | 261 | 262 | 263 | 264 | 265 | 266 | 267 | 268 | 269 | 270, [r]271 | 271 | 272 | 272 | 272 |
| 1910 | 281 | 282 | 283 | 284 | 285 | 286 | 287 | 288 | 289 | 290 | 291 | 292 | 292 | 292 |
| 1911 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 310 | 311 | 312 | 312 | 312 |
| 1912 | 321 | 322 | 323 | 324 | 325 | 326 | 327 | 328 | 329 | 330 | 331 | 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 | 288 | 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 |

[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] Whissahickon 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, 1925, was done in cooperation with the Railroad Commission of Wisconsin, C. M. Larson, chief engineer. The United States Engineer Corps cooperated in maintaining the stations on Fox River at Berlin and at Rapide Croche Dam and on Wolf River at New London.

In Minnesota the stations on Pigeon River were maintained in cooperation with the Pigeon River Lumber Co.

In Michigan the work was done in cooperation with the following organizations: Peninsular Power Co., D. W. Meade, consulting engineer (Menominee River at Twin Falls, near Iron Mountain); Menominee & Marinette Light & Traction Co., Edward Daniell, general manager (Menominee River below Koss); Castile Mining Co. (Black River at Ramsay); and Michigan Gas & Electric Co. (St. Joseph River at Mottville).

The station on Little Calumet River at Harvey, Ill., was maintained in cooperation with the Illinois Department of Public Works and Buildings, division of waterways, W. L. Sackett, superintendent; the gage reader was paid by the Sanitary District of Chicago.

In Ohio the work was done in cooperation with the Ohio Cooperative Topographic Survey, C. E. Sherman, inspector.

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 (Genesee River at Driving Park Avenue, Rochester); the city of Rochester (Conesus Creek near Lakeville and Canadice Lake outlet near Hemlock); Cornell University (Fall Creek near Ithaca); Utica Gas & Electric Co. (East Branch of Fish Creek at Fish Creek, near Constableville, and East Branch of Fish Creek at Taberg); Black River Regulating District (Black River at Watertown, Moose River at McKeever, and Beaver River below Stillwater Dam, near Beaver River); Otter Creek Power Corporation (Otter Creek near Glenfield); Northern New York Utilities (Inc.) (Beaver River at Eagle Falls, near Number Four, East Branch of Oswegatchie River near Oswegatchie, and North Branch of Grass River near South Colton); the Commission for the Improvement of the Oswegatchie River (East Branch of Oswegatchie River at Cranberry Lake); DeGrasse Paper Co. (Grass River at Pyrites); International Paper Co. (Raquette River at Piercefield and Lake George at Rogers Rock); New York & Pennsylvania Co. (Bouquet River at Willsboro); J. & J. Rogers Co. (Black Brook at Black Brook, East Branch of Ausable River at Ausable Forks, and Ausable River near Ausable Forks); Plattsburg Gas & Electric Co. (Saranac River near Plattsburg).

Cooperation in Vermont was given by Charles T. Middlebrook (Green River at Garfield).

## DIVISION OF WORK

Data for stations in the Lake Superior and Lake Michigan drainage basins in Minnesota, Wisconsin, and Michigan (excluding St. Joseph River at Mottville) were collected and prepared for publication under the direction of S. B. Soulé, district engineer, assisted by F. C. Christopherson and J. H. Olson.

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

Data for the station on St. Joseph River at Mottville, Mich., and for stations in the Lake Erie drainage basin in Ohio were collected and prepared for publication under the direction of Lasley Lee, district engineer, assisted by E. E. R. Dornbach, W. A. Werner, F. A. English, W. S. Frame, R. G. Kasel, and E. H. Markel.

Data for stations in New York were collected and prepared for publication under the direction of Arthur W. Harrington, district engineer, assisted by J. L. Lamson, E. B. Shupe, A. E. Johnson, W. B. Mifflin, C. G. Sutton, and Agnes D. Buchanan.

Data for stations in Vermont were collected and prepared for publication under the direction of C. H. Pierce and H. B. Kinnison, district engineers, assisted by Lillian H. McCarthy and H. F. Hill, jr.

The manuscript was assembled and reviewed by J. W. Mangan.

## 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, and 11.7 miles above mouth

DRAINAGE AREA.—338 square miles.

RECORDS AVAILABLE.—September 4 to November 28, 1924, and April 15 to September 30, 1925 (gage heights only).

GAGE.—Au water-stage recorder on right bank; inspected by Oscar Anderson.

CHANNEL AND CONTROL.—Bed composed of cobblestones and heavy gravel; probably permanent. Banks of medium height; overflowed at flood stages.

DISCHARGE MEASUREMENTS.—Made from boat or by wading.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 5.0 feet at 1 p. m. May 2; minimum stage recorded, 1.20 feet at 6 p. m. April 20.

ICE.—Stage-discharge relation affected by ice.

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

ACCURACY.—The recording gage operated satisfactorily throughout the open-water periods, and the gage heights are accurate. The station is not sufficiently rated to determine discharge.

The following discharge measurements were made:

September 3, 1924: Gage height, 1.80 feet; discharge, 63 second-feet.

April 15, 1925: Gage height, 1.40 feet; discharge, 56 second-feet.

*Daily gage height, in feet, of Pigeon River above mouth of Arrow River, for the period September 4, 1924, to September 30, 1925*

| Day | Sept. | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ------- | 2.55 | 2.10 | ------- | 2.48 | 2.30 | 1.98 | 1.70 | 1.42 |
| 2 | ------- | 2.52 | 2.95 | ------- | 2.56 | 3.20 | 1.96 | 1.69 | 1.43 |
| 3 | ------- | 2.68 | 2.40 | ------- | 2.38 | 3.34 | 1.93 | 1.63 | 1.43 |
| 4 | 1.76 | 2.90 | 2.40 | ------- | 2.20 | 3.18 | 1.90 | 1.60 | 1.44 |
| 5 | 1.70 | 2.86 | 2.36 | ------- | 2.16 | 3.28 | 1.87 | 1.57 | 1.45 |
| 6 | 1.64 | 3.00 | 2.37 | ------- | 2.16 | 3.16 | 1.86 | 1.56 | 1.45 |
| 7 | 1.62 | 2.96 | 2.32 | ------- | 2.12 | 3.04 | 1.74 | 1.55 | 1.44 |
| 8 | 1.60 | 2.80 | 2.45 | ------- | 2.06 | 2.94 | 1.56 | 1.54 | 1.43 |
| 9 | 1.58 | 2.83 | 2.42 | ------- | 2.04 | 2.85 | 1.64 | 1.53 | 1.44 |
| 10 | 1.55 | 2.80 | 2.27 | ------- | 2.24 | 2.78 | 1.88 | 1.51 | 1.45 |
| 11 | 1.54 | 2.86 | 2.30 | ------- | 1.90 | 2.67 | 1.77 | 1.50 | 1.45 |
| 12 | 1.55 | 3.08 | 2.45 | ------- | 1.94 | 2.62 | 1.64 | 1.48 | 1.44 |
| 13 | 1.60 | 3.08 | 2.55 | ------- | 1.88 | 2.57 | 1.74 | 1.48 | 1.42 |
| 14 | 1.64 | 3.00 | 2.80 | ------- | 1.88 | 2.54 | 1.70 | 1.48 | 1.40 |
| 15 | 1.66 | 2.90 | 2.78 | 1.82 | 1.94 | 2.47 | 1.68 | 1.46 | 1.38 |
| 16 | 1.66 | 2.85 | 2.60 | 1.80 | 2.06 | 2.40 | 1.66 | 1.46 | 1.35 |
| 17 | 1.64 | 2.80 | 2.65 | 1.74 | 1.98 | 2.38 | 1.64 | 1.45 | 1.33 |
| 18 | 1.62 | 2.74 | 2.78 | 1.70 | 2.10 | 2.39 | 1.61 | 1.45 | 1.32 |
| 19 | 1.60 | 2.68 | 2.88 | 1.78 | 2.14 | 2.37 | 1.59 | 1.46 | 1.36 |
| 20 | 1.58 | 2.64 | 2.90 | 1.68 | 2.24 | 2.32 | 1.58 | 1.44 | 1.85 |
| 21 | 1.62 | 2.61 | 3.04 | 1.70 | 1.90 | 2.24 | 1.58 | 1.44 | 2.02 |
| 22 | 2.08 | 2.56 | 3.58 | 1.82 | 1.80 | 2.20 | 1.57 | 1.42 | 1.94 |
| 23 | 2.70 | 2.52 | 3.58 | 2.50 | 1.90 | 2.15 | 1.55 | 1.42 | 1.86 |
| 24 | 2.56 | 2.44 | 3.59 | 3.80 | 2.06 | 2.12 | 1.52 | 1.44 | 1.85 |
| 25 | 2.44 | 2.42 | 3.58 | 3.60 | 2.07 | 2.10 | 1.51 | 1.40 | 1.82 |
| 26 | 2.34 | 2.44 | 3.59 | 3.30 | 1.94 | 2.12 | 1.54 | 1.40 | 1.76 |
| 27 | 2.32 | 2.38 | 3.57 | 3.12 | 1.58 | 2.13 | 1.66 | 1.39 | 1.72 |
| 28 | 2.46 | 2.36 | 3.57 | 3.16 | 2.10 | 2.12 | 1.70 | 1.36 | 1.68 |
| 29 | 2.50 | 2.37 | ------- | 2.86 | 2.18 | 2.07 | 1.69 | 1.36 | 1.65 |
| 30 | 2.57 | 2.34 | ------- | 2.64 | 2.12 | 2.02 | 1.69 | 1.37 | 1.62 |
| 31 | ------- | 2.30 | ------- | ------- | 2.14 | ------- | 1.70 | 1.40 | ------- |

**PIGEON RIVER AT INTERNATIONAL BRIDGE, MINN.**

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

DRAINAGE AREA.—580 square miles.

RECORDS AVAILABLE.—April 17, 1924, to September 30, 1925.

GAGE.—Staff gage bolted to vertical rock ledge on right bank; read by E. W. Stewardson.

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

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year ending September 30, 1924, 4.20 feet May 19 (discharge, 3,180 second-feet); minimum stage, 0.30 foot August 28 and 29 (discharge, 78 second-feet).

Maximum stage recorded during year ending September 30, 1925, 5.3 feet April 24 (discharge, 4,690 second-feet); minimum stage, 0.5 foot April 21 (discharge, 120 second-feet).

ICE.—Stage-discharge relation affected by ice.

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

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Some artificial regulation April 5 to June 15, and records during this period fair; during remainder of year good.

*Discharge measurements of Pigeon River at International Bridge, Minn., during the years ending September 30, 1921 to 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| 1921 | *Feet* | *Sec.-ft.* | 1922 | *Feet* | *Sec.-ft.* | 1924 | *Feet* | *Sec.-ft.* |
| May 24 | 1.69 | 740 | July 27 | 0.90 | 238 | Apr. 26 | 2.83 | 1,660 |
| June 14 | 1.60 | 614 | Do | .90 | 224 | Do | 2.77 | 1,610 |
| July 28 | 1.20 | 348 | Oct. 1 | .64 | 156 | Apr. 27 | 2.88 | 1,700 |
| Do | 1.20 | 351 | | | | Do | 2.76 | 1,580 |
| Sept. 4 | .49 | 120 | 1923 | | | Sept. 4 | .58 | 140 |
| Do | .49 | 122 | Mar. 4 | [a].90 | 83 | Sept. 18 | .49 | 119 |
| Oct. 4 | .40 | 95.2 | Do | [a].90 | 81 | | | |
| Do | .40 | 96.0 | Sept. 2 | .49 | 125 | 1925 | | |
| Do | .40 | 97.3 | Do | .49 | 120 | Apr. 15 | 1.07 | 281 |
| Nov. 13 | [a].45 | 75.5 | | | | | | |
| Do | [a].45 | 77.9 | 1924 | | | | | |
| | | | Apr. 24 | 2.46 | 1,300 | | | |
| 1922 | | | Do | 2.46 | 1,310 | | | |
| May 21 | 3.00 | 1,770 | Apr. 25 | 1.81 | 790 | | | |
| June 11 | 1.60 | 605 | Do | 1.75 | 751 | | | |

[a] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Pigeon River at International Bridge, Minn., for the years ending September 30, 1924 and 1925*

| Day | Apr. | May | June | July | Aug. | Sept. | Day | Apr. | May | Jnne | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1924 | | | | | | | 1924 | | | | | | |
| 1 | ------- | 1,610 | 935 | 540 | 98 | 200 | 16 | ------- | 1,190 | 615 | 98 | 120 | 120 |
| 2 | ------- | 1,440 | 935 | 265 | 98 | 170 | 17 | 1,440 | 1,610 | 400 | 98 | 120 | 120 |
| 3 | ------- | 1,110 | 1,020 | 120 | 98 | 145 | 18 | 1,360 | 2,780 | 300 | 145 | 120 | 120 |
| 4 | ------- | 1,190 | 935 | 145 | 98 | 145 | 19 | 1,360 | 3,180 | 230 | 265 | 120 | 120 |
| 5 | ------- | 1,440 | 775 | 170 | 98 | 145 | 20 | 1,360 | 2,780 | 265 | 170 | 120 | 120 |
| 6 | ------- | 1,610 | 735 | 265 | 98 | 120 | 21 | 1,280 | 2,530 | 345 | 98 | 98 | 120 |
| 7 | ------- | 1,610 | 1,020 | 465 | 98 | 120 | 22 | 1,110 | 2,650 | 200 | 98 | 98 | 230 |
| 8 | ------- | 1,440 | 855 | 615 | 98 | 120 | 23 | 1,110 | 2,780 | 145 | 98 | 98 | 1,110 |
| 9 | ------- | 695 | 400 | 540 | 98 | 120 | 24 | 1,110 | 2,180 | 230 | 98 | 98 | 935 |
| 10 | ------- | 372 | 200 | 345 | 98 | 120 | 25 | 1,020 | 1,520 | 345 | 98 | 98 | 775 |
| 11 | ------- | 465 | 265 | 170 | 145 | 120 | 26 | 1,520 | 775 | 230 | 98 | 98 | 200 |
| 12 | ------- | 1,020 | 1,020 | 120 | 145 | 145 | 27 | 1,690 | 540 | 145 | 98 | 98 | 200 |
| 13 | ------- | 1,190 | 1,360 | 145 | 145 | 145 | 28 | 1,870 | 1,020 | 230 | 109 | 78 | 200 |
| 14 | ------- | 1,020 | 1,020 | 230 | 145 | 109 | 29 | 1,870 | 1,190 | 400 | 88 | 78 | 200 |
| 15 | ------- | 1,110 | 775 | 170 | 145 | 120 | 30 | 1,870 | 855 | 400 | 98 | 200 | 200 |
| | | | | | | | 31 | ------- | 775 | ------- | 98 | 200 | ------- |

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1924-25 | | | | | | | | |
| 1 | 465 | 400 | ------- | 400 | 775 | 322 | 230 | 145 |
| 2 | 465 | 400 | ------- | 935 | 1,690 | 300 | 200 | 145 |
| 3 | 400 | 400 | ------- | 1,970 | 1,610 | 300 | 170 | 145 |
| 4 | 615 | 345 | ------- | 2,070 | 1,610 | 265 | 170 | 145 |
| 5 | 775 | 345 | 935 | 540 | 1,520 | 230 | 170 | 145 |
| 6 | 1,280 | 345 | 935 | 1,690 | 1,360 | 230 | 170 | 145 |
| 7 | 1,110 | 345 | 855 | 2,780 | 1,280 | 215 | 158 | 145 |
| 8 | 935 | 345 | 855 | 2,650 | 1,020 | 200 | 145 | 145 |
| 9 | 855 | 345 | 855 | 695 | 978 | 200 | 145 | 145 |
| 10 | 775 | 345 | 775 | 300 | 775 | 200 | 145 | 145 |
| 11 | 855 | 345 | 695 | 2,290 | 775 | 200 | 145 | 145 |
| 12 | 1,110 | 300 | 540 | 935 | 695 | 200 | 145 | 145 |
| 13 | 1,110 | 300 | 502 | 1,110 | 695 | 540 | 145 | 145 |
| 14 | 935 | 300 | 465 | 935 | 655 | 265 | 145 | 145 |
| 15 | 935 | 300 | 300 | 1,020 | 615 | 200 | 145 | 145 |
| 16 | 775 | 300 | 265 | 540 | 615 | 200 | 145 | 145 |
| 17 | 775 | 615 | 248 | 1,360 | 540 | 200 | 145 | 145 |
| 18 | 695 | 775 | 200 | 400 | 540 | 200 | 145 | 145 |
| 19 | 695 | 465 | 200 | 300 | 540 | 200 | 145 | 145 |
| 20 | 695 | 465 | 185 | 265 | 502 | 200 | 145 | 200 |

*Daily discharge, in second-feet, of Pigeon River at International Bridge, Minn., for the years ending September 30, 1924 and 1925*—Continued

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1924-25 | | | | | | | | |
| 21 | 615 | 855 | 120 | 282 | 465 | 185 | 145 | 265 |
| 22 | 540 | 855 | 200 | 265 | 465 | 170 | 145 | 265 |
| 23 | 540 | 935 | 815 | 265 | 465 | 170 | 145 | 248 |
| 24 | 465 | 1,190 | 4,690 | 200 | 432 | 170 | 145 | 230 |
| 25 | 465 | 1,020 | 2,910 | 200 | 400 | 170 | 145 | 200 |
| 26 | 400 | 1,020 | 2,070 | 265 | 400 | 170 | 145 | 200 |
| 27 | 400 | 1,020 | 1,610 | 815 | 345 | 145 | 145 | 185 |
| 28 | 400 | 1,020 | 1,110 | 935 | 372 | 145 | 145 | 170 |
| 29 | 400 | 935 | 1,020 | 735 | 345 | 200 | 145 | 145 |
| 30 | 400 | 935 | 935 | 615 | 345 | 215 | 145 | 145 |
| 31 | 400 | | | 265 | | 230 | 145 | |

NOTE.—Stage-discharge relation affected by ice Dec. 1, 1924, to Apr. 4, 1925; discharge not determined.

*Monthly discharge of Pigeon River at International Bridge, Minn., for the years ending September 30, 1924 and 1925*

[Drainage area, 580 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1924 | | | | | |
| April 17-30 | 1,870 | 1,020 | 1,430 | 2.47 | 1.29 |
| May | 3,180 | 372 | 1,470 | 2.53 | 2.92 |
| June | 1,360 | 145 | 558 | .962 | 1.07 |
| July | 615 | 88 | 199 | .343 | .40 |
| August | 200 | 78 | 114 | .197 | .23 |
| September | 1,110 | 109 | 227 | .391 | .44 |
| 1924-25 | | | | | |
| October | 1,280 | 400 | 686 | 1.18 | 1.36 |
| November | 1,190 | 300 | 586 | 1.01 | 1.13 |
| April 5-30 | 4,690 | 120 | 934 | 1.61 | 1.56 |
| May | 2,780 | 200 | 904 | 1.56 | 1.80 |
| June | 1,690 | 345 | 761 | 1.31 | 1.46 |
| July | 540 | 145 | 221 | .381 | .44 |
| August | 230 | 145 | 153 | .264 | .30 |
| September | 265 | 145 | 169 | .291 | .32 |

### MONTREAL RIVER AT IRONWOOD, MICH.

LOCATION.—At main highway bridge on State line between Hurley, Wis., and Ironwood, Mich., 8 miles above junction with West Branch.

DRAINAGE AREA.—About 66 square miles.[3]

RECORDS AVAILABLE.—April 24, 1918, to June 6, 1922, and July 17, 1924, to November 30, 1925, when station was discontinued.

GAGE.—Chain gage fastened to downstream side of main highway bridge; read by Louis Egizi.

DISCHARGE MEASUREMENTS.—Made from wooden bridge at lumber mill, one-fourth mile above gage, or by wading.

CHANNEL AND CONTROL.—Bed at and below gage heavy gravel. Concrete retaining walls on both sides of river below gage prevent overflow at flood stages.

[3] Supersedes figure published in previous reports.

EXTREMES OF DISCHARGE.—Maximum stage recorded during periods, 2.35 feet at 8.30 a. m. April 24, 1925 (discharge, 248 second-feet); minimum stage, 0.56 foot 11.45 a. m. September 26, 1925 (discharge, 1.5 second-feet).

1918–1922; 1924–1925: Maximum stage recorded, 3.8 feet June 30, 1920, and April 5–7, 1921 (discharge, 910 second-feet); minimum stage, that of 1925.

REGULATION.—Water stored in Pine Lake in secs. 28, 29, 32, and 33, T. 44 N., R. 3 E., is used to increase the water supply for Ironwood and Hurley during periods of low flow; effect of this regulation on the flow at the station probably slight. Considerable diurnal fluctuation seems to be caused at the station, owing to operation of gates in a small dam one-fourth mile upstream from gage. Dam is used to float logs to sawmill.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve well defined above 5 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

*Discharge measurements of Montreal River at Ironwood, Mich., during the period June 27, 1924, to November 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| 1924 | *Feet* | *Sec.-feet* | 1925 | *Feet* | *Sec.-feet* |
| June 27 | 1.20 | 20 | Apr. 4 | 2.12 | 182 |
| July 18 | 1.18 | 17.3 | | | |
| Oct. 11 | 1.45 | 43 | | | |
| Oct. 31 | 1.21 | 16.3 | | | |

*Daily discharge, in second-feet, of Montreal River at Ironwood, Mich., for the period July 17, 1924, to November 30, 1925*

| Day | July | Aug. | Sept. | Day | July | Aug. | Sept. | Day | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1924 | | | | 1924 | | | | 1924 | | | |
| 1 | | 19 | 22 | 11 | | 41 | 13 | 21 | 21 | 41 | 27 |
| 2 | | 14 | 16 | 12 | | 48 | 16 | 22 | 17 | 50 | 35 |
| 3 | | 28 | 7.2 | 13 | | 42 | 20 | 23 | 18 | 44 | 21 |
| 4 | | 202 | 7.5 | 14 | | 35 | 29 | 24 | 16 | 91 | 17 |
| 5 | | 162 | 7.8 | 15 | | 35 | 23 | 25 | 17 | 44 | 23 |
| 6 | | 100 | 6.0 | 16 | | 37 | 25 | 26 | 17 | 42 | 24 |
| 7 | | 128 | 16 | 17 | 19 | 35 | 26 | 27 | 18 | 16 | 28 |
| 8 | | 111 | 21 | 18 | 17 | 24 | 30 | 28 | 12 | 33 | 33 |
| 9 | | 115 | 8.0 | 19 | 15 | 20 | 20 | 29 | 14 | 44 | 35 |
| 10 | | 47 | 6.0 | 20 | 22 | 18 | 23 | 30 | 16 | 24 | 29 |
| | | | | | | | | 31 | 24 | 19 | |

| Day | Oct. | Nov. | Dec. | Jan. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1924-25 | | | | | | | | | | |
| 1 | 34 | 20 | 34 | 16 | 152 | 38 | 17 | 10 | 7.0 | 5.8 |
| 2 | 37 | 27 | 24 | 15 | 168 | 37 | 17 | 12 | 7.0 | 9.2 |
| 3 | 34 | 29 | 23 | 14 | 152 | 39 | 24 | 4.0 | 7.2 | 10 |
| 4 | 53 | 24 | 23 | 13 | 177 | 34 | 64 | 3.7 | 8.0 | 7.0 |
| 5 | 52 | 25 | 26 | 12 | 124 | 35 | 49 | 4.6 | 8.4 | 4.8 |
| 6 | 17 | 33 | 23 | 8.0 | 133 | 32 | 27 | 3.8 | 8.4 | 3.7 |
| 7 | 20 | 35 | 34 | 8.8 | 113 | 32 | 32 | 5.2 | 8.4 | 4.3 |
| 8 | 21 | 34 | 30 | 8.4 | 115 | 32 | 27 | 6.8 | 8.0 | 4.6 |
| 9 | 23 | 33 | 21 | 8.0 | 100 | 24 | 25 | 7.8 | 7.2 | 4.5 |
| 10 | 13 | 43 | 18 | 10 | 98 | 24 | 17 | 9.2 | 6.5 | 4.3 |
| 11 | 23 | 49 | 20 | 10 | 96 | 26 | 16 | 8.0 | 7.0 | 4.5 |
| 12 | 37 | 47 | 17 | 12 | 94 | 33 | 17 | 7.5 | 6.8 | 4.5 |
| 13 | 24 | 33 | 19 | 13 | 91 | 29 | 41 | 7.0 | 6.5 | 4.6 |
| 14 | 24 | 28 | 19 | 8.8 | 91 | 25 | 56 | 7.2 | 7.0 | 4.6 |
| 15 | 28 | 42 | 19 | 8.4 | 55 | 18 | 49 | 7.5 | 3.7 | 4.3 |

*Daily discharge, in second-feet, of Montreal River at Ironwood, Mich., for the period July 17, 1924, to November 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1924-25 | | | | | | | | | | |
| 16 | 22 | 39 | 20 | 8.4 | 57 | 41 | 39 | 7.0 | 4.5 | 4.5 |
| 17 | 25 | 36 | 17 | 8.4 | 59 | 25 | 26 | 6.8 | 4.1 | 4.1 |
| 18 | 26 | 39 | 20 | 9.6 | 57 | 26 | 24 | 6.0 | 3.8 | 4.3 |
| 19 | 34 | 49 | 20 | 9.6 | 57 | 24 | 19 | 6.0 | 3.8 | 4.1 |
| 20 | 23 | 36 | 20 | 9.2 | 60 | 22 | 19 | 5.8 | 5.8 | 7.6 |
| 21 | 28 | 35 | 19 | 8.0 | 56 | 21 | 19 | 7.2 | 4.5 | 11 |
| 22 | 20 | 56 | 19 | 9.2 | 85 | 21 | 17 | 7.0 | 4.8 | 15 |
| 23 | 26 | 36 | 20 | 7.8 | 206 | 20 | 15 | 6.5 | 4.8 | 18 |
| 24 | 21 | 39 | 20 | 8.0 | 230 | 20 | 13 | 7.5 | 4.5 | 3.6 |
| 25 | 23 | 29 | 22 | 8.4 | 180 | 20 | 11 | 7.5 | 4.1 | 2.4 |
| 26 | 29 | 34 | 21 | 8.8 | 128 | 18 | 12 | 7.2 | 4.0 | 1.9 |
| 27 | 24 | 36 | 20 | 10 | 59 | 17 | 13 | 7.5 | 4.3 | 7.0 |
| 28 | 29 | 24 | 19 | 9.6 | 66 | 17 | 12 | 7.8 | 4.5 | 7.8 |
| 29 | 23 | 30 | 18 | 9.6 | 76 | 16 | 12 | 7.8 | 5.5 | 5.5 |
| 30 | 23 | 30 | 18 | 9.2 | 49 | 16 | 13 | 8.4 | 5.3 | 18 |
| 31 | 21 | ------- | 19 | 9.6 | ------- | 15 | ------- | 7.5 | 5.2 | ------- |

| Day | Oct. | Nov. | Day | Oct. | Nov. | Day | Oct. | Nov. |
|---|---|---|---|---|---|---|---|---|
| 1925 | | | 1925 | | | 1925 | | |
| 1 | 69 | 6.2 | 11 | 17 | 25 | 21 | 17 | 14 |
| 2 | 80 | 13 | 12 | 15 | 25 | 22 | 33 | 14 |
| 3 | 24 | 22 | 13 | 17 | 23 | 23 | 10 | 13 |
| 4 | 43 | 36 | 14 | 17 | 22 | 24 | 17 | 14 |
| 5 | 39 | 80 | 15 | 14 | 18 | 25 | 13 | 13 |
| 6 | 35 | 92 | 16 | 16 | 17 | 26 | 13 | 11 |
| 7 | 24 | 62 | 17 | 16 | 16 | 27 | 15 | 10 |
| 8 | 22 | 52 | 18 | 17 | 16 | 28 | 13 | 5.5 |
| 9 | 20 | 30 | 19 | 17 | 15 | 29 | 5.5 | 5.5 |
| 10 | 19 | 24 | 20 | 17 | 15 | 30 | 2.8 | 7.8 |
| | | | | | | 31 | 2.6 | ------- |

NOTE.—Stage-discharge relation affected by ice Feb. 1 to Mar. 31, 1925; discharge not determined. Gage not read Dec. 26, 1924, to June 3, 1925, and Sept. 20-22, 1925; discharge interpolated.

*Monthly discharge of Montreal River at Ironwood, Mich., for the period July 17, 1924, to November 30, 1925*

[Drainage area, 66 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1924 | | | | | |
| July 17-31 | 24 | 12 | 17.5 | 0.265 | 0.15 |
| August | 202 | 14 | 55.1 | .835 | .96 |
| September | 35 | 6.0 | 20.5 | .311 | .35 |
| October | 53 | 13 | 27.3 | .414 | .48 |
| November | 56 | 20 | 35.0 | .530 | .59 |
| December | 34 | 17 | 21.3 | .323 | .37 |
| 1925 | | | | | |
| January | 16 | 7.8 | 10.0 | .152 | .18 |
| April | 230 | 49 | 106 | 1.61 | 1.80 |
| May | 41 | 15 | 25.7 | .390 | .45 |
| June | 64 | 11 | 24.7 | .374 | .42 |
| July | 12 | 3.7 | 7.0 | .106 | .12 |
| August | 8.4 | 3.7 | 5.8 | .088 | .10 |
| September | 18 | 1.9 | 6.5 | .098 | .11 |
| October | 80 | 2.6 | 21.9 | .332 | .38 |
| November | 92 | 5.5 | 23.9 | .362 | .40 |

### MONTREAL RIVER NEAR KIMBALL, WIS.

LOCATION.—In sec. 22, T. 47 N., R. 2 E., 300 feet above mouth of West Branch, 2½ miles northeast of Kimball, Iron County, and 7 miles northwest of Hurley.

DRAINAGE AREA.—109 square miles.

RECORDS AVAILABLE.—June 26, 1924, to December 7, 1925, when station was discontinued.

GAGE.—Staff gage attached to post driven in bed of stream near left bank; read by Arne Johnson.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; fairly permanent. A short distance below the gage is a large log jam covering the entire channel, but this obstruction remained practically permanent during period of records.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 3.76 feet at 6 p. m. April 2 (discharge, 328 second-feet); minimum stage, 1.16 feet August 8–19 (discharge, 2.0 second-feet).

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during the spring of 1925. Rating curves well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying to rating table mean daily gage height. Records good.

*Discharge measurements of Montreal River near Kimball, Wis., during the period June 26, 1924, to December 7, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| 1924 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* |
| June 26 | 1.58 | 32.7 | Oct. 30 | 1.51 | 24.4 | June 18 | 1.52 | 31.2 |
| July 17 | 1.49 | 24.5 | Do | 1.51 | 24.1 | July 26 | 1.22 | 5.40 |
| Aug. 5 | 2.87 | 212 | Apr. 3 | 3.64 | 310 | July 27 | 1.23 | 6.22 |
| Aug. 6 | 2.67 | 183 | Do | 3.61 | 303 | | | |
| Aug. 7 | 1.94 | 80 | Apr. 29 | 2.05 | 90.2 | | | |
| Do | 2.25 | 122 | June 18 | 1.52 | 30.1 | | | |

*Daily discharge, in second-feet, of Montreal River near Kimball, Wis., for the period June 26, 1924, to December 7, 1925*

| Day | June | July | Aug. | Sept. | Day | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1924 | | | | | 1924 | | | | |
| 1 | | 60 | 41 | 36 | 16 | | 33 | 46 | 36 |
| 2 | | 54 | 37 | 34 | 17 | | 34 | 43 | 34 |
| 3 | | 46 | 66 | 33 | 18 | | 31 | 39 | 32 |
| 4 | | 41 | 164 | 31 | 19 | | 31 | 36 | 26 |
| 5 | | 36 | 217 | 28 | 20 | | 28 | 32 | 25 |
| 6 | | 35 | 180 | 27 | 21 | | 31 | 56 | 77 |
| 7 | | 33 | 150 | 23 | 22 | | 33 | 217 | 52 |
| 8 | | 34 | 122 | 22 | 23 | | 35 | 232 | 72 |
| 9 | | 35 | 108 | 22 | 24 | | 37 | 122 | 68 |
| 10 | | 33 | 94 | 21 | 25 | | 35 | 76 | 55 |
| 11 | | 33 | 76 | 21 | 26 | 31 | 33 | 61 | 46 |
| 12 | | 34 | 65 | 22 | 27 | 31 | 33 | 56 | 52 |
| 13 | | 35 | 60 | 32 | 28 | 32 | 33 | 51 | 59 |
| 14 | | 32 | 56 | 45 | 29 | 39 | 32 | 43 | 59 |
| 15 | | 31 | 51 | 42 | 30 | 59 | 35 | 40 | 55 |
| | | | | | 31 | | 40 | 40 | |

*Daily discharge, in second-feet, of Montreal River near Kimball, Wis., for the period June 26, 1924, to December 7, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1924–25 | | | | | | | | | |
| 1 | 54 | 27 | 94 | ------- | 69 | 28 | 21 | 4.6 | 9.5 |
| 2 | 50 | 26 | 77 | 328 | 59 | 30 | 20 | 3.8 | 16 |
| 3 | 46 | 24 | 61 | 315 | 55 | 31 | 19 | 3.8 | 26 |
| 4 | 101 | 23 | 55 | 292 | 52 | 34 | 19 | 2.7 | 25 |
| 5 | 172 | 22 | 50 | 270 | 51 | 38 | 18 | 2.7 | 19 |
| 6 | 180 | 26 | 46 | 217 | 50 | 38 | 17 | 2.7 | 17 |
| 7 | 143 | 30 | 40 | 202 | 46 | 35 | 15 | 2.7 | 14 |
| 8 | 122 | 33 | 37 | 187 | 44 | 32 | 15 | 2.0 | 12 |
| 9 | 108 | 31 | ------- | 172 | 43 | 30 | 14 | 2.0 | 11 |
| 10 | 83 | 32 | ------- | 172 | 41 | 29 | 13 | 2.0 | 9.5 |
| 11 | 80 | 40 | ------- | 172 | 40 | 28 | 12 | 2.0 | 8.6 |
| 12 | 122 | 122 | ------- | 157 | 39 | 30 | 11 | 2.0 | 7.0 |
| 13 | 94 | 187 | ------- | 143 | 36 | 38 | 11 | 2.0 | 7.0 |
| 14 | 77 | 157 | ------- | 129 | 34 | 45 | 11 | 2.0 | 7.0 |
| 15 | 68 | 77 | ------- | 115 | 31 | 48 | 11 | 2.0 | 7.0 |
| 16 | 56 | 33 | ------- | 108 | 29 | 45 | 9.5 | 2.0 | 5.4 |
| 17 | 51 | 37 | ------- | 108 | 30 | 39 | 9.5 | 2.0 | 5.4 |
| 18 | 48 | 48 | ------- | 101 | 34 | 28 | 8.6 | 2.0 | 5.4 |
| 19 | 47 | 59 | ------- | 101 | 34 | 28 | 8.6 | 2.0 | 12 |
| 20 | 45 | 55 | ------- | 94 | 32 | 27 | 8.6 | 2.3 | 17 |
| 21 | 41 | 63 | ------- | 87 | 32 | 26 | 7.0 | 4.6 | 18 |
| 22 | 40 | 80 | ------- | 115 | 30 | 26 | 7.0 | 8.6 | 17 |
| 23 | 37 | 68 | ------- | 270 | 30 | 25 | 7.0 | 7.8 | 15 |
| 24 | 35 | 64 | ------- | 315 | 30 | 23 | 7.0 | 6.2 | 14 |
| 25 | 34 | 122 | ------- | 303 | 30 | 23 | 7.0 | 4.6 | 12 |
| 26 | 32 | 68 | ------- | 270 | 30 | 23 | 6.2 | 3.8 | 12 |
| 27 | 31 | 101 | ------- | 232 | 30 | 23 | 5.4 | 4.6 | 12 |
| 28 | 31 | 129 | ------- | 157 | 30 | 23 | 4.6 | 6.2 | 16 |
| 29 | 28 | 115 | ------- | 94 | 29 | 23 | 3.8 | 7.8 | 24 |
| 30 | 26 | 108 | ------- | 80 | 28 | 23 | 3.8 | 8.6 | 35 |
| 31 | 27 | ------- | ------- | ------- | 28 | ------- | 4.6 | 8.6 | ------- |

| Day | Oct. | Nov. | Dec. | Day | Oct. | Nov. | Dec. | Day | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1925 | | | | 1925 | | | | 1925 | | | |
| 1 | 157 | 36 | 39 | 11 | 35 | 73 | ------- | 21 | 101 | 72 | ------- |
| 2 | 35 | 37 | 37 | 12 | 32 | 64 | ------- | 22 | 129 | 108 | ------- |
| 3 | 36 | 41 | 36 | 13 | 32 | 59 | ------- | 23 | 41 | 81 | ------- |
| 4 | 47 | 77 | 39 | 14 | 29 | 52 | ------- | 24 | 38 | 73 | ------- |
| 5 | 66 | 258 | 48 | 15 | 27 | 52 | ------- | 25 | 36 | 64 | ------- |
| 6 | 59 | 303 | 73 | 16 | 25 | 74 | ------- | 26 | 36 | 57 | ------- |
| 7 | 45 | 281 | 101 | 17 | 21 | 73 | ------- | 27 | 36 | 51 | ------- |
| 8 | 41 | 245 | ------- | 18 | 20 | 63 | ------- | 28 | 39 | 46 | ------- |
| 9 | 39 | 172 | ------- | 19 | 26 | 57 | ------- | 29 | 55 | 43 | ------- |
| 10 | 36 | 115 | ------- | 20 | 42 | 52 | ------- | 30 | 41 | 40 | ------- |
| | | | | | | | | 31 | 37 | ------- | ------- |

NOTE.—No records Dec. 9 to Apr. 1; stage-discharge relation affected by ice during greater part of this period.

*Monthly discharge of Montreal River near Kimball, Wis., for the period June 26, 1924, to December 7, 1925*

[Drainage area, 109 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1924 | | | | | |
| June 26–30 | 59 | 31 | 38.4 | 0.352 | 0.07 |
| July | 60 | 28 | 35.7 | .328 | .38 |
| August | 232 | 32 | 86.4 | .793 | .91 |
| September | 72 | 21 | 38.1 | .350 | .39 |
| October | 180 | 26 | 68.0 | .624 | .72 |
| November | 187 | 22 | 66.9 | .614 | .68 |
| December 1–8 | 94 | 37 | 57.5 | .528 | .16 |

*Monthly discharge of Montreal River near Kimball, Wis., for the period June 26, 1924, to December 7, 1925*—Continued

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1925 | | | | | |
| April 2-30 | 328 | 80 | 183 | 1.68 | 1.81 |
| May | 69 | 28 | 37.9 | .348 | .40 |
| June | 48 | 23 | 30.6 | .281 | .31 |
| July | 21 | 3.8 | 10.8 | .099 | .11 |
| August | 8.6 | 2.0 | 3.89 | .036 | .04 |
| September | 35 | 5.4 | 13.9 | .128 | .14 |
| October | 157 | 20 | 46.4 | .426 | .49 |
| November | 303 | 36 | 94.0 | .862 | .96 |
| December 1-7 | 101 | 36 | 53.3 | .489 | .13 |

### WEST BRANCH OF MONTREAL RIVER AT GILE, WIS.

LOCATION.—In sec. 27, T. 46 N., R. 2 E., 800 feet above highway bridge at Gile, Iron County, 2½ miles southwest of Hurley, and 4 miles upstream from junction of East and West Branches.

DRAINAGE AREA.—78 square miles[4] (measured on map of Wisconsin Soil Survey).

RECORDS AVAILABLE.—April 26, 1918, to November 30, 1925, when station was discontinued.

GAGE.—Sloping gage bolted to rock ledge on left bank of river a few hundred feet upstream from pump house of Ottawa mine; read by Carl Long and Fred Durand.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge 800 feet below gage or by wading.

CHANNEL AND CONTROL.—Control formed by permanent rock ledge across narrow section of stream about 15 feet downstream from gage. Fall at control about 4 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period October 1, 1924, to November 30, 1925, 4.75 feet March 27 (discharge, 250 second-feet); minimum stage, 1.15 feet, August 14–19 (discharge, about 1.6 second-feet).

1918–1925: Maximum stage recorded, 7.20 feet April 21, 1923 (discharge, 1,480 second-feet); minimum stage, 1.15 feet August 14–19, 1925 (discharge, about 1.6 second-feet).

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined above 4 second-feet. Gage read once daily to hundredths until July 11 and twice daily to hundredths July 14 to November 30. Daily discharge ascertained by applying mean daily gage height to rating table except on dates when gage was not read for which it was ascertained as indicated in footnote to table of daily discharge. Records when gage heights were available, good; at other times poor.

The following discharge measurements were made:

October 11, 1924: Gage height, 3.00 feet; discharge, 58.1 second-feet.

April 5, 1925: Gage height, 4.50 feet; discharge, 204 second-feet.

[4] Supersedes figure published in previous reports.

*Daily discharge, in second-feet, of West Branch of Montreal River at Gile, Wis., for the period October 1, 1924, to November 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1924–25 | | | | | | | | | | | | |
| 1 | 51 | 16 | 41 | 14 | | | 214 | 74 | 22 | 7.8 | 2.2 | 3.0 |
| 2 | 46 | 16 | 41 | 14 | | | 214 | 68 | 22 | 7.8 | 2.2 | 5.3 |
| 3 | 41 | 16 | 44 | 14 | | | 214 | 61 | 26 | 6.9 | 2.2 | 6.2 |
| 4 | 59 | 16 | 46 | 14 | | | 214 | 55 | 32 | 6.5 | 2.4 | 5.8 |
| 5 | 92 | 16 | 46 | 14 | | | 195 | 48 | 34 | 6.0 | 2.5 | 5.3 |
| 6 | 126 | 16 | 46 | 14 | | | 177 | 47 | 34 | 5.5 | 2.4 | 5.0 |
| 7 | 111 | 16 | 41 | 14 | | | 158 | 46 | 29 | 6.2 | 1.9 | 4.4 |
| 8 | 97 | 17 | 37 | 13 | | | 158 | 41 | 24 | 6.2 | 1.8 | 3.9 |
| 9 | 74 | 18 | 32 | 12 | | | 158 | 38 | 22 | 6.2 | 1.8 | 3.4 |
| 10 | 62 | 20 | 29 | 11 | | | 158 | 36 | 17 | 6.9 | 1.8 | 3.4 |
| 11 | 56 | 34 | 26 | 11 | | 8 | 158 | 33 | 21 | 5.5 | 1.8 | 3.0 |
| 12 | 52 | 97 | 25 | 11 | | | 151 | 30 | 24 | 5.0 | 1.8 | 2.7 |
| 13 | 48 | 116 | 24 | 11 | | | 143 | 28 | 28 | 5.0 | 1.7 | 2.5 |
| 14 | 44 | 93 | 22 | 12 | | | 136 | 26 | 27 | 4.4 | 1.6 | 2.5 |
| 15 | 41 | 81 | 21 | 12 | 9 | | 124 | 24 | 26 | 4.4 | 1.6 | 2.2 |
| 16 | 38 | 68 | 20 | 12 | | | 111 | 24 | 24 | 3.6 | 1.6 | 2.2 |
| 17 | 36 | 56 | 19 | 12 | | | 104 | 24 | 23 | 3.4 | 1.6 | 2.2 |
| 18 | 32 | 54 | 18 | 12 | | | 98 | 24 | 22 | 3.4 | 1.6 | 1.9 |
| 19 | 31 | 51 | 18 | 12 | | | 92 | 25 | 17 | 3.0 | 1.6 | 1.8 |
| 20 | 30 | 46 | 17 | 12 | | | 85 | 26 | 16 | 2.7 | 1.8 | 3.0 |
| 21 | 26 | 54 | 17 | 12 | | | 100 | 25 | 13 | 2.2 | 2.4 | 3.4 |
| 22 | 26 | 54 | 17 | 12 | | 25 | 116 | 24 | 9.8 | 2.5 | 2.5 | 3.9 |
| 23 | 24 | 54 | 17 | 12 | | | 184 | 24 | 7.8 | 2.5 | 2.2 | 4.4 |
| 24 | 22 | 54 | 17 | 12 | | | 232 | 24 | 8.6 | 2.7 | 1.8 | 4.4 |
| 25 | 22 | 54 | 16 | 12 | | 97 | 224 | 24 | 11 | 3.0 | 1.8 | 4.4 |
| 26 | 20 | 54 | 16 | 11 | | 136 | 203 | 24 | 12 | 3.4 | 1.8 | 3.9 |
| 27 | 17 | 52 | 15 | 11 | | 250 | 158 | 24 | 11 | 3.4 | 1.8 | 3.9 |
| 28 | 18 | 51 | 15 | 11 | | 232 | 136 | 24 | 10 | 3.0 | 1.8 | 4.2 |
| 29 | 16 | 48 | 15 | 11 | ------- | 223 | 100 | 24 | 8.6 | 2.5 | 1.9 | 5.5 |
| 30 | 16 | 44 | 14 | 11 | ------- | 214 | 81 | 23 | 8.6 | 2.4 | 2.5 | 22.0 |
| 31 | 16 | ------- | 14 | 11 | ------- | 214 | ------- | 23 | ------- | 2.2 | 2.5 | ----- |

| Day | Oct. | Nov. | Day | Oct. | Nov. | Day | Oct. | Nov. |
|---|---|---|---|---|---|---|---|---|
| 1925 | | | 1925 | | | 1925 | | |
| 1 | 68 | 17 | 11 | 30 | 38 | 21 | 26 | 24 |
| 2 | 89 | 18 | 12 | 28 | 34 | 22 | 26 | 22 |
| 3 | 81 | 19 | 13 | 22 | 34 | 23 | 24 | 22 |
| 4 | 68 | 28 | 14 | 24 | 32 | 24 | 24 | 21 |
| 5 | 56 | 36 | 15 | 24 | 30 | 25 | 24 | 20 |
| 6 | 51 | 68 | 16 | 24 | 30 | 26 | 23 | 18 |
| 7 | 48 | 89 | 17 | 26 | 24 | 27 | 22 | 17 |
| 8 | 41 | 85 | 18 | 26 | 24 | 28 | 21 | 14 |
| 9 | 34 | 51 | 19 | 26 | 24 | 29 | 19 | 14 |
| 10 | 32 | 44 | 20 | 26 | 24 | 30 | 18 | 11 |
| | | | | | | 31 | 14 | ------- |

NOTE.—Stage-discharge relation not seriously affected by ice. Gage read to hundredths once daily Oct. 1 to Dec. 6 and Mar. 25 to July 11, with numerous omissions usually on Sunday. Dec. 9 to Jan. 29 gage read only about once a week. No gage readings Jan. 30 to Mar. 24. Gage read to hundredths twice daily July 14 to Sept. 30. Mean discharge for periods Feb. 1–28, Mar. 1–20, and 21–24 estimated from weather records. Discharge for dates gage readings are missing Mar. 25 to July 14 were determined by a comparison with discharge of the West Branch of Montreal River near Kimball; on all other dates that gage heights were not available discharge was interpolated.

*Monthly discharge of West Branch of Montreal River at Gile, Wis., for the period October 1, 1924, to November 30, 1925*

[Drainage area, 78 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1924-25 | | | | | |
| October | 126 | 16 | 44.8 | 0.574 | 0.66 |
| November | 116 | 16 | 46.1 | .591 | .66 |
| December | 46 | 14 | 25.4 | .326 | .38 |
| January | 14 | 11 | 12.2 | .156 | .18 |
| February | | | 9 | .115 | .12 |
| March | 250 | | 52.5 | .673 | .78 |
| April | 232 | 81 | 153 | 1.96 | 2.19 |
| May | 74 | 23 | 33.6 | .431 | .50 |
| June | 34 | 7.8 | 19.7 | .253 | .28 |
| July | 7.8 | 2.2 | 4.39 | .056 | .06 |
| August | 2.5 | 1.6 | 1.96 | .025 | .03 |
| September | 22 | 1.8 | 4.32 | .055 | .06 |
| The year | 250 | 1.6 | 33.9 | .435 | 5.90 |
| 1925 | | | | | |
| October | 89 | 14 | 34.4 | .441 | .51 |
| November | 89 | 11 | 31.1 | .399 | .45 |

### WEST BRANCH OF MONTREAL RIVER NEAR KIMBALL, WIS.

LOCATION.—In sec. 32, T. 47 N., R. 2 E., 1,000 feet above mouth, 2 miles northeast of Kimball, Iron County, and 7 miles northwest of Hurley.

DRAINAGE AREA.—96 square miles.

RECORDS AVAILABLE.—June 26, 1924, to December 7, 1925, when station was discontinued.

GAGE.—Staff gage attached to fence post near left edge of channel; read by Arne Johnson.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed composed of heavy gravel; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 1.78 feet at 7 a. m. April 2 (discharge, 284 second-feet); minimum stage, 0.16 foot August 17–20 (discharge, 1.6 second-feet).

REGULATION.—None.

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

*Discharge measurements of West Branch of Montreal River near Kimball, Wis., during the period June 26, 1924, to December 7, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| 1924 | *Feet* | *Sec.-ft.* | 1924 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* |
| June 26 | 0.52 | 18.2 | Oct. 10 | 0.85 | 72.1 | Apr. 29 | 1.01 | 108 |
| July 17 | .64 | 27.7 | Oct. 30 | .54 | 17.3 | June 18 | .55 | 17.6 |
| Aug. 5 | 1.60 | 248 | Do | .54 | 17.8 | Do | .55 | 18.4 |
| Aug. 7 | 1.40 | 215 | | | | July 26 | .23 | 2.44 |
| Do | 1.36 | 202 | 1925 | | | July 27 | .22 | 2.72 |
| Aug. 8 | 1.19 | 160 | Apr. 2 | 1.59 | 248 | | | |
| Aug. 9 | 1.06 | 126 | Apr. 3 | 1.58 | 253 | | | |

*Daily discharge, in second-feet, of West Branch of Montreal River near Kimball, Wis., for the period June 26, 1924, to December 7, 1925*

| Day | June | July | Aug. | Sept. | Day | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1924 | | | | | 1924 | | | | |
| 1 | | 55 | 53 | 37 | 16 | | 23 | 42 | 30 |
| 2 | | 44 | 51 | 30 | 17 | | 28 | 35 | 26 |
| 3 | | 37 | 100 | 25 | 18 | | 29 | 29 | 23 |
| 4 | | 30 | 200 | 24 | 19 | | 26 | 24 | 20 |
| 5 | | 24 | 248 | 22 | 20 | | 23 | 21 | 20 |
| 6 | | 23 | 248 | 22 | 21 | | 24 | 39 | 20 |
| 7 | | 21 | 213 | 20 | 22 | | 25 | 122 | 42 |
| 8 | | 22 | 158 | 19 | 23 | | 25 | 213 | 55 |
| 9 | | 23 | 130 | 19 | 24 | | 28 | 200 | 65 |
| 10 | | 21 | 110 | 19 | 25 | | 25 | 156 | 55 |
| 11 | | 21 | 92 | 19 | 26 | 18 | 23 | 110 | 44 |
| 12 | | 22 | 75 | 20 | 27 | 18 | 24 | 95 | 51 |
| 13 | | 25 | 62 | 25 | 28 | 20 | 25 | 75 | 55 |
| 14 | | 24 | 58 | 37 | 29 | 28 | 23 | 55 | 70 |
| 15 | | 21 | 48 | 37 | 30 | 55 | 29 | 48 | 72 |
| | | | | | 31 | | 42 | 46 | |

| Day | Oct. | Nov. | Dec. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1924-25 | | | | | | | | | |
| 1 | 65 | 20 | 65 | | 82 | 21 | 13 | 2.2 | 4.2 |
| 2 | 55 | 20 | 55 | 277 | 70 | 23 | 12 | 2.0 | 8.7 |
| 3 | 51 | 20 | 48 | 256 | 62 | 24 | 11 | 2.0 | 14 |
| 4 | 75 | 20 | 44 | 240 | 58 | 29 | 10 | 2.0 | 15 |
| 5 | 128 | 18 | 39 | 232 | 55 | 35 | 10 | 2.0 | 11 |
| 6 | 140 | 19 | 35 | 213 | 51 | 35 | 9.2 | 1.8 | 9.6 |
| 7 | 130 | 20 | 29 | 200 | 46 | 29 | 9.2 | 1.8 | 7.4 |
| 8 | 112 | 21 | 26 | 187 | 42 | 22 | 8.3 | 1.8 | 6.0 |
| 9 | 88 | 20 | | 187 | 39 | 20 | 8.3 | 1.8 | 5.5 |
| 10 | 68 | 20 | | 187 | 35 | 19 | 7.4 | 1.8 | 4.6 |
| 11 | 65 | 35 | | 187 | 33 | 18 | 7.0 | 1.8 | 4.2 |
| 12 | 78 | 95 | | 174 | 31 | 21 | 6.5 | 1.8 | 3.8 |
| 13 | 68 | 135 | | 161 | 28 | 29 | 6.5 | 1.8 | 3.8 |
| 14 | 62 | 125 | | 151 | 25 | 33 | 6.5 | 1.8 | 3.8 |
| 15 | 58 | 108 | | 140 | 24 | 31 | 6.5 | 1.8 | 3.1 |
| 16 | 51 | 98 | | 128 | 23 | 28 | 6.0 | 1.7 | 3.1 |
| 17 | 46 | 80 | | 115 | 24 | 24 | 5.5 | 1.6 | 2.4 |
| 18 | 39 | 65 | | 102 | 29 | 20 | 5.5 | 1.6 | 2.4 |
| 19 | 37 | 58 | | 90 | 31 | 19 | 4.6 | 1.6 | 5.5 |
| 20 | 35 | 51 | | 82 | 29 | 17 | 4.6 | 1.6 | 8.7 |
| 21 | 31 | 58 | | 72 | 28 | 16 | 4.6 | 1.9 | 9.2 |
| 22 | 28 | 75 | | 95 | 25 | 16 | 3.8 | 2.4 | 8.3 |
| 23 | 25 | 75 | | 213 | 23 | 15 | 3.8 | 2.0 | 8.3 |
| 24 | 24 | 102 | | 265 | 23 | 15 | 3.8 | 2.0 | 8.3 |
| 25 | 23 | 98 | | 256 | 23 | 13 | 3.5 | 2.0 | 7.8 |
| 26 | 22 | 72 | | 232 | 23 | 13 | 3.1 | 2.0 | 7.4 |
| 27 | 20 | 95 | | 187 | 23 | 13 | 3.1 | 2.2 | 7.4 |
| 28 | 20 | 161 | | 151 | 23 | 13 | 2.4 | 2.7 | 10 |
| 29 | 18 | 118 | | 115 | 22 | 13 | 2.4 | 3.5 | 16 |
| 30 | 18 | 95 | | 98 | 21 | 13 | 2.4 | 3.8 | 28 |
| 31 | 19 | | | | 21 | | 2.4 | 3.8 | |

| Day | Oct. | Nov. | Dec. | Day | Oct. | Nov. | Dec. | Day | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1925 | | | | 1925 | | | | 1925 | | | |
| 1 | 85 | 26 | 25 | 11 | 28 | 53 | | 21 | 55 | 44 | |
| 2 | 105 | 26 | 25 | 12 | 25 | 46 | | 22 | 68 | 58 | |
| 3 | 95 | 28 | 23 | 13 | 24 | 42 | | 23 | 42 | 60 | |
| 4 | 80 | 46 | 25 | 14 | 23 | 37 | | 24 | 29 | 55 | |
| 5 | 68 | 110 | 35 | 15 | 23 | 33 | | 25 | 26 | 44 | |
| 6 | 58 | 151 | 37 | 16 | 23 | 33 | | 26 | 25 | 37 | |
| 7 | 48 | 145 | 37 | 17 | 24 | 55 | | 27 | 25 | 31 | |
| 8 | 42 | 132 | | 18 | 25 | 51 | | 28 | 29 | 30 | |
| 9 | 37 | 118 | | 19 | 25 | 35 | | 29 | 51 | 28 | |
| 10 | 31 | 58 | | 20 | 31 | 29 | | 30 | 33 | 28 | |
| | | | | | | | | 31 | 29 | | |

NOTE.—Stage-discharge relation affected by ice Dec. 9 to Apr. 1; gage not read, discharge not determined.

*Monthly discharge of West Branch of Montreal River near Kimball, Wis., for the period June 26, 1924, to December 7, 1925*

[Drainage area, 96 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1924 | | | | | |
| June 26–30 | 55 | 18 | 27.8 | 0.290 | 0.05 |
| July | 55 | 21 | 26.9 | .280 | .32 |
| August | 248 | 21 | 102 | 1.06 | 1.22 |
| September | 72 | 19 | 34.1 | .355 | .40 |
| October | 140 | 18 | 54.8 | .571 | .66 |
| November | 161 | 18 | 66.6 | .694 | .77 |
| December 1–8 | 65 | 26 | 42.6 | .444 | .13 |
| 1925 | | | | | |
| April 2–30 | 277 | 72 | 172 | 1.79 | 1.93 |
| May | 82 | 21 | 34.6 | .360 | .42 |
| June | 35 | 13 | 21.2 | .221 | .25 |
| July | 13 | 2.4 | 6.22 | .065 | .07 |
| August | 3.8 | 1.6 | 2.08 | .022 | .03 |
| September | 28 | 2.4 | 7.92 | .083 | .09 |
| October | 105 | 23 | 42.3 | .441 | .51 |
| November | 151 | 26 | 55.6 | .579 | .65 |
| December 1–7 | 37 | 23 | 29.6 | .308 | .08 |

### BLACK RIVER AT RAMSAY, MICH.

LOCATION.—In sec. 13, T. 47 N., R. 46 W., at highway bridge 100 feet downstream from Chicago & Northwestern Railway in Ramsay, Gogebic County.

DRAINAGE AREA.—82 square miles.

RECORDS AVAILABLE.—April 1, 1924, to September 30, 1925.

GAGE.—Chain gage attached to upstream guard rail of bridge; read by engineers of Castile Mining Co.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of large rock and cobblestones; probably permanent. Considerable rubbish is thrown into river from time to time which, during periods of low water, lodges and obstructs channel, causing backwater.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.91 feet at 11.45 a. m. April 11 (discharge, about 278 second-feet); minimum stage, 3.64 feet at 3.25 p. m. August 19 (discharge, 4 second-feet).

1924–1925: Maximum stage recorded, 6.40 feet at 7.30 a. m. April 26, 1924 (discharge, about 392 second-feet); minimum stage, 3.64 feet at 3.25 p. m. August 19, 1925 (discharge, 4 second-feet).

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

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent except when affected by rubbish, which is thrown into the river and obstructs channel during periods of low water. Rating curve well defined below 100 second-feet, poorly defined between 100 and 200 second-feet, and extended above. Gage read to hundredths twice daily. Records fair.

The following discharge measurements were made:

April 5, 1925: Gage height, 5.66 feet; discharge, 187 second-feet.

April 30, 1925: Gage height, 4.88 feet; discharge, 88 second-feet.

*Daily discharge, in second-feet, of Black River at Ramsay, Mich., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43 | 10 | 35 | 17 | 15 | 15 | 182 | 65 | 31 | 8 | 8 | 13 |
| 2 | 39 | 10 | 24 | 16 | 15 | 14 | 224 | 62 | 45 | 9 | 9 | 16 |
| 3 | 41 | 10 | 28 | 18 | 15 | 15 | 245 | 60 | 60 | 8 | 9 | 15 |
| 4 | 43 | 8 | 25 | 16 | 16 | 15 | 245 | 57 | 75 | 8 | 9 | 16 |
| 5 | 41 | 7 | 26 | 15 | 16 | 13 | 245 | 52 | 67 | 8 | 10 | 15 |
| 6 | 39 | 7 | 25 | 15 | 18 | 13 | 245 | 48 | 55 | 8 | 11 | 13 |
| 7 | 36 | 5 | 23 | 15 | 16 | 14 | 245 | 44 | 43 | 8 | 9 | 12 |
| 8 | 34 | 10 | 21 | 17 | 18 | 15 | 250 | 43 | 31 | 9 | 9 | 12 |
| 9 | 32 | 12 | 22 | 18 | 20 | 16 | 256 | 42 | 27 | 10 | 8 | 13 |
| 10 | 32 | 13 | 28 | 15 | 22 | 16 | 267 | 40 | 26 | 9 | 8 | 14 |
| 11 | 29 | 29 | 31 | 16 | 20 | 17 | 278 | 39 | 30 | 12 | 8 | 12 |
| 12 | 25 | 91 | 31 | 17 | 19 | 18 | 251 | 34 | 32 | 10 | 8 | 12 |
| 13 | 22 | 94 | 31 | 17 | 19 | 18 | 224 | 31 | 33 | 7 | 7 | 11 |
| 14 | 22 | 78 | 28 | 18 | 20 | 18 | 182 | 26 | 35 | 7 | 7 | 11 |
| 15 | 22 | 61 | 26 | 17 | 19 | 18 | 163 | 28 | 36 | 7 | 7 | 11 |
| 16 | 18 | 56 | 31 | 16 | 18 | 19 | 144 | 31 | 37 | 8 | 6 | 10 |
| 17 | 16 | 50 | 31 | 15 | 16 | 21 | 127 | 31 | 32 | 8 | 6 | 10 |
| 18 | 16 | 46 | 31 | 15 | 15 | 24 | 102 | 31 | 27 | 6 | 5 | 11 |
| 19 | 15 | 42 | 28 | 15 | 14 | 26 | 99 | 31 | 23 | 6 | 4 | 11 |
| 20 | 14 | 59 | 28 | 15 | 15 | 28 | 96 | 30 | 18 | 7 | 6 | 16 |
| 21 | 12 | 56 | 25 | 15 | 15 | 29 | 106 | 29 | } | 7 | 8 | 20 |
| 22 | 11 | 52 | 22 | 16 | 15 | 37 | 127 | 28 | | 8 | 8 | 18 |
| 23 | 10 | 51 | 22 | 17 | 15 | 45 | 202 | 31 | | 8 | 8 | 16 |
| 24 | 10 | 50 | 22 | 17 | 15 | 56 | 245 | 33 | | 7 | 8 | 14 |
| 25 | 10 | 50 | } | 17 | 15 | 114 | 234 | 36 | } 15 | 8 | 7 | 13 |
| 26 | 10 | 46 | } 20 | 17 | 15 | 172 | 196 | 32 | | 8 | 7 | 12 |
| 27 | 10 | } | | 15 | 15 | 182 | 157 | 31 | } | 7 | 7 | 18 |
| 28 | 10 | } 35 | | 17 | 15 | 192 | 119 | 31 | | 7 | 8 | 25 |
| 29 | 10 | } | 15 | 15 | 15 | 202 | 100 | 33 | 11 | 8 | 8 | 32 |
| 30 | 10 | } | 17 | 15 | ------- | 213 | 74 | 32 | 8 | 8 | 9 | 67 |
| 31 | 10 | ------- | 18 | 15 | ------- | 153 | ------- | 32 | ------- | 8 | 10 | ------ |

NOTE.—Gage not read Oct. 3, 5–8, 11–12, 19, 26, 30–31, Nov. 2, 9, 14, 16, 21, 23, 27–30, Dec. 1, 7, 14, 21, 25–28, Jan. 1, 4, 11, 18, 25, Feb. 1, 8, 15, 20–28, Mar. 1, 8–11, 15, 22, 25, 29, Apr. 5, 8, 10, 12, 15, 19, 26, 27, May 2, 3, 9, 10, 17, 23, 24, 30, 31, June 2, 3, 6, 7, 13, 14, 18, 19, 21–28, July 4, 5, 12, 19, 20, 26, 30, 31, Aug. 1–4, 9, 10, 16, 17, 23–25, 27–30, Sept. 1, 5, 6, 13–15, 20, and 27; discharge interpolated.

*Monthly discharge of Black River at Ramsay, Mich., for the year ending September 30, 1925*

[Drainage area, 82 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 43 | 10 | 22.3 | 0.272 | 0.31 |
| November | 94 | 5 | 38.1 | .465 | .52 |
| December | 35 | 15 | 24.9 | .304 | .35 |
| January | 18 | 15 | 16.1 | .196 | .23 |
| February | 22 | 14 | 16.6 | .202 | .21 |
| March | 213 | 13 | 56.4 | .687 | .79 |
| April | 278 | 74 | 188 | 2.290 | 2.56 |
| May | 65 | 26 | 37.8 | .461 | .53 |
| June | 75 | 8 | 30.1 | .367 | .41 |
| July | 12 | 7 | 8.0 | .098 | .11 |
| August | 11 | 4 | 7.8 | .095 | .11 |
| September | 67 | 10 | 16.2 | .198 | .22 |
| The year | 278 | 4 | 38.4 | .468 | 6.34 |

## 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, 1925.

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

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

EXTREMES OF DISCHARGE.—Maximum mean daily discharge recorded during year, 3,500 second-feet April 25; minimum mean daily discharge, 154 second-feet August 9.

1914–1925: 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 the regulation at this power plant, the flow is subject to the regulation of a power plant on Brule River about 5 miles above station, owned by the same company. Owing to variations in demand, the daily discharge bears no relation to the natural flow, but the monthly mean discharge probably corresponds closely to the 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 four 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, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,100 | 732 | 805 | 715 | 569 | 591 | 1,430 | 1,760 | 903 | 961 | 553 | 454 |
| 2 | 1,370 | 704 | 783 | 703 | 591 | 649 | 1,380 | 1,880 | 899 | 967 | 603 | 555 |
| 3 | 1,370 | 670 | 839 | 717 | 619 | 638 | 1,750 | 1,400 | 1,040 | 906 | 596 | 567 |
| 4 | 1,190 | 745 | 705 | 649 | 639 | 759 | 1,720 | 2,140 | 1,180 | 810 | 575 | 546 |
| 5 | 849 | 716 | 730 | 683 | 591 | 774 | 1,250 | 1,330 | 2,480 | 870 | 614 | 607 |
| 6 | 1,580 | 803 | 715 | 711 | 629 | 693 | 1,960 | 1,080 | 2,430 | 844 | 668 | 470 |
| 7 | 1,080 | 832 | 554 | 718 | 600 | 662 | 1,510 | 1,330 | 1,540 | 701 | 430 | 443 |
| 8 | 1,010 | 749 | 661 | 717 | 507 | 532 | 1,380 | 1,280 | 1,420 | 623 | 215 | 776 |
| 9 | 1,160 | 785 | 826 | 717 | 653 | 595 | 1,380 | 1,320 | 1,140 | 715 | 154 | 959 |
| 10 | 1,180 | 811 | 758 | 696 | 710 | 630 | 1,320 | 879 | 1,160 | 784 | 379 | 805 |
| 11 | 1,130 | 778 | 736 | 598 | 707 | 630 | 1,310 | 1,120 | 1,330 | 740 | 433 | 678 |
| 12 | 868 | 692 | 703 | 668 | 695 | 645 | 1,420 | 1,210 | 1,360 | 627 | 483 | 586 |
| 13 | 957 | 746 | 814 | 723 | 771 | 645 | 2,220 | 1,310 | 1,370 | 727 | 590 | 553 |
| 14 | 1,060 | 848 | 680 | 714 | 810 | 624 | 1,640 | 1,370 | 1,120 | 711 | 590 | 578 |
| 15 | 1,140 | 909 | 701 | 741 | 610 | 578 | 1,680 | 1,270 | 1,980 | 673 | 582 | 572 |
| 16 | 1,140 | 876 | 807 | 749 | 727 | 680 | 2,300 | 1,090 | 1,240 | 800 | 518 | 608 |
| 17 | 1,050 | 864 | 777 | 752 | 865 | 714 | 1,240 | 777 | 1,260 | 722 | 620 | 657 |
| 18 | 1,180 | 817 | 716 | 673 | 859 | 708 | 1,270 | 943 | 1,260 | 715 | 608 | 658 |
| 19 | 803 | 794 | 759 | 724 | 839 | 816 | 1,270 | 968 | 1,280 | 697 | 591 | 657 |
| 20 | 1,040 | 804 | 798 | 786 | 845 | 865 | 1,220 | 977 | 1,230 | 725 | 596 | 466 |

*Daily discharge, in second-feet, of Menominee River at Twin Falls, near Iron Mountain, Mich., for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | 947 | 1,030 | 814 | 774 | 763 | 838 | 1,380 | 1,000 | 892 | 673 | 553 | 624 |
| 22 | 880 | 1,080 | 796 | 786 | 618 | 684 | 1,370 | 1,010 | 959 | 661 | 505 | 781 |
| 23 | 858 | 812 | 902 | 750 | 723 | 771 | 1,470 | 964 | 1,110 | 661 | 550 | 1,200 |
| 24 | 843 | 962 | 945 | 774 | 694 | 826 | 2,600 | 701 | 1,010 | 641 | 541 | 891 |
| 25 | 880 | 968 | 726 | 629 | 652 | 1,110 | 3,500 | 908 | 986 | 621 | 555 | 1,030 |
| 26 | 837 | 989 | 767 | 675 | 632 | 1,260 | 3,210 | 989 | 1,090 | 661 | 606 | 1,200 |
| 27 | 883 | 912 | 871 | 639 | 660 | 1,250 | 3,150 | 997 | 1,030 | 592 | 713 | 739 |
| 28 | 820 | 842 | 712 | 610 | 788 | 1,200 | 2,190 | 1,200 | 846 | 672 | 640 | 987 |
| 29 | 786 | 869 | 705 | 618 | ------- | 1,140 | 3,100 | 1,120 | 882 | 617 | 630 | 889 |
| 30 | 778 | 865 | 826 | 605 | ------- | 2,260 | 1,680 | 834 | 987 | 635 | 573 | 1,000 |
| 31 | 759 | ------- | 799 | 627 | ------- | 2,080 | ------- | 801 | ------- | 593 | 637 | ------ |

NOTE.—Discharge computed by the 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, 1925*

[Drainage area, 1,790 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 1,580 | 759 | 1,020 | 0.570 | 0.66 |
| November | 1,080 | 670 | 833 | .465 | .52 |
| December | 945 | 554 | 765 | .427 | .49 |
| January | 786 | 598 | 698 | .390 | .45 |
| February | 865 | 507 | 692 | .387 | .40 |
| March | 2,260 | 532 | 866 | .484 | .56 |
| April | 3,500 | 1,220 | 1,810 | 1.01 | 1.13 |
| May | 2,140 | 701 | 1,160 | .648 | .75 |
| June | 2,480 | 846 | 1,250 | .698 | .78 |
| July | 967 | 592 | 721 | .403 | .46 |
| August | 713 | 154 | 545 | .304 | .35 |
| September | 1,200 | 443 | 718 | .401 | .45 |
| The year | 3,500 | 154 | 922 | .515 | 7.00 |

### 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, 1925.

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

EXTREMES OF DISCHARGE.—Maximum mean daily discharge during year, 4,310 second-feet April 29; minimum mean daily discharge, 752 second-feet August 25.

1913–1925: Maximum mean daily discharge recorded, 23,200 second-feet April 23 and 25, 1916; minimum mean daily discharge, 752 second-feet August 25, 1925.

REGULATION.—Above the station are the following power plants: Sturgeon Falls, owned by Pennsylvania Iron Mining Co., 50 miles; Little Quinnesec, owned by Kimberly Clark, 57 miles; Upper Quinnesec, owned by Oliver Iron Mining Co., 62 miles; Ford plant, owned by the Ford Hydroelectric 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 on September 12, 1922, at the highway bridge about 4 miles below station checks 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 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, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2,140 | 1,830 | 1,480 | 1,180 | 1,230 | 949 | 3,690 | 3,850 | 1,930 | 1,380 | 1,180 | 823 |
| 2 | 2,350 | 1,280 | 1,390 | 1,240 | 1,150 | 1,010 | 2,900 | 2,660 | 1,400 | 1,560 | 960 | 995 |
| 3 | 1,890 | 1,640 | 1,840 | 1,230 | 925 | 1,060 | 2,440 | 2,670 | 1,940 | 1,560 | 1,050 | 1,620 |
| 4 | 2,410 | 1,230 | 1,600 | 1,170 | 1,110 | 1,090 | 2,420 | 2,730 | 2,240 | 1,610 | 810 | 1,350 |
| 5 | 1,840 | 1,270 | 1,570 | 1,180 | 1,200 | 1,150 | 1,960 | 2,440 | 2,760 | 1,250 | 972 | 1,780 |
| 6 | 2,080 | 1,380 | 1,620 | 1,160 | 1,150 | 1,120 | 2,740 | 3,240 | 3,190 | 1,080 | 1,060 | 1,270 |
| 7 | 1,630 | 1,560 | 1,700 | 1,040 | 1,080 | 1,120 | 2,010 | 3,190 | 3,190 | 1,390 | 1,270 | 1,840 |
| 8 | 2,080 | 1,630 | 1,540 | 1,150 | 1,080 | 1,240 | 2,800 | 2,430 | 3,520 | 1,710 | 1,180 | 1,400 |
| 9 | 2,180 | 1,640 | 1,450 | 1,160 | 1,180 | 1,160 | 2,870 | 2,550 | 2,770 | 1,500 | 984 | 1,120 |
| 10 | 1,860 | 1,420 | 1,170 | 1,280 | 1,150 | 1,030 | 2,080 | 1,720 | 2,490 | 1,100 | 1,250 | 1,630 |
| 11 | 1,970 | 1,270 | 1,170 | 1,170 | 1,300 | 1,130 | 2,450 | 2,490 | 1,180 | 1,200 | 1,220 | 1,530 |
| 12 | 1,690 | 1,480 | 1,220 | 1,180 | 1,300 | 1,220 | 2,130 | 1,810 | 2,400 | 1,280 | 1,190 | 1,550 |
| 13 | 2,240 | 1,940 | 1,280 | 1,220 | 1,260 | 1,220 | 2,540 | 2,410 | 3,020 | 1,620 | 1,400 | 1,400 |
| 14 | 1,570 | 1,960 | 1,240 | 1,130 | 1,250 | 1,190 | 2,660 | 2,370 | 3,140 | 1,050 | 1,200 | 1,280 |
| 15 | 1,920 | 1,910 | 1,150 | 1,200 | 1,110 | 1,030 | 3,560 | 1,910 | 3,140 | 1,310 | 1,170 | 1,060 |
| 16 | 1,860 | 1,630 | 1,160 | 1,220 | 1,450 | 1,100 | 2,930 | 2,700 | 3,180 | 1,040 | 1,240 | 1,050 |
| 17 | 1,830 | 1,700 | 1,300 | 1,220 | 1,180 | 1,020 | 2,840 | 1,480 | 3,090 | 1,110 | 1,100 | 1,170 |
| 18 | 2,160 | 1,400 | 1,460 | 1,160 | 1,230 | 1,160 | 3,370 | 2,320 | 2,270 | 1,190 | 1,060 | 1,160 |
| 19 | 2,050 | 1,850 | 1,530 | 1,220 | 1,390 | 1,710 | 2,570 | 1,400 | 2,920 | 1,200 | 1,180 | 1,130 |
| 20 | 1,810 | 1,850 | 1,230 | 1,170 | 1,330 | 1,420 | 2,620 | 2,130 | 2,510 | 1,100 | 1,270 | 1,060 |
| 21 | 1,230 | 1,640 | 1,280 | 1,280 | 1,320 | 1,300 | 2,440 | 1,900 | 2,380 | 961 | 1,100 | 1,100 |
| 22 | 1,750 | 1,990 | 1,160 | 1,220 | 1,250 | 1,560 | 2,920 | 1,940 | 2,030 | 1,190 | 1,110 | 1,100 |
| 23 | 1,770 | 1,640 | 1,160 | 1,240 | 1,350 | 1,750 | 3,470 | 2,020 | 1,570 | 1,240 | 1,080 | 1,400 |
| 24 | 1,700 | 2,060 | 1,380 | 1,260 | 1,100 | 1,350 | 3,530 | 1,530 | 2,120 | 1,080 | 1,030 | 2,460 |
| 25 | 1,710 | 1,470 | 1,240 | 1,220 | 1,190 | 1,700 | 3,800 | 1,900 | 2,180 | 995 | 752 | 2,370 |
| 26 | 1,640 | 1,940 | 1,410 | 1,290 | 1,340 | 2,380 | 3,570 | 1,460 | 1,880 | 1,100 | 880 | 1,930 |
| 27 | 1,720 | 2,000 | 1,130 | 1,220 | 1,190 | 2,780 | 3,810 | 1,860 | 1,740 | 1,250 | 1,170 | 1,790 |
| 28 | 1,270 | 1,490 | 1,080 | 1,150 | 1,150 | 3,140 | 4,060 | 2,160 | 1,540 | 1,020 | 1,060 | 2,050 |
| 29 | 1,560 | 1,230 | 1,250 | 1,250 | ------- | 2,130 | 4,310 | 1,920 | 1,830 | 1,240 | 1,050 | 1,860 |
| 30 | 1,750 | 1,150 | 1,150 | 1,310 | ------- | 2,810 | 3,710 | 1,910 | 1,530 | 1,080 | 880 | 2,160 |
| 31 | 1,290 | ------- | 1,200 | 1,230 | ------- | 2,690 | ------- | 1,960 | ------- | 1,200 | 985 | ------ |

NOTE.—Monthly and yearly discharge computed by U. S. Geol. Survey.

*Monthly discharge of Menominee River below Koss, Mich., for the year ending September 30, 1925*

[Drainage area, 3,790 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 2,410 | 1,230 | 1,840 | 0.485 | 0.56 |
| November | 2,060 | 1,150 | 1,620 | .427 | .48 |
| December | 1,840 | 1,080 | 1,340 | .354 | .41 |
| January | 1,390 | 1,040 | 1,210 | .319 | .37 |
| February | 1,450 | 925 | 1,210 | .319 | .33 |
| March | 3,140 | 949 | 1,510 | .398 | .46 |
| April | 4,310 | 1,960 | 2,970 | .784 | .87 |
| May | 3,850 | 1,400 | 2,230 | .588 | .68 |
| June | 3,520 | 1,180 | 2,370 | .625 | .70 |
| July | 1,710 | 961 | 1,250 | .330 | .38 |
| August | 1,400 | 752 | 1,090 | .288 | .33 |
| September | 2,460 | 823 | 1,480 | .391 | .44 |
| The year | 4,310 | 752 | 1,670 | .441 | 6.01 |

**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, and 9 miles above mouth.

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, 1925. January 22, 1914, to September 30, 1923, records were obtained at a station 4 miles upstream (Pine River near Florence, drainage area 488 square miles).

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

EXTREMES OF DISCHARGE.—Maximum mean discharge recorded during year, 1,320 second-feet June 5; minimum mean daily discharge, 49 second-feet January 31.

1923–1924: Maximum mean daily discharge recorded, 1,870 second-feet May 11, 1924; minimum mean daily discharge, zero on January 20, 1924.

The extremes of discharge are the result of regulation.

REGULATION.—Discharge is subject to diurnal fluctuation by operation of 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 was done by Mead & Seastone, hydraulic engineers. Records at the plant are carefully taken, and the 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, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 297 | 255 | 205 | 163 | 225 | 209 | 259 | 576 | 361 | 204 | 189 | 584 |
| 2 | 298 | 212 | 166 | 111 | 184 | 162 | 295 | 488 | 437 | 195 | 137 | 598 |
| 3 | 248 | 235 | 175 | 100 | 122 | 123 | 295 | 388 | 743 | 174 | 166 | 568 |
| 4 | 246 | 219 | 263 | 181 | 138 | 128 | 295 | 431 | 1110 | 183 | 191 | 534 |
| 5 | 255 | 281 | 153 | 171 | 180 | 131 | 193 | 384 | 1320 | 104 | 126 | 452 |
| 6 | 292 | 183 | 143 | 129 | 123 | 131 | 289 | 406 | 1240 | 109 | 147 | 457 |
| 7 | 296 | 129 | 246 | 125 | 145 | 86 | 300 | 295 | 1220 | 191 | 387 | 346 |
| 8 | 246 | 285 | 170 | 131 | 242 | 218 | 255 | 295 | 834 | 266 | 389 | 383 |
| 9 | 238 | 203 | 173 | 131 | 224 | 178 | 236 | 295 | 815 | 223 | 554 | 332 |
| 10 | 196 | 205 | 212 | 183 | 136 | 122 | 225 | 210 | 605 | 241 | 571 | 300 |
| 11 | 246 | 246 | 228 | 219 | 198 | 122 | 330 | 318 | 535 | 208 | 475 | 298 |
| 12 | 243 | 355 | 223 | 187 | 237 | 120 | 553 | 278 | 909 | 194 | 349 | 299 |
| 13 | 221 | 343 | 167 | 122 | 163 | 122 | 401 | 245 | 850 | 207 | 307 | 257 |
| 14 | 196 | 374 | 273 | 125 | 143 | 132 | 375 | 233 | 883 | 167 | 306 | 242 |
| 15 | 194 | 297 | 289 | 183 | 233 | 227 | 295 | 295 | 833 | 166 | 299 | 209 |
| 16 | 194 | 241 | 260 | 190 | 201 | 205 | 375 | 222 | 732 | 147 | 241 | 156 |
| 17 | 191 | 236 | 151 | 96 | 89 | 119 | 295 | 223 | 620 | 147 | 216 | 103 |
| 18 | 255 | 218 | 163 | 110 | 86 | 122 | 295 | 277 | 535 | 166 | 226 | 98 |
| 19 | 229 | 303 | 208 | 186 | 123 | 147 | 244 | 245 | 469 | 154 | 172 | 176 |
| 20 | 304 | 206 | 274 | 135 | 128 | 181 | 294 | 281 | 415 | 134 | 175 | 479 |
| 21 | 180 | 353 | 180 | 127 | 177 | 206 | 375 | 256 | 385 | 98 | 122 | 546 |
| 22 | 182 | 349 | 183 | 128 | 176 | 225 | 373 | 254 | 336 | 98 | 159 | 544 |
| 23 | 245 | 256 | 100 | 196 | 137 | 208 | 620 | 295 | 335 | 98 | 224 | 573 |
| 24 | 209 | 318 | 93 | 158 | 126 | 171 | 884 | 226 | 355 | 135 | 98 | 558 |
| 25 | 295 | 263 | 161 | 174 | 123 | 353 | 1130 | 294 | 274 | 135 | 97 | 433 |
| 26 | 233 | 209 | 239 | 191 | 128 | 359 | 990 | 295 | 274 | 180 | 99 | 339 |
| 27 | 200 | 271 | 106 | 133 | 159 | 502 | 958 | 295 | 178 | 226 | 107 | 272 |
| 28 | 174 | 224 | 138 | 136 | 134 | 432 | 758 | 295 | 85 | 147 | 107 | 321 |
| 29 | 180 | 240 | 200 | 133 | ------ | 366 | 724 | 332 | 209 | 223 | 127 | 449 |
| 30 | 182 | 232 | 144 | 139 | ------ | 460 | 700 | 329 | 209 | 162 | 311 | 536 |
| 31 | 195 | ------ | 116 | 49 | ------ | 295 | ------ | 308 | ------ | 233 | 563 | ------ |

*Monthly discharge of Pine River at Pine River power plant, near Florence, Wis., for the year ending September 30, 1925*

[Drainage area, 520 square miles]

| Month | Discharge in second-feet | | | | Run-off, in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 304 | 174 | 231 | 0.444 | 0.51 |
| November | 374 | 129 | 258 | .496 | .55 |
| December | 289 | 93 | 185 | .356 | .41 |
| January | 219 | 49 | 147 | .283 | .33 |
| February | 242 | 86 | 160 | .308 | .32 |
| March | 502 | 86 | 212 | .408 | .47 |
| April | 1,130 | 193 | 454 | .873 | .97 |
| May | 576 | 210 | 309 | .594 | .68 |
| June | 1,320 | 85 | 605 | 1.16 | 1.29 |
| July | 266 | 98 | 171 | .329 | .38 |
| August | 589 | 97 | 253 | .487 | .56 |
| September | 598 | 98 | 381 | .733 | .82 |
| The year | 1,320 | 49 | 280 | .538 | 7.29 |

## PIKE RIVER AT AMBERG, WIS.

LOCATION.—In sec. 15, T. 35 N., R. 21 E., at Chicago, Milwaukee & St. Paul 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, 1925.

GAGE.—Chain gage fastened to guard rail on upstream side of bridge; read by Frank Bunce.

DISCHARGE MEASUREMENTS.—Made from a highway bridge a quarter of a mile downstream from bridge to which gage is attached or by wading.

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

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.15 feet April 24 (discharge, 582 second-feet); minimum discharge, about 60 second-feet December 31 (stage-discharge relation affected by ice).

1914–1925: Maximum stage recorded, 7.68 feet at 5 p. m. April 10, 1922 (discharge, 2,730 second-feet); minimum discharge, about 60 second-feet December 31, 1924 (stage-discharge relation affected by ice).

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined above 100 second-feet. Gage read to quarter-tenths once 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; records for winter fair.

The following discharge measurements were made:
January 21, 1925: Gage height, 1.98 feet;[5] discharge, 112 second-feet.
February 18, 1925: Gage height 1.65 feet;[5] discharge, 97 second-feet.
June 15, 1925: Gage height, 2.65 feet; discharge, 396 second-feet.

*Daily discharge, in second-feet, of Pike River at Amberg, Wis., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 169 | 158 | 125 | 100 | 110 | 90 | 258 | 230 | 185 | 109 | 100 | 107 |
| 2 | 162 | 154 | 130 | 100 | 110 | 95 | 244 | 230 | 185 | 109 | 100 | 104 |
| 3 | 158 | 148 | 120 | 100 | 115 | 100 | 230 | 217 | 306 | 109 | 107 | 107 |
| 4 | 148 | 145 | 140 | 100 | 120 | 100 | 230 | 199 | 428 | 114 | 107 | 114 |
| 5 | 158 | 142 | 120 | 105 | 120 | 100 | 217 | 192 | 412 | 100 | 104 | 114 |
| 6 | 154 | 142 | 100 | 110 | 120 | 100 | 204 | 185 | 412 | 100 | 122 | 122 |
| 7 | 158 | 148 | 100 | 110 | 130 | 110 | 202 | 180 | 318 | 118 | 167 | 134 |
| 8 | 158 | 154 | 90 | 110 | 140 | 120 | 199 | 180 | 303 | 118 | 244 | 122 |
| 9 | 158 | 158 | 100 | 90 | 160 | 120 | 192 | 169 | 258 | 128 | 258 | 114 |
| 10 | 158 | 169 | 120 | 100 | 160 | 120 | 185 | 166 | 217 | 128 | 288 | 107 |
| 11 | • 158 | 176 | 140 | 120 | 145 | 125 | 217 | 162 | 192 | 109 | 217 | 104 |
| 12 | 158 | 185 | 160 | 130 | 130 | 130 | 288 | 158 | 204 | 104 | 167 | 100 |
| 13 | 158 | 192 | 90 | 125 | 135 | 115 | 273 | 158 | 460 | 100 | 142 | 100 |
| 14 | 154 | 199 | 140 | 120 | 140 | 100 | 258 | 158 | 476 | 91 | 138 | 96 |
| 15 | 154 | 204 | 120 | 115 | 120 | 100 | 273 | 154 | 404 | 86 | 138 | 92 |
| 16 | 154 | 217 | 110 | 110 | 100 | 120 | 258 | 154 | 333 | 82 | 126 | 89 |
| 17 | 154 | 230 | 100 | 100 | 80 | 140 | 244 | 180 | 258 | 86 | 114 | 86 |
| 18 | 154 | 217 | 100 | 100 | 100 | 130 | 230 | 199 | 217 | 91 | 107 | 82 |
| 19 | 154 | 224 | 90 | 100 | 100 | 125 | 230 | 185 | 199 | 86 | 104 | 82 |
| 20 | 154 | 230 | 90 | 100 | 100 | 120 | 230 | 176 | 180 | 82 | 102 | 114 |
| 21 | 148 | 217 | 90 | 100 | 100 | 160 | 258 | 169 | 162 | 82 | 100 | 146 |
| 22 | 148 | 204 | 90 | 95 | 90 | 170 | 273 | 169 | 154 | 82 | 96 | 138 |
| 23 | 148 | 204 | 90 | 90 | 90 | 180 | 428 | 176 | 142 | 82 | 93 | 122 |
| 24 | 148 | 185 | 90 | 90 | 90 | 190 | 582 | 180 | 128 | 82 | 89 | 118 |
| 25 | 148 | 118 | 85 | 130 | 90 | 260 | 546 | 176 | 122 | 96 | 86 | 107 |
| 26 | 148 | 128 | 80 | 120 | 90 | 333 | 471 | 169 | 120 | 100 | 82 | 100 |
| 27 | 148 | 148 | 80 | 110 | 90 | 380 | 396 | 162 | 118 | 96 | 79 | 100 |
| 28 | 142 | 180 | 80 | 115 | 90 | 318 | 333 | 169 | 118 | 91 | 79 | 118 |
| 29 | 142 | 100 | 90 | 120 | ------- | 303 | 288 | 204 | 114 | 96 | 76 | 146 |
| 30 | 148 | 120 | 90 | 115 | ------- | 258 | 244 | 204 | 114 | 100 | 86 | 190 |
| 31 | 154 | ------- | 60 | 110 | ------- | 244 | ------- | 192 | ------- | 104 | 114 | ------- |

NOTE.—Stage-discharge relation affected by ice Nov. 30 to Mar. 25; discharge estimated by means of three discharge measurements, observer's notes, and weather records. Discharge interpolated Oct. 9 15, 16, 24, 30, Nov. 4, 13, 19, Apr. 7, 26, May 10, June 3, 15, 26, July 29, Aug. 20, Sept. 15, and 20.

[5] Stage-discharge relation affected by ice.

*Monthly discharge of Pike River at Amberg, Wis., for the year ending September 30, 1925*

[Drainage area, 240 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 169 | 142 | 153 | 0.638 | 0.74 |
| November | 230 | 100 | 173 | .721 | .80 |
| December | 160 | 60 | 104 | .433 | .50 |
| January | 130 | 90 | 108 | .450 | .52 |
| February | 160 | 80 | 113 | .471 | .49 |
| March | 380 | 90 | 163 | .679 | .78 |
| April | 582 | 185 | 283 | 1.18 | 1.32 |
| May | 230 | 154 | 181 | .754 | .87 |
| June | 476 | 114 | 241 | 1.00 | 1.12 |
| July | 128 | 82 | 98.7 | .411 | .47 |
| August | 288 | 76 | 127 | .529 | .61 |
| September | 190 | 82 | 112 | .467 | .52 |
| The year | 582 | 60 | 155 | .646 | 8.74 |

**PESHTIGO RIVER AT HIGH FALLS, NEAR CRIVITZ, WIS.**

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

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, 1925.

DISCHARGE.—Daily discharge, subsequent to September 30, 1922, is computed from the hourly flow through the turbines based on load on generators, head on turbines, and over-all efficiency of the plant; to which is added the quantity wasted.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge recorded during year, 1,200 second-feet April 28 and May 6; no flow December 14, February 8, March 9, 22, April 6 and 13.

1912–1925: Maximum stage recorded, 7.80 feet at 4.30 p. m. April 11, 1922 (discharge, 3,860 second-feet); minimum discharge that of 1925. Owing to artificial regulation, extremes given do not represent the natural flow.

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

ACCURACY.—Discharge is computed from hourly records at the power plant, and records are fair.

COOPERATION.—Records of daily discharge furnished by Wisconsin Public Service Corporation.

*Daily discharge, in second-feet, of Peshtigo River at High Falls, near Crivitz, Wis., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 357 | 168 | 184 | 53 | 179 | 1 | 553 | 95 | 278 | 261 | 129 | 70 |
| 2 | 374 | 157 | 58 | 149 | 424 | 224 | 621 | 821 | 440 | 115 | 50 | 232 |
| 3 | 283 | 194 | 22 | 99 | 278 | 383 | 594 | 262 | 457 | 305 | 206 | 137 |
| 4 | 343 | 218 | 266 | 71 | 215 | 334 | 632 | 200 | 434 | 90 | 23 | 19 |
| 5 | 311 | 159 | 92 | 220 | 224 | 213 | 91 | 591 | 402 | 63 | 31 | 45 |
| 6 | 344 | 146 | 100 | 259 | 35 | 148 | 0 | 1,200 | 274 | 241 | 316 | 412 |
| 7 | 295 | 385 | 51 | 255 | 229 | 31 | 194 | 261 | 314 | 172 | 436 | 247 |
| 8 | 282 | 94 | 192 | 264 | 0 | 581 | 265 | 213 | 700 | 306 | 533 | 402 |
| 9 | 291 | 230 | 102 | 177 | 130 | 0 | 232 | 789 | 640 | 470 | 290 | 556 |
| 10 | 342 | 365 | 301 | 158 | 216 | 581 | 399 | 37 | 840 | 399 | 575 | 456 |
| 11 | 274 | 151 | 240 | 90 | 299 | 152 | 237 | 267 | 83 | 365 | 710 | 456 |
| 12 | 321 | 374 | 195 | 319 | 257 | 497 | 25 | 251 | 789 | 50 | 851 | 75 |
| 13 | 312 | 215 | 235 | 337 | 151 | 537 | 0 | 427 | 685 | 199 | 624 | 336 |
| 14 | 279 | 329 | 0 | 266 | 137 | 301 | 249 | 36 | 535 | 318 | 59 | 170 |
| 15 | 273 | 294 | 128 | 173 | 56 | 284 | 555 | 247 | 690 | 251 | 481 | 195 |
| 16 | 267 | 241 | 166 | 143 | 228 | 91 | 139 | 52 | 840 | 239 | 60 | 260 |
| 17 | 214 | 201 | 200 | 316 | 180 | 139 | 161 | 11 | 747 | 167 | 230 | 232 |
| 18 | 174 | 138 | 243 | 1 | 522 | 430 | 135 | 271 | 736 | 86 | 229 | 288 |
| 19 | 51 | 293 | 184 | 428 | 186 | 264 | 291 | 433 | 632 | 50 | 67 | 336 |
| 20 | 48 | 154 | 19 | 274 | 82 | 448 | 163 | 44 | 330 | 384 | 186 | 115 |
| 21 | 209 | 239 | 111 | 106 | 20 | 281 | 865 | 356 | 297 | 350 | 15 | 175 |
| 22 | 68 | 158 | 242 | 116 | 45 | 0 | 686 | 380 | 694 | 176 | 164 | 229 |
| 23 | 279 | 170 | 38 | 66 | 264 | 110 | 701 | 275 | 795 | 129 | 9 | 172 |
| 24 | 193 | 378 | 195 | 139 | 153 | 421 | 766 | 175 | 583 | 241 | 176 | 165 |
| 25 | 136 | 341 | 111 | 51 | 275 | 451 | 451 | 332 | 533 | 260 | 176 | 103 |
| 26 | 99 | 180 | 47 | 194 | 254 | 721 | 361 | 447 | 548 | 85 | 161 | 401 |
| 27 | 202 | 37 | 98 | 112 | 230 | 543 | 1,010 | 25 | 416 | 121 | 66 | 187 |
| 28 | 136 | 134 | 139 | 101 | 356 | 381 | 1,200 | 276 | 300 | 210 | 172 | 261 |
| 29 | 38 | 109 | 249 | 205 | ------ | 141 | 861 | 335 | 402 | 167 | 152 | 457 |
| 30 | 178 | 32 | 310 | 151 | ------ | 546 | 826 | 215 | 320 | 168 | 50 | 66 |
| 31 | 309 | ------ | 192 | 174 | ------ | 753 | ------ | 130 | ------ | 129 | 180 | ------ |

*Monthly discharge of Peshtigo River at High Falls, near Crivitz, Wis., for the year ending September 30, 1925*

[Drainage area, 520 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 374 | 33 | 235 | 0.452 | 0.52 |
| November | 385 | 32 | 209 | .402 | .45 |
| December | 310 | 0 | 152 | .292 | .34 |
| January | 428 | 1 | 176 | .338 | .39 |
| February | 522 | 0 | 201 | .387 | .40 |
| March | 753 | 0 | 322 | .619 | .71 |
| April | 1,200 | 0 | 442 | .850 | .95 |
| May | 1,200 | 11 | 305 | .587 | .68 |
| June | 840 | 83 | 524 | 1.01 | 1.13 |
| July | 470 | 50 | 212 | .408 | .47 |
| August | 851 | 9 | 239 | .460 | .53 |
| September | 556 | 19 | 242 | .465 | .52 |
| The year | 1,200 | 0 | 271 | .521 | 7.09 |

### 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, and 27 miles above mouth.

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, 1925.

GAGE.—Chain gage attached to iron railing on upstream side of bridge; read by Harvey Gilbertson. Zero of gage was raised 4 feet January 6, 1914.

DISCHARGE MEASUREMENTS.—Made from bridge to which gage is attached.

CHANNEL AND CONTROL.—Gravel; permanent. Left bank of medium height and not subject to overflow. During extremely high stages water may overflow around right end of bridge.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.98 feet June 24 (discharge, 1,430 second-feet); minimum stage, 0.65 foot July 19 (discharge, 222 second-feet).

1906-1925: Maximum stage recorded, 9.1 feet at 3 p. m. April 11, 1922 (discharge, 6,470 second-feet); minimum stage, 0.1 foot June 3 and 6, 1907 (discharge, 95 second-feet). Maximum stage of April 11, 1922, was the result of failure of a dam at Pulcifer 4 miles above station.

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

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent, except as affected by ice. Rating curve well defined above 320 second-feet. Gage read to quarter-tenths once daily. Daily discharge obtained by applying daily gage height to rating table, except as indicated in footnote to table of daily discharge. Open-water records excellent, records for winter are fair.

*Discharge measurements of Oconto River near Gillett, Wis., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| Oct. 16 | 1.19 | 384 | Jan. 22 | [a] 1.97 | 283 | Mar. 22 | [a] 2.70 | 504 |
| Oct. 17 | 1.18 | 393 | Feb. 19 | [a] 2.07 | 317 | June 14 | 2.37 | 977 |

[a] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Oconto River near Gillett, Wis., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 425 | 488 | 405 | 235 | 320 | 305 | 466 | 713 | 370 | 320 | 336 | 290 |
| 2 | 406 | 466 | 415 | 235 | 320 | 305 | 510 | 557 | 387 | 320 | 305 | 276 |
| 3 | 406 | 446 | 425 | 235 | 320 | 305 | 607 | 510 | 387 | 248 | 305 | 262 |
| 4 | 336 | 387 | 405 | 235 | 330 | 320 | 557 | 510 | 510 | 290 | 320 | 262 |
| 5 | 336 | 352 | 385 | 240 | 335 | 335 | 557 | 488 | 607 | 290 | 320 | 320 |
| 6 | 320 | 406 | 385 | 250 | 340 | 340 | 488 | 466 | 633 | 276 | 320 | 305 |
| 7 | 446 | 425 | 385 | 250 | 350 | 350 | 488 | 466 | 557 | 320 | 276 | 305 |
| 8 | 466 | 425 | 380 | 250 | 360 | 360 | 534 | 425 | 510 | 425 | 290 | 305 |
| 9 | 425 | 446 | 370 | 250 | 465 | 370 | 534 | 387 | 466 | 466 | 320 | 290 |
| 10 | 370 | 370 | 380 | 250 | 445 | 390 | 534 | 352 | 466 | 425 | 320 | 290 |
| 11 | 387 | 406 | 385 | 250 | 425 | 405 | 466 | 466 | 425 | 262 | 290 | 290 |
| 12 | 387 | 446 | 380 | 250 | 425 | 405 | 466 | 425 | 466 | 262 | 290 | 276 |
| 13 | 387 | 387 | 370 | 260 | 425 | 405 | 387 | 406 | 557 | 235 | 290 | 276 |
| 14 | 387 | 370 | 350 | 275 | 400 | 415 | 425 | 406 | 1,080 | 510 | 276 | 276 |
| 15 | 387 | 488 | 335 | 270 | 370 | 425 | 534 | 406 | 1,150 | 290 | 262 | 290 |

*Daily discharge, in second-feet, of Oconto River near Gillett, Wis., for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 387 | 406 | 340 | 260 | 345 | 425 | 488 | 406 | 1,020 | 290 | 262 | 276 |
| 17 | 370 | 406 | 350 | 260 | 320 | 425 | 510 | 387 | 769 | 305 | 276 | 276 |
| 18 | 387 | 446 | 330 | 260 | 320 | 480 | 584 | 370 | 713 | 290 | 290 | 276 |
| 19 | 387 | 425 | 305 | 260 | 320 | 535 | 713 | 370 | 607 | 222 | 290 | 262 |
| 20 | 387 | 446 | 300 | 260 | 330 | 500 | 769 | 352 | 510 | 262 | 262 | 262 |
| 21 | 406 | 466 | 290 | 275 | 335 | 465 | 827 | 370 | 510 | 290 | 248 | 276 |
| 22 | 425 | 446 | 290 | 290 | 335 | 445 | 887 | 352 | 466 | 262 | 262 | 290 |
| 23 | 406 | 466 | 290 | 290 | 335 | 425 | 887 | 370 | 425 | 290 | 262 | 276 |
| 24 | 406 | 406 | 280 | 290 | 340 | 515 | 1,020 | 370 | 1,430 | 262 | 276 | 262 |
| 25 | 406 | 445 | 275 | 290 | 350 | 605 | 1,020 | 370 | 387 | 262 | 290 | 248 |
| 26 | 406 | 406 | 270 | 290 | 335 | 769 | 887 | 352 | 466 | 262 | 262 | 262 |
| 27 | 425 | 446 | 260 | 300 | 320 | 887 | 887 | 370 | 387 | 262 | 262 | 276 |
| 28 | 446 | 406 | 255 | 305 | 310 | 1,020 | 827 | 370 | 276 | 290 | 262 | 276 |
| 29 | 488 | 370 | 250 | 305 | ------- | 713 | 769 | 370 | 466 | 290 | 276 | 290 |
| 30 | 510 | 390 | 240 | 305 | ------- | 607 | 769 | 387 | 320 | 262 | 262 | 488 |
| 31 | 488 | ------- | 235 | 310 | ------- | 557 | ------- | 370 | ------- | 262 | 262 | ------ |

NOTE.—Stage-discharge relation affected by ice Nov. 25 and Nov. 29 to Mar. 25; 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, 1925*

[Drainage area, 678 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 510 | 320 | 406 | 0.599 | 0.69 |
| November | 488 | 352 | 423 | .624 | .70 |
| December | 425 | 235 | 333 | .491 | .57 |
| January | 310 | 235 | 267 | .394 | .45 |
| February | 465 | 310 | 354 | .522 | .54 |
| March | 1,020 | 305 | 478 | .705 | .81 |
| April | 1,020 | 387 | 645 | .951 | 1.06 |
| May | 713 | 352 | 417 | .615 | .71 |
| June | 1,430 | 276 | 577 | .851 | .95 |
| July | 510 | 222 | 300 | .442 | .51 |
| August | 336 | 248 | 285 | .420 | .48 |
| September | 488 | 248 | 287 | .423 | .47 |
| The year | 1,430 | 222 | 397 | .586 | 7.94 |

### FOX RIVER AT BERLIN, WIS.

LOCATION.—In sec. 16, T. 17 N., R. 13 E., at Government lock and dam, 2⅛ miles above Berlin, Green Lake County.

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

RECORDS AVAILABLE.—January 1, 1898, to September 30, 1925.

GAGE.—Staff gage in pool immediately below dam; read by lock tender for United States Engineer Corps.

CHANNEL AND CONTROL.—Sand and gravel. One channel at all stages. Banks low and subject to overflow.

DISCHARGE MEASUREMENTS.—Made from downstream side of Huron Street highway bridge at Berlin. Rating curves for gage corrected for any small inflow between the gage and measuring section.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge recorded during year March 23 and 25 (discharge, 2,520 second-feet); minimum mean daily discharge, 535 second-feet August 28 to September 4.

1898–1925: Maximum mean daily discharge, 6,400 second-feet March 28 and 30, 1916; minimum mean daily discharge, 250 second-feet February 1–4, 1900.

ICE.—Stage-discharge relation affected by ice.

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 hundredths three times daily; in general, however, noon reading alone is used in determination of daily discharge. Daily discharge ascertained by applying mean daily gage height to rating table, corrected for period when stage-discharge relation was affected by ice by means of curves based on discharge measurements and observer's notes. Open-water records good; winter records poor.

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, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,420 | 905 | 1,180 | 675 | 800 | 1,060 | 1,460 | 1,270 | 615 | 735 | 615 | 535 |
| 2 | 1,420 | 800 | 1,180 | 705 | 800 | 1,020 | 1,360 | 1,220 | 645 | 735 | 615 | 535 |
| 3 | 1,360 | 765 | 1,140 | 735 | 800 | 975 | 1,320 | 1,180 | 675 | 735 | 590 | 535 |
| 4 | 1,320 | 765 | 1,100 | 735 | 830 | 940 | 1,220 | 1,180 | 735 | 735 | 560 | 535 |
| 5 | 1,270 | 800 | 1,060 | 735 | 830 | 940 | 1,140 | 1,100 | 735 | 765 | 590 | 560 |
| 6 | 1,220 | 830 | 1,060 | 765 | 865 | 940 | 1,100 | 1,060 | 705 | 705 | 615 | 615 |
| 7 | 1,180 | 830 | 1,020 | 765 | 905 | 975 | 1,100 | 1,060 | 675 | 765 | 645 | 645 |
| 8 | 1,140 | 865 | 1,060 | 765 | 975 | 1,020 | 1,060 | 1,020 | 615 | 765 | 800 | 645 |
| 9 | 1,060 | 905 | 1,100 | 765 | 1,220 | 1,100 | 975 | 975 | 615 | 940 | 800 | 645 |
| 10 | 1,060 | 905 | 975 | 765 | 1,280 | 1,220 | 975 | 940 | 615 | 940 | 800 | 645 |
| 11 | 1,060 | 905 | 940 | 765 | 1,320 | 1,320 | 975 | 865 | 560 | 940 | 765 | 645 |
| 12 | 1,020 | 975 | 975 | 765 | 1,320 | 1,360 | 940 | 865 | 560 | 905 | 735 | 615 |
| 13 | 975 | 940 | 975 | 765 | 1,360 | 1,420 | 905 | 830 | 705 | 865 | 735 | 590 |
| 14 | 940 | 940 | 975 | 765 | 1,420 | 1,520 | 940 | 800 | 830 | 830 | 735 | 590 |
| 15 | 940 | 975 | 975 | 765 | 1,420 | 1,360 | 940 | 765 | 905 | 830 | 705 | 590 |
| 16 | 940 | 940 | 905 | 765 | 1,420 | 1,420 | 940 | 800 | 940 | 765 | 705 | 615 |
| 17 | 940 | 940 | 905 | 765 | 1,420 | 1,460 | 905 | 765 | 940 | 735 | 675 | 615 |
| 18 | 905 | 905 | 865 | 765 | 1,420 | 1,570 | 905 | 765 | 1,020 | 705 | 645 | 615 |
| 19 | 905 | 975 | 865 | 765 | 1,420 | 1,620 | 975 | 735 | 1,020 | 705 | 675 | 645 |
| 20 | 905 | 975 | 865 | 765 | 1,360 | 1,680 | 1,180 | 735 | 975 | 705 | 675 | 675 |
| 21 | 865 | 1,060 | 865 | 765 | 1,320 | 1,740 | 1,270 | 735 | 905 | 705 | 675 | 645 |
| 22 | 865 | 1,140 | 865 | 765 | 1,270 | 1,980 | 1,360 | 705 | 830 | 705 | 615 | 645 |
| 23 | 865 | 1,180 | 800 | 800 | 1,270 | 2,520 | 1,420 | 735 | 765 | 675 | 615 | 645 |
| 24 | 865 | 1,180 | 735 | 800 | 1,220 | 2,450 | 1,460 | 645 | 765 | 675 | 590 | 615 |
| 25 | 830 | 1,180 | 735 | 800 | 1,220 | 2,520 | 1,520 | 590 | 765 | 675 | 590 | 615 |
| 26 | 830 | 1,220 | 735 | 800 | 1,220 | 2,310 | 1,570 | 645 | 765 | 675 | 590 | 615 |
| 27 | 830 | 1,180 | 705 | 800 | 1,180 | 2,170 | 1,520 | 675 | 800 | 645 | 560 | 645 |
| 28 | 800 | 1,270 | 675 | 765 | 1,100 | 2,040 | 1,460 | 705 | 800 | 645 | 535 | 675 |
| 29 | 830 | 1,140 | 675 | 765 | ------- | 1,850 | 1,460 | 675 | 765 | 645 | 535 | 645 |
| 30 | 830 | 1,180 | 645 | 765 | ------- | 1,740 | 1,360 | 645 | 705 | 615 | 535 | 675 |
| 31 | 830 | ------- | 645 | 765 | ------- | 1,520 | ------- | 645 | ------- | 615 | 535 | ------- |

*Monthly discharge of Fox River at Berlin, Wis., for the year ending September 30, 1925*

[Drainage area, 1,430 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 1,420 | 800 | 1,010 | 0.706 | 0.81 |
| November | 1,270 | 765 | 986 | .690 | .77 |
| December | 1,180 | 645 | 910 | .636 | .73 |
| January | 800 | 675 | 763 | .534 | .62 |
| February | 1,420 | 800 | 1,180 | .825 | .86 |
| March | 2,520 | 940 | 1,540 | 1.08 | 1.24 |
| April | 1,570 | 905 | 1,190 | .832 | .93 |
| May | 1,270 | 590 | 849 | .594 | .68 |
| June | 1,020 | 560 | 765 | .535 | .60 |
| July | 940 | 615 | 745 | .521 | .60 |
| August | 800 | 535 | 647 | .452 | .52 |
| September | 675 | 535 | 617 | .431 | .48 |
| The year | 2,520 | 535 | 932 | .652 | 8.84 |

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, and 20 miles upstream from mouth of river at Green Bay.

RECORDS AVAILABLE.—March 3, 1896, to September 30, 1925.

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

DETERMINATION OF DISCHARGE.—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 4 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 the dam is read five times daily at 7 a. m., 9 a. m., noon, 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, 8,340 second-feet July 9; minimum mean daily discharge, 1,540 second-feet April 19.

1918–1925: Maximum mean daily discharge, 20,100 second-feet April 23, 1922; minimum mean daily discharge, 742 second-feet August 15, 1921.

REGULATION.—The 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 that were developed by current-meter measurements made by engineers of United States Geological Survey.

No discharge measurements were made at this station during the year.

*Daily discharge, in second-feet, of Fox River at Rapide Croche Dam, near Wrightstown, Wis., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5,190 | 4,640 | 3,990 | 5,150 | 3,680 | 3,830 | 4,620 | 2,060 | 2,420 | 5,070 | 4,460 | 2,480 |
| 2 | 5,400 | 3,260 | 4,480 | 5,030 | 4,200 | 4,310 | 4,880 | 2,580 | 2,610 | 4,950 | 3,390 | 2,400 |
| 3 | 5,410 | 4,340 | 4,630 | 4,740 | 4,220 | 4,680 | 4,350 | 2,360 | 2,840 | 4,660 | 3,020 | 2,260 |
| 4 | 5,100 | 4,750 | 4,550 | 3,680 | 4,420 | 4,730 | 4,060 | 2,370 | 2,950 | 2,950 | 4,590 | 2,120 |
| 5 | 3,650 | 4,710 | 4,390 | 4,530 | 4,530 | 4,760 | 2,690 | 2,890 | 2,910 | 2,710 | 4,590 | 1,980 |
| 6 | 3,680 | 4,530 | 4,520 | 4,770 | 4,480 | 4,820 | 2,180 | 2,890 | 2,650 | 3,880 | 4,380 | 1,860 |
| 7 | 4,890 | 4,620 | 3,340 | 4,700 | 4,260 | 4,900 | 3,740 | 3,050 | 2,030 | 4,860 | 3,420 | 1,780 |
| 8 | 4,960 | 4,420 | 3,820 | 4,660 | 3,810 | 3,640 | 3,830 | 2,790 | 2,850 | 5,270 | 3,380 | 2,090 |
| 9 | 5,190 | 3,240 | 4,320 | 4,860 | 6,070 | 4,240 | 3,760 | 2,760 | 2,980 | 8,340 | 2,820 | 1,970 |
| 10 | 5,070 | 4,200 | 4,260 | 4,840 | 4,950 | 4,420 | 2,950 | 2,160 | 2,790 | 6,220 | 3,200 | 2,140 |
| 11 | 4,930 | 4,580 | 4,600 | 3,690 | 4,350 | 4,750 | 1,880 | 2,630 | 2,920 | 5,790 | 2,740 | 2,170 |
| 12 | 3,680 | 4,550 | 4,840 | 4,540 | 4,400 | 4,810 | 1,790 | 2,960 | 3,100 | 4,700 | 2,770 | 2,350 |
| 13 | 3,410 | 4,530 | 4,640 | 4,720 | 4,480 | 4,660 | 2,630 | 2,930 | 3,140 | 4,630 | 3,000 | 1,770 |
| 14 | 4,390 | 4,670 | 4,480 | 4,750 | 4,430 | 4,710 | 2,190 | 2,610 | 2,770 | 5,460 | 2,980 | 2,250 |
| 15 | 4,840 | 4,420 | 4,020 | 4,560 | 3,580 | 3,920 | 2,100 | 2,840 | 3,250 | 5,720 | 2,860 | 2,200 |
| 16 | 4,850 | 3,050 | 4,340 | 4,510 | 4,050 | 4,310 | 2,210 | 3,040 | 4,100 | 5,430 | 2,210 | 2,180 |
| 17 | 4,720 | 3,980 | 4,510 | 4,190 | 4,200 | 4,840 | 2,150 | 2,020 | 4,760 | 5,260 | 2,580 | 2,290 |
| 18 | 4,700 | 4,450 | 4,580 | 3,350 | 4,490 | 5,000 | 1,910 | 2,630 | 5,130 | 5,310 | 2,800 | 2,380 |
| 19 | 3,060 | 4,510 | 4,400 | 4,210 | 4,400 | 5,100 | 1,540 | 2,840 | 6,550 | 4,410 | 3,010 | 2,270 |
| 20 | 3,780 | 4,390 | 3,740 | 4,540 | 4,400 | 4,940 | 2,020 | 2,880 | 6,960 | 4,370 | 2,970 | 2,000 |
| 21 | 4,640 | 4,340 | 3,160 | 4,580 | 4,020 | 4,780 | 2,330 | 2,770 | 5,870 | 4,990 | 2,960 | 2,090 |
| 22 | 4,630 | 4,450 | 3,770 | 4,460 | 3,370 | 3,840 | 2,040 | 2,750 | 6,040 | 5,140 | 2,930 | 2,220 |
| 23 | 4,760 | 3,220 | 4,820 | 4,460 | 4,220 | 4,050 | 2,070 | 2,310 | 5,360 | 4,920 | 2,370 | 2,140 |
| 24 | 4,760 | 3,760 | 4,210 | 4,460 | 4,400 | 4,830 | 1,860 | 1,680 | 5,100 | 4,990 | 3,120 | 2,140 |
| 25 | 4,330 | 4,600 | 2,820 | 33,50 | 4,430 | 4,740 | 1,960 | 1,970 | 5,140 | 4,990 | 2,990 | 2,120 |
| 26 | 3,200 | 4,700 | 3,880 | 3,970 | 4,160 | 4,940 | 1,960 | 2,380 | 5,360 | 3,970 | 2,780 | 2,160 |
| 27 | 4,220 | 4,430 | 3,670 | 4,550 | 4,480 | 4,840 | 2,020 | 2,580 | 5,190 | 3,970 | 2,500 | 1,650 |
| 28 | 4,890 | 3,280 | 3,240 | 4,590 | 4,610 | 4,760 | 2,370 | 2,626 | 4,000 | 4,730 | 2,450 | 1,910 |
| 29 | 5,190 | 3,550 | 4,170 | 4,590 | ------ | 3,800 | 1,950 | 2,420 | 3,510 | 4,980 | 2,550 | 2,080 |
| 30 | 5,030 | 3,020 | 5,120 | 4,610 | ------ | 4,360 | 2,000 | 2,320 | 4,820 | 4,910 | 2,060 | 2,170 |
| 31 | 4,990 | ------ | 4,810 | 4,540 | ------ | 4,600 | ------ | 2,100 | ------ | 4,710 | 2,420 | ------ |

*Monthly discharge of Fox River at Rapide Croche Dam, near Wrightstown, Wis., for the year ending September 30, 1925*

[Drainage area, 6,150 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 5,410 | 3,060 | 4,560 | 0.741 | 0.85 |
| November | 4,700 | 3,020 | 4,180 | .680 | .76 |
| December | 5,120 | 2,820 | 4,200 | .683 | .79 |
| January | 5,150 | 3,350 | 4,460 | .725 | .84 |
| February | 6,070 | 3,370 | 4,320 | .702 | .73 |
| March | 5,100 | 3,640 | 4,550 | .740 | .85 |
| April | 4,880 | 1,540 | 2,600 | .423 | .47 |
| May | 3,050 | 1,680 | 2,550 | .415 | .48 |
| June | 6,960 | 2,030 | 4,000 | .650 | .73 |
| July | 8,340 | 2,710 | 4,910 | .798 | .92 |
| August | 4,590 | 2,060 | 3,040 | .494 | .57 |
| September | 2,480 | 1,650 | 2,120 | .345 | .38 |
| The year | 8,340 | 1,540 | 3,790 | .616 | 8.37 |

### 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, 1925.

GAGE.—Chain gage fastened to downstream side of bridge December 9, 1914; read by G. Sloniker.

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, 3.40 feet at 9 a. m. June 14 (discharge, 1,510 second-feet); minimum discharge, 415 second-feet August 23 to September 2.

1907–1909; 1911–1925: 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.

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

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

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except as indicated in footnote to table of daily discharge. Open-water records excellent; winter records fair.

*Discharge measurements of Wolf River at Keshena, Wis., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Jan. 23 | [a] 2.45 | 469 | Mar. 21 | [a] 2.51 | 615 |
| Feb. 20 | [a] 2.36 | 451 | June 13 | 3.40 | 1,570 |

[a] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Wolf River at Keshena, Wis., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 680 | 565 | 530 | 500 | 485 | 455 | 725 | 770 | 600 | 500 | 470 | 415 |
| 2 | 640 | 565 | 530 | 500 | 515 | 455 | 680 | 725 | 565 | 500 | 470 | 415 |
| 3 | 640 | 565 | 530 | 485 | 515 | 455 | 680 | 680 | 600 | 500 | 470 | 440 |
| 4 | 640 | 565 | 530 | 485 | 515 | 470 | 640 | 640 | 910 | 500 | 500 | 470 |
| 5 | 600 | 565 | 515 | 500 | 530 | 485 | 640 | 680 | 1,130 | 500 | 530 | 530 |
| 6 | 640 | 565 | 515 | 500 | 530 | 485 | 600 | 640 | 1,310 | 500 | 500 | 565 |
| 7 | 600 | 600 | 515 | 515 | 530 | 500 | 600 | 640 | 1,070 | 530 | 530 | 565 |
| 8 | 600 | 600 | 500 | 485 | 530 | 515 | 565 | 680 | 910 | 565 | 530 | 565 |
| 9 | 600 | 565 | 500 | 500 | 565 | 530 | 600 | 600 | 910 | 600 | 500 | 530 |
| 10 | 600 | 565 | 500 | 500 | 580 | 550 | 600 | 600 | 640 | 600 | 470 | 500 |
| 11 | 600 | 600 | 500 | 470 | 565 | 580 | 640 | 600 | 860 | 565 | 470 | 500 |
| 12 | 600 | 680 | 500 | 485 | 515 | 550 | 640 | 565 | 1,070 | 565 | 470 | 500 |
| 13 | 600 | 680 | 500 | 485 | 500 | 580 | 600 | 565 | 1,440 | 565 | 470 | 470 |
| 14 | 600 | 725 | 500 | 485 | 485 | 580 | 640 | 530 | 1,510 | 565 | 470 | 470 |
| 15 | 565 | 640 | 500 | 470 | 440 | 550 | 640 | 530 | 1,190 | 530 | 470 | 470 |
| 16 | 565 | 565 | 500 | 470 | 455 | 530 | 680 | 600 | 1,190 | 530 | 440 | 440 |
| 17 | 565 | 565 | 500 | 485 | 440 | 600 | 680 | 600 | 1,070 | 500 | 440 | 440 |
| 18 | 565 | 600 | 500 | 470 | 440 | 640 | 680 | 530 | 1,070 | 500 | 440 | 440 |
| 19 | 565 | 600 | 500 | 470 | 440 | 660 | 815 | 640 | 910 | 500 | 440 | 440 |
| 20 | 565 | 680 | 500 | 485 | 455 | 620 | 815 | 565 | 860 | 500 | 440 | 470 |

*Daily discharge, in second-feet, of Wolf River at Keshena, Wis., for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | 565 | 725 | 500 | 485 | 470 | 615 | 860 | 530 | 815 | 500 | 440 | 470 |
| 22 | 565 | 770 | 500 | 500 | 470 | 620 | 960 | 600 | 815 | 500 | 440 | 470 |
| 23 | 565 | 725 | 500 | 470 | 470 | 640 | 1,010 | 565 | 725 | 470 | 415 | 470 |
| 24 | 565 | 680 | 500 | 485 | 485 | 640 | 1,070 | 565 | 680 | 470 | 415 | 470 |
| 25 | 565 | 600 | 500 | 470 | 500 | 725 | 1,130 | 530 | 680 | 470 | 415 | 440 |
| 26 | 565 | 600 | 500 | 470 | 500 | 860 | 1,070 | 640 | 600 | 470 | 415 | 470 |
| 27 | 565 | 640 | 500 | 470 | 485 | 1,010 | 960 | 600 | 565 | 470 | 415 | 500 |
| 28 | 565 | 640 | 500 | 485 | 470 | 1,010 | 860 | 600 | 565 | 470 | 415 | 500 |
| 29 | 565 | 640 | 500 | 485 | ------ | 910 | 770 | 640 | 600 | 470 | 415 | 565 |
| 30 | 565 | 530 | 500 | 470 | ------- | 815 | 815 | 640 | 600 | 470 | 415 | 680 |
| 31 | 565 | ------- | 500 | 500 | ------- | 770 | ------- | 600 | ------- | 500 | 415 | ------ |

NOTE.—Stage-discharge relation affected by ice Nov. 30 to Mar. 26; discharge estimated 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, 1925*

[Drainage area, 840 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 680 | 565 | 589 | 0.701 | 0.81 |
| November | 770 | 530 | 620 | .738 | .82 |
| December | 530 | 500 | 505 | .601 | .69 |
| January | 515 | 470 | 485 | .577 | .67 |
| February | 580 | 440 | 496 | .590 | .61 |
| March | 1,010 | 455 | 626 | .745 | .86 |
| April | 1,130 | 565 | 756 | .900 | 1.00 |
| May | 770 | 530 | 609 | .725 | .84 |
| June | 1,510 | 565 | 882 | 1.05 | 1.17 |
| July | 600 | 470 | 512 | .610 | .70 |
| August | 530 | 415 | 456 | .543 | .63 |
| September | 680 | 415 | 489 | .582 | .65 |
| The year | 1,510 | 415 | 585 | .696 | 9.45 |

### 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 from right three-fourths of a mile above, and Little Wolf River, also from right, 5 miles below station.

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, 1925. Unpublished gage heights March 1, 1899, to September 30, 1913, are in files of the office of the United States Engineer Corps, Milwaukee, Wis.

GAGE.—Staff gage fastened to right-hand downstream pier of Pearl Street Bridge. Datum of gage raised 0.641 foot on March 1, 1911, according to information of United States Engineer Corps. Zero of gage is at elevation 748.874 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 the water from Embarrass River flows across the city of New London into the channel of Wolf River below the gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.4 feet June 19 and 20 (discharge, 4,270 second-feet); minimum stage, 0.7 foot August 31 to September 3 (discharge, 690 second-feet).

1914–1925: Maximum stage recorded, 11.4 feet at 8 a. m. April 13, 1922 (discharge, 15,500 second-feet); minimum discharge, 700 second-feet February 6–9, 1918. The office of United States Engineer Corps reports a stage of 11.6 feet on April 16, 1888.

ICE.—Stage-discharge relation affected by ice.

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

ACCURACY.—Stage-discharge relation not permanent. Rating curve fairly well defined. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating curve, except as indicated in footnote to table of daily discharge. Open-water records fair; winter records poor.

*Discharge measurements of Wolf River at New London, Wis., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 17 | 2.42 | 1,210 | Feb. 22 | *3.10 | 911 |
| Jan. 25 | *2.37 | 758 | June 11 | 3.29 | 1,670 |

*Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Wolf River at New London, Wis., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,860 | 1,160 | 1,200 | 720 | 750 | 910 | 2,480 | 2,310 | 980 | 1,440 | 945 | 690 |
| 2 | 1,710 | 1,160 | 1,200 | 720 | 780 | 840 | 2,360 | 2,060 | 980 | 1,320 | 945 | 690 |
| 3 | 1,620 | 1,050 | 1,200 | 720 | 780 | 810 | 2,010 | 1,910 | 1,050 | 1,320 | 910 | 690 |
| 4 | 1,530 | 1,050 | 1,200 | 750 | 780 | 810 | 1,960 | 1,760 | 1,320 | 1,320 | 875 | 720 |
| 5 | 1,480 | 1,050 | 1,200 | 720 | 810 | 840 | 1,910 | 1,620 | 1,810 | 1,240 | 910 | 750 |
| 6 | 1,400 | 1,120 | 1,200 | 780 | 810 | 840 | 1,810 | 1,580 | 2,060 | 1,120 | 945 | 875 |
| 7 | 1,360 | 1,160 | 1,160 | 780 | 840 | 875 | 1,710 | 1,580 | 2,210 | 1,120 | 1,020 | 980 |
| 8 | 1,280 | 1,160 | 1,160 | 780 | 875 | 910 | 1,660 | 1,530 | 2,260 | 1,160 | 1,120 | 980 |
| 9 | 1,360 | 1,160 | 1,120 | 810 | 1,200 | 945 | 1,660 | 1,480 | 2,210 | 1,280 | 1,160 | 1,080 |
| 10 | 1,360 | 1,160 | 1,120 | 810 | 1,660 | 910 | 1,530 | 1,440 | 2,010 | 1,580 | 1,160 | 1,080 |
| 11 | 1,360 | 1,160 | 1,120 | 810 | 1,660 | 980 | 1,480 | 1,360 | 1,760 | 1,910 | 1,020 | 1,020 |
| 12 | 1,360 | 1,240 | 1,080 | 810 | 1,710 | 1,120 | 1,480 | 1,280 | 1,710 | 2,010 | 945 | 910 |
| 13 | 1,320 | 1,240 | 1,080 | 780 | 1,620 | 1,280 | 1,530 | 1,280 | 2,660 | 2,010 | 945 | 875 |
| 14 | 1,280 | 1,280 | 1,050 | 810 | 1,530 | 1,360 | 1,440 | 1,240 | 3,360 | 1,810 | 910 | 875 |
| 15 | 1,280 | 1,320 | 1,050 | 810 | 1,400 | 1,400 | 1,530 | 1,240 | 3,740 | 1,580 | 910 | 810 |
| 16 | 1,280 | 1,320 | 1,050 | 810 | 1,320 | 1,400 | 1,660 | 1,240 | 3,990 | 1,360 | 910 | 810 |
| 17 | 1,240 | 1,320 | 1,020 | 780 | 1,200 | 1,320 | 1,660 | 1,320 | 4,080 | 1,240 | 910 | 840 |
| 18 | 1,280 | 1,280 | 945 | 780 | 1,120 | 1,440 | 1,660 | 1,400 | 4,170 | 1,120 | 875 | 840 |
| 19 | 1,280 | 1,280 | 980 | 780 | 1,050 | 1,620 | 1,860 | 1,440 | 4,270 | 1,120 | 910 | 875 |
| 20 | 1,240 | 1,280 | 945 | 780 | 945 | 1,960 | 2,360 | 1,440 | 4,270 | 1,050 | 875 | 840 |
| 21 | 1,200 | 1,320 | 945 | 780 | 910 | 2,060 | 2,600 | 1,320 | 4,170 | 1,050 | 840 | 780 |
| 22 | 1,200 | 1,440 | 910 | 750 | 910 | 2,210 | 2,900 | 1,280 | 4,080 | 1,020 | 840 | 720 |
| 23 | 1,240 | 1,620 | 875 | 750 | 875 | 2,310 | 2,900 | 1,160 | 3,820 | 980 | 780 | 720 |
| 24 | 1,200 | 1,660 | 875 | 780 | 875 | 2,480 | 3,020 | 1,160 | 3,500 | 945 | 750 | 750 |
| 25 | 1,240 | 1,480 | 875 | 780 | 945 | 2,660 | 3,020 | 1,160 | 3,150 | 980 | 750 | 750 |
| 26 | 1,160 | 1,440 | 810 | 780 | 945 | 2,720 | 2,960 | 1,120 | 2,900 | 980 | 720 | 750 |
| 27 | 1,120 | 1,400 | 780 | 750 | 980 | 2,900 | 2,840 | 1,120 | 2,540 | 980 | 720 | 810 |
| 28 | 1,160 | 1,200 | 780 | 750 | 910 | 2,960 | 2,720 | 1,120 | 2,210 | 910 | 720 | 780 |
| 29 | 1,160 | 1,200 | 750 | 750 | ------ | 2,960 | 2,540 | 1,120 | 1,860 | 875 | 720 | 780 |
| 30 | 1,160 | 1,200 | 780 | 780 | ------ | 2,900 | 2,420 | 1,120 | 1,580 | 910 | 720 | 780 |
| 31 | 1,160 | ------ | 780 | 750 | ------ | 2,720 | ------ | 1,080 | ------ | 945 | 690 | ------ |

NOTE.—Stage-discharge relation affected by ice Nov. 28 to Mar. 25; discharge estimated from observer's notes and weather records.

*Monthly discharge of Wolf River at New London, Wis., for the year ending September 30, 1925*

[Drainage area, 2,240 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 1,860 | 1,120 | 1,320 | 0.589 | 0.68 |
| November | 1,660 | 1,050 | 1,260 | .562 | .63 |
| December | 1,200 | 750 | 1,010 | .451 | .52 |
| January | 810 | 720 | 772 | .345 | .40 |
| February | 1,710 | 750 | 1,080 | .482 | .50 |
| March | 2,960 | 810 | 1,660 | .741 | .85 |
| April | 3,020 | 1,440 | 2,120 | .946 | 1.06 |
| May | 2,310 | 1,080 | 1,400 | .625 | .72 |
| June | 4,270 | 980 | 2,690 | 1.20 | 1.34 |
| July | 2,010 | 875 | 1,250 | .558 | .64 |
| August | 1,160 | 690 | 885 | .395 | .46 |
| September | 1,080 | 690 | 828 | .370 | .41 |
| The year | 4,270 | 690 | 1,350 | .603 | 8.21 |

### 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., Shawano County, 1 mile below mouth of Mill Creek, 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, 1925.

GAGE.—Chain gage fastened to downstream handrail; read by Alphonce Murawski.

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 subject to overflow at a stage of about 9 feet.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.2 feet June 15 and 16 (discharge, 1,230 second-feet); minimum discharge, 60 second-feet February 28 (stage-discharge relation affected by ice).

1919–1925: Maximum stage recorded, 11.50 feet at 4 p. m. April 10, 1922 (discharge, about 6,760 second-feet); minimum stage, 2.38 feet at 7 a. m. July 23, 1923 (discharge, 34 second-feet).

ICE.—Stage-discharge relation seriously 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. Rating curve well defined between 250 and 1,600 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to the 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 good; winter records fair.

*Discharge measurements of Embarrass River near Embarrass, Wis., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Jan. 24 | a3.59 | 87 | June 13 | 4.36 | 724 |
| Feb. 21 | a3.60 | 100 | June 14 | 4.96 | 1,080 |
| Mar. 22 | 3.53 | 343 | | | |

a Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Embarrass River near Embarrass, Wis., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 250 | 155 | 310 | 140 | 115 | 105 | 178 | 233 | 138 | 149 | 128 | 105 |
| 2 | 223 | 161 | 310 | 185 | 105 | 70 | 268 | 226 | 178 | 158 | 128 | 118 |
| 3 | 200 | 181 | 290 | 105 | 130 | 105 | 250 | 233 | 200 | 147 | 128 | 125 |
| 4 | 210 | 203 | 290 | 70 | 155 | 105 | 268 | 216 | 324 | 152 | 138 | 120 |
| 5 | 207 | 181 | 270 | 140 | 140 | 115 | 250 | 223 | 450 | 120 | 136 | 149 |
| 6 | 230 | 166 | 270 | 200 | 155 | 115 | 268 | 220 | 520 | 87 | 133 | 178 |
| 7 | 223 | 155 | 175 | 105 | 140 | 115 | 230 | 223 | 473 | 101 | 138 | 194 |
| 8 | 207 | 181 | 216 | 90 | 185 | 115 | 220 | 213 | 385 | 128 | 147 | 197 |
| 9 | 210 | 184 | 184 | 130 | 185 | 130 | 216 | 203 | 233 | 344 | 175 | 194 |
| 10 | 197 | 169 | 200 | 140 | 170 | 185 | 226 | 184 | 250 | 385 | 163 | 184 |
| 11 | 210 | 197 | 200 | 140 | 155 | 155 | 233 | 175 | 268 | 286 | 163 | 158 |
| 12 | 191 | 194 | 90 | 70 | 170 | 185 | 230 | 184 | 364 | 226 | 169 | 144 |
| 13 | 191 | 226 | 115 | 70 | 170 | 200 | 216 | 178 | 780 | 188 | 158 | 123 |
| 14 | 194 | 233 | 200 | 90 | 155 | 185 | 223 | 178 | 1110 | 191 | 144 | 118 |
| 15 | 191 | 233 | 140 | 105 | 130 | 200 | 268 | 172 | 1230 | 191 | 123 | 110 |
| 16 | 188 | 250 | 170 | 90 | 130 | 185 | 230 | 166 | 1230 | 178 | 123 | 108 |
| 17 | 200 | 223 | 185 | 70 | 90 | 235 | 268 | 169 | 1110 | 169 | 138 | 118 |
| 18 | 191 | 203 | 170 | 130 | 90 | 250 | 250 | 268 | 725 | 161 | 131 | 120 |
| 19 | 178 | 207 | 105 | 70 | 155 | 310 | 344 | 220 | 520 | 152 | 125 | 110 |
| 20 | 188 | 210 | 185 | 70 | 105 | 355 | 594 | 305 | 450 | 175 | 123 | 108 |
| 21 | 216 | 233 | 185 | 90 | 115 | 330 | 672 | 70 | 268 | 166 | 128 | 93 |
| 22 | 188 | 286 | 200 | 80 | 90 | 364 | 620 | 141 | 268 | 147 | 136 | 113 |
| 23 | 131 | 305 | 155 | 90 | 80 | 364 | 569 | 163 | 250 | 128 | 133 | 110 |
| 24 | 158 | 364 | 105 | 105 | 80 | 344 | 569 | 191 | 226 | 113 | 120 | 110 |
| 25 | 149 | 233 | 130 | 90 | 80 | 428 | 520 | 166 | 216 | 138 | 96 | 123 |
| 26 | 178 | 305 | 90 | 70 | 80 | 620 | 428 | 172 | 207 | 144 | 120 | 108 |
| 27 | 158 | 230 | 115 | 70 | 80 | 594 | 428 | 188 | 207 | 136 | 113 | 113 |
| 28 | 191 | 250 | 140 | 115 | 60 | 520 | 344 | 175 | 216 | 144 | 108 | 118 |
| 29 | 188 | 250 | 155 | 80 | ------- | 428 | 344 | 184 | 194 | 123 | 108 | 113 |
| 30 | 175 | 305 | 130 | 90 | ------- | 344 | 305 | 194 | 184 | 138 | 108 | 155 |
| 31 | 184 | ------- | 170 | 170 | ------- | 268 | ------- | 141 | ------- | 138 | 101 | ------ |

NOTE.—Stage-discharge relation affected by ice Dec. 1-6 and Dec. 10 to Mar. 21; discharge based on gage heights corrected for ice effect by means of discharge measurements, observer's notes, and weather records.

*Monthly discharge of Embarrass River near Embarrass, Wis., for the year ending September 30, 1925*

[Drainage area, 395 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 250 | 131 | 193 | 0.489 | 0.56 |
| November | 364 | 155 | 222 | .562 | .63 |
| December | 310 | 90 | 182 | .461 | .53 |
| January | 200 | 70 | 105 | .266 | .31 |
| February | 185 | 60 | 125 | .316 | .33 |
| March | 620 | 70 | 259 | .656 | .76 |
| April | 672 | 178 | 334 | .846 | .94 |
| May | 305 | 70 | 193 | .489 | .56 |
| June | 1,230 | 138 | 439 | 1.110 | 1.24 |
| July | 385 | 87 | 168 | .425 | .49 |
| August | 175 | 96 | 132 | .334 | .39 |
| September | 197 | 93 | 131 | .332 | .37 |
| The year | 1,230 | 60 | 207 | .524 | 7.11 |

### 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, 1925.

GAGE.—Sloping gage on left bank 150 feet upstream from highway bridge; read by J. C. Jensen.

DISCHARGE MEASUREMENTS.—Made from cable 1,500 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed at gage consists of heavy gravel and rock; fairly permanent. At measuring section bed is fine, smooth gravel. Banks are not overflowed to any extent at flood stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.01 feet at 6.30 p. m. June 15 and 6 p. m. June 17 (discharge, 2,080 second-feet); minimum discharge, 155 second-feet February 16, 23, and March 3 (stage-discharge relation affected by ice).

1914–1925: Maximum discharge recorded, 5,780 second-feet at 7 a. m. April 10 and 5 p. m. April 11, 1922; minimum discharge, about 120 second-feet January 20, 1922.

ICE.—Stage-discharge relation affected by ice.

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. Rating curve well defined. Gage read to half-tenths twice daily. Daily discharge obtained by applying mean daily gage height to rating table, except for period when stage-discharge relation was affected by ice, for which period it was obtained as indicated in footnote to table of daily discharge. Open-water records good; winter records fair.

The following discharge measurements were made:

January 26, 1925: Gage height, 2.25 feet;[6] discharge, 218 second-feet.

February 23, 1925: Gage height, 1.80 feet;[6] discharge, 157 second-feet.

June 12, 1925: Gage height, 2.12 feet; discharge, 555 second-feet.

[6] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Little Wolf River at Royalton, Wis., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 434 | 301 | 365 | 180 | 245 | 180 | 680 | 560 | 417 | 501 | 260 | 209 |
| 2 | 434 | 318 | 365 | 180 | 245 | 170 | 710 | 392 | 392 | 417 | 352 | 198 |
| 3 | 472 | 301 | 275 | 170 | 275 | 155 | 680 | 417 | 417 | 392 | 352 | 213 |
| 4 | 472 | 270 | 245 | 185 | 260 | 180 | 560 | 352 | 650 | 352 | 332 | 234 |
| 5 | 501 | 301 | 235 | 180 | 320 | 185 | 501 | 381 | 1,050 | 417 | 434 | 501 |
| 6 | 461 | 310 | 235 | 170 | 320 | 170 | 501 | 342 | 1,210 | 501 | 417 | 560 |
| 7 | 450 | 332 | 245 | 180 | 340 | 160 | 472 | 402 | 1,210 | 501 | 560 | 530 |
| 8 | 450 | 347 | 225 | 180 | 260 | 170 | 456 | 381 | 740 | 530 | 650 | 501 |
| 9 | 434 | 347 | 260 | 185 | 710 | 180 | 402 | 434 | 560 | 501 | 680 | 472 |
| 10 | 347 | 356 | 235 | 180 | 365 | 205 | 332 | 392 | 366 | 560 | 620 | 392 |
| 11 | 366 | 397 | 235 | 170 | 215 | 235 | 305 | 366 | 352 | 590 | 530 | 381 |
| 12 | 318 | 381 | 215 | 185 | 235 | 245 | 332 | 342 | 560 | 650 | 381 | 366 |
| 13 | 332 | 366 | 215 | 205 | 205 | 235 | 297 | 305 | 1,130 | 560 | 342 | 332 |
| 14 | 332 | 332 | 225 | 205 | 195 | 245 | 392 | 366 | 1,670 | 501 | 289 | 289 |
| 15 | 347 | 347 | 235 | 195 | 185 | 195 | 402 | 434 | 1,970 | 444 | 267 | 267 |
| 16 | 381 | 356 | 235 | 185 | 155 | 225 | 444 | 501 | 1,970 | 434 | 305 | 260 |
| 17 | 366 | 366 | 225 | 195 | 195 | 245 | 501 | 472 | 1,970 | 318 | 318 | 245 |
| 18 | 310 | 381 | 185 | 195 | 180 | 245 | 620 | 530 | 1,770 | 305 | 332 | 245 |
| 19 | 318 | 381 | 195 | 205 | 180 | 295 | 680 | 560 | 1,570 | 318 | 318 | 267 |
| 20 | 301 | 366 | 185 | 195 | 160 | 415 | 970 | 501 | 1,390 | 289 | 267 | 276 |
| 21 | 318 | 356 | 185 | 185 | 170 | 415 | 1,130 | 366 | 1,130 | 289 | 289 | 238 |
| 22 | 301 | 434 | 195 | 195 | 180 | 470 | 1,050 | 260 | 710 | 297 | 267 | 254 |
| 23 | 310 | 530 | 195 | 205 | 155 | 470 | 1,130 | 342 | 560 | 254 | 267 | 267 |
| 24 | 301 | 590 | 205 | 225 | 180 | 590 | 1,050 | 417 | 530 | 223 | 234 | 245 |
| 25 | 301 | 590 | 185 | 225 | 160 | 680 | 1,090 | 402 | 620 | 234 | 223 | 254 |
| 26 | 310 | 590 | 185 | 215 | 160 | 740 | 1,210 | 444 | 590 | 305 | 198 | 245 |
| 27 | 332 | 590 | 180 | 225 | 160 | 740 | 1,090 | 434 | 530 | 318 | 203 | 289 |
| 28 | 318 | 470 | 185 | 215 | 170 | 710 | 1,010 | 392 | 501 | 289 | 198 | 332 |
| 29 | 347 | 500 | 180 | 225 | ------ | 740 | 1,050 | 402 | 472 | 276 | 209 | 456 |
| 30 | 310 | 445 | 185 | 225 | ------ | 680 | 865 | 402 | 417 | 254 | 203 | 402 |
| 31 | 276 | ------ | 180 | 235 | ------ | 620 | ------ | 392 | ------ | 260 | 208 | ------ |

NOTE.—Stage-discharge relation affected by ice Nov. 28 to Mar. 24; discharge based on gage heights corrected for effect of ice by means of two discharge measurements, observer's notes, and weather records.

*Monthly discharge of Little Wolf River at Royalton, Wis., for the year ending September 30, 1925*

[Drainage area, 485 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 501 | 276 | 363 | 0.748 | 0.86 |
| November | 590 | 270 | 398 | .821 | .92 |
| December | 365 | 180 | 222 | .458 | .53 |
| January | 235 | 170 | 197 | .406 | .47 |
| February | 710 | 155 | 235 | .485 | .50 |
| March | 740 | 155 | 361 | .744 | .86 |
| April | 1,210 | 297 | 697 | 1.44 | 1.61 |
| May | 560 | 260 | 409 | .843 | .97 |
| June | 1,970 | 352 | 914 | 1.88 | 2.10 |
| July | 650 | 223 | 390 | .804 | .93 |
| August | 680 | 198 | 339 | .699 | .81 |
| September | 560 | 198 | 324 | .668 | .75 |
| The year | 1,970 | 155 | 404 | .833 | 11.31 |

### WAUPACA RIVER NEAR WAUPACA, WIS.

LOCATION.—Near north line of sec. 1, T. 21 N., R. 12 E., at 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, 1925. June 28, 1916, to October 18, 1917, records were obtained at a station near Weyauwega, 1 mile below present site.

GAGE.—Chain gage, bolted to upstream handrail of bridge; read by George Radtke.

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 seldom overflowed; left bank of medium height and is overflowed at a stage of about 6 feet.

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

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.06 feet at 8 a. m. July 9 (discharge, 730 second-feet); minimum stage, 1.54 feet at 8.15 a. m. August 29 (discharge, 168 second-feet); minimum discharge, 120 second-feet February 23 (stage-discharge relation affected by ice).

1918–1925: Maximum stage recorded, 5.6 feet March 17, 1919 (discharge, 2,600 second-feet); minimum stage, 1.28 feet November 21, 1920 (discharge, 96 second-feet).

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

ACCURACY.—Stage-discharge relation changed slightly during summer. Rating curve well defined. 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 poor.

*Discharge measurements of Waupaca River near Waupaca Wis., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 18 | 1.84 | 245 | Feb. 24 | a 3.25 | 235 | Aug. 3 | 1.75 | 208 |
| Jan. 27 | a 2.99 | 173 | June 10 | 1.74 | 216 | | | |

a Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Waupaca River near Waupaca, Wis., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 278 | 248 | 265 | 180 | 155 | 155 | 294 | 206 | 206 | 206 | 234 | 193 |
| 2 | 263 | 248 | 265 | 180 | 170 | 145 | 278 | 206 | 193 | 206 | 248 | 193 |
| 3 | 263 | 263 | 265 | 195 | 170 | 145 | 278 | 220 | 248 | 180 | 220 | 206 |
| 4 | 263 | 234 | 266 | 195 | 180 | 170 | 278 | 220 | 268 | 263 | 234 | 193 |
| 5 | 248 | 248 | 280 | 195 | 180 | 170 | 294 | 220 | 464 | 234 | 248 | 206 |
| 6 | 248 | 248 | 280 | 180 | 195 | 205 | 263 | 234 | 428 | 220 | 342 | 206 |
| 7 | 234 | 263 | 280 | 180 | 220 | 250 | 278 | 220 | 294 | 278 | 326 | 310 |
| 8 | 234 | 263 | 278 | 180 | 430 | 250 | 263 | 206 | 263 | 234 | 320 | 263 |
| 9 | 234 | 248 | 263 | 180 | 465 | 265 | 263 | 206 | 180 | 730 | 278 | 234 |
| 10 | 248 | 263 | 265 | 170 | 410 | 280 | 263 | 206 | 180 | 679 | 278 | 234 |

*Daily discharge, in second-feet, of Waupaca River near Waupaca, Wis., for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 248 | 248 | 265 | 180 | 250 | 585 | 263 | 206 | 193 | 631 | 206 | 220 |
| 12 | 248 | 294 | 265 | 195 | 234 | 630 | 263 | 206 | 278 | 446 | 263 | 220 |
| 13 | 263 | 294 | 250 | 195 | 250 | 630 | 263 | 206 | 608 | 376 | 234 | 220 |
| 14 | 248 | 278 | 170 | 195 | 195 | 360 | 263 | 206 | 585 | 342 | 234 | 220 |
| 15 | 248 | 294 | 235 | 195 | 180 | 360 | 263 | 206 | 564 | 278 | 234 | 206 |
| 16 | 248 | 263 | 220 | 170 | 190 | 395 | 263 | 220 | 428 | 263 | 234 | 206 |
| 17 | 248 | 248 | 235 | 170 | 205 | 340 | 263 | 263 | 608 | 263 | 220 | 206 |
| 18 | 248 | 248 | 180 | 175 | 170 | 430 | 294 | 248 | 342 | 234 | 220 | 220 |
| 19 | 248 | 278 | 180 | 180 | 180 | 428 | 410 | 234 | 294 | 234 | 234 | 234 |
| 20 | 248 | 278 | 180 | 180 | 180 | 359 | 393 | 220 | 278 | 248 | 220 | 234 |
| 21 | 248 | 294 | 195 | 170 | 280 | 342 | 359 | 206 | 248 | 248 | 220 | 220 |
| 22 | 248 | 326 | 195 | 155 | 145 | 359 | 359 | 220 | 248 | 248 | 234 | 234 |
| 23 | 248 | 294 | 180 | 170 | 120 | 359 | 294 | 220 | 220 | 248 | 234 | 22 |
| 24 | 278 | 294 | 180 | 155 | 195 | 359 | 278 | 220 | 220 | 220 | 234 | 203 |
| 25 | 234 | 280 | 180 | 195 | 195 | 342 | 263 | 206 | 234 | 234 | 220 | 220 |
| 26 | 248 | 280 | 155 | 205 | 195 | 359 | 263 | 206 | 234 | 234 | 206 | 206 |
| 27 | 263 | 265 | 145 | 130 | 170 | 326 | 248 | 193 | 263 | 234 | 180 | 220 |
| 28 | 234 | 265 | 170 | 145 | 145 | 326 | 234 | 193 | 220 | 234 | 193 | 263 |
| 29 | 263 | 265 | 145 | 180 | ------- | 342 | 263 | 206 | 206 | 220 | 168 | 220 |
| 30 | 263 | 265 | 170 | 180 | ------- | 359 | 263 | 206 | 234 | 234 | 180 | 248 |
| 31 | 234 | ------- | 180 | 155 | ------- | 294 | ------- | 206 | ------- | 220 | 180 | ------- |

NOTE.—Stage-discharge relation affected by ice Nov. 25 to Dec. 7 and Dec. 10 to Mar. 18; discharge based on gage heights corrected for ice effect by means of two discharge measurements, observer's notes, and weather records. Gage not read Sept. 13; discharge interpolated.

*Monthly discharge of Waupaca River near Waupaca, Wis., for the year ending September 30, 1925*

[Drainage area, 305 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 278 | 234 | 251 | 0.823 | 0.95 |
| November | 326 | 234 | 269 | .882 | .98 |
| December | 280 | 145 | 219 | .718 | .83 |
| January | 205 | 130 | 178 | .584 | .67 |
| February | 465 | 120 | 216 | .708 | .74 |
| March | 630 | 145 | 333 | 1.09 | 1.26 |
| April | 410 | 234 | 284 | .931 | 1.04 |
| May | 263 | 193 | 214 | .702 | .81 |
| June | 608 | 180 | 307 | 1.01 | 1.13 |
| July | 730 | 180 | 294 | .964 | 1.11 |
| August | 342 | 168 | 235 | .770 | .89 |
| September | 310 | 193 | 223 | .731 | .82 |
| The year | 730 | 120 | 252 | .826 | 11.23 |

### 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 of Milwaukee and Menominee Rivers.

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, 1925.

GAGE.—Slope gage set in concrete foundations on left bank; read by Mrs. Richard Kuehl.

CHANNEL AND CONTROL.—Bed of channel at gage heavy gravel. About 200 feet below gage is a rock outcrop with a 4-foot fall which forms the control, which changed somewhat the later part of summer of 1924 by breaking

down of a small part 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 above control of medium height; below the control the right bank is artificial and of such height that it is seldom overflowed.

DISCHARGE MEASUREMENTS.—Made by wading, from railroad bridge one-fourth of a mile below gage, or from Folsom Street Bridge 2 miles below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.3 feet February 11 (discharge, 3,160 second-feet); minimum stage, 0.32 foot July 24, August 31, September 4 and 5 (discharge, 66 second-feet).

1914–1925: Maximum stage recorded, 9.00 feet March 20, 1918 (discharge, 15,100 second-feet, revised); minimum discharge, about 26 second-feet August 2, 1916.

ICE.—Stage-discharge relation affected by ice.

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

ACCURACY.—Stage-discharge relation probably permanent. Rating curve poorly defined. Gage read to quarter-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

The following discharge measurements were made:

January 16, 1925: Gage height, 1.20 feet;[7] discharge, 138 second-feet.

February 17, 1925: Gage height, 1.58 feet; discharge, 549 second-feet.

July 29, 1925: Gage height, 0.44 foot; discharge, 90 second-feet.

*Daily discharge, in second-feet, of Milwaukee River near Milwaukee Wis., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 297 | 154 | 394 | 180 | 195 | 195 | 394 | 297 | 117 | 89 | 97 | 70 |
| 2 | 274 | 154 | 365 | 250 | 230 | 180 | 315 | 297 | 86 | 86 | 89 | 70 |
| 3 | 246 | 145 | 306 | 180 | 195 | 180 | 340 | 297 | 97 | 109 | 95 | 68 |
| 4 | 238 | 170 | 279 | 115 | 230 | 202 | 306 | 297 | 86 | 86 | 95 | 66 |
| 5 | 254 | 184 | 210 | 130 | 365 | 154 | 297 | 254 | 104 | 97 | 91 | 66 |
| 6 | 238 | 170 | 184 | 130 | 675 | 154 | 297 | 254 | 117 | 76 | 100 | 106 |
| 7 | 220 | 230 | 202 | 115 | 930 | 170 | 274 | 223 | 130 | 109 | 107 | 97 |
| 8 | 209 | 365 | 340 | 160 | 1,220 | 178 | 262 | 234 | 86 | 91 | 114 | 86 |
| 9 | 220 | 675 | 394 | 160 | 2,610 | 230 | 274 | 223 | 86 | 109 | 117 | 117 |
| 10 | 202 | 590 | 361 | 160 | 2,080 | 365 | 274 | 223 | 70 | 91 | 130 | 97 |
| 11 | 230 | 450 | 365 | 145 | 3,160 | 394 | 254 | 195 | 74 | 95 | 117 | 127 |
| 12 | 202 | 450 | 340 | 160 | 2,000 | 590 | 254 | 188 | 86 | 97 | 117 | 130 |
| 13 | 230 | 515 | 340 | 160 | 1,910 | 480 | 246 | 188 | 109 | 117 | 117 | 130 |
| 14 | 195 | 480 | 515 | 115 | 1,740 | 550 | 254 | 160 | 117 | 130 | 109 | 117 |
| 15 | 195 | 480 | 279 | 160 | 1,100 | 394 | 254 | 160 | 188 | 130 | 109 | 109 |
| 16 | 202 | 450 | 279 | 145 | 720 | 234 | 274 | 160 | 206 | 206 | 109 | 109 |
| 17 | 184 | 450 | 365 | 115 | 515 | 274 | 254 | 170 | 234 | 130 | 86 | 100 |
| 18 | 188 | 315 | 340 | 115 | 365 | 394 | 274 | 188 | 365 | 109 | 97 | 109 |
| 19 | 170 | 340 | 316 | 115 | 365 | 820 | 985 | 170 | 306 | 107 | 86 | 109 |
| 20 | 178 | 340 | 270 | 105 | 279 | 1,040 | 1,220 | 160 | 288 | 86 | 76 | 76 |
| 21 | 133 | 340 | 250 | 115 | 238 | 1,500 | 1,360 | 170 | 188 | 91 | 76 | 76 |
| 22 | 220 | 394 | 230 | 145 | 365 | 1,500 | 1,160 | 170 | 130 | 109 | 86 | 91 |
| 23 | 220 | 480 | 210 | 130 | 590 | 1,220 | 2,610 | 160 | 130 | 117 | 76 | 97 |
| 24 | 184 | 550 | 210 | 160 | 315 | 1,100 | 2,790 | 170 | 109 | 66 | 76 | 117 |
| 25 | 184 | 420 | 195 | 180 | 420 | 1,040 | 1,660 | 130 | 97 | 117 | 76 | 97 |
| 26 | 178 | 394 | 180 | 160 | 394 | 820 | 1,100 | 109 | 86 | 86 | 70 | 109 |
| 27 | 178 | 394 | 160 | 160 | 270 | 875 | 820 | 109 | 109 | 70 | 70 | 117 |
| 28 | 178 | 420 | 145 | 145 | 210 | 675 | 550 | 117 | 109 | 97 | 97 | 109 |
| 29 | 178 | 340 | 115 | 195 | ------- | 515 | 480 | 130 | 86 | 86 | 86 | 125 |
| 30 | 178 | 315 | 195 | 195 | ------- | 420 | 340 | 109 | 104 | 97 | 70 | 117 |
| 31 | 178 | ------- | 180 | 180 | ------- | 420 | ------- | 109 | ------- | 86 | 66 | ------- |

NOTE.—Stage-discharge relation affected by ice Dec. 18 to Feb. 4 and Feb. 27 to Mar. 3; discharge based on gage heights corrected for effect of ice by means of one discharge measurement, observer's notes, and weather records.

[7] Stage-discharge relation affected by ice.

*Monthly discharge of Milwaukee River near Milwaukee, Wis., for the year ending September 30, 1925*

[Drainage area, 661 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 297 | 133 | 206 | 0.312 | 0.36 |
| November | 675 | 145 | 372 | .563 | .63 |
| December | 515 | 115 | 275 | .416 | .48 |
| January | 250 | 105 | 151 | .228 | .26 |
| February | 3,160 | 195 | 846 | 1.28 | 1.33 |
| March | 1,500 | 154 | 557 | .843 | .97 |
| April | 2,790 | 246 | 672 | 1.02 | 1.14 |
| May | 297 | 109 | 188 | .284 | .33 |
| June | 365 | 70 | 137 | .207 | .23 |
| July | 206 | 66 | 102 | .154 | .18 |
| August | 130 | 66 | 94 | .142 | .16 |
| September | 130 | 66 | 100 | .151 | .17 |
| The year | 3,160 | 66 | 304 | .460 | 6.24 |

LITTLE CALUMET RIVER AT HARVEY, ILL.

LOCATION.—In NW. ¼ sec. 9, T. 36 N., R. 14 E., at Illinois Central Railroad bridge, 800 feet north of railroad station at 147th Street, Harvey, Cook County, and 11 miles above mouth of river.

DRAINAGE AREA.—570 square miles (measured on map issued by United States Geological Survey).

RECORDS AVAILABLE.—October 1, 1916, to September 30, 1925. Daily gage heights collected by Sanitary District of Chicago, June 10, 1907, to September 30, 1916.

GAGE.—Vertical staff gage attached to bridge pier; read by Mrs. H. Wurtman.

DISCHARGE MEASUREMENTS.—Made from highway bridge 2,000 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed of river composed of clay and gravel. Low-water control gravel and boulders; practically permanent. Banks not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.2 feet March 20 (discharge, 763 second-feet); minimum stage, 2.82 feet September 26 (discharge, 37 second-feet).

1907–1925; Maximum stage recorded, 13.4 feet March 6, 1908 (discharge not determined). Minimum discharge from 1917 to 1925 estimated at less than 25 second-feet in January, 1918.

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

ACCURACY.—Stage-discharge relation changed during March. Rating curves well defined. 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, poor for period of ice effect.

Discharge from Little Calumet River is diverted through Calumet-Sag Channel into Chicago Sanitary Canal. The capacity of this channel as computed by Chicago Sanitary District is 2,000 second-feet when the slope is that prevailing with a flow of 8,000 second-feet in the main Sanitary Canal above the effluent of the Calumet-Sag Channel. Diversion from Little Calumet River was begun in August, 1922. The point of diversion is near center of sec. 32, T. 37 N., R. 14 E., about 3.8 miles below gaging station at Harvey.

The following discharge measurements were made:

January 22, 1925: Gage height, 3.76 feet (stage-discharge relation affected by ice); discharge, 93.8 second-feet.

March 30, 1925: Gage height, 4.58 feet; discharge, 508 second-feet.

June 11, 1925: Gage height, 3.08 feet; discharge, 71.2 second-feet.

*Daily discharge, in second-feet, of Little Calumet River at Harvey, Ill., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 92 | 77 | 103 | | | 338 | 468 | 157 | 79 | 71 | 88 | 56 |
| 2 | 85 | 77 | 83 | | | 390 | 431 | 157 | 74 | 68 | 85 | 62 |
| 3 | 85 | 77 | 85 | | 110 | 355 | 431 | 157 | 74 | 68 | 81 | 59 |
| 4 | 85 | 77 | 89 | | | 306 | 394 | 169 | 74 | 78 | 79 | 59 |
| 5 | 87 | 77 | 99 | | | 306 | 376 | 207 | 74 | 68 | 76 | 59 |
| 6 | 85 | 69 | 113 | | | 291 | 358 | 207 | 74 | 68 | 74 | 59 |
| 7 | 83 | 69 | 119 | | 480 | 276 | 324 | 207 | 74 | 78 | 71 | 62 |
| 8 | 83 | 69 | 134 | | | 276 | 308 | 194 | 74 | 88 | 74 | 62 |
| 9 | 82 | 85 | 113 | | 480 | 291 | 277 | 194 | 74 | 96 | 72 | 78 |
| 10 | 82 | 83 | 82 | | 390 | 306 | 292 | 181 | 72 | 123 | 71 | 65 |
| 11 | 80 | 80 | 143 | | 322 | 355 | 262 | 181 | 71 | 134 | 71 | 68 |
| 12 | 79 | 87 | 145 | | 425 | 338 | 234 | 169 | 78 | 146 | 71 | 74 |
| 13 | 79 | 90 | 143 | | 355 | 322 | 220 | 152 | 66 | 146 | 70 | 71 |
| 14 | 79 | 99 | 193 | | 390 | 462 | 248 | 146 | 71 | 123 | 74 | 74 |
| 15 | 79 | 94 | 119 | | 425 | 443 | 220 | 134 | 88 | 92 | 72 | 112 |
| 16 | 79 | 94 | 113 | 95 | 372 | 443 | 207 | 130 | 92 | 78 | 71 | 134 |
| 17 | 79 | 99 | 123 | | 443 | 425 | 181 | 134 | 92 | 74 | 68 | 146 |
| 18 | 79 | 94 | 134 | | 425 | 407 | 181 | 146 | 112 | 74 | 68 | 146 |
| 19 | 79 | 89 | 123 | | 390 | 518 | 181 | 157 | 102 | 71 | 68 | 150 |
| 20 | 79 | 85 | | | 338 | 763 | 181 | 181 | 92 | 88 | 68 | 130 |
| 21 | 79 | 87 | | | 338 | 725 | 181 | 169 | 88 | 112 | 68 | 104 |
| 22 | 79 | 96 | | | 338 | 680 | 181 | 157 | 83 | 88 | 65 | 81 |
| 23 | 79 | 103 | | | 390 | 590 | 194 | 146 | | 78 | 62 | 65 |
| 24 | 79 | 103 | | | 557 | 590 | 194 | 134 | | 78 | 62 | 46 |
| 25 | 77 | 99 | 95 | | 480 | 590 | 194 | 130 | | 78 | 62 | 44 |
| 26 | 77 | 99 | | | 425 | 590 | 181 | 112 | 90 | 74 | 59 | 37 |
| 27 | 77 | 94 | | | 557 | 590 | 169 | 102 | | 74 | 59 | 52 |
| 28 | 77 | 85 | | | 390 | 548 | 157 | 98 | | 88 | 58 | 46 |
| 29 | 77 | 103 | | | ------ | 548 | 157 | 92 | | 81 | 56 | 44 |
| 30 | 77 | 99 | | | ------ | 508 | 157 | 90 | | 78 | 56 | 42 |
| 31 | 77 | ------ | | | ------ | 508 | ------ | 83 | ------- | 85 | 56 | ----- |

NOTE.—Discharge estimated Dec. 20 to Feb. 8 on account of ice, from gage-height record, results of discharge measurement, observer's notes, and weather records. Braced figures show mean discharge for periods included. Discharge estimated June 23-30; gage was removed.

*Monthly discharge of Little Calumet River at Harvey, Ill., for the year ending September 30, 1925*

[Drainage area, 570 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 92 | 77 | 80.5 | 0.141 | 0.16 |
| November | 103 | 69 | 88.0 | .154 | .17 |
| December | 193 | 83 | 110 | .193 | .22 |
| January | ---------- | ---------- | 95.0 | .167 | .19 |
| February | 557 | ---------- | 365 | .640 | .67 |
| March | 763 | 276 | 454 | .796 | .92 |
| April | 468 | 157 | 251 | .440 | .49 |
| May | 207 | 83 | 151 | .265 | .31 |
| June | ---------- | ---------- | 83.3 | .146 | .16 |
| July | 146 | 68 | 88.6 | .155 | .18 |
| August | 88 | 56 | 68.9 | .121 | .14 |
| September | 150 | 37 | 76.2 | .134 | .15 |
| The year | 763 | 37 | 158 | .277 | 3.76 |

### 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, 1925.

GAGE.—Float gage in tailwater at power plant; read by plant attendants. Zero of gage 759.5 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made by wading 200 feet below gage or from highway bridges half a mile 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 gage. Control for low water is a 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 −2.5 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.3 feet at 10 and 10.30 p. m. March 23 (discharge, 4,170 second-feet); minimum stage, −1.9 feet at 1.30 and 5.30 a. m. May 31 (discharge, 96 second-feet).

1924–1925: Maximum stage recorded, 2.8 feet for several hours on March 30, 31, and April 2, 1924 (discharge, 4,960 second-feet); minimum stage, −1.9 feet at 5 and 5.30 p. m. February 17, 1924, and at 1.30 and 5.30 a. m. May 31, 1925 (discharge, 96 second-feet).

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

REGULATION.—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. Gage read to hundredths every half hour day and night. Daily discharge ascertained by applying mean daily gage height to rating table. Records excellent.

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

*Discharge measurements of St. Joseph River at Mottville, Mich., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 7 | −0.20 | 935 | Nov. 22 | 0.75 | 1,940 | Mar. 13 | 0.98 | 2,320 |
| Do | .32 | 1,380 | Nov. 23 | −.97 | 374 | June 11 | −.29 | 881 |
| Oct. 8 | .57 | 1,780 | Do | −.24 | 820 | | | |
| Do | .09 | 1,240 | Mar. 12 | .92 | 2,270 | | | |

*Daily discharge, in second-feet, of St. Joseph River at Mottville, Mich., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,200 | 785 | 785 | 785 | 514 | 1,690 | 1,690 | 1,100 | 660 | 365 | 584 | 700 |
| 2 | 785 | 392 | 620 | 915 | 700 | 2,190 | 1,570 | 1,000 | 828 | 299 | 584 | 584 |
| 3 | 1,100 | 828 | 660 | 915 | 870 | 1,810 | 1,460 | 660 | 660 | 547 | 785 | 547 |
| 4 | 1,000 | 700 | 584 | 547 | 742 | 1,570 | 1,350 | 1,460 | 660 | 392 | 870 | 514 |
| 5 | 620 | 828 | 660 | 960 | 785 | 1,810 | 915 | 1,460 | 547 | 262 | 870 | 392 |
| 6 | 870 | 828 | 828 | 1,000 | 785 | 1,810 | 1,570 | 1,250 | 785 | 419 | 1,050 | 419 |
| 7 | 1,000 | 828 | 480 | 1,000 | 700 | 1,570 | 1,690 | 1,150 | 365 | 828 | 1,050 | 419 |
| 8 | 1,150 | 584 | 1,200 | 1,000 | 480 | 1,100 | 1,250 | 1,150 | 514 | 915 | 742 | 785 |
| 9 | 960 | 514 | 1,300 | 828 | 960 | 1,810 | 1,150 | 1,150 | 620 | 660 | 660 | 419 |
| 10 | 915 | 785 | 1,350 | 915 | 1,100 | 1,690 | 1,250 | 547 | 547 | 660 | 742 | 450 |

*Daily discharge, in second-feet, of St. Joseph River at Mottville Mich., for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 1,050 | 700 | 1,350 | 584 | 1,350 | 1,810 | 1,250 | 1,000 | 450 | 450 | 785 | 514 |
| 12 | 514 | 870 | 1,460 | 1,050 | 1,200 | 2,060 | 584 | 1,100 | 419 | 450 | 1,000 | 620 |
| 13 | 915 | 828 | 828 | 915 | 1,460 | 1,810 | 1,300 | 960 | 480 | 700 | 960 | 450 |
| 14 | 1,050 | 785 | 828 | 870 | 1,570 | 1,930 | 1,350 | 915 | 212 | 660 | 828 | 700 |
| 15 | 915 | 785 | 1,350 | 915 | 1,100 | 1,690 | 1,350 | 828 | 584 | 392 | 742 | 785 |
| 16 | 870 | 742 | 1,100 | 870 | 1,690 | 2,450 | 1,200 | 915 | 620 | 392 | 660 | 1,100 |
| 17 | 742 | 785 | 1,150 | 660 | 1,460 | 1,570 | 1,150 | 547 | 584 | 514 | 620 | 1,000 |
| 18 | 828 | 870 | 1,200 | 514 | 1,200 | 2,190 | 1,100 | 1,050 | 547 | 514 | 960 | 960 |
| 19 | 584 | 700 | 1,300 | 870 | 1,200 | 2,190 | 742 | 1,100 | 514 | 342 | 1,100 | 915 |
| 20 | 742 | 785 | 1,200 | 828 | 1,300 | 2,320 | 1,200 | 1,000 | 365 | 547 | 915 | 514 |
| 21 | 1,100 | 785 | 514 | 870 | 1,200 | 2,590 | 1,100 | 828 | 198 | 785 | 960 | 915 |
| 22 | 1,000 | 785 | 660 | 785 | 480 | 2,590 | 1,350 | 870 | 480 | 620 | 742 | 960 |
| 23 | 785 | 228 | 915 | 828 | 1,570 | 3,150 | 1,100 | 915 | 547 | 960 | 419 | 828 |
| 24 | 700 | 584 | 1,100 | 660 | 2,060 | 2,870 | 1,150 | 785 | 742 | 742 | 620 | 828 |
| 25 | 828 | 660 | 480 | 392 | 2,450 | 2,590 | 1,000 | 785 | 514 | 620 | 785 | 870 |
| 26 | 660 | 547 | 828 | 828 | 2,190 | 2,320 | 547 | 660 | 514 | 450 | 660 | 785 |
| 27 | 785 | 392 | 1,150 | 785 | 2,060 | 2,320 | 1,350 | 700 | 660 | 870 | 620 | 742 |
| 28 | 870 | 660 | 742 | 828 | 1,570 | 2,060 | 1,250 | 742 | 279 | 620 | 828 | 870 |
| 29 | 785 | 915 | 828 | 785 | ------- | 1,570 | 1,200 | 785 | 620 | 514 | 700 | 1,200 |
| 30 | 785 | 244 | 960 | 785 | ------- | 1,930 | 1,000 | 700 | 547 | 547 | 450 | 1,200 |
| 31 | 742 | ------- | 960 | 700 | ------- | 1,930 | ------- | 319 | ------- | 547 | 547 | ------ |

*Monthly discharge, in second-feet, of St. Joseph River at Mottville, Mich., for the year ending September 30, 1925*

| Month | Maximum | Minimum | Mean | Month | Maximum | Minimum | Mean |
|---|---|---|---|---|---|---|---|
| October | 1,200 | 514 | 866 | May | 1,460 | 319 | 917 |
| November | 915 | 228 | 691 | June | 828 | 198 | 535 |
| December | 1,460 | 480 | 947 | July | 960 | 262 | 567 |
| January | 1,050 | 392 | 812 | August | 1,100 | 419 | 769 |
| February | 2,450 | 480 | 1,240 | September | 1,200 | 392 | 733 |
| March | 3,150 | 1,100 | 2,030 | | | | |
| April | 1,690 | 547 | 1,210 | The year | 3,150 | 198 | 942 |

## 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, 1925.

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, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 440 | 140 | 489 | 480 | 648 | 1,600 | 1,120 | 1,080 | 265 | 392 | 368 | 513 |
| 2 | 344 | 214 | 566 | 480 | 529 | 1,600 | 1,300 | 930 | 290 | 269 | 392 | 489 |
| 3 | 290 | 392 | 646 | 480 | 529 | 1,600 | 1,230 | 900 | 315 | 244 | 368 | 489 |
| 4 | 392 | 187 | 620 | 522 | 545 | 1,260 | 760 | 1,050 | 240 | 295 | 344 | 513 |
| 5 | 416 | 112 | 592 | 562 | 545 | 845 | 900 | 1,020 | 417 | 319 | 392 | 513 |
| 6 | 440 | 187 | 540 | 579 | 529 | 815 | 646 | 930 | 265 | 392 | 392 | 540 |
| 7 | 440 | 392 | 368 | 629 | 529 | 592 | 930 | 815 | 315 | 440 | 392 | 566 |
| 8 | 465 | 315 | 392 | 579 | 629 | 430 | 872 | 930 | 290 | 269 | 1,170 | 646 |
| 9 | 465 | 440 | 416 | 579 | 718 | 393 | 785 | 785 | 393 | 319 | 930 | 646 |
| 10 | 440 | 392 | 465 | 562 | 840 | 566 | 728 | 760 | 344 | 392 | 930 | 646 |

*Daily discharge, in second-feet, of Tittabawassee River at Freeland, Mich., for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 440 | 465 | 489 | 562 | 1,990 | 785 | 702 | 760 | 290 | 489 | 815 | 815 |
| 12 | 368 | 489 | 566 | 529 | 3,050 | 930 | 760 | 728 | 290 | 440 | 760 | 930 |
| 13 | 290 | 489 | 675 | 529 | 1,600 | 1,230 | 785 | 702 | 187 | 465 | 646 | 845 |
| 14 | 392 | 513 | 845 | 529 | 1,600 | 1,600 | 900 | 728 | 290 | 440 | 730 | 870 |
| 15 | 465 | 566 | 990 | 529 | 1,520 | 2,150 | 872 | 1,170 | 240 | 416 | 700 | 900 |
| 16 | 540 | 489 | 930 | 529 | 1,480 | 1,600 | 900 | 490 | 393 | 416 | 646 | 870 |
| 17 | 592 | 513 | 845 | 495 | 1,080 | 1,230 | 1,080 | 440 | 315 | 392 | 675 | 870 |
| 18 | 540 | 513 | 760 | 480 | 815 | 930 | 990 | 702 | 315 | 319 | 646 | 900 |
| 19 | 489 | 489 | 730 | 522 | 540 | 1,300 | 1,050 | 592 | 290 | 344 | 620 | 845 |
| 20 | 465 | 513 | 700 | 529 | 490 | 2,150 | 3,850 | 490 | 265 | 392 | 620 | 760 |
| 21 | 440 | 540 | 646 | 595 | 540 | 2,740 | 4,550 | 162 | 290 | 416 | 592 | 646 |
| 22 | 440 | 489 | 646 | 579 | 592 | 2,400 | 3,660 | 490 | 315 | 440 | 540 | 675 |
| 23 | 344 | 440 | 646 | 495 | 815 | 1,990 | 3,290 | 646 | 315 | 392 | 513 | 646 |
| 24 | 392 | 416 | 646 | 415 | 990 | 2,400 | 3,010 | 845 | 265 | 368 | 513 | 592 |
| 25 | 290 | 392 | 430 | 366 | 1,480 | 2,610 | 3,660 | 592 | 240 | 392 | 489 | 620 |
| 26 | 140 | 214 | 462 | 398 | 1,600 | 2,400 | 2,400 | 394 | 265 | 416 | 489 | 592 |
| 27 | 90 | 440 | 480 | 462 | 1,600 | 1,990 | 1,990 | 240 | 265 | 392 | 513 | 592 |
| 28 | 140 | 392 | 512 | 512 | 1,600 | 1,830 | 1,860 | 393 | 240 | 392 | 513 | 592 |
| 29 | 214 | 187 | 480 | 579 | ..... | 1,600 | 1,670 | 394 | 265 | 368 | 540 | 620 |
| 30 | 162 | 392 | 495 | 839 | ..... | 1,410 | 1,640 | 393 | 368 | 344 | 540 | 620 |
| 31 | 112 | ..... | 495 | 839 | ..... | 1,050 | ..... | 315 | ..... | 319 | 513 | ..... |

*Monthly discharge of Tittabawassee River at Freeland, Mich., for the year ending September 30, 1925*

[Drainage area, 2,530 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 592 | 90 | 370 | 0.146 | 0.17 |
| November | 566 | 112 | 390 | .154 | .17 |
| December | 990 | 368 | 599 | .237 | .27 |
| January | 839 | 366 | 541 | .214 | .25 |
| February | 3,050 | 490 | 1,050 | .415 | .43 |
| March | 2,740 | 393 | 1,480 | .585 | .67 |
| April | 4,550 | 646 | 1,630 | .644 | .72 |
| May | 1,170 | 162 | 673 | .266 | .31 |
| June | 417 | 187 | 295 | .117 | .13 |
| July | 489 | 244 | 377 | .149 | .17 |
| August | 1,170 | 344 | 590 | .233 | .27 |
| September | 930 | 489 | 679 | .268 | .30 |
| The year | 4,550 | 90 | 720 | .285 | 3.86 |

NOTE.—Monthly and yearly discharge computed by U. S. Geol. Survey.

## STREAMS TRIBUTARY TO LAKE ERIE

### HURON RIVER AT BARTON, MICH.

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

DRAINAGE AREA.—723 square miles.

RECORDS AVAILABLE.—January 1, 1914, to September 30, 1925.

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. The flow through the 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-inch by 5-inch milled plate, the discharge

over the weir being computed by Bazin's formula for free overflow. The greater part of the flood water passes through undersluices in the 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, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 126 | 140 | 132 | 185 | 48 | 601 | 473 | 271 | 125 | 70 | 103 | 110 |
| 2 | 168 | 108 | 114 | 125 | 116 | 554 | 450 | 282 | 145 | 110 | 85 | 117 |
| 3 | 120 | 121 | 119 | 100 | 125 | 487 | 416 | 256 | 71 | 176 | 73 | 91 |
| 4 | 146 | 119 | 120 | 91 | 125 | 532 | 407 | 273 | 107 | 6 | 102 | 91 |
| 5 | 106 | 121 | 120 | 123 | 125 | 481 | 360 | 282 | 116 | 6 | 79 | 90 |
| 6 | 143 | 130 | 156 | 134 | 163 | 424 | 340 | 234 | 68 | 83 | 87 | 89 |
| 7 | 241 | 137 | 108 | 128 | 245 | 380 | 334 | 238 | 101 | 103 | 118 | 117 |
| 8 | 12 | 109 | 229 | 136 | 366 | 447 | 343 | 209 | 99 | 68 | 197 | 94 |
| 9 | 209 | 25 | 205 | 150 | 538 | 364 | 306 | 232 | 73 | 68 | 102 | 131 |
| 10 | 51 | 113 | 211 | 137 | 402 | 395 | 301 | 227 | 71 | 67 | 100 | 86 |
| 11 | 154 | 115 | 224 | 144 | 333 | 431 | 269 | 198 | 101 | 94 | 133 | 163 |
| 12 | 82 | 113 | 261 | 127 | 301 | 422 | 267 | 181 | 74 | 26 | 106 | 110 |
| 13 | 134 | 118 | 180 | 156 | 340 | 434 | 290 | 168 | 71 | 70 | 150 | 156 |
| 14 | 124 | 120 | 193 | 202 | 375 | 535 | 284 | 191 | 45 | 83 | 126 | 157 |
| 15 | 131 | 130 | 165 | 188 | 352 | 449 | 314 | 150 | 104 | 42 | 98 | 212 |
| 16 | 135 | 73 | 238 | 195 | 337 | 515 | 301 | 175 | 97 | 60 | 110 | 194 |
| 17 | 134 | 117 | 210 | 68 | 326 | 558 | 302 | 189 | 87 | 65 | 106 | 187 |
| 18 | 109 | 119 | 192 | 67 | 221 | 563 | 333 | 188 | 108 | 59 | 111 | 226 |
| 19 | 97 | 121 | 230 | 72 | 318 | 911 | 271 | 196 | 96 | 6 | 113 | 189 |
| 20 | 132 | 119 | 154 | 129 | 237 | 985 | 327 | 131 | 100 | 63 | 124 | 204 |
| 21 | 133 | 156 | 130 | 129 | 274 | 914 | 344 | 160 | 91 | 60 | 131 | 193 |
| 22 | 117 | 113 | 189 | 156 | 319 | 786 | 321 | 174 | 94 | 50 | 131 | 178 |
| 23 | 127 | 83 | 165 | 145 | 771 | 732 | 327 | 147 | 106 | 48 | 108 | 182 |
| 24 | 120 | 131 | 178 | 138 | 1,040 | 689 | 302 | 160 | 70 | 40 | 124 | 162 |
| 25 | 125 | 134 | 130 | 96 | 914 | 724 | 328 | 140 | 103 | 44 | 113 | 161 |
| 26 | 113 | 135 | 153 | 138 | 752 | 611 | 327 | 141 | 90 | 6 | 114 | 150 |
| 27 | 120 | 120 | 113 | 136 | 518 | 585 | 241 | 138 | 111 | 69 | 113 | 295 |
| 28 | 119 | 136 | 146 | 112 | 633 | 591 | 279 | 134 | 80 | 72 | 102 | 188 |
| 29 | 120 | 141 | 141 | 114 | ------- | 518 | 249 | 121 | 135 | 69 | 103 | 194 |
| 30 | 119 | 93 | 127 | 126 | ------- | 494 | 246 | 90 | 100 | 6 | 104 | 142 |
| 31 | 120 | ------- | 142 | 153 | ------- | 432 | ------- | 115 | ------- | 83 | 108 | ------- |

*Monthly discharge of Huron River at Barton, Mich., for the year ending September 30, 1925*

[Drainage area, 723 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 241 | 12 | 125 | 0.173 | 0.20 |
| November | 156 | 25 | 117 | .162 | .18 |
| December | 261 | 108 | 167 | .231 | .27 |
| January | 202 | 67 | 131 | .181 | .21 |
| February | 1,040 | 48 | 379 | .524 | .55 |
| March | 985 | 364 | 566 | .783 | .90 |
| April | 473 | 246 | 322 | .445 | .50 |
| May | 282 | 90 | 187 | .259 | .30 |
| June | 145 | 45 | 94.6 | .131 | .15 |
| July | 176 | 6 | 60.4 | .084 | .10 |
| August | 197 | 73 | 112 | .155 | .18 |
| September | 295 | 86 | 155 | .214 | .24 |
| The year | 1,040 | 6 | 200 | .277 | 3.78 |

NOTE.—Monthly and yearly discharge computed by U. S. Geol. Survey.

### MAUMEE RIVER AT ANTWERP, OHIO

LOCATION.—At 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, 1925.

GAGE.—Chain gage on highway bridge; read by H. G. Carr. Beginning September 12, 1925, Au water-stage recorder at same datum on left bank 1,000 feet below bridge.

DISCHARGE MEASUREMENTS.—Made from bridge 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 three-fourths mile below gage; 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 and period of record, 17.3 feet at 7.40 a. m. March 16 (discharge, 15,400 second-feet); minimum stage during year and period of record, 0.78 foot June 27 and 28 (discharge, 82 second-feet).

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

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 200 and 13,000 second-feet, fairly well defined above and below these limits. Gage read to hundredths twice daily prior to September 13. Operation of water-stage recorder satisfactory after that date. Daily discharge ascertained by applying mean daily gage height to rating table except as noted in footnote to table of daily discharge. Records good except for extremely low water and periods of ice effect, for which they are fair.

*Discharge measurements of Maumee River at Antwerp, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 9 | 1.52 | 247 | Apr. 11 | 2.41 | 582 |
| Nov. 24 | 1.34 | 182 | July 31 | 1.34 | 220 |

*Daily discharge, in second-feet, of Maumee River at Antwerp, Ohio, for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 263 | 194 | 207 | | 445 | 3,070 | 700 | 410 | 248 | 157 | 112 | 110 |
| 2 | 234 | 194 | 214 | | 485 | 2,160 | 700 | 392 | 118 | 159 | 102 | 110 |
| 3 | 220 | 194 | 220 | | 525 | 1,500 | 840 | 428 | 169 | 159 | 147 | 122 |
| 4 | 220 | 182 | 220 | | 525 | 990 | 790 | 428 | 182 | 220 | 278 | 122 |
| 5 | 248 | 182 | 220 | | 485 | 1,200 | 700 | 428 | 182 | 272 | 263 | 118 |
| 6 | 220 | 182 | 234 | 500 | 890 | 1,140 | 655 | 445 | 182 | 324 | 745 | 114 |
| 7 | 220 | 194 | 220 | | 3,230 | 1,260 | 610 | 392 | 194 | 340 | 278 | 110 |
| 8 | 278 | 182 | 263 | | 4,700 | 1,620 | 610 | 410 | 194 | 410 | 234 | 112 |
| 9 | 248 | 182 | 840 | | 7,050 | 1,740 | 565 | 445 | 182 | 1,140 | 263 | 122 |
| 10 | 234 | 169 | 1,090 | | 6,720 | 2,160 | 1,140 | 465 | 220 | 840 | 248 | 136 |
| 11 | 234 | 169 | 890 | 340 | 4,310 | 2,510 | 610 | 428 | 207 | 790 | 234 | 127 |
| 12 | 234 | 169 | 745 | 340 | 3,860 | 2,830 | 565 | 340 | 169 | 1,380 | 248 | 120 |
| 13 | 220 | 182 | 655 | 340 | 3,230 | 2,910 | 525 | 358 | 182 | 2,160 | 220 | 136 |
| 14 | 194 | 194 | 655 | 340 | 2,990 | 12,100 | 525 | 324 | 308 | 2,300 | 220 | 167 |
| 15 | 194 | 207 | 655 | 340 | 2,230 | 15,100 | 525 | 308 | 410 | 1,320 | 445 | 169 |

*Daily discharge, in second-feet, of Maumee River at Antwerp, Ohio, for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 194 | 194 | 655 | 340 | 1,620 | 15,300 | 525 | 324 | 655 | 890 | 410 | 234 |
| 17 | 182 | 194 | 428 | 340 | 1,260 | 14,200 | 485 | 278 | 840 | 700 | 324 | 278 |
| 18 | 169 | 207 | 940 | 340 | 1,090 | 12,000 | 485 | 358 | 392 | 565 | 358 | 410 |
| 19 | 169 | 207 | 7,380 | 340 | 940 | 12,400 | 485 | 410 | 340 | 428 | 340 | 392 |
| 20 | 169 | 220 | 9,420 | 340 | 840 | 12,900 | 485 | 340 | 293 | 392 | 278 | 410 |
| 21 | 169 | 207 | 8,260 | 340 | 1,200 | 10,400 | 465 | 340 | 248 | 745 | 220 | 428 |
| 22 | 169 | 207 | 7,160 | 340 | 3,950 | 7,160 | 485 | 340 | 194 | 1,880 | 182 | 375 |
| 23 | 169 | 207 | 6,400 | 340 | 5,700 | 5,300 | 525 | 308 | 234 | 1,140 | 169 | 263 |
| 24 | 167 | 207 | 5,100 | 340 | 8,820 | 4,400 | 248 | 324 | 207 | 745 | 162 | 220 |
| 25 | 164 | 207 | 3,590 | 340 | 8,940 | 3,590 | 392 | 293 | 234 | 610 | 150 | 194 |
| 26 | 164 | 207 | | 308 | 7,380 | 2,670 | 485 | 248 | 308 | 1,090 | 169 | 182 |
| 27 | 167 | 207 | | 308 | 5,700 | 2,160 | 445 | 248 | 99 | 700 | 162 | 194 |
| 28 | 169 | 194 | | 278 | 3,860 | 1,810 | 428 | 248 | 116 | 392 | 159 | 278 |
| 29 | 182 | 194 | 800 | | ------- | 1,500 | 410 | 248 | 159 | 278 | 147 | 565 |
| 30 | 220 | 200 | | 300 | ------- | 1,320 | 410 | 234 | 155 | 324 | 136 | 745 |
| 31 | 207 | ------- | | | ------- | 1,140 | ------- | 234 | ------- | 220 | 124 | ----- |

NOTE.—Gage not read Dec. 14, July 5, Aug. 30, Sept. 6; discharge interpolated. Stage-discharge relation affected by ice Nov. 30, Dec. 1, 2, 15, 26–31, Jan. 1–10, and 29–31; discharge Nov. 30, Dec. 1, 2, and 15 interpolated; discharge Dec. 26–31, Jan. 1–10, and 29–31 estimated from study of observer's notes, weather records, and record of flow of Maumee River near Defiance. Braced figures indicate mean discharge or periods included.

*Monthly discharge of Maumee River at Antwerp, Ohio, for the year ending September 30, 1925*

[Drainage area, 2,050 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 278 | 164 | 203 | 0.099 | 0.11 |
| November | 220 | 169 | 194 | .095 | .11 |
| December | 9,420 | 207 | 1,980 | .966 | 1.11 |
| January | ------- | ------- | 384 | .187 | .22 |
| February | 8,940 | 445 | 3,320 | 1.62 | 1.69 |
| March | 15,300 | 990 | 5,180 | 2.53 | 2.92 |
| April | 1,140 | 248 | 561 | .274 | .31 |
| May | 465 | 234 | 348 | .170 | .20 |
| June | 840 | 99 | 254 | .124 | .14 |
| July | 2,300 | 157 | 744 | .363 | .42 |
| August | 745 | 102 | 243 | .119 | .14 |
| September | 745 | 110 | 235 | .115 | .13 |
| The year | 15,300 | 99 | 1,130 | .551 | 7.50 |

### MAUMEE RIVER NEAR DEFIANCE, OHIO

LOCATION.—In NW. ¼ sec. 22, T. 4 N., R. 5 E., at Independence, Defiance County, 5 miles east of Defiance, 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, 1925.

GAGE.—From November 1 to 12, staff gage; beginning November 13, Au water-stage recorder on left bank just above Independence Dam. Staff gage read and recorder inspected by Adam Rose. Zero of gage is 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 a mile above and below gage. Banks high, not subject to overflow. Control for all stages is concrete

dam, rebuilt in 1924. Crest of dam is notched 0.1 foot for 100 feet to make more sensitive control. Zero flow would occur at about gage height 1.1 feet.

EXTREMES OF DISCHARGE.—Maximum combined daily discharge of river and canal during period, 50,700 second-feet March 15; minimum combined daily discharge, 157 second-feet September 4.

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

DIVERSIONS.—Miami & Erie Canal diverts water past station. See record of flow of canal on page 75.

REGULATION.—Flow at low water affected by regulation of Auglaize River at dam of Toledo Edison Co., near Defiance.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve well defined below 30,000 second-feet. Staff gage read to hundredths twice daily from November 1–12. Operation of water-stage recorder satisfactory after that date. Daily discharge ascertained by applying to rating table mean daily gage height obtained from observer's readings or from gage-height graph. Records excellent.

*Discharge measurements of Maumee River near Defiance, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Nov. 13 | 1.50 | 215 | Apr. 12 | 1.85 | 72.9 |
| Nov. 25 | 1.38 | 84.0 | May 20 | 1.68 | 451 |
| Mar. 11 | 3.28 | 5,270 | | | |

*Daily discharge, in second-feet, of Maumee River near Defiance, Ohio, for the year ending September 30, 1925*

| Day | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 214 | 22 | 1,020 | 568 | 6,280 | 1,670 | 478 | 152 | 298 | 262 | 28 |
| 2 | 214 | 36 | 890 | 586 | 4,700 | 1,150 | 415 | 171 | 460 | 133 | 12 |
| 3 | 214 | 62 | 763 | 622 | 3,680 | 980 | 445 | 95 | 496 | 114 | 4 |
| 4 | 133 | 62 | 702 | 640 | 2,400 | 845 | 460 | 82 | 370 | 133 | 3 |
| 5 | 171 | 88 | 722 | 722 | 2,570 | 722 | 460 | 550 | 340 | 171 | 18 |
| 6 | 124 | 95 | 702 | 1,390 | 2,920 | 702 | 478 | 180 | 532 | 162 | 76 |
| 7 | 95 | 202 | 568 | 3,100 | 2,570 | 702 | 514 | 124 | 385 | 400 | 238 |
| 8 | 88 | 400 | 550 | 6,720 | 2,920 | 640 | 460 | 133 | 550 | 238 | 62 |
| 9 | 95 | 640 | 550 | 11,900 | 4,080 | 640 | 430 | 124 | 514 | 142 | 56 |
| 10 | 95 | 1,020 | 478 | 14,500 | 4,920 | 640 | 400 | 62 | 980 | 114 | 20 |
| 11 | 190 | 958 | 385 | 12,500 | 6,040 | 1,000 | 415 | 69 | 824 | 104 | 5 |
| 12 | 214 | 935 | 514 | 10,000 | 9,450 | 640 | 415 | 95 | 1,580 | 124 | 56 |
| 13 | 142 | 881 | 466 | 8,880 | 12,000 | 763 | 370 | 82 | 2,570 | 124 | 124 |
| 14 | 76 | 496 | 460 | 7,270 | 35,100 | 784 | 340 | 88 | 3,290 | 114 | 88 |
| 15 | 214 | 568 | 460 | 5,360 | 50,600 | 742 | 298 | 190 | 2,740 | 133 | 171 |
| 16 | 104 | 845 | 445 | 4,280 | 45,800 | 742 | 298 | 325 | 1,670 | 274 | 180 |
| 17 | 82 | 1,440 | 400 | 3,480 | 34,500 | 681 | 250 | 845 | 1,120 | 400 | 180 |
| 18 | 82 | 9,310 | 298 | 2,740 | 25,200 | 640 | 262 | 1,200 | 824 | 478 | 250 |
| 19 | 76 | 22,400 | 460 | 2,400 | 29,200 | 550 | 325 | 868 | 586 | 460 | 460 |
| 20 | 76 | 24,200 | 400 | 1,850 | 27,200 | 604 | 385 | 660 | 660 | 355 | 532 |
| 21 | 82 | 20,400 | 400 | 3,000 | 23,300 | 742 | 286 | 340 | 763 | 478 | 586 |
| 22 | 88 | 13,500 | 415 | 8,700 | 15,900 | 640 | 274 | 162 | 1,200 | 250 | 532 |
| 23 | 88 | 9,450 | 415 | 22,400 | 11,200 | 681 | 262 | 95 | 2,070 | 152 | 460 |
| 24 | 88 | 6,280 | 400 | 30,200 | 8,330 | 568 | 568 | 133 | 1,200 | 88 | 370 |
| 25 | 69 | 3,480 | 310 | 30,200 | 6,770 | 385 | 250 | 250 | 742 | 62 | 202 |
| 26 | 76 | 2,230 | 355 | 22,400 | 5,140 | 370 | 202 | 250 | 568 | 36 | 162 |
| 27 | 76 | 1,470 | 370 | 14,500 | 4,280 | 478 | 180 | 310 | 868 | 25 | 274 |
| 28 | 62 | 1,230 | 370 | 8,330 | 3,480 | 496 | 152 | 250 | 763 | 28 | 226 |
| 29 | 50 | 1,330 | 340 | ------ | 2,400 | 496 | 142 | 152 | 532 | 43 | 226 |
| 30 | 22 | 1,300 | 400 | ------ | 2,070 | 478 | 152 | 88 | 430 | 95 | 568 |
| 31 | ------ | 1,170 | 622 | ------ | 1,880 | ----- | 171 | ------ | 445 | 50 | ------ |

*Monthly discharge, in second-feet, of Maumee River and Miami & Erie Canal near Defiance, Ohio, for the year ending September 30, 1925*

| Month | Maximum (combined) | Minimum (combined) | Mean | | |
|---|---|---|---|---|---|
| | | | River | Canal | Combined |
| November | 407 | 198 | 113 | 183 | 296 |
| December | 24,400 | 197 | 4,070 | 185 | 4,160 |
| January | 1,230 | 483 | 504 | 194 | 698 |
| February | 30,400 | 770 | 8,540 | 181 | 8,720 |
| March | 50,700 | 2,060 | 12,800 | 156 | 13,000 |
| April | 1,940 | 532 | 706 | 163 | 869 |
| May | 755 | 313 | 340 | 174 | 514 |
| June | 1,400 | 240 | 271 | 185 | 456 |
| July | 3,480 | 471 | 980 | 195 | 1,180 |
| August | 658 | 186 | 185 | 158 | 343 |
| September | 798 | 157 | 206 | 181 | 387 |

### 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, and August 26, 1921, to September 30, 1925.

GAGE.—Chain gage on highway bridge; read by John Rhodes.

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

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

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

EXTREMES OF DISCHARGE.—Maximum combined discharge of river and canal during year, 46,000 second-feet March 15; minimum combined daily discharge during year, 195 second-feet October 27.

1921–1925: Maximum combined discharge of river and canal, 49,600 second-feet March 31, 1924; minimum combined discharge, 195 second-feet October 27, 1924.

REGULATION.—Flow at extremely low water may be affected by regulation of Auglaize River at dam of Toledo Edison Co., near Defiance.

DIVERSIONS.—Water is diverted into Miami & Erie Canal at Grand Rapids and carried past station. See record of Miami & Erie Canal at Waterville.

ACCURACY.—Stage-discharge relation permanent except when affected by ice during December, January, and February. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except for periods of ice effect, for which they are fair.

*Discharge measurements of Maumee River at Waterville, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 6 | 1.56 | 90.8 | Apr. 13 | 1.84 | 359 | Sept. 10 | 1.43 | 53.4 |
| Nov. 26 | 1.52 | 70.5 | May 19 | 1.60 | 91.4 | | | |
| Mar. 15 | 10.47 | 45,300 | July 30 | 1.78 | 289 | | | |

*Daily discharge, in second-feet, of Maumee River at Waterville, Ohio, for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 448 | 66 | 73 | | | 7,980 | 2,180 | 574 | 110 | 66 | 190 | 58 |
| 2 | 210 | 66 | 75 | | | 5,230 | 1,840 | 334 | 110 | 70 | 110 | 58 |
| 3 | 210 | 58 | 76 | 850 | 610 | 3,180 | 1,450 | 230 | 102 | 54 | 66 | 62 |
| 4 | 126 | 58 | 78 | | | 3,040 | 1,270 | 334 | 90 | 110 | 70 | 58 |
| 5 | 94 | 58 | 110 | | | 2,910 | 1,040 | 520 | 70 | 66 | 68 | 62 |
| 6 | 90 | 58 | 94 | | | 2,780 | 910 | 334 | 102 | 58 | 78 | 50 |
| 7 | 86 | 66 | 70 | | | 3,180 | 972 | 378 | 110 | 78 | 78 | 50 |
| 8 | 86 | 66 | 102 | 560 | 8,000 | 3,040 | 762 | 378 | 102 | 102 | 66 | 44 |
| 9 | 86 | 50 | 94 | | | 3,040 | 820 | 356 | 110 | 78 | 66 | 50 |
| 10 | 78 | 58 | 86 | | | 5,230 | 850 | 400 | 102 | 82 | 58 | 56 |
| 11 | 86 | 62 | 174 | | | 6,750 | 706 | 290 | 70 | 650 | 60 | 58 |
| 12 | 78 | 78 | 142 | | | 8,420 | 880 | 240 | 70 | 520 | 60 | 70 |
| 13 | 70 | 66 | 1,000 | 450 | 9,700 | 11,200 | 323 | 356 | 62 | 1,540 | 94 | 110 |
| 14 | 78 | 94 | 110 | | | 36,400 | 850 | 210 | 60 | 2,290 | 70 | 66 |
| 15 | 78 | 78 | 572 | | | 45,600 | 706 | 174 | 62 | 3,040 | 78 | 70 |
| 16 | 70 | 86 | 910 | | | 44,800 | 572 | 190 | 126 | 2,290 | 62 | 70 |
| 17 | 78 | 60 | 762 | | | 38,700 | 572 | 312 | 290 | 1,130 | 50 | 60 |
| 18 | 86 | 58 | 1,240 | 390 | 3,300 | 28,200 | 546 | 290 | 290 | 910 | 58 | 58 |
| 19 | 94 | 66 | 6,360 | | | 33,300 | 598 | 110 | 356 | 520 | 62 | 66 |
| 20 | 70 | 70 | 25,400 | | | 29,600 | 334 | 174 | 790 | 1,640 | 58 | 86 |
| 21 | 102 | 62 | 31.800 | | 2,060 | 26,800 | 650 | 230 | 520 | 424 | 62 | 58 |
| 22 | 60 | 86 | 23,300 | | 8,420 | 21,300 | 650 | 142 | 230 | 546 | 62 | 50 |
| 23 | 86 | 78 | 15,300 | 370 | 22,600 | 14,200 | 850 | 142 | 126 | 972 | 58 | 70 |
| 24 | 70 | 58 | 12,200 | | 31,800 | 10,200 | 520 | 110 | 70 | 1,450 | 50 | 70 |
| 25 | 70 | 102 | 8,420 | | 32,600 | 8,860 | 472 | 94 | 102 | 940 | 50 | 70 |
| 26 | 70 | 98 | | | 26,800 | 7,150 | 448 | 110 | 94 | 496 | 62 | 70 |
| 27 | 50 | 86 | | | 17,000 | 5,980 | 378 | 78 | 70 | 312 | 58 | 174 |
| 28 | 66 | 70 | 1,500 | 330 | 11,700 | 4,530 | 472 | 110 | 66 | 706 | 58 | 70 |
| 29 | 70 | 70 | | | -------- | 3,600 | 460 | 190 | 66 | 496 | 58 | 70 |
| 30 | 78 | 72 | | | -------- | 2,660 | 546 | 110 | 62 | 270 | 58 | 70 |
| 31 | 70 | ------- | | | -------- | 2,410 | ------- | 110 | ------- | 190 | 50 | ----- |

NOTE.—Stage-discharge relation affected by ice Nov. 30 to Dec. 4 and Dec. 26 to Feb. 20; discharge Nov. 30 to Dec. 4, interpolated; discharge Dec. 26 to Feb. 20 estimated by comparison with record of combined flow of Maumee River and Miami & Erie Canal near Deflance, Ohio.

*Monthly discharge, in second-feet, of Maumee River and Miami & Erie Canal at Waterville, Ohio, for the year ending September 30, 1925*

| Month | Combined | | Mean | | |
|---|---|---|---|---|---|
| | Maximum | Minimum | River | Canal | Combined |
| October | 820 | 195 | 99.8 | 302 | 402 |
| November | 347 | 286 | 70.1 | 247 | 317 |
| December | 32,200 | 288 | 4,440 | 325 | 4,760 |
| January | ---------- | ---------- | 486 | 298 | 784 |
| February | 33,000 | ---------- | 9,320 | 387 | 9,710 |
| March | 46,000 | 2,820 | 13,900 | 387 | 14,300 |
| April | 2,590 | 568 | 788 | 407 | 1,190 |
| May | 984 | 488 | 245 | 411 | 656 |
| June | 1,160 | 365 | 153 | 352 | 505 |
| July | 3,440 | 368 | 713 | 372 | 1,080 |
| August | 574 | 364 | 68.6 | 355 | 424 |
| September | 510 | 282 | 67.8 | 277 | 345 |
| The year | 46,000 | 195 | 2,500 | 343 | 2,840 |

### 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 (revised; area in Ohio measured on topographic maps, area in Michigan measured on post-route map).

RECORDS AVAILABLE.—September 1, 1921, to September 30, 1925.

GAGE.—Chain gage on highway bridge; read by Vernetta and L. E. Allison.

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, 12.2 feet at 7.40 a. m. March 16 (discharge, 1,930 second-feet); minimum stage, 0.92 foot August 29 and 30 (discharge, 10 second-feet).

1921–1925: Maximum stage recorded, 13.0 feet at 5.30 p. m. April 1, 1922 (revised discharge), and at 4 p. m. March 7, 1924 (discharge, 2,070 second-feet); minimum discharge, August 26–31, 1925.

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

ACCURACY.—Stage-discharge relation changed during high water on March 15. Rating curves fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except as noted in footnote to table of daily discharge. Records fair.

*Discharge measurements of Tiffin River near Stryker, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 6 | 1.56 | 32.6 | May 20 | 1.99 | 98.7 |
| Mar. 14 | 10.56 | 1,980 | July 31 | 1.06 | 14.7 |
| Apr. 13 | 2.11 | 107 | | | |

*Daily discharge, in second-feet, of Tiffin River near Stryker, Ohio, for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 34 | 31 | 27 | 19 | 40 | 357 | 198 | 92 | 40 | 21 | 24 | 14 |
| 2 | 40 | 32 | 27 | 17 | 43 | 343 | 185 | 92 | 36 | 18 | 33 | 21 |
| 3 | 35 | 33 | 33 | 19 | 41 | 273 | 172 | 92 | 38 | 18 | 32 | 17 |
| 4 | 28 | 38 | 38 | 20 | 41 | 175 | 152 | 86 | 35 | 22 | 43 | 14 |
| 5 | 31 | 31 | 38 | 20 | 44 | 175 | 140 | 86 | 36 | 30 | 23 | 13 |
| 6 | 31 | 36 | 41 | 21 | 140 | 189 | 133 | 109 | 32 | 38 | 17 | 14 |
| 7 | 28 | 37 | 46 | 20 | 385 | 231 | 127 | 109 | 30 | 45 | 16 | 14 |
| 8 | 27 | 34 | 72 | 19 | 899 | 287 | 115 | 97 | 30 | 75 | 18 | 16 |
| 9 | 30 | 29 | 175 | 18 | 1,170 | 287 | 109 | 92 | 24 | 58 | 19 | 17 |
| 10 | 27 | 31 | 147 | 18 | 1,230 | 315 | 109 | 86 | 26 | 56 | 21 | 16 |
| 11 | 27 | 36 | 50 | 18 | 1,550 | 399 | 115 | 80 | 29 | 51 | 17 | 15 |
| 12 | 25 | 33 | 62 | 19 | 1,400 | 602 | 109 | 75 | 29 | 75 | 17 | 21 |
| 13 | 25 | 37 | 58 | 22 | 1,050 | 474 | 109 | 70 | 23 | 133 | 21 | 40 |
| 14 | 25 | 35 | 50 | 21 | 687 | 1,500 | 92 | 61 | 38 | 211 | 26 | 50 |
| 15 | 24 | 38 | 38 | 22 | 273 | 1,860 | 97 | 61 | 49 | 267 | 23 | 49 |
| 16 | 26 | 41 | 43 | 20 | 231 | 1,890 | 103 | 60 | 46 | 55 | 26 | 44 |
| 17 | 27 | 41 | 48 | 21 | 189 | 1,800 | 97 | 92 | 70 | 45 | 24 | 51 |
| 18 | 28 | 35 | 58 | 20 | 128 | 1,800 | 86 | 121 | 70 | 39 | 18 | 48 |
| 19 | 29 | 27 | 147 | 23 | 140 | 1,820 | 97 | 97 | 59 | 38 | 17 | 44 |
| 20 | 30 | 31 | 357 | 18 | 128 | 1,890 | 97 | 86 | 40 | 27 | 19 | 44 |
| 21 | 29 | 41 | 399 | 14 | 168 | 1,820 | 92 | 70 | 25 | 23 | 16 | 45 |
| 22 | 28 | 41 | 315 | 16 | 357 | 1,760 | 92 | 63 | 24 | 24 | 13 | 36 |
| 23 | 28 | 42 | 245 | 23 | 738 | 1,520 | 86 | 56 | 22 | 21 | 12 | 27 |
| 24 | 30 | 41 | 189 | 21 | 1,110 | 1,030 | 86 | 53 | 26 | 19 | 12 | 24 |
| 25 | 34 | 38 | 82 | 23 | 1,360 | 752 | 80 | 46 | 29 | 20 | 11 | 21 |
| 26 | 31 | 27 | 58 | 23 | 1,380 | 598 | 70 | 43 | 35 | 21 | 10 | 20 |
| 27 | 29 | 34 | 38 | 29 | 1,320 | 485 | 70 | 48 | 46 | 22 | 10 | 29 |
| 28 | 30 | 34 | 30 | 24 | 881 | 380 | 65 | 44 | 36 | 19 | 10 | 58 |
| 29 | 27 | 25 | 27 | 22 | ------- | 309 | 65 | 50 | 29 | 18 | 10 | 80 |
| 30 | 25 | 25 | 18 | 25 | ------- | 253 | 70 | 46 | 22 | 15 | 10 | 70 |
| 31 | 29 | ------- | 20 | 31 | ------- | 225 | ------- | 43 | ------- | 17 | 10 | ------- |

NOTE.—Stage-discharge relation affected by leaves lodged on control Oct. 1 to Dec. 20; daily discharge Oct. 1–5 ascertained by method for shifting control; Oct. 6 to Dec. 20, from parallel rating curve through discharge measurement made on Oct. 6. Gage heights Dec. 23 to Jan. 31 corrected for thickness of ice cover at gage.

*Monthly discharge of Tiffin River near Stryker, Ohio, for the year ending September 30, 1925*

[Drainage area, 450 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimnm | Mean | Per square mile | |
| October | 40 | 24 | 28.9 | 0.064 | 0.07 |
| November | 42 | 25 | 34.5 | .077 | .09 |
| December | 399 | 18 | 96.0 | .213 | .25 |
| Jannary | 31 | 14 | 20.8 | .046 | .05 |
| February | 1,550 | 40 | 612 | 1.36 | 1.42 |
| March | 1,890 | 175 | 832 | 1.85 | 2.13 |
| April | 198 | 65 | 107 | .238 | .27 |
| May | 121 | 43 | 74.4 | .165 | .19 |
| June | 70 | 22 | 35.8 | .080 | .09 |
| July | 267 | 15 | 49.7 | .110 | .13 |
| August | 43 | 10 | 18.6 | .041 | .05 |
| September | 80 | 13 | 32.4 | .072 | .08 |
| The year | 1,890 | 10 | 159 | .353 | 4.82 |

### AUGLAIZE RIVER NEAR FORT JENNINGS, OHIO

LOCATION.—In SE. ¼ sec. 15, T. 1 S., R. 5 E., 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, 1925.

GAGE.—Chain gage on highway bridge; read by G. S. Hedrick.

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. Prior to October 29, 1922, the control for low water was the loose rock dam 800 feet below gage. On that date an opening was made in the center of the loose rock dam down to bedrock in order to lower pool at the gage and allow submerged quarry cofferdam 500 feet below the gage to form control for low water. Zero flow would occur at gage height 0.3 foot, from measurements made after pool was lowered.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.8 feet at 12.05 p. m. December 20 (discharge, 3,730 second-feet); minimum stage, 1.04 feet at 12.10 p. m. July 20 (discharge, 13 second-feet).

1921–1925: Maximum stage recorded, 15.6 feet at 12.30 p. m. April 19, 1922 (discharge, 5,130 second-feet); minimum stage, 1.10 feet November 26, 1923, and August 9 and 11, 1924 (discharge, 12 second-feet).

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

ACCURACY.—Stage-discharge relation not permanent; affected by ice during winter. Rating curve used August 31, 1921, to April 18, 1922, is well defined between 50 and 3,000 second-feet and extended above and below these limits. Rating curve used April 19, 1922, to October 27, 1922, is well defined between 40 and 3,000 second-feet and extended below and above these limits. On October 28, 1922, an opening was made through the control, lowering the water level and forming a new and somewhat more permanent control just below gage. Rating curve for this new control is well defined below 3,000 second-feet and extended above this limit and was used to September 30, 1925. Gage read to hundredths once a day. Discharge ascertained by applying daily gage height to rating table, except as indicated in footnote to table of daily discharge. Records good, except for periods of ice effect and when leaves were lodged on control for which they are fair.

*Discharge measurements of Auglaize River near Fort Jennings, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 10 | 1.45 | 36.5 | Mar. 20 | 3.77 | 390 | Aug. 4 | 1.43 | 40.0 |
| Nov. 21 | 1.66 | 44.0 | Apr. 10 | 1.99 | 69.7 | Sept. 11 | 1.34 | 32.5 |

*Daily discharge, in second-feet, of Auglaize River near Fort Jennings, Ohio, for the years ending September 30, 1921–1925*

| Day | Aug. | Sept. | Day | Aug. | Sept. | Day | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1921 | | | 1921 | | | 1921 | | |
| 1 | | 52 | 11 | | 70 | 21 | | 18 |
| 2 | | 40 | 12 | | 52 | 22 | | 40 |
| 3 | | 38 | 13 | | 66 | 23 | | 38 |
| 4 | | 21 | 14 | | 36 | 24 | | 34 |
| 5 | | 22 | 15 | | 18 | 25 | | 40 |
| 6 | | 30 | 16 | | 63 | 26 | | 36 |
| 7 | | 40 | 17 | | 70 | 27 | | 32 |
| 8 | | 24 | 18 | | 34 | 28 | | 59 |
| 9 | | 28 | 19 | | 27 | 29 | | 56 |
| 10 | | 42 | 20 | | 22 | 30 | | 59 |
| | | | | | | 31 | 52 | |

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1921-22 | | | | | | | | | | | | |
| 1 | 63 | 97 | 290 | 111 | 140 | 240 | 4,080 | 155 | 215 | 160 | 66 | 76 |
| 2 | 32 | 520 | 265 | 165 | 1,120 | 190 | 2,560 | 155 | 215 | 145 | 61 | 99 |
| 3 | 16 | 465 | 670 | 190 | 1,860 | 190 | 1,060 | 190 | 190 | 115 | 66 | 1,030 |
| 4 | 14 | 265 | 390 | 178 | 1,480 | 190 | 700 | 670 | 165 | 95 | 61 | 1,970 |
| 5 | 32 | 190 | 290 | 1,440 | 730 | 155 | 520 | 465 | 155 | 79 | 74 | 1,270 |
| 6 | 32 | 145 | 240 | 1,440 | 520 | 160 | 415 | 290 | 155 | 74 | 66 | 440 |
| 7 | 63 | 130 | 215 | 580 | 365 | 365 | 340 | 240 | 145 | 64 | 61 | 240 |
| 8 | 79 | 121 | 190 | 365 | 315 | 440 | 790 | 215 | 130 | 150 | 56 | 178 |
| 9 | 74 | 116 | 190 | 290 | 265 | 340 | 1,550 | 190 | 111 | 465 | 76 | 145 |
| 10 | 52 | 106 | 190 | 240 | 240 | 315 | 820 | 315 | 190 | 190 | 76 | 315 |
| 11 | 45 | 140 | 178 | 215 | 240 | 730 | 2,090 | 850 | 365 | 190 | 69 | 1,380 |
| 12 | 47 | 240 | 178 | 240 | 290 | 970 | 2,740 | 640 | 365 | 215 | 76 | 1,150 |
| 13 | 47 | 290 | 190 | 190 | 290 | 550 | 1,270 | 1,410 | 215 | 910 | 66 | 550 |
| 14 | 30 | 290 | 240 | 165 | 215 | 670 | 970 | 580 | 160 | 1,180 | 66 | 290 |
| 15 | 38 | 550 | 265 | 165 | 160 | 2,290 | 3,060 | 290 | 130 | 465 | 66 | 190 |
| 16 | 38 | 440 | 265 | 121 | 111 | 670 | 3,830 | 215 | 120 | 165 | 71 | 155 |
| 17 | 22 | 465 | 290 | 106 | 135 | 520 | 1,760 | 190 | 95 | 165 | 79 | 135 |
| 18 | 16 | 1,150 | 1,690 | 145 | 165 | 315 | 3,500 | 215 | 95 | 145 | 66 | 103 |
| 19 | 15 | 1,800 | 1,970 | 465 | 165 | 315 | 5,130 | 1,000 | 95 | 150 | 71 | 95 |
| 20 | 28 | 2,380 | 940 | 640 | 850 | 490 | 2,960 | 3,010 | 85 | 150 | 39 | 92 |
| 21 | 16 | 1,340 | 520 | 340 | 820 | 520 | 790 | 2,920 | 82 | 115 | 74 | 89 |
| 22 | 22 | 550 | 315 | 265 | 1,440 | 390 | 550 | 1,620 | 79 | 107 | 61 | 79 |
| 23 | 27 | 390 | 290 | 215 | 1,580 | 465 | 415 | 700 | 79 | 99 | 37 | 71 |
| 24 | 24 | 315 | 490 | 190 | 1,520 | 910 | 340 | 440 | 89 | 92 | 69 | 64 |
| 25 | 52 | 440 | 1,030 | | 670 | 610 | 265 | 1,030 | 76 | 82 | 71 | 71 |
| 26 | 45 | 415 | 550 | | 365 | 465 | 215 | 1,180 | 95 | 69 | 92 | 74 |
| 27 | 56 | 490 | 290 | 120 | 265 | 1,210 | 215 | 1,480 | 89 | 74 | 107 | 76 |
| 28 | 47 | 550 | 215 | | 265 | 2,050 | 190 | 1,090 | 64 | 76 | 89 | 74 |
| 29 | 45 | 490 | 215 | | ------- | 1,830 | 178 | 610 | 82 | 71 | 99 | 69 |
| 30 | 74 | 340 | 145 | | ------- | 1,480 | 160 | 340 | 125 | 69 | 99 | 71 |
| 31 | 97 | ------- | 160 | | ------- | 3,550 | ------- | 265 | ------- | 69 | 89 | ------ |

*Daily discharge, in second-feet, of Auglaize River near Fort Jennings, Ohio, for the years ending September 30, 1921–1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1922–23** | | | | | | | | | | | | |
| 1 | 69 | 36 | 47 | 2,380 | 610 | 550 | 136 | 90 | 90 | 55 | 42 | 71 |
| 2 | 79 | 31 | 40 | 2,130 | 850 | 316 | 124 | 80 | 90 | 53 | 51 | 80 |
| 3 | 76 | 26 | 47 | 1,090 | 910 | 231 | 124 | 62 | 85 | 58 | 53 | 50 |
| 4 | 79 | 20 | 45 | 880 | 550 | 610 | 136 | 56 | 62 | 50 | 62 | 58 |
| 5 | 82 | 28 | 60 | 550 | 294 | 970 | 850 | 58 | 71 | 47 | 80 | 71 |
| 6 | 79 | 22 | 53 | 340 | | 610 | 2,290 | 60 | 71 | 62 | 55 | 62 |
| 7 | 89 | 18 | 60 | 294 | | 440 | 1,410 | 47 | 90 | 60 | 60 | 55 |
| 8 | 99 | 24 | 66 | 250 | 240 | 316 | 730 | 62 | 80 | 62 | 37 | 62 |
| 9 | 89 | 23 | 62 | 465 | | 272 | 390 | 53 | 85 | 45 | 48 | 62 |
| 10 | 95 | 16 | 62 | 760 | 204 | 760 | 272 | 71 | 106 | 71 | 66 | 33 |
| 11 | 99 | 25 | 106 | 490 | 164 | 1,270 | 240 | 76 | 100 | 57 | 55 | 57 |
| 12 | 115 | 18 | 95 | 390 | 118 | 1,970 | 100 | 390 | 95 | 112 | 50 | 60 |
| 13 | 107 | 23 | 196 | 294 | 1,340 | 2,210 | 180 | 2,740 | 106 | 71 | 24 | 47 |
| 14 | 99 | 24 | 90 | 760 | 1,150 | 1,090 | 172 | 3,370 | 106 | 31 | 48 | 55 |
| 15 | 89 | 22 | 85 | 3,240 | 440 | 610 | 204 | 2,290 | 150 | 42 | 42 | 53 |
| 16 | 89 | 18 | 80 | 2,380 | | 3,240 | 180 | 3,460 | 100 | 51 | 55 | 50 |
| 17 | 71 | 43 | 76 | 940 | | 3,320 | 164 | 2,520 | 90 | 62 | 30 | 33 |
| 18 | 65 | 47 | 58 | 520 | 330 | 1,340 | 136 | 1,030 | 106 | 57 | 48 | 39 |
| 19 | 59 | 55 | | 340 | | 730 | 143 | 610 | 118 | 51 | 57 | 48 |
| 20 | 70 | 47 | | 112 | | 340 | 136 | 440 | 95 | 50 | 29 | 58 |
| 21 | 71 | 60 | 55 | 820 | 261 | 250 | 124 | 316 | 80 | 53 | 50 | 66 |
| 22 | 67 | 58 | | 1,620 | 222 | 294 | 124 | 250 | 71 | 47 | 30 | 50 |
| 23 | 59 | 58 | | 850 | 186 | 1,830 | 100 | 204 | 66 | 33 | 51 | 37 |
| 24 | 49 | 55 | | 465 | 164 | 910 | 100 | 180 | 76 | 53 | 45 | 42 |
| 25 | 46 | 57 | 51 | 294 | 164 | 550 | 90 | 164 | 43 | 50 | 40 | 53 |
| 26 | 51 | 47 | 43 | 250 | 150 | 390 | 90 | 143 | 57 | 50 | 55 | 36 |
| 27 | 44 | 42 | 47 | 231 | 316 | 294 | 95 | 136 | 53 | 45 | 26 | 30 |
| 28 | 43 | 42 | 1,380 | 1,150 | 790 | 222 | 95 | 136 | 62 | 51 | 57 | 37 |
| 29 | 42 | 45 | 1,970 | 1,550 | ------- | 188 | 85 | 112 | 53 | 55 | 85 | 39 |
| 30 | 62 | 48 | 1,340 | 790 | ------- | 180 | 71 | 100 | 71 | 39 | 45 | 37 |
| 31 | 33 | ------- | 940 | 490 | ------- | 150 | ------- | 85 | ------- | 47 | 62 | ------- |
| **1923–24** | | | | | | | | | | | | |
| 1 | 30 | 28 | 43 | 143 | 1,100 | | 940 | 164 | 172 | 1,480 | 53 | 20 |
| 2 | 29 | 33 | 50 | 272 | 850 | 550 | 670 | 164 | 180 | 550 | 51 | 25 |
| 3 | 26 | 47 | 34 | 196 | 730 | | 490 | 164 | 180 | 340 | 62 | 25 |
| 4 | 28 | 47 | 42 | | 820 | 640 | 390 | 188 | 340 | 550 | 51 | 18 |
| 5 | 28 | 40 | 124 | | 1,000 | 2,740 | 316 | 188 | 440 | 250 | 53 | 17 |
| 6 | 30 | 36 | 180 | | 1,030 | 2,210 | 272 | 172 | 850 | 188 | 53 | 13 |
| 7 | 33 | 29 | 157 | 100 | 790 | 1,240 | 196 | 150 | 1,210 | 157 | 51 | 14 |
| 8 | 31 | 29 | 136 | | 365 | 550 | 188 | 180 | 1,030 | 1,150 | 19 | 17 |
| 9 | 28 | 19 | 136 | | 272 | 294 | 172 | 124 | 3,140 | 340 | 12 | 20 |
| 10 | 23 | 39 | 188 | | 272 | 272 | 157 | 136 | 3,980 | 231 | 13 | 23 |
| 11 | 30 | 34 | 196 | 200 | 172 | 231 | 143 | 212 | 2,880 | 172 | 12 | 20 |
| 12 | 33 | 28 | 180 | 222 | 196 | 340 | 124 | 390 | 1,210 | 150 | 18 | 17 |
| 13 | 34 | 34 | 490 | 536 | 150 | 850 | 118 | 272 | 910 | 130 | 18 | 24 |
| 14 | 31 | 30 | 1,410 | 850 | 143 | 910 | 112 | 231 | 970 | 106 | 18 | 58 |
| 15 | 29 | 45 | 760 | 640 | 124 | 440 | 112 | 440 | 440 | 112 | 18 | 55 |
| 16 | 30 | 43 | 340 | 880 | 121 | 294 | 118 | 294 | 316 | 100 | 16 | 53 |
| 17 | 30 | 43 | 222 | 1,380 | 118 | 222 | 124 | 212 | 294 | 95 | 19 | 36 |
| 18 | 47 | 62 | 196 | 850 | 106 | 212 | 124 | 172 | 231 | 85 | 18 | 19 |
| 19 | 28 | 28 | 180 | 550 | | 204 | 130 | 164 | 180 | 85 | 24 | 37 |
| 20 | 34 | 23 | 164 | | | 212 | 130 | 150 | 143 | 76 | 24 | 48 |
| 21 | 31 | 19 | 222 | | | 212 | 124 | 136 | 118 | 66 | 19 | 58 |
| 22 | 25 | 23 | 1,410 | | | 212 | 520 | 130 | 100 | 76 | 19 | 33 |
| 23 | 19 | 24 | 1,900 | | | 1,150 | 730 | 118 | 136 | 66 | 18 | 31 |
| 24 | 28 | 24 | 2,130 | 180 | 130 | 1,690 | 390 | 164 | 150 | 71 | 16 | 34 |
| 25 | 36 | 25 | 1,240 | | | 1,410 | 250 | 440 | 1,150 | 62 | 14 | 42 |
| 26 | 37 | 12 | 670 | | | 1,690 | 196 | 272 | 1,090 | 76 | 20 | 50 |
| 27 | 30 | 18 | 465 | | | 1,760 | 164 | 188 | 390 | 66 | 20 | 60 |
| 28 | 37 | 18 | 670 | | | 1,090 | 157 | 157 | 294 | 53 | 19 | 55 |
| 29 | 33 | 28 | 580 | | | 2,960 | 150 | 150 | 2,050 | 50 | 16 | 51 |
| 30 | 34 | 42 | 340 | 800 | ------- | 4,480 | 157 | 143 | 3,100 | 57 | 17 | 51 |
| 31 | 37 | ------- | 250 | 1,450 | ------- | 3,460 | ------- | 188 | ------- | 47 | 19 | ------- |

*Daily discharge, in second-feet, of Auglaize River near Fort Jennings, Ohio, for the years ending September 30, 1921–1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1924–25 | | | | | | | | | | | | |
| 1 | 34 | 32 | 26 | | | 390 | 95 | 47 | 32 | 29 | 60 | 45 |
| 2 | 42 | 34 | 36 | | | 250 | 100 | 58 | 43 | 32 | 62 | 40 |
| 3 | 42 | 32 | 39 | | | 204 | 95 | 56 | 31 | 38 | 39 | 45 |
| 4 | 50 | 32 | 47 | | 95 | 188 | 90 | 56 | 38 | 34 | 39 | 29 |
| 5 | 37 | 30 | 49 | 85 | | 143 | 76 | 57 | 44 | 17 | 33 | 45 |
| 6 | 34 | 33 | 56 | | | 124 | 71 | 58 | 31 | 20 | 51 | 33 |
| 7 | 40 | 36 | 52 | | | 143 | 71 | 53 | 43 | 42 | 57 | 25 |
| 8 | 33 | 37 | 51 | | | 157 | 71 | 55 | 36 | 14 | 57 | 19 |
| 9 | 30 | 38 | 66 | | 630 | 204 | 58 | 57 | 85 | 22 | 76 | 16 |
| 10 | 34 | 29 | 66 | | | 231 | 71 | 48 | 80 | 20 | 45 | 16 |
| 11 | 37 | 29 | 85 | | 670 | 610 | 76 | 44 | 56 | 25 | 31 | 32 |
| 12 | 43 | 25 | 76 | | 550 | 1,480 | 76 | 46 | 31 | 53 | 20 | 30 |
| 13 | 30 | 25 | 76 | | 340 | 910 | 62 | 46 | 52 | 40 | 16 | 47 |
| 14 | 50 | 39 | 39 | | 272 | 1,830 | 71 | 44 | 61 | 22 | 22 | 47 |
| 15 | 33 | 31 | 66 | | 204 | 2,740 | 58 | 61 | 33 | 19 | 37 | 51 |
| 16 | 37 | 39 | 52 | 70 | 180 | 1,410 | 58 | 51 | 47 | 21 | 136 | 85 |
| 17 | 33 | 27 | 66 | | 164 | 730 | 66 | 42 | 51 | 23 | 76 | 250 |
| 18 | 53 | 34 | 118 | | 157 | 550 | 71 | 28 | 43 | 22 | 62 | 172 |
| 19 | 50 | 27 | 2,600 | | 150 | 440 | 62 | 18 | 47 | 15 | 66 | 136 |
| 20 | 37 | 41 | 3,730 | | 143 | 390 | 55 | 16 | 60 | 13 | 76 | 121 |
| 21 | 31 | 45 | 2,380 | | 188 | 294 | 57 | 47 | 66 | 30 | 62 | 76 |
| 22 | 28 | 41 | 790 | | 850 | 231 | 71 | 54 | 47 | 43 | 62 | 71 |
| 23 | 26 | 49 | 490 | | 1,480 | 188 | 66 | 44 | 49 | 85 | 40 | 53 |
| 24 | 28 | 29 | | | 2,050 | 172 | 62 | 43 | 47 | 85 | 37 | 51 |
| 25 | 15 | 43 | | | 1,410 | 164 | 66 | 32 | 47 | 80 | 47 | 48 |
| 26 | 16 | 26 | | 80 | 1,060 | 157 | 59 | 57 | 48 | 71 | 47 | 45 |
| 27 | 15 | 41 | 150 | | 340 | 143 | 58 | 60 | 40 | 47 | 50 | 80 |
| 28 | 16 | 26 | | | 390 | 136 | 47 | 51 | 40 | 46 | 45 | 62 |
| 29 | 26 | 25 | | | ------ | 130 | 47 | 51 | 42 | 39 | 61 | 62 |
| 30 | 43 | 47 | | | ------ | 118 | 58 | 53 | 42 | 60 | 57 | 51 |
| 31 | 31 | ------ | | | ------ | 100 | ------ | 40 | ------ | 62 | 24 | ------ |

NOTE.—Stage-discharge relation affected by ice Jan. 25–31, Dec. 19–24, 1922, Feb. 6–9, 16–20, 1923, Jan. 4–10, Jan. 20 to Feb. 2, Feb. 19 to Mar. 3, Dec. 24–31, 1924, and Jan. 1 to Feb. 10, 1925; discharge estimated from study of records of flow of near-by streams which were not affected by ice, observer's notes, and weather records. Discharge ascertained by method for shifting control Oct. 13 to Nov. 1, 1921, July 13–17, and Oct. 13–27, 1922, Oct. 24 to Dec. 19, 1924, and Mar. 22 to Sept. 30, 1925, because of leaves and twigs collecting on control.

*Monthly discharge of Auglaize River near Fort Jennings, Ohio, for the years ending September 30, 1921–1925*

[Drainage area, 333 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1921 | | | | | |
| September | 70 | 18 | 40.2 | 0.121 | 0.14 |
| 1921–22 | | | | | |
| October | 97 | 14 | 41.5 | .125 | .14 |
| November | 2,380 | 97 | 507 | 1.52 | 1.70 |
| December | 1,970 | 145 | 431 | 1.29 | 1.49 |
| January | 1,440 | ------ | 300 | .901 | 1.04 |
| February | 1,860 | 111 | 592 | 1.78 | 1.85 |
| March | 3,550 | 155 | 761 | 2.29 | 2.64 |
| April | 5,130 | 160 | 1,450 | 4.35 | 4.85 |
| May | 3,010 | 155 | 741 | 2.23 | 2.57 |
| June | 365 | 64 | 142 | .426 | .48 |
| July | 1,180 | 64 | 200 | .601 | .69 |
| August | 107 | 37 | 71.6 | .215 | .25 |
| September | 1,970 | 64 | 355 | 1.07 | 1.19 |
| The year | 5,130 | 14 | 463 | 1.39 | 18.89 |

*Monthly discharge of Auglaize River near Fort Jennings, Ohio, for the years ending September 30, 1921–1925*—Continued

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1922–23 | | | | | |
| October | 115 | 33 | 73.1 | 0.220 | 0.25 |
| November | 60 | 16 | 35.9 | .108 | .12 |
| December | 1,970 | 40 | 240 | .721 | .83 |
| January | 3,240 | 112 | 875 | 2.63 | 3.03 |
| February | 1,340 | 150 | 410 | 1.23 | 1.28 |
| March | 3,320 | 150 | 853 | 2.56 | 2.95 |
| April | 2,290 | 71 | 303 | .910 | 1.02 |
| May | 3,460 | 47 | 626 | 1.88 | 2.17 |
| June | 150 | 43 | 84.3 | .253 | .28 |
| July | 112 | 31 | 53.9 | .162 | .19 |
| August | 85 | 24 | 49.6 | .149 | .17 |
| September | 80 | 30 | 51.0 | .153 | .17 |
| The year | 3,460 | 16 | 306 | .919 | 12.46 |
| 1923–24 | | | | | |
| October | 47 | 19 | 30.9 | .093 | .11 |
| November | 62 | 12 | 31.7 | .095 | .11 |
| December | 2,130 | 34 | 487 | 1.46 | 1.68 |
| January | | | 370 | 1.11 | 1.28 |
| February | | | 338 | 1.01 | 1.09 |
| March | 4,480 | 204 | 1,080 | 3.24 | 3.74 |
| April | 940 | 112 | 262 | .787 | .88 |
| May | 440 | 118 | 202 | .607 | .70 |
| June | 3,980 | 100 | 922 | 2.77 | 3.09 |
| July | 1,480 | 47 | 227 | .682 | .79 |
| August | 62 | 12 | 25.8 | .077 | .09 |
| September | 60 | 13 | 34.1 | .102 | .11 |
| The year | 4,480 | 12 | 335 | 1.01 | 13.67 |
| 1924–25 | | | | | |
| October | 53 | 15 | 34.0 | .102 | .12 |
| November | 49 | 25 | 34.1 | .102 | .11 |
| December | 3,730 | 26 | 395 | 1.19 | 1.37 |
| January | | | 78.4 | .235 | .27 |
| February | 2,050 | | 470 | 1.41 | 1.47 |
| March | 2,740 | 100 | 483 | 1.45 | 1.67 |
| April | 100 | 47 | 68.1 | .204 | .23 |
| May | 61 | 16 | 47.5 | .143 | .16 |
| June | 85 | 31 | 47.1 | .141 | .16 |
| July | 85 | 13 | 37.7 | .113 | .13 |
| August | 136 | 16 | 51.4 | .154 | .18 |
| September | 250 | 16 | 62.5 | .188 | .21 |
| The year | 3,730 | 13 | 149 | .447 | 6.08 |

### 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.—May 20 to October 24, 1903; April 13, 1915, to September 30, 1925.

GAGE.—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 feet. Height of flashboards 1.75 feet prior to April 16, 1924; 2.00 feet thereafter. Gages read hourly by power-plant attendants.

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. One channel at all stages. Dam and power plant form control.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge during year, 19,300 second-feet March 15; minimum mean daily discharge, 32 second-feet October 28, 30, and 31.

1915-1925: Maximum mean daily discharge, 36,100 second-feet March 18, 1919; minimum mean daily discharge, 6 second-feet October 17, 1923.

ICE.—Determination of discharge over dam and through plant not seriously affected by ice.

DIVERSIONS.—None.

REGULATION.—Flow regulated by Toledo Edison Co., at this point. Record of discharge not corrected for storage.

ACCURACY.—Discharge ascertained by power company from hourly readings on head and tail gages, and ratings of crest of dam, Taintor gates, and turbines, has been checked by current-meter measurements made below dam at various stages and found accurate. 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 shut down. Prior to high water of March 15, the leakage during year varied from 32 second-feet at headwater elevation 684.9 feet to 46 second-feet at headwater elevation 688.3 feet; after that date from 39 second-feet at head-water elevation 684.7 feet to 80 second-feet at headwater elevation 687.6 feet. Daily discharge values below 300 second-feet have been corrected for leakage. Records good.

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

*Discharge measurements of Auglaize River near Defiance, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 9 | 686.20 | 36.1 | May 21 | 685.00 | 42.1 |
| Nov. 21 | 685.95 | 36.0 | Aug. 3 | 686.15 | 219 |
| Apr. 12 | 687.00 | 70.2 | | | |

NOTE.—All discharge measurements made during year indicate amount of leakage through dam and power plant.

*Daily discharge, in second-feet, of Auglaize River near Defiance, Ohio, for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 339 | 50 | 40 | 424 | 308 | 1,870 | 629 | 312 | 67 | 366 | 239 | 52 |
| 2 | 34 | 33 | 40 | 435 | 389 | 1,780 | 637 | 229 | 57 | 364 | 57 | 52 |
| 3 | 144 | 33 | 41 | 400 | 412 | 1,240 | 410 | 177 | 59 | 362 | 249 | 52 |
| 4 | 88 | 33 | 41 | 313 | 379 | 1,090 | 283 | 313 | 344 | 62 | 226 | 103 |
| 5 | 92 | 34 | 42 | 430 | 498 | 1,100 | 65 | 312 | 574 | 63 | 53 | 81 |
| 6 | 53 | 34 | 42 | 433 | 1,100 | 1,040 | 366 | 311 | 71 | 84 | 54 | 343 |
| 7 | 36 | 34 | 175 | 367 | 1,310 | 764 | 366 | 309 | 40 | 138 | 56 | 85 |
| 8 | 68 | 34 | 307 | 298 | 2,300 | 567 | 303 | 308 | 134 | 117 | 107 | 40 |
| 9 | 37 | 34 | 458 | 325 | 4,920 | 1,530 | 363 | 204 | 42 | 65 | 59 | 40 |
| 10 | 47 | 34 | 142 | 314 | 5,810 | 1,800 | 363 | 50 | 43 | 65 | 60 | 40 |
| 11 | 38 | 125 | 194 | 108 | 4,970 | 2,630 | 327 | 319 | 47 | 133 | 63 | 40 |
| 12 | 70 | 34 | 183 | 295 | 3,410 | 5,330 | 68 | 309 | 39 | 663 | 67 | 40 |
| 13 | 38 | 35 | 508 | 294 | 2,670 | 7,270 | 304 | 306 | 53 | 1,020 | 68 | 60 |
| 14 | 146 | 55 | 142 | 293 | 2,120 | 12,900 | 314 | 252 | 123 | 701 | 70 | 40 |
| 15 | 238 | 325 | 322 | 293 | 1,390 | 19,300 | 315 | 249 | 118 | 584 | 187 | 42 |
| 16 | 37 | 34 | 369 | 290 | 1,480 | 15,900 | 364 | 192 | 60 | 345 | 73 | 47 |
| 17 | 37 | 34 | 362 | 274 | 1,260 | 9,220 | 300 | 60 | 812 | 318 | 77 | 52 |
| 18 | 106 | 35 | 1,060 | 41 | 1,040 | 5,150 | 347 | 247 | 635 | 314 | 327 | 223 |
| 19 | 116 | 35 | 5,870 | 266 | 841 | 6,580 | 67 | 245 | 561 | 78 | 306 | 278 |
| 20 | 103 | 36 | 12,800 | 285 | 635 | 4,670 | 353 | 171 | 514 | 324 | 444 | 392 |

*Daily discharge, in second-feet, of Auglaize River near Defiance, Ohio, for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | 103 | 36 | 12,800 | 41 | 1,270 | 4,420 | 363 | 42 | 56 | 306 | 356 | 403 |
| 22 | 99 | 36 | 8,520 | 283 | 4,510 | 3,010 | 400 | 45 | 60 | 336 | 255 | 297 |
| 23 | 243 | 51 | 5,190 | 282 | 11,200 | 2,170 | 352 | 332 | 63 | 453 | 54 | 292 |
| 24 | 231 | 37 | 3,210 | 264 | 14,600 | 1,820 | 352 | 295 | 67 | 322 | 54 | 292 |
| 25 | 165 | 38 | 2,090 | 39 | 14,000 | 1,480 | 337 | 73 | 68 | 239 | 54 | 60 |
| 26 | 34 | 38 | 1,490 | 305 | 8,640 | 1,360 | 59 | 42 | 72 | 65 | 54 | 164 |
| 27 | 317 | 39 | 785 | 281 | 4,980 | 1,340 | 332 | 45 | 73 | 292 | 54 | 149 |
| 28 | 32 | 39 | 406 | 281 | 2,600 | 1,140 | 331 | 48 | 75 | 294 | 54 | 65 |
| 29 | 45 | 40 | 645 | 298 | ------- | 396 | 319 | 50 | 77 | 254 | 116 | 70 |
| 30 | 32 | 57 | 627 | 316 | ------- | 654 | 313 | 53 | 78 | 253 | 143 | 73 |
| 31 | 32 | ------- | 572 | 380 | ------- | 660 | ------- | 95 | ------- | 275 | 52 | ------ |

*Monthly discharge, in second-feet, of Auglaize River near Defiance, Ohio, for the year ending September 30, 1925*

| Month | Maximum | Minimum | Mean | Month | Maximum | Minimum | Mean |
|---|---|---|---|---|---|---|---|
| October | 339 | 32 | 103 | May | 332 | 42 | 193 |
| November | 325 | 33 | 50.4 | June | 812 | 39 | 169 |
| December | 12,800 | 40 | 1,920 | July | 1,020 | 62 | 299 |
| January | 435 | 39 | 290 | August | 444 | 52 | 132 |
| February | 14,600 | 308 | 3,550 | September | 403 | 40 | 130 |
| March | 19,300 | 396 | 3,880 | | | | |
| April | 637 | 59 | 323 | The year | 19,300 | 32 | 906 |

### 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, 1925.

GAGE.—Chain gage on highway bridge; read by A. E. Benedum.

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 about 75 feet below gage. Zero flow would occur at zero gage height.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.3 feet at 4 p. m. December 19 (discharge, 2,200 second-feet); minimum stage, 0.63 foot at 8.30 a. m. June 2 (discharge, 6.5 second-feet).

1924–25: maximum stage recorded, 8.6 feet at 6.10 p. m. March 29 (discharge, 2,920 second-feet); minimum stage recorded, that of June 2, 1925.

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

DIVERSIONS.—Negligible.

REGULATION. None.

ACCURACY.—Stage-discharge relation for low water changed gradually from October 10 to November 19, 1924; affected by ice as indicated in footnote to table of daily discharge. Rating curves fairly well defined below 2,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except for periods of ice effect and of shifting control, for which they are fair.

*Discharge measurements of Ottawa River at Allentown, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 10 | 0.94 | 13.6 | Feb. 8 | 2.76 | 297 | July 7 | 0.85 | 13.1 |
| Nov. 20 | .87 | 15.6 | Mar. 9 | 1.90 | 125 | Aug. 4 | .82 | 10.1 |
| Dec. 10 | .92 | 16.9 | Apr. 11 | 1.06 | 24.3 | Sept. 12 | .78 | 10.5 |

*Daily discharge, in second-feet, of Ottawa River at Allentown, Ohio, for the years ending September 30, 1924 and 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1923–24 | | | | | | | | | | | | |
| 1 | | | 16 | 147 | 610 | 207 | 347 | 62 | 80 | 262 | 13 | 73 |
| 2 | | | 11 | 62 | 424 | 138 | 228 | 57 | 73 | 156 | 10 | 21 |
| 3 | | | 12 | 55 | 262 | 129 | 166 | 45 | 109 | 147 | 11 | 15 |
| 4 | | | 35 | 32 | 347 | 273 | 129 | 129 | 262 | 87 | 11 | 15 |
| 5 | | | 67 | 112 | 510 | 980 | 109 | 129 | 147 | 59 | 46 | 13 |
| 6 | | | 52 | 81 | 540 | 480 | 99 | 78 | 452 | 47 | 110 | 11 |
| 7 | | | 48 | 67 | 250 | 297 | 63 | 64 | 196 | 64 | 62 | 9.3 |
| 8 | | | 43 | 54 | 138 | 147 | 52 | 57 | 1,280 | 78 | 73 | 8.5 |
| 9 | | | 75 | 54 | 84 | 93 | 50 | 78 | 1,820 | 71 | 54 | 33 |
| 10 | | | 81 | 398 | 98 | 87 | 73 | 64 | 2,300 | 70 | 28 | 35 |
| 11 | | | 31 | 2,250 | 67 | 86 | 62 | 228 | 785 | 44 | 16 | 26 |
| 12 | | | 30 | 860 | 81 | 129 | 54 | 273 | 398 | 36 | 16 | 18 |
| 13 | | | 575 | 347 | 59 | 250 | 41 | 176 | 228 | 29 | 24 | 22 |
| 14 | | | 207 | 166 | 57 | 273 | 45 | 166 | 166 | 26 | 15 | 18 |
| 15 | | 11 | 81 | 73 | 55 | 196 | 39 | 186 | 120 | 24 | 12 | 12 |
| 16 | | 15 | 30 | 186 | 52 | 104 | 35 | 98 | 92 | 25 | 12 | 12 |
| 17 | | 14 | 28 | 372 | 52 | 87 | 58 | 52 | 67 | 21 | 9.3 | 12 |
| 18 | | 11 | 28 | 147 | 43 | 73 | 54 | 59 | 52 | 19 | 8.5 | 12 |
| 19 | | 11 | 30 | 106 | 44 | 70 | 37 | 59 | 41 | 16 | 11 | 12 |
| 20 | | 12 | 33 | 84 | 51 | 78 | 46 | 73 | 33 | 16 | 11 | 21 |
| 21 | | 13 | 73 | 129 | 50 | 81 | 62 | 60 | 29 | 19 | 8.9 | 39 |
| 22 | | 13 | 1,200 | 96 | 44 | 112 | 785 | 52 | 26 | 18 | 9.3 | 35 |
| 23 | | 13 | 1,100 | 67 | 41 | 540 | 372 | 45 | 54 | 16 | 18 | 11 |
| 24 | | 16 | 820 | 55 | 38 | 785 | 186 | 398 | 50 | 16 | 15 | 12 |
| 25 | | 13 | 273 | 54 | 33 | 610 | 109 | 285 | 452 | 18 | 12 | 12 |
| 26 | | 11 | 186 | 43 | 26 | 1,100 | 90 | 129 | 480 | 16 | 11 | 12 |
| 27 | | 12 | 129 | 43 | 43 | 820 | 90 | 87 | 207 | 14 | 12 | 12 |
| 28 | | 11 | 285 | 43 | 102 | 424 | 71 | 78 | 147 | 15 | 11 | 14 |
| 29 | | 13 | 156 | 372 | 228 | 2,740 | 57 | 78 | 1,720 | 13 | 8.9 | 13 |
| 30 | | 23 | 84 | 1,280 | | 1,280 | 67 | 109 | 610 | 15 | 11 | 11 |
| 31 | | | 176 | 820 | | 715 | | 84 | | 16 | 15 | |
| 1924–25 | | | | | | | | | | | | |
| 1 | 11 | 16 | 17 | | | 87 | 30 | 20 | 16 | 13 | 21 | 9.3 |
| 2 | 11 | 16 | 16 | | | 55 | 27 | 18 | 9.8 | 12 | 16 | 9.0 |
| 3 | 11 | 14 | 14 | | | 70 | 27 | 20 | 14 | 14 | 12 | 8.7 |
| 4 | 12 | 22 | 15 | | 100 | 44 | 26 | 26 | 13 | 15 | 12 | 9.3 |
| 5 | 11 | 21 | 38 | 25 | | 42 | 24 | 21 | 12 | 16 | 15 | 8.7 |
| 6 | 10 | 20 | 16 | | | 35 | 22 | 21 | 14 | 12 | 14 | 9.3 |
| 7 | 11 | 20 | 17 | | 210 | 51 | 22 | 20 | 15 | 13 | 13 | 9.3 |
| 8 | 13 | 23 | 90 | | 285 | 68 | 22 | 18 | 13 | 12 | 29 | 9.6 |
| 9 | 11 | 22 | 27 | | 322 | 120 | 22 | 18 | 12 | 12 | 22 | 9.0 |
| 10 | 12 | 20 | 18 | | 297 | 120 | 22 | 20 | 12 | 424 | 12 | 9.8 |
| 11 | 13 | 26 | 14 | | 228 | 980 | 24 | 19 | 11 | 424 | 12 | 9.3 |
| 12 | 12 | 32 | 14 | | 196 | 680 | 21 | 18 | 11 | 186 | 23 | 12 |
| 13 | 10 | 26 | 19 | | 120 | 398 | 20 | 18 | 12 | 17 | 39 | 18 |
| 14 | 12 | 16 | 17 | | 70 | 1,240 | 22 | 19 | 14 | 14 | 15 | 20 |
| 15 | 12 | 15 | 11 | 20 | 45 | 715 | 22 | 17 | 15 | 13 | 14 | 65 |
| 16 | 12 | 16 | 12 | | 35 | 273 | 21 | 18 | 26 | 13 | 13 | 26 |
| 17 | 12 | 13 | 43 | | 44 | 166 | 20 | 18 | 17 | 12 | 10 | 16 |
| 18 | 13 | 14 | 424 | | 42 | 129 | 22 | 16 | 18 | 16 | 12 | 14 |
| 19 | 16 | 16 | 2,080 | | 30 | 120 | 22 | 17 | 14 | 14 | 12 | 19 |
| 20 | 20 | 16 | 1,240 | | 26 | 86 | 20 | 19 | 12 | 21 | 12 | 18 |

*Daily discharge, in second-feet, of Ottawa River at Allentown, Ohio, for the years ending September 30, 1924 and 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1924–25 | | | | | | | | | | | | |
| 21 | 22 | 15 | 424 | | 67 | 45 | 20 | 20 | 11 | 18 | 11 | 12 |
| 22 | 19 | 17 | 207 | | 322 | 29 | 22 | 23 | 10 | 14 | 11 | 12 |
| 23 | 22 | 12 | 112 | | 1,060 | 30 | 21 | 21 | 12 | 14 | 11 | 12 |
| 24 | 21 | 13 | 70 | | 860 | 27 | 20 | 33 | 11 | 11 | 9.3 | 12 |
| 25 | 20 | 13 | 73 | | 372 | 26 | 21 | 43 | 20 | 15 | 10 | 11 |
| 26 | 20 | 12 | | 80 | 218 | 20 | 20 | 24 | 13 | 12 | 10 | 11 |
| 27 | 19 | 14 | | | 129 | 48 | 18 | 18 | 12 | 12 | 10 | 14 |
| 28 | 22 | 12 | 40 | | 93 | 44 | 18 | 16 | 14 | 14 | 9.6 | 14 |
| 29 | 21 | 13 | | | ------- | 33 | 18 | 15 | 23 | 12 | 9.6 | 13 |
| 30 | 23 | 15 | | | ------- | 34 | 21 | 13 | 13 | 13 | 9 | 13 |
| 31 | 18 | ------- | | | ------- | 33 | ------- | 15 | ------- | 21 | 8.4 | ------- |

NOTE.—Stage-discharge relation seriously affected by ice Jan. 6-9, 22-28, Dec. 26-31, 1924, and Jan. 1 to Feb. 6, 1925; discharge estimated from study of observer's notes, weather records, and records of flow of near-by streams. Method of shifting control used Oct. 11 to Nov. 19, 1924.

*Monthly discharge of Ottawa River at Allentown, Ohio, for the years ending September 30, 1924 and 1925*

[Drainage area, 168 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1923–24 | | | | | |
| November 15–30 | 23 | 11 | 13.2 | 0.079 | 0.03 |
| December | 1,200 | 11 | 193 | 1.15 | 1.33 |
| January | 2,250 | 32 | 279 | 1.66 | 1.91 |
| February | 610 | 26 | 153 | .911 | .98 |
| March | 2,740 | 70 | 432 | 2.57 | 2.96 |
| April | 785 | 35 | 123 | .732 | .82 |
| May | 398 | 45 | 114 | .679 | .78 |
| June | 2,300 | 26 | 416 | 2.48 | 2.77 |
| July | 262 | 13 | 47.5 | .283 | .33 |
| August | 110 | 8.5 | 22.1 | .132 | .15 |
| September | 73 | 8.5 | 19.0 | .113 | .13 |
| 1924–25 | | | | | |
| October | 23 | 10 | 15.2 | .090 | .10 |
| November | 32 | 12 | 17.3 | .103 | .11 |
| December | 2,080 | 11 | 170 | 1.01 | 1.16 |
| January | ------- | ------- | 42.9 | .255 | .29 |
| February | 1,060 | 26 | 203 | 1.21 | 1.26 |
| March | 1,240 | 20 | 189 | 1.12 | 1.29 |
| April | 30 | 18 | 21.9 | .130 | .14 |
| May | 43 | 13 | 20.1 | .120 | .14 |
| June | 26 | 9.8 | 14.0 | .083 | .09 |
| July | 424 | 11 | 46.1 | .274 | .32 |
| August | 39 | 8.4 | 14.1 | .084 | .10 |
| September | 65 | 8.7 | 14.4 | .086 | .10 |
| The year | 2,080 | 8.4 | 63.3 | .377 | 5.10 |

### 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, 1925.

GAGE.—Chain gage on highway bridge; read by R. T. Rees and Miss Gertrude Parish.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel curved above but straight for 400 feet below gage. Banks high and brushy. Control for extremely low water is concrete protection wall for pipe line beneath bridge; for medium and high stages, a long stretch of channel below gage. Zero flow would occur at gage height 0.4 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.2 feet at 4.30 p. m. December 19 (discharge, 2,980 second-feet); minimum stage, 0.68 foot at 6.30 p. m. September 6 and 8 and at 8.45 a. m. September 11 (discharge, 3.6 second-feet).

1924–1925: Maximum stage recorded, 10.9 feet at 7 a. m. March 30, 1924 (discharge, 4,280 second-feet); minimum stage that of September 6, 8, and 11, 1925.

ACCURACY.—Stage-discharge relation permanent; affected by ice and by scum and débris lodged on control as stated in footnote to table of daily discharge. Rating curve well defined. 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 for periods of ice effect and for period during which débris was lodged on control, for which they are fair.

*Discharge measurements of Blanchard River near Findlay, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Nov. 12 | 0.84 | 9.0 | Apr. 10 | 1.26 | 51.6 | Sept. 10 | 0.73 | 5.0 |
| Feb. 7 | 3.10 | 726 | May 21 | 1.05 | 19.8 | | | |
| Mar. 16 | 3.53 | 867 | July 29 | .87 | 10.4 | | | |

*Daily discharge, in second-feet, of Blanchard River near Findlay, Ohio, for the years ending September 30, 1924 and 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1923–24 | | | | | | | | | | | | |
| 1 | ------ | ------ | 29 | 472 | 967 | 663 | 706 | 132 | 106 | 200 | 6 | 6 |
| 2 | ------ | ------ | 25 | 287 | 577 | 451 | 472 | 104 | 91 | 102 | 5 | 10 |
| 3 | ------ | ------ | 24 | 196 | 535 | 368 | 368 | 145 | 95 | 59 | 8 | 10 |
| 4 | ------ | ------ | 46 | 156 | 620 | 835 | 307 | 514 | 287 | 43 | 11 | 14 |
| 5 | ------ | ------ | 249 | 111 | 879 | 2,320 | 242 | 327 | 368 | 37 | 8 | 14 |
| 6 | ------ | ------ | 792 | | 1,320 | 1,500 | 180 | 200 | 409 | 32 | 15 | 12 |
| 7 | ------ | ------ | 879 | 80 | 535 | 706 | 165 | 137 | 409 | 102 | 19 | 7 |
| 8 | ------ | ------ | 409 | | 307 | 327 | 129 | 109 | 923 | 287 | 21 | 12 |
| 9 | ------ | ------ | 388 | 84 | 213 | 268 | 134 | 102 | 2,370 | 122 | 23 | 15 |
| 10 | ------ | ------ | 535 | 203 | 174 | 249 | 122 | 111 | 2,840 | 76 | 17 | 17 |
| 11 | ------ | ------ | 409 | 3,500 | 174 | 217 | 104 | 249 | 2,000 | 56 | 17 | 18 |
| 12 | ------ | ------ | 249 | 3,030 | 140 | 249 | 88 | 409 | 1,410 | 40 | 16 | 18 |
| 13 | ------ | ------ | 1,280 | 1,680 | 115 | 409 | 76 | 287 | 663 | 25 | 14 | 14 |
| 14 | ------ | 15 | 1,540 | 835 | 102 | 577 | 84 | 235 | 409 | 26 | 14 | 12 |
| 15 | ------ | 15 | 706 | 706 | 93 | 327 | 73 | 307 | 327 | 32 | 8 | 10 |
| 16 | ------ | 15 | 327 | 620 | 81 | 203 | 64 | 213 | 213 | 37 | 11 | 10 |
| 17 | ------ | 18 | 249 | 792 | 98 | 177 | 73 | 145 | 129 | 32 | 8 | 6 |
| 18 | ------ | 15 | 210 | 472 | 66 | 156 | 71 | 134 | 111 | 26 | 9 | 8 |
| 19 | ------ | 15 | 183 | 238 | 45 | 140 | 73 | 117 | 76 | 26 | 24 | 8 |
| 20 | ------ | 14 | 187 | 129 | 81 | 145 | 74 | 109 | 64 | 16 | 16 | 10 |
| 21 | ------ | 13 | 307 | | 65 | 162 | 132 | 79 | 327 | 19 | 9 | 7 |
| 22 | ------ | 13 | 2,280 | 80 | 79 | 200 | 1,680 | 76 | 45 | 21 | 7 | 1,320 |
| 23 | ------ | 16 | 2,840 | | 50 | 835 | 749 | 71 | 37 | 20 | 6 | 249 |
| 24 | ------ | 14 | 2,370 | | 40 | 1,820 | 409 | 183 | 44 | 13 | 6 | 115 |
| 25 | ------ | 13 | 1,100 | 62 | 48 | 1,500 | 268 | 193 | 287 | 10 | 7 | 48 |
| 26 | ------ | 14 | 620 | | 48 | 1,960 | 150 | 165 | 348 | 14 | 6 | 28 |
| 27 | ------ | 14 | 472 | 60 | 70 | 2,000 | 115 | 106 | 249 | 10 | 7 | 23 |
| 28 | ------ | 14 | 967 | | 171 | 1,190 | 183 | 88 | 124 | 12 | 6 | 21 |
| 29 | ------ | 16 | 620 | 206 | 430 | 3,220 | 98 | 98 | 327 | 9 | 6 | 48 |
| 30 | ------ | 22 | 348 | 1,590 | ------ | 4,130 | 120 | 109 | 327 | 17 | 6 | 30 |
| 31 | ------ | ------ | 307 | 1,720 | ------ | 1,960 | ------ | 100 | ------ | 10 | 11 | ------ |

*Daily discharge, in second-feet, of Blanchard River near Findlay, Ohio, for the year ending September 30, 1924 and 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1924–25 | | | | | | | | | | | | |
| 1 | 29 | 8 | 7 | 37 | 31 | 156 | 60 | 22 | 12 | 15 | 14 | 5 |
| 2 | 24 | 8 | 7 | 37 | 37 | 88 | 54 | 20 | 9 | 12 | 10 | 5 |
| 3 | 18 | 7 | 8 | 34 | 36 | 93 | 46 | 24 | 9 | 9 | 8 | 6 |
| 4 | 14 | 7 | 8 | 32 | 71 | 86 | 44 | 30 | 8 | 11 | 10 | 5 |
| 5 | 15 | 9 | 10 | 34 | 79 | 76 | 39 | 36 | 6 | 9 | 12 | 5 |
| 6 | 18 | 9 | 8 | 30 | 451 | 84 | 37 | 31 | 5 | 8 | 8 | 4 |
| 7 | 16 | 8 | 9 | 29 | 620 | 104 | 39 | 29 | 10 | 8 | 8 | 4 |
| 8 | 12 | 7 | 39 | 34 | 663 | 100 | 34 | 25 | 7 | 6 | 71 | 4 |
| 9 | 10 | 6 | 91 | 32 | 663 | 142 | 34 | 25 | 10 | 9 | 54 | 4 |
| 10 | 10 | 8 | 43 | 28 | 235 | 307 | 50 | 24 | 12 | 307 | 40 | 4 |
| 11 | 12 | 7 | 34 | 27 | 388 | 1,360 | 39 | 21 | 10 | 348 | 27 | 4 |
| 12 | 10 | 8 | 37 | 23 | 430 | 1,280 | 34 | 19 | 8 | 307 | 21 | 4 |
| 13 | 11 | 8 | 33 | 25 | 249 | 879 | 30 | 18 | 10 | 95 | 31 | 22 |
| 14 | 10 | 9 | 34 | 24 | 174 | 1,680 | 32 | 21 | 10 | 52 | 53 | 11 |
| 15 | 12 | 8 | 20 | 21 | 140 | 1,280 | 29 | 17 | 12 | 31 | 39 | 54 |
| 16 | 12 | 6 | 16 | 23 | 111 | 835 | 28 | 18 | 224 | 34 | 26 | 168 |
| 17 | 10 | 8 | 56 | 26 | 70 | 451 | 29 | 27 | 159 | 17 | 14 | 171 |
| 18 | 10 | 8 | 430 | 26 | 76 | 368 | 29 | 29 | 109 | 10 | 12 | 120 |
| 19 | 8 | 28 | 2,560 | 26 | 76 | 409 | 40 | 25 | 93 | 8 | 14 | 68 |
| 20 | 7 | 25 | 2,050 | 29 | 76 | 368 | 30 | 25 | 79 | 10 | 19 | 24 |
| 21 | 8 | 12 | 879 | 27 | 168 | 268 | 27 | 24 | 49 | 15 | 24 | 18 |
| 22 | 10 | 4 | 307 | 19 | 514 | 187 | 29 | 19 | 21 | 12 | 12 | 16 |
| 23 | 10 | 5 | 162 | 23 | 2,140 | 145 | 26 | 20 | 10 | 13 | 6 | 14 |
| 24 | 8 | 6 | 98 | 19 | 2,180 | 122 | 23 | 17 | 11 | 10 | 4 | 13 |
| 25 | 7 | 7 | 68 | 24 | 1,460 | 113 | 22 | 16 | 31 | 12 | 6 | 14 |
| 26 | 8 | 6 | | | 577 | 100 | 19 | 17 | 29 | 12 | 6 | 28 |
| 27 | 7 | 6 | | | 224 | 97 | 23 | 18 | 37 | 10 | 6 | 31 |
| 28 | 10 | 8 | 30 | 20 | 210 | 89 | 22 | 19 | 71 | 12 | 5 | 10 |
| 29 | 8 | 8 | | | ------- | 79 | 26 | 18 | 32 | 10 | 5 | 10 |
| 30 | 8 | 8 | | | ------- | 79 | 26 | 19 | 21 | 10 | 6 | 10 |
| 31 | 10 | ------- | | | ------- | 66 | ------- | 13 | ------- | 12 | 7 | ------ |

NOTE.—Stage-discharge relation affected by ice Jan. 6–8, 21–28, Dec. 26–31, 1924, and Jan. 26–31, 1925; discharge estimated from study of observer's notes, weather records, one discharge measurement, and records of flow at near-by gaging stations. Stage-discharge relation affected by débris on control Apr. 11 to July 9, 1925; discharge Apr. 11 to May 20 obtained by shifting-control method; discharge May 21 to July 9, obtained from rating curve through one discharge measurement and parallel to curve applicable for clean control.

*Monthly discharge of Blanchard River near Findlay, Ohio, for 1924 and 1925.*

[Drainage area, 343 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1923–24 | | | | | |
| November 14–30 | 22 | 13 | 15.1 | 0.044 | 0.03 |
| December | 2,840 | 24 | 676 | 1.97 | 2.27 |
| January | 3,500 | ---------- | 575 | 1.68 | 1.94 |
| February | 1,320 | 40 | 280 | .816 | .88 |
| March | 4,130 | 140 | 944 | 2.75 | 3.17 |
| April | 1,680 | 64 | 250 | .729 | .81 |
| May | 514 | 71 | 173 | .504 | .58 |
| June | 2,840 | 37 | 514 | 1.50 | 1.67 |
| July | 287 | 9 | 49.4 | .144 | .17 |
| August | 24 | 5 | 11.2 | .033 | .04 |
| September | 1,320 | 6 | 70.7 | .206 | .23 |

*Monthly discharge of Blanchard River near Findlay, Ohio, for 1924 and 1925*—Continued

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1924–25 | | | | | |
| October | 29 | 7 | 11.7 | 0.034 | 0.04 |
| November | 28 | 4 | 8.73 | .026 | .03 |
| December | 2.560 | 7 | 232 | .676 | .78 |
| January | | | 26.1 | .076 | .09 |
| February | 2,180 | 31 | 434 | 1.27 | 1.32 |
| March | 1,680 | 66 | 371 | 1.08 | 1.24 |
| April | 60 | 19 | 33.3 | .097 | .11 |
| May | 36 | 13 | 22.1 | .064 | .07 |
| June | 224 | 5 | 37.1 | .108 | .12 |
| July | 348 | 6 | 46.3 | .135 | .16 |
| August | 71 | 4 | 18.6 | .054 | .06 |
| September | 171 | 4 | 28.5 | .083 | .09 |
| The year | 2,560 | 4 | 104 | .303 | 4.11 |

### 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, 1925.

GAGE.—Chain gage on highway bridge; read by Victor Unterbrink.

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 0.5 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 19.0 feet at 6 a. m. December 20 and March 15 (discharge, 4,460 second-feet); minimum stage, 1.53 feet at 10 a. m. September 11 (discharge, 6.6 second-feet).

1921–1925: Maximum stage recorded, 22.4 feet at 1 p. m. April 1, 1922 (discharge, 5,990 second-feet); minimum stage that of September 11, 1925.

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

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent except when affected by leaves lodged on control and by ice as noted in footnote to tables of daily discharge. Rating curve well defined up to 1,500 second-feet. Gage read to hundredths once or twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except as indicated in footnote to table of daily discharge. Records good except for period when leaves were lodged on control and for periods of ice effect, for which they are fair.

*Discharge measurements of Blanchard River at Glandorf, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 10 | 2.00 | 28.6 | Aug. 3 | 1.88 | 22.1 |
| Nov. 21 | 1.96 | 24.1 | Sept. 11 | 1.53 | 6.0 |
| Apr. 10 | 2.63 | 77.8 | | | |

*Daily discharge, in second-feet, of Blanchard River at Glandorf, Ohio, for the years ending September 30, 1921–1925*

| Day | Aug. | Sept. | Day | Aug. | Sept. | Day | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1921 | | | 1921 | | | 1921 | | |
| 1 | | 15 | 11 | | 18 | 21 | | 55 |
| 2 | | 15 | 12 | | 105 | 22 | | 42 |
| 3 | | 14 | 13 | | 55 | 23 | | 39 |
| 4 | | 17 | 14 | | 36 | 24 | | 42 |
| 5 | | 20 | 15 | | 23 | 25 | | 35 |
| 6 | | 60 | 16 | | 18 | 26 | | 28 |
| 7 | | 40 | 17 | | 17 | 27 | | 24 |
| 8 | | 23 | 18 | | 22 | 28 | | 24 |
| 9 | | 16 | 19 | | 81 | 29 | | 20 |
| 10 | | 13 | 20 | | 64 | 30 | 8.3 | 19 |
| | | | | | | 31 | 12 | |

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1921–22 | | | | | | | | | | | | |
| 1 | 17 | 158 | 363 | 199 | | 243 | 5,940 | 171 | 395 | 56 | 33 | 28 |
| 2 | 17 | 475 | 411 | 185 | | 228 | 5,630 | 152 | 288 | 56 | 56 | 34 |
| 3 | 26 | 427 | 555 | 185 | | 213 | 4,420 | 171 | 213 | 56 | 53 | 395 |
| 4 | 22 | 333 | 427 | 318 | | 199 | 2,660 | 213 | 213 | 54 | 54 | 303 |
| 5 | 20 | 258 | 303 | 975 | 450 | 185 | 1,200 | 303 | 171 | 60 | 60 | 288 |
| 6 | 22 | 158 | 273 | 1,300 | | 185 | 761 | 395 | 164 | 54 | 48 | 133 |
| 7 | 34 | 44 | 243 | 895 | | 258 | 606 | 395 | 164 | 48 | 37 | 95 |
| 8 | 43 | 44 | 243 | 572 | | 363 | 835 | 395 | 199 | 60 | 35 | 72 |
| 9 | 76 | 44 | 243 | 395 | | 491 | 1,220 | 475 | 164 | 1,220 | 29 | 56 |
| 10 | 68 | 64 | 213 | 303 | | 459 | 1,200 | 1,970 | 589 | 875 | 33 | 158 |
| 11 | 42 | 76 | 213 | 243 | | 708 | 2,940 | 4,060 | 1,130 | 379 | 35 | 348 |
| 12 | 30 | 258 | 243 | 243 | | 1,060 | 4,140 | 4,060 | 691 | 243 | 29 | 243 |
| 13 | 29 | 303 | 348 | 228 | | 779 | 3,660 | 2,150 | 459 | 427 | 27 | 228 |
| 14 | 28 | 333 | 539 | | | 895 | 3,300 | 1,470 | 288 | 797 | 23 | 127 |
| 15 | 25 | 427 | 640 | | | 2,620 | 4,020 | 1,110 | 199 | 491 | 21 | 81 |
| 16 | 22 | 459 | 640 | | 300 | 2,690 | 4,600 | 657 | 164 | 507 | 18 | 56 |
| 17 | 20 | 555 | 640 | | | 1,500 | 4,380 | 475 | 152 | 303 | 18 | 44 |
| 18 | 17 | 995 | 1,550 | 250 | | 761 | 4,220 | 743 | 133 | 243 | 18 | 34 |
| 19 | 16 | 1,760 | 3,000 | | | 443 | 4,820 | 2,030 | 288 | 116 | 17 | 30 |
| 20 | 19 | 2,860 | 2,690 | | | 539 | 4,600 | 4,060 | 185 | 100 | 16 | 26 |
| 21 | 20 | 1,760 | 1,150 | | | 572 | 3,340 | 5,400 | 139 | 110 | 15 | 24 |
| 22 | 20 | 915 | 606 | | 1,110 | 623 | 1,470 | 5,180 | 110 | 100 | 18 | 23 |
| 23 | 20 | 657 | 379 | | 1,180 | 691 | 761 | 4,140 | 95 | 86 | 20 | 23 |
| 24 | 20 | 523 | 427 | | 1,420 | 915 | 491 | 2,270 | 76 | 68 | 19 | 21 |
| 25 | 18 | 589 | 379 | | 1,270 | 1,550 | 395 | 3,420 | 72 | 56 | 20 | 20 |
| 26 | 16 | 523 | 333 | | 895 | 1,340 | 333 | 4,820 | 55 | 50 | 21 | 19 |
| 27 | 16 | 379 | 273 | 90 | 411 | 1,710 | 318 | 4,600 | 53 | 42 | 20 | 17 |
| 28 | 16 | 507 | 273 | | 273 | 3,660 | 258 | 3,380 | 53 | 41 | 17 | 17 |
| 29 | 18 | 589 | 258 | | ------ | 4,220 | 228 | 2,620 | 54 | 40 | 17 | 16 |
| 30 | 27 | 459 | 213 | | ------ | 4,140 | 185 | 1,060 | 56 | 35 | 17 | 14 |
| 31 | 90 | ------ | 199 | | ------ | 5,270 | ------ | 459 | ------ | 33 | 21 | ------ |
| 1922–23 | | | | | | | | | | | | |
| 1 | 15 | 22 | 23 | 1,790 | 779 | 600 | 127 | 81 | 81 | 30 | 64 | 40 |
| 2 | 16 | 22 | 22 | 1,630 | 1,060 | 657 | 164 | 76 | 72 | 28 | 64 | 42 |
| 3 | 15 | 22 | 22 | 915 | 1,370 | 555 | 164 | 72 | 68 | 27 | 60 | 52 |
| 4 | 15 | 22 | 22 | 761 | 995 | 623 | 171 | 64 | 64 | 27 | 105 | 40 |
| 5 | 14 | 21 | 29 | 555 | 797 | 915 | 674 | 72 | 60 | 27 | 81 | 52 |
| 6 | 12 | 22 | 27 | 363 | 674 | 725 | 2,620 | 64 | 54 | 27 | 54 | 39 |
| 7 | 12 | 22 | 32 | 303 | 555 | 623 | 3,040 | 44 | 90 | 34 | 45 | 43 |
| 8 | 14 | 22 | 44 | 243 | 459 | 459 | 1,970 | 40 | 288 | 40 | 27 | 110 |
| 9 | 16 | 22 | 48 | 243 | 395 | 363 | 1,040 | 68 | 185 | 56 | 24 | 72 |
| 10 | 33 | 22 | 45 | 303 | 333 | 640 | 555 | 100 | 158 | 110 | 21 | 56 |
| 11 | 29 | 22 | 41 | 427 | 318 | 935 | 379 | 110 | 116 | 86 | 20 | 39 |
| 12 | 22 | 22 | 41 | 411 | 303 | 2,210 | 288 | 152 | 95 | 318 | 18 | 31 |
| 13 | 24 | 22 | 37 | 379 | | 3,740 | 288 | 1,680 | 76 | 411 | 121 | 26 |
| 14 | 24 | 22 | 37 | 761 | | 3,300 | 258 | 3,340 | 68 | 379 | 110 | 24 |
| 15 | 24 | 24 | 35 | 2,800 | | 3,820 | 228 | 3,660 | 56 | 243 | 90 | 20 |
| 16 | 24 | 26 | 33 | 3,940 | 600 | 4,380 | 213 | 4,220 | 64 | 110 | 41 | 20 |
| 17 | 23 | 28 | | 3,080 | | 4,500 | 158 | 3,500 | 56 | 81 | 28 | 18 |
| 18 | 22 | 60 | | 2,030 | | 3,860 | 139 | 2,830 | 51 | 76 | 23 | 18 |
| 19 | 20 | 41 | | 855 | | 2,030 | 127 | 2,000 | 45 | 60 | 20 | 18 |
| 20 | 19 | 29 | 20 | 539 | | 955 | 121 | 995 | 40 | 50 | 18 | 116 |
| 21 | 18 | 28 | | 855 | | 797 | 105 | 555 | 37 | 42 | 16 | 116 |
| 22 | 18 | 26 | | 2,030 | | 411 | 100 | 427 | 35 | 38 | 15 | 95 |
| 23 | 23 | 23 | | 2,830 | 400 | 1,370 | 100 | 333 | 34 | 27 | 14 | 76 |
| 24 | 25 | 20 | 28 | 835 | | 1,940 | 100 | 243 | 38 | 86 | 14 | 60 |
| 25 | 22 | 17 | 35 | 555 | | 1,580 | 95 | 199 | 45 | 90 | 14 | 46 |

*Daily discharge, in second-feet, of Blanchard River at Glandorf, Ohio, for the years ending September 30, 1921–1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1922–23** | | | | | | | | | | | | |
| 26 | 22 | 17 | 110 | 411 | ------ | 835 | 90 | 185 | 40 | 90 | 14 | 36 |
| 27 | 22 | 18 | 318 | 333 | ------ | 459 | 86 | 158 | 37 | 121 | 14 | 32 |
| 28 | 22 | 18 | 674 | 363 | ------ | 395 | 86 | 127 | 34 | 105 | 29 | 30 |
| 29 | 22 | 19 | 855 | 975 | ------ | 363 | 86 | 100 | 34 | 81 | 60 | 29 |
| 30 | 22 | 19 | 725 | 1,130 | ------ | 303 | 86 | 95 | 33 | 76 | 68 | 199 |
| 31 | 22 | ------ | 1,080 | 935 | ------ | 228 | ------ | 90 | ------ | 68 | 44 | ------ |
| **1923–24** | | | | | | | | | | | | |
| 1 | 133 | 27 | 33 | 640 | 2,400 | 1,220 | 4,140 | 213 | 199 | 674 | 20 | 13 |
| 2 | 95 | 20 | 35 | 623 | 2,250 | 1,300 | 2,580 | 213 | 185 | 555 | 20 | 53 |
| 3 | 56 | 31 | 44 | 258 | 1,970 | 1,300 | 1,320 | 199 | 213 | 395 | 20 | 40 |
| 4 | 46 | 33 | 213 | 145 | 1,660 | 1,440 | 725 | 725 | 333 | 303 | 20 | 34 |
| 5 | 35 | 39 | 288 | 104 | 1,150 | 1,790 | 572 | 674 | 395 | 116 | 24 | 30 |
| 6 | 29 | 42 | 691 | 217 | 1,370 | 2,150 | 475 | 491 | 427 | 100 | 158 | 27 |
| 7 | 24 | 46 | 1,240 | 231 | 1,760 | 2,860 | 411 | 459 | 459 | 86 | 72 | 22 |
| 8 | 20 | 47 | 1,400 | 231 | 1,180 | 2,410 | 363 | 395 | 1,080 | 81 | 64 | 21 |
| 9 | 18 | 50 | 1,080 | 245 | 1,020 | 1,060 | 273 | 395 | 3,340 | 395 | 76 | 21 |
| 10 | 17 | 44 | 995 | 273 | 657 | 779 | 243 | 333 | 4,340 | 273 | 76 | 21 |
| 11 | 16 | 39 | 895 | 2,410 | 348 | 459 | 243 | 411 | 4,060 | 185 | 72 | 21 |
| 12 | 16 | 33 | 725 | 5,040 | 318 | 379 | 228 | 875 | 3,580 | 145 | 68 | 21 |
| 13 | 15 | 30 | 674 | 4,500 | 258 | 657 | 491 | 895 | 2,900 | 116 | 64 | 27 |
| 14 | 22 | 29 | 2,690 | 4,260 | 243 | 779 | 395 | 797 | 1,520 | 86 | 51 | 26 |
| 15 | 20 | 27 | 2,970 | 2,690 | 228 | 1,040 | 379 | 674 | 995 | 68 | 33 | 24 |
| 16 | 20 | 27 | 1,850 | 1,040 | 171 | 915 | 303 | 572 | 815 | 56 | 30 | 22 |
| 17 | 18 | 27 | 761 | 1,880 | 171 | 507 | 243 | 555 | 691 | 53 | 28 | 21 |
| 18 | 18 | 25 | 725 | 1,340 | 185 | 333 | 213 | 411 | 459 | 44 | 24 | 20 |
| 19 | 18 | 22 | 691 | 935 | 199 | 333 | 145 | 303 | 213 | 41 | 19 | 17 |
| 20 | 18 | 22 | 623 | 806 | 199 | 333 | 258 | 243 | 152 | 41 | 19 | 16 |
| 21 | 20 | 22 | 523 | 591 | 199 | 333 | 491 | 243 | 116 | 40 | 19 | 15 |
| 22 | 25 | 22 | 1,080 | 363 | 199 | 333 | 1,080 | 228 | 100 | 40 | 19 | 1,040 |
| 23 | 24 | 22 | 2,180 | 333 | 199 | 1,130 | 1,970 | 228 | 105 | 47 | 19 | 1,200 |
| 24 | 22 | 22 | 4,140 | 318 | 199 | 2,270 | 1,270 | 213 | 213 | 38 | 19 | 761 |
| 25 | 29 | 25 | 3,540 | 303 | 199 | 3,110 | 797 | 228 | 674 | 35 | 19 | 395 |
| 26 | 38 | 27 | 3,180 | 303 | 199 | 3,620 | 443 | 258 | 1,060 | 33 | 19 | 133 |
| 27 | 32 | 29 | 1,970 | 245 | 199 | 3,740 | 258 | 243 | 657 | 30 | 17 | 100 |
| 28 | 32 | 43 | 1,130 | 190 | 199 | 3,500 | 258 | 243 | 475 | 28 | 15 | 90 |
| 29 | 31 | 44 | 606 | 379 | 303 | 3,860 | 228 | 243 | 523 | 27 | 15 | 86 |
| 30 | 31 | 38 | 743 | 700 | ------ | 4,910 | 213 | 213 | 589 | 26 | 15 | 86 |
| 31 | 30 | ------ | 708 | 2,000 | ------ | 5,270 | ------ | 213 | ------ | 22 | 14 | ------ |
| **1924–25** | | | | | | | | | | | | |
| 1 | 90 | 20 | 21 | | | 815 | 133 | 45 | 27 | 72 | 20 | 6.9 |
| 2 | 72 | 21 | 22 | | | 623 | 116 | 45 | 24 | 56 | 20 | 6.9 |
| 3 | 60 | 21 | 23 | | | 443 | 110 | 45 | 22 | 68 | 20 | 9.8 |
| 4 | 40 | 21 | 23 | | | 395 | 110 | 45 | 18 | 72 | 20 | 9.0 |
| 5 | 42 | 21 | 23 | | 130 | 273 | 100 | 45 | 15 | 68 | 27 | 9.0 |
| 6 | 45 | 22 | 27 | | | 213 | 95 | 45 | 13 | 54 | 32 | 9.0 |
| 7 | 48 | 22 | 35 | | | 171 | 90 | 45 | 13 | 42 | 28 | 9.0 |
| 8 | 51 | 22 | 86 | | 1,400 | 158 | 90 | 45 | 13 | 31 | 38 | 8.3 |
| 9 | 33 | 22 | 110 | | 1,740 | 333 | 90 | 45 | 13 | 27 | 34 | 7.6 |
| 10 | 29 | 22 | 133 | | 1,220 | 674 | 81 | 44 | 13 | 22 | 30 | 7.6 |
| 11 | 27 | 22 | 127 | | 835 | 995 | 81 | 44 | 13 | 243 | 27 | 6.9 |
| 12 | 26 | 22 | 127 | | 623 | 1,370 | 76 | 44 | 13 | 589 | 31 | 7.6 |
| 13 | 23 | 22 | 95 | 80 | 555 | 1,740 | 72 | 41 | 13 | 333 | 35 | 8.3 |
| 14 | 14 | 26 | 72 | | 427 | 2,380 | 64 | 41 | 13 | 185 | 47 | 15 |
| 15 | 21 | 24 | 56 | | 395 | 4,460 | 64 | 40 | 13 | 145 | 60 | 45 |
| 16 | 21 | 24 | 54 | | 363 | 3,380 | 60 | 37 | 26 | 95 | 48 | 100 |
| 17 | 20 | 26 | 110 | | 303 | 2,440 | 56 | 38 | 95 | 56 | 40 | 145 |
| 18 | 20 | 26 | 213 | | 243 | 1,220 | 56 | 38 | 127 | 50 | 35 | 139 |
| 19 | 20 | 26 | 2,410 | | 213 | 895 | 56 | 38 | 164 | 48 | 34 | 127 |
| 20 | 20 | 26 | 4,460 | | 133 | 725 | 54 | 37 | 133 | 48 | 34 | 110 |
| 21 | 20 | 26 | 3,820 | | 213 | 623 | 54 | 37 | 116 | 47 | 33 | 81 |
| 22 | 20 | 29 | 2,690 | | 895 | 475 | 53 | 34 | 95 | 44 | 29 | 56 |
| 23 | 20 | 28 | 2,090 | | 2,380 | 411 | 51 | 33 | 86 | 41 | 20 | 45 |
| 24 | 20 | 27 | 935 | | 4,420 | 363 | 51 | 33 | 72 | 33 | 14 | 33 |
| 25 | 20 | 27 | | | 3,540 | 318 | 48 | 33 | 60 | 29 | 12 | 25 |
| 26 | 20 | 27 | | | 3,040 | 258 | 47 | 33 | 54 | 27 | 9.0 | 22 |
| 27 | 20 | 26 | | | 2,210 | 213 | 44 | 33 | 53 | 23 | 8.3 | 27 |
| 28 | 20 | 26 | 250 | | 995 | 158 | 44 | 33 | 51 | 21 | 8.3 | 28 |
| 29 | 20 | 23 | | 60 | ------ | 145 | 42 | 32 | 121 | 20 | 6.9 | 32 |
| 30 | 20 | 22 | | | ------ | 145 | 42 | 30 | 81 | 20 | 6.9 | 29 |
| 31 | 20 | ------ | | | ------ | 139 | ------ | 28 | ------ | 20 | 6.9 | ------ |

NOTE.—Stage-discharge relation seriously affected by ice Jan. 14 to Feb. 21, Dec. 17–23, 1922, Feb. 13 to Mar. 1, 1923, Jan. 5–9, Jan. 20 to Feb. 2, Dec. 25–31, 1924, and Jan. 1 to Feb. 7, 1925; discharge estimated from study of observer's notes, weather records, and records of flow of near-by streams. Stage-discharge relation seriously affected by leaves lodged on control Oct. 2 to Dec. 3, 1923; discharge Oct. 2–8 ascertained by method for shifting control; discharge Oct. 9 to Dec. 3 from rating curve parallel to standard curve and based on discharge measurement made Oct. 9.

*Monthly discharge of Blanchard River at Glandorf, Ohio, for the years ending September 1921–1925*

[Drainage area, 643 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1921 | | | | | |
| September | 105 | 13 | 33.3 | 0.052 | 0.06 |
| 1921–22 | | | | | |
| October | 90 | 16 | 28.2 | .044 | .05 |
| November | 2,860 | 44 | 564 | .877 | .98 |
| December | 3,000 | 199 | 589 | .916 | 1.06 |
| January | 1,300 | ---------- | 294 | .457 | .53 |
| February | 1,420 | ---------- | 513 | .798 | .83 |
| March | 5,270 | 185 | 1,270 | 1.98 | 2.28 |
| April | 5,940 | 185 | 2,430 | 3.78 | 4.22 |
| May | 5,400 | 152 | 2,030 | 3.16 | 3.64 |
| June | 1,130 | 53 | 234 | .364 | .41 |
| July | 1,220 | 33 | 220 | .342 | .39 |
| August | 600 | 15 | 27.9 | .043 | .05 |
| September | 395 | 14 | 99.1 | .154 | .17 |
| The year | 5,940 | 14 | 692 | 1.08 | 14.61 |
| 1922–23 | | | | | |
| October | 33 | 12 | 20.4 | .032 | .04 |
| November | 60 | 17 | 24.0 | .037 | .04 |
| December | 1,080 | ---------- | 145 | .226 | .26 |
| January | 3,940 | 243 | 1,080 | 1.68 | 1.94 |
| February | 1,370 | ---------- | 573 | .891 | .93 |
| March | 4,500 | 228 | 1,440 | 2.24 | 2.58 |
| April | 3,040 | 86 | 455 | .708 | .79 |
| May | 4,220 | 40 | 828 | 1.29 | 1.49 |
| June | 288 | 33 | 71.8 | .112 | .12 |
| July | 411 | 27 | 98.2 | .153 | .18 |
| August | 121 | 14 | 43.1 | .067 | .08 |
| September | 199 | 18 | 53.2 | .083 | .09 |
| The year | 4,500 | 12 | 404 | .628 | 8.54 |
| 1923–24 | | | | | |
| October | 133 | 15 | 31.2 | .049 | .06 |
| November | 50 | 20 | 31.8 | .049 | .05 |
| December | 4,140 | 33 | 1,240 | 1.93 | 2.22 |
| January | 5,040 | ---------- | 1,080 | 1.68 | 1.94 |
| February | ---------- | 171 | 677 | 1.05 | 1.13 |
| March | 5,270 | 333 | 1,750 | 2.72 | 3.14 |
| April | 4,140 | 145 | 700 | 1.09 | 1.22 |
| May | 895 | 199 | 400 | .622 | .72 |
| June | 4,340 | 100 | 1,030 | 1.60 | 1.78 |
| July | 674 | 22 | 135 | .210 | .24 |
| August | 158 | 14 | 37.0 | .058 | .07 |
| September | 1,200 | 13 | 147 | .229 | .26 |
| The year | 5,270 | 13 | 606 | .942 | 12.83 |
| 1924–25 | | | | | |
| October | 90 | 14 | 30.4 | .047 | .05 |
| November | 29 | 20 | 24.0 | .037 | .04 |
| December | 4,460 | 21 | 629 | .978 | 1.13 |
| January | ---------- | ---------- | 76.1 | .118 | .14 |
| February | 4,420 | ---------- | 966 | 1.50 | 1.56 |
| March | 4,460 | 139 | 869 | 1.35 | 1.56 |
| April | 133 | 42 | 71.0 | .110 | .12 |
| May | 45 | 28 | 38.9 | .060 | .07 |
| June | 164 | 13 | 52.3 | .081 | .09 |
| July | 589 | 20 | 84.8 | .132 | .15 |
| August | 60 | 6.9 | 26.3 | .041 | .05 |
| September | 145 | 6.9 | 38.8 | .060 | .07 |
| The year | 4,460 | 6.9 | 238 | .370 | 5.03 |

### 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, 1925.

GAGE.—November 1–12, staff gage; beginning November 13, Au water-stage recorder on right bank. Staff gage read and recorder inspected by Adam Rose. Zero of gage is 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 stage recorded during period, 2.69 feet at 1 a. m. March 14 (discharge, 257 second-feet); minimum stage, −0.4 foot from 9 p. m. April 20 to 3 p. m. April 21 (discharge, 52 second-feet).

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

ACCURACY.—Stage-discharge relation not permanent; not seriously affected by ice. Rating curve used as standard for shifting-control method, fairly well defined. Staff gage read to hundredths twice daily. Operation of water-stage recorder satisfactory except as stated in footnote to table of daily discharge. Daily discharge ascertained by method for shifting control. Records fair.

The canal diverts water from Maumee River at Independence. The water is used for power purposes at Napoleon, Ohio.

*Discharge measurements of Miami & Erie Canal near Defiance, Ohio, during the years ending September 30, 1923–1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| 1923 | *Feet* | *Sec.-ft.* | 1924 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* |
| Aug. 16 | 1.70 | 176 | Apr. 3 | 1.70 | 212 | Apr. 12 | 1.67 | 164 |
| Oct. 4 | 1.54 | 145 | May 2 | 1.76 | 203 | May 20 | 1.68 | 184 |
| | | | June 10 | 1.80 | 174 | July 7 | 1.83 | 209 |
| 1924 | | | July 14 | 1.82 | 243 | Aug. 2 | 1.65 | 170 |
| Jan. 22 | *2.08 | 114 | Sept. 10 | .00 | 77.2 | | | |
| Mar. 17 | 1.71 | 182 | Nov. 25 | 1.58 | 181 | | | |

*Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Miami & Erie Canal near Defiance, Ohio, for the year ending September 30, 1925*

| Day | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 192 | 175 | 207 | 202 | 169 | 168 | 165 | 182 | 173 | 182 | 156 |
| 2 | 192 | 176 | 207 | 201 | 145 | 165 | 165 | 187 | 191 | 172 | 155 |
| 3 | 192 | 179 | 205 | 203 | 173 | 157 | 166 | 181 | 200 | 169 | 155 |
| 4 | 188 | 179 | 203 | 205 | 173 | 167 | 169 | 180 | 201 | 171 | 154 |
| 5 | 187 | 181 | 203 | 208 | 167 | 169 | 173 | 206 | 190 | 174 | 156 |
| 6 | 185 | 183 | 202 | 215 | 157 | 172 | 174 | 177 | 191 | 174 | 158 |
| 7 | 183 | 186 | 201 | 180 | 154 | 177 | 177 | 173 | 204 | 189 | 161 |
| 8 | 181 | 199 | 194 | 169 | 157 | 177 | 177 | 173 | 220 | 181 | 163 |
| 9 | 180 | 210 | 194 | 171 | 166 | 173 | 174 | 184 | 217 | 174 | 166 |
| 10 | 179 | 206 | 195 | 169 | 132 | 173 | 175 | 178 | 213 | 171 | 162 |
| 11 | 177 | 192 | 191 | 169 | 127 | 179 | 177 | 178 | 203 | 171 | 163 |
| 12 | 175 | 186 | 189 | 177 | 190 | 164 | 174 | 181 | 201 | 173 | 165 |
| 13 | 173 | 184 | 193 | 176 | 185 | 166 | 173 | 181 | 200 | 173 | 166 |
| 14 | 176 | 190 | 191 | 184 | 187 | 168 | 173 | 189 | 189 | 172 | 171 |
| 15 | 193 | 182 | 190 | 177 | 118 | 166 | 175 | 192 | 189 | 173 | 181 |

*Daily discharge, in second-feet, of Miami & Erie Canal near Defiance, Ohio, for the year ending September 30, 1925*—Continued

| Day | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 185 | 185 | 191 | 177 | 110 | 166 | 177 | 200 | 201 | 139 | 181 |
| 17 | 183 | 187 | 189 | 176 | 149 | 166 | 179 | 204 | 200 | 63 | 181 |
| 18 | 182 | 184 | 185 | 193 | 181 | 165 | 180 | 199 | 194 | 63 | 190 |
| 19 | 182 | 178 | 187 | 192 | 178 | 164 | 181 | 196 | 186 | 69 | 198 |
| 20 | 181 | 195 | 190 | 184 | 162 | 148 | 182 | 195 | 189 | 154 | 205 |
| 21 | 182 | 160 | 191 | 174 | 127 | 62 | 177 | 186 | 197 | 180 | 212 |
| 22 | 183 | 161 | 191 | 169 | 67 | 149 | 176 | 177 | 205 | 169 | 205 |
| 23 | 184 | 177 | 192 | 187 | 80 | 168 | 175 | 171 | 200 | 164 | 204 |
| 24 | 185 | 193 | 190 | 147 | 164 | 167 | 187 | 170 | 189 | 163 | 204 |
| 25 | 183 | 178 | 186 | 173 | 163 | 162 | 171 | 186 | 185 | 162 | 204 |
| 26 | 183 | 166 | 189 | 161 | 166 | 162 | 172 | 186 | 181 | 162 | 204 |
| 27 | 183 | 164 | 189 | 161 | 173 | 170 | 170 | 185 | 194 | 161 | 204 |
| 28 | 182 | 177 | 190 | 171 | 173 | 173 | 169 | 190 | 188 | 160 | 204 |
| 29 | 180 | 203 | 189 | ------- | 181 | 172 | 171 | 184 | 181 | 159 | 204 |
| 30 | 176 | 208 | 193 | ------- | 181 | 166 | 173 | 177 | 185 | 158 | 204 |
| 31 | ------- | 208 | 203 | ------- | 177 | ------- | 177 | ------- | 190 | 157 | ------- |

NOTE.—Gage not read Nov. 9–12; discharge interpolated. Recorder not operating satisfactorily May 15–19, Aug. 24–26, 28–31, Sept. 1, 2, 5–8, 11, 12, 20, 23–29; range in stage only indicated; discharge interpolated.

*Monthly discharge, in second-feet, of Miami & Erie Canal near Defiance, Ohio, for the year ending September 30, 1925*

| Month | Maximum | Minimum | Mean | Month | Maximum | Minimum | Mean |
|---|---|---|---|---|---|---|---|
| November | 193 | 173 | 183 | May | 187 | 165 | 174 |
| December | 210 | 160 | 185 | June | 206 | 170 | 185 |
| January | 207 | 185 | 194 | July | 220 | 173 | 195 |
| February | 215 | 147 | 181 | August | 189 | 63 | 158 |
| March | 190 | 67 | 156 | September | 212 | 154 | 181 |
| April | 179 | 62 | 163 | | | | |

### 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 26, 1921, to September 30, 1925.

GAGE.—Vertical staff on downstream wingwall of left abutment of bridge; read by John Rhodes.

DISCHARGE MEASUREMENTS.—Made from footbridge 500 feet 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, 6.50 feet February 9 (discharge, 520 second-feet); minimum stage, 3.48 feet October 25 (discharge, 137 second-feet).

1921–1925: 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.

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

REGULATION.—Flow in canal is regulated at head gate at Grand Rapids 10 miles upstream, the point of diversion from Maumee River. Water is used for power purposes at Maumee and Toledo.

ACCURACY.—Stage-discharge relation not permanent; not seriously affected by ice. Gage read to half-tenths once daily. Daily discharge ascertained by method for shifting control. Records fair.

*Discharge measurements of Miami & Erie Canal at Waterville, Ohio, during the year ending September, 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 6 | 6.00 | 380 | Apr. 13 | 5.61 | 414 | Sept. 10 | 4.14 | 236 |
| Nov. 26 | 4.22 | 229 | May 19 | 5.77 | 428 | | | |
| Mar. 15 | 5.30 | 360 | July 30 | 5.72 | 382 | | | |

*Daily discharge, in second-feet, of Miami & Erie Canal at Waterville, Ohio, for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 372 | 281 | 314 | 314 | 325 | 450 | 410 | 410 | 372 | 325 | 384 | 314 |
| 2 | 372 | 281 | 292 | 292 | 325 | 436 | 410 | 397 | 372 | 314 | 372 | 303 |
| 3 | 372 | 270 | 259 | 292 | 325 | 360 | 410 | 397 | 372 | 314 | 372 | 303 |
| 4 | 372 | 281 | 218 | 292 | 325 | 336 | 410 | 410 | 372 | 325 | 372 | 281 |
| 5 | 384 | 270 | 218 | 303 | 336 | 372 | 436 | 410 | 348 | 325 | 372 | 259 |
| 6 | 384 | 270 | 218 | 292 | 348 | 348 | 436 | 410 | 372 | 325 | 360 | 238 |
| 7 | 384 | 270 | 218 | 292 | 360 | 314 | 436 | 410 | 372 | 336 | 360 | 238 |
| 8 | 372 | 270 | 238 | 292 | 423 | 360 | 436 | 410 | 372 | 348 | 360 | 238 |
| 9 | 372 | 259 | 259 | 292 | 520 | 372 | 436 | 410 | 360 | 360 | 372 | 238 |
| 10 | 372 | 259 | 270 | 292 | 478 | 372 | 436 | 410 | 348 | 384 | 360 | 238 |
| 11 | 360 | 248 | 314 | 292 | 450 | 372 | 436 | 410 | 325 | 397 | 360 | 238 |
| 12 | 348 | 259 | 410 | 292 | 478 | 360 | 410 | 423 | 314 | 397 | 348 | 228 |
| 13 | 348 | 238 | 360 | 292 | 384 | 384 | 410 | 423 | 303 | 397 | 360 | 218 |
| 14 | 348 | 228 | 348 | 292 | 410 | 397 | 436 | 410 | 325 | 397 | 348 | 228 |
| 15 | 336 | 218 | 348 | 292 | 397 | 360 | 436 | 423 | 303 | 397 | 348 | 218 |
| 16 | 336 | 228 | 423 | 292 | 360 | 348 | 436 | 410 | 325 | 384 | 336 | 238 |
| 17 | 336 | 238 | 384 | 292 | 360 | 384 | 436 | 423 | 336 | 384 | 348 | 248 |
| 18 | 325 | 228 | 423 | 292 | 372 | 397 | 436 | 372 | 384 | 397 | 348 | 248 |
| 19 | 303 | 228 | 372 | 292 | 372 | 436 | 423 | 436 | 348 | 397 | 360 | 259 |
| 20 | 270 | 228 | 348 | 292 | 384 | 397 | 436 | 436 | 372 | 397 | 360 | 281 |
| 21 | 259 | 228 | 372 | 303 | 397 | 384 | 436 | 436 | 384 | 397 | 360 | 303 |
| 22 | 228 | 228 | 360 | 303 | 372 | 397 | 436 | 423 | 384 | 397 | 360 | 314 |
| 23 | 190 | 238 | 303 | 303 | 423 | 384 | 450 | 423 | 372 | 397 | 372 | 325 |
| 24 | 190 | 238 | 372 | 303 | 348 | 423 | 423 | 410 | 360 | 384 | 360 | 336 |
| 25 | 137 | 238 | 384 | 303 | 384 | 410 | 303 | 410 | 360 | 372 | 360 | 303 |
| 26 | 145 | 228 | 384 | 303 | 384 | 410 | 181 | 410 | 360 | 372 | 348 | 325 |
| 27 | 145 | 238 | 372 | 303 | 372 | 384 | 190 | 410 | 348 | 372 | 348 | 336 |
| 28 | 181 | 238 | 348 | 303 | 423 | 410 | 303 | 410 | 348 | 397 | 336 | 336 |
| 29 | 270 | 238 | 336 | 303 | ------- | 423 | 397 | 397 | 336 | 384 | 325 | 336 |
| 30 | 281 | 248 | 314 | 314 | ------- | 410 | 410 | 397 | 325 | 384 | 325 | 336 |
| 31 | 281 | ------- | 292 | 325 | ------- | 410 | ------- | 384 | ------- | 384 | 314 | ------- |

*Monthly discharge, in second-feet, of Miami & Erie Canal at Waterville, Ohio, for the year ending September 30, 1925*

| Month | Maximum | Minimum | Mean | Month | Maximum | Minimum | Mean |
|---|---|---|---|---|---|---|---|
| October | 384 | 137 | 302 | May | 436 | 372 | 411 |
| November | 281 | 218 | 247 | June | 384 | 303 | 352 |
| December | 423 | 218 | 325 | July | 397 | 314 | 372 |
| January | 325 | 292 | 298 | August | 384 | 314 | 355 |
| February | 520 | 325 | 387 | September | 336 | 218 | 277 |
| March | 450 | 314 | 387 | | | | |
| April | 450 | 181 | 407 | The year | 520 | 137 | 343 |

### 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, 1925.

GAGE.—Chain gage on bridge; read by C. N. Swindler.

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 about 100 feet below gage. Zero flow would occur at gage height 0.3 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.65 feet at 6.30 a. m. February 24 (discharge, 431 second-feet); minimum stage, 0.58 foot at 5 p. m. December 16 and 5 a. m. August 25 (discharge, 0.6 second-foot).

1923–1925: Maximum stage recorded, 5.8 feet June 29, 1924 (discharge, 598 second-feet); minimum discharge, 0.5 second-foot at 8 a. m. November 29, 1923.

ICE.—Stage-discharge relation affected by ice.

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

REGULATION.—Negligible.

ACCURACY.—Stage-discharge relation permanent; affected by ice during winter. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except for period of ice effect, for which they are fair.

*Discharge measurements of North Branch of Portage River near Bowling Green, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 4 | 0.64 | 0.8 | Mar. 15 | 3.94 | 346 | July 29 | 0.60 | 0.8 |
| Nov. 26 | .71 | .8 | Apr. 14 | .89 | 7.6 | Sept. 9 | .76 | 2.4 |
| Feb. 7 | a 2.03 | 32.3 | May 19 | .82 | 1.3 | | | |

a Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of North Branch of Portage River near Bowling Green, Ohio, for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.4 | 1.2 | 1.3 | | | 55 | 13 | 5.3 | 2.1 | 1.5 | 1.7 | 2.1 |
| 2 | 2.1 | 1.0 | 1.1 | | | 38 | 12 | 3.3 | 3.0 | 1.5 | 1.4 | 2.2 |
| 3 | 2.4 | 1.0 | 1.0 | | | 26 | 11 | 4.0 | 2.4 | 1.5 | .9 | 2.2 |
| 4 | 1.9 | 1.3 | 1.2 | | 8 | 25 | 10 | 9.0 | 2.4 | 2.4 | .9 | 2.4 |
| 5 | 1.7 | 1.2 | 2.2 | | | 30 | 5.8 | 9.0 | 2.1 | 1.9 | 1.1 | 2.6 |
| 6 | 3.0 | 1.3 | 2.1 | 4 | | 23 | 4.4 | 9.5 | 2.1 | 1.5 | 1.6 | 1.5 |
| 7 | 2.4 | 1.4 | 2.9 | | 32 | 22 | 4.0 | 9.5 | 1.5 | 1.7 | 1.2 | 2.6 |
| 8 | 2.4 | 1.2 | 16 | | 94 | 30 | 3.1 | 8.0 | 1.5 | 3.0 | 1.6 | 2.8 |
| 9 | 2.1 | 1.5 | 4.8 | | 155 | 39 | 5.3 | 5.8 | 1.5 | 2.1 | 1.2 | 2.8 |
| 10 | 2.1 | 1.4 | 2.2 | | 155 | 51 | 7.6 | 5.3 | 1.5 | 2.1 | .9 | 3.3 |

*Daily discharge, in second-feet, of North Branch of Portage River near Bowling Green, Ohio, for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 1.7 | 1.6 | 1.6 | | 137 | 92 | 5.8 | 3.0 | 1.5 | 1.6 | 0.9 | 3.5 |
| 12 | 1.2 | 1.9 | 1.6 | | 108 | 80 | 6.2 | 2.2 | 1.5 | 1.5 | 3.0 | 5.8 |
| 13 | 1.7 | 1.7 | 3.1 | | 80 | 80 | 6.2 | 2.2 | 1.6 | 2.1 | 2.6 | 10 |
| 14 | 1.9 | 1.6 | 2.1 | | 53 | 392 | 6.2 | 2.4 | 4.8 | 2.2 | 1.9 | 5.3 |
| 15 | 1.9 | 2.2 | 1.3 | | 41 | 366 | 5.8 | 5.3 | 3.5 | 2.6 | 1.4 | 6.2 |
| | | | | 2 | | | | | | | | |
| 16 | 2.1 | 1.9 | .7 | | 31 | 203 | 4.4 | 5.8 | 25 | 2.2 | 1.1 | 4.0 |
| 17 | 2.1 | 1.6 | 4.0 | | 35 | 143 | 3.5 | 9.0 | 39 | 2.1 | 1.1 | 4.0 |
| 18 | 1.9 | 1.6 | 11 | | 29 | 119 | 3.5 | 7.1 | 35 | 2.1 | 1.0 | 4.0 |
| 19 | 1.3 | 1.6 | 149 | | 25 | 227 | 4.0 | 5.8 | 22 | 2.1 | .9 | 4.4 |
| 20 | 1.5 | 1.6 | 191 | | 19 | 191 | 3.5 | 5.8 | 16 | 2.1 | 1.1 | 7.1 |
| 21 | 1.5 | 1.7 | 191 | | 143 | 114 | 3.1 | 5.3 | 12 | 2.1 | 1.6 | 3.3 |
| 22 | 1.2 | 2.2 | | | 288 | 64 | 3.3 | 5.3 | 7.1 | 2.4 | 1.3 | 3.1 |
| 23 | 1.6 | 1.9 | | | 405 | 48 | 6.6 | 5.3 | 5.3 | 2.2 | .8 | 2.8 |
| 24 | 1.1 | 1.7 | 90 | | 418 | 41 | 4.8 | 7.6 | 4.4 | 1.9 | .8 | 2.6 |
| 25 | 1.3 | 1.4 | | | 288 | 36 | 3.5 | 6.6 | 4.0 | 1.5 | .7 | 2.6 |
| | | | | 5 | | | | | | | | |
| 26 | 1.4 | 1.6 | | | 155 | 33 | 3.5 | 5.8 | 3.3 | 1.5 | 1.4 | 2.2 |
| 27 | 1.0 | 1.6 | | | 143 | 33 | 3.1 | 5.3 | 2.6 | 1.4 | 1.4 | 2.6 |
| 28 | 1.3 | 1.5 | 10 | | 108 | 27 | 2.6 | 5.3 | 1.9 | 1.2 | 1.4 | 3.3 |
| 29 | 1.2 | 1.4 | | | ------- | 21 | 3.5 | 5.3 | 1.7 | .8 | 1.4 | 3.0 |
| 30 | 1.2 | 1.2 | | | ------- | 17 | 7.6 | 4.0 | 1.7 | .8 | .9 | 3.0 |
| 31 | 1.0 | ------- | | | ------- | 15 | ------- | 2.6 | ------- | 1.6 | 1.1 | ------- |

NOTE.—Stage-discharge relation affected by ice Dec. 22 to Feb. 8; discharge Dec. 22 to Feb. 6, estimated from study of observer's notes, weather records, and records of flow of near-by streams; discharge Feb. 7, result of discharge measurement; discharge Feb. 8, interpolated.

*Monthly discharge of North Branch of Portage River near Bowling Green, Ohio, for the year ending September 30, 1925*

| Month | Discharge in second-feet | | | Month | Discharge in second-feet | | |
|---|---|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | | Maximum | Minimum | Mean |
| October | 3.0 | 1.0 | 1.73 | May | 9.5 | 2.2 | 5.67 |
| November | 2.2 | 1.0 | 1.53 | June | 39 | 1.5 | 7.13 |
| December | 191 | .7 | 32.6 | July | 3.0 | .8 | 1.85 |
| January | ------- | ------- | 3.71 | August | 3.0 | .7 | 1.30 |
| February | 418 | ------- | 107 | September | 10 | 1.5 | 3.58 |
| March | 392 | 15 | 86.5 | | | | |
| April | 13 | 2.6 | 5.56 | The year | 418 | .7 | 21.0 |

### 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 to September 30, 1925.

GAGE.—Chain gage on highway bridge; read by J. L. Beard.

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 period, 3.17 feet at 8 a. m. September 14 (discharge, 310 second-feet); minimum stage, 0.76 foot at 8 a. m. September 4 (discharge, 1.5 second-feet).

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

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

The following discharge measurements were made:
August 20, 1925: Gage height, 0.97 foot; discharge, 8.0 second-feet.
September 5, 1925: Gage height, 0.79 foot; discharge, 2.0 second-feet.

*Daily discharge, in second-feet, of Sandusky River near Bucyrus, Ohio, for the period August 20 to September 30, 1925*

| Day | Aug. | Sept. | Day | Aug. | Sept. | Day | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | | 3.0 | 11 | | 2.7 | 21 | 7.0 | 22 |
| 2 | | 2.7 | 12 | | 11 | 22 | 5.8 | 16 |
| 3 | | 2.7 | 13 | | 64 | 23 | 4.7 | 13 |
| 4 | | 1.8 | 14 | | 200 | 24 | 4.4 | 11 |
| 5 | | 2.0 | 15 | | 253 | 25 | 4.1 | 9.8 |
| 6 | | 3.3 | 16 | | 170 | 26 | 3.8 | 8.2 |
| 7 | | 2.7 | 17 | | 58 | 27 | 3.8 | 15 |
| 8 | | 3.0 | 18 | | 82 | 28 | 3.3 | 9.4 |
| 9 | | 2.7 | 19 | | 53 | 29 | 3.3 | 9.0 |
| 10 | | 3.0 | 20 | 7.8 | 37 | 30 | 2.7 | 9.0 |
| | | | | | | 31 | 3.3 | |

*Monthly discharge of Sandusky River near Bucyrus, Ohio, for the period August 20 to September 30, 1925*

[Drainage area, 89.8 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| August 20-31 | 7.8 | 2.7 | 4.50 | 0.050 | 0.02 |
| September | 253 | 1.8 | 36.0 | .401 | .45 |

### SANDUSKY RIVER NEAR UPPER SANDUSKY, OHIO

LOCATION.—In sec. 21, T. 2 S., R. 14 E., at highway bridge 2 miles northwest 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, 1925.

GAGE.—Water-stage recorder on left bank at bridge.

DISCHARGE MEASUREMENTS.—Made from bridge 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, as determined September 9, 1925.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.4 feet at 9 p. m. February 24 (discharge, 3,520 second-feet); minimum stage, 1.05 feet September 5 (discharge, 3.8 second-feet).

1921–1925: maximum stage recorded, 8.15 feet at 1.30 p. m. March 30, 1924 (discharge, 4,240 second-feet); minimum stage that of September 5, 1925.

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

ACCURACY.—Stage-discharge relation for low water changed during high water on February 9; seriously affected by leaves lodged on control and by ice as indicated in footnote to table of daily discharge. Rating curves well defined. Water-stage recorder operated satisfactorily except April 12–17. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting gage-height graph or, for days of considerable variation in stage, by averaging results for shorter intervals. Records excellent except for periods during which stage-discharge relation was affected by leaves lodged on control or by ice, for which they are fair.

*Discharge measurements of Sandusky River near Upper Sandusky, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft* |
| Oct. 1 | 1.48 | 36.2 | Mar. 16 | 3.32 | 708 | May 21 | 1.30 | 25.5 |
| Nov. 14 | 1.37 | 10.9 | Apr. 10 | 1.46 | 49.1 | July 28 | 1.45 | 46.1 |
| Nov. 27 | 1.34 | 7.44 | Apr. 22 | 1.38 | 34.8 | Aug. 7 | 1.43 | 53.0 |
| Feb. 5 | [a] 1.70 | 27.1 | May 1 | 1.42 | 34.9 | Sept. 5 | 1.05 | 3.31 |

[a] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Sandusky River near Upper Sandusky, Ohio, for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 26 | 11 | 7.0 | | | | 107 | 39 | 19 | 30 | 30 | 4.8 |
| 2 | 35 | 11 | 6.7 | | | | 97 | 36 | 18 | 25 | 31 | 4.8 |
| 3 | 26 | 15 | 6.3 | | | 230 | 90 | 38 | 15 | 21 | 26 | 4.3 |
| 4 | 20 | 12 | 6.3 | | | | 79 | 39 | 14 | 17 | 102 | 4.3 |
| 5 | 16 | 10 | 7.0 | | 170 | | 71 | 46 | 13 | 15 | 118 | 3.8 |
| 6 | 16 | 10 | 7.6 | 45 | | 208 | 62 | 54 | 12 | 13 | 67 | 4.3 |
| 7 | 15 | 11 | 8.0 | | | 208 | 56 | 58 | 15 | 13 | 46 | 5.4 |
| 8 | 13 | 12 | 13 | | | 224 | 54 | 51 | 16 | 44 | 39 | 6.0 |
| 9 | 13 | 12 | 20 | | 2,540 | 330 | 51 | 42 | 12 | 293 | 233 | 6.0 |
| 10 | 12 | 13 | 30 | | 1,620 | 348 | 49 | 41 | 8.4 | 241 | 484 | 6.0 |
| 11 | 11 | 11 | 15 | | 1,240 | 1,340 | 51 | 44 | 6.5 | 520 | 184 | 5.4 |
| 12 | 10 | 11 | 9.0 | | 1,180 | 1,800 | 50 | 58 | 5.4 | 231 | 95 | 5.4 |
| 13 | 11 | 11 | 8.3 | | 532 | 645 | 49 | 54 | 5.4 | 301 | 97 | 96 |
| 14 | 10 | 11 | 9.0 | | 330 | 1,610 | 49 | 46 | 4.8 | 410 | 174 | 345 |
| 15 | 10 | 11 | 6.0 | | 275 | 2,400 | 48 | 36 | 5.4 | 148 | 107 | 425 |
| 16 | 9.0 | 11 | 6.7 | 35 | 224 | 823 | 47 | 32 | 13 | 88 | 62 | 845 |
| 17 | 9.0 | 10 | 17 | | 208 | 488 | 47 | 31 | 22 | 148 | 39 | 454 |
| 18 | 9.3 | 9.3 | 306 | | 186 | 406 | 46 | 31 | 25 | 137 | 29 | 205 |
| 19 | 9.3 | 8.3 | 1,170 | | 160 | 928 | 44 | 34 | 17 | 67 | 25 | 402 |
| 20 | 11 | 8.0 | 1,260 | | 129 | 1,130 | 41 | 31 | 13 | 46 | 30 | 275 |
| 21 | 11 | 8.3 | 753 | | 129 | 510 | 38 | 26 | 10 | 56 | 25 | 134 |
| 22 | 11 | 9.0 | | | 515 | 348 | 36 | 24 | 7.4 | 331 | 21 | 82 |
| 23 | 12 | 9.0 | | | 1,670 | 241 | 39 | 23 | 5.4 | 902 | 15 | 54 |
| 24 | 12 | 8.6 | | | 3,180 | 196 | 42 | 31 | 5.4 | 324 | 13 | 41 |
| 25 | 11 | 8.3 | | | 1,760 | 168 | 42 | 38 | 6.5 | 134 | 11 | 35 |
| 26 | 12 | 8.0 | 150 | 30 | 745 | 145 | 41 | 41 | 6.5 | 93 | 9.4 | 29 |
| 27 | 13 | 7.6 | | | 420 | 154 | 38 | 38 | 12 | 62 | 8.4 | 30 |
| 28 | 11 | 8.0 | | | 330 | 224 | 35 | 31 | 8.4 | 46 | 6.5 | 30 |
| 29 | 11 | 7.6 | | | ------- | 180 | 34 | 26 | 17 | 36 | 6.5 | 30 |
| 30 | 11 | 7.3 | | | ------- | 143 | 36 | 24 | 29 | 29 | 6.0 | 27 |
| 31 | 11 | ------- | | | ------- | 121 | ------- | 22 | ------- | 26 | 6.5 | ------- |

NOTE.—Stage-discharge relation affected by leaves lodged on control Oct. 24 to Dec. 17; discharge computed by shifting-control method; also affected by ice Dec. 22 to Feb. 8, and Feb. 27 to Mar. 5; discharge computed by use of records of flow of near-by streams, one discharge measurement, and records on same stream at a station near Mexico. Recorder not operating satisfactorily April 12–17; discharge interpolated.

*Monthly discharge of Sandusky River near Upper Sandusky, Ohio, for the year ending September 30, 1925*

[Drainage area, 299 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 35 | 9.0 | 13.5 | 0.045 | 0.05 |
| November | 15 | 7.3 | 10.0 | .033 | .04 |
| December | 1,260 | 6.0 | 167 | .559 | .64 |
| January | | | 36.5 | .122 | .14 |
| February | 3,180 | | 669 | 2.24 | 2.33 |
| March | 2,400 | 121 | 531 | 1.78 | 2.05 |
| April | 107 | 34 | 52.3 | .175 | .20 |
| May | 58 | 22 | 37.6 | .126 | .15 |
| June | 29 | 4.8 | 12.2 | .041 | .05 |
| July | 902 | 13 | 156 | .522 | .60 |
| August | 484 | 6.0 | 69.2 | .231 | .27 |
| September | 845 | 3.8 | 120 | .401 | .45 |
| The year | 3,180 | 3.8 | 153 | .512 | 6.97 |

### SANDUSKY RIVER NEAR MEXICO, OHIO

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

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

RECORDS AVAILABLE.—March 1, 1923, to September 30, 1925; November 17, 1898, to November 17, 1900, at highway bridge at Mexico 9 miles above present site.

GAGE.—Chain gage on bridge; read by L. E. Keller.

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, 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 1.15 feet as determined September 8, 1925.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.6 feet at 2.30 p. m. February 25 (discharge, 5,000 second-feet); minimum stage, 1.52 feet at 12.30 p. m. September 12 (discharge, 6 second-feet).

1923–1925: Maximum stage recorded, 15.0 feet at 5.45 p. m. March 31 1924 (discharge, 8,200 second-feet); minimum stage that of September 12, 1925.

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

ACCURACY.—Stage-discharge relation permanent; affected by leaves lodged on control and by ice. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except during periods when stage-discharge relation was affected by leaves or by ice, for which they are fair.

*Discharge measurements of Sandusky River near Mexico, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 2 | 2.03 | 56.3 | Feb. 5 | [a] 2.96 | 99.8 | Sept. 8 | 1.75 | 19.9 |
| Nov. 14 | 1.90 | 19.5 | Apr. 14 | 2.34 | 104 | | | |
| Nov. 27 | 2.08 | 18.8 | Aug. 7 | 2.50 | 135 | | | |

[a] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Sandusky River near Mexico, Ohio, for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 57 | 73 | 37 | | | 480 | 177 | 51 | 37 | 51 | 27 | 17 |
| 2 | 59 | 79 | 30 | | | 352 | 135 | 57 | 30 | 43 | 222 | 14 |
| 3 | 59 | 100 | 23 | | | 311 | 131 | 57 | 25 | 25 | 222 | 11 |
| 4 | 57 | 122 | 19 | | | 272 | 135 | 51 | 23 | 19 | 234 | 9 |
| 5 | 51 | 145 | 27 | 190 | 440 | 247 | 131 | 57 | 19 | 25 | 51 | 10 |
| 6 | 48 | 177 | 23 | | | 234 | 116 | 59 | 15 | 21 | 102 | 10 |
| 7 | 48 | 166 | 30 | | | 247 | 112 | 65 | 17 | 51 | 131 | 9 |
| 8 | 45 | 177 | 43 | | | 298 | 116 | 57 | 15 | 116 | 155 | 11 |
| 9 | 45 | 65 | 88 | | 4,360 | 515 | 98 | 62 | 15 | 65 | 199 | 9 |
| 10 | 43 | 24 | 84 | | 4,200 | 585 | 105 | 65 | 19 | 199 | 515 | 8 |
| 11 | 40 | 35 | 88 | | 3,440 | 2,340 | 98 | 59 | 17 | 550 | 247 | 7 |
| 12 | 43 | 48 | 71 | | 2,700 | 3,510 | 105 | 57 | 17 | 515 | 199 | 6 |
| 13 | 45 | 50 | 51 | 170 | 1,730 | 2,640 | 98 | 59 | 15 | 550 | 177 | 7 |
| 14 | 43 | 32 | 45 | | 1,140 | 3,370 | 109 | 57 | 15 | 585 | 155 | 585 |
| 15 | 37 | 43 | 51 | | 620 | 4,280 | 105 | 51 | 15 | 247 | 135 | 795 |
| 16 | 35 | 38 | 48 | | 515 | 3,300 | 98 | 51 | 51 | 135 | 127 | 1,280 |
| 17 | 30 | 30 | 57 | | 414 | 2,340 | 95 | 65 | 57 | 145 | 116 | 1,180 |
| 18 | 32 | 35 | 515 | 170 | 298 | 1,140 | 88 | 98 | 37 | 155 | 120 | 940 |
| 19 | 30 | 37 | 3,160 | | 285 | 1,330 | 98 | 81 | 40 | 127 | 112 | 1,180 |
| 20 | 25 | 45 | 3,090 | | 272 | 1,780 | 91 | 68 | 37 | 98 | 98 | 900 |
| 21 | 23 | 51 | 1,980 | | 247 | 1,680 | 88 | 62 | 30 | 88 | 88 | 515 |
| 22 | 25 | 45 | 620 | | 1,180 | 1,020 | 81 | 59 | 25 | 81 | 75 | 177 |
| 23 | 30 | 40 | | | 3,880 | 620 | 88 | 51 | 19 | 965 | 65 | 166 |
| 24 | 36 | 43 | | | 4,920 | 480 | 81 | 45 | 15 | 550 | 45 | 131 |
| 25 | 44 | 40 | | | 5,000 | 352 | 78 | 48 | 17 | 247 | 27 | 88 |
| 26 | 48 | 37 | 280 | 160 | 2,280 | 324 | 81 | 43 | 15 | 65 | 23 | 65 |
| 27 | 55 | 40 | | | 1,100 | 298 | 75 | 45 | 57 | 62 | 15 | 48 |
| 28 | 58 | 43 | | | 865 | 324 | 68 | 40 | 57 | 65 | 17 | 43 |
| 29 | 62 | 45 | | | ------- | 272 | 65 | 37 | 54 | 59 | 21 | 37 |
| 30 | 65 | 43 | | | ------- | 234 | 59 | 37 | 51 | 51 | 19 | 32 |
| 31 | 70 | ------- | | | ------- | 222 | ------- | 40 | ------- | 37 | 15 | ------- |

NOTE.—Stage-discharge relation affected by leaves lodged on control Oct. 24 to Dec. 17; shifting-control method used Oct. 24 to Nov. 16 and a parallel rating curve from Nov. 17 to Dec. 17. Stage-discharge relation affected by ice Dec. 23 to Feb. 8; discharge estimated from one discharge measurement, observer's notes, weather records, and records of flow of near-by streams.

*Monthly discharge of Sandusky River near Mexico, Ohio, for the year ending September 30, 1925*

[Drainage area, 776 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 70 | 23 | 44.8 | 0.058 | 0.07 |
| November | 177 | 24 | 64.9 | .084 | .09 |
| December | 3,160 | 19 | 410 | .528 | .61 |
| January | ---------- | ---------- | 173 | .223 | .26 |
| February | 5,000 | ---------- | 1,530 | 1.97 | 2.05 |
| March | 4,280 | 222 | 1,140 | 1.47 | 1.70 |
| April | 177 | 59 | 100 | .129 | .14 |
| May | 98 | 37 | 55.9 | .072 | .08 |
| June | 57 | 15 | 28.5 | .037 | .04 |
| July | 865 | 19 | 190 | .245 | .28 |
| August | 515 | 15 | 121 | .156 | .18 |
| September | 1,280 | 6 | 276 | .356 | .40 |
| The year | 5,000 | 6 | 338 | .435 | 5.90 |

SANDUSKY RIVER NEAR FREMONT, OHIO

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

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

RECORDS AVAILABLE.—November 8, 1923, to September 30, 1925. November 18, 1898, to March 9, 1901, at Lake Shore and Michigan Southern Railroad bridge, 4 miles below present gage.

GAGE.—Chain gage on highway bridge; read by G. E. Smith.

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, 6.2 feet at 8 a. m. February 24 (discharge, 7,600 second-feet); minimum stage, 0.90 foot at 7 a. m. September 1 (discharge, 10 second-feet).

1924–25: Maximum stage recorded, 7.6 feet at 5 p. m. January 11, 1924 (discharge, 10,300 second-feet); minimum stage that of September 1, 1925.

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

DIVERSIONS.—Negligible.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent; seriously affected by ice. Rating curve fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except for periods of ice effect for which they are fair.

*Discharge measurements of Sandusky River near Fremont, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 2 | 1.22 | 89.4 | Feb. 6 | *3.11 | 248 | Aug. 6 | 1.52 | 285 |
| Nov. 27 | 1.14 | 53.1 | Apr. 14 | 1.35 | 160 | Sept. 9 | 1.02 | 30.3 |

* Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Sandusky River near Fremont, Ohio, for the years ending September 30, 1924 and 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1923–24 | | | | | | | | | | | | |
| 1 | ------ | ------ | 184 | 1,920 | | 2,000 | 6,460 | 474 | 522 | 2,000 | 83 | 63 |
| 2 | ------ | ------ | 238 | 1,920 | 3,250 | 2,240 | 2,720 | 575 | 490 | 1,140 | 80 | 250 |
| 3 | ------ | ------ | 289 | 1,200 | | 2,080 | 1,840 | 670 | 474 | 670 | 70 | 220 |
| 4 | ------ | ------ | 354 | 950 | 2,080 | 3,710 | 1,470 | 1,540 | 490 | 474 | 80 | 146 |
| 5 | ------ | ------ | 1,260 | | 2,240 | 6,650 | 1,260 | 1,770 | 602 | 367 | 94 | 104 |
| 6 | ------ | ------ | 3,370 | | 3,710 | 5,320 | 1,070 | 950 | 670 | 308 | 90 | 83 |
| 7 | ------ | ------ | 4,960 | 850 | 3,040 | 3,710 | 890 | 775 | 670 | 367 | 99 | 73 |
| 8 | ------ | 263 | 3,710 | | 1,770 | 2,080 | 775 | 670 | 1,400 | 1,260 | 126 | 70 |
| 9 | ------ | 250 | 2,560 | | 890 | 1,330 | 775 | 1,200 | 5,700 | 1,330 | 104 | 130 |
| 10 | ------ | 202 | 3,200 | | 720 | 1,070 | 720 | 1,140 | 6,840 | 775 | 80 | 415 |
| 11 | ------ | 179 | 3,370 | 8,360 | 720 | 1,070 | 670 | 1,070 | 7,220 | 506 | 63 | 276 |
| 12 | ------ | 152 | 2,400 | 7,220 | 720 | 1,470 | 584 | 775 | 6,840 | 380 | 50 | 152 |
| 13 | ------ | 117 | 3,040 | 6,270 | 602 | 1,470 | 506 | 775 | 5,890 | 322 | 66 | 112 |
| 14 | ------ | 112 | 6,080 | 5,140 | 548 | 1,540 | 443 | 775 | 4,240 | 296 | 73 | 99 |
| 15 | ------ | 104 | 4,600 | 2,560 | 482 | 1,260 | 387 | 1,140 | 2,000 | 276 | 42 | 104 |
| 16 | ------ | 99 | 3,710 | 1,620 | 466 | 890 | 360 | 1,770 | 1,470 | 232 | 34 | 152 |
| 17 | ------ | 99 | 1,770 | 3,040 | 415 | 720 | 360 | 1,400 | 950 | 196 | 42 | 130 |
| 18 | ------ | 112 | 1,330 | 2,720 | 443 | 611 | 367 | 890 | 950 | 168 | 34 | 94 |
| 19 | ------ | 99 | 1,140 | | 490 | 548 | 367 | 775 | 720 | 117 | 28 | 80 |
| 20 | ------ | 104 | 1,010 | | | 522 | 360 | 1,140 | 522 | 135 | 23 | 76 |
| 21 | ------ | 90 | 1,140 | | | 575 | 394 | 950 | 429 | 190 | 21 | 162 |
| 22 | ------ | 90 | 4,420 | 1,000 | | 602 | 2,560 | 670 | 348 | 263 | 56 | 238 |
| 23 | ------ | 99 | 6,650 | | 600 | 2,400 | 2,400 | 498 | 354 | 214 | 66 | 238 |
| 24 | ------ | 94 | 6,650 | | | 3,880 | 1,770 | 498 | 348 | 184 | 66 | 162 |
| 25 | ------ | 90 | 5,510 | | | 4,240 | 1,140 | 1,070 | 1,010 | 135 | 56 | 108 |
| 26 | ------ | 90 | 3,880 | | | 4,780 | 775 | 1,010 | 1,330 | 117 | 56 | 90 |
| 27 | ------ | 90 | 2,400 | | 498 | 4,960 | 584 | 720 | 1,400 | 99 | 63 | 73 |
| 28 | ------ | 90 | 2,720 | | 557 | 4,420 | 506 | 557 | 1,330 | 99 | 53 | 76 |
| 29 | ------ | 94 | 2,880 | 2,150 | 950 | 7,220 | 466 | 490 | 4,240 | 104 | 39 | 94 |
| 30 | ------ | 104 | 2,080 | | ------ | 9,500 | 450 | 530 | 2,400 | 99 | 36 | 108 |
| 31 | ------ | ------ | 1,400 | | ------ | 7,790 | ------ | 593 | ------ | 83 | 39 | ------ |
| 1924–25 | | | | | | | | | | | | |
| 1 | 112 | 45 | 60 | | | 890 | 387 | 108 | 63 | 168 | 73 | 15 |
| 2 | 108 | 42 | 63 | | | 670 | 374 | 117 | 36 | 94 | 83 | 23 |
| 3 | 104 | 39 | 67 | | | 615 | 315 | 130 | 94 | 99 | 83 | 26 |
| 4 | 104 | 39 | 70 | | | 561 | 289 | 162 | 66 | 104 | 220 | 26 |
| 5 | 104 | 39 | 70 | | 1,110 | 506 | 244 | 184 | 53 | 73 | 244 | 23 |
| 6 | 94 | 39 | 70 | 330 | | 429 | 226 | 190 | 42 | 66 | 244 | 23 |
| 7 | 83 | 56 | 70 | | | 436 | 202 | 190 | 53 | 70 | 250 | 28 |
| 8 | 76 | 48 | 76 | | | 548 | 196 | 152 | 48 | 94 | 168 | 15 |
| 9 | 70 | 36 | 162 | | | 775 | 196 | 174 | 73 | 196 | 157 | 31 |
| 10 | 66 | 31 | 214 | | 5,320 | 1,070 | 202 | 157 | 39 | 415 | 179 | 23 |
| 11 | 73 | 34 | 220 | | 4,600 | 3,040 | 190 | 157 | 28 | 950 | 602 | 23 |
| 12 | 56 | 50 | 168 | 330 | 4,240 | 4,420 | 190 | 135 | 28 | 890 | 360 | 28 |
| 13 | 56 | 56 | 146 | | 2,880 | 3,880 | 184 | 135 | 36 | 950 | 226 | 63 |
| 14 | 63 | 56 | 179 | 289 | 1,700 | 4,960 | 168 | 140 | 42 | 950 | 354 | 890 |
| 15 | 63 | 59 | 170 | | 1,070 | 5,700 | 190 | 135 | 45 | 890 | 232 | 1,140 |
| 16 | 63 | 56 | 162 | | 775 | 4,780 | 168 | 135 | 56 | 1,620 | 220 | 1,920 |
| 17 | 50 | 50 | 162 | | 670 | 3,200 | 168 | 190 | 168 | 322 | 162 | 1,840 |
| 18 | 45 | 56 | 450 | | 584 | 1,920 | 168 | 334 | 244 | 263 | 94 | 1,140 |
| 19 | 39 | 66 | 4,780 | | 539 | 2,000 | 146 | 256 | 174 | 226 | 80 | 775 |
| 20 | 39 | 63 | 5,320 | | 450 | 2,720 | 152 | 174 | 135 | 196 | 99 | 775 |
| 21 | 34 | 48 | 3,370 | | 593 | 2,400 | 152 | 140 | 73 | 157 | 66 | 548 |
| 22 | 39 | 70 | 1,330 | 270 | 2,400 | 1,540 | 135 | 157 | 83 | 126 | 59 | 387 |
| 23 | 45 | 70 | 1,200 | | 5,890 | 1,010 | 146 | 135 | 70 | 99 | 66 | 276 |
| 24 | 45 | 56 | | | 7,220 | 720 | 146 | 130 | 53 | 179 | 45 | 184 |
| 25 | 39 | 76 | | | 5,700 | 670 | 130 | 63 | 87 | 514 | 59 | 130 |
| 26 | 39 | 76 | | | 4,780 | 548 | 157 | 99 | 202 | 302 | 28 | 108 |
| 27 | 39 | 70 | 450 | | 2,240 | 522 | 76 | 94 | 202 | 184 | 28 | 108 |
| 28 | 48 | 56 | | | 1,200 | 575 | 108 | 126 | 830 | 152 | 42 | 76 |
| 29 | 50 | 53 | | | ------ | 575 | 130 | 108 | 482 | 117 | 34 | 112 |
| 30 | 48 | 56 | | | ------ | 530 | 146 | 94 | 220 | 94 | 26 | 108 |
| 31 | 45 | ------ | | | ------ | 443 | ------ | 87 | ------ | 108 | 24 | ------ |

NOTE.—Stage-discharge relation affected by ice Jan. 5–10, 19–31, Feb. 1–3, 20–26, Nov. 30, Dec. 1–3, 15, 24–31, 1924, Jan. 1–13, 15–31, Feb. 1–9, Mar. 3 and 4, 1925. Discharge interpolated, except for periods in brackets which were computed by comparison with flow of other streams, observer's notes, and weather records. Braced figures show mean discharge for periods indicated.

*Monthly discharge of Sandusky River near Fremont, Ohio, for the years ending September 30, 1924 and 1925*

[Drainage area, 1,250 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1923-24 | | | | | |
| November | 263 | 90 | 123 | 0.098 | 0.03 |
| December | 6,650 | 184 | 2,850 | 2.28 | 2.62 |
| January | 8,360 | | 2,190 | 1.75 | 2.08 |
| February | | | 1,220 | .976 | 1.05 |
| March | 9,500 | 522 | 2,920 | 2.34 | 2.70 |
| April | 6,460 | 360 | 1,110 | .888 | .99 |
| May | 1,770 | 474 | 899 | .719 | .83 |
| June | 7,220 | 348 | 2,060 | 1.65 | 1.84 |
| July | 2,000 | 83 | 416 | .333 | .38 |
| August | 126 | 21 | 61.7 | .049 | .06 |
| September | 415 | 63 | 139 | .111 | .12 |
| 1924-25 | | | | | |
| October | 112 | 34 | 62.5 | .050 | .06 |
| November | 76 | 31 | 53.0 | .042 | .05 |
| December | 4,780 | | 715 | .572 | .66 |
| January | | | 296 | .237 | .27 |
| February | 7,220 | | 2,240 | 1.79 | 1.86 |
| March | 5,700 | 429 | 1,700 | 1.36 | 1.57 |
| April | 387 | 76 | 189 | .151 | .17 |
| May | 334 | 63 | 148 | .118 | .14 |
| June | 830 | 28 | 128 | .102 | .11 |
| July | 1,620 | 66 | 344 | .275 | .32 |
| August | 602 | 24 | 149 | .119 | .14 |
| September | 1,920 | 15 | 362 | .290 | .32 |
| The year | 7,220 | 15 | 522 | .418 | 5.67 |

### 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, 1925.

GAGE.—Chain gage on highway bridge; read by C. L. Hartwig.

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 0.3 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year and period of record, 6.1 feet at 4.45 p. m. February 23 (discharge, 2,210 second-feet); minimum stage, 0.84 foot August 30 and 31 (discharge, 2.5 second-feet).

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

DIVERSIONS.—Negligible.

REGULATION.—None.

ACCURACY.—Stage-discharge relation for low water changed during high water on February 23, 1925; affected by leaves lodged on control October 24 to December 17, 1924; affected by ice as indicated in footnote to table of daily discharge. Rating curves well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table or by shifting-control method, as indicated in footnote to table of daily discharge. Records good except for periods during which stage-discharge relation was affected by leaves lodged on control or by ice, for which they are fair.

*Discharge measurements of East Branch of Huron River near Norwalk, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 3 | 1.12 | 18.2 | Apr. 15 | 1.42 | 51.3 | Sept. 9 | 0.88 | 2.9 |
| Nov. 19 | 1.06 | 7.2 | May 6 | 1.34 | 35.5 | | | |
| Mar. 18 | 1.63 | 83.7 | Aug. 6 | 1.42 | 53.9 | | | |

*Daily discharge, in second-feet, of East Branch of Huron River near Norwalk, Ohio, for the years ending September 30, 1924 and 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1923-24 | | | | | | | | | | | | |
| 1 | ------ | ------ | 38 | 80 | 194 | | 123 | 41 | 51 | 148 | 7.3 | 119 |
| 2 | ------ | ------ | 30 | 282 | 150 | 120 | 114 | 32 | 41 | 86 | 7.3 | 35 |
| 3 | ------ | ------ | 19 | 78 | 121 | | 88 | 74 | 60 | 55 | 6.4 | 19 |
| 4 | ------ | ------ | 60 | 97 | 207 | 578 | 72 | 194 | 74 | 36 | 6.4 | 13 |
| 5 | ------ | ------ | 395 | 64 | 250 | 645 | 57 | 86 | 68 | 33 | 6.4 | 11 |
| 6 | ------ | ------ | 930 | | 207 | 266 | 50 | 48 | 60 | 33 | 6.8 | 7.3 |
| 7 | ------ | 8.5 | 298 | | 80 | 194 | 46 | 36 | 55 | 40 | 8.9 | 7.3 |
| 8 | ------ | 11 | 146 | 53 | 88 | 84 | 60 | 30 | 690 | 33 | 6.4 | 4.8 |
| 9 | ------ | 6.0 | 235 | | 88 | 59 | 66 | 32 | 555 | 23 | 5.6 | 11 |
| 10 | ------ | 8.1 | 298 | | 64 | 72 | 68 | 28 | 314 | 40 | 5.6 | 19 |
| 11 | ------ | 5.6 | 126 | 1,670 | | 101 | 46 | 26 | 735 | 32 | 4.8 | 13 |
| 12 | ------ | 4.4 | 76 | 266 | | 169 | 35 | 24 | 645 | 23 | 5.2 | 13 |
| 13 | ------ | 3.9 | 780 | 140 | | 101 | 28 | 28 | 207 | 20 | 4.8 | 8.9 |
| 14 | ------ | 4.1 | 555 | 90 | | 72 | 25 | 43 | 107 | 14 | 4.8 | 13 |
| 15 | ------ | 4.8 | 128 | 84 | | 38 | 23 | 346 | 62 | 8.1 | 4.8 | 8.9 |
| 16 | ------ | 5.2 | 70 | 76 | 36 | 26 | 20 | 169 | 50 | 8.1 | 4.8 | 8.9 |
| 17 | ------ | 26 | 50 | 164 | | 32 | 25 | 130 | 46 | 23 | 4.8 | 8.9 |
| 18 | ------ | 19 | 59 | 90 | | 30 | 25 | 112 | 158 | 20 | 4.8 | 8.9 |
| 19 | ------ | 14 | 53 | | | 26 | 20 | 266 | 103 | 16 | 4.8 | 7.3 |
| 20 | ------ | 8.1 | 57 | | | 24 | 18 | 97 | 51 | 13 | 7.3 | 7.7 |
| 21 | ------ | 6.8 | 314 | | | 36 | 41 | 60 | 29 | 15 | 7.3 | 20 |
| 22 | ------ | 6.0 | 1,130 | 51 | | 107 | 314 | 40 | 23 | 30 | 6.4 | 32 |
| 23 | ------ | 7.3 | 578 | | | 221 | 116 | 35 | 20 | 33 | 6.4 | 26 |
| 24 | ------ | 8.1 | 510 | | | 177 | 62 | 62 | 20 | 26 | 5.6 | 16 |
| 25 | ------ | 8.5 | 194 | | 48 | 148 | 41 | 116 | 194 | 16 | 4.8 | 16 |
| 26 | ------ | 8.9 | 166 | | | 395 | 30 | 60 | 207 | 8.9 | 4.8 | 11.1 |
| 27 | ------ | 8.5 | 126 | 80 | | 250 | 23 | 44 | 80 | 7.3 | 4.6 | 8 |
| 28 | ------ | 7.3 | 330 | | | 298 | 22 | 40 | 51 | 6.8 | 3.9 | 19 |
| 29 | ------ | 7.3 | 121 | | | 1,850 | 28 | 53 | 1,130 | 6.4 | 3.9 | 133 |
| 30 | ------ | 20 | 82 | 735 | ------ | 412 | 29 | 140 | 282 | 6.4 | 3.9 | 76 |
| 31 | ------ | ------ | 94 | 298 | ------ | 180 | ------ | 80 | --------- | 7.7 | 3.5 | ------ |
| 1924-25 | | | | | | | | | | | | |
| 1 | 44 | 7.3 | 8.5 | | | 70 | 37 | 16 | 9.2 | 6.2 | 8.2 | 3.1 |
| 2 | 30 | 7.3 | 8.5 | | | 63 | 32 | 13 | 9.2 | 5.5 | 6.2 | 2.9 |
| 3 | 18 | 7.3 | 8.5 | | 25 | 47 | 27 | 11 | 9.2 | 4.5 | 5.8 | 3.4 |
| 4 | 14 | 6.8 | 8.5 | | | 40 | 25 | 28 | 7.6 | 4.1 | 4.8 | 3.1 |
| 5 | 13 | 6.0 | 8.5 | | | 36 | 21 | 52 | 7.6 | 4.1 | 4.8 | 2.9 |
| 6 | 13 | 6.4 | 8.5 | 10 | 105 | 27 | 19 | 39 | 7.6 | 4.1 | 49 | 2.8 |
| 7 | 12 | 6.4 | 8.5 | | 362 | 47 | 19 | 27 | 8.2 | 5.5 | 12 | 3.4 |
| 8 | 11 | 6.4 | 60 | | 690 | 67 | 18 | 19 | 9.8 | 6.2 | 8.2 | 4.1 |
| 9 | 9.8 | 7.7 | 36 | | 470 | 99 | 17 | 16 | 9.2 | 5.5 | 8.7 | 3.1 |
| 10 | 8.5 | 6.4 | 19 | | 298 | 139 | 19 | 16 | 6.2 | 18 | 9.8 | 2.9 |
| 11 | 8.1 | 6.0 | 17 | | 330 | 1,130 | 19 | 15 | 5.1 | 12 | 6.2 | 2.8 |
| 12 | 7.3 | 5.6 | 13 | | 250 | 266 | 18 | 15 | 5.5 | 7.0 | 5.1 | 3.8 |
| 13 | 7.3 | 6.4 | 19 | | 130 | 134 | 14 | 13 | 4.8 | 6.2 | 5.8 | 645 |
| 14 | 7.3 | 7.3 | 38 | | 94 | 1,180 | 21 | 11 | 5.1 | 4.8 | 9.2 | 208 |
| 15 | 7.3 | 7.7 | 41 | 12 | 97 | 317 | 50 | 10 | 7.6 | 4.1 | 6.2 | 249 |
| 16 | 8.1 | 7.7 | 25 | | 59 | 148 | 37 | 9.8 | 12 | 4.5 | 5.8 | 171 |
| 17 | 7.3 | 6.4 | 38 | | 68 | 110 | 27 | 60 | 9.2 | 3.8 | 5.1 | 76 |
| 18 | 7.3 | 6.4 | 378 | | 46 | 92 | 21 | 25 | 8.7 | 4.1 | 5.5 | 40 |
| 19 | 8.1 | 6.4 | 1,790 | | 41 | 645 | 21 | 16 | 7.0 | 3.4 | 5.5 | 20 |
| 20 | 8.9 | 6.4 | 362 | | 36 | 211 | 18 | 11 | 5.5 | 3.1 | 4.8 | 16 |

*Daily discharge, in second-feet, of East Branch of Huron River near Norwalk, Ohio, for the years ending September 30, 1924 and 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1924-25 | | | | | | | | | | | | |
| 21 | 8.9 | 7.3 | 133 | | 92 | 92 | 15 | 9.2 | 4.8 | 4.1 | 4.1 | 11 |
| 22 | 11 | 7.7 | 88 | | 555 | 63 | 14 | 10 | 4.5 | 192 | 3.8 | 9.8 |
| 23 | 8.9 | 8.1 | 84 | | 1,790 | 49 | 14 | 9.2 | 4.5 | 33 | 3.8 | 8.7 |
| 24 | 9.8 | 9.8 | 32 | | 510 | 44 | 12 | 44 | 4.5 | 10 | 2.9 | 7.6 |
| 25 | 9.8 | 8.9 | | | 283 | 41 | 11 | 39 | 27 | 13 | 2.9 | 6.5 |
| 26 | 9.8 | 14 | | 30 | 139 | 39 | 11 | 28 | 16 | 19 | 2.8 | 6.2 |
| 27 | 8.9 | 14 | 18 | | 83 | 83 | 9.2 | 18 | 14 | 9.8 | 2.9 | 5.8 |
| 28 | 8.9 | 8.5 | | | 70 | 65 | 11 | 13 | 16 | 7.6 | 2.9 | 7.0 |
| 29 | 8.5 | 8.5 | | | ------- | 50 | 11 | 12 | 11 | 8.2 | 2.9 | 6.2 |
| 30 | 8.1 | 8.5 | | | ------- | 47 | 16 | 11 | 9.8 | 7.0 | 2.6 | 5.8 |
| 31 | 7.7 | ------ | | | ------- | 43 | ------- | 9.2 | ---------- | 8.2 | 2.6 | ------ |

NOTE.—Stage-discharge relation affected by ice Jan. 6-10, 19-29, Feb. 11-29, Mar. 1-3, Dec. 25-31, 1924, and Jan. 1 to Feb. 7, 1925; discharge estimated from study of observer's notes; weather records, and records of flow of near-by streams. Stage-discharge relation affected by leaves lodged on control Oct. 24 to Dec. 17, 1924; discharge ascertained by shifting-control method Oct. 24 to Nov. 16 and parallel rating curve Nov. 17 to Dec. 17. Gage not read Dec. 2-4, 1924; discharge interpolated.

*Monthly discharge of East Branch of Huron River near Norwalk, Ohio, for the years ending September 30, 1924 and 1925*

[Drainage area, 84.9 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1923-24 | | | | | |
| November 7-30 | 26 | 3.9 | 9.06 | 0.107 | 0.10 |
| December | 1,130 | 19 | 260 | 3.06 | 3.53 |
| January | 1,670 | ---------- | 166 | 1.96 | 2.26 |
| February | 250 | ---------- | 77.3 | .910 | .98 |
| March | 1,850 | 24 | 224 | 2.64 | 3.04 |
| April | 314 | 18 | 57.2 | .674 | .75 |
| May | 346 | 24 | 83.0 | .978 | 1.13 |
| June | 1,130 | 20 | 206 | 2.43 | 2.71 |
| July | 148 | 6.4 | 28.0 | .330 | .38 |
| August | 8.9 | 3.5 | 5.58 | .066 | .08 |
| September | 133 | 4.8 | 23.4 | .276 | .31 |
| 1924-25 | | | | | |
| October | 44 | 7.3 | 11.3 | .133 | .15 |
| November | 14 | 5.6 | 7.65 | .090 | .10 |
| December | 1,790 | 8.5 | 108 | 1.27 | 1.46 |
| January | ---------- | ---------- | 17.7 | .208 | .24 |
| February | 1,790 | ---------- | 240 | 2.83 | 2.95 |
| March | 1,180 | 27 | 177 | 2.08 | 2.40 |
| April | 50 | 9.2 | 20.1 | .237 | .26 |
| May | 60 | 9.2 | 20.2 | .238 | .27 |
| June | 27 | 4.5 | 8.88 | .105 | .12 |
| July | 192 | 3.1 | 13.8 | .163 | .19 |
| August | 49 | 2.6 | 6.80 | .080 | .09 |
| September | 645 | 2.8 | 51.3 | .604 | .67 |
| The year | 1,790 | 2.6 | 55.8 | .657 | 8.90 |

### 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, 1925.

GAGE.—Chain gage on bridge; read by Mrs. Joe Wojcik.

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 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, 5.0 feet February 11 and March 11 (discharge, 2,920 second-feet); minimum discharge, 0.3 second-foot September 3–6.

1922–1925: Maximum stage recorded, 9.9 feet at 5.30 a. m. June 29, 1924 (backwater caused by tornado). Maximum discharge that of February 11 and March 11, 1925; minimum stage, 0.57 foot October 5 and 6, 1922 (discharge, 0.2 second-foot).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Negligible.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent; affected by ice and leaves lodged on control as indicated in footnote to table of daily discharge. Rating curve fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except for periods during which stage-discharge relation was affected by leaves lodged on control or by ice, for which they are fair.

*Discharge measurements of East Branch of Black River at Elyria, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 23 | *0.80 | 4.5 | Mar. 18 | 1.69 | 202 | Aug. 5 | 0.86 | 9.1 |
| Nov. 20 | *.89 | 7.1 | May 6 | 1.66 | 156 | Aug. 26 | .78 | 4.0 |

*Stage-discharge relation affected by leaves on control.

*Daily discharge, in second-feet, of East Branch of Black River at Elyria, Ohio, for the years ending September 30, 1922–1925*

| Day | July | Aug. | Sept. | Day | July | Aug. | Sept. | Day | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1922 | | | | 1922 | | | | 1922 | | | |
| 1 | | 2.8 | 3.9 | 11 | 23 | 2.8 | 6.0 | 21 | 9.2 | 0.6 | 2.8 |
| 2 | | 2.8 | 3.9 | 12 | 38 | 1.8 | 3.9 | 22 | 7.6 | .5 | 1.8 |
| 3 | | 2.8 | 5.5 | 13 | 22 | 1.8 | 2.8 | 23 | 6.8 | .5 | 1.8 |
| 4 | | .7 | 23 | 14 | 21 | 2.8 | 1.8 | 24 | 6.0 | .6 | .7 |
| 5 | | 1.2 | 69 | 15 | 16 | 2.3 | 1.8 | 25 | 12 | .7 | .7 |
| 6 | | 1.2 | 39 | 16 | 12 | 1.8 | 1.8 | 26 | 14 | .7 | .6 |
| 7 | | .7 | 18 | 17 | 7.6 | 1.8 | 1.2 | 27 | 12 | .6 | .4 |
| 8 | 68 | 2.3 | 12 | 18 | 7.6 | 1.2 | 1.2 | 28 | 6.8 | 1.8 | .3 |
| 9 | 103 | 4.9 | 9.2 | 19 | 12 | .7 | 2.8 | 29 | 3.9 | 3.4 | .4 |
| 10 | 39 | 6.0 | 6.0 | 20 | 12 | .7 | 1.8 | 30 | 3.9 | 2.8 | .5 |
| | | | | | | | | 31 | 2.8 | 4.9 | |

*Daily discharge, in second-feet, of East Branch of Black River at Elyria, Ohio, for the years ending September 30, 1922–1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1922-23 | | | | | | | | | | | | |
| 1 | 0.5 | 3.9 | 7.6 | 33 | 86 | 103 | 42 | 11 | 25 | 4.9 | 4.4 | 39 |
| 2 | .4 | 3.9 | 8.4 | 31 | 100 | 138 | 36 | 10 | 23 | 4.9 | 4.9 | 29 |
| 3 | .4 | 4.4 | 9.2 | 28 | 111 | 203 | 24 | 9.2 | 33 | 6.0 | 6.0 | 24 |
| 4 | .4 | 4.4 | 9.2 | 29 | 117 | 280 | 31 | 8.4 | 31 | 7.6 | 7.6 | 16 |
| 5 | .2 | 3.4 | 9.2 | 33 | 117 | 305 | 510 | 7.6 | 21 | 6.0 | 49 | 12 |
| 6 | .3 | 4.4 | 9.2 | 36 | 95 | 251 | 2,320 | 9.2 | 18 | 7.6 | 95 | 4.9 |
| 7 | .5 | 4.9 | 10 | 31 | 82 | 168 | 2,320 | 11 | 16 | 9.2 | 478 | 8.4 |
| 8 | .6 | 4.4 | 11 | 31 | 62 | 91 | 2,120 | 16 | 6.0 | 86 | 310 | 18 |
| 9 | .6 | 3.9 | 12 | 33 | 45 | 251 | 1,820 | 21 | 3.9 | 82 | 62 | 15 |
| 10 | .6 | 13 | 12 | 33 | 31 | 650 | 1,370 | 57 | 3.9 | 66 | 25 | 11 |
| 11 | .7 | 16 | 12 | 36 | 33 | 1,190 | 900 | 141 | 6.0 | 62 | 14 | 7.6 |
| 12 | .7 | 12 | 12 | 36 | 41 | 1,190 | 141 | 415 | 7.6 | 49 | 13 | 11 |
| 13 | .6 | 10 | 10 | 38 | 52 | 860 | 49 | 825 | 6.0 | 49 | 12 | 5.5 |
| 14 | .6 | 9.2 | 11 | 42 | 66 | 445 | 49 | 940 | 7.6 | 41 | 12 | 4.4 |
| 15 | .6 | 12 | 11 | 175 | 82 | 195 | 49 | 940 | 6.0 | 49 | 11 | 2.3 |
| 16 | .6 | 11 | 11 | 415 | 98 | 374 | 49 | 980 | 4.9 | 45 | 9.2 | 1.8 |
| 17 | .7 | 9.2 | 12 | 374 | 111 | 790 | 47 | 980 | 6.0 | 42 | 7.6 | 2.3 |
| 18 | 1.8 | 10 | 12 | 325 | 82 | 580 | 47 | 545 | 4.9 | 41 | 6.8 | 4.4 |
| 19 | 2.8 | 2.8 | 13 | 261 | 55 | 183 | 45 | 111 | 4.9 | 21 | 6.0 | 2.3 |
| 20 | 2.8 | 4.4 | 14 | 232 | 42 | 91 | 45 | 93 | 3.9 | 18 | 6.8 | 24 |
| 21 | 3.9 | 11 | 14 | 545 | 39 | 98 | 45 | 98 | 11 | 11 | 6.8 | 160 |
| 22 | 3.9 | 12 | 14 | 445 | 36 | 374 | 49 | 82 | 21 | 4.9 | 9.2 | 261 |
| 23 | 4.9 | 11 | 15 | 352 | 36 | 1,100 | 45 | 64 | 26 | 3.9 | 5.5 | 77 |
| 24 | 4.4 | 11 | 15 | 315 | 36 | 860 | 44 | 60 | 26 | .6 | 5.5 | 45 |
| 25 | 4.4 | 11 | 16 | 305 | 36 | 385 | 38 | 57 | 21 | 4.9 | 4.4 | 23 |
| 26 | 3.9 | 9.2 | 17 | 310 | 36 | 183 | 25 | 36 | 4.9 | 3.9 | 8.4 | 21 |
| 27 | 2.8 | 7.6 | 16 | 341 | 119 | 75 | 18 | 33 | 3.9 | 3.9 | 8.4 | 13 |
| 28 | 3.4 | 7.6 | 18 | 285 | 117 | 60 | 16 | 31 | 3.9 | 2.8 | 28 | 21 |
| 29 | 3.4 | 7.6 | 25 | 232 | ------- | 57 | 14 | 28 | .6 | 3.9 | 545 | 80 |
| 30 | 2.8 | 7.6 | 47 | 175 | ------- | 49 | 12 | 26 | .6 | 4.9 | 163 | 29 |
| 31 | 3.4 | ------- | 33 | 122 | ------- | 45 | ------- | 25 | -------- | 4.9 | 53 | ------- |
| 1923-24 | | | | | | | | | | | | |
| 1 | 21 | 14 | 183 | 650 | 415 | 119 | 290 | 45 | 211 | 580 | 7.6 | 1.2 |
| 2 | 14 | 25 | 164 | 246 | 256 | 141 | 134 | 98 | 168 | 215 | 10 | 3.9 |
| 3 | 6.8 | 18 | 144 | 144 | 207 | 194 | 157 | 88 | 91 | 119 | 11 | 4.9 |
| 4 | 8 | 21 | 138 | 290 | 203 | 242 | 117 | 445 | 122 | 64 | 10 | 4.4 |
| 5 | 18.4 | 23 | 1,020 | 168 | 315 | 1,020 | 103 | 545 | 73 | 57 | 8.4 | 3.9 |
| 6 | 5.5 | 66 | 2,220 | | 580 | 650 | 91 | 147 | 33 | 330 | 6.0 | 2.8 |
| 7 | 2.8 | 91 | 1,920 | | 352 | 415 | 73 | 88 | 45 | 790 | 6.8 | 3.9 |
| 8 | 3.9 | 55 | 580 | 140 | 122 | 91 | 128 | 62 | 237 | 478 | 7.6 | 3.9 |
| 9 | 2.8 | 53 | 385 | | 88 | 77 | 160 | 53 | 1,190 | 198 | 9.2 | 15 |
| 10 | 3.9 | 49 | 825 | | 69 | 93 | 160 | 232 | 1,100 | 242 | 8.4 | 415 |
| 11 | 1.8 | 32 | 510 | 2,620 | 73 | 119 | 106 | 125 | 1,370 | 128 | 6.0 | 164 |
| 12 | 3.9 | 23 | 228 | 2,520 | 59 | 232 | 77 | 86 | 1,020 | 59 | 2.3 | 71 |
| 13 | 4.4 | 28 | 825 | 545 | 49 | 172 | 62 | 184 | 790 | 44 | 2.8 | 41 |
| 14 | 3.9 | 23 | 2,420 | 224 | 45 | 141 | 49 | 503 | 270 | 32 | 2.8 | 33 |
| 15 | 2.8 | 22 | 1,370 | 119 | 52 | 71 | 39 | 10 | 103 | 26 | 2.8 | 31 |
| 16 | 1.8 | 20 | 256 | 211 | 52 | 66 | 33 | 755 | 66 | 25 | 2.8 | 18 |
| 17 | 2.8 | 117 | 134 | 650 | 57 | 62 | 47 | 415 | 55 | 23 | 3.4 | 17 |
| 18 | .6 | 295 | 114 | 320 | 44 | 52 | 39 | 224 | 650 | 21 | 2.3 | 14 |
| 19 | .7 | 108 | 108 | 186 | 69 | 45 | 510 | 1,020 | 415 | 17 | .7 | 14 |
| 20 | 1.8 | 71 | 114 | 153 | 69 | 42 | 190 | 310 | 203 | 16 | 2.8 | 18 |
| 21 | .7 | 42 | 215 | 95 | 160 | 49 | 122 | 183 | 80 | 15 | 3.9 | 256 |
| 22 | 1.8 | 32 | 1,550 | 75 | 215 | 341 | 720 | 106 | 44 | 18 | 9.2 | 352 |
| 23 | 4.9 | 32 | 2,320 | | 190 | 685 | 650 | 77 | 41 | 77 | 7.6 | 134 |
| 24 | 7.6 | 36 | 1,190 | | 125 | 685 | 237 | 77 | 650 | 64 | 4.4 | 71 |
| 25 | 15 | 39 | 510 | | 80 | 510 | 100 | 117 | 790 | 38 | 3.4 | 31 |
| 26 | 33 | 53 | 358 | 80 | 55 | 825 | 98 | 160 | 320 | 24 | 2.3 | 12 |
| 27 | 41 | 122 | 445 | | 45 | 1,280 | 55 | 95 | 144 | 22 | 1.8 | 10 |
| 28 | 20 | 160 | 650 | | 45 | 790 | 39 | 73 | 860 | 21 | 4.4 | 12 |
| 29 | 13 | 160 | 510 | | 59 | 2,020 | 42 | 69 | 1,700 | 13 | 5.5 | 363 |
| 30 | 13 | 207 | 194 | 1,280 | ------- | 2,620 | 42 | 111 | 750 | 6.8 | 3.9 | 1,020 |
| 31 | 12 | ------- | 295 | 615 | ------- | 1,020 | ------- | 179 | -------- | 7.6 | 2.3 | ------- |

*Daily discharge, in second-feet, of East Branch of Black River at Elyria, Ohio, for the years ending September 30, 1922–1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1924–25 | | | | | | | | | | | | |
| 1 | 755 | 4.9 | 6.0 | | | 95 | 41 | 9.2 | 5.5 | 7.6 | 22 | 1.8 |
| 2 | 330 | 4.9 | 8.4 | | | 82 | 32 | 9.2 | 5.5 | 8.4 | 13 | .6 |
| 3 | 175 | 2.8 | 10 | | | 108 | 31 | 9.2 | 6.0 | 6.8 | 11 | .3 |
| 4 | 88 | 1.8 | 4.4 | | | 84 | 28 | 13 | 6.0 | 4.9 | 9.2 | .3 |
| 5 | 53 | 1.8 | 2.8 | 25 | 220 | 84 | 25 | 24 | 6.8 | 4.9 | 10 | .3 |
| 6 | 35 | 1.2 | 3.4 | | | 122 | 25 | 175 | 6.0 | 2.3 | 25 | .3 |
| 7 | 20 | .7 | 4.4 | | | 95 | 23 | 122 | 6.0 | 3.9 | 39 | .4 |
| 8 | 18 | 1.8 | 7.6 | | | 157 | 16 | 75 | 6.8 | 5.5 | 39 | .4 |
| 9 | 25 | 4.4 | 13 | | 790 | 325 | 14 | 50 | 6.8 | 6 | 55 | .4 |
| 10 | 18 | 4.4 | 26 | | 363 | 358 | 14 | 36 | 6.0 | 71 | 39 | .4 |
| 11 | 17 | 6.0 | 35 | | 2,520 | 2,620 | 22 | 28 | 7.6 | 36 | 36 | .4 |
| 12 | 11 | 6.0 | 17 | | 1,550 | 1,730 | 23 | 111 | 5.5 | 23 | 33 | .4 |
| 13 | 14 | 5.5 | 21 | | 545 | 720 | 23 | 66 | 2.8 | 15 | 36 | 106 |
| 14 | 14 | 5.5 | 22 | | 228 | 1,730 | 31 | 45 | 1.8 | 16 | 35 | 1,190 |
| 15 | 8.4 | 4.9 | 41 | 30 | 186 | 1,730 | 50 | 35 | 2.8 | 12 | 12 | 1,100 |
| 16 | 7.6 | 4.9 | 31 | | 160 | 860 | 42 | 29 | 3.4 | 7.6 | 10 | 1,550 |
| 17 | 4.4 | 4.9 | 69 | | 134 | 237 | 29 | 52 | 2.8 | 7.6 | 7.6 | 650 |
| 18 | 7.6 | 6.0 | 374 | | 125 | 186 | 25 | 53 | 2.8 | 6.8 | 7.6 | 175 |
| 19 | 7.6 | 4.9 | 545 | | 119 | 1,370 | 24 | 33 | 1.8 | 5.5 | 3.4 | 80 |
| 20 | 9.2 | 6.8 | 1,020 | | 69 | 980 | 20 | 24 | 1.8 | 4.9 | 1.8 | 39 |
| 21 | 7.6 | 6.8 | 685 | | 179 | 415 | 16 | 17 | 1.8 | 6 | 1.8 | 28 |
| 22 | 3.9 | 7.6 | 270 | | 685 | 144 | 18 | 10 | 2.3 | 10 | 1.8 | 24 |
| 23 | 2.8 | 10 | 86 | | 2,420 | 100 | 16 | 17 | 2.8 | 128 | 1.8 | 23 |
| 24 | 6.0 | 14 | 73 | | 2,620 | 95 | 16 | 21 | 3.9 | 60 | 4.4 | 21 |
| 25 | 12 | 14 | | 30 | 980 | 86 | 14 | 32 | 6.0 | 41 | 5.5 | 16 |
| 26 | 8.4 | 14 | | | 755 | 57 | 12 | 49 | 3.4 | 21 | 4.9 | 12 |
| 27 | 6.0 | 12 | | | 285 | 59 | 3.4 | 31 | 12 | 36 | 4.9 | 14 |
| 28 | 7.6 | 9.2 | 30 | | 256 | 55 | 1.8 | 25 | 14 | 47 | 4.9 | 13 |
| 29 | 6.8 | 8.4 | | | ------- | 55 | .7 | 20 | 10 | 24 | 4.9 | 6 |
| 30 | 5.5 | 7.6 | | | ------- | 52 | 3.9 | 15 | 7.6 | 23 | 3.9 | 6 |
| 31 | 6.0 | ------- | | | ------- | 28 | ------- | 10 | ------- | 23 | 2.8 | ------- |

NOTE.—Stage-discharge relation seriously affected by ice Jan. 6–10, 21–29, Dec. 25–31, 1924, and Jan. 1 to Feb. 8, 1925; discharge estimated from study of observer's notes, weather records, records of flow of near-by streams, and one discharge measurement. Stage-discharge relation seriously affected June 29 and 30, 1924, by backwater caused by tornado; discharge estimated from study of records of flow of near-by streams. Stage-discharge relation seriously affected by leaves lodged on control Oct. 23 to Dec. 17, 1924; discharge Oct. 23 to Nov. 14 ascertained by shifting-control method; discharge Nov. 15 to Dec. 17 from rating curve parallel to standard curve and based on discharge measurement.

*Monthly discharge of East Branch of Black River at Elyria, Ohio, for the years ending September 30, 1922–1925*

[Drainage area, 211 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1922 | | | | | |
| July 8–31 | 103 | 2.8 | 19.4 | 0.092 | 0.08 |
| August | 6 | .5 | 1.94 | .0092 | .01 |
| September | 69 | .3 | 7.49 | .035 | .04 |
| 1922–23 | | | | | |
| October | 4.9 | .2 | 1.86 | .0088 | .01 |
| November | 16 | 2.8 | 8.09 | .038 | .04 |
| December | 47 | 7.6 | 14.4 | .068 | .08 |
| January | 545 | 28 | 183 | .867 | 1.00 |
| February | 119 | 31 | 70.1 | .332 | .35 |
| March | 1,190 | 45 | 375 | 1.78 | 2.05 |
| April | 2,320 | 12 | 408 | 1.93 | 2.15 |
| May | 980 | 7.6 | 215 | 1.02 | 1.18 |
| June | 33 | .6 | 11.9 | .056 | .06 |
| July | 86 | .6 | 24.1 | .114 | .13 |
| August | 545 | 4.4 | 63.8 | .302 | .35 |
| September | 261 | 1.8 | 32.4 | .154 | .17 |
| The year | 2,320 | .2 | 118 | .559 | 7.57 |

*Monthly discharge of East Branch of Black River at Elyria, Ohio, for the years ending September 30, 1922–1925*—Continued

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1923–24 | | | | | |
| October | 41 | 0.6 | 8.83 | 0.042 | 0.05 |
| November | 295 | 14 | 67.9 | .322 | .36 |
| December | 2,420 | 108 | 706 | 3.35 | 3.86 |
| January | 2,620 | | 399 | 1.89 | 2.18 |
| February | 580 | 44 | 143 | .678 | .73 |
| March | 2,620 | 42 | 480 | 2.27 | 2.62 |
| April | 720 | 33 | 156 | .739 | .82 |
| May | 1,020 | 45 | 216 | 1.02 | 1.18 |
| June | 1,700 | 33 | 453 | 2.15 | 2.40 |
| July | 790 | 6.8 | 122 | .578 | .67 |
| August | 11 | .7 | 5.24 | .025 | .03 |
| September | 1,020 | 1.2 | 105 | .498 | .56 |
| The year | 2,620 | .6 | 239 | 1.13 | 15.46 |
| 1924–25 | | | | | |
| October | 755 | 2.8 | 54.5 | .258 | .30 |
| November | 14 | .7 | 6.26 | .030 | .03 |
| December | 1,020 | 2.8 | 116 | .550 | .63 |
| January | | | 28.4 | .135 | .16 |
| February | 2,620 | | 597 | 2.83 | 2.95 |
| March | 2,620 | 28 | 478 | 2.27 | 2.62 |
| April | 50 | .7 | 21.3 | .101 | .11 |
| May | 175 | 9.2 | 40.2 | .191 | .22 |
| June | 14 | 1.8 | 5.28 | .025 | .03 |
| July | 128 | 2.3 | 21.8 | .103 | .12 |
| August | 55 | 1.8 | 15.7 | .074 | .09 |
| September | 1,550 | .3 | 169 | .801 | .89 |
| The year | 2,620 | .3 | 126 | .597 | 8.15 |

### 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, 1925.

GAGE.—Chain gage on highway bridge; read by O. R. Ruple.

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

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 about 150 feet below gage. Zero flow would occur at gage height 0.2 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year ending September 30, 1925, 6.9 feet at 3.30 p. m. February 23 (discharge, 6,140 second-feet); minimum stage, 0.43 foot at 6.15 p. m. September 2 (discharge, 3 second-feet).

1924–1925: Maximum stage recorded, 18.6 feet at 6 a. m. June 29, 1924 (backwater caused by tornado). Maximum discharge, 7,060 second-feet on January 11, 1924 (gage height, 7.4 feet). Minimum stage that of September 2, 1925.

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

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

DIVERSIONS.—Negligible.

REGULATION.—None.

ACCURACY.—Stage-discharge relation for low water changed during high water on June 29, 1924, February 23 and March 19, 1925; affected by ice as indicated in footnote to tables of daily discharge. Rating curves used prior to March 20, 1925, fairly well defined up to 6,000 second-feet and poorly defined above that limit. Curve used beginning that date well defined up to 6,000 second-feet and poorly defined above that limit. Gage read twice daily to hundredths. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

*Discharge measurements of Rocky River near Berea, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 23 | 1.24 | 24.4 | Mar. 19 | 5.40 | 3,750 | July 10 | 2.26 | 406 |
| Nov. 20 | 1.16 | 17.4 | Apr. 15 | 1.86 | 205 | Aug. 5 | 1.01 | 24.7 |
| Mar. 18 | 2.08 | 264 | May 6 | 1.83 | 171 | Aug. 27 | .63 | 7.0 |

*Daily discharge, in second-feet, of Rocky River near Berea, Ohio, for the years ending September 30, 1924 and 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1923–24 | | | | | | | | | | | | |
| 1 | | | 66 | 414 | 492 | | 265 | 153 | 112 | 1,360 | 20 | 34 |
| 2 | | 30 | 75 | 182 | 377 | 205 | 286 | 123 | 90 | 535 | 18 | 43 |
| 3 | | 24 | 117 | 296 | 359 | | 308 | 95 | 123 | 284 | 16 | 51 |
| 4 | | 32 | 280 | 447 | 525 | 1,330 | 221 | 560 | 104 | 84 | 14 | 69 |
| 5 | | 52 | 3,070 | 230 | 1,060 | 3,330 | 112 | 740 | 77 | 74 | 16 | 94 |
| 6 | | 133 | 5,300 | | 1,420 | 895 | 95 | 168 | 59 | 1,200 | 21 | 117 |
| 7 | | 93 | 2,120 | | 235 | 665 | 204 | 93 | 59 | 1,200 | 19 | 449 |
| 8 | | 133 | 395 | 225 | 139 | 221 | 347 | 101 | 434 | 1,050 | 19 | 463 |
| 9 | | 143 | 815 | | 114 | 153 | 421 | 93 | 855 | 620 | 28 | 503 |
| 10 | | 88 | 665 | | 117 | 139 | 335 | 101 | 291 | 800 | 30 | 4,190 |
| 11 | | 59 | 525 | 7,060 | 112 | 179 | 186 | 86 | 335 | 388 | 27 | 3,070 |
| 12 | | 55 | 221 | 1,330 | 93 | 280 | 130 | 90 | 3,070 | 176 | 19 | 2,680 |
| 13 | | 42 | 1,910 | 560 | 101 | 212 | 127 | 195 | 1,420 | 755 | 17 | 1,420 |
| 14 | | 30 | 855 | 270 | 93 | 164 | 93 | 291 | 560 | 310 | 14 | 710 |
| 15 | | 28 | 525 | 149 | 77 | 143 | 86 | 1,330 | 190 | 73 | 11 | 278 |
| 16 | | 27 | 195 | 136 | 75 | 77 | 64 | 740 | 112 | 54 | 13 | 54 |
| 17 | | 190 | 308 | 1,330 | 98 | 68 | 61 | 260 | 123 | 52 | 22 | 755 |
| 18 | | 428 | 260 | 139 | 81 | 57 | 117 | 492 | 492 | 47 | 19 | 665 |
| 19 | | 171 | 204 | 313 | | 54 | 702 | 341 | 630 | 39 | 16 | 620 |
| 20 | | 81 | 221 | 199 | | 49 | 226 | 186 | 204 | 33 | 16 | 366 |
| 21 | | 55 | 560 | 117 | | 64 | 179 | 136 | 117 | 28 | 16 | 168 |
| 22 | | 44 | 2,940 | 80 | | 270 | 2,230 | 120 | 90 | 345 | 14 | 76 |
| 23 | | 57 | 2,120 | | | 1,330 | 560 | 86 | 428 | 154 | 15 | 54 |
| 24 | | 98 | 1,150 | | 72 | 778 | 250 | 101 | 324 | 76 | 10 | 42 |
| 25 | | 136 | 492 | | | 492 | 139 | 359 | 895 | 32 | 8 | 27 |
| 26 | | 347 | 421 | 75 | | 1,150 | 117 | 164 | 895 | 36 | 8 | 29 |
| 27 | | 460 | 389 | | | 895 | 72 | 117 | 460 | 34 | 6 | 52 |
| 28 | | 1,100 | 1,810 | | | 702 | 66 | 86 | 130 | 28 | 6 | 1,980 |
| 29 | | 2,340 | 740 | | | 3,200 | 72 | 77 | 3,500 | 20 | 7 | 3,470 |
| 30 | | 665 | 235 | 2,010 | | 2,940 | 72 | 428 | 1,000 | 22 | 9 | 2,200 |
| 31 | | | 585 | 1,240 | | 492 | | 195 | | 22 | 11 | |
| 1924–25 | | | | | | | | | | | | |
| 1 | 1,750 | 11 | 16 | | 500 | 222 | 88 | | 14 | 63 | 40 | 3.7 |
| 2 | 710 | 11 | 16 | | 2,560 | 175 | 81 | 55 | 14 | 52 | 28 | 3.2 |
| 3 | 535 | 12 | 15 | | 2,560 | 175 | 77 | | 13 | 30 | 31 | 33 |
| 4 | 131 | 13 | 15 | | 2,080 | 203 | 71 | | 11 | 26 | 31 | 66 |
| 5 | 74 | 14 | 18 | 30 | 1,860 | 243 | 64 | 191 | 9 | 21 | 34 | 33 |
| 6 | 57 | 15 | 19 | | 850 | 264 | 61 | 208 | 7.5 | 16 | 23 | 16 |
| 7 | 61 | 17 | 19 | | 850 | 299 | 50 | 135 | 7.3 | 22 | 19 | 0 |
| 8 | 54 | 19 | 23 | | 850 | 311 | 61 | 81 | 7.0 | 55 | 27 | 10 |
| 9 | 42 | 19 | 39 | | 800 | 311 | 45 | 67 | 6.8 | 48 | 28 | 8.4 |
| 10 | 38 | 19 | 138 | | 755 | 545 | 52 | 54 | 6.5 | 455 | 31 | 7.8 |

*Daily discharge, in second-feet, of Rocky River near Berea, Ohio, for the years ending September 30, 1924 and 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1924–25 | | | | | | | | | | | | |
| 11 | 25 | 20 | 212 | | 755 | 2,200 | 63 | 125 | 6.3 | 283 | 36 | 7.2 |
| 12 | 20 | 19 | 212 | | 665 | 1,550 | 74 | 271 | 6.0 | 196 | 50 | 18 |
| 13 | 20 | 19 | 223 | 35 | 352 | 835 | 52 | 216 | 8.1 | 122 | 95 | 1,270 |
| 14 | 19 | 18 | 234 | | 131 | 705 | 55 | 69 | 6.0 | 26 | 216 | 2,440 |
| 15 | 20 | 18 | 345 | | 128 | 545 | 191 | 46 | 7.2 | 14 | 88 | 1,970 |
| 16 | 21 | 18 | 366 | | 100 | 470 | 146 | 60 | 8.4 | 11 | 61 | 2,440 |
| 17 | 19 | 17 | 1,860 | | 76 | 428 | 95 | 67 | 11 | 11 | 28 | 422 |
| 18 | 19 | 18 | 2,440 | 35 | 71 | 421 | 84 | 63 | 7.2 | 5.0 | 20 | 236 |
| 19 | 20 | 18 | 1,860 | | 61 | 3,200 | 72 | 60 | 6.9 | 5.8 | 16 | 216 |
| 20 | 20 | 16 | 373 | | 69 | 1,750 | 61 | 58 | 6.0 | 11 | 14 | 127 |
| 21 | 20 | 18 | 290 | | 578 | 830 | | 48 | 8.7 | 16 | 12 | 93 |
| 22 | 20 | 18 | 297 | | 158 | 675 | | 43 | 12 | 75 | 16 | 71 |
| 23 | 20 | 18 | 317 | | 5,970 | 226 | | 41 | 14 | 9.0 | 17 | 55 |
| 24 | 12 | 19 | 503 | | 1,650 | 162 | | 36 | 29 | 60 | 14 | 41 |
| 25 | 14 | 16 | 2,680 | | 705 | 143 | | 31 | 38 | 28 | 11 | 31 |
| 26 | 14 | 18 | | 40 | 323 | 130 | 40 | 29 | 42 | 20 | 8.1 | 28 |
| 27 | 16 | 15 | | | 227 | 200 | | 27 | 49 | 7.2 | 6.6 | 26 |
| 28 | 14 | 15 | 150 | | 238 | 200 | | 24 | 55 | 5.8 | 5.4 | 28 |
| 29 | 12 | 15 | | | ------- | 104 | | 21 | 67 | 11 | 4.4 | 29 |
| 30 | 11 | 15 | | | ------- | 110 | | 21 | 74 | 16 | 4.6 | 23 |
| 31 | 11 | ------- | | | ------- | 113 | ------- | 18 | ------- | 104 | 3.8 | ------- |

NOTE.—Stage-discharge relation seriously affected by ice Jan. 6–10, 15–16, 21–29, Feb. 19 to Mar. 3, Dec. 26–31, 1924, and Jan. 1 to Feb. 1, 1925; discharge estimated from observer's notes, weather records, and records of flow of near-by streams. Stage-discharge relation seriously affected June 29–30, 1924, by backwater caused by tornado; discharge estimated from study of records of flow of near-by streams. Gage not read Apr. 18, 19, 21–30, May 1–4, and June 7–10, 1925; discharge Apr. 21 to May 4 estimated by comparison with flow of near-by streams; discharge interpolated for remaining days when gage was not read.

*Monthly discharge of Rocky River near Berea, Ohio, for the years ending September 30, 1924 and 1925*

[Drainage area, 269 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1923–24 | | | | | |
| November 2–30 | 2,340 | 24 | 246 | 0.914 | 0.99 |
| December | 5,300 | 66 | 954 | 3.55 | 4.09 |
| January | 7,060 | ---------- | 587 | 2.18 | 2.51 |
| February | 1,420 | ---------- | 219 | .814 | .88 |
| March | 3,330 | 49 | 676 | 2.51 | 2.89 |
| April | 2,230 | 61 | 271 | 1.01 | 1.13 |
| May | 1,330 | 77 | 262 | .974 | 1.12 |
| June | 3,500 | 59 | 573 | 2.13 | 2.38 |
| July | 1,360 | 20 | 320 | 1.19 | 1.37 |
| August | 30 | 6 | 15.6 | .058 | .07 |
| September | 4,190 | 27 | 820 | 3.05 | 3.40 |
| 1924–25 | | | | | |
| October | 1,750 | 11 | 123 | .457 | .53 |
| November | 29 | 11 | 16.6 | .062 | .07 |
| December | 2,680 | 15 | 433 | 1.61 | 1.86 |
| January | ---------- | ---------- | 35.2 | .131 | .15 |
| February | 5,970 | 61 | 926 | 3.44 | 3.58 |
| March | 3,200 | 104 | 572 | 2.13 | 2.46 |
| April | 191 | ---------- | 64.8 | .241 | .27 |
| May | 271 | 18 | 75.2 | .280 | .32 |
| June | 74 | 6.0 | 18.6 | .069 | .08 |
| July | 455 | 5.0 | 58.9 | .219 | .25 |
| August | 216 | 3.8 | 32.9 | .122 | .14 |
| September | 2,440 | 3.2 | 325 | 1.21 | 1.35 |
| The year | 5,970 | 3.2 | 219 | .814 | 11.06 |

### CUYAHOGA RIVER AT OLD PORTAGE, OHIO

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

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

RECORDS AVAILABLE.—September 27, 1921, to September 30, 1925.

GAGE.—An water-stage recorder on right bank just below bridge; installed December 21, 1923.

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. Zero flow would occur at zero gage height.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 7.4 feet at 1 a. m. February 12 (discharge, 2,200 second-feet); minimum stage, 0.98 foot at 10 a. m. July 5 (discharge, 45 second-feet).

1921–1925: Maximum stage recorded, 10.8 feet at 9 p. m. June 28, 1924 (discharge, 3,540 second-feet); minimum stage that of July 5, 1925.

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

DIVERSIONS.—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.

REGULATION.—Flow regulated at reservoir above Akron.

ACCURACY.—Stage-discharge relation for low water changed during high water on February 12. Rating curves well defined. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by means of discharge integrator. Records good.

*Discharge measurements of Cuyahoga River at Old Portage, Ohio, for the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 22 | 1.90 | 275 | Mar. 16 | 5.42 | 1,420 | May 4 | 2.88 | 497 |
| Nov. 26 | 1.96 | 279 | Mar. 17 | 5.32 | 1,450 | Aug. 26 | 1.42 | 111 |
| Jan. 11 | 1.18 | 104 | Apr. 11 | 2.36 | 336 | | | |

*Daily discharge, in second-feet, of Cuyahoga River at Old Portage, Ohio, for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,150 | 140 | 178 | 258 | 110 | 1,150 | 419 | 234 | 168 | 154 | 253 | 200 |
| 2 | 1,090 | 108 | 158 | 268 | 206 | 1,050 | 385 | 218 | 118 | 77 | 218 | 178 |
| 3 | 1,080 | 185 | 142 | 205 | 240 | 780 | 381 | 116 | 144 | 107 | 194 | 294 |
| 4 | 1,060 | 198 | 150 | 101 | 284 | 664 | 356 | 392 | 110 | 56 | 158 | 129 |
| 5 | 950 | 174 | 192 | 178 | 264 | 617 | 312 | 460 | 104 | 52 | 316 | 106 |
| 6 | 820 | 150 | 158 | 255 | 248 | 580 | 327 | 432 | 98 | 137 | 324 | 100 |
| 7 | 670 | 198 | 270 | 265 | 305 | 596 | 316 | 376 | 68 | 156 | 286 | 82 |
| 8 | 645 | 180 | 268 | 300 | 613 | 690 | 308 | 330 | 108 | 219 | 260 | 148 |
| 9 | 495 | 139 | 345 | 245 | 1,070 | 854 | 307 | 288 | 137 | 306 | 240 | 154 |
| 10 | 435 | 174 | 320 | 188 | 1,620 | 953 | 316 | 268 | 109 | 386 | 232 | 180 |

*Daily discharge, in second-feet, of Cuyahoga River at Old Portage, Ohio, for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 395 | 208 | 318 | 104 | 2,000 | 1,220 | 310 | 381 | 126 | 306 | 198 | 93 |
| 12 | 310 | 208 | 332 | 222 | 2,120 | 1,330 | 220 | 347 | 90 | 253 | 214 | 232 |
| 13 | 330 | 208 | 435 | 278 | 1,810 | 1,260 | 234 | 316 | 92 | 268 | 240 | 350 |
| 14 | 310 | 208 | 420 | 268 | 1,590 | 1,450 | 282 | 289 | 62 | 275 | 226 | 288 |
| 15 | 305 | 208 | 350 | 276 | 1,430 | 1,530 | 352 | 287 | 69 | 230 | 210 | 422 |
| 16 | 270 | 149 | 350 | 256 | 1,280 | 1,390 | 350 | 182 | 94 | 174 | 178 | 325 |
| 17 | 205 | 225 | 620 | 174 | 1,110 | 1,350 | 339 | 124 | 80 | 196 | 200 | 408 |
| 18 | 132 | 165 | 955 | 100 | 923 | 1,280 | 338 | 191 | 100 | 153 | 188 | 485 |
| 19 | 152 | 176 | 1,190 | 223 | 771 | 1,500 | 320 | 258 | 111 | 140 | 181 | 553 |
| 20 | 200 | 186 | 1,250 | 261 | 680 | 1,440 | 319 | 273 | 84 | 152 | 174 | 539 |
| 21 | 290 | 145 | 1,090 | 270 | 595 | 1,250 | 329 | 272 | 86 | 203 | 167 | 536 |
| 22 | 240 | 165 | 1,060 | 236 | 668 | 1,200 | 282 | 270 | 129 | 226 | 160 | 448 |
| 23 | 180 | 208 | 1,000 | 203 | 1,460 | 1,130 | 270 | 250 | 68 | 154 | 153 | 394 |
| 24 | 178 | 245 | 950 | 159 | 1,960 | 964 | 258 | 258 | 96 | 174 | 146 | 346 |
| 25 | 145 | 232 | 735 | 126 | 1,920 | 791 | 168 | 290 | 135 | 214 | 139 | 333 |
| 26 | 140 | 185 | 485 | 214 | 2,060 | 668 | 154 | 266 | 92 | 212 | 131 | 288 |
| 27 | 175 | 175 | 420 | 258 | 1,870 | 592 | 197 | 246 | 116 | 236 | 123 | 350 |
| 28 | 185 | 212 | 365 | 266 | 1,400 | 546 | 244 | 142 | 83 | 264 | 120 | 393 |
| 29 | 175 | 125 | 385 | 276 | ------- | 466 | 159 | 154 | 163 | 248 | 128 | 264 |
| 30 | 185 | 140 | 400 | 249 | ------- | 466 | 158 | 77 | 152 | 232 | 107 | 226 |
| 31 | 168 | ------- | 320 | 176 | ------- | 444 | ------- | 62 | ------- | 228 | 169 | ------- |

NOTE.—No record Nov. 5, 10, 12–13, 19, when gage-height chart was torn by pencil, and Aug. 19–25, when paper on supply roll ran out; discharge interpolated.

*Monthly discharge, in second-feet, of Cuyahoga River at Old Portage, Ohio, for the year ending September 30, 1925*

| Month | Maximum | Minimum | Mean | Month | Maximum | Minimum | Mean |
|---|---|---|---|---|---|---|---|
| October | 1,150 | 132 | 421 | May | 460 | 62 | 260 |
| November | 245 | 108 | 181 | June | 168 | 62 | 106 |
| December | 1,250 | 142 | 504 | July | 386 | 52 | 200 |
| January | 300 | 100 | 221 | August | 324 | 107 | 194 |
| February | 2,120 | 110 | 1,090 | September | 553 | 82 | 292 |
| March | 1,530 | 444 | 974 | | | | |
| April | 419 | 154 | 290 | The year | 2,120 | 52 | 391 |

### 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 to September 30, 1925.

GAGE.—Vertical staff in two sections; lower section on left abutment of dam; upper section on large pole at pumping station; read by J. M. O'Brien.

DISCHARGE MEASUREMENTS.—Made from footbridge above gage or by wading below gage.

CHANNEL AND CONTROL.—Channel straight for several hundred feet above 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 STAGE.—Maximum stage recorded during period, 4.5 feet at 4 p. m. September 13 (discharge, 5,860 second-feet); minimum stage, 0.28 foot August 25–31, September 1, 2, 10, and 11 (discharge, 25 second-feet).

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

DIVERSIONS.—Municipal water supply for Willoughby is diverted above gage.

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

The following discharge measurements were made:
July 9, 1925: Gage height, 0.40 foot; discharge, 52.4 second-feet.
August 4, 1925: Gage height, 0.29 foot; discharge, 28.1 second-feet.
August 27, 1925: Gage height, 0.28 foot; discharge, 22.7 second-feet.

*Daily discharge, in second-feet, of Chagrin River at Willoughby, Ohio, for the year ending September 30, 1925*

| Day | July | Aug. | Sept. | Day | July | Aug. | Sept. | Day | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 60 | 25 | 11 | 156 | 40 | 25 | 21 | 28 | 94 | 282 |
| 2 | | 42 | 25 | 12 | 60 | 37 | 30 | 22 | 37 | 66 | 115 |
| 3 | | 28 | 46 | 13 | 46 | 42 | 2,560 | 23 | 60 | 44 | 90 |
| 4 | | 26 | 51 | 14 | 40 | 46 | 945 | 24 | 37 | 30 | 71 |
| 5 | | 51 | 37 | 15 | 35 | 42 | 780 | 25 | 28 | 25 | 63 |
| 6 | | 49 | 37 | 16 | 60 | 35 | 1,240 | 26 | 57 | 25 | 63 |
| 7 | | 51 | 30 | 17 | 54 | 26 | 437 | 27 | 71 | 25 | 63 |
| 8 | | 33 | 33 | 18 | 46 | 28 | 256 | 28 | 63 | 25 | 98 |
| 9 | 51 | 94 | 33 | 19 | 35 | 26 | 152 | 29 | 40 | 25 | 66 |
| 10 | 295 | 57 | 25 | 20 | 28 | 26 | 94 | 30 | 30 | 25 | 57 |
| | | | | | | | | 31 | 35 | 25 | |

*Monthly discharge of Chagrin River at Willoughby, Ohio, for the year ending September 30, 1925*

[Drainage area, 251 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| July | 295 | 28 | 60.5 | 0.241 | 0.21 |
| August | 94 | 25 | 40.3 | .161 | .19 |
| September | 2,560 | 25 | 261 | 1.04 | 1.16 |

### 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, 1925.

GAGE.—Chain gage on highway bridge; read by E. H. Horton.

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 0.7 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.2 feet at 8.30 a. m. December 19 (discharge, 6,900 second-feet); minimum stage, 1.20 feet at 6 p. m. September 3 (discharge, 7 second-feet).

1922–1925: Maximum stage recorded, 9.7 feet at 3.30 p. m. January 11, 1924 (discharge, 10,500 second-feet); minimum stage, 1.10 feet at 5.30 p. m. August 27, 1923 (discharge, 1.5 second-feet).

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

ACCURACY.—Stage-discharge relation for low water changed during high water on December 19; affected by ice as noted in footnote to table of daily discharge. Rating curves well defined below 500 second-feet and fairly well defined above that limit. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except for periods of ice effect, for which they are fair.

*Discharge measurements of Grand River near Madison, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 24 | 1.62 | 22.1 | May 7 | 3.00 | 329 | Aug. 28 | 1.38 | 12.9 |
| Nov. 22 | 1.72 | 34.3 | July 8 | 1.48 | 17.6 | | | |
| Mar. 19 | 6.85 | 4,130 | Aug. 4 | 1.51 | 20.3 | | | |

*Daily discharge, in second-feet, of Grand River near Madison, Ohio, for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5,580 | 19 | 73 | | | 820 | 342 | 70 | 55 | 42 | 25 | 11 |
| 2 | 3,860 | 15 | 81 | | | 550 | 290 | 208 | 32 | 52 | 48 | 11 |
| 3 | 2,900 | 12 | 73 | | | 500 | 238 | 187 | 47 | 23 | 33 | 8 |
| 4 | 2,120 | 23 | 56 | | | 450 | 174 | 205 | 47 | 23 | 21 | 10 |
| 5 | 1,330 | 30 | 49 | | 250 | 400 | 205 | 238 | 20 | 23 | 44 | 12 |
| 6 | 700 | 33 | 100 | | | 360 | 208 | 360 | 18 | 21 | 21 | 12 |
| 7 | 412 | 25 | 325 | | | 620 | 145 | 360 | 18 | 20 | 46 | 10 |
| 8 | 272 | 17 | 510 | | | 2,360 | 135 | 360 | 18 | 21 | 72 | 10 |
| 9 | 202 | 14 | 1,170 | | 6,020 | 2,620 | 113 | 290 | 19 | 19 | 79 | 10 |
| 10 | 179 | 14 | 1,020 | | 6,460 | 1,900 | 100 | 211 | 20 | 19 | 42 | 11 |
| 11 | 153 | 19 | 700 | | 5,800 | 4,780 | 125 | 193 | 16 | 17 | 20 | 10 |
| 12 | 130 | 16 | 430 | | 4,980 | 3,360 | 342 | 220 | 14 | 16 | 36 | 12 |
| 13 | 123 | 19 | 550 | | 3,860 | 2,120 | 238 | 214 | 14 | 38 | 66 | 2,000 |
| 14 | 86 | 19 | 760 | | 2,900 | 3,680 | 205 | 220 | 14 | 96 | 51 | 1,600 |
| 15 | 71 | 19 | 820 | | 2,240 | 4,040 | 142 | 140 | 15 | 66 | 65 | 1,090 |
| 16 | 77 | 15 | 820 | 200 | 1,700 | 2,240 | 174 | 105 | 15 | 60 | 40 | 2,360 |
| 17 | 61 | 21 | 1,090 | | 1,420 | 1,600 | 211 | 153 | 11 | 53 | 24 | 1,900 |
| 18 | 68 | 23 | 4,040 | | 1,020 | 1,170 | 190 | 510 | 14 | 37 | 14 | 1,090 |
| 19 | 59 | 26 | 6,900 | | | 820 | 3,200 | 174 | 530 | 14 | 43 | 22 | 595 |
| 20 | 35 | 36 | 5,380 | | | 595 | 2,900 | 176 | 360 | 14 | 54 | 18 | 342 |
| 21 | 43 | 32 | 4,580 | | | 820 | 1,800 | 155 | 238 | 16 | 28 | 22 | 1,700 |
| 22 | 39 | 33 | 2,000 | | | 3,040 | 1,420 | 140 | 160 | 18 | 40 | 12 | 1,250 |
| 23 | 39 | 59 | 1,510 | | | 5,580 | 950 | 123 | 118 | 22 | 19 | 11 | 620 |
| 24 | 33 | 120 | 1,250 | | | 6,460 | 550 | 160 | 174 | 24 | 20 | 18 | 290 |
| 25 | 31 | 147 | 1,090 | | | 4,400 | 378 | 168 | 58 | 28 | 18 | 14 | 199 |
| 26 | 34 | 135 | | | | 3,680 | 290 | 123 | 65 | 19 | 21 | 17 | 127 |
| 27 | 18 | 111 | | | | 2,480 | 238 | 78 | 90 | 25 | 16 | 14 | 83 |
| 28 | 26 | 84 | 600 | | | 1,170 | 290 | 72 | 66 | 43 | 17 | 14 | 83 |
| 29 | 29 | 63 | | | | ------- | 290 | 49 | 87 | 55 | 20 | 18 | 98 |
| 30 | 27 | 46 | | | | ------- | 308 | 44 | 59 | 60 | 19 | 14 | 72 |
| 31 | 20 | ------- | | | | ------- | 308 | ------- | 57 | ------- | 21 | 12 | ------ |

NOTE.—Stage-discharge relation affected by ice Dec. 26 to Feb. 8 and Mar. 3-5; discharge estimated from study of weather records, observer's notes, and records of flow of near-by streams.

*Monthly discharge of Grand River near Madison, Ohio, for the year ending September 30, 1925*

[Drainage area, 587 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 5,580 | 18 | 605 | 1.03 | 1.19 |
| November | 147 | 12 | 41.5 | .071 | .08 |
| December | 6,900 | 49 | 1,260 | 2.15 | 2.48 |
| January | ---------- | ---------- | 200 | .341 | .39 |
| February | 6,460 | ---------- | 2,410 | 4.11 | 4.28 |
| March | 4,780 | 238 | 1,500 | 2.56 | 2.95 |
| April | 342 | 44 | 168 | .286 | .32 |
| May | 530 | 57 | 203 | .346 | .40 |
| June | 60 | 11 | 24.8 | .042 | .05 |
| July | 96 | 16 | 31.7 | .054 | .06 |
| August | 79 | 11 | 30.7 | .052 | .06 |
| September | 2,360 | 8 | 521 | .888 | .99 |
| The year | 6,900 | 8 | 572 | .974 | 13.25 |

### 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, 1925.

GAGE.—Au water-stage recorder on right bank at bridge; installed August 17, 1924; inspected by J. L. Evans.

DISCHARGE MEASUREMENTS.—Made from bridge 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 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 0.65 foot.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 5.9 feet at 6 p. m. February 9 (discharge, 3,200 second-feet); minimum stage, 1.18 feet at 10 a. m. September 6 (discharge, 3.2 second-feet).

1922–1925: Maximum stage recorded, 8.0 feet at 6 p. m. May 9, 1924 (discharge, 5,900 second-feet); minimum stage, 1.06 feet at 6 p. m. October 20, 1923 (discharge, 1.6 second-feet).

ACCURACY.—Stage-discharge relation permanent; affected by leaves lodged on control and by ice as noted in footnote to table of daily discharge. Rating curve well defined below 1,000 second-feet. Operation of water-stage recorder satisfactory. Daily discharge ascertained by means of discharge integrator or by applying to rating table mean daily gage height obtained from recorder graph by inspection. Records excellent except for periods of ice and leaf effect and extremely high water, for which they are fair.

*Discharge measurements of Conneaut Creek at Amboy, Ohio, during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 25 | [a] 1.48 | 18.7 | Feb. 7 | [b] 2.45 | 51.5 | July 8 | 1.28 | 6.9 |
| Nov. 23 | [a] 1.54 | 22.8 | Mar. 20 | 3.24 | 785 | Aug. 3 | 1.42 | 15.9 |
| Jan. 9 | [b] 2.35 | 71 | May 8 | 2.10 | 161 | Aug. 29 | 1.24 | 4.6 |

[a] Stage-discharge relation affected by leaves on control. [b] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Conneaut Creek at Amboy, Ohio, for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,870 | 13 | 55 | | | 157 | 163 | 96 | 18 | 12 | 14 | 4.2 |
| 2 | 672 | 12 | 57 | | | 453 | 138 | 219 | 16 | 9.1 | 15 | 3.8 |
| 3 | 315 | 12 | 50 | | | 529 | 151 | 207 | 15 | 9.8 | 15 | 4.2 |
| 4 | 178 | 22 | 40 | | 140 | 387 | 156 | 162 | 14 | 12 | 11 | 4.2 |
| 5 | 114 | 13 | 42 | | | 303 | 116 | 130 | 13 | 12 | 9.1 | 3.5 |
| 6 | 89 | 14 | 48 | | | 258 | 96 | 144 | 11 | 8.4 | 12 | 3.5 |
| 7 | 76 | 13 | 90 | | | 472 | 80 | 150 | 9.8 | 6.6 | 30 | 4.2 |
| 8 | 74 | 13 | 146 | 90 | 1,800 | 877 | 72 | 152 | 9.1 | 6 | 24 | 4.9 |
| 9 | 63 | 13 | 360 | | | 630 | 66 | 122 | 9.1 | 10 | 32 | 4.9 |
| 10 | 59 | 8.4 | 367 | | 2,320 | 340 | 64 | 92 | 7.7 | 75 | 20 | 4.2 |
| 11 | 52 | 17 | 192 | | 1,050 | 893 | 62 | 78 | 7.7 | 98 | 13 | 3.8 |
| 12 | 44 | 11 | 118 | | 722 | 947 | 65 | 92 | 7.7 | 42 | 11 | 6 |
| 13 | 40 | 13 | 216 | | 405 | 317 | 64 | 100 | 6.0 | 22 | 30 | 146 |
| 14 | 37 | 15 | 627 | | 329 | 706 | 58 | 76 | 6.3 | 14 | 97 | 116 |
| 15 | 35 | 14 | 442 | | 264 | 1,290 | 61 | 57 | 6.6 | 10 | 87 | 144 |
| 16 | 30 | 16 | 328 | | 218 | 435 | 60 | 48 | 7.0 | 13 | 50 | 342 |
| 17 | 30 | 8.4 | 528 | | 251 | 299 | 60 | 58 | 7.0 | 22 | 28 | 338 |
| 18 | 28 | 27 | 1,670 | | 251 | 271 | 54 | 96 | 6.6 | 11 | 20 | 152 |
| 19 | 25 | 32 | 1,840 | | 189 | 904 | 84 | 130 | 5.6 | 9.8 | 13 | 78 |
| 20 | 27 | 35 | 1,580 | | 136 | 977 | 230 | 92 | 6.0 | 7.7 | 12 | 48 |
| 21 | 24 | 17 | 486 | | 176 | 386 | 176 | 61 | 5.6 | 7.7 | 12 | 44 |
| 22 | 23 | 21 | | | 1,040 | 244 | 110 | 46 | 5.6 | 12 | 9.1 | 91 |
| 23 | 22 | 32 | | 90 | 1,400 | 178 | 184 | 37 | 11 | 9.1 | 7.7 | 96 |
| 24 | 20 | 72 | | | 1,710 | 145 | 758 | 34 | 11 | 6.6 | 7.7 | 53 |
| 25 | 20 | 78 | | | 585 | 137 | 287 | 30 | 22 | 7 | 7.7 | 35 |
| 26 | 15 | 69 | 450 | | 540 | 137 | 158 | 27 | 17 | 9.1 | 7.0 | 25 |
| 27 | 18 | 61 | | | 412 | 134 | 107 | 27 | 15 | 10 | 6.0 | 22 |
| 28 | 18 | 50 | | | 284 | 179 | 84 | 27 | 22 | 13 | 5.2 | 24 |
| 29 | 20 | 67 | | | ------- | 198 | 68 | 24 | 16 | 13 | 4.9 | 21 |
| 30 | 21 | 50 | | | ------- | 159 | 68 | 23 | 14 | 13 | 4.6 | 21 |
| 31 | 21 | ------ | | | ------- | 160 | ------- | 22 | ------- | 13 | 5.6 | ------ |

NOTE.—Stage-discharge relation affected by leaves lodged on control Oct. 23 to Dec. 8; discharge Oct. 23 to Nov. 18 obtained by shifting-control method; discharge Nov. 19 to Dec. 8, from rating curve parallel to standard curve and based on discharge measurement. Stage-discharge relation affected by ice Dec. 22 to Feb. 9; discharge estimated from study of weather records, observer's notes, two discharge measurements, and records of flow of near-by streams. No gage-height record Feb. 27-28; discharge interpolated.

*Monthly discharge of Conneaut Creek at Amboy, Ohio, for the year ending September 30, 1925*

[Drainage area, 178 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 1,870 | 15 | 132 | 0.742 | 0.86 |
| November | 78 | 8.4 | 28.0 | .157 | .18 |
| December | 1,840 | 40 | 445 | 2.50 | 2.88 |
| January | ---------- | ---------- | 90.0 | .506 | .58 |
| February | 2,320 | ---------- | 602 | 3.38 | 3.52 |
| March | 1,290 | 134 | 436 | 2.45 | 2.82 |
| April | 758 | 54 | 130 | .730 | .81 |
| May | 219 | 22 | 85.8 | .482 | .56 |
| June | 22 | 5.6 | 10.9 | .061 | .07 |
| July | 98 | 6.0 | 16.9 | .095 | .11 |
| August | 97 | 4.6 | 20.0 | .112 | .13 |
| September | 342 | 3.5 | 61.6 | .346 | .39 |
| The year | 2,320 | 3.5 | 169 | .949 | 12.91 |

## STREAMS TRIBUTARY TO LAKE ONTARIO

### LITTLE TONAWANDA CREEK AT LINDEN, N. Y.

LOCATION.—At stone-arch highway bridge in Linden, Genesee County, 3 miles above junction with Tonawanda Creek.

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

RECORDS AVAILABLE.—July 8, 1912, to September 30, 1925.

GAGE.—Vertical staff on upstream side of right abutment; read by C. L. Schenck.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Control consists of a standard Francis weir 2.01 feet long with a notch 8 inches deep. After the notch runs full, the water flows over a 2-inch plank about 13 feet long including the width of the notch.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.2 feet at 5.30 p. m. February 23 (discharge, 655 second-feet); minimum stage, 0.34 foot at 8 a. m. July 21 and September 11 (discharge, 0.9 second-foot).

1912–1925: Maximum stage, determined by leveling from floodmarks, 14.6 feet during flood of April 22, 1916 (discharge, 2,400 second-feet); minimum discharge, 0.4 second-foot, several times during September and October, 1921.

ICE.—Stage-discharge relation occasionally slightly affected by ice.

ACCURACY.—Stage-discharge relation as affecting the flow through the notch changed slightly, owing to raising of the notch crest, presumably in the spring. Rating curves well defined below 800 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except for days of great range in stage, for which discharge is averaged for intervals of day. Records good.

*Discharge measurements of Little Tonawanda Creek at Linden, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 17 | 0.85 | 5.99 | Apr. 18 | 0.98 | 10.8 | Aug. 26 | 0.40 | 1.12 |
| Jan. 18 | .90 | 7.44 | June 17 | .62 | 2.67 | Do | .40 | 1.23 |

*Daily discharge, in second-feet, of Little Tonawanda Creek at Linden, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 125 | 4.7 | 4.7 | 7.8 | 6.2 | 30 | 35 | 18 | 3.4 | 1.7 | 24 | 1.0 |
| 2 | 38 | 4.3 | 4.5 | 7.2 | 6.8 | 26 | 69 | 20 | 3.1 | 2.0 | 6.1 | 1.0 |
| 3 | 24 | 4.3 | 4.7 | 7.8 | 6.8 | 21 | 46 | 15 | 2.7 | 1.6 | 4.1 | 1.0 |
| 4 | 17 | 4.3 | 4.3 | 7.8 | 6.8 | 21 | 32 | 17 | 2.5 | 2.8 | 4.8 | 1.0 |
| 5 | 13 | 4.0 | 4.5 | 7.8 | 6.8 | 21 | 32 | 17 | 2.2 | 2.0 | 5.0 | 1.0 |
| 6 | 11 | 4.0 | 10 | 7.8 | 7.5 | 29 | 22 | 15 | 2.1 | 1.7 | 3.5 | 1.2 |
| 7 | 9.6 | 3.8 | 17 | 7.8 | 7.5 | 49 | 20 | 14 | 2.0 | 1.6 | 2.9 | 1.4 |
| 8 | 9.6 | 4.3 | 29 | 7.8 | 27 | 107 | 17 | 12 | 2.0 | 1.5 | 2.4 | 1.2 |
| 9 | 8.8 | 4.5 | 26 | 7.2 | 337 | 57 | 16 | 9.2 | 2.1 | 1.4 | 3.2 | 1.1 |
| 10 | 7.8 | 4.5 | 15 | 7.2 | 390 | 81 | 16 | 8.4 | 2.0 | 1.6 | 6.7 | 1.0 |
| 11 | 7.5 | 4.3 | 12 | 7.2 | 256 | 261 | 17 | 7.8 | 2.0 | 1.4 | 4.5 | 1.0 |
| 12 | 7.2 | 4.0 | 10 | 7.0 | 177 | 166 | 15 | 7.2 | 1.8 | 1.2 | 3.3 | 2.2 |
| 13 | 6.8 | 3.8 | 13 | 6.8 | 85 | 145 | 14 | 6.7 | 1.6 | 1.1 | 3.1 | 20 |
| 14 | 6.8 | 6.8 | 10 | 7.2 | 61 | 302 | 12 | 6.4 | 1.5 | 1.1 | 3.1 | 34 |
| 15 | 6.2 | 5.2 | 9.2 | 6.8 | 49 | 77 | 15 | 6.1 | 1.5 | 1.1 | 2.9 | 34 |
| 16 | 6.5 | 5.0 | 8.4 | 6.2 | 41 | 77 | 12 | 5.9 | 5.2 | 1.4 | 2.4 | 57 |
| 17 | 6.2 | 5.2 | 74 | 7.2 | 36 | 73 | 11 | 14 | 2.8 | 1.2 | 2.1 | 27 |
| 18 | 6.0 | 4.0 | 45 | 7.2 | 35 | 57 | 10 | 9.2 | 2.2 | 1.1 | 1.8 | 94 |
| 19 | 6.0 | 3.8 | 119 | 6.8 | 29 | 125 | 20 | 7.2 | 1.9 | 1.1 | 1.7 | 40 |
| 20 | 5.8 | 4.0 | 52 | 6.8 | 32 | 49 | 57 | 6.4 | 2.0 | 1.0 | 1.6 | 28 |

*Daily discharge, in second-feet, of Little Tonawanda Creek at Linden, N. Y., for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | 5.3 | 5.2 | 24 | 6.8 | 84 | 40 | 28 | 5.6 | 1.7 | 1.0 | 3.3 | 17 |
| 22 | 5.3 | 5.3 | 15 | 6.8 | 281 | 34 | 21 | 5.2 | 1.6 | 5.6 | 2.7 | 11 |
| 23 | 5.0 | 4.8 | 15 | 7.0 | 454 | 29 | 17 | 5.2 | 1.7 | 2.5 | 1.7 | 9.2 |
| 24 | 5.0 | 4.7 | 14 | 6.5 | 206 | 27 | 14 | 5.4 | 1.5 | 1.6 | 1.5 | 7.8 |
| 25 | 5.2 | 4.7 | 11 | 6.5 | 94 | 36 | 12 | 5.4 | 3.1 | 1.4 | 1.4 | 7.2 |
| 26 | 5.0 | 4.7 | 10 | 6.8 | 112 | 28 | 10 | 5.0 | 2.7 | 1.4 | 1.3 | 10 |
| 27 | 5.0 | 5.0 | 10 | 8.0 | 35 | 65 | 8.4 | 4.8 | 2.1 | 1.3 | 1.2 | 9.2 |
| 28 | 4.7 | 5.0 | 9.6 | 7.5 | 32 | 53 | 8.0 | 4.5 | 1.8 | 2.4 | 1.2 | 24 |
| 29 | 4.7 | 4.8 | 9.2 | 6.8 | ------- | 36 | 7.8 | 4.5 | 2.1 | 5.6 | 1.1 | 14 |
| 30 | 4.7 | 5.3 | 8.4 | 5.8 | ------- | 38 | 7.8 | 4.1 | 1.8 | 2.2 | 1.1 | 10 |
| 31 | 4.7 | ------- | 8.4 | 6.5 | ------- | 39 | ------- | 3.5 | ------- | 1.7 | 1.0 | ------- |

*Monthly discharge of Little Tonawanda Creek at Linden, N. Y., for the year ending September 30, 1925*

[Drainage area, 22.0 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 125 | 4.7 | 12.4 | 0.564 | 0.65 |
| November | 6.8 | 3.8 | 4.61 | .210 | .23 |
| December | 119 | 4.3 | 19.6 | .891 | 1.03 |
| January | 7.8 | 5.8 | 7.11 | .323 | .37 |
| February | 454 | 6.2 | 104 | 4.73 | 4.92 |
| March | 302 | 21 | 70.9 | 3.22 | 3.71 |
| April | 69 | 7.8 | 20.7 | .941 | 1.05 |
| May | 20 | 3.5 | 8.89 | .404 | .47 |
| June | 5.2 | 1.5 | 2.22 | .101 | .11 |
| July | 5.6 | 1.0 | 1.82 | .083 | .10 |
| August | 24 | 1.0 | 3.44 | .156 | .18 |
| September | 94 | 1.0 | 15.6 | .709 | .79 |
| The year | 454 | 1.0 | 22.0 | 1.00 | 13.61 |

### GENESEE RIVER AT SCIO, N. Y.

LOCATION.—At steel highway bridge, a quarter of a mile above Vandermark Creek, half a mile above Scio, Allegany County, and 1 mile above Knight Creek.

DRAINAGE AREA.—288 square miles (measured on map issued by United States Geological Survey).

RECORDS AVAILABLE.—June 12, 1916, to September 30, 1925.

GAGE.—Vertical staff attached to downstream face of left bridge abutment; read by Mrs. Margaret Potter.

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

CHANNEL AND CONTROL.—Coarse gravel; shifting occasionally.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.8 feet at 5.30 p. m. February 11 (discharge, 8,140 second-feet); minimum stage, 0.12 foot at 8.45 a. m. September 3 (discharge, 15 second-feet).

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

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation for low water changed presumably at time of flood in February. Rating curve used before the change well defined between 20 and 2,000 second-feet; curve used subsequently well defined between 40 and 2,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair except during parts of the summer, particularly July, when gage-height record is doubtful.

*Discharge measurements of Genesee River at Scio, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 18 | 0.72 | 102 | Mar. 3 | *1.31 | 263 | June 16 | 0.63 | 96.6 |
| Jan. 15 | *1.36 | 63.4 | Apr. 17 | 1.11 | 225 | Aug. 24 | .35 | 48.7 |

*Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Genesee River at Scio, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2,180 | 46 | 28 | 100 | 45 | 400 | 615 | 341 | 119 | 116 | 132 | 18 |
| 2 | 1,220 | 43 | 28 | 100 | 45 | 340 | 505 | 425 | 121 | 119 | 88 | 18 |
| 3 | 860 | 42 | 30 | 100 | 50 | 280 | 478 | 375 | 134 | 100 | 71 | 16 |
| 4 | 588 | 38 | 30 | 110 | 50 | 240 | 505 | 341 | 127 | 62 | 83 | 18 |
| 5 | 450 | 40 | 32 | 90 | 65 | 260 | 478 | 308 | 116 | 67 | 88 | 18 |
| 6 | 370 | 38 | 36 | 80 | 130 | 260 | 450 | 294 | 112 | 59 | 74 | 18 |
| 7 | 314 | 40 | 44 | 75 | 300 | 240 | 365 | 273 | 108 | 54 | 88 | 32 |
| 8 | 318 | 37 | 130 | 80 | 600 | 300 | 341 | 282 | 108 | 51 | 72 | 26 |
| 9 | 252 | 36 | 220 | 80 | 1,700 | 395 | 326 | 275 | 104 | 60 | 85 | 22 |
| 10 | 213 | 35 | 120 | 80 | 4,000 | 450 | 341 | 500 | 104 | 64 | 110 | 22 |
| 11 | 187 | 36 | 95 | 75 | 6,580 | 675 | 341 | 925 | 100 | 60 | 67 | 19 |
| 12 | 166 | 35 | 80 | 80 | 6,090 | 560 | 308 | 645 | 96 | 57 | 54 | 19 |
| 13 | 147 | 35 | 90 | 70 | 3,530 | 370 | 269 | 532 | 96 | 52 | 66 | 50 |
| 14 | 133 | 38 | 80 | 70 | 1,560 | 795 | 252 | 478 | 92 | 52 | 260 | 96 |
| 15 | 121 | 42 | 75 | 70 | 950 | 645 | 317 | 425 | 88 | 136 | 108 | 69 |
| 16 | 116 | 36 | 120 | 65 | 765 | 560 | 277 | 395 | 96 | 139 | 88 | 92 |
| 17 | 108 | 36 | 280 | 100 | 675 | 615 | 249 | 450 | 88 | 130 | 72 | 83 |
| 18 | 98 | 34 | 750 | 90 | 645 | 588 | 218 | 390 | 85 | 119 | 62 | 78 |
| 19 | 86 | 34 | 1,700 | 85 | 588 | 1,220 | 300 | 350 | 80 | 110 | 57 | 72 |
| 20 | 88 | 34 | 900 | 60 | 560 | 705 | 675 | 326 | 72 | 94 | 57 | 100 |
| 21 | 84 | 36 | 460 | 100 | 560 | 560 | 615 | 294 | 81 | 88 | 59 | 478 |
| 22 | 86 | 38 | 340 | 95 | 1,060 | 505 | 560 | 273 | 94 | 78 | 52 | 282 |
| 23 | 84 | 38 | 240 | 70 | 2,640 | 425 | 505 | 252 | 88 | 69 | 43 | 104 |
| 24 | 86 | 40 | 200 | 65 | 2,880 | 425 | 478 | 252 | 96 | 62 | 43 | 98 |
| 25 | 86 | 38 | 180 | 60 | 1,960 | 425 | 450 | 245 | 94 | 55 | 32 | 79 |
| 26 | 81 | 37 | 160 | 60 | 1,300 | 425 | 560 | 237 | 76 | 65 | 35 | 71 |
| 27 | 74 | 36 | 140 | 70 | 850 | 705 | 478 | 233 | 104 | 78 | 32 | 72 |
| 28 | 70 | 34 | 140 | 50 | 550 | 1,140 | 450 | 215 | 136 | 76 | 29 | 72 |
| 29 | 62 | 32 | 120 | 50 | ------- | 900 | 395 | 205 | 125 | 125 | 23 | 66 |
| 30 | 54 | 30 | 110 | 45 | ------- | 645 | 355 | 175 | 222 | 100 | 26 | 60 |
| 31 | 49 | ------- | 110 | 50 | ------- | 735 | ------- | 150 | ------- | 92 | 20 | ------- |

NOTE.—Discharge Nov. 19, 27-30, Jan. 1, 14, Feb. 15, Feb. 27 to Mar. 2, Mar. 8, 29, Apr. 19, May 3, 9, 19, 30, 31, June 18, 19, July 19, 26, Aug. 9, Sept. 13, 20, and 27, estimated from hydrograph studies; gage not read. Discharge Nov. 16-21, Dec. 1 to Feb. 10, and Mar. 1-7, determined from gage heights corrected for ice effect from two discharge measurements, study of gage-height graph and weather records, and comparison with records for other stations.

*Monthly discharge of Genesee River at Scio, N. Y., for the year ending September 30, 1925*

[Drainage area, 288 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 2,180 | 49 | 285 | 0.990 | 1.14 |
| November | 46 | 30 | 37.1 | .129 | .14 |
| December | 1,700 | 28 | 228 | .792 | .91 |
| January | 110 | 45 | 76.6 | .266 | .31 |
| February | 6,580 | 45 | 1,450 | 5.03 | 5.24 |
| March | 1,220 | 240 | 542 | 1.88 | 2.17 |
| April | 675 | 218 | 415 | 1.44 | 1.61 |
| May | 925 | 150 | 350 | 1.22 | 1.41 |
| June | 222 | 72 | 105 | .365 | .41 |
| July | 139 | 51 | 83.5 | .290 | .33 |
| August | 260 | 20 | 70.2 | .244 | .28 |
| September | 478 | 16 | 75.6 | .263 | .29 |
| The year | 6,580 | 16 | 303 | 1.05 | 14.24 |

GENESEE RIVER AT ST. HELENA, N. Y.

LOCATION.—At steel highway bridge in St. Helena, Wyoming County, 5½ miles below Portageville and site of proposed storage dam of New York State Conservation Commission and 9½ miles above mouth of Canaseraga Creek.

DRAINAGE AREA.—992 square miles.

RECORDS AVAILABLE.—August 14, 1908, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on left bank and chain gage on upstream side of highway bridge; water-stage recorder inspected and chain gage read by Glenn Streeter.

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

CHANNEL AND CONTROL.—Gravel and small boulders; shifts occasionally.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 9.34 feet at 9.30 a. m. February 12 (discharge, 17,500 second-feet); minimum stage, 2.10 feet at 9.30 a. m. September 6 (discharge, 78 second-feet).

1908–1925: Maximum stage recorded, 12.81 feet at 8 a. m. May 17, 1916 (discharge, 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).

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

ACCURACY.—Stage-discharge relation for low stages changed slightly presumably at time of flood on October 1. Rating curve fairly well defined above 30 second-feet. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Chain gage readings used directly and as basis for estimates during periods when automatic record was unsatisfactory owing to obstructed inlet pipe. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of automatic record or by averaging the twice daily chain gage readings, except for days of considerable fluctuation when discharge is averaged for intervals of day. Records good except during periods of ice effect and estimate for which they are fair.

*Discharge measurements of Genesee River at St. Helena, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 16 | 2.70 | 322 | Mar. 5 | *3.63 | 1,030 | June 17 | 2.58 | 244 |
| Jan. 17 | *4.40 | 343 | Apr. 19 | 3.14 | 597 | Aug. 26 | 2.28 | 126 |

*Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Genesee River at St. Helena, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9,040 | 175 | 150 | 460 | 180 | 1,300 | 2,010 | 750 | 285 | 352 | 259 | 107 |
| 2 | 3,690 | 164 | 150 | 420 | 190 | 1,000 | 1,940 | 980 | 280 | 285 | 301 | 101 |
| 3 | 2,220 | 160 | 150 | 420 | 180 | 1,000 | 2,220 | 970 | 236 | 259 | 236 | 99 |
| 4 | 1,570 | 175 | 150 | 440 | 190 | 950 | 1,820 | 870 | 231 | 259 | 200 | 91 |
| 5 | 1,180 | 167 | 150 | 460 | 180 | 1,000 | 1,440 | 880 | 212 | 221 | 295 | 91 |
| 6 | 940 | 164 | 160 | 420 | 180 | 1,000 | 1,300 | 1,080 | 179 | 301 | 275 | 86 |
| 7 | 780 | 164 | 180 | 420 | 190 | 1,290 | 1,120 | 910 | 153 | 275 | 250 | 101 |
| 8 | 734 | 164 | 311 | 400 | 240 | 1,940 | 1,020 | 900 | 146 | 250 | 245 | 104 |
| 9 | 635 | 160 | 590 | 400 | 2,600 | 2,290 | 920 | 890 | 204 | 236 | 355 | 99 |
| 10 | 542 | 157 | 608 | 400 | 8,000 | 1,940 | 780 | 810 | 221 | 285 | 1,660 | 99 |
| 11 | 473 | 167 | 416 | 380 | 9,500 | 4,580 | 698 | 850 | 217 | 352 | 761 | 96 |
| 12 | 416 | 164 | 335 | 360 | 14,600 | 2,870 | 752 | 1,430 | 183 | 301 | 466 | 99 |
| 13 | 480 | 164 | 323 | 360 | 8,520 | 1,750 | 734 | 950 | 164 | 236 | 352 | 120 |
| 14 | 436 | 179 | 221 | 360 | 5,620 | 4,970 | 650 | 800 | 146 | 212 | 773 | 149 |
| 15 | 323 | 179 | 204 | 340 | 3,900 | 4,300 | 600 | 750 | 135 | 179 | 1,300 | 208 |
| 16 | 335 | 180 | 311 | 320 | 2,930 | 2,220 | 689 | 698 | 208 | 160 | 689 | 473 |
| 17 | 317 | 170 | 1,660 | 340 | 2,360 | 1,940 | 698 | 662 | 269 | 164 | 443 | 550 |
| 18 | 295 | 170 | 4,100 | 360 | 1,630 | 1,820 | 574 | 810 | 264 | 192 | 335 | 480 |
| 19 | 269 | 170 | 4,780 | 320 | 1,420 | 3,460 | 941 | 716 | 200 | 192 | 264 | 725 |
| 20 | 245 | 160 | 5,010 | 300 | 1,370 | 3,220 | 5,100 | 608 | 183 | 160 | 236 | 436 |
| 21 | 240 | 157 | 2,100 | 300 | 1,630 | 1,940 | 2,290 | 550 | 153 | 160 | 221 | 503 |
| 22 | 231 | 153 | 1,100 | 280 | 4,240 | 1,690 | 1,570 | 500 | 135 | 164 | 200 | 1,000 |
| 23 | 226 | 160 | 850 | 280 | 9,770 | 1,500 | 1,240 | 480 | 157 | 149 | 183 | 503 |
| 24 | 217 | 175 | 750 | 280 | 9,560 | 1,280 | 1,040 | 460 | 146 | 157 | 160 | 400 |
| 25 | 200 | 183 | 650 | 260 | 5,490 | 1,190 | 900 | 423 | 200 | 157 | 146 | 320 |
| 26 | 179 | 171 | 550 | 240 | 5,490 | 1,240 | 880 | 390 | 245 | 167 | 129 | 280 |
| 27 | 167 | 160 | 550 | 220 | 2,600 | 1,250 | 1,040 | 383 | 259 | 259 | 126 | 240 |
| 28 | 179 | 146 | 500 | 240 | 1,600 | 3,550 | 800 | 323 | 290 | 212 | 120 | 200 |
| 29 | 179 | 175 | 500 | 200 | ------- | 2,440 | 650 | 358 | 340 | 208 | 113 | 220 |
| 30 | 175 | 160 | 480 | 200 | ------- | 2,010 | 650 | 410 | 323 | 192 | 107 | 220 |
| 31 | 171 | ------- | 460 | 190 | ------- | 2,290 | ------- | 352 | ------- | 192 | 91 | ------ |

NOTE.—Discharge Feb. 15, 16, Mar. 21, 22, Apr. 14, 15, 28–30, May 1, 11, 14, 15, 21–24, Sept. 22, and 24–30, estimated by comparison with record at Jones Bridge; automatic and chain gage records either faulty or missing. Discharge Nov. 16–20, Dec. 1–7, Dec. 22 to Feb. 11, and Feb. 28 to Mar. 6, determined from gage heights corrected for ice effect, from two discharge measurements, study of gage-height graph and weather records, and by comparison with records at Jones Bridge and in the intervening drainage areas. Chain gage readings used Oct. 7–16, Dec. 19–21, 27–29, Jan. 28–30, Feb. 13, 14, 27, 28, Apr. 10–13, 16–18, May 9, 10, 16–20, May 25 to June 2, Aug. 10, Sept. 21 and 23.

*Monthly discharge of Genesee River at St. Helena, N. Y., for the year ending September 30, 1925*

[Drainage area, 992 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 9,040 | 167 | 874 | 0.881 | 1.02 |
| November | 183 | 146 | 166 | .167 | .19 |
| December | 5,010 | 150 | 918 | .925 | 1.07 |
| January | 460 | 190 | 335 | .338 | .39 |
| February | 14,600 | 180 | 3,730 | 3.76 | 3.92 |
| March | 4,970 | 950 | 2,100 | 2.12 | 2.44 |
| April | 5,100 | 574 | 1,240 | 1.25 | 1.40 |
| May | 1,430 | 323 | 708 | .714 | .82 |
| June | 340 | 135 | 212 | .214 | .24 |
| July | 352 | 149 | 222 | .224 | .26 |
| August | 1,660 | 91 | 364 | .367 | .42 |
| September | 1,000 | 86 | 273 | .275 | .31 |
| The year | 14,600 | 86 | 910 | .917 | 12.48 |

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

LOCATION.—At steel highway bridge known as Jones Bridge, 5 miles below Mount Morris, Livingston County, 1½ miles below mouth of Canaseraga Creek, 1¾ miles above mouth of Beards Creek, and 6 miles above Geneseo.

DRAINAGE AREA.—1,400 square miles.

RECORDS AVAILABLE.—May 22, 1903, to April 30, 1906; August 12, 1908, to December 31, 1913; July 12, 1915, to September 30, 1925.

GAGE.—Gurley 7-day graph water-stage recorder on right bank; inspected by Arthur E. McNair.

DISCHARGE MEASUREMENTS.—Made from footbridge on lower chord of upstream truss of highway bridge or by wading.

CHANNEL AND CONTROL.—Sandy clay; fairly permanent in recent years.

EXTREMES OF DISCHARGE.—Maximum daily discharge, about 20,000 second-feet February 12 (stage-discharge relation affected by ice); minimum stage, 0.43 foot at 8 p. m. August 30 (discharge, 75 second-feet).

1903–1906; 1908–1913; 1915–1925: 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.

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

REGULATION.—During low-water periods there is considerable diurnal fluctuation due to operation of mills at Mount Morris.

ACCURACY.—Stage-discharge relation practically permanent except as affected by ice. Rating curve well defined below and fairly well defined above 4,000 second-feet. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of gage-height graph or, for days of considerable fluctuation, by averaging discharge for intervals of day. Records good except during periods of ice effect and estimate for which they are fair.

*Discharge measurements of Genesee River at Jones Bridge, near Mount Morris, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 16 | 1.73 | 500 | Mar. 7 | [a]4.64 | 1,410 | June 18 | 1.50 | 363 |
| Jan. 20 | [a]2.15 | 314 | Apr. 20 | 11.8 | 7,080 | Aug. 28 | 1.02 | 195 |

[a] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Genesee River at Jones Bridge, near Mount Morris, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13,900 | 260 | 240 | 600 | 280 | 1,800 | 2,660 | 955 | 462 | 550 | 340 | 155 |
| 2 | 6,470 | 260 | 240 | 550 | 300 | 1,400 | 2,520 | 1,230 | 427 | 462 | 497 | 159 |
| 3 | 3,280 | 273 | 200 | 550 | 300 | 1,300 | 2,800 | 1,200 | 406 | 394 | 415 | 161 |
| 4 | 2,130 | 264 | 200 | 550 | 300 | 1,300 | 2,390 | 1,120 | 386 | 394 | 347 | 164 |
| 5 | 1,760 | 260 | 240 | 600 | 280 | 1,300 | 2,000 | 1,180 | 374 | 351 | 434 | 165 |
| 6 | 1,300 | 264 | 240 | 550 | 280 | 1,300 | 1,700 | 1,370 | 332 | 348 | 485 | 142 |
| 7 | 1,100 | 264 | 260 | 550 | 280 | 1,500 | 1,580 | 1,200 | 283 | 370 | 402 | 146 |
| 8 | 1,000 | 233 | 300 | 550 | 360 | 2,200 | 1,460 | 1,180 | 276 | 332 | 386 | 158 |
| 9 | 900 | 276 | 460 | 500 | 3,000 | 3,400 | 1,310 | 1,150 | 286 | 321 | 378 | 156 |
| 10 | 750 | 286 | 700 | 500 | 11,000 | 2,870 | 1,200 | 1,010 | 310 | 440 | 1,810 | 156 |
| 11 | 655 | 212 | 650 | 500 | 13,000 | 6,450 | 1,120 | 982 | 304 | 605 | 955 | 153 |
| 12 | 605 | 263 | 550 | 480 | 20,000 | 4,970 | 1,150 | 1,710 | 276 | 516 | 580 | 153 |
| 13 | 545 | 280 | 480 | 460 | 12,000 | 2,870 | 1,040 | 1,260 | 245 | 358 | 440 | 156 |
| 14 | 512 | 236 | 380 | 440 | 7,500 | 6,610 | 955 | 1,040 | 224 | 304 | 493 | 149 |
| 15 | 467 | 293 | 300 | 440 | 5,500 | 6,910 | 928 | 928 | 202 | 273 | 1,490 | 233 |
| 16 | 462 | 219 | 320 | 420 | 4,000 | 3,780 | 1,010 | 845 | 296 | 260 | 790 | 535 |
| 17 | 440 | 270 | 1,400 | 400 | 3,200 | 2,940 | 982 | 790 | 336 | 286 | 516 | 630 |
| 18 | 415 | 260 | 4,880 | 400 | 2,600 | 2,730 | 900 | 872 | 358 | 273 | 398 | 580 |
| 19 | 390 | 193 | 4,880 | 380 | 2,200 | 4,530 | 1,140 | 928 | 314 | 314 | 325 | 845 |
| 20 | 351 | 273 | 6,440 | 360 | 2,000 | 4,650 | 5,990 | 818 | 270 | 260 | 286 | 580 |
| 21 | 358 | 280 | 2,170 | 360 | 2,200 | 3,010 | 3,680 | 735 | 224 | 245 | 290 | 661 |
| 22 | 347 | 270 | 1,300 | 360 | 6,500 | 2,200 | 2,200 | 655 | 233 | 260 | 264 | 1,230 |
| 23 | 347 | 264 | 1,100 | 340 | 13,000 | 1,900 | 1,820 | 630 | 230 | 251 | 224 | 708 |
| 24 | 328 | 280 | 1,000 | 340 | 13,500 | 1,700 | 1,580 | 605 | 218 | 233 | 242 | 503 |
| 25 | 328 | 286 | 900 | 340 | 8,600 | 1,600 | 1,280 | 570 | 234 | 245 | 239 | 415 |
| 26 | 296 | 280 | 800 | 320 | 6,860 | 1,650 | 1,120 | 565 | 284 | 216 | 227 | 358 |
| 27 | 270 | 264 | 750 | 320 | 3,800 | 1,650 | 1,200 | 550 | 366 | 303 | 224 | 328 |
| 28 | 286 | 276 | 700 | 300 | 2,600 | 4,520 | 1,040 | 512 | 490 | 328 | 202 | 283 |
| 29 | 293 | 260 | 700 | 300 | ------ | 3,290 | 900 | 494 | 575 | 332 | 166 | 310 |
| 30 | 286 | 177 | 650 | 300 | ------ | 2,590 | 872 | 480 | 480 | 286 | 108 | 310 |
| 31 | 280 | ------ | 600 | 280 | ------ | 2,800 | ------ | 476 | ------ | 286 | 161 | ------ |

NOTE.—Discharge Oct. 2-10, 24, 25, 30, 31, Nov. 1, 13, 14, 22, 23, Dec. 25-27, 31, Jan. 1, 2, 5-19, Feb. 6, 7, 10-18, 27, 28, Mar. 21-28, Apr. 6-11, 17, May 2-6, June 12, 13, and July 9-11, estimated largely by comparison with St. Helena record; gage-height record either faulty or missing. Discharge Dec. 1-17, Dec. 22 to Feb. 23, and Mar. 1-9, determined from gage heights corrected for ice effect from two discharge measurements, study of gage-height graph and weather records, and by comparison with records of flow at St. Helena and of intervening streams.

*Monthly discharge of Genesee River at Jones Bridge, near Mount Morris, N. Y., for the year ending September 30, 1925*

[Drainage area, 1,400 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 13,900 | 270 | 1,320 | 0.943 | 1.09 |
| November | 293 | 177 | 259 | .185 | .21 |
| December | 6,400 | 200 | 1,100 | .786 | .91 |
| January | 600 | 280 | 430 | .307 | .35 |
| February | 20,000 | 280 | 5,190 | 3.71 | 3.86 |
| March | 6,450 | 1,300 | 2,960 | 2.11 | 2.43 |
| April | 5,990 | 872 | 1,680 | 1.20 | 1.34 |
| May | 1,710 | 476 | 905 | .646 | .74 |
| June | 575 | 202 | 323 | .231 | .26 |
| July | 550 | 216 | 335 | .239 | .28 |
| August | 1,810 | 108 | 455 | .325 | .37 |
| September | 1,230 | 142 | 356 | .254 | .28 |
| The year | 20,000 | 108 | 1,250 | .893 | 12.12 |

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

LOCATION.—In station No. 5 of Rochester Gas & Electric Corporation, 400 feet above Driving Park Avenue Bridge, 1½ miles northwest of center of Rochester, Monroe County, and 5 miles above mouth of river.

DRAINAGE AREA.—2,460 square miles.

RECORDS AVAILABLE.—December 17, 1919, to September 30, 1925.

GAGE.—Gurley 7-day graph water-stage recorder in northwest corner of old power house; inspected by employee of Rochester Gas & Electric Corporation.

DISCHARGE MEASUREMENTS.—Made from cable 2,000 feet below gage.

CHANNEL AND CONTROL.—Coarse gravel and large broken rock; subject to occasional shifts.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 12.40 feet at 7.45 a. m. February 25 (discharge, about 24,800 second-feet); minimum stage occurs almost daily during low-water periods when power plant is shut down and there is no flow over spillway.

1919–1925: Maximum discharge recorded, about 26,000 second-feet at 2.30 p. m. March 17, 1920 (observed at Court Street Dam).

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

REGULATION.—Daily discharge affected by storage for power purposes at Rochester and points upstream.

DIVERSIONS.—The Barge Canal crosses the river near the southern boundary of city of Rochester. It discharges water from Lake Erie into Genesee River and diverts a smaller amount of water to the east for canal use.

ACCURACY.—Stage-discharge relation changed slightly about October 1 and again on or about February 13. Base rating curve used throughout the year fairly well defined between 20 and 20,000 second-feet. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Daily discharge ascertained by averaging discharge for intervals of day. Records fair.

*Discharge measurements of Genesee River at Driving Park Avenue, Rochester, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 14 | 3.40 | 1,830 | Mar. 8 | 4.57 | 3,130 | Aug. 4 | 2.68 | 1,360 |
| Nov. 4 | 2.63 | 1,220 | Apr. 21 | 6.68 | 7,880 | Aug. 29 | 2.54 | 933 |
| Jan. 21 | 2.51 | 914 | June 19 | 2.95 | 1,150 | Aug. 30 | 2.75 | 1,040 |
| Feb. 10 | 5.72 | 6,820 | Do | 3.43 | 1,740 | Do | 2.53 | 862 |

*Daily discharge, in second-feet, of Genesee River at Driving Park Avenue, Rochester, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13,800 | 1,010 | 1,030 | 1,220 | 702 | 2,600 | 3,530 | 1,870 | 1,360 | 1,180 | 1,150 | 865 |
| 2 | 14,400 | 1,220 | 911 | 1,140 | 713 | 2,600 | 3,740 | 2,010 | 1,370 | 1,280 | 1,270 | 800 |
| 3 | 7,650 | 984 | 888 | 1,100 | 711 | 2,600 | 3,990 | 2,360 | 1,260 | 1,070 | 1,330 | 845 |
| 4 | 4,460 | 970 | 964 | 1,140 | 808 | 2,400 | 4,020 | 2,020 | 1,260 | 1,240 | 1,270 | 779 |
| 5 | 3,330 | 864 | 949 | 1,050 | 820 | 2,400 | 4,100 | 1,770 | 1,370 | 1,140 | 1,150 | 756 |
| 6 | 2,180 | 797 | 1,030 | 880 | 837 | 2,160 | 2,320 | 1,780 | 1,240 | 1,070 | 1,100 | 813 |
| 7 | 1,990 | 971 | 1,050 | 846 | 758 | 2,010 | 1,900 | 1,960 | 1,160 | 1,120 | 1,180 | 768 |
| 8 | 1,780 | 1,050 | 1,080 | 937 | 792 | 3,260 | 1,840 | 1,900 | 996 | 1,120 | 1,130 | 824 |
| 9 | 1,700 | 957 | 1,520 | 962 | 925 | 3,600 | 1,880 | 1,860 | 1,210 | 1,090 | 1,180 | 800 |
| 10 | 1,680 | 955 | 1,560 | 898 | 5,440 | 4,550 | 1,880 | 2,080 | 1,140 | 1,130 | 1,330 | 831 |
| 11 | 1,720 | 889 | 1,620 | 994 | 15,900 | 6,190 | 1,710 | 1,860 | 1,060 | 1,220 | 1,980 | 783 |
| 12 | 1,520 | 884 | 1,480 | 860 | 19,400 | 10,700 | 1,690 | 1,670 | 1,070 | 1,430 | 1,610 | 949 |
| 13 | 1,500 | 770 | 1,440 | 793 | 22,400 | 6,870 | 1,800 | 1,960 | 1,030 | 1,280 | 1,470 | 1,260 |
| 14 | 1,210 | 791 | 1,450 | 774 | 23,200 | 6,850 | 1,680 | 1,830 | 992 | 1,130 | 1,210 | 1,470 |
| 15 | 1,400 | 1,110 | 813 | 856 | 20,400 | 13,100 | 1,530 | 1,880 | 1,040 | 1,030 | 1,280 | 1,410 |

*Daily discharge, in second-feet, of Genesee River at Driving Park Avenue, Rochester, N. Y., for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 1,350 | 1,040 | 1,730 | 871 | 14,900 | 10,000 | 1,510 | 1,580 | 1,180 | 969 | 1,840 | 1,690 |
| 17 | 1,170 | 1,080 | 1,310 | 856 | 9,260 | 5,960 | 1,490 | 1,820 | 1,170 | 981 | 1,530 | 1,750 |
| 18 | 1,280 | 1,020 | 1,790 | 856 | 7,260 | 4,920 | 1,360 | 1,790 | 1,170 | 969 | 1,200 | 1,720 |
| 19 | 1,200 | 1,080 | 4,810 | 825 | 4,350 | 4,770 | 947 | 1,550 | 1,130 | 1,060 | 1,010 | 2,170 |
| 20 | 1,090 | 1,110 | 7,930 | 773 | 3,280 | 7,260 | 3,240 | 1,690 | 1,010 | 1,040 | 1,030 | 2,320 |
| 21 | 1,120 | 1,080 | 6,500 | 764 | 3,760 | 6,330 | 7,580 | 1,620 | 1,110 | 894 | 948 | 1,710 |
| 22 | 1,170 | 1,040 | 4,750 | 770 | 7,660 | 4,790 | 4,120 | 1,510 | 1,040 | 1,250 | 944 | 1,450 |
| 23 | 1,070 | 1,160 | 3,000 | 810 | 13,900 | 3,260 | 3,510 | 1,410 | 999 | 1,110 | 998 | 1,690 |
| 24 | 1,080 | 1,130 | 1,600 | 771 | 21,400 | 2,980 | 2,800 | 1,390 | 963 | 1,080 | 829 | 1,400 |
| 25 | 1,190 | 1,070 | 1,390 | 758 | 22,400 | 2,800 | 2,890 | 1,520 | 1,130 | 907 | 841 | 1,290 |
| 26 | 1,030 | 1,050 | 1,390 | 682 | 18,000 | 2,070 | 2,770 | 1,450 | 1,060 | 1,040 | 848 | 1,110 |
| 27 | 1,150 | 1,180 | 1,170 | 674 | 11,000 | 2,120 | 1,950 | 1,440 | 1,060 | 1,030 | 866 | 1,050 |
| 28 | 1,060 | 1,050 | 1,090 | 661 | 5,430 | 3,350 | 1,840 | 1,390 | 1,040 | 1,160 | 853 | 972 |
| 29 | 884 | 1,020 | 944 | 673 | ------- | 6,020 | 1,850 | 1,390 | 1,300 | 1,110 | 817 | 883 |
| 30 | 987 | 1,140 | 980 | 678 | ------- | 4,240 | 1,860 | 1,330 | 1,360 | 1,060 | 839 | 926 |
| 31 | 881 | ------- | 1,160 | 734 | ------- | 3,470 | ------- | 1,290 | ------- | 1,040 | 902 | ----- |

NOTE.—Discharge Dec. 21–27, Jan. 11–14, 20–30, Feb. 28 to Mar. 6, June 28 and 29, estimated by comparison with record of Genesee River at Jones Bridge and from records of operation at plant No. 5; water-stage recorder not operating satisfactorily.

*Monthly discharge of Genesee River at Driving Park Avenue, Rochester, N. Y., for the year ending September 30, 1925*

[Drainage area, 2,460 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 14,400 | 881 | 2,520 | 1.02 | 1.18 |
| November | 1,220 | 770 | 1,020 | .415 | .46 |
| December | 7,930 | 813 | 1,910 | .776 | .89 |
| January | 1,220 | 661 | 858 | .349 | .40 |
| February | 23,200 | 702 | 9,160 | 3.72 | 3.87 |
| March | 13,100 | 2,010 | 4,720 | 1.92 | 2.21 |
| April | 7,580 | 947 | 2,580 | 1.05 | 1.17 |
| May | 2,360 | 1,290 | 1,710 | .695 | .80 |
| June | 1,370 | 963 | 1,140 | .463 | .52 |
| July | 1,430 | 894 | 1,100 | .447 | .52 |
| August | 1,980 | 817 | 1,160 | .472 | .54 |
| September | 2,320 | 756 | 1,200 | .488 | .54 |
| The year | 23,200 | 661 | 2,380 | .967 | 13.10 |

NOTE.—The figures on discharge and run-off given above do not represent the natural flow from the drainage area on account of 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 below mouth of Mill Brook, and 22 miles above mouth.

DRAINAGE AREA.—158 square miles (furnished by New York State Conservation Commission).

RECORDS AVAILABLE.—July 21, 1910, to December 31, 1912; July 10, 1915, to June 30, 1917; March 10, 1919, to June 17, 1919; March 17, 1920, to September 30, 1925.

GAGE.—Gurley 7-day water-stage recorder on left bridge abutment. During winter a vertical staff at same location is read owing to unsatisfactory operation of water-stage recorder. Recorder inspected and staff gage read by Frank S. Fox.

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

CHANNEL AND CONTROL.—Low-water control composed of sand and gravel; shifting frequently. At high stages the channel section below gage becomes the control; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year ending September 30, 1923, 11.2 feet (staff gage reading) at 4 p. m. March 4 (discharge, from extension of rating curve, 3,570 second-feet); minimum stage, from water-stage recorder, 6.26 feet from 11 p. m. September 2 to 5 a. m. September 3 (discharge, 15 second-feet).

Maximum stage during year ending September 30, 1924, from water-stage recorder, 9.5 feet at 9 a. m. September 30 (discharge, 1,830 second-feet); minimum stage, from water-stage recorder, 6.315 feet at 5 a. m. October 14 (discharge, 18 second-feet).

Maximum stage recorded during year ending September 30, 1925, 10.9 feet (staff gage reading) at 5 p. m. February 11 (discharge, 3,240 second-feet); minimum stage, from water-stage recorder, 6.01 feet at 6 a. m. September 2 (discharge, 22 second-feet).

1910–1912; 1915–1917; 1919–1925: Maximum stage recorded, 13.0 feet at 9.30 p. m. May 16, 1916 (discharge, from logarithmic extension of rating curve, roughly 6,600 second-feet); minimum discharge, 14 second-feet September 10, 1921.

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Records published below for the period March 4, 1923, to September 30, 1924, supersede records published in previous reports. Stage-discharge relation changed during winter 1922–23, slightly in early June and September 30, 1924, and again during flood of February 11, 1925; affected by ice December 17, 1922, to March 3, 1923, January 5–8, and February 9 to March 5, 1924, December 14–16, and December 21, 1924, to February 10, 1925. Rating curve used October 1, 1922, to March 3, 1923, fairly well defined between 30 and 2,000 second-feet; curves used March 4, 1923, to February 11, 1925, well defined between 20 and 1,600 second-feet; curve used February 12 to September 30, 1925, fairly well defined between same limits. 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 staff gage reading or from recorder graph, or, for days of considerable fluctuation in stage, by averaging discharge for intervals of day. Records fair.

*Discharge measurements of Canaseraga Creek near Dansville, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 15 | 6.56 | 42.4 | Apr. 20 | 7.54 | 495 | Aug. 27 | 6.05 | 24.9 |
| Jan. 19 | [a]6.62 | 39.6 | June 15 | 6.33 | 60.9 | | | |
| Mar. 6 | 6.68 | 121 | June 18 | 6.23 | 40.4 | | | |

[a] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Canaseraga Creek near Dansville, N. Y., for the years ending September 30, 1923–1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1922–23 | | | | | | | | | | | | |
| 1 | 52 | 46 | 72 | 240 | 95 | 90 | 158 | 93 | 58 | 37 | 27 | 18 |
| 2 | 52 | 46 | 95 | 160 | 280 | 120 | 158 | 88 | 58 | 33 | 24 | 17 |
| 3 | 52 | 46 | 65 | 120 | 650 | 1,400 | 168 | 82 | 50 | 30 | 25 | 17 |
| 4 | 50 | 47 | 58 | 110 | 340 | 3,350 | 370 | 78 | 50 | 43 | 25 | 19 |
| 5 | 50 | 46 | 60 | 95 | 220 | 1,270 | 1,250 | 78 | 50 | 36 | 23 | 21 |
| 6 | 49 | 50 | 50 | 85 | 120 | 522 | 830 | 78 | 58 | 34 | 22 | 22 |
| 7 | 52 | 52 | 47 | 75 | 100 | 400 | 522 | 78 | 58 | 33 | 21 | 19 |
| 8 | 60 | 52 | 56 | 70 | 95 | 300 | 430 | 67 | 93 | 30 | 22 | 37 |
| 9 | 70 | 56 | 80 | 70 | 80 | 259 | 322 | 118 | 135 | 27 | 22 | 28 |
| 10 | 92 | 55 | 60 | 65 | 70 | 236 | 259 | 126 | 78 | 25 | 20 | 22 |
| 11 | 92 | 52 | 95 | 70 | 70 | 340 | 250 | 126 | 64 | 27 | 19 | 21 |
| 12 | 68 | 50 | 65 | 65 | 80 | 1,220 | 236 | 168 | 67 | 26 | 19 | 21 |
| 13 | 63 | 47 | 65 | 60 | 80 | 935 | 206 | 175 | 50 | 25 | 18 | 21 |
| 14 | 55 | 46 | 65 | 65 | 95 | 430 | 175 | 135 | 50 | 24 | 18 | 21 |
| 15 | 52 | 50 | 65 | 60 | 95 | 269 | 158 | 112 | 53 | 46 | 19 | 20 |
| 16 | 53 | 50 | 53 | 75 | 90 | 1,740 | 158 | 206 | 50 | 363 | 20 | 19 |
| 17 | 52 | 49 | 42 | 70 | 80 | 900 | 141 | 214 | 50 | 98 | 19 | 19 |
| 18 | 49 | 47 | 36 | 100 | 75 | 620 | 141 | 141 | 50 | 67 | 19 | 18 |
| 19 | 49 | 46 | 36 | 100 | 70 | 588 | 141 | 141 | 50 | 52 | 18 | 19 |
| 20 | 47 | 46 | 36 | 130 | 60 | 370 | 141 | 112 | 43 | 42 | 18 | 20 |
| 21 | 46 | 45 | 36 | 160 | 55 | 322 | 135 | 236 | 36 | 36 | 18 | 23 |
| 22 | 45 | 46 | 36 | 440 | 50 | 400 | 126 | 168 | 36 | 30 | 20 | 46 |
| 23 | 55 | 45 | 36 | 200 | 46 | 970 | 138 | 141 | 30 | 28 | 19 | 26 |
| 24 | 78 | 47 | 38 | 160 | 34 | 588 | 124 | 107 | 30 | 30 | 18 | 25 |
| 25 | 63 | 45 | 42 | 110 | 48 | 370 | 110 | 100 | 27 | 48 | 19 | 23 |
| 26 | 58 | 43 | 55 | 95 | 46 | 284 | 102 | 88 | 53 | 34 | 19 | 23 |
| 27 | 53 | 46 | 90 | 90 | 55 | 214 | 98 | 78 | 43 | 30 | 19 | 22 |
| 28 | 52 | 45 | 180 | 85 | 55 | 175 | 102 | 67 | 58 | 33 | 20 | 22 |
| 29 | 49 | 43 | 110 | 80 | ------- | 175 | 115 | 67 | 67 | 30 | 21 | 23 |
| 30 | 47 | 43 | 110 | 85 | ------- | 175 | 100 | 67 | 50 | 29 | 19 | 23 |
| 31 | 46 | ------- | 95 | 80 | ------- | 158 | ------ | 67 | ------- | 30 | 18 | ------ |
| 1923–24 | | | | | | | | | | | | |
| 1 | 22 | 29 | 132 | 804 | | 30 | 210 | 175 | 151 | 71 | 44 | 34 |
| 2 | 22 | 27 | 86 | 370 | | 30 | 141 | 179 | 144 | 65 | 44 | 60 |
| 3 | 21 | 25 | 65 | 353 | 70 | 48 | 236 | 175 | 309 | 64 | 44 | 58 |
| 4 | 19 | 26 | 57 | 274 | | 120 | 400 | 187 | 489 | 62 | 44 | 40 |
| 5 | 21 | 26 | 106 | 160 | | 440 | 400 | 198 | 290 | 64 | 44 | 40 |
| 6 | 21 | 26 | 240 | 130 | 360 | 223 | 1,120 | 194 | 285 | 65 | 46 | 37 |
| 7 | 19 | 32 | 268 | 100 | 170 | 168 | 1,000 | 179 | 378 | 62 | 47 | 36 |
| 8 | 20 | 47 | 155 | 98 | 89 | 141 | 1,000 | 223 | 175 | 62 | 49 | 37 |
| 9 | 20 | 43 | 158 | 86 | 80 | 110 | 430 | 310 | 214 | 62 | 49 | 78 |
| 10 | 21 | 36 | 165 | 82 | 70 | 84 | 250 | 448 | 138 | 57 | 47 | 67 |
| 11 | 21 | 39 | 129 | 806 | 60 | 78 | 202 | 490 | 236 | 55 | 47 | 53 |
| 12 | 20 | 39 | 100 | 511 | 50 | 67 | 168 | 536 | 214 | 52 | 44 | 46 |
| 13 | 19 | 37 | 88 | 200 | | 71 | 155 | 739 | 179 | 53 | 44 | 68 |
| 14 | 20 | 34 | 93 | 110 | | 71 | 210 | 753 | 165 | 55 | 43 | 65 |
| 15 | 22 | 30 | 71 | 90 | 48 | 78 | 232 | 746 | 129 | 53 | 43 | 52 |
| 16 | 20 | 30 | 62 | 170 | | 100 | 198 | 588 | 118 | 50 | 40 | 47 |
| 17 | 21 | 35 | 57 | 436 | 44 | 88 | 179 | 460 | 112 | 52 | 40 | 44 |
| 18 | 21 | 39 | 50 | 198 | 44 | 88 | 257 | 388 | 100 | 55 | 40 | 43 |
| 19 | 23 | 34 | 44 | 141 | 44 | 100 | 466 | 394 | 86 | 55 | 39 | 42 |
| 20 | 23 | 32 | 46 | 121 | 32 | 67 | 503 | 388 | 88 | 55 | 39 | 40 |
| 21 | 23 | 28 | 49 | | 44 | 88 | 484 | 334 | 126 | 53 | 39 | 40 |
| 22 | 22 | 28 | 50 | | 40 | 78 | 484 | 290 | 105 | 52 | 37 | 39 |
| 23 | 23 | 32 | 53 | | 30 | 141 | 496 | 254 | 93 | 50 | 37 | 39 |
| 24 | 80 | 37 | 62 | | 36 | 194 | 388 | 236 | 90 | 49 | 37 | 39 |
| 25 | 64 | 37 | 58 | 70 | 36 | 259 | 310 | 236 | 168 | 47 | 36 | 39 |
| 26 | 39 | 35 | 60 | | 38 | 214 | 250 | 236 | 102 | 47 | 36 | 39 |
| 27 | 33 | 42 | 57 | | 44 | 175 | 218 | 206 | 88 | 46 | 36 | 37 |
| 28 | 28 | 46 | 82 | | 48 | 259 | 194 | 191 | 82 | 46 | 35 | 37 |
| 29 | 26 | 39 | 121 | | 30 | 430 | 183 | 179 | 90 | 44 | 35 | 330 |
| 30 | 27 | 95 | 98 | 200 | ------- | 690 | 172 | 175 | 78 | 43 | 35 | 1,130 |
| 31 | 30 | ------- | 159 | 170 | ------- | 370 | ------ | 161 | ------- | 43 | 35 | ------ |

*Daily discharge, in second-feet, of Canaseraga Creek near Dansville, N. Y., for the years ending September 30, 1923–1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1924–25 | | | | | | | | | | | | |
| 1 | 473 | 35 | 30 | 42 | 36 | 235 | 235 | 120 | 59 | 54 | 27 | 23 |
| 2 | 232 | 35 | 30 | 42 | 36 | 132 | 274 | 130 | 58 | 50 | 27 | 22 |
| 3 | 144 | 35 | 30 | 36 | 36 | 132 | 288 | 124 | 58 | 48 | 27 | 24 |
| 4 | 105 | 34 | 30 | 44 | 38 | 162 | 235 | 117 | 56 | 46 | 27 | 24 |
| 5 | 86 | 34 | 47 | 42 | 38 | 147 | 193 | 130 | 54 | 45 | 27 | 23 |
| 6 | 71 | 34 | 36 | 36 | 42 | 132 | 186 | 120 | 53 | 41 | 27 | 62 |
| 7 | 65 | 34 | 37 | 36 | 46 | 162 | 150 | 114 | 52 | 39 | 27 | 38 |
| 8 | 64 | 35 | 43 | 30 | 180 | 196 | 132 | 114 | 55 | 35 | 27 | 36 |
| 9 | 57 | 34 | 47 | 30 | 580 | 196 | 122 | 107 | 77 | 32 | 28 | 35 |
| 10 | 53 | 34 | 39 | 36 | 1,300 | 235 | 122 | 103 | 56 | 48 | 32 | 34 |
| 11 | 50 | 34 | 36 | 30 | 2,680 | 530 | 120 | 112 | 53 | 49 | 33 | 32 |
| 12 | 47 | 33 | 34 | 36 | 1,770 | 278 | 112 | 120 | 52 | 49 | 33 | 33 |
| 13 | 47 | 33 | 37 | 36 | 820 | 179 | 105 | 105 | 50 | 46 | 33 | 40 |
| 14 | 46 | 37 | 36 | 30 | 475 | 797 | 99 | 99 | 48 | 43 | 33 | 51 |
| 15 | 44 | 37 | 30 | 30 | 325 | 492 | 105 | 99 | 52 | 40 | 34 | 64 |
| 16 | 43 | 35 | 36 | 44 | 278 | 316 | 96 | 92 | 83 | 39 | 34 | 113 |
| 17 | 42 | 41 | 158 | 42 | 235 | 278 | 90 | 90 | 58 | 38 | 33 | 63 |
| 18 | 40 | 40 | 160 | 40 | 196 | 265 | 86 | 94 | 44 | 37 | 33 | 91 |
| 19 | 39 | 32 | 270 | 38 | 235 | 448 | 238 | 90 | 41 | 37 | 32 | 78 |
| 20 | 39 | 34 | 225 | 38 | 235 | 314 | 484 | 84 | 40 | 35 | 31 | 57 |
| 21 | 37 | 35 | 120 | 38 | 235 | 235 | 261 | 79 | 39 | 34 | 31 | 84 |
| 22 | 37 | 36 | 90 | 38 | 502 | 196 | 193 | 75 | 38 | 33 | 31 | 56 |
| 23 | 37 | 35 | 75 | 36 | 1,170 | 169 | 162 | 72 | 39 | 33 | 28 | 45 |
| 24 | 36 | 35 | 60 | 38 | 680 | 156 | 141 | 70 | 38 | 32 | 27 | 43 |
| 25 | 36 | 34 | 55 | 42 | 475 | 159 | 124 | 70 | 67 | 31 | 26 | 41 |
| 26 | 36 | 32 | 50 | 44 | 475 | 150 | 117 | 70 | 54 | 30 | 26 | 40 |
| 27 | 36 | 30 | 50 | 36 | 235 | 207 | 105 | 68 | 55 | 29 | 26 | 38 |
| 28 | 36 | 30 | 48 | | 216 | 330 | 99 | 65 | 124 | 29 | 25 | 40 |
| 29 | 36 | 30 | 46 | 36 | ------- | 325 | 92 | 64 | 82 | 29 | 24 | 39 |
| 30 | 35 | 27 | 44 | | ------- | 231 | 94 | 65 | 65 | 28 | 23 | 38 |
| 31 | 35 | ------- | 42 | | ------- | 252 | ----- | 60 | ------- | 28 | 23 | ------ |

NOTE.—Discharge for ice-affected periods determined from gage heights corrected for backwater from ice by means of four discharge measurements, observer's notes, weather records, and comparison with flow of adjacent streams. Gage-height record faulty or lacking Dec. 11–13, 1922, Feb. 5, Apr. 30 to May 6, Sept. 20–25, Oct. 5–9, 19, 20, 1923, Jan. 13–16, 21–31, Feb. 1–11, 13–16, Mar. 9, Apr. 13–15, May 2, 3, 14, 24, 26, 27, 29, 30, June 3–12, 17–19, 22–26, July 1, 2, 11, 12, 15, 16, 23, Aug. 6, 19, Sept. 2, 3, 6, 19, Oct. 7, 8, Dec. 27, 1924, Jan. 18, 28–31, Feb. 24, June 28, 29, July 10, and Sept. 6, 1925; discharge based on comparative studies. Recorder not operating and staff gage readings used Dec. 14, 1922, to Apr. 23, 1923, May 7 to June 30, 1923, Feb. 17 to Apr. 10, and Dec. 28, 1924, to Mar. 14, 1925. Braced figures show mean discharge for periods indicated.

*Monthly discharge of Canaseraga Creek near Dansville, N. Y., for the years ending September 30, 1923–1925*

[Drainage area, 158 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1922–23 | | | | | |
| October | 92 | 45 | 56.5 | 0.358 | 0.41 |
| November | 56 | 43 | 47.6 | .301 | .34 |
| December | 180 | 36 | 65.5 | .415 | .48 |
| January | 440 | 60 | 112 | .709 | .82 |
| February | 650 | 34 | 116 | .734 | .76 |
| March | 3,350 | 90 | 619 | 3.92 | 4.52 |
| April | 1,250 | 98 | 245 | 1.55 | 1.73 |
| May | 236 | 67 | 116 | .734 | .85 |
| June | 135 | 27 | 54.8 | .347 | .39 |
| July | 363 | 24 | 47.0 | .297 | .34 |
| August | 27 | 18 | 20.3 | .128 | .15 |
| September | 46 | 17 | 22.5 | .142 | .16 |
| The year | 3,350 | 17 | 127 | .804 | 10.95 |

*Monthly discharge of Canaseraga Creek near Dansville, N. Y., for the years ending September 30, 1923–1925*—Continued

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1923–24 | | | | | |
| October | 80 | 19 | 26.2 | 0.166 | 0.19 |
| November | 95 | 25 | 36.2 | .229 | .26 |
| December | 268 | 44 | 97.5 | .617 | .71 |
| January | 806 | | 201 | 1.27 | 1.46 |
| February | 360 | 30 | 66.6 | .422 | .46 |
| March | 690 | 30 | 165 | 1.04 | 1.20 |
| April | 1,120 | 141 | 365 | 2.31 | 2.58 |
| May | 753 | 161 | 331 | 2.09 | 2.41 |
| June | 489 | 78 | 167 | 1.06 | 1.18 |
| July | 71 | 43 | 54.5 | .345 | .40 |
| August | 49 | 35 | 41.1 | .260 | .30 |
| September | 1,130 | 34 | 91.9 | .582 | .65 |
| The year | 1,130 | 19 | 137 | .867 | 11.80 |
| 1924–25 | | | | | |
| October | 473 | 35 | 70.5 | .446 | .51 |
| November | 41 | 27 | 34.1 | .216 | .24 |
| December | 270 | 30 | 66.8 | .423 | .49 |
| January | 44 | 30 | 37.2 | .235 | .27 |
| February | 2,680 | 36 | 485 | 3.07 | 3.20 |
| March | 797 | 132 | 259 | 1.64 | 1.89 |
| April | 484 | 86 | 162 | 1.03 | 1.15 |
| May | 130 | 60 | 94.3 | .597 | .69 |
| June | 124 | 38 | 56.7 | .359 | .40 |
| July | 54 | 28 | 38.3 | .242 | .28 |
| August | 34 | 23 | 28.9 | .183 | .21 |
| September | 113 | 22 | 45.7 | .289 | .32 |
| The year | 2,680 | 22 | 112 | .709 | 9.65 |

### 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 above mouth.

DRAINAGE AREA.—70 square miles (measured by New York State Conservation Commission).

RECORDS AVAILABLE.—October 31, 1917, to September 30, 1925. 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.

GAGE.—Vertical staff in three sections on retaining wall on left bank just above the concrete dam for pumping plant of Craig Colony; read by A. J. Porter. From February 9 to March 6 gage readings were determined by measuring distance of water surface below reference point on abutment wall, the standard gage having been carried out by ice.

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

CONTROL.—Double-crested concrete dam built by Craig Colony for maintaining water level for their pumping plant; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.2 feet at 5 p. m. February 11 (discharge, 2,000 second-feet); minimum stage, 0.18 foot at 5 p. m. September 1 (0.04 foot backwater from temporary dam, discharge, about 1.0 second-foot).

1917–1925: Maximum stage recorded, 5.9 feet at 10 a. m. May 22, 1919 (discharge beyond limits of present rating curve); minimum discharge, 0.7 second-foot at 8 a. m. August 20, 1918, and 5 p. m. August 24, 1923.

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

ACCURACY.—Stage-discharge relation permanent except as affected by ice and by temporary dam. Rating curve fairly well defined below 1,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying to rating table mean daily gage height corrected for backwater effect, if necessary, or for days of great range in stage, by averaging discharge for intervals of day. Records fair.

*Discharge measurements of Keshequa Creek at Craig Colony, Sonyea, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 15 | 0.44 | 7.73 | Mar. 7 | 0.92 | 55.9 | June 18 | 0.37 | 5.67 |
| Jan. 19 | .47 | 9.46 | Apr. 19 | .88 | 51.1 | Aug. 27[a] | .26 | 2.12 |

[a] Stage-discharge relation affected by temporary dam.

*Daily discharge, in second-feet, of Keshequa Creek at Craig Colony, Sonyea, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 150 | 7.2 | 8.6 | 9 | 10 | 36 | 66 | 30 | 6.7 | 5.4 | 4.9 | 1.1 |
| 2 | 65 | 7.6 | 8.6 | 9 | 11 | 31 | 98 | 28 | 5.9 | 5.4 | 6.7 | 1.5 |
| 3 | 42 | 8.1 | 8.1 | 11 | 10 | 21 | 79 | 24 | 5.4 | 6.2 | 6.0 | 1.3 |
| 4 | 27 | 7.2 | 8.1 | 12 | 12 | 32 | 60 | 23 | 4.4 | 6.7 | 5.4 | 2.1 |
| 5 | 20 | 8.1 | 8.1 | 12 | 11 | 32 | 47 | 26 | 5.4 | 5.9 | 5.7 | 2.5 |
| 6 | 17 | 9.1 | 11 | 12 | 13 | 30 | 38 | 21 | 3.4 | 4.9 | 6.7 | 2.8 |
| 7 | 15 | 7.2 | 10 | 11 | 14 | 47 | 36 | 19 | 4.4 | 4.4 | 5.4 | 3.4 |
| 8 | 17 | 8.1 | 12 | 10 | 70 | 70 | 30 | 19 | 3.2 | 3.6 | 4.9 | 5.4 |
| 9 | 15 | 10 | 15 | 9.6 | 380 | 72 | 27 | 17 | 3.9 | 3.9 | 5.4 | 4.3 |
| 10 | 12 | 7.6 | 11 | 9.1 | 850 | 75 | 28 | 16 | 3.9 | 14 | 31 | 3.2 |
| 11 | 11 | 7.2 | 9.6 | 11 | 1,200 | 412 | 27 | 22 | 3.9 | 12 | 9.1 | 1.9 |
| 12 | 11 | 6.2 | 11 | 8.1 | 590 | 118 | 26 | 18 | 3.6 | 5.4 | 6.7 | 1.3 |
| 13 | 11 | 7.6 | 10 | 11 | 153 | 72 | 24 | 16 | 3.4 | 4.1 | 6.7 | 3.2 |
| 14 | 11 | 11 | 7.2 | 8.0 | 98 | 805 | 21 | 14 | 2.6 | 4.6 | 12 | 8.1 |
| 15 | 10 | 10 | 5.7 | 6.2 | 75 | 146 | 26 | 14 | 2.1 | 3.4 | 14 | 6.2 |
| 16 | 9.1 | 10 | 8.6 | 8.1 | 55 | 83 | 23 | 14 | 10 | 3.2 | 8.6 | 21 |
| 17 | 9.1 | 11 | 17 | 10 | 48 | 79 | 19 | 14 | 5.9 | 4.6 | 4.4 | 10 |
| 18 | 8.1 | 7.6 | 58 | 9.6 | 40 | 75 | 19 | 17 | 5.4 | 5.4 | 4.1 | 8.1 |
| 19 | 9.1 | 7.6 | 198 | 10 | 42 | 203 | 91 | 13 | 4.4 | 4.4 | 3.9 | 18 |
| 20 | 9.1 | 7.6 | 83 | 8 | 44 | 83 | 222 | 12 | 3.9 | 3.2 | 3.4 | 8.1 |
| 21 | 9.1 | 9.1 | 22 | 8.5 | 115 | 63 | 79 | 11 | 4.4 | 3.4 | 3.9 | 9.6 |
| 22 | 8.6 | 11 | 19 | 8.5 | 227 | 50 | 51 | 9.1 | 3.4 | 3.6 | 4.4 | 7.6 |
| 23 | 9.1 | 11 | 17 | 8 | 1,060 | 44 | 42 | 8.6 | 3.9 | 5.4 | 3.4 | 6.2 |
| 24 | 10 | 9.1 | 14 | 8 | 293 | 39 | 39 | 11 | 3.4 | 3.4 | 2.6 | 5.4 |
| 25 | 6.2 | 11 | 13 | 9 | 160 | 39 | 30 | 11 | 8.6 | 2.3 | 1.6 | 5.7 |
| 26 | 7.6 | 8.6 | 12 | 10 | 110 | 37 | 28 | 10 | 11 | 2.3 | 1.6 | 5.7 |
| 27 | 8.1 | 8.1 | 11 | 10 | 70 | 53 | 23 | 9.1 | 7.2 | 7.6 | 1.7 | 4.1 |
| 28 | 7.6 | 7.6 | 11 | 9.5 | 34 | 102 | 22 | 8.1 | 24 | 5.2 | 1.7 | 4.6 |
| 29 | 7.2 | 9.1 | 10 | 9 | ------- | 63 | 22 | 7.6 | 13 | 7.2 | 1.5 | 5.4 |
| 30 | 7.4 | 9.1 | 9 | 8 | ------- | 61 | 19 | 8.1 | 8.1 | 4.9 | 1.5 | 7.2 |
| 31 | 7.6 | ------- | 9 | 10 | ------- | 70 | ------- | 7.2 | ------- | 3.4 | 1.3 | ----- |

NOTE.—Discharge Oct. 23, 30, Nov. 2, 30, Dec. 1, 25, Jan. 14, 30, Feb. 1, 27, Apr. 21, May 16, Aug. 3, and Sept. 9, estimated; no gage-height record. Discharge Dec. 21 to Jan. 2, Jan. 20 to Feb. 10, Feb. 16–18, and 25–28, determined from gage heights corrected for ice effect from one discharge measurement, study of gage-height graph and weather records, and by comparison with record of Canaseraga Creek near Dansville. Discharge Aug. 25 to Sept. 30 determined from gage heights corrected for backwater effect from obstruction on dam, by means of one discharge measurement.

*Monthly discharge of Keshequa Creek at Craig Colony, Sonyea, N. Y., for the year ending September 30, 1925*

[Drainage area, 70 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 150 | 6.2 | 18.3 | 0.261 | 0.30 |
| November | 11 | 6.2 | 8.66 | .124 | .14 |
| December | 198 | 5.7 | 21.1 | .301 | .35 |
| January | 12 | 6.2 | 9.46 | .135 | .16 |
| February | 1,200 | 10 | 207 | 2.96 | 3.08 |
| March | 805 | 21 | 101 | 1.44 | 1.66 |
| April | 222 | 19 | 45.4 | .649 | .72 |
| May | 30 | 7.2 | 15.4 | .220 | .25 |
| June | 24 | 2.1 | 5.96 | .085 | .09 |
| July | 14 | 2.3 | 5.14 | .073 | .08 |
| August | 31 | 1.3 | 5.81 | .083 | .10 |
| September | 21 | 1.1 | 5.83 | .083 | .09 |
| The year | 1,200 | 1.1 | 36.3 | .519 | 7.02 |

### CONESUS CREEK NEAR LAKEVILLE, N. Y.

LOCATION.—At highway bridge known locally as Millville Bridge, 1½ miles north of 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, 1925.

GAGE.—Vertical staff fastened to piling just above bridge; read by W. B. Milliman.

DISCHARGE MEASUREMENTS.—Made from highway bridge about a quarter of a mile downstream or by wading near gage.

CHANNEL AND CONTROL.—The control consists of a parabolic concrete weir 25.33 feet long at upstream edge of concrete apron under highway 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, 2.5 feet at 10.30 a. m. February 23 (discharge, 296 second-feet); minimum discharge, 10 second-feet from measurement October 14 and probably on other days in October.

1919–1925: Maximum stage recorded, that of February 23, 1925; minimum stage, 0.52 foot at 5 p. m. November 22, 1923 (discharge, 0.45 second-foot).

ICE.—Stage-discharge relation only slightly affected by ice.

DIVERSIONS.—Water supply for the village of Avon is taken from Conesus Lake. The amount of this diversion is not known.

ACCURACY.—Stage-discharge relation permanent. Rating curve fairly well defined below 175 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table Records good except during periods of estimate, for which they are poor.

*Discharge measurements of Conesus Creek near Lakeville, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 14 | (a) | 10.0 | Apr. 21 | 1.72 | 113 | Aug. 29 | 0.86 | 12.8 |
| Jan. 21 | 1.00 | 22.2 | June 18 | 1.05 | 26.9 | | | |
| Mar. 8 | 1.93 | 157 | Aug. 29 | .86 | 14.3 | | | |

[a] Water being diverted around weir by Avon waterworks.

*Daily discharge, in second-feet, of Conesus Creek near Lakeville, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 24 | 26 | 20 | 240 | 140 | 92 | 41 | 23 | 22 | 12 |
| 2 | | 28 | 22 | 26 | 20 | 215 | 142 | 90 | 41 | 23 | 18 | 12 |
| 3 | | | 22 | 26 | 20 | 191 | 140 | 88 | 40 | 23 | 18 | 12 |
| 4 | | 45 | 23 | 26 | 20 | 191 | 138 | 86 | 39 | 23 | 16 | 13 |
| 5 | | 50 | 23 | 24 | 20 | 169 | 140 | 87 | 39 | 21 | 16 | 12 |
| 6 | 24 | 49 | 20 | 26 | 22 | 165 | 132 | 81 | 36 | 21 | 17 | 12 |
| 7 | | 46 | 20 | 26 | 24 | 165 | 126 | 77 | 35 | 20 | 16 | 13 |
| 8 | | 45 | 23 | 26 | 28 | 158 | 123 | 74 | 35 | 18 | 15 | 12 |
| 9 | | 43 | 22 | 24 | 74 | 165 | 121 | 74 | 34 | 19 | 17 | 13 |
| 10 | | 44 | 22 | 24 | 117 | 180 | 119 | 71 | 33 | 20 | 17 | 12 |
| 11 | | 42 | 20 | 22 | 191 | 167 | 115 | 67 | 33 | 22 | 18 | 12 |
| 12 | | 40 | 20 | 22 | 215 | 165 | 108 | 65 | 30 | 22 | 16 | 13 |
| 13 | 10 | 39 | 22 | 22 | 240 | 163 | 105 | 65 | 35 | 18 | 16 | 17 |
| 14 | | 39 | 23 | 22 | 254 | 203 | 107 | 62 | 27 | 16 | 16 | 16 |
| 15 | | 38 | 20 | 22 | 228 | 203 | 102 | 63 | 27 | 19 | 15 | 14 |
| 16 | 10 | 37 | 20 | 22 | 215 | 203 | 103 | 60 | 35 | 20 | 15 | 19 |
| 17 | | 34 | 22 | 22 | 228 | 191 | 93 | 59 | 29 | 18 | 14 | 16 |
| 18 | | 34 | 24 | 22 | 215 | 191 | 92 | 58 | 27 | 18 | 14 | 48 |
| 19 | | 35 | 27 | 22 | 203 | 203 | 108 | 54 | 25 | 18 | 15 | 20 |
| 20 | | 33 | 29 | 22 | 191 | 180 | 112 | 52 | 26 | 18 | 14 | 20 |
| 21 | 18 | 31 | 28 | 22 | 215 | 180 | 114 | 51 | 24 | 18 | 14 | 17 |
| 22 | | 29 | 28 | 24 | 203 | 169 | 114 | 50 | 23 | 18 | 14 | 17 |
| 23 | | 29 | 28 | 22 | 296 | 161 | 108 | 50 | 23 | 17 | 14 | 16 |
| 24 | | 27 | 28 | 22 | 267 | 154 | 108 | 49 | 21 | 17 | 14 | 16 |
| 25 | | 27 | 28 | 22 | 267 | 144 | 107 | 46 | 26 | 20 | 14 | 14 |
| 26 | | 27 | 26 | 22 | 282 | 140 | 105 | 44 | 22 | 18 | 14 | 15 |
| 27 | | 26 | 26 | 22 | 267 | 142 | 103 | 42 | 23 | 16 | 14 | 14 |
| 28 | 10 | 24 | 26 | 22 | 240 | 144 | 98 | 40 | 23 | 18 | 13 | 14 |
| 29 | | 24 | 26 | 20 | ------- | 144 | 95 | 43 | 22 | 16 | 13 | 13 |
| 30 | | 24 | 26 | 20 | ------- | 140 | 90 | 42 | 21 | 17 | 11 | 12 |
| 31 | | ------- | 24 | 20 | ------- | 140 | ------- | 41 | ------- | 17 | 12 | ----- |

NOTE.—Discharge Oct. 1 to Nov. 3 and Jan. 30 to Feb. 3 estimated; no gage-height record during latter period, during former period a large part of the flow was diverted around the control through a ditch during construction work by Avon waterworks. Discharge Dec. 21 to Feb. 8 determined from gage heights corrected for ice effect from one discharge measurement, study of gage-height graph, weather records, and observer's notes.

*Monthly discharge of Conesus Creek near Lakeville, N. Y., for the year ending September 30, 1925*

[Drainage area, 71 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | ---------- | 10 | 17.3 | 0.244 | 0.28 |
| November | 50 | 24 | 34.8 | .490 | .55 |
| December | 29 | 20 | 23.9 | .337 | .39 |
| January | 26 | 20 | 23.0 | .324 | .37 |
| February | 296 | 20 | 164 | 2.31 | 2.40 |
| March | 240 | 140 | 173 | 2.44 | 2.81 |
| April | 142 | 90 | 113 | 1.59 | 1.77 |
| May | 92 | 40 | 62.0 | .873 | 1.01 |
| June | 41 | 21 | 29.8 | .420 | .47 |
| July | 23 | 16 | 19.1 | .269 | .31 |
| August | 22 | 11 | 15.2 | .214 | .25 |
| September | 48 | 12 | 15.5 | .218 | .24 |
| The year | 296 | 10 | 56.8 | .800 | 10.85 |

### CANADICE LAKE OUTLET NEAR HEMLOCK, N. Y.

LOCATION.—At foot of Canadice Lake, 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, 1925.

GAGE.—Hook 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 the stream channel, which is artificial with a plank bottom and vertical sides, and the crest is never submerged by backwater. Two additional rectangular gates, each 1 foot square with three complete contractions and a fourth incomplete contraction at the bottom.

ICE.—Stage-discharge relation not affected by ice as the pool above the weir is free from ice throughout the winter.

DIVERSIONS.—No water is diverted from Canadice Lake above the station.

REGULATION.—Outflow of lake is regulated by bulkhead and gates at dam above weir.

ACCURACY.—Stage-dischage relation permanent. 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.

*Monthly discharge of Canadice Lake outlet near Hemlock, N. Y., for the year ending September 30, 1925*

| Month | Mean discharge | Mean elevation of lake above low-water mark | Month | Mean discharge | Mean elevation of lake above low-water mark |
|---|---|---|---|---|---|
| | *Sec.-ft.* | *Feet* | | *Sec.-ft.* | *Feet* |
| October | 9.777 | +0.815 | May | 9.110 | +2.999 |
| November | 1.775 | +.119 | June | 14.422 | +1.773 |
| December | .302 | −.227 | July | 9.954 | +.966 |
| January | .290 | −.383 | August | 5.345 | +.450 |
| February | 24.909 | +1.686 | September | 1.108 | −.243 |
| March | 21.779 | +2.787 | | | |
| April | 16.878 | +3.108 | The year | 9.637 | +1.154 |

NOTE.—Terminal water surface for the year was 1.95 feet lower than that of the previous year, corresponding to a loss in storage of 55,815,388 cubic feet or a discharge of 1.770 second-feet for the year. This correction applied to the above gives 7.867 second-feet equivalent to 0.624 second-foot per square mile or a run-off of 8.467 inches from the drainage area.

### FALL CREEK NEAR ITHACA, N. Y.

LOCATION.—At Forest Home, Tompkins County, half a mile above Cornell University Dam at the foot of Beebe Lake and 1½ miles northeast from the center of Ithaca.

DRAINAGE AREA.—126 square miles (measured on topographic maps).

RECORDS AVAILABLE.—February 15 to September 30, 1925. July 12, 1908, to June 30, 1909, at steel highway bridge 1¼ miles below present site.

GAGE.—Au 60-day continuous water-stage recorder on left bank; inspected by students or members of the faculty of Cornell University, College of Civil Engineering.

DISCHARGE MEASUREMENTS.—Made from cable 50 feet above gage or by wading.

CHANNEL AND CONTROL.—Control consists of a sharp-crested concrete weir 90 feet long with 20-foot rectangular notch 1 foot deep. Bed of stream near gage is largely of solid rock.

EXTREMES OF DISCHARGE.—Maximum stage during period, from water-stage recorder, 3.34 feet at 6 a. m. February 24 (discharge, 1,850 second-feet); minimum stage, 0.17 foot at 3.30 p. m. June 27 (discharge, about 5 second-feet).

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

REGULATION.—Some diurnal fluctuation is noticeable during low stages owing to small power operations above station.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 20 and 500 second-feet. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of gage-height graph or, for days of considerable fluctuation, by averaging discharge for intervals of day. Records excellent except during periods of estimate for which they are fair.

*Discharge measurements of Fall Creek near Ithaca, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Mar. 11 | 1.80 | 360 | Apr. 22 | 1.46 | 201 | June 6 | 0.76 | 44.3 |
| Mar. 20 | 1.79 | 377 | May 7 | 1.60 | 276 | June 14 | .51 | 24.7 |
| Mar. 21 | 1.63 | 284 | May 25 | 1.13 | 106 | Aug. 21 | .66 | 39.1 |
| Apr. 6 | 1.40 | 188 | May 28 | 1.04 | 84 | Aug. 22 | .80 | 47.0 |
| Apr. 18 | 1.20 | 126 | May 31 | .96 | 73 | | | |

*Daily discharge, in second-feet, of Fall Creek near Ithaca, N. Y., for the year ending September 30, 1925*

| Day | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | | 259 | 440 | 267 | 75 | 112 | 60 | 24 |
| 2 | | 238 | 420 | 312 | 80 | 84 | 56 | 22 |
| 3 | | 208 | 420 | 246 | 74 | 84 | 48 | 20 |
| 4 | | 215 | 360 | 196 | 60 | 60 | 48 | 20 |
| 5 | | 193 | 300 | 586 | 47 | 107 | 46 | 20 |
| 6 | | 189 | 240 | 290 | 42 | 74 | 69 | 22 |
| 7 | | 219 | 204 | 276 | 38 | 48 | 189 | 24 |
| 8 | | 346 | 215 | 246 | 56 | 48 | 92 | 26 |
| 9 | | 393 | 180 | 196 | 56 | 43 | 63 | 30 |
| 10 | | 331 | 160 | 172 | 48 | 122 | 104 | 34 |
| 11 | | 366 | 160 | 242 | 39 | 214 | 95 | 39 |
| 12 | | 336 | 175 | 246 | 36 | 95 | 71 | 33 |
| 13 | | 251 | 162 | 172 | 31 | 56 | 78 | 47 |
| 14 | | 548 | 140 | 149 | 28 | 42 | 125 | 188 |
| 15 | 580 | 587 | 179 | 140 | 33 | 38 | 84 | 128 |
| 16 | 392 | 303 | 182 | 120 | 41 | 43 | 63 | 134 |
| 17 | 393 | 317 | 143 | 151 | 39 | 241 | 53 | 117 |
| 18 | 281 | 365 | 125 | 152 | 40 | 122 | 47 | 109 |
| 19 | 267 | 632 | 199 | 120 | 38 | 79 | 39 | 143 |
| 20 | 263 | 399 | 790 | 115 | 31 | 60 | 32 | 84 |
| 21 | 276 | 294 | 280 | 97 | 30 | 49 | 40 | 95 |
| 22 | 479 | 255 | 219 | 95 | 26 | 112 | 43 | 72 |
| 23 | 953 | 226 | 193 | 90 | 31 | 282 | 38 | 54 |
| 24 | 1,420 | 215 | 186 | 97 | 26 | 131 | 34 | 44 |
| 25 | 645 | 211 | 165 | 112 | 56 | 85 | 34 | 40 |
| 26 | 753 | 208 | 222 | 102 | 72 | 86 | 36 | 38 |
| 27 | 335 | 210 | 182 | 88 | 36 | 135 | 24 | 36 |
| 28 | 286 | 501 | 146 | 69 | 93 | 81 | 26 | 40 |
| 29 | | 550 | 134 | 86 | 140 | 129 | 26 | 46 |
| 30 | | 480 | 145 | 96 | 223 | 112 | 26 | 44 |
| 31 | | 500 | | 75 | | 71 | 26 | |

NOTE.—Discharge Mar. 25, Mar. 29 to Apr. 6, Apr. 9–11, May 1–2, 6, Aug. 30 to Sept. 9, Sept. 25–28, and 30, estimated from comparative hydrographs; gage-height record either faulty or missing.

*Monthly discharge of Fall Creek near Ithaca, N. Y., for the year ending September 30, 1925*

[Drainage area, 126 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| February 15-28 | 1,420 | 263 | 523 | 4.15 | 2.16 |
| March | 632 | 189 | 334 | 2.65 | 3.06 |
| April | 790 | 125 | 236 | 1.87 | 2.09 |
| May | 586 | 69 | 174 | 1.38 | 1.59 |
| June | 223 | 26 | 55.5 | .440 | .49 |
| July | 282 | 38 | 98.2 | .779 | .90 |
| August | 189 | 24 | 58.5 | .464 | .53 |
| September | 188 | 20 | 59.1 | .469 | .52 |

### OWASCO LAKE OUTLET NEAR AUBURN, N. Y.

LOCATION.—On farm of Charles H. Pearce, 2 miles below center of Auburn, Cayuga County, and 3¾ miles below State dam at outlet of Owasco Lake.

DRAINAGE AREA.—206 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 17, 1912, to September 30, 1925.

GAGE.—Gurley 7-day graph water-stage recorder on left bank; inspected by Mrs. Charles H. Pearce.

DISCHARGE MEASUREMENTS.—Made from a cable directly opposite gage or by wading.

CHANNEL AND CONTROL.—Control is artificial and consists of a low concrete dam 100 feet long, 25 feet below the gage. The elevation of crest of left half of dam is 1.28 feet gage datum; right half of dam is at elevation of 2.13 feet.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 3.66 feet at 9 a. m. February 27 (discharge, 1,250 second-feet); minimum stage, 1.55 feet at 12.15 p. m. September 20 (discharge, 20 second-feet).

1912–1925: Maximum stage, 6.4 feet March 25–30, 1913, determined by leveling from floodmarks (discharge, 2,750 second-feet); minimum stage, 1.38 feet (effective) at 7 p. m. August 21, 1920 (discharge, 3.8 second-feet).

ICE.—Stage-discharge relation practically unaffected by ice.

DIVERSIONS.—An average flow of about 10 second-feet is pumped from Owasco Lake for the municipal water supply of the city of Auburn. Proportion returning to stream above the gaging station is not known.

REGULATION.—Large diurnal fluctuation in flow during low-water periods due to operation of mills in city of Auburn; seasonal flow regulated at State dam.

ACCURACY.—Stage-discharge relation permanent except for possible slight backwater effect from ice during winter and from aquatic growth during late summer. Rating curve well defined. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Daily discharge ascertained by averaging the discharge for bihourly intervals of day. Records good except during periods of estimate, for which they are fair.

*Discharge measurements of Owasco Lake outlet near Auburn, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Mar. 9 | 2.92 | 533 | June 20 | 2.33 | 211 |
| Apr. 22 | 2.85 | 535 | Aug. 21 | 2.52 | 280 |

*Daily discharge, in second-feet, of Owasco Lake outlet near Auburn, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 167 | 164 | 157 | 162 | | 903 | 593 | 299 | 210 | 182 | 173 | 236 |
| 2 | 152 | 141 | 152 | 153 | | 861 | 598 | 315 | 206 | 183 | 183 | 216 |
| 3 | 145 | 166 | 144 | 143 | | 816 | 596 | 319 | 207 | 178 | 199 | 237 |
| 4 | 139 | 153 | 152 | 125 | 150 | 766 | 603 | 346 | 196 | 166 | 201 | 246 |
| 5 | 128 | 180 | 158 | 145 | | 660 | 566 | 316 | 202 | 159 | 197 | 212 |
| 6 | 144 | 182 | 163 | 152 | | 630 | 504 | 338 | 199 | 175 | 211 | 167 |
| 7 | 152 | 182 | 125 | 146 | | 553 | 493 | 334 | 193 | 185 | 197 | 168 |
| 8 | 121 | 155 | 150 | 150 | 172 | 535 | 483 | 328 | 200 | 171 | 205 | 217 |
| 9 | 131 | 124 | 156 | 148 | 195 | 547 | 468 | 332 | 203 | 184 | 173 | 221 |
| 10 | 141 | 161 | 141 | 142 | 206 | 542 | 458 | 319 | 188 | 183 | 202 | 210 |
| 11 | 127 | 173 | 151 | 136 | 456 | 548 | 434 | 334 | 213 | 172 | 207 | 199 |
| 12 | 127 | 158 | 151 | 172 | 893 | 535 | 399 | 327 | 214 | 164 | 181 | 245 |
| 13 | 144 | 168 | 152 | 143 | 986 | 534 | 362 | 324 | 194 | 182 | 205 | 268 |
| 14 | 128 | 160 | 124 | 118 | 1,020 | 600 | 229 | 318 | 196 | 185 | 195 | 273 |
| 15 | 113 | 169 | 166 | 141 | 991 | 648 | 233 | 311 | 225 | 188 | 200 | 273 |
| 16 | 135 | 110 | 151 | 149 | 981 | 607 | 227 | 303 | 227 | 184 | 201 | 242 |
| 17 | 119 | 150 | 150 | 155 | 944 | 527 | 224 | 292 | 195 | 177 | 211 | 236 |
| 18 | 132 | 152 | 151 | 141 | 905 | 551 | 222 | 307 | 206 | 187 | 211 | 218 |
| 19 | 107 | 145 | 171 | 160 | 844 | 552 | 242 | 298 | 206 | 184 | 204 | 162 |
| 20 | 131 | 145 | 162 | 159 | 824 | 547 | 266 | 284 | 187 | 198 | 206 | 77 |
| 21 | 127 | 155 | 152 | 155 | 792 | 559 | 413 | 304 | 162 | 203 | 215 | 215 |
| 22 | 125 | 155 | 184 | 148 | 782 | 512 | 475 | 287 | 170 | 241 | 210 | 224 |
| 23 | 128 | 116 | 159 | 143 | 863 | 518 | 388 | 281 | 186 | 194 | | 222 |
| 24 | 135 | 152 | 158 | 164 | 976 | 464 | 317 | 278 | 172 | 191 | 220 | 215 |
| 25 | 162 | 144 | 136 | 128 | 1,030 | 379 | 352 | 281 | 184 | 194 | | 207 |
| 26 | 116 | 143 | 199 | 141 | 1,070 | 383 | 340 | 255 | 173 | 179 | 250 | 154 |
| 27 | 168 | 116 | 174 | 145 | 1,060 | 377 | 358 | 224 | 175 | 198 | 232 | 61 |
| 28 | 189 | 150 | 155 | 172 | 978 | 450 | 323 | 226 | 177 | 217 | 207 | 203 |
| 29 | 181 | 151 | 196 | | | 558 | 296 | 228 | 188 | 209 | 192 | 202 |
| 30 | 187 | 127 | 149 | 150 | | 588 | 308 | 210 | 182 | 196 | 131 | 197 |
| 31 | 187 | | 135 | | | 583 | | 186 | | 191 | 218 | |

NOTE.—Discharge Jan. 29 to Feb. 7, Feb. 13, 14, and Aug. 22-25 estimated; gage-height record either faulty or missing.

*Monthly discharge of Owasco Lake outlet near Auburn, N. Y., for the year ending September 30, 1925*

[Drainage area, 206 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 189 | 107 | 142 | 0.689 | 0.79 |
| November | 182 | 110 | 152 | .738 | .82 |
| December | 199 | 124 | 156 | .757 | .87 |
| January | 172 | 118 | 148 | .718 | .83 |
| February | 1,070 | | 644 | 3.13 | 3.26 |
| March | 903 | 377 | 575 | 2.79 | 3.22 |
| April | 603 | 222 | 392 | 1.90 | 2.12 |
| May | 346 | 186 | 294 | 1.43 | 1.65 |
| June | 227 | 162 | 195 | .947 | 1.06 |
| July | 241 | 159 | 187 | .908 | 1.05 |
| August | 250 | 131 | 202 | .981 | 1.13 |
| September | 273 | 61 | 207 | 1.00 | 1.12 |
| The year | 1,070 | 61 | 272 | 1.32 | 17.92 |

### 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 below mouth of Alder Creek, and 8 miles southwest of Constableville.

DRAINAGE AREA.—75 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 18, 1923, to September 30, 1925.

GAGE.—Chain gage attached to downstream rail of right span near right abutment; read by Adolph F. Seelman.

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

CHANNEL AND CONTROL.—At gage stream is in two channels which join a short distance below. Bed of stream and control composed of gravel, small boulders, and some solid ledge; shifts within narrow limits.

EXTREMES OF DISCHARGE.—Maximum open-water stage during year ending September 30, 1924, about 5.0 feet (as determined from graph of plotted gage readings) at noon September 30 (discharge, 4,000 second-feet); minimum discharge, 21 second-feet at 11.30 a. m. October 18.

Maximum discharge recorded during year ending September 30, 1925, 1,860 second-feet at 7.25 a. m. October 1; minimum stage, 1.15 feet at 7 a. m. September 2 (discharge, 23 second-feet).

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

ACCURACY.—Records published below for the period October 18, 1923, to September 30, 1924, supersede records for that period published in preceding water-supply paper. Stage-discharge relation not permanent; seriously affected by ice. Four rating curves used as follows: October 18, 1923, to April 10, 1924, poorly defined; April 11, 1924, to February 24, 1925, fairly well defined between 20 and 2,500 second-feet; February 25 to July 22, 1925, fairly well defined between 35 and 1,600 second-feet; July 23 to September 30, 1925, fairly well defined between 40 and 2,000 second-feet. 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 the daily gage readings and averaging discharge for intervals of the day, except for periods of ice effect for which it was ascertained as indicated in footnote to tables of daily discharge. Open-water records generally good; winter records fair.

*Discharge measurements of East Branch of Fish Creek at Fish Creek, near Constableville, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Nov 11 | 1.51 | 47.0 | Apr. 15 | 3.52 | 1,290 | June 11 | 1.52 | 61.1 |
| Dec. 3 | *2.54 | 82.6 | May 3 | 2.59 | 433 | July 3 | 1.41 | 43.5 |
| Feb. 18 | *4.47 | 407 | May 7 | 2.38 | 326 | July 27 | 2.13 | 200 |
| Apr. 15 | 3.42 | 1,200 | June 6 | 1.45 | 50.5 | Sept. 8 | 1.47 | 48.2 |

* Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of East Branch of Fish Creek at Fish Creek, near Constableville, N. Y., for the period October 18, 1923, to September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1923–24** | | | | | | | | | | | | |
| 1 | ------- | 198 | 1,860 | 180 | 150 | 55 | 380 | 1,710 | 117 | 63 | 39 | 24 |
| 2 | ------- | 135 | 738 | 220 | 130 | 55 | 340 | 1,120 | 104 | 46 | 32 | 40 |
| 3 | ------- | 116 | 475 | 200 | 120 | 55 | 280 | 658 | 93 | 39 | 26 | 81 |
| 4 | ------- | 99 | 333 | 200 | 100 | 55 | 280 | 1,300 | 104 | 37 | 24 | 52 |
| 5 | ------- | 99 | 316 | 170 | 100 | 70 | 700 | 870 | 95 | 64 | 134 | 47 |
| 6 | ------- | 152 | 695 | 160 | 130 | 95 | 1,700 | 619 | 91 | 95 | 169 | 66 |
| 7 | ------- | 142 | 615 | 140 | 130 | 110 | 3,800 | 583 | 91 | 61 | 146 | 95 |
| 8 | ------- | 130 | 415 | 120 | 110 | 110 | 2,400 | 481 | 79 | 48 | 152 | 66 |
| 9 | ------- | 103 | 344 | 100 | 95 | 100 | 1,700 | 451 | 71 | 102 | 74 | 131 |
| 10 | ------- | 87 | 260 | 90 | 95 | 100 | 1,600 | 619 | 66 | 61 | 93 | 228 |
| 11 | ------- | 96 | 210 | 1,300 | 90 | 90 | 1,070 | 481 | 60 | 53 | 120 | 255 |
| 12 | ------- | 96 | 142 | 2,400 | 90 | 90 | 781 | 451 | 66 | 39 | 71 | 259 |
| 13 | ------- | 87 | 333 | 1,100 | 85 | 85 | 870 | 583 | 72 | 64 | 54 | 183 |
| 14 | ------- | 74 | 475 | 600 | 80 | 85 | 2,190 | 421 | 85 | 71 | 46 | 162 |
| 15 | ------- | 67 | 300 | 400 | 80 | 85 | 1,570 | 826 | 67 | 48 | 37 | 112 |
| 16 | ------- | 67 | 240 | 440 | 75 | 80 | 965 | 781 | 61 | 39 | 32 | 79 |
| 17 | ------- | 66 | 170 | 700 | 75 | 80 | 918 | 481 | 51 | 122 | 44 | 60 |
| 18 | 22 | 74 | 120 | 650 | 75 | 75 | 1,020 | 394 | 46 | 95 | 42 | 52 |
| 19 | 24 | 80 | 130 | 600 | 70 | 80 | 1,640 | 658 | 56 | 53 | 32 | 42 |
| 20 | 32 | 80 | 160 | 360 | 70 | 75 | 1,070 | 421 | 39 | 37 | 37 | 38 |
| 21 | 29 | 67 | 360 | 260 | 70 | 80 | 658 | 297 | 122 | 32 | 37 | 34 |
| 22 | 24 | 94 | 280 | 200 | 70 | 110 | 1,020 | 216 | 134 | 31 | 32 | 44 |
| 23 | 24 | 101 | 170 | 160 | 65 | 220 | 1,240 | 186 | 75 | 46 | 77 | 169 |
| 24 | 695 | 155 | 140 | 130 | 65 | 280 | 781 | 224 | 74 | 34 | 58 | 95 |
| 25 | 780 | 168 | 130 | 110 | 65 | 320 | 870 | 421 | 93 | 49 | 46 | 66 |
| 26 | 415 | 135 | 100 | 75 | 60 | 380 | 739 | 287 | 120 | 44 | 37 | 54 |
| 27 | 232 | 415 | 140 | 100 | 60 | 240 | 1,020 | 209 | 74 | 32 | 32 | 45 |
| 28 | 145 | 275 | 75 | 120 | 60 | 260 | 1,120 | 278 | 56 | 29 | 33 | 40 |
| 29 | 108 | 191 | 65 | 140 | 60 | 260 | 1,020 | 209 | 60 | 26 | 28 | 192 |
| 30 | 108 | 870 | 110 | 170 | ------- | 360 | 1,180 | 166 | 71 | 27 | 26 | 2,980 |
| 31 | 275 | ------- | 150 | 160 | ------- | 460 | ------- | 134 | ------- | 36 | 24 | ------- |
| **1924–25** | | | | | | | | | | | | |
| 1 | 1,430 | 53 | 100 | 55 | 46 | 400 | 416 | 580 | 81 | 68 | 80 | 24 |
| 2 | 739 | 54 | 90 | 55 | 44 | 340 | 337 | 580 | 98 | 58 | 82 | 24 |
| 3 | 394 | 49 | 85 | 55 | 42 | 300 | 445 | 416 | 88 | 46 | 56 | 30 |
| 4 | 259 | 42 | 80 | 55 | 44 | 260 | 510 | 375 | 74 | 44 | 45 | 30 |
| 5 | 179 | 44 | 70 | 55 | 44 | 240 | 478 | 510 | 71 | 42 | 38 | 27 |
| 6 | 146 | 44 | 110 | 60 | 42 | 220 | 445 | 416 | 65 | 40 | 38 | 27 |
| 7 | 122 | 42 | 180 | 65 | 42 | 220 | 580 | 343 | 51 | 40 | 50 | 74 |
| 8 | 107 | 51 | 360 | 55 | 48 | 240 | 785 | 298 | 40 | 46 | 40 | 50 |
| 9 | 102 | 53 | 1,000 | 55 | 60 | 280 | 740 | 252 | 49 | 36 | 46 | 40 |
| 10 | 97 | 49 | 420 | 50 | 140 | 320 | 740 | 216 | 59 | 116 | 421 | 37 |
| 11 | 83 | 46 | 240 | 55 | 500 | 580 | 740 | 283 | 56 | 62 | 162 | 35 |
| 12 | 74 | 49 | 160 | 55 | 1,400 | 880 | 1,270 | 265 | 46 | 56 | 90 | 92 |
| 13 | 64 | 48 | 120 | 55 | 900 | 740 | 700 | 200 | 39 | 42 | 77 | 261 |
| 14 | 61 | 77 | 90 | 55 | 650 | 740 | 785 | 162 | 36 | 34 | 96 | 481 |
| 15 | 61 | 87 | 85 | 60 | 550 | 930 | 1,210 | 134 | 44 | 30 | 62 | 212 |
| 16 | 61 | 69 | 85 | 55 | 480 | 1,100 | 930 | 124 | 172 | 35 | 48 | 697 |
| 17 | 58 | 42 | 90 | 55 | 440 | 580 | 620 | 332 | 101 | 80 | 41 | 451 |
| 18 | 54 | 30 | 80 | 55 | 420 | 416 | 580 | 283 | 68 | 62 | 37 | 244 |
| 19 | 56 | 32 | 80 | 50 | 380 | 660 | 660 | 193 | 45 | 49 | 33 | 175 |
| 20 | 52 | 36 | 80 | 50 | 320 | 1,040 | 545 | 143 | 41 | 38 | 32 | 120 |
| 21 | 51 | 55 | 75 | 50 | 360 | 930 | 510 | 122 | 38 | 34 | 32 | 197 |
| 22 | 52 | 320 | 70 | 55 | 600 | 830 | 620 | 109 | 44 | 785 | 31 | 125 |
| 23 | 49 | 965 | 65 | 50 | 1,200 | 740 | 930 | 114 | 42 | 421 | 30 | 92 |
| 24 | 51 | 451 | 60 | 55 | 2,200 | 660 | 1,270 | 129 | 37 | 193 | 27 | 74 |
| 25 | 48 | 278 | 60 | 50 | 1,400 | 830 | 1,270 | 112 | 114 | 98 | 26 | 96 |
| 26 | 49 | 224 | 60 | 50 | 1,000 | 1,040 | 1,150 | 101 | 179 | 186 | 26 | 80 |
| 27 | 46 | 150 | 60 | 50 | 550 | 1,150 | 1,040 | 92 | 105 | 204 | 26 | 62 |
| 28 | 46 | 130 | 60 | 48 | 420 | 1,540 | 660 | 81 | 119 | 120 | 25 | 316 |
| 29 | 44 | 110 | 55 | 46 | ------- | 880 | 445 | 92 | 109 | 96 | 25 | 219 |
| 30 | 44 | 100 | 55 | 42 | ------- | 660 | 386 | 94 | 86 | 67 | 25 | 122 |
| 31 | 46 | ------- | 55 | 46 | ------- | 510 | ------- | 81 | ------- | 54 | 25 | ------- |

NOTE.—Discharge Dec. 15, 1923, to Apr. 10, 1924, Nov. 17–22, 1924, and Nov. 27, 1924, to Mar. 10, 1925, determined from gage heights corrected for backwater from ice by means of four discharge measurements, observer's notes, weather records, and comparison with flow at station at Taberg.

*Monthly discharge of East Branch of Fish Creek at Fish Creek, near Constableville, N. Y., for the period October 18, 1923, to September 30, 1925*

[Drainage area, 75 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1923–24 | | | | | |
| October 18–31 | 780 | 22 | 208 | 2.77 | 1.44 |
| November | 870 | 66 | 151 | 2.01 | 2.24 |
| December | 1,860 | 65 | 324 | 4.32 | 4.98 |
| January | 2,400 | 75 | 379 | 5.05 | 5.82 |
| February | 150 | 60 | 87.1 | 1.16 | 1.25 |
| March | 460 | 55 | 148 | 1.97 | 2.27 |
| April | 3,800 | 280 | 1,160 | 15.47 | 17.26 |
| May | 1,710 | 134 | 533 | 7.11 | 8.20 |
| June | 134 | 39 | 79.8 | 1.06 | 1.18 |
| July | 122 | 26 | 52.4 | .699 | .81 |
| August | 169 | 24 | 59.2 | .789 | .91 |
| September | 2,980 | 24 | 193 | 2.57 | 2.87 |
| 1924–25 | | | | | |
| October | 1,430 | 44 | 152 | 2.03 | 2.34 |
| November | 965 | 30 | 126 | 1.68 | 1.87 |
| December | 1,000 | 55 | 138 | 1.84 | 2.12 |
| January | 65 | 42 | 53.1 | .708 | .82 |
| February | 2,200 | 42 | 512 | 6.83 | 7.11 |
| March | 1,540 | 220 | 653 | 8.71 | 10.04 |
| April | 1,270 | 337 | 727 | 9.69 | 10.81 |
| May | 580 | 81 | 233 | 3.11 | 3.58 |
| June | 179 | 36 | 73.2 | .976 | 1.09 |
| July | 785 | 30 | 106 | 1.41 | 1.63 |
| August | 421 | 25 | 60.4 | .805 | .93 |
| September | 697 | 24 | 150 | 2.00 | 2.23 |
| The year | 2,200 | 24 | 246 | 3.28 | 44.57 |

**EAST BRANCH OF FISH CREEK AT TABERG, N. Y.**

LOCATION.—At steel highway bridge in Taberg, Oneida County, just below mouth of Furnace Creek and 2¾ miles above confluence with West Branch.

DRAINAGE AREA.—188 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 1, 1923, to September 30, 1925.

GAGE.—Gurley 7-day graph water-stage recorder on downstream side of left bridge abutment; inspected by Alvin Thorn.

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

CHANNEL AND CONTROL.—Large and small boulders; shifting occasionally.

EXTREMES OF DISCHARGE.—Maximum stage during year ending September 30, 1924, from water-stage recorder, 8.2 feet at 11 p. m. April 6 (discharge, 12,600 second-feet); minimum stage from water-stage recorder, 0.12 foot at 10 p. m. September 26 (discharge, 20 second-feet).

Maximum stage during year ending September 30, 1925, from water-stage recorder, 5.5 feet at 12.01 a. m. on October 1 (discharge, 6,110 second-feet); minimum stage from water-stage recorder, 0.41 foot during afternoon of August 30 (discharge, 53 second-feet).

ICE.—Stage-discharge relation considerably affected by ice during extremely cold periods.

REGULATION.—During periods of extremely low water there is some diurnal fluctuations in flow caused presumably by operation of mills upstream.

ACCURACY.—Stage-discharge relation changed considerably during flood of April 6–7, 1924, September 30, 1924, and presumably on April 24, 1925.

Rating curve used October 1, 1923, to April 6, 1924, well defined between 20 and 2,000 second-feet; curve used April 7 to September 30, 1924, well defined between 50 and 2,000 second-feet; curve used October 1, 1924, to April 24, 1925, well defined between 100 and 2,000 second-feet; curve used April 25 to September 30, 1925, well defined between 50 and 2,000 second-feet; all curves extended above 2,000 second-feet on basis of subsequent curve which is defined up to 3,500 second-feet. Operation of water-stage recorder satisfactory during year ending September 30, 1924, except during extremely cold weather; unsatisfactory at times during year ending September 30, 1925. 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 day, except for periods of ice effect or of no record as indicated in footnote to daily-discharge table. Records generally good except those for periods of ice effect or of no record, which are fair.

*Discharge measurements of East Branch of Fish Creek at Taberg, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 13 | 0.88 | 171 | Mar. 25 | 3.18 | 1,890 | June 12 | 0.64 | 90.8 |
| Nov. 12 | .68 | 105 | Apr. 14 | 2.90 | 1,440 | June 21 | .64 | 86.1 |
| Dec. 4 | .96 | 180 | Apr. 22 | 2.65 | 1,200 | Aug. 20 | .54 | 73.6 |
| Jan. 28 | a1.53 | 163 | May 8 | 1.99 | 599 | | | |

a Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of East Branch of Fish Creek at Taberg, N. Y., for the years ending September 30, 1924 and 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1923–24 | | | | | | | | | | | | |
| 1 | 88 | 400 | 3,710 | 482 | | | 717 | 2,850 | 294 | 138 | 112 | 44 |
| 2 | 67 | 292 | 1,500 | 586 | | | 598 | 1,810 | 256 | 112 | 79 | 128 |
| 3 | 61 | 244 | 912 | 610 | | 150 | 517 | 1,170 | 238 | 95 | 60 | 253 |
| 4 | 67 | 219 | 628 | 509 | | | 651 | 2,000 | 305 | 86 | 52 | 140 |
| 5 | 80 | 219 | 830 | 388 | | | 1,230 | 1,520 | 378 | 80 | 142 | 100 |
| 6 | 80 | 336 | 1,340 | 311 | | 257 | 5,610 | 1,290 | 282 | 152 | 246 | 326 |
| 7 | 69 | 338 | 1,350 | 268 | | 271 | 8,430 | 1,170 | 294 | 116 | 324 | 434 |
| 8 | 62 | 342 | 796 | 235 | | 260 | 3,980 | 902 | 256 | 102 | 314 | 206 |
| 9 | 57 | 249 | 646 | 205 | | 260 | 2,620 | 913 | 246 | 159 | 167 | 467 |
| 10 | 57 | 211 | 509 | 180 | | 235 | 2,540 | 1,360 | 207 | 151 | 148 | 644 |
| 11 | 60 | 211 | 482 | 3,020 | | 231 | 2,120 | 1,030 | 182 | 120 | 228 | 466 |
| 12 | 60 | 208 | 384 | 4,340 | | 260 | 1,520 | 1,010 | 191 | 89 | 143 | 450 |
| 13 | 57 | 184 | 617 | 2,510 | | 255 | 1,750 | 1,190 | 200 | 148 | 133 | 396 |
| 14 | 55 | 170 | 1,030 | 1,580 | | 250 | 4,650 | 902 | 224 | 214 | 154 | 378 |
| 15 | 57 | 160 | 550 | 1,120 | 240 | 219 | 3,490 | 1,520 | 188 | 122 | 98 | 270 |
| 16 | 64 | 154 | 420 | 920 | | 225 | 2,290 | 1,580 | 165 | 95 | 72 | 185 |
| 17 | 54 | 147 | 346 | 1,580 | | 208 | 1,900 | 942 | 146 | 263 | 71 | 154 |
| 18 | 53 | 194 | 196 | 1,310 | | 200 | 2,490 | 809 | 132 | 290 | 89 | 110 |
| 19 | 57 | 232 | 208 | 920 | | 192 | 3,490 | 1,300 | 123 | 165 | 72 | 105 |
| 20 | 83 | 160 | 303 | 705 | | 194 | 2,120 | 812 | 112 | 112 | 65 | 79 |
| 21 | 86 | 156 | 761 | | | 222 | 1,350 | 595 | 267 | 82 | 74 | 74 |
| 22 | 74 | 192 | 604 | | | 327 | 2,220 | 483 | 382 | 76 | 66 | 124 |
| 23 | 68 | 217 | 455 | | | 520 | 2,650 | 410 | 262 | 93 | 164 | 322 |
| 24 | 1,510 | 364 | 334 | | | 755 | 1,690 | 405 | 224 | 84 | 138 | 213 |
| 25 | 1,520 | 384 | 285 | | | 822 | 1,580 | 796 | 194 | 96 | 154 | 141 |
| 26 | 771 | 280 | 244 | 400 | | 768 | 1,370 | 677 | 263 | 120 | 137 | 117 |
| 27 | 451 | 775 | 260 | | | 704 | 1,580 | 511 | 185 | 82 | 92 | 87 |
| 28 | 292 | 598 | 190 | | | 851 | 1,750 | 698 | 138 | 65 | 106 | 77 |
| 29 | 219 | 388 | 154 | | | 882 | 1,640 | 638 | 120 | 58 | 87 | 889 |
| 30 | 217 | 2,980 | 222 | | | 1,090 | 1,580 | 450 | 146 | 62 | 52 | 8,040 |
| 31 | 523 | | 271 | | | 936 | | 364 | | 93 | 50 | |

*Daily discharge, in second-feet, of East Branch of Fish Creek at Taberg, N. Y., for the years ending September 30, 1924 and 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1924–25 | | | | | | | | | | | | |
| 1 | 3,680 | 127 | 180 | 140 | 140 | 928 | 1,020 | 1,170 | 210 | 200 | 179 | 55 |
| 2 | 1,480 | 134 | 180 | 140 | 150 | 819 | 896 | 1,100 | 235 | 156 | 232 | 55 |
| 3 | 864 | 115 | 170 | 140 | 140 | 714 | 1,000 | 872 | 221 | 129 | 146 | 75 |
| 4 | 572 | 111 | 170 | 140 | 140 | 665 | 1,110 | 775 | 165 | 112 | 106 | 75 |
| 5 | 435 | 107 | 130 | 150 | 140 | 630 | 1,190 | 1,040 | 159 | 134 | 91 | 70 |
| 6 | 355 | 104 | 319 | 170 | 150 | 591 | 1,060 | 768 | 136 | 106 | 84 | 69 |
| 7 | 302 | 107 | 523 | 170 | 160 | 591 | 1,220 | 753 | 106 | 104 | 162 | 220 |
| 8 | 282 | 113 | 1,020 | 170 | 180 | 665 | 1,470 | 625 | 91 | 104 | 110 | 130 |
| 9 | 247 | 125 | 1,880 | 170 | 200 | 777 | 1,380 | 529 | 84 | 91 | 403 | 100 |
| 10 | 225 | 120 | 949 | 170 | 440 | 856 | 1,500 | 440 | 106 | 296 | 1,340 | 90 |
| 11 | 197 | 111 | 500 | 170 | 1,200 | 1,710 | 1,360 | 534 | 104 | 194 | 484 | 90 |
| 12 | 182 | 111 | 340 | 160 | 3,000 | 2,160 | 1,780 | 553 | 89 | 148 | 252 | 200 |
| 13 | 163 | 115 | 240 | 160 | 2,100 | 1,600 | 1,490 | 420 | 79 | 112 | 242 | 553 |
| 14 | 152 | 189 | 190 | 160 | 1,600 | 1,960 | 1,710 | 355 | 82 | 84 | 286 | 1,300 |
| 15 | 147 | 222 | 180 | 150 | 1,300 | 2,060 | 2,160 | 314 | 98 | 71 | 182 | 650 |
| 16 | 139 | 191 | 180 | 150 | 1,100 | 1,500 | 1,860 | 274 | 529 | 120 | 132 | 2,000 |
| 17 | 137 | 100 | 200 | 160 | 1,000 | 1,190 | 1,250 | 483 | 277 | 200 | 104 | 1,200 |
| 18 | 134 | 65 | 170 | 150 | 900 | 1,060 | 1,110 | 565 | 182 | 148 | 89 | 650 |
| 19 | 132 | 75 | 160 | 150 | 800 | 2,520 | 1,500 | 382 | 132 | 120 | 77 | 450 |
| 20 | 129 | 80 | 170 | 150 | 700 | 2,370 | 1,500 | 302 | 98 | 93 | 71 | 224 |
| 21 | 120 | 130 | 160 | 170 | 665 | 1,970 | 1,220 | 263 | 91 | 80 | 70 | 500 |
| 22 | 117 | 1,110 | 150 | 180 | 1,010 | 2,040 | 1,300 | 242 | 89 | 1,480 | 68 | 340 |
| 23 | 115 | 2,310 | 150 | 160 | 2,440 | 1,450 | 1,620 | 310 | 96 | 968 | 66 | 260 |
| 24 | 115 | 1,160 | 150 | 140 | 4,270 | 1,310 | 1,900 | 298 | 80 | 420 | 64 | 220 |
| 25 | 113 | 706 | 140 | 180 | 2,840 | 1,780 | 1,690 | 260 | 430 | 242 | 62 | 260 |
| 26 | 109 | 472 | 150 | 160 | 2,120 | 1,910 | 1,690 | 235 | 448 | 255 | 60 | 220 |
| 27 | 107 | 320 | 150 | 170 | 1,030 | 2,630 | 1,390 | 210 | 294 | 360 | 57 | 176 |
| 28 | 104 | 260 | 150 | 170 | 936 | 2,990 | 1,010 | 191 | 410 | 242 | 55 | 800 |
| 29 | 102 | 220 | 150 | 160 | ------- | 1,820 | 753 | 204 | 435 | 207 | 55 | 550 |
| 30 | 100 | 190 | 150 | 150 | ------- | 1,420 | 722 | 228 | 274 | 156 | 53 | 340 |
| 31 | 100 | ------- | 140 | 150 | ------- | 1,200 | ------- | 185 | ------- | 122 | 55 | ------ |

NOTE.—Records in the above table for the year ending September 30, 1924, supersede those published in Water-Supply Paper 584. Discharge Nov 17-21, Nov. 27 to Dec. 5, Dec. 11, 1924, to Feb. 12, 1925, determined from gage heights corrected for ice effect on basis of 1 discharge measurement, weather records, and studies of comparative flow. Staff gage readings used Oct. 1-5, 1923, when recorder did not operate. Discharge estimated for the following periods on basis of fragmentary gage-height graph, occasional staff gage readings, and studies of comparative flow, owing to unsatisfactory operation of recorder: Oct. 6, Dec. 26, 27, 1923; Jan. 4 to Mar. 6, Apr. 22, Nov. 19, 20, 1924; Feb. 14-21 and Aug. 21 to Sept. 30, 1925. Braced figures show mean discharge for periods indicated.

*Monthly discharge of East Branch of Fish Creek at Taberg, N. Y., for the years ending September 30, 1924 and 1925*

[Drainage area, 188 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1923–24 | | | | | |
| October | 1,520 | 53 | 226 | 1.20 | 1.38 |
| November | 2,980 | 147 | 367 | 1.95 | 2.18 |
| December | 3,710 | 154 | 662 | 3.52 | 4.06 |
| January | 4,340 | 180 | 844 | 4.49 | 5.18 |
| February | ---------- | ---------- | 240 | 1.28 | 1.38 |
| March | 1,090 | ---------- | 392 | 2.09 | 2.41 |
| April | 8,430 | 517 | 2,340 | 12.45 | 13.89 |
| May | 2,850 | 364 | 1,040 | 5.53 | 6.38 |
| June | 382 | 112 | 220 | 1.17 | 1.30 |
| July | 290 | 58 | 120 | .638 | .74 |
| August | 324 | 50 | 125 | .665 | .77 |
| September | 8,040 | 44 | 514 | 2.73 | 3.05 |
| The year | 8,430 | 44 | 589 | 3.13 | 42.72 |

*Monthly discharge of East Branch of Fish Creek at Taberg, N. Y., for the years ending September 30, 1924 and 1925*—Continued

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1924–25 | | | | | |
| October | 3,680 | 100 | 360 | 1.91 | 2.20 |
| November | 2,310 | 65 | 310 | 1.65 | 1.84 |
| December | 1,880 | 130 | 306 | 1.63 | 1.88 |
| January | 180 | 140 | 158 | .840 | .97 |
| February | 4,270 | 140 | 1,100 | 5.85 | 6.09 |
| March | 2,990 | 591 | 1,480 | 7.87 | 9.07 |
| April | 2,160 | 722 | 1,360 | 7.23 | 8.07 |
| May | 1,170 | 185 | 480 | 2.55 | 2.94 |
| June | 529 | 79 | 194 | 1.03 | 1.15 |
| July | 1,480 | 71 | 234 | 1.24 | 1.43 |
| August | 1,340 | 53 | 175 | .931 | 1.07 |
| September | 2,000 | 55 | 397 | 2.11 | 2.35 |
| The year | 4,270 | 53 | 542 | 2.88 | 39.06 |

NOTE.—Records for the year ending Sept. 30, 1924, supersede those published in Water-Supply Paper 584.

### BLACK RIVER NEAR BOONVILLE, N. Y.

LOCATION.—At highway bridge 1 mile above mouth of Sugar River, 2 miles northeast of Boonville, Oneida County, and 2 miles below Hawkinsville.

DRAINAGE AREA.—303 square miles (measured on topographic maps).

RECORDS AVAILABLE.—February 16, 1911, to September 30, 1925.

GAGE.—Chain near center of left span, downstream side of bridge; staff gage on right abutment used for high-water readings; read by W. D. Charbonneau.

DISCHARGE MEASUREMENTS.—Made from a cable half a mile above gage or by wading.

CHANNEL AND CONTROL.—Rough and full of boulders; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.5 feet at 8 a. m. October 1 (discharge, 4,820 second-feet); minimum stage, 3.25 feet at 5 p. m. August 28 (discharge, 46 second-feet).

1911–1925: Maximum stage (determined by leveling from floodmark), 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).

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

REGULATION.—State pond at Forestport, about 8 miles upstream, impounds 13,068,000 cubic feet; State dam about 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.

DIVERSIONS.—Water is diverted at Forestport during the navigation season and to a lesser extent during the remainder of the year through the Forestport feeder, flowing west to a basin in Boonville. Black River Canal flows north from this basin and enters 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, passes out of the Black River Basin and enters the summit level of the Erie Canal (Barge Canal) at Rome.

A continuous record of the amount of diversion through the Forestport feeder from the 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.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined between 35 and 2,800 second-feet and fairly well defined between 2,800 and 4,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good, except during period of ice effect, for which they are fair.

*Discharge measurements of Black River near Boonville, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Jan. 29 | [a] 4.72 | 218 | June 11 | 4.25 | 193 |
| Mar. 24 | 6.60 | 1,400 | Sept. 6 | 3.31 | 47.5 |
| June 6 | 4.90 | 404 | | | |

[a] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Black River near Boonville, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4,680 | 97 | 380 | 260 | 200 | 1,210 | 2,050 | 1,370 | 352 | 450 | 275 | 50 |
| 2 | 4,410 | 90 | 360 | 260 | 200 | 1,060 | 1,740 | 1,370 | 370 | 410 | 227 | 51 |
| 3 | 4,140 | 84 | 340 | 260 | 190 | 920 | 1,640 | 1,370 | 352 | 370 | 205 | 56 |
| 4 | 3,360 | 90 | 320 | 260 | 190 | 920 | 1,370 | 1,290 | 370 | 335 | 205 | 57 |
| 5 | 1,060 | 97 | 360 | 260 | 190 | 855 | 1,370 | 1,210 | 390 | 238 | 194 | 52 |
| 6 | 512 | 97 | 360 | 260 | 220 | 795 | 1,290 | 1,210 | 370 | 238 | 184 | 53 |
| 7 | 490 | 97 | 460 | 260 | 260 | 735 | 1,210 | 1,140 | 335 | 227 | 250 | 84 |
| 8 | 430 | 111 | 700 | 260 | 300 | 680 | 1,290 | 920 | 275 | 227 | 305 | 84 |
| 9 | 410 | 97 | 1,700 | 240 | 360 | 680 | 1,370 | 795 | 227 | 194 | 1,210 | 84 |
| 10 | 430 | 90 | 1,400 | 240 | 700 | 735 | 1,370 | 630 | 205 | 275 | 1,060 | 72 |
| 11 | 370 | 84 | 1,200 | 240 | 1,600 | 795 | 1,460 | 730 | 205 | 305 | 795 | 63 |
| 12 | 335 | 84 | 1,100 | 240 | 3,200 | 855 | 1,540 | 680 | 184 | 275 | 680 | 72 |
| 13 | 238 | 90 | 900 | 240 | 3,360 | 920 | 1,640 | 680 | 164 | 216 | 390 | 184 |
| 14 | 216 | 97 | 600 | 240 | 2,860 | 1,540 | 1,640 | 580 | 145 | 194 | 370 | 990 |
| 15 | 205 | 97 | 480 | 240 | 2,620 | 1,540 | 2,270 | 490 | 154 | 184 | 335 | 920 |
| 16 | 205 | 95 | 420 | 240 | 1,640 | 1,540 | 2,160 | 450 | 335 | 174 | 305 | 1,140 |
| 17 | 184 | 80 | 400 | 240 | 1,210 | 1,640 | 2,050 | 490 | 450 | 470 | 238 | 920 |
| 18 | 174 | 70 | 360 | 240 | 920 | 1,740 | 1,740 | 735 | 305 | 490 | 194 | 630 |
| 19 | 184 | 70 | 360 | 240 | 795 | 2,380 | 1,740 | 512 | 250 | 390 | 145 | 490 |
| 20 | 184 | 70 | 340 | 220 | 795 | 2,620 | 1,540 | 470 | 216 | 305 | 136 | 335 |
| 21 | 184 | 95 | 340 | 220 | 735 | 2,160 | 1,370 | 490 | 184 | 390 | 111 | 250 |
| 22 | 184 | 170 | 320 | 220 | 920 | 2,160 | 1,540 | 450 | 145 | 1,370 | 97 | 275 |
| 23 | 184 | 750 | 320 | 220 | 1,060 | 1,740 | 1,840 | 430 | 136 | 2,620 | 111 | 275 |
| 24 | 184 | 1,000 | 300 | 220 | 2,500 | 1,460 | 1,940 | 450 | 136 | 1,460 | 72 | 250 |
| 25 | 145 | 900 | 300 | 220 | 3,240 | 1,290 | 2,050 | 410 | 205 | 1,060 | 63 | 262 |
| 26 | 111 | 850 | 280 | 220 | 2,860 | 1,740 | 2,050 | 410 | 490 | 920 | 56 | 390 |
| 27 | 111 | 800 | 280 | 220 | 2,500 | 2,380 | 1,940 | 370 | 490 | 795 | 51 | 580 |
| 28 | 104 | 700 | 280 | 220 | 2,380 | 3,360 | 1,740 | 335 | 470 | 680 | 47 | 410 |
| 29 | 111 | 600 | 260 | 220 | ------ | 2,620 | 1,210 | 305 | 735 | 680 | 51 | 370 |
| 30 | 104 | 480 | 260 | 200 | ------ | 2,270 | 1,140 | 320 | 605 | 430 | 51 | 320 |
| 31 | 97 | ------ | 260 | 200 | ------ | 2,380 | ------ | 335 | ------ | 352 | 55 | ------ |

NOTE.—Discharge Nov. 16 to Feb. 12 determined from gage heights corrected for ice effect from one discharge measurement, study of gage-height graph, weather records, and by comparison with adjusted record of Moose River at McKeever.

*Monthly discharge of Black River near Boonville, N. Y., for the year ending September 30, 1925*

[Drainage area, 303 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 4,680 | 97 | 765 | 2.52 | 2.90 |
| November | 1,000 | 70 | 271 | .894 | 1.00 |
| December | 1,700 | 260 | 508 | 1.68 | 1.94 |
| January | 260 | 200 | 236 | .779 | .90 |
| Feburary | 3,360 | 190 | 1,360 | 4.49 | 5.68 |
| March | 3,360 | 680 | 1,540 | 5.08 | 5.86 |
| April | 2,270 | 1,140 | 1,640 | 5.41 | 6.04 |
| May | 1,370 | 305 | 691 | 2.28 | 2.63 |
| June | 735 | 136 | 308 | 1.02 | 1.14 |
| July | 2,620 | 174 | 539 | 1.78 | 2.05 |
| August | 1,210 | 47 | 273 | .901 | 1.04 |
| September | 1,140 | 50 | 326 | 1.08 | 1.20 |
| The year | 4,680 | 47 | 700 | 2.31 | 31.38 |

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 the mouth. No important tributary enters the river below this point.

DRAINAGE AREA.—1,890 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 18, 1920, to September 30, 1925.

GAGE.—Gurley 7-day graph water-stage recorder on downstream side of right bridge abutment; inspected by employees of Black River Regulating District.

DISCHARGE MEASUREMENTS.—Made from cable about 150 feet below gage.

CHANNEL AND CONTROL.—Largely of solid rock; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 6.63 feet at 1 p. m. October 3 (discharge, 15,300 second-feet); minimum stage, 0.69 foot at 9 a. m. August 31 (discharge, 378 second-feet).

1920–1925: Maximum stage recorded, 9.45 feet (staff gage reading) at 6 p. m. April 13, 1922 (discharge, 26,200 second-feet); minimum stage, 0.30 foot from 1 to 5 a. m. August 6, 1923 (discharge, 155 second-feet).

ICE.—Stage-discharge relation affected by ice for short periods only during extremely cold weather.

REGULATION.—Seasonal distribution of flow is regulated by Stillwater Dam, Fulton Chain Lakes, Forestport Reservoir, and other storage reservoirs in the upper part of the drainage basin. During medium and low-water periods there is considerable diurnal fluctuation in flow, caused by mills and power plants at Watertown and above.

DIVERSIONS.—Water is diverted from Black River into the Forestport feeder at Forestport. A part of this water returns to the river through various spillways and through the Black River Canal (flowing north); the rest passes out of the drainage basin through the Black River Canal (flowing south). The record at the station on Black River Canal (flowing south) near Boonville indicates the amount of this diversion. See also "Regulation" and "Diversions" in description of station on Black River near Boonville.

ACCURACY.—Stage-discharge relation practically permanent except as affected by ice. Rating curve well defined between 200 and 25,000 second-feet. Operation of water-stage recorder generally satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of gage-height graph or, for days of considerable fluctuation, by averaging discharge for intervals of day. Records excellent, except during periods of ice effect and estimate, for which they are fair.

*Discharge measurements of Black River at Watertown, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Feb. 3 | [a] 1.81 | 1,130 | July 25 | 3.63 | 5,430 |
| Mar. 26 | 4.86 | 8,900 | Sept. 7 | .91 | 579 |

[a] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Black River at Watertown, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10,600 | 1,580 | 1,930 | 2,280 | 650 | | 12,000 | 7,570 | 2,470 | 2,510 | 2,360 | 1,210 |
| 2 | 12,000 | 1,420 | 2,220 | 2,070 | 1,100 | | 10,600 | 6,980 | 2,570 | 2,330 | 1,780 | 1,190 |
| 3 | 15,200 | 1,100 | 2,220 | 1,460 | 1,100 | | 9,610 | 6,980 | 2,860 | 1,830 | 2,010 | 1,290 |
| 4 | 13,600 | 1,480 | 2,300 | 1,680 | 1,000 | 6,500 | 8,330 | 7,420 | 2,760 | 1,410 | 1,960 | 1,120 |
| 5 | 10,600 | 1,680 | 2,050 | 1,600 | 1,000 | | 7,570 | 7,280 | 2,860 | 1,200 | 2,020 | 971 |
| 6 | 8,330 | 1,320 | 2,010 | 1,720 | 1,200 | | 7,280 | 7,130 | 2,760 | 1,530 | 2,000 | 862 |
| 7 | 6,140 | 1,400 | 3,060 | 1,970 | 1,400 | 4,980 | 6,840 | 6,980 | 2,190 | 1,540 | 1,900 | 953 |
| 8 | 4,730 | 1,340 | 3,580 | 1,840 | 1,300 | 4,490 | 6,420 | 6,840 | 2,130 | 1,630 | 1,990 | 1,740 |
| 9 | 3,910 | 1,200 | 5,490 | 1,830 | 1,500 | 4,860 | 6,280 | 6,280 | 1,740 | 1,510 | 1,880 | 1,340 |
| 10 | 3,580 | 986 | 6,140 | 1,670 | 2,940 | 5,360 | 6,140 | 5,620 | 1,970 | 1,530 | 2,270 | 1,560 |
| 11 | 3,060 | 1,440 | 5,880 | 1,720 | 5,740 | 8,020 | 6,010 | 5,100 | 1,550 | 1,510 | 4,250 | 1,320 |
| 12 | 2,660 | 1,270 | 4,610 | 1,750 | 11,600 | 8,960 | 6,140 | 4,730 | 1,700 | 1,470 | 4,370 | 1,240 |
| 13 | 2,570 | 1,310 | 3,480 | 1,460 | 10,300 | 8,960 | 6,560 | 4,730 | 1,440 | 1,860 | 3,660 | 1,550 |
| 14 | 2,390 | 1,600 | 2,560 | 1,860 | 11,300 | 9,610 | 7,570 | 4,490 | 1,140 | 1,810 | 2,880 | 3,140 |
| 15 | 2,320 | 1,580 | 2,940 | 1,880 | 12,000 | 10,600 | 8,640 | 3,690 | 1,270 | 1,580 | 2,390 | 4,370 |
| 16 | 2,080 | 1,110 | 3,220 | 1,510 | 11,300 | 11,000 | 9,610 | 3,580 | 1,400 | 1,220 | 2,030 | 5,100 |
| 17 | 1,970 | 1,010 | 2,860 | 1,600 | 9,940 | 10,600 | 10,600 | 2,820 | 1,810 | 1,480 | 1,790 | 5,490 |
| 18 | 2,060 | 1,390 | 2,760 | 1,800 | 8,330 | 9,610 | 11,000 | 3,510 | 2,450 | 2,340 | 1,880 | 5,490 |
| 19 | 1,610 | 1,280 | 2,860 | 1,700 | 6,840 | 10,600 | 10,300 | 3,690 | 2,150 | 2,030 | 1,880 | 4,860 |
| 20 | 1,680 | 1,410 | 2,960 | 1,600 | 5,880 | 11,600 | 9,610 | 3,370 | 1,580 | 2,160 | 1,500 | 3,800 |
| 21 | 1,650 | 1,330 | 3,190 | 1,500 | 5,490 | 11,600 | 9,280 | 3,160 | 980 | 2,060 | 1,520 | 3,090 |
| 22 | 1,780 | 1,670 | 3,000 | 1,200 | 6,840 | 12,000 | 9,610 | 2,860 | 1,880 | 2,010 | 1,380 | 2,970 |
| 23 | 1,570 | 5,160 | 2,480 | 1,400 | 9,280 | 11,600 | 9,940 | 2,520 | 1,220 | 3,740 | 1,000 | 2,660 |
| 24 | 1,360 | 6,140 | 2,270 | 1,400 | 12,000 | 10,600 | 9,940 | 2,250 | 1,390 | 5,750 | 1,150 | 2,440 |
| 25 | 1,490 | 6,140 | 1,970 | 950 | 12,000 | 9,610 | 10,300 | 2,620 | 1,630 | 5,300 | 1,460 | 2,080 |
| 26 | 1,270 | 5,230 | 2,890 | 1,000 | 13,200 | 8,960 | 9,610 | 2,570 | 1,660 | 4,400 | 1,380 | 2,040 |
| 27 | 1,170 | 4,150 | 2,710 | 1,400 | 11,600 | 8,640 | 9,940 | 2,760 | 1,800 | 3,890 | 1,250 | 1,900 |
| 28 | 1,230 | 3,160 | 2,470 | 1,300 | 11,000 | 9,940 | 9,610 | 2,660 | 1,920 | 3,860 | 1,340 | 1,600 |
| 29 | 1,400 | 2,860 | 2,220 | 1,300 | ------- | 11,600 | 8,960 | 2,570 | 2,660 | 3,800 | 1,260 | 2,140 |
| 30 | 1,260 | 2,140 | 1,880 | 1,000 | ------- | 14,000 | 8,330 | 2,470 | 2,520 | 3,260 | 1,070 | 2,690 |
| 31 | 1,400 | ------- | 2,060 | 1,200 | ------- | 13,600 | ------- | 1,920 | ------- | 3,040 | 958 | ------ |

NOTE.—Discharge Mar. 1-7, July 5, 23, 24, Sept. 20, and 26-28, estimated; gage-height record either faulty or missing. Discharge Jan. 17 to Feb. 9 determined from gage heights corrected for ice effect from one discharge measurement and study of gage-height graph and weather records.

*Monthly discharge of Black River at Watertown, N. Y., for the year ending September 30, 1925*

[Drainage area, 1,890 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 15,200 | 1,170 | 4,090 | 2.16 | 2.49 |
| November | 6,140 | 986 | 2,160 | 1.14 | 1.27 |
| December | 6,140 | 1,880 | 2,980 | 1.58 | 1.82 |
| January | 2,280 | 950 | 1,570 | .831 | .96 |
| February | 13,200 | 650 | 6,710 | 3.55 | 3.70 |
| March | 14,000 | 4,490 | 9,050 | 4.79 | 5.52 |
| April | 12,000 | 6,010 | 8,750 | 4.63 | 5.17 |
| May | 7,570 | 1,920 | 4,420 | 2.34 | 2.70 |
| June | 2,860 | 980 | 1,920 | 1.02 | 1.14 |
| July | 5,750 | 1,200 | 2,440 | 1.29 | 1.49 |
| August | 4,370 | 958 | 1,950 | 1.03 | 1.19 |
| September | 5,490 | 862 | 2,410 | 1.28 | 1.43 |
| The year | 15,200 | 650 | 4,020 | 2.13 | 28.88 |

NOTE.—See "Regulation" and "Diversions" 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.—Occasional discharge measurements, 1900 and 1905–1915; continuous record during canal season, October 30, 1915, to September 30, 1925.

GAGES.—Two Gurley 7-day graph water-stage recorders with natural scale for gage heights, 2.53 miles apart. Gage No. 1 is at downstream end of left abutment of steel highway bridge in Hawkinsville; gage No. 2 is on left bank just below a farm bridge about a mile above the basin at Boonville. Recorders inspected by Fred Kesauer.

DISCHARGE MEASUREMENTS.—Made from the steel highway bridge at gage No. 1 in Hawkinsville.

DETERMINATION OF DISCHARGE.—Daily discharge determined by use of Chezy formula. The coefficient "C" is computed from each current meter measurement and is plotted on a curve showing the variation of "C" throughout the season. A smooth curve drawn as nearly as possible through the plotted points indicates the coefficients for intervening days. The other factors in the Chezy formula are obtained from gage-height records and cross section of the canal.

REGULATION.—Flow in the feeder is regulated at the outlet of Forestport Reservoir.

DIVERSIONS.—One spillway diverts water from the Forestport feeder just below gage No. 2, and a second spillway diverts water from the basin in Boonville. Both spillways discharge into Mill Creek, which enters Black River below Boonville gaging station. There is no spillway between gages Nos. 1 and 2. Other spillways in the feeder above gage No. 1 discharge into Black River above the 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 of Black River near Boonville indicates the total run-off of the Black River Basin above these stations.

ICE.—There is usually some flow in the canal during the winter season, and occasional current-meter measurements of the discharge have been made.

ACCURACY.—Operation of water-stage recorders satisfactory except as indicated in footnote to daily-discharge table. Records good except when either recorder is not in operation when estimates of missing gage heights are usually made by comparison with other record. Records for such periods, fair.

*Discharge measurements of Forestport feeder near Boonville, N. Y., during the year ending September 30, 1925*

| Date | Gage height in feet | | Discharge in second-feet | Date | Gage height in feet | | Discharge in second-feet |
|---|---|---|---|---|---|---|---|
| | Gage No. 1 | Gage No. 2 | | | Gage No. 1 | Gage No. 2 | |
| Nov. 12 | 6.91 | 5.94 | 119 | Sept. 5 | 7.50 | 6.48 | 151 |
| July 3 | 7.33 | 6.44 | 140 | Sept. 27 | 7.31 | 6.52 | 128 |
| July 27 | 7.57 | 6.72 | 142 | | | | |

*Daily discharge, in second-feet, of Forestport feeder near Boonville, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | June | July | Aug. | Sept. | Day | Oct. | Nov. | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 177 | 160 | ------- | 140 | 167 | 151 | 16 | 159 | 116 | | 133 | 173 | 203 |
| 2 | 157 | 153 | ------- | 140 | 167 | 149 | 17 | 164 | | | 141 | 167 | 162 |
| 3 | 175 | 153 | ------- | 139 | 164 | 149 | 18 | 164 | | | 136 | 162 | 156 |
| 4 | 162 | 152 | ------- | 137 | 163 | 149 | 19 | 163 | | | 132 | 160 | 166 |
| 5 | 166 | 159 | ------- | 139 | 162 | 150 | 20 | 175 | 130 | | 130 | 159 | 137 |
| 6 | 157 | 160 | ------- | 136 | 164 | 151 | 21 | 191 | | | 132 | 157 | 135 |
| 7 | 148 | 155 | ------- | 135 | 167 | 159 | 22 | 187 | | | 184 | 156 | 131 |
| 8 | 155 | 161 | ------- | 133 | 167 | 161 | 23 | 187 | 156 | 125 | 183 | 158 | 129 |
| 9 | 169 | 155 | ------- | 126 | 186 | 159 | 24 | 186 | 116 | | 149 | 157 | 129 |
| 10 | 170 | 156 | | 143 | 245 | 157 | 25 | 191 | 118 | | 145 | 156 | 129 |
| 11 | 168 | 141 | | 141 | 200 | 158 | 26 | 182 | 124 | | 142 | 155 | 129 |
| 12 | 163 | 119 | 125 | 136 | 183 | 160 | 27 | 175 | 139 | | 146 | 155 | 129 |
| 13 | 161 | 124 | | 123 | 178 | 184 | 28 | 191 | 128 | | 199 | 157 | 147 |
| 14 | 159 | 126 | | 127 | 183 | 208 | 29 | 190 | ------- | | 187 | 157 | 147 |
| 15 | 157 | 122 | | 125 | 178 | 201 | 30 | 165 | ------- | | 137 | 155 | 137 |
| | | | | | | | 31 | 107 | ------- | ------- | 156 | 153 | ------ |

NOTE.—Discharge Oct. 3, Nov. 17–22, 25–27, June 10 to July 3, July 15, 16, 20–25, Aug. 19, 22–29, and Sept. 27–30 partly or wholly estimated; incomplete gage-height record.

*Monthly discharge, in second-feet, of Forestport feeder near Boonville, N. Y., for the year ending September 30, 1925*

| Month | Maximum | Minimum | Mean | Month | Maximum | Minimum | Mean |
|---|---|---|---|---|---|---|---|
| October | 191 | 107 | 168 | July | 199 | 123 | 144 |
| November 1–28 | 161 | 116 | 138 | August | 245 | 153 | 168 |
| June 10–30 | ------- | ------- | 125 | September | 208 | 129 | 154 |

### BLACK RIVER CANAL (FLOWING SOUTH) NEAR BOONVILLE, N. Y.

LOCATION.—Slope station in summit level of Black River Canal (flowing south) near Boonville, Oneida County.

RECORDS AVAILABLE.—Occasional discharge measurements 1900 and 1905–1915; continuous record during canal season, September 16, 1915, to September 30, 1925.

GAGES.—Two Gurley 7-day graph water-stage recorders with natural scale for gage heights, 1.81 miles apart. Gage No. 1 is on right bank about 300 feet above steel and concrete highway bridge in Boonville. Gage No. 2 is on right bank about 1,000 feet above Lock 70 and 150 feet above spillway into Lansing Kill. These gages and the two gages on Forestport feeder near Boonville are set to the same datum. Recorders inspected by Fred Kesauer.

DISCHARGE MEASUREMENTS.—Made from highway bridge in Boonville just below gage No. 1.

DETERMINATION OF DISCHARGE.—Daily discharge determined by use of Chezy formula. The coefficient "C" is computed from each current meter measurement and plotted on a curve showing the variation of "C" throughout the season. A smooth curve drawn as nearly as possible through the plotted points indicates the coefficients for intervening days. The other factors in the Chezy formula are obtained from gage-height records and cross section of canal.

REGULATION.—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.

DIVERSIONS.—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.

ICE.—No flow in canal during winter.

ACCURACY.—Operation of water-stage recorders satisfactory except as indicated in footnote to daily-discharge table. Method of computation outlined above not fully applicable to conditions during canal season of 1925 on account of excessively small slope between gages 1 and 2. Much of discharge record during this period estimated from discharge measurements and from record of Forestport feeder. Records for October and November, 1924, fair; for June to September, 1925, poor.

*Discharge measurements of Black River Canal (flowing south) near Boonville, N. Y., during the year ending September 30, 1925*

| Date | Gage height in feet | | Discharge in second-feet | Date | Gage height in feet | | Discharge in second-feet |
|---|---|---|---|---|---|---|---|
| | Gage No. 1 | Gage No. 2 | | | Gage No. 1 | Gage No. 2 | |
| Nov. 12 | 5.66 | 5.56 | 63.5 | Sept. 5 | 6.27 | 6.27 | 43.3 |
| July 28 | 6.325 | 6.298 | 49.9 | Sept. 8 | 6.37 | 6.36 | 55.0 |
| July 29 | 6.34 | 6.24 | 75.1 | Sept. 27 | 6.36 | 6.36 | 33.4 |

*Daily discharge, in second-feet, of Black River Canal (flowing south) near Boonville, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | June | July | Aug. | Sept. | Day | Oct. | Nov. | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 122 | 93 | | | 41 | | 16 | 135 | 54 | | 44 | | 40 |
| 2 | 133 | 73 | | | 36 | | 17 | 136 | | | 44 | | |
| 3 | 139 | 100 | | | 36 | 40 | 18 | 133 | 65 | | 45 | | |
| 4 | 127 | 107 | | | 39 | | 19 | 130 | | | 44 | | |
| 5 | 127 | 107 | | | 35 | | 20 | 127 | | | 43 | | |
| 6 | 117 | 110 | | | 34 | 45 | 21 | 119 | 73 | | 47 | | |
| 7 | 129 | 109 | | 40 | 35 | 45 | 21 | 119 | 66 | | 79 | | |
| 8 | 136 | 107 | | | 34 | 50 | 23 | 122 | 96 | 35 | 91 | 40 | 35 |
| 9 | 134 | 109 | | | 58 | | 24 | 120 | 56 | | 68 | | |
| 10 | 135 | 101 | | | 75 | 40 | 25 | 123 | 61 | | 55 | | |
| 11 | 135 | 87 | | | 50 | | 26 | 121 | 51 | | 47 | | |
| 12 | 132 | 53 | 35 | | 32 | 29 | 27 | 113 | 57 | | 63 | | |
| 13 | 130 | 57 | | | 40 | 37 | 28 | 118 | 54 | | 80 | | |
| 14 | 130 | 67 | | | 40 | 42 | 29 | 119 | | | 60 | | |
| 15 | 130 | 63 | | 40 | | 29 | 30 | 117 | | | 30 | | |
| | | | | | | | 31 | 79 | | | 35 | | |

NOTE.—Discharge estimated from hydrograph or otherwise Nov. 17–21, June 10 to July 14, July 26, 27, 30, 31, Aug. 11, Aug. 14 to Sept. 11, and Sept. 17–30; gage-height record either incomplete or slope between gages 1 and 2 too small to apply the usual method of computing discharge.

*Monthly discharge, in second-feet, of Black River Canal (flowing south) near Boonville, N. Y., for the year ending September 30, 1925*

| Month | Maximum | Minimum | Mean | Month | Maximum | Minimum | Mean |
|---|---|---|---|---|---|---|---|
| October | 139 | 79 | 125 | July | 91 | 30 | 47.6 |
| November 1–28 | 110 | 51 | 77.2 | August | 75 | 32 | 40.8 |
| June 10–30 | | | 35.0 | September | 50 | 29 | 37.6 |

### MOOSE RIVER AT McKEEVER, N. Y.

LOCATION.—Half a mile below dam of Iroquois Pulp & Paper Co. at McKeever, Herkimer County, 2 miles below mouth of South Branch of Moose River, and 16 miles above junction of Black and Moose Rivers at Lyons Falls.

DRAINAGE AREA.—366 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 28, 1922, to September 30, 1925.

GAGE.—Gurley 7-day graph water-stage recorder on left bank; inspected by R. D. Nash.

DISCHARGE MEASUREMENTS.—Made from cable about 250 feet above gage or by wading.

CHANNEL AND CONTROL.—Primary control consists principally of coarse gravel and boulders; secondary control, operative at high stages, is of rock. Primary control practically permanent under normal river conditions. Section at gage and cable very smooth and uniform.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 11.53 feet at 10 a. m. October 1 (discharge, 8,340 second-feet); minimum stage, 1.37 feet at 3 a. m. September 2 (discharge, 64 second-feet).

1922–1925: Maximum stage recorded, 12.9 feet at about 10 p. m. June 22, 1922 (discharge, about 10,000 second-feet); minimum stage, that of September 2, 1925.

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

REGULATION.—Flow regulated to a considerable extent for short periods at dam of Iroquois Pulp & Paper Co., half a mile above. Seasonal distribution of flow affected by operation of State dam at Old Forge. This regulation is indicated by record from station, "Middle Branch of Moose River at Old Forge, N. Y."

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined between 100 and 6,000 second-feet. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of gage-height graph or, for days of considerable fluctuation, by averaging discharge for intervals of day. Records good, except for periods of ice effect, for which they are fair.

*Discharge measurements of Moose River at McKeever, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Feb. 20 | [a] 3.87 | 782 | Apr. 14 | 5.39 | 2,040 | July 28 | 4.46 | 1,370 |
| Mar. 25 | 4.70 | 1,540 | June 12 | 2.56 | 399 | Sept. 4 | 1.99 | 219 |

[a] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Moose River at McKeever, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7,030 | 336 | 434 | 400 | 320 | 1,700 | 2,120 | 2,410 | 598 | 485 | 593 | 227 |
| 2 | 3,460 | 340 | 398 | 400 | 340 | 1,400 | 1,910 | 2,360 | 676 | 434 | 476 | 82 |
| 3 | 2,230 | 328 | 390 | 400 | 340 | | 1,830 | 2,180 | 875 | 402 | 736 | 194 |
| 4 | 1,830 | 325 | 386 | 400 | 340 | | 1,750 | 1,730 | 726 | 213 | 664 | 210 |
| 5 | 1,540 | 317 | 418 | 400 | 340 | 1,000 | 1,740 | 2,030 | 654 | 282 | 541 | 191 |
| 6 | 1,280 | 313 | 378 | 400 | 340 | | 1,680 | 1,990 | 654 | 368 | 476 | 191 |
| 7 | 1,050 | 313 | 398 | 360 | 340 | | 1,540 | 1,720 | 452 | 332 | 563 | 204 |
| 8 | 975 | 313 | 451 | 260 | 340 | 800 | 1,500 | 1,540 | 565 | 310 | 631 | 237 |
| 9 | 794 | 310 | 1,360 | 420 | 360 | 900 | 1,640 | 1,400 | 442 | 292 | 523 | 258 |
| 10 | 800 | 306 | 1,580 | 400 | 440 | 950 | 1,830 | 1,150 | 386 | 356 | 826 | 255 |
| 11 | 726 | 302 | 1,040 | 340 | 1,200 | 1,400 | 1,950 | 1,250 | 386 | 632 | 1,070 | 230 |
| 12 | 654 | 266 | 775 | 400 | 3,400 | 2,190 | 2,360 | 1,400 | 382 | 410 | 800 | 248 |
| 13 | 599 | 244 | 701 | 360 | 4,000 | 1,950 | 2,290 | 1,220 | 374 | 466 | 654 | 458 |
| 14 | 554 | 244 | 550 | 340 | 3,000 | 1,890 | 2,230 | 1,050 | 223 | 328 | 608 | 1,840 |
| 15 | 519 | 244 | 500 | 340 | 2,600 | 2,230 | 2,990 | 925 | 336 | 298 | 599 | 1,210 |
| 16 | 493 | 244 | 480 | 340 | 2,000 | 1,990 | 3,700 | 875 | 423 | 276 | 465 | 1,040 |
| 17 | 485 | 241 | 460 | 340 | 1,700 | 1,720 | 2,950 | 646 | 498 | 558 | 519 | 1,580 |
| 18 | 468 | 217 | 440 | | 1,400 | 1,400 | 2,140 | 1,050 | 485 | 825 | 427 | 1,110 |
| 19 | 442 | 210 | 440 | | 1,100 | 1,750 | 2,080 | 950 | 386 | 511 | 422 | 900 |
| 20 | 430 | 217 | 420 | 340 | 850 | 2,310 | 1,950 | 750 | 328 | 564 | 367 | 661 |
| 21 | 406 | 213 | 420 | | 850 | 2,220 | 1,670 | 654 | 234 | 371 | 418 | 701 |
| 22 | 390 | 276 | 460 | | 750 | 2,150 | 1,640 | 631 | 344 | 772 | 442 | 750 |
| 23 | 382 | 1,480 | 420 | | 1,400 | 1,830 | 2,230 | 631 | 317 | 2,370 | 264 | 571 |
| 24 | 382 | 1,550 | 360 | 340 | 3,000 | 1,610 | 3,320 | 530 | 295 | 1,250 | 363 | 480 |
| 25 | 382 | 1,040 | 340 | | 3,200 | 1,640 | 3,400 | 726 | 306 | 875 | 332 | 485 |
| 26 | 378 | 826 | 380 | | 2,600 | 1,750 | 4,450 | 631 | 526 | 698 | 291 | 446 |
| 27 | 367 | 594 | 340 | 340 | 2,200 | 2,140 | 3,990 | 596 | 554 | 1,360 | 284 | 349 |
| 28 | 359 | 563 | | | 2,000 | 4,280 | 3,250 | 608 | 399 | 1,340 | 269 | 463 |
| 29 | 351 | 506 | 340 | | ------- | 3,360 | 2,700 | 503 | 678 | 1,050 | 258 | 616 |
| 30 | 347 | 482 | | | ------- | 2,750 | 2,240 | 537 | 599 | 925 | 173 | 562 |
| 31 | 344 | ------- | | 220 | ------- | 2,560 | ------- | 433 | ------- | 726 | 255 | ------- |

NOTE.—Discharge Dec. 28 to Jan. 2, 12, 15, 16, 18–31, Feb. 18, 19, Mar. 3–7, Aug. 7, 8, 23, and Sept. 5 estimated; gage-height record either faulty or missing. Discharge Dec. 14 to Mar. 11, except during periods indicated above, determined from gage heights corrected for ice effect, from one discharge measurement, study of gage-height graph and weather records, and by comparison with records for stations in adjacent drainage areas.

*Monthly discharge of Moose River at McKeever, N. Y., for the year ending September 30, 1925*

[Drainage area, 366 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 7,030 | 344 | 982 | 2.68 | 3.09 |
| November | 1,550 | 210 | 439 | 1.20 | 1.34 |
| December | 1,580 | ------ | 519 | 1.42 | 1.64 |
| January | 420 | 220 | 353 | .964 | 1.11 |
| February | 4,000 | 320 | 1,460 | 3.99 | 4.16 |
| March | 4,280 | 800 | 1,800 | 4.92 | 5.67 |
| April | 4,450 | 1,500 | 2,370 | 6.48 | 7.23 |
| May | 2,410 | 433 | 1,130 | 3.09 | 3.56 |
| June | 875 | 223 | 470 | 1.28 | 1.43 |
| July | 2,370 | 213 | 648 | 1.77 | 2.04 |
| August | 1,070 | 173 | 494 | 1.35 | 1.56 |
| September | 1,840 | 82 | 558 | 1.52 | 1.70 |
| The year | 7,030 | 82 | 931 | 2.54 | 34.53 |

NOTE.—See "Regulation" in station description.

### MIDDLE BRANCH OF MOOSE RIVER AT OLD FORGE, N. Y.

LOCATION.—300 feet below highway bridge and 400 feet below State dam at Old Forge, Herkimer County.

DRAINAGE AREA.—51.5 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 9, 1911, to September 30, 1925.

GAGE.—Vertical staff on left bank; read by Joseph Otis.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by w ading near gage

CHANNEL AND CONTROL.—Bed of stream near gage and low-water control consists of gravel. Main control is rock ledge 200 feet below gage; practically permanent when unobstructed.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.2 feet April 28–30 (discharge, 375 second-feet); minimum stage, 1.08 feet November 26 to December 12 (discharge, about 28 second-feet).

1911–1925: Maximum discharge, 862 second-feet March 23, 1921; minimum discharge, 16 second-feet several times in October and November, 1919.

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

REGULATION.—Discharge regulated by gates at dam.

ACCURACY.—Stage-discharge relation affected during almost entire year by varying amounts of backwater; use of shifting-control method necessary. Rating curve well defined above 20 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying to rating table mean daily gage height corrected when necessary for backwater effect. Records fair.

*Discharge measurements of Middle Branch of Moose River at Old Forge, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Dec. 4 | 1.08 | 28.2 | Mar. 25 | 2.54 | 208 | June 12 | 1.61 | 71.3 |
| Feb. 5 | 1.76 | 89.7 | Apr. 14 | 2.80 | 285 | July 28 | 1.67 | 76.2 |
| Feb. 20 | 1.19 | 41.6 | May 8 | 2.83 | 265 | Sept. 5 | 1.47 | 61.1 |

NOTE.—All measurements, except the one for Apr. 14, are affected by backwater.

*Daily discharge, in second-feet, of Middle Branch of Moose River at Old Forge, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 130 | 140 | 28 | 100 | 90 | 130 | 350 | 350 | 60 | 60 | 75 | 60 |
| 2 | 200 | 140 | 28 | 100 | 90 | 140 | 350 | 350 | 65 | 60 | 75 | 60 |
| 3 | 220 | 140 | 28 | 95 | 90 | 160 | 326 | 340 | 70 | 60 | 75 | 60 |
| 4 | 190 | 140 | 28 | 95 | 90 | 170 | 314 | 320 | 70 | 60 | 75 | 60 |
| 5 | 170 | 140 | 28 | 95 | 90 | 160 | 314 | 320 | 70 | 65 | 75 | 60 |
| 6 | 160 | 140 | 28 | 95 | 90 | 150 | 302 | 300 | 70 | 60 | 70 | 60 |
| 7 | 200 | 130 | 28 | 95 | 90 | 150 | 290 | 280 | 70 | 60 | 70 | 85 |
| 8 | 240 | 130 | 28 | 95 | 90 | 150 | 279 | 220 | 70 | 60 | 70 | 95 |
| 9 | 240 | 130 | 28 | 95 | 90 | 140 | 290 | 190 | 70 | 60 | 70 | 90 |
| 10 | 240 | 130 | 28 | 95 | 90 | 140 | 279 | 180 | 70 | 60 | 75 | 90 |
| 11 | 240 | 110 | 28 | 95 | 75 | 140 | 279 | 150 | 70 | 60 | 75 | 90 |
| 12 | 220 | 70 | 28 | 95 | 55 | 150 | 279 | 120 | 70 | 60 | 75 | 90 |
| 13 | 200 | 70 | 30 | 95 | 55 | 150 | 290 | 120 | 70 | 60 | 90 | 90 |
| 14 | 200 | 70 | 30 | 95 | 55 | 160 | 279 | 120 | 70 | 60 | 100 | 60 |
| 15 | 190 | 70 | 30 | 95 | 55 | 160 | 279 | 80 | 65 | 60 | 100 | 34 |
| 16 | 180 | 70 | 30 | 95 | 55 | 170 | 302 | 48 | 70 | 55 | 100 | 34 |
| 17 | 180 | 70 | 32 | 95 | 46 | 170 | 290 | 50 | 70 | 60 | 95 | 34 |
| 18 | 180 | 70 | 32 | 95 | 36 | 170 | 226 | 50 | 65 | 60 | 95 | 34 |
| 19 | 170 | 70 | 32 | 90 | 36 | 160 | 216 | 48 | 65 | 60 | 95 | 34 |
| 20 | 160 | 70 | 34 | 90 | 40 | 180 | 236 | 50 | 65 | 60 | 95 | 34 |
| 21 | 150 | 70 | 34 | 90 | 44 | 200 | 226 | 50 | 60 | 55 | 90 | 42 |
| 22 | 140 | 75 | 34 | 90 | 50 | 220 | 216 | 48 | 60 | 60 | 90 | 42 |
| 23 | 150 | 70 | 34 | 90 | 55 | 220 | 226 | 50 | 60 | 65 | 90 | 42 |
| 24 | 150 | 75 | 34 | 90 | 70 | 220 | 246 | 50 | 60 | 65 | 85 | 42 |
| 25 | 150 | 48 | 34 | 90 | 85 | 200 | 279 | 55 | 60 | 70 | 80 | 42 |
| 26 | 150 | 28 | 36 | 90 | 95 | 200 | 314 | 55 | 60 | 70 | 80 | 42 |
| 27 | 150 | 28 | 36 | 90 | 120 | 220 | 326 | 55 | 60 | 80 | 80 | 42 |
| 28 | 150 | 28 | 36 | 90 | 130 | 260 | 375 | 55 | 60 | 80 | 70 | 42 |
| 29 | 150 | 28 | 36 | 90 | ------- | 280 | 375 | 55 | 60 | 75 | 60 | 42 |
| 30 | 150 | 28 | 65 | 90 | ------- | 300 | 375 | 55 | 60 | 75 | 60 | 42 |
| 31 | 140 | ------- | 100 | 90 | ------- | 340 | ------- | 55 | ------- | 75 | 60 | ------- |

NOTE.—Discharge Oct. 1 to Mar. 30 and May 3 to Sept. 30 determined from gage heights corrected for backwater effect from eight discharge measurements.

*Monthly discharge of Middle Branch of Moose River ot Old Forge, N. Y., for the year ending September 30, 1925*

[Drainage area, 51.5 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 240 | 130 | 179 | 3.48 | 4.01 |
| November | 140 | 28 | 85.9 | 1.67 | 1.86 |
| December | 100 | 28 | 34.4 | .668 | .77 |
| January | 100 | 90 | 93.2 | 1.81 | 2.09 |
| February | 130 | 36 | 73.5 | 1.43 | 1.49 |
| March | 340 | 130 | 186 | 3.61 | 4.16 |
| April | 375 | 216 | 291 | 5.65 | 6.30 |
| May | 350 | 48 | 138 | 2.68 | 3.09 |
| June | 70 | 60 | 65.5 | 1.27 | 1.42 |
| July | 80 | 55 | 63.5 | 1.23 | 1.42 |
| August | 100 | 60 | 80.5 | 1.56 | 1.80 |
| September | 95 | 34 | 55.8 | 1.08 | 1.20 |
| The year | 375 | 28 | 112 | 2.17 | 29.61 |

NOTE.—The above figures on discharge in second-feet per square mile and run-off in inches do not necessarily represent the natural flow from the basin, because of artificial storage in Fulton chain of lakes

### OTTER CREEK NEAR GLENFIELD, N. Y.

LOCATION.—A quarter of a mile above dam of Otter Creek Power Corporation, 2½ miles east of Glenfield, Lewis County, and 1¾ miles above mouth.

DRAINAGE AREA.—62 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 16, 1924, to September 30, 1925.

GAGE.—Gurley 7-day graph water-stage recorder on left bank; installed August 22, 1924; inspected by employee of Otter Creek Power Corporation.

DISCHARGE MEASUREMENTS.—Made from a cable about 250 feet above gage or by wading.

CHANNEL AND CONTROL.—The 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. Elevation of crest of weir, 1.00 foot gage datum.

EXTREMES OF DISCHARGE.—Maximum stage recorded during the year and for the period of record, 4.61 feet at 2. 30 p. m. March 28 (discharge, 592 second-feet); minimum stage, 1.49 feet at 8 p. m. September 2 (discharge, 25 second-feet).

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

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined between 20 and 400 second-feet. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height, determined by inspection of gage-height graph or, for days of considerable fluctuation, by averaging discharge for intervals of day. Records excellent, except during period of ice effect, for which they are fair.

*Discharge measurements of Otter Creek near Glenfield, N. Y., for the year ending September, 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 8 | 2.10 | 91.2 | Mar. 26 | 2.99 | 235 | June 17 | 1.91 | 64.0 |
| Dec. 3 | 1.89 | 60.8 | Apr. 16 | 3.47 | 329 | July 27 | 2.25 | 113 |
| Jan. 31 | *2.84 | 30.6 | May 3 | 2.66 | 168 | Sept. 8 | 1.58 | 32.1 |

* Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Otter Creek near Glenfield, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 515 | 43 | 70 | 55 | 30 | 170 | 282 | 173 | 72 | 48 | 65 | 26 |
| 2 | 376 | 45 | 65 | 55 | 30 | 160 | 253 | 181 | 82 | 45 | 63 | 26 |
| 3 | 253 | 42 | 65 | 50 | 30 | 150 | 244 | 178 | 91 | 43 | 56 | 29 |
| 4 | 183 | 42 | 60 | 50 | 30 | 140 | 244 | 170 | 87 | 42 | 52 | 30 |
| 5 | 148 | 42 | 60 | 55 | 28 | 140 | 244 | 181 | 81 | 42 | 51 | 28 |
| 6 | 124 | 41 | 70 | 55 | 28 | 130 | 223 | 183 | 75 | 41 | 60 | 27 |
| 7 | 104 | 41 | 75 | 55 | 30 | 124 | 207 | 171 | 69 | 40 | 104 | 33 |
| 8 | 94 | 41 | 85 | 50 | 30 | 124 | 203 | 162 | 64 | 40 | 93 | 33 |
| 9 | 85 | 40 | 130 | 50 | 55 | 128 | 203 | 149 | 63 | 38 | 85 | 30 |
| 0 | 77 | 40 | 140 | 50 | 90 | 142 | 203 | 134 | 58 | 42 | 128 | 30 |
| 11 | 72 | 40 | 120 | 48 | 180 | 214 | 203 | 128 | 54 | 39 | 122 | 30 |
| 12 | 67 | 40 | 100 | 48 | 444 | 272 | 209 | 126 | 53 | 36 | 101 | 43 |
| 13 | 65 | 40 | 95 | 46 | 387 | 253 | 244 | 125 | 49 | 35 | 89 | 66 |
| 14 | 60 | 40 | 90 | 44 | 365 | 253 | 262 | 114 | 47 | 33 | 77 | 148 |
| 15 | 57 | 38 | 80 | 44 | 312 | 272 | 302 | 104 | 49 | 31 | 67 | 128 |

*Daily discharge, in second-feet, of Otter Creek near Glenfield, N. Y., for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 55 | 36 | 80 | 42 | 262 | 244 | 322 | 97 | 61 | 46 | 63 | 134 |
| 17 | 54 | 36 | 80 | 42 | 216 | 212 | 292 | 103 | 54 | 89 | 56 | 175 |
| 18 | 53 | 36 | 75 | 40 | 168 | 202 | 253 | 104 | 53 | 86 | 60 | 160 |
| 19 | 51 | 36 | 75 | 40 | 168 | 272 | 234 | 103 | 51 | 67 | 53 | 132 |
| 20 | 50 | 38 | 75 | 40 | 143 | 365 | 229 | 96 | 49 | 56 | 47 | 110 |
| 21 | 49 | 40 | 70 | 40 | 132 | 333 | 200 | 90 | 47 | 52 | 44 | 106 |
| 22 | 49 | 70 | 70 | 38 | 146 | 312 | 216 | 87 | 45 | 125 | 41 | 93 |
| 23 | 48 | 170 | 65 | 38 | 193 | 282 | 282 | 89 | 44 | 196 | 39 | 84 |
| 24 | 48 | 170 | 65 | 36 | 302 | 244 | 312 | 101 | 42 | 137 | 38 | 77 |
| 25 | 48 | 140 | 65 | 36 | 322 | 230 | 292 | 93 | 52 | 107 | 35 | 72 |
| 26 | 47 | 110 | 65 | 36 | 302 | 234 | 282 | 87 | 54 | 118 | 34 | 66 |
| 27 | 46 | 90 | 65 | 34 | 240 | 272 | 244 | 82 | 54 | 110 | 33 | 63 |
| 28 | 45 | 80 | 60 | 34 | 190 | 528 | 214 | 78 | 53 | 91 | 31 | 66 |
| 29 | 45 | 70 | 55 | 32 | ------- | 503 | 184 | 77 | 52 | 80 | 30 | 66 |
| 30 | 44 | 70 | 55 | 30 | ------- | 387 | 167 | 76 | 50 | 73 | 29 | 65 |
| 31 | 44 | ------- | 55 | 30 | ------- | 354 | ------- | 75 | ------- | 65 | 27 | ---- |

NOTE.—Discharge Nov. 13 to Feb. 11 and Feb. 27 to Mar. 6 determined from gage heights corrected for ice effect from one discharge measurement and study of gage-height graph and weather records.

*Monthly discharge of Otter Creek near Glenfield, N. Y., for the year ending September 30, 1925*

[Drainage area, 62 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 515 | 44 | 98.6 | 1.59 | 1.83 |
| November | 170 | 36 | 60.2 | .971 | 1.08 |
| December | 140 | 55 | 76.8 | 1.24 | 1.43 |
| January | 55 | 30 | 43.3 | .698 | .80 |
| February | 444 | 28 | 173 | 2.79 | 2.90 |
| March | 528 | 124 | 247 | 3.98 | 4.59 |
| April | 322 | 167 | 242 | 3.90 | 4.35 |
| May | 183 | 75 | 120 | 1.94 | 2.24 |
| June | 91 | 42 | 58.5 | .944 | 1.05 |
| July | 196 | 31 | 67.5 | 1.09 | 1.26 |
| August | 128 | 27 | 60.4 | .974 | 1.12 |
| September | 175 | 26 | 72.5 | 1.17 | 1.30 |
| The year | 528 | 26 | 109 | 1.76 | 23.95 |

### BEAVER RIVER BELOW STILLWATER DAM, NEAR BEAVER RIVER, N. Y.

LOCATION.—1,000 feet below Stillwater Dam at outlet of Beaver River Flow, 7½ miles west of Beaver River post office, Herkimer County, and 7 miles above Beaver Lake at Number Four.

DRAINAGE AREA.—176 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 1, 1924, to September 30, 1925. Comparable records at station at State dam half a mile above, from May 11, 1908, to May 31, 1924.

GAGE.—Staff in two sections on left bank; read by employees of Black River Regulating District.

DISCHARGE MEASUREMENTS.—Made from a cable about 100 feet above gage.

CHANNEL AND CONTROL.—Bed of stream very rough. Control consists of large boulders; probably permanent.

EXTREMES OF DISCHARGE.—Maximum discharge during the period, June 1, 1924, to September 30, 1925, 1,680 second-feet August 31; minimum discharge, zero, following frequent closing of gates February to May, 1925. Maximum stage of reservoir during year, 1,676.45 feet on June 11; minimum stage occurred during construction period in early part of year, not recorded.

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

REGULATION.—Seasonal distribution of flow is under almost complete regulation by the operation of gates at Stillwater Dam.

ACCURACY.—Stage-discharge relation affected by backwater from logs October 1 to August 31. River clear subsequent to latter date. Discharge, February 12 to September 20, determined from records of gate operations using gate ratings derived from current-meter measurements. Backwater rating curve used October 1 to February 11 fairly well defined between 150 and 300 second-feet. Open-water rating used September 21 to 30 well defined. Gage read to hundredths once daily before changing gates. Daily discharge from staff-gage readings ascertained by applying the daily gage reading to rating table or in case of gate operation by averaging discharge for intervals of day. Records from October 1 to February 11 poor; others good.

*Discharge measurements of Beaver River below Stillwater Dam, near Beaver River N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Sept. 9 | 0.98 | 2.86 | Sept. 24 | 3.02 | 321 | Sept. 25 | 2.04 | 92.4 |
| Sept. 10 | 5.11 | 1,590 | Sept. 25 | 2.32 | 148 | Sept. 26 | 3.64 | 572 |
| Do | 4.74 | 1,280 | Do | 1.53 | 27.3 | Do | 4.03 | 827 |

*Daily discharge, in second-feet, of Beaver River below Stillwater Dam, near Beaver River, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,480 | 255 | 240 | 165 | 155 | 883 | | 632 | 340 | 81 | 80 | 1,300 |
| 2 | 1,480 | 240 | 240 | 165 | 155 | 821 | | 632 | 342 | 0 | 37 | 1,330 |
| 3 | 1,480 | 226 | 240 | 188 | 145 | 701 | | 632 | 342 | 55 | 210 | 1,630 |
| 4 | 1,110 | 213 | 226 | 188 | 165 | 543 | | 632 | 289 | 203 | 239 | 1,170 |
| 5 | 870 | 226 | 226 | 200 | 165 | 493 | | 632 | 213 | 219 | 318 | 335 |
| 6 | 670 | 270 | 213 | 145 | 155 | 341 | 0 | 632 | 147 | 278 | 412 | 3 |
| 7 | 670 | 270 | 213 | 88 | 165 | 341 | | 632 | 142 | 278 | 289 | 3 |
| 8 | 610 | 240 | 213 | 188 | 165 | 341 | | 580 | 142 | 278 | 90 | 3 |
| 9 | 582 | 270 | 255 | 188 | 176 | 342 | | 492 | 142 | 401 | 36 | 703 |
| 10 | 505 | 270 | 226 | 213 | 176 | 85 | | 492 | 142 | 487 | 236 | 699 |
| 11 | 455 | 255 | 226 | 188 | 81 | | | 399 | 201 | 327 | 306 | 761 |
| 12 | 455 | 240 | 213 | 188 | | | 552 | 352 | 423 | 90 | 336 | 3 |
| 13 | 432 | 270 | 213 | 213 | 0 | | 1,260 | 352 | 423 | 395 | 336 | 3 |
| 14 | 410 | 270 | 226 | 270 | | | 1,530 | 353 | 422 | 411 | 293 | 3 |
| 15 | 432 | 240 | 240 | 255 | | | 1,520 | 353 | 429 | 409 | 3 | 360 |
| 16 | 455 | 255 | 240 | 270 | 23 | | 1,440 | 165 | 459 | 409 | 176 | 657 |
| 17 | 432 | 240 | 226 | 270 | 94 | | 1,200 | | 459 | 409 | 347 | 223 |
| 18 | 200 | 240 | 226 | 285 | 118 | | 1,100 | | 458 | 409 | 346 | 3 |
| 19 | 127 | 226 | 226 | 300 | 190 | | 873 | | 458 | 202 | 439 | 3 |
| 20 | 119 | 213 | 240 | 300 | 270 | | 763 | 0 | 456 | 230 | 509 | 3 |
| 21 | 111 | 200 | 240 | 285 | 347 | 0 | 763 | | 438 | 272 | 509 | 85 |
| 22 | 119 | 188 | 240 | 270 | 489 | | 762 | 120 | 417 | 339 | 297 | 336 |
| 23 | 145 | 200 | 220 | 255 | 726 | | 672 | 356 | 417 | 200 | 101 | 336 |
| 24 | 213 | 226 | 220 | 255 | 1,020 | | 651 | 333 | 416 | 3 | 477 | 336 |
| 25 | 240 | 240 | 220 | 240 | 1,180 | | | 310 | 416 | 3 | 521 | 336 |
| 26 | 200 | 200 | 200 | 213 | 1,300 | | 0 | 381 | 416 | 3 | 574 | 512 |
| 27 | 240 | 200 | 200 | 200 | 1,150 | | | 427 | 378 | 97 | 572 | 352 |
| 28 | 240 | 188 | 200 | 188 | 883 | | | 412 | 351 | 165 | 570 | 406 |
| 29 | 255 | 240 | 190 | 176 | ------- | | | 377 | 351 | 202 | 262 | 477 |
| 30 | 270 | 270 | 188 | 165 | ------- | | 393 | 327 | 227 | 179 | 702 | 560 |
| 31 | 270 | ------- | 176 | 165 | ------- | | ------- | 340 | ------- | 138 | 1,680 | ------ |

NOTE.—Discharge Dec. 23–29 and Sept. 27 estimated; gage-height record either incomplete or missing. Discharge Feb. 12 to Sept. 20 determined from records of gate operation; no gage-height record.

*Monthly discharge of Beaver River below Stillwater Dam, near Beaver River, N. Y., for the year ending September 30, 1925*

[Drainage area, 176 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 1,480 | 111 | 493 | 2.80 | 3.23 |
| November | 270 | 188 | 236 | 1.34 | 1.50 |
| December | 255 | 176 | 221 | 1.26 | 1.45 |
| January | 300 | 88 | 215 | 1.22 | 1.41 |
| February | 1,300 | 0 | 339 | 1.93 | 2.01 |
| March | 883 | 0 | 158 | .898 | 1.04 |
| April | 1,530 | 0 | 449 | 2.55 | 2.84 |
| May | 632 | 0 | 366 | 2.08 | 2.40 |
| June | 459 | 142 | 342 | 1.94 | 2.16 |
| July | 487 | 0 | 231 | 1.31 | 1.51 |
| August | 1,680 | 3 | 365 | 2.07 | 2.39 |
| September | 1,630 | 3 | 431 | 2.45 | 2.73 |
| The year | 1,680 | 0 | 320 | 1.82 | 24.67 |

NOTE.—The monthly discharge in second-feet per square mile and run-off in inches shown by the table do not represent the natural flow from the basin because of storage in Stillwater Reservoir.

### BEAVER RIVER AT EAGLE FALLS, NEAR NUMBER FOUR, N. Y.

LOCATION.—500 feet below Eagle Falls power plant of Northern New York Utilities (Inc.), 2½ miles below Beaver Lake, 4 miles north of Number Four, Lewis County, and 9 miles below Stillwater Dam at outlet of Beaver River Flow.

DRAINAGE AREA.—230 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 21, 1921, to September 30, 1925.

GAGE.—Gurley 7-day graph water-stage recorder on left bank; inspected by employees of Northern New York Utilities (Inc.).

DISCHARGE MEASUREMENTS.—Made from a cable over tailrace and river channel 300 feet above gage or by wading.

CHANNEL AND CONTROL.—Boulders and large broken rock; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 4.99 feet at 2 p. m. April 15 (discharge, 2,360 second-feet); minimum stage, 0.31 foot at 4 a. m. July 27 (discharge, about 7 second-feet).

1921–1925: Maximum stage recorded, 7.30 feet at 3.30 p. m. April 13, 1922 (discharge, 4,980 second-feet); minimum stage, 0.22 foot at noon December 17, 1923 (discharge, 5.8 second-feet).

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

REGULATION.—Seasonal flow is regulated by storage in Beaver River Flow about 9 miles above. Diurnal flow regulated at dam at foot of Beaver Lake according to needs of power plant. Some regulation in other ponds and lakes in drainage area.

ACCURACY.—Stage-discharge relation changed slightly at end of August. Rating curves well defined between 100 and 1,000 second-feet, and fairly well defined above. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage-height determined by inspection of gage-height graph or, for days of considerable fluctuation, by averaging discharge for intervals of day. Records fair.

*Discharge measurements of Beaver River at Eagle Falls, near Number Four, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Dec. 10 | 2.85 | 666 | June 8 | 1.94 | 284 | Sept. 24 | 2.83 | 660 |
| May 7 | 3.41 | 836 | Sept. 9 | 2.03 | 317 | | | |
| June 7 | 1.61 | 179 | Do | .86 | 66.8 | | | |

*Daily discharge, in second-feet, of Beaver River at Eagle Falls, near Number Four, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,640 | 455 | 357 | 143 | 85 | 1,030 | 320 | 263 | 622 | 312 | 142 | ,770 |
| 2 | 2,020 | 443 | 316 | 276 | 224 | 960 | 286 | 708 | 598 | 171 | 9 | ,260 |
| 3 | 1,820 | 531 | 320 | 306 | 247 | 900 | 164 | 900 | 532 | 173 | 264 | ,500 |
| 4 | 1,540 | 436 | 320 | 380 | 217 | 710 | 160 | 960 | 501 | 10 | 277 | ,510 |
| 5 | 1,140 | 370 | 336 | 220 | 193 | 655 | 160 | 900 | 442 | 57 | 285 | 764 |
| 6 | 1,040 | 475 | 329 | 197 | 209 | 541 | 160 | 840 | 156 | 366 | 363 | 218 |
| 7 | 906 | 433 | 264 | 198 | 175 | 504 | 180 | 800 | 169 | 429 | 500 | 103 |
| 8 | 879 | 475 | 368 | 220 | 147 | 482 | 206 | 780 | 246 | 384 | 384 | 250 |
| 9 | 784 | 417 | 522 | 240 | 258 | 482 | 152 | 752 | 260 | 321 | 9 | 273 |
| 10 | 686 | 516 | 611 | 280 | 236 | 493 | 175 | 690 | 220 | 386 | 317 | 449 |
| 11 | 620 | 513 | 400 | 177 | 297 | 319 | 76 | 710 | 280 | 383 | 329 | 559 |
| 12 | 800 | 436 | 442 | 296 | 708 | 362 | 324 | 645 | 400 | 104 | 326 | 391 |
| 13 | 946 | 475 | 287 | 215 | 758 | 333 | 1,260 | 595 | 460 | 318 | 404 | 86 |
| 14 | 840 | 474 | 362 | 246 | 520 | 236 | 1,920 | 455 | 362 | 429 | 461 | 314 |
| 15 | 752 | 546 | 400 | 278 | 377 | 272 | 2,020 | 509 | 400 | 442 | 324 | 262 |
| 16 | 780 | 125 | 440 | 281 | 344 | 301 | 1,870 | 424 | 478 | 253 | 19 | 514 |
| 17 | 780 | 526 | 377 | 292 | 242 | 250 | 1,920 | 238 | 476 | 520 | 332 | 553 |
| 18 | 600 | 547 | 268 | 383 | 248 | 218 | 1,540 | 293 | 389 | 390 | 259 | 455 |
| 19 | 400 | 432 | 280 | 273 | 267 | 200 | 1,200 | 306 | 386 | 140 | 253 | 120 |
| 20 | 369 | 460 | 331 | 390 | 276 | 376 | 1,200 | 512 | 463 | 390 | 446 | 77 |
| 21 | 343 | 440 | 314 | 257 | 468 | 388 | 1,300 | 11 | 496 | 335 | 540 | 249 |
| 22 | 258 | 440 | 257 | 304 | 476 | 436 | 1,410 | 43 | 453 | 366 | 447 | 175 |
| 23 | 207 | 648 | 276 | 284 | 790 | 333 | 1,140 | 110 | 440 | 330 | 100 | 268 |
| 24 | 240 | 880 | 317 | 287 | 1,330 | 251 | 829 | 326 | 432 | 302 | 413 | 341 |
| 25 | 460 | 764 | 248 | 204 | 1,540 | 235 | 796 | 456 | 501 | 360 | 435 | 391 |
| 26 | 308 | 675 | 358 | 298 | 1,540 | 267 | 642 | 638 | 459 | 8 | 485 | 423 |
| 27 | 454 | 438 | 350 | 220 | 1,540 | 458 | 575 | 472 | 448 | 113 | 506 | 257 |
| 28 | 514 | 558 | 206 | 258 | 1,210 | 1,060 | 358 | 716 | 462 | 148 | 484 | 490 |
| 29 | 501 | 434 | 317 | 225 | ------- | 796 | 233 | 548 | 465 | 227 | 494 | 449 |
| 30 | 510 | 329 | 238 | 129 | ------- | 524 | 136 | 500 | 408 | 348 | 390 | 443 |
| 31 | 442 | ------- | 251 | 239 | ------- | 402 | ------- | 480 | ------- | 291 | 1,290 | ------ |

NOTE.—Discharge Oct. 11, 12, 18–20, 23–25, Nov. 20–22, Dec. 3, 4, 15, 16, Jan. 4, 8, 9, Mar. 22, Apr. 3–7, 19–22, May 3–9, 23, 24, 30, 31, June 8–14, Aug. 15, 23, and Sept. 27, estimated; gage-height record incomplete or missing.

*Monthly discharge of Beaver River at Eagle Falls, near Number Four, N. Y., for the year ending September 30, 1925*

[Drainage area, 230 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 2,020 | 207 | 761 | 3.31 | 3.82 |
| November | 880 | 125 | 490 | 2.13 | 2.38 |
| December | 611 | 206 | 337 | 1.47 | 1.70 |
| January | 390 | 129 | 258 | 1.12 | 1.29 |
| February | 1,540 | 85 | 533 | 2.32 | 2.42 |
| March | 1,060 | 200 | 477 | 2.07 | 2.39 |
| April | 2,020 | 76 | 757 | 3.29 | 3.67 |
| May | 960 | 11 | 535 | 2.33 | 2.69 |
| June | 622 | 156 | 413 | 1.80 | 2.01 |
| July | 520 | 8 | 284 | 1.23 | 1.42 |
| August | 1,290 | 9 | 364 | 1.58 | 1.82 |
| September | 1,770 | 77 | 497 | 2.16 | 2.41 |
| The year | 2,020 | 8 | 474 | 2.06 | 28.02 |

NOTE.—The monthly discharge in second-feet per square mile and run-off in inches shown by the table do not necessarily represent the natural flow from the basin because of artificial storage, mainly in Stillwater Reservoir and Beaver Lake.

## STREAMS TRIBUTARY TO ST. LAWRENCE RIVER

### EAST BRANCH OF OSWEGATCHIE RIVER AT CRANBERRY LAKE, N. Y.

LOCATION.—At Cranberry Lake, St. Lawrence County, 500 feet below concrete dam at outlet of Cranberry Lake and 10½ miles above Newton Falls.

DRAINAGE AREA.—144 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 5, 1923, to September 30, 1925. Comparable records at station at Newton Falls, October 6, 1912, to May 4, 1923.

GAGE.—Slope gage on left bank; read by Herbert Dean.

DISCHARGE MEASUREMENTS.—Made from cable about 200 feet below gage or by wading.

CHANNEL AND CONTROL.—Large boulders and gravel; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.7 feet at 8 a. m. April 19–28 (discharge, 990 second-feet); minimum stage, 4.1 feet at 8 a. m. October 1 and 2 (discharge, 105 second-feet).

1923–1925: 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 stage and discharge are occasionally reached when gates in dam are closed and when there is no discharge over spillway.

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

REGULATION.—Discharge is regulated by operation of sluice gates at Cranberry Lake Dam.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined above 40 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table except for days when sluice gates in dam are operated when the discharge is averaged for parts of the day. Records fair.

*Discharge measurements of East Branch of Oswegatchie River at Cranberry Lake, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 3 | 4.73 | 212 | Apr. 17 | 5.12 | 304 | June 9 | 5.07 | 310 |
| Feb. 4 | 5.35 | 374 | May 6 | 5.46 | 415 | Sept. 23 | 5.11 | 328 |

*Daily discharge, in second-feet, of East Branch of Oswegatchie River at Cranberry Lake, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 105 | 315 | 274 | 190 | 390 | 374 | 287 | 473 | 301 | 330 | 315 | 315 |
| 2 | 146 | 315 | 274 | 190 | 390 | 374 | 287 | 473 | 301 | 330 | 301 | 315 |
| 3 | 236 | 315 | 274 | 190 | 390 | 374 | 287 | 473 | 301 | 330 | 301 | 315 |
| 4 | 217 | 315 | 274 | 190 | 390 | 374 | 287 | 473 | 301 | 330 | 301 | 315 |
| 5 | 161 | 315 | 274 | 190 | 390 | 374 | 287 | 473 | 301 | 330 | 301 | 315 |
| 6 | 161 | 315 | 274 | 190 | 390 | 374 | 287 | 448 | 301 | 330 | 301 | 315 |
| 7 | 161 | 315 | 274 | 190 | 390 | 341 | 287 | 422 | 301 | 330 | 301 | 315 |
| 8 | 161 | 315 | 274 | 190 | 390 | 261 | 287 | 422 | 301 | 330 | 301 | 315 |
| 9 | 161 | 301 | 274 | 190 | 390 | 261 | 287 | 422 | 301 | 330 | 301 | 315 |
| 10 | 161 | 301 | 274 | 235 | 288 | 261 | 287 | 372 | 301 | 330 | 301 | 315 |
| 11 | 161 | 301 | 274 | 374 | 144 | 261 | 287 | 301 | 301 | 330 | 301 | 315 |
| 12 | 161 | 301 | 274 | 374 | 144 | 261 | 344 | 301 | 301 | 330 | 301 | 315 |
| 13 | 161 | 301 | 274 | 374 | 144 | 261 | 344 | 301 | 301 | 330 | 301 | 315 |
| 14 | 161 | 301 | 274 | 374 | 144 | 261 | 344 | 301 | 301 | 330 | 310 | 315 |
| 15 | 161 | 301 | 274 | 374 | 144 | 261 | 344 | 301 | 301 | 330 | 330 | 315 |
| 16 | 161 | 301 | 274 | 374 | 144 | 261 | 344 | 301 | 287 | 330 | 330 | 330 |
| 17 | 161 | 301 | 274 | 374 | 264 | 261 | 344 | 301 | 287 | 330 | 330 | 330 |
| 18 | 161 | 305 | 274 | 374 | 374 | 261 | 344 | 301 | 287 | 330 | 330 | 330 |
| 19 | 161 | 315 | 274 | 374 | 374 | 261 | 990 | 301 | 287 | 315 | 330 | 330 |
| 20 | 161 | 315 | 274 | 374 | 374 | 261 | 990 | 301 | 274 | 315 | 330 | 330 |
| 21 | 252 | 311 | 228 | 374 | 374 | 261 | 990 | 301 | 274 | 315 | 330 | 315 |
| 22 | 330 | 301 | 190 | 374 | 374 | 261 | 990 | 301 | 274 | 315 | 330 | 315 |
| 23 | 330 | 301 | 190 | 374 | 374 | 261 | 990 | 301 | 274 | 315 | 330 | 315 |
| 24 | 330 | 301 | 190 | 374 | 374 | 261 | 990 | 301 | 274 | 315 | 330 | 315 |
| 25 | 330 | 301 | 190 | 374 | 374 | 261 | 990 | 301 | 274 | 315 | 330 | 315 |
| 26 | 330 | 294 | 190 | 374 | 374 | 261 | 990 | 301 | 284 | 315 | 330 | 315 |
| 27 | 330 | 274 | 190 | 381 | 374 | 261 | 990 | 301 | 330 | 315 | 330 | 315 |
| 28 | 315 | 274 | 190 | 390 | 374 | 261 | 990 | 301 | 330 | 315 | 330 | 315 |
| 29 | 315 | 274 | 190 | 390 | ------ | 261 | 658 | 301 | 330 | 315 | 330 | 315 |
| 30 | 315 | 274 | 190 | 390 | ------ | 261 | 473 | 301 | 330 | 315 | 315 | 315 |
| 31 | 315 | ------ | 190 | 390 | ------ | 261 | ------ | 301 | ------ | 315 | 315 | ------ |

*Monthly discharge of East Branch of Oswegatchie River at Cranberry Lake, N. Y., for the year ending September 30, 1925*

[Drainage area, 144 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 330 | 105 | 218 | 1.51 | 1.74 |
| November | 315 | 274 | 302 | 2.10 | 2.34 |
| December | 274 | 190 | 245 | 1.70 | 1.96 |
| January | 390 | 190 | 318 | 2.21 | 2.55 |
| February | 390 | 144 | 323 | 2.24 | 2.33 |
| March | 374 | 261 | 285 | 1.98 | 2.28 |
| April | 990 | 287 | 553 | 3.84 | 4.28 |
| May | 473 | 301 | 347 | 2.41 | 2.78 |
| June | 330 | 274 | 297 | 2.06 | 2.30 |
| July | 330 | 315 | 324 | 2.25 | 2.59 |
| August | 330 | 301 | 317 | 2.20 | 2.54 |
| September | 330 | 315 | 318 | 2.21 | 2.47 |
| The year | 990 | 105 | 320 | 2.22 | 30.16 |

NOTE.—The monthly discharge in second-feet per square mile and run-off in inches shown by the table do not represent the natural flow from the basin because of artificial storage in Cranberry Lake.

### EAST BRANCH OF OSWEGATCHIE RIVER NEAR OSWEGATCHIE, N. Y.

LOCATION.—At Flat Rock power plant of Northern New York Utilities (Inc.), just below mouth of Skate Creek, 3¾ miles north of Oswegatchie, St. Lawrence County, and 4½ miles above Fine.

DRAINAGE AREA.—262 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 8, 1924, to September 30, 1925.

GAGE.—Gurley 7-day graph water-stage recorder on left bank 300 feet downstream from Flat Rock power plant; inspected by operators from the plant.

DISCHARGE MEASUREMENTS.—Made from cable at the gage.

CHANNEL AND CONTROL.—Bed is composed of small boulders and gravel covered with silt. Control consists of large and small boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage from water-stage recorder during period, October 8, 1924, to September 30, 1925, 6.00 feet at 7.30 a. m. April 23 (discharge, 2,320 second-feet); minimum discharge frequently approaches 10 second-feet after complete shutdowns at power plant.

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

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 outlet of Cranberry Lake.

ACCURACY.—Stage-discharge relation changed at time of high water February 12. Rating curves well defined between 200 and 2,000 second-feet. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of gage-height graph or, for days of considerable fluctuation, by averaging discharge for intervals of day. Records good except for periods of estimate, for which they are fair.

*Discharge measurements of East Branch of Oswegatchie River near Oswegatchie, N. Y., during the period September 28, 1924, to September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| 1924 | *Feet* | *Sec.-ft.* | 1924 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* |
| Sept. 28 | 3.02 | 344 | Sept. 30 | 5.69 | 1,930 | Feb. 10 | 4.05 | 813 |
| Do | 2.88 | 306 | Oct. 7 | 3.50 | 531 | Apr. 17 | 5.38 | 1,780 |
| Sept. 29 | 5.19 | 1,550 | Do | 3.95 | 752 | June 9 | 4.70 | 1,300 |
| Do | 2.77 | 259 | Do | 4.49 | 1,090 | Sept. 23 | 5.07 | 1,550 |

*Daily discharge, in second-feet, of East Branch of Oswegatchie River near Oswegatchie, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 284 | | 338 | 189 | 741 | 870 | 842 | 700 | 348 | 500 | 396 |
| 2 | | 336 | | 604 | 442 | 963 | 857 | 786 | 696 | 369 | 347 | 442 |
| 3 | | 455 | | 360 | | 778 | 904 | 850 | 631 | 528 | 598 | 294 |
| 4 | | 338 | | 147 | 525 | 704 | 778 | 900 | 752 | 124 | 625 | 332 |
| 5 | | 408 | 490 | 544 | | 641 | 630 | 902 | 800 | 202 | 583 | 202 |
| 6 | | 480 | | 525 | 603 | 641 | 869 | 858 | 750 | 582 | 436 | 46 |
| 7 | | 418 | | 525 | 506 | 607 | 716 | 892 | 196 | 630 | 476 | 119 |
| 8 | 534 | 370 | | 480 | 240 | 548 | 696 | 774 | 587 | 541 | 235 | 533 |
| 9 | 527 | 242 | | 495 | 524 | 688 | 690 | 639 | 578 | 496 | 165 | 544 |
| 10 | 436 | 513 | 954 | | 649 | 714 | 674 | 612 | 598 | 517 | 382 | 396 |
| 11 | 393 | 463 | 792 | | 808 | 1,090 | 539 | 865 | 694 | 251 | 403 | 444 |
| 12 | 325 | 559 | 626 | 440 | 1,590 | 1,070 | 474 | 904 | 594 | 180 | 410 | 206 |
| 13 | 329 | 447 | 570 | | 1,190 | 948 | 714 | 772 | 296 | 410 | 484 | 216 |
| 14 | 371 | 396 | 490 | | 889 | 831 | 538 | 658 | 64 | 546 | 466 | 722 |
| 15 | 354 | 525 | 658 | | 806 | 780 | 618 | 698 | 647 | 541 | 224 | 705 |

*Daily discharge, in second-feet, of East Branch of Oswegatchie River near Oswegatchie, N. Y., for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 427 | 361 | 675 | 440 | 884 | 961 | 755 | 330 | 578 | 664 | 131 | 707 |
| 17 | 278 | 383 | 514 | | 692 | 753 | 814 | 521 | 535 | 475 | 548 | 649 |
| 18 | 322 | | 514 | 181 | 530 | 799 | 711 | 737 | 375 | 218 | 564 | 701 |
| 19 | | 400 | 398 | 439 | 662 | 1,110 | 605 | 529 | 421 | 119 | 497 | 500 |
| 20 | | | 347 | 504 | 642 | 1,020 | 758 | 634 | 318 | 453 | 485 | 293 |
| 21 | 380 | 392 | 227 | 433 | 417 | 814 | 563 | 528 | 23 | 448 | 505 | 1,010 |
| 22 | | 352 | 533 | 617 | 840 | 863 | 1,090 | 763 | 482 | 434 | 268 | 635 |
| 23 | | 346 | 538 | 478 | 1,190 | 913 | 1,280 | 527 | 490 | 440 | 19 | 848 |
| 24 | | 686 | 329 | 476 | 1,670 | 818 | 1,050 | 214 | 442 | 465 | 482 | 450 |
| 25 | | 746 | 32 | 195 | 1,440 | 743 | 580 | 696 | 419 | 475 | 589 | 746 |
| 26 | 302 | | 516 | 651 | 1,260 | 765 | 672 | 642 | 432 | | 605 | 348 |
| 27 | 354 | | 197 | 677 | 1,030 | 864 | 849 | 520 | 166 | | 488 | 18 |
| 28 | 450 | 600 | 252 | 687 | 873 | 1,090 | 1,000 | 705 | 199 | 500 | 165 | 541 |
| 29 | 506 | | 377 | 500 | ------- | 1,010 | 1,070 | 643 | 325 | | 119 | 508 |
| 30 | 342 | | 425 | 376 | ------- | 1,110 | 986 | 255 | 300 | | 15 | 436 |
| 31 | 379 | ------- | 471 | 211 | ------- | 981 | ------- | 309 | ------- | | 333 | ------ |

NOTE.—Discharge Oct. 19–25, Nov. 18–20, 26–30, Dec. 1–9, Jan. 10–17, 29, Feb. 3–6, 8, Apr. 19, May 3–4, 31, June 5–6, and July 26 to Aug. 1, estimated by comparison with records for other stations in same drainage basin; water-stage recorder not operating satisfactorily.

*Monthly discharge of East Branch of Oswegatchie River near Oswegatchie, N. Y., for the year ending September 30, 1925*

[Drainage area, 262 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October 8–31 | 534 | 278 | 387 | 1.48 | 1.32 |
| November | 746 | 242 | 457 | 1.74 | 1.94 |
| December | 954 | 32 | 479 | 1.83 | 2.11 |
| January | 687 | 147 | 450 | 1.72 | 1.98 |
| February | 1,670 | 189 | 791 | 3.02 | 3.14 |
| March | 1,110 | 548 | 850 | 3.24 | 3.74 |
| April | 1,280 | 474 | 778 | 2.97 | 3.31 |
| May | 904 | 214 | 661 | 2.52 | 2.90 |
| June | 800 | 23 | 470 | 1.79 | 2.00 |
| July | 664 | 119 | 434 | 1.66 | 1.91 |
| August | 625 | 15 | 392 | 1.50 | 1.73 |
| September | 1,010 | 18 | 466 | 1.78 | 1.99 |
| The year | 1,670 | 15 | 553 | 2.11 | 28.07 |

### OSWEGATCHIE RIVER NEAR HEUVELTON, N. Y.

LOCATION.—2½ miles above Heuvelton, St. Lawrence County, 3 miles below Rensselaer Falls, and 7 miles above mouth of Indian River (outlet of Black Lake).

DRAINAGE AREA.—967 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 23, 1916, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on right bank; inspected by George B. Todd.

DISCHARGE MEASUREMENTS.—Made from cable 20 feet below gage or by wading.

CHANNEL AND CONTROL.—Solid rock; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 6.29 feet at 11.30 p. m. February 13 (discharge, 8,520 second-feet); minimum stage, 0.67 foot from 9 to 11 p. m. September 2 (discharge, about 211 second-feet).

1916–1925: Maximum stage recorded, 7.60 feet from 9 a. m. to noon March 30, 1917 (discharge, 11,700 second-feet); minimum stage, that of September 2, 1925.

ICE.—Stage-discharge relation slightly affected by ice only for short periods during extremely cold weather.

REGULATION.—During low-water periods there is some diurnal fluctuation in flow due to operation of mills at Rensselaer Falls and above. Seasonal flow regulated by storage in Cranberry Lake.

ACCURACY.—Stage-discharge relation practically permanent; probably not affected by ice. Rating curve well defined above 300 second-feet. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of gage-height graph or, for days of considerable fluctuation, by averaging discharge for intervals of day. Records good, except during periods of estimate, for which they are fair.

*Discharge measurements of Oswegatchie River near Heuvelton, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 1 | 3.88 | 3,840 | May 4 | 2.52 | 1,810 |
| Feb. 9 | 1.66 | 954 | Sept. 21 | 2.74 | 2,150 |
| Mar. 27 | 3.52 | 3,120 | | | |

*Daily discharge, in second-feet, of Oswegatchie River near Heuvelton, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3,330 | 650 | 1,700 | | | | 5,480 | 2,290 | 854 | 735 | 1,040 | 323 |
| 2 | 4,920 | 610 | 1,410 | 700 | 750 | 3,800 | 5,290 | 2,080 | 1,150 | 789 | 1,010 | 238 |
| 3 | 6,250 | 570 | 1,380 | | | | 4,920 | 1,950 | 1,790 | 744 | 844 | 294 |
| 4 | 6,450 | 634 | 1,450 | | 667 | | 4,380 | 1,820 | 2,220 | 744 | 709 | 461 |
| 5 | 5,860 | | 1,260 | 948 | 958 | 2,360 | 3,870 | 1,950 | 2,220 | 658 | 930 | 487 |
| 6 | 4,470 | | 1,350 | 676 | 1,100 | 2,080 | 3,300 | 2,150 | 2,080 | 578 | 1,020 | 468 |
| 7 | 3,230 | | 2,290 | 578 | 1,080 | 2,020 | 3,080 | 2,220 | 1,730 | 562 | 930 | 422 |
| 8 | 2,500 | | 2,930 | 863 | 1,100 | 2,360 | 2,860 | 2,150 | 1,180 | 771 | 930 | 294 |
| 9 | 1,950 | | 3,700 | 901 | 948 | 2,430 | 2,570 | 2,020 | 1,040 | 920 | 872 | 270 |
| 10 | 1,670 | | 3,780 | 892 | 2,460 | 2,780 | 2,290 | 1,880 | 1,080 | 882 | 771 | 360 |
| 11 | 1,470 | 850 | 3,380 | 854 | 5,480 | 4,300 | 2,220 | 1,670 | 1,080 | 807 | 642 | 578 |
| 12 | 1,310 | | 3,000 | 753 | 7,260 | 4,740 | 2,020 | 1,770 | 988 | 863 | 650 | 650 |
| 13 | 1,140 | | 2,640 | 594 | 8,320 | 4,830 | 1,740 | 1,880 | 1,020 | 667 | 718 | 610 |
| 14 | 996 | | 3,230 | 642 | 8,320 | 4,560 | 1,820 | 1,880 | 910 | 454 | 735 | 709 |
| 15 | 948 | | 3,160 | 780 | 7,260 | 4,300 | 2,020 | 1,760 | 744 | 411 | 744 | 948 |
| 16 | 920 | | 2,640 | 718 | 5,860 | 3,960 | 1,880 | 1,620 | 540 | 642 | 692 | 1,570 |
| 17 | 882 | | 2,220 | 700 | 4,740 | 3,780 | 1,880 | 1,590 | 692 | 762 | 586 | 2,430 |
| 18 | 872 | 1,120 | 2,080 | 753 | 4,040 | 3,870 | 2,020 | 1,180 | 834 | 753 | 454 | 2,640 |
| 19 | 825 | 1,100 | 1,720 | 692 | 3,230 | 4,560 | 1,950 | 1,330 | 844 | 771 | 555 | 2,640 |
| 20 | 718 | 930 | 1,670 | 578 | 2,640 | 5,480 | 1,820 | 1,520 | 735 | 700 | 726 | 2,500 |
| 21 | 700 | 958 | 1,650 | 562 | 2,430 | 6,250 | 1,820 | 1,390 | 658 | | 667 | 2,150 |
| 22 | 709 | 1,080 | 1,200 | 753 | 3,540 | 6,050 | 2,080 | 1,330 | 642 | | 684 | 2,360 |
| 23 | 771 | 2,540 | 892 | | 4,380 | 4,920 | 2,640 | 1,290 | 524 | 540 | 658 | 2,430 |
| 24 | 825 | 3,700 | 780 | | 5,860 | 4,380 | 3,160 | 1,400 | 524 | 555 | 570 | 1,950 |
| 25 | 780 | 3,380 | 1,020 | | 7,260 | 3,870 | 3,160 | 1,340 | 798 | 517 | 416 | 1,620 |
| 26 | 718 | 3,230 | 948 | 750 | 7,680 | 3,540 | 2,640 | 1,250 | 863 | 634 | 405 | 1,310 |
| 27 | 570 | 2,930 | 658 | | 7,200 | 3,300 | 2,150 | 1,550 | 807 | 692 | 454 | 1,250 |
| 28 | | 2,500 | 650 | | 6,400 | 3,920 | 2,220 | 1,410 | 735 | 735 | 684 | 1,210 |
| 29 | 750 | 2,220 | | | ------- | 5,100 | 2,220 | 1,260 | 626 | 930 | 744 | 977 |
| 30 | | 1,950 | 650 | | ------- | 5,480 | 2,220 | 1,300 | 610 | 1,040 | 586 | 1,020 |
| 31 | | ------- | | | ------- | 5,670 | ------- | 1,150 | ------- | 1,010 | 405 | ------ |

NOTE.—Discharge Oct. 27-31, Nov. 1, 2, 5-18, Dec. 29-31, Jan. 1-4, 23-31, Feb. 1-3, 5, 27, 28, Mar. 1-4, July 20-23, estimated from studies of records in the upper Oswegatchie drainage basin; gage-height record either faulty or missing.

*Monthly discharge of Oswegatchie River near Heuvelton, N. Y., for the year ending September 30, 1925*

[Drainage area, 967 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 6,450 | 570 | 1,900 | 1.96 | 2.26 |
| November | 3,700 | 570 | 1,370 | 1.42 | 1.58 |
| December | 3,780 | 650 | 1,830 | 1.89 | 2.18 |
| January | 948 | 562 | 735 | .760 | .88 |
| February | 8,320 | 667 | 4,020 | 4.16 | 4.33 |
| March | 6,250 | 2,020 | 4,070 | 4.21 | 4.85 |
| April | 5,480 | 1,740 | 2,720 | 2.81 | 3.14 |
| May | 2,290 | 1,150 | 1,660 | 1.72 | 1.98 |
| June | 2,220 | 524 | 1,020 | 1.05 | 1.17 |
| July | 1,040 | 411 | 718 | .743 | .86 |
| August | 1,040 | 405 | 704 | .728 | .84 |
| September | 2,640 | 238 | 1,170 | 1.21 | 1.35 |
| The year | 8,320 | 238 | 1,810 | 1.87 | 25.42 |

### WEST BRANCH OF OSWEGATCHIE RIVER NEAR HARRISVILLE, N. Y.

LOCATION.—At highway bridge, near Geers Corners, 4 miles below Harrisville, Lewis County, and 16 miles above 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, 1925.

GAGE.—Vertical staff in three sections on right bank; one section graduated from 0.0 to 3.3 feet about 25 feet below bridge, and two sections graduated from 3.3 to 10.1 feet on downstream side of bridge abutment. Read by Frank Osborne.

DISCHARGE MEASUREMENTS.—Made from cable 200 feet above gage, from highway bridge, or by wading.

CHANNEL AND CONTROL.—Rocky and rough; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.9 feet at 7 a. m. October 2 (discharge, 4,640 second-feet); minimum stage, 0.98 foot at 7 a. m. September 3 (discharge, 31 second-feet).

1916–1925: Maximum stage recorded, 8.1 feet at 6.30 a. m. and 6 p. m. March 28, 1917 (discharge, 4,880 second-feet); minimum stage, 0.90 foot several times during August and October, 1923 (discharge, 27 second-feet).

ICE.—Stage-discharge relation only slightly affected by ice during extremely cold periods.

REGULATION.—During low water there is some diurnal fluctuation in flow caused by operation of pulp mill at Harrisville.

ACCURACY.—Stage-discharge relation practically permanent; probably not affected by ice. Rating curve fairly well defined between 50 and 4,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good, except during periods of extremely low water when errors may be introduced by diurnal fluctuation; records for such periods, fair.

The following discharge measurements were made:

April 16, 1925: Gage height, 3.62 feet; discharge, 783 second-feet.

September 22, 1925: Gage height, 3.40 feet; discharge, 663 second-feet.

*Daily discharge, in second-feet, of West Branch of Oswegatchie River near Harrisville, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3,360 | 189 | 369 | 189 | 126 | 1,530 | 1,530 | 595 | 369 | 334 | 387 | 53 |
| 2 | 4,520 | 166 | 351 | 189 | 145 | 1,250 | 1,390 | 640 | 595 | 270 | 334 | 53 |
| 3 | 3,360 | 166 | 351 | 177 | 145 | 1,000 | 1,250 | 595 | 835 | 227 | 351 | 38 |
| 4 | 2,000 | 155 | 317 | 201 | 166 | 735 | 1,180 | 640 | 890 | 177 | 270 | 46 |
| 5 | 1,120 | 155 | 241 | 177 | 145 | 640 | 1,120 | 685 | 685 | 201 | 241 | 53 |
| 6 | 945 | 189 | 406 | 189 | 166 | 595 | 1,060 | 785 | 445 | 189 | 334 | 59 |
| 7 | 685 | 177 | 550 | 227 | 166 | 640 | 1,000 | 785 | 425 | 145 | 445 | 51 |
| 8 | 507 | 189 | 735 | 189 | 177 | 640 | 890 | 735 | 351 | 166 | 445 | 61 |
| 9 | 486 | 201 | 890 | 189 | 227 | 685 | 785 | 735 | 270 | 166 | 369 | 67 |
| 10 | 425 | 201 | 835 | 177 | 595 | 890 | 785 | 685 | 270 | 135 | 351 | 57 |
| 11 | 387 | 201 | 890 | 177 | 1,060 | 1,180 | 685 | 685 | 255 | 155 | 317 | 53 |
| 12 | 334 | 201 | 890 | 177 | 2,740 | 1,390 | 685 | 685 | 201 | 117 | 285 | 76 |
| 13 | 301 | 201 | 785 | 189 | 2,180 | 1,530 | 785 | 685 | 201 | 145 | 270 | 155 |
| 14 | 334 | 227 | 685 | 177 | 2,000 | 1,530 | 785 | 685 | 145 | 145 | 189 | 334 |
| 15 | 317 | 285 | 640 | 177 | 1,920 | 1,460 | 785 | 640 | 145 | 126 | 227 | 507 |
| 16 | 255 | 270 | 550 | 155 | 1,840 | 1,390 | 785 | 507 | 166 | 126 | 177 | 640 |
| 17 | 227 | 285 | 507 | 155 | 1,530 | 1,250 | 835 | 425 | 177 | 145 | 155 | 835 |
| 18 | 227 | 227 | 465 | 177 | 1,120 | 1,180 | 785 | 507 | 166 | 145 | 117 | 1,000 |
| 19 | 285 | 214 | 387 | 166 | 785 | 1,250 | 785 | 507 | 145 | 117 | 109 | 1,000 |
| 20 | 255 | 214 | 369 | 135 | 785 | 1,390 | 685 | 507 | 166 | 166 | 71 | 890 |
| 21 | 227 | 214 | 369 | 201 | 685 | 1,530 | 640 | 507 | 145 | 135 | 126 | 785 |
| 22 | 227 | 241 | 301 | 166 | 890 | 1,460 | 685 | 486 | 145 | 145 | 101 | 685 |
| 23 | 201 | 685 | 270 | 189 | 1,390 | 1,390 | 890 | 465 | 166 | 214 | 94 | 465 |
| 24 | 201 | 1,180 | 255 | 155 | 2,540 | 1,250 | 1,000 | 465 | 145 | 317 | 77 | 369 |
| 25 | 189 | 1,120 | 214 | 166 | 2,740 | 1,060 | 1,000 | 595 | 145 | 301 | 94 | 301 |
| 26 | 189 | 1,000 | 241 | 126 | 2,540 | 1,000 | 1,000 | 507 | 189 | 270 | 67 | 255 |
| 27 | 189 | 785 | 241 | 166 | 2,180 | 1,000 | 945 | 507 | 255 | 334 | 72 | 241 |
| 28 | 189 | 685 | 241 | 166 | 1,840 | 1,390 | 890 | 425 | 270 | 425 | 65 | 227 |
| 29 | 201 | 507 | 214 | 166 | ------- | 2,000 | 735 | 369 | 425 | 406 | 56 | 241 |
| 30 | 201 | 406 | 214 | 145 | ------- | 2,000 | 595 | 334 | 369 | 425 | 59 | 241 |
| 31 | 189 | ------- | 201 | 155 | ------- | 1,760 | ------- | 334 | ------- | 369 | 53 | ------ |

NOTE.—Discharge estimated Nov. 4 and Apr. 15; gage not read.

*Monthly discharge of West Branch of Oswegatchie River near Harrisville, N. Y., for the year ending September 30, 1925*

[Drainage area, 256 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 4,520 | 189 | 727 | 2.84 | 3.27 |
| November | 1,180 | 155 | 365 | 1.43 | 1.60 |
| December | 890 | 201 | 451 | 1.76 | 2.03 |
| January | 227 | 126 | 174 | .680 | .78 |
| February | 2,720 | 126 | 1,170 | 4.57 | 4.76 |
| March | 2,000 | 595 | 1,230 | 4.80 | 5.53 |
| April | 1,530 | 595 | 899 | 3.51 | 3.92 |
| May | 785 | 334 | 571 | 2.23 | 2.57 |
| June | 890 | 145 | 305 | 1.19 | 1.33 |
| July | 425 | 117 | 217 | .848 | .98 |
| August | 445 | 53 | 203 | .793 | .91 |
| September | 1,000 | 38 | 328 | 1.28 | 1.43 |
| The year | 4,520 | 38 | 549 | 2.14 | 29.11 |

### GRASS RIVER AT PYRITES, N. Y.

LOCATION.—1,000 feet below lower highway bridge in Pyrites, St. Lawrence County, three-quarters of a mile below dam of DeGrasse Paper Co., and half a mile above mouth of Harrison Creek.

DRAINAGE AREA.—334 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 4, 1924, to September 30, 1925.

GAGE.—Gurley 7-day graph water-stage recorder on left bank installed August 16, 1924. Vertical staff 30 feet upstream was used previous to that date. Gage read by engineer during installation of automatic gage. Water-stage recorder inspected by employee of DeGrasse Paper Co.

DISCHARGE MEASUREMENTS.—Made from a cable 175 feet below gage or by wading.

CHANNEL AND CONTROL.—Gravel and small boulders; probably permanent under ordinary river conditions.

EXTREMES OF DISCHARGE.—Maximum stage from water-stage recorder, during period August 4, 1924, to September 30, 1925, 8.65 feet at 7 a. m. October 2, 1924 (discharge, 4,160 second-feet); minimum stage, 1.10 feet at 11 a. m. September 28, 1924 (discharge, about 40 second-feet).

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

REGULATION.—Some diurnal fluctuation in flow during low-water season caused by operation of power plant of DeGrasse Paper Co.

ACCURACY.—Stage-discharge relation permanent. Rating curve fairly well defined above 150 second-feet. Operation of water-stage recorder satisfactory except during winter. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of gage-height graph or, for days of considerable fluctuation, by averaging discharge for intervals of day. Records good except during periods of estimate, for which they are fair.

*Discharge measurements of Grass River at Pyrites, N. Y., during the years ending September 30, 1924 and 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| 1924 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* |
| Aug. 12 | 2.54 | 330 | Feb. 8 | 2.04 | 202 | Sept. 21 | 3.79 | 1,030 |
| Aug. 17 | 2.09 | 212 | Mar. 27 | 4.54 | 1,410 | | | |
| Sept. 23 | 1.98 | 180 | Apr. 19 | 3.71 | 862 | | | |
| Oct. 2 | 8.64 | 4,140 | May 5 | 3.68 | 884 | | | |
| Dec. 2 | 2.71 | 410 | June 10 | 2.72 | 400 | | | |

*Daily discharge, in second-feet, of Grass River at Pyrites, N. Y., for the years ending September 30, 1924 and 1925*

| Day | Aug. | Sept. | Day | Aug. | Sept. | Day | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1924 | | | 1924 | | | 1924 | | |
| 1 | ------ | 210 | 11 | 368 | 413 | 21 | 312 | 192 |
| 2 | ------ | 211 | 12 | 350 | 398 | 22 | 441 | 206 |
| 3 | ------ | 285 | 13 | 284 | 368 | 23 | 604 | 188 |
| 4 | 165 | 386 | 14 | 246 | 476 | 24 | 790 | 193 |
| 5 | 131 | 326 | 15 | 269 | 468 | 25 | 558 | 200 |
| 6 | 135 | 297 | 16 | 237 | 368 | 26 | 401 | 190 |
| 7 | 297 | 323 | 17 | 203 | 300 | 27 | 320 | 188 |
| 8 | 535 | 333 | 18 | 232 | 263 | 28 | 303 | 141 |
| 9 | 580 | 300 | 19 | 224 | 237 | 29 | 320 | 198 |
| 10 | 441 | 316 | 20 | 206 | 216 | 30 | 284 | 1,200 |
| | | | | | | 31 | 234 | ------ |

*Daily discharge, in second-feet, of Grass River at Pyrites, N. Y., for the years ending September 30, 1924 and 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1924-25 | | | | | | | | | | | | |
| 1 | 3,570 | 252 | 468 | 257 | 196 | 1,810 | 1,930 | 790 | 526 | 263 | 291 | 107 |
| 2 | 4,050 | 236 | 405 | 254 | 221 | 1,450 | 1,750 | 880 | 855 | 260 | 361 | 95 |
| 3 | 3,210 | 246 | 390 | 249 | 198 | 1,240 | 1,630 | 820 | 1,180 | 244 | 409 | 102 |
| 4 | 2,110 | 235 | 364 | 227 | 203 | 940 | 1,570 | 760 | 1,180 | 219 | 303 | 105 |
| 5 | 1,510 | 226 | 454 | 237 | 198 | 790 | 1,510 | 850 | 910 | 221 | 249 | 119 |
| 6 | 1,120 | 224 | 850 | 237 | 196 | 705 | 1,450 | 940 | 705 | 240 | 235 | 91 |
| 7 | 880 | 224 | 1,270 | 229 | 198 | 680 | 1,240 | 910 | 530 | 240 | 213 | 118 |
| 8 | 760 | 278 | 1,450 | 240 | 196 | 910 | 1,150 | 790 | 437 | 333 | 198 | 137 |
| 9 | 730 | 307 | 1,690 | 246 | 336 | 1,240 | 1,090 | 760 | 372 | 433 | 176 | 141 |
| 10 | 655 | 303 | 1,690 | 249 | 2,320 | 1,570 | 1,030 | 680 | 350 | 333 | 204 | 145 |
| 11 | 558 | 278 | 1,180 | 237 | 2,710 | 1,810 | 1,000 | 680 | 340 | 266 | 188 | 127 |
| 12 | 472 | 281 | 970 | 221 | 3,720 | 1,690 | 1,000 | 730 | 344 | 188 | 186 | 137 |
| 13 | 441 | 303 | 880 | | 2,040 | 1,510 | 1,000 | 705 | 310 | 215 | 183 | 290 |
| 14 | 394 | 364 | 659 | | 1,570 | 1,390 | 940 | 630 | 260 | 148 | 174 | 940 |
| 15 | 375 | 394 | 970 | 200 | 1,510 | 1,300 | 940 | 558 | 266 | 165 | 158 | 940 |
| 16 | 350 | 375 | 630 | | 1,330 | 1,240 | 1,030 | 508 | 257 | 163 | 167 | 1,150 |
| 17 | 347 | 320 | 463 | 213 | 1,180 | 1,150 | 1,030 | 558 | 297 | 181 | 191 | 1,570 |
| 18 | 330 | 266 | 421 | 203 | 1,030 | 1,120 | 970 | 705 | 307 | 257 | 145 | 1,390 |
| 19 | 310 | 246 | 375 | 278 | 880 | 1,860 | 910 | 655 | 294 | 232 | 136 | 1,240 |
| 20 | 326 | 257 | 361 | 216 | 730 | 2,050 | 850 | 558 | 272 | 224 | 145 | 910 |
| 21 | 316 | 288 | 295 | 221 | 763 | 1,930 | 850 | 512 | 268 | 186 | 307 | 910 |
| 22 | 307 | 456 | 275 | 216 | 1,870 | 1,930 | 940 | 580 | 354 | 172 | 252 | 1,030 |
| 23 | 307 | 1,390 | 218 | 213 | 2,180 | 1,750 | 1,150 | 630 | 368 | 281 | 184 | 790 |
| 24 | 303 | 1,930 | 213 | 200 | 3,280 | 1,450 | 1,270 | 680 | 303 | 333 | 190 | 580 |
| 25 | 300 | 1,570 | 237 | | 2,510 | 1,360 | 1,210 | 680 | 266 | 263 | 154 | 463 |
| 26 | 278 | 1,150 | 226 | | 2,300 | 1,390 | 1,090 | 580 | 266 | 233 | 143 | 398 |
| 27 | 281 | 850 | 181 | 200 | 2,300 | 1,450 | 1,000 | 530 | 300 | 291 | 137 | 340 |
| 28 | 272 | 705 | 220 | | 2,300 | 2,420 | 910 | 476 | 288 | 303 | 122 | 433 |
| 29 | 266 | 630 | 275 | | ------- | 2,930 | 820 | 437 | 323 | 260 | 118 | 413 |
| 30 | 257 | 444 | 266 | | ------- | 2,370 | 760 | 481 | 288 | 237 | 80 | 386 |
| 31 | 252 | ------- | 263 | 186 | ------- | 2,170 | ------- | 535 | ------- | 235 | 137 | ------- |

NOTE.—Discharge estimated from gage-height hydrograph and comparative studies, Dec. 5, 6, 16, 28-31, Jan. 1, 2, 12-17, 23-31, Feb. 1-6, 15-21, 27, 28, Mar. 7-12, 15-18, Apr. 27-29, and May 4-5; automatic gage record either faulty or missing.

*Monthly discharge of Grass River at Pyrites, N. Y., for the years ending September 30, 1924 and 1925*

[Drainage area, 334 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1924 | | | | | |
| August 4-31 | 790 | 131 | 338 | 1.01 | 1.05 |
| September | 1,200 | 141 | 313 | .937 | 1.05 |
| 1924-25 | | | | | |
| October | 4,050 | 252 | 827 | 2.48 | 2.86 |
| November | 1,930 | 224 | 501 | 1.50 | 1.67 |
| December | 1,690 | 181 | 600 | 1.80 | 2.08 |
| January | 278 | 186 | 220 | .659 | .76 |
| February | 3,720 | 196 | 1,370 | 4.10 | 4.27 |
| March | 2,930 | 680 | 1,540 | 4.61 | 5.32 |
| April | 1,930 | 760 | 1,130 | 3.38 | 3.77 |
| May | 940 | 437 | 664 | 1.99 | 2.29 |
| June | 1,180 | 257 | 434 | 1.30 | 1.45 |
| July | 433 | 148 | 246 | .737 | .85 |
| August | 409 | 80 | 198 | .593 | .68 |
| September | 1,570 | 91 | 520 | 1.56 | 1.74 |
| The year | 4,050 | 80 | 683 | 2.04 | 27.74 |

### NORTH BRANCH OF GRASS RIVER NEAR SOUTH COLTON, N. Y.

LOCATION.—At Gleasons mill, 3½ miles above mouth of Gulf Creek, 4¼ miles southwest of South Colton, St. Lawrence County, and 11 miles above junction with Grass River.

DRAINAGE AREA.—25.8 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 22, 1924, to September 30, 1925.

GAGE.—Staff gage in two sections on right bank 700 feet below sawmill dam, the lower inclined, the upper vertical; read by H. L. Gleason.

DISCHARGE MEASUREMENTS.—Made by wading or from highway bridge half a mile below gage.

CHANNEL AND CONTROL.—Gravel and small boulders; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, September 22, 1924, to September 30, 1925, 3.9 feet at 6 a. m. October 1, 1924 (discharge, 561 second-feet); minimum stage, 0.77 foot several times August 27–29, 1925 (discharge, 2.5 second-feet).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined below 100 second-feet and fairly well defined below 400 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table or for days of great range in stage by averaging discharge for intervals of day. Records good except during periods of ice effect for which they are fair.

*Discharge measurements of North Branch of Grass River near South Colton, N. Y., during the period September 22, 1924, to September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| 1924 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* |
| Sept. 22 | 0.98 | 8.7 | Feb. 7 | [a] 1.21 | 12.7 | Sept. 20 | 1.42 | 46.2 |
| Do | .73 | 1.9 | Apr. 18 | 1.59 | 67.7 | | | |
| Do | 1.12 | 14.3 | Apr. 20 | 1.48 | 51.3 | | | |
| Sept. 24 | 1.15 | 18.4 | May 5 | 1.57 | 66.6 | | | |
| Oct. 2 | 3.08 | 368 | June 9 | 1.15 | 21.0 | | | |

[a] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of North Branch of Grass River near South Colton, N. Y., for the period September 22, 1924, to September 30, 1925*

| Day | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 537 | 18 | 31 | 20 | 14 | 140 | 137 | 55 | 27 | 14 | 12 | 2.7 |
| 2 | | 373 | 18 | 29 | 19 | 13 | 110 | 116 | 73 | 92 | 14 | 35 | 2.7 |
| 3 | | 217 | 18 | 28 | 19 | 13 | 85 | 116 | 58 | 166 | 12 | 22 | 2.7 |
| 4 | | 123 | 17 | 26 | 22 | 13 | 70 | 133 | 46 | 96 | 11 | 14 | 3.5 |
| 5 | | 73 | 17 | 32 | 22 | 13 | 50 | 133 | 61 | 52 | 18 | 9.5 | 3.5 |
| 6 | | 50 | 16 | 60 | 22 | 13 | 45 | 99 | 76 | 35 | 21 | 8.7 | 3.5 |
| 7 | | 42 | 16 | 110 | 22 | 13 | 45 | 94 | 67 | 26 | 21 | 9.1 | 3.5 |
| 8 | | 40 | 22 | 150 | 22 | 16 | 50 | 89 | 52 | 21 | 60 | 9.5 | 3.5 |
| 9 | | 42 | 28 | 190 | 22 | 32 | 54 | 89 | 50 | 18 | 50 | 8.7 | 4.5 |
| 10 | | 38 | 24 | 180 | 22 | 75 | 58 | 78 | 45 | 21 | 25 | 7.1 | 7.9 |
| 11 | | 32 | 27 | 130 | 20 | 140 | 110 | 84 | 47 | 22 | 14 | 6.3 | 3.5 |
| 12 | | 29 | 26 | 80 | 20 | 220 | 166 | 92 | 50 | 21 | 11 | 6.3 | 7.9 |
| 13 | | 27 | 28 | 60 | 20 | 220 | 137 | 89 | 47 | 16 | 9.5 | 7.5 | 32 |
| 14 | | 26 | 31 | 48 | 20 | 180 | 116 | 78 | 41 | 14 | 8.7 | 7.9 | 128 |
| 15 | | 25 | 31 | 75 | 19 | 150 | 123 | 83 | 33 | 12 | 7.9 | 7.9 | 104 |
| 16 | | 24 | 30 | 42 | 18 | 140 | 119 | 102 | 29 | 15 | 7.9 | 7.1 | 89 |
| 17 | | 23 | 30 | 34 | 16 | 120 | 73 | 105 | 35 | 23 | 20 | 5.5 | 196 |
| 18 | | 22 | 26 | 30 | 16 | 110 | 67 | 80 | 52 | 21 | 21 | 4.8 | 128 |
| 19 | | 22 | 20 | 24 | 15 | 100 | 123 | 62 | 41 | 25 | 18 | 4.2 | 70 |
| 20 | | 22 | 19 | 26 | 14 | 95 | 238 | 61 | 31 | 19 | 14 | 4.5 | 48 |

*Daily discharge, in second-feet, of North Branch of Grass River near South Colton, N. Y., for the period September 22, 1924, to September 30, 1925*—Continued

| Day | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | ------- | 22 | 22 | 24 | 14 | 85 | 217 | 55 | 33 | 17 | 9.5 | 5.0 | 50 |
| 22 | 7.9 | 22 | 42 | 24 | 14 | 90 | 217 | 73 | 52 | 29 | 13 | 4.2 | 42 |
| 23 | 13 | 24 | 249 | 24 | 14 | 130 | 166 | 102 | 52 | 26 | 30 | 4.0 | 27 |
| 24 | 18 | 23 | 260 | 24 | 13 | 240 | 119 | 116 | 64 | 16 | 22 | 3.5 | 20 |
| 25 | 16 | 22 | 156 | 24 | 13 | 280 | 128 | 96 | 52 | 15 | 13 | 3.0 | 17 |
| 26 | 13 | 22 | 84 | 24 | 13 | 220 | 133 | 83 | 42 | 22 | 11 | 2.7 | 16 |
| 27 | 12 | 21 | 55 | 22 | 13 | 220 | 166 | 75 | 35 | 21 | 18 | 2.7 | 16 |
| 28 | 11 | 21 | 47 | 22 | 12 | 200 | 327 | 64 | 31 | 19 | 14 | 2.5 | 29 |
| 29 | 13 | 21 | 41 | 20 | 12 | ------- | 282 | 50 | 27 | 21 | 12 | 2.5 | 33 |
| 30 | 267 | 19 | 35 | 20 | 13 | ------- | 217 | 43 | 27 | 14 | 12 | 3.0 | 25 |
| 31 | ------- | 19 | ------- | 20 | 13 | ------- | 176 | ------- | 27 | ------- | 9.5 | 2.8 | ----- |

NOTE.—Discharge Nov. 17-19 and Dec. 3 to Mar. 5 determined from gage heights corrected for ice effect from one discharge measurement, study of oberver's notes, gage-height graph, and weather records and by comparison with record of Grass River at Pyrites.

*Monthly discharge of North Branch of Grass River near South Colton, N. Y., for the period September 22, 1924, to September 30, 1925*

[Drainage area, 25.8 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1924 | | | | | |
| September 22-30 | 267 | 7.9 | 41.2 | 1.60 | 0.54 |
| 1924-25 | | | | | |
| October | 537 | 19 | 65.3 | 2.53 | 2.92 |
| November | 260 | 16 | 48.4 | 1.88 | 2.10 |
| December | 190 | 20 | 52.7 | 2.04 | 2.35 |
| January | 22 | 12 | 17.2 | .667 | .77 |
| February | 280 | 13 | 113 | 4.38 | 4.56 |
| March | 327 | 45 | 133 | 5.16 | 5.95 |
| April | 137 | 43 | 89.2 | 3.46 | 3.86 |
| May | 76 | 27 | 46.2 | 1.79 | 2.06 |
| June | 166 | 12 | 31.4 | 1.22 | 1.36 |
| July | 60 | 7.9 | 17.5 | .678 | .78 |
| August | 35 | 2.5 | 7.53 | .292 | .34 |
| September | 196 | 2.7 | 37.3 | 1.45 | 1.62 |
| The year | 537 | 2.5 | 54.4 | 2.11 | 28.67 |

### RAQUETTE RIVER AT PIERCEFIELD, N. Y.

LOCATION.—Half a mile below dam of International Paper Co. at Piercefield, St. Lawrence County, and three-quarters of a mile above head of Black Rapids.

DRAINAGE AREA.—723 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 20, 1908, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on left bank; inspected by employee of International Paper Co.

DISCHARGE MEASUREMENTS.—Made from cable three-quarters of a mile below gage.

CHANNEL AND CONTROL.—Channel opposite gage is a deep pond with no perceptible velocity. Control which is at head of Black Rapids is composed of rock ledge and large boulders; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year ending September 30, 1924, from water-stage recorder, 10.7 feet at 10 a. m. May 5 (discharge, 5,930 second-feet); minimum stage, from water-stage recorder, 1.85 feet from 3 to 7 p. m. October 14 (discharge, 60 second-feet).

Maximum stage during year ending September 30, 1925, from water-stage recorder, 9.4 feet at 10 a. m. April 6 (discharge, 4,380 second-feet); minimum stage from water-stage recorder, 2.14 feet at 10 p. m. September 6 (discharge, 87 second-feet).

1908–1925: 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).

ICE.—Stage-discharge relation affected by ice for short periods only during extremely cold weather.

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 storage, most of which is so controlled that the effect on the seasonal distribution of flow is large.

ACCURACY.—Stage-discharge relation was permanent during the year ending September 30, 1925, but owing to change in the control in May, 1924, the records of discharge from May 21 to September 30, 1924, have been revised. Rating curve used October 1, 1923, to May 20, 1924, well defined between 50 and 5,000 second-feet; curve used May 21, 1924, to September 30, 1925, well defined between 50 and 7,000 second-feet. 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. Records good except those estimated, which are fair.

*Discharge measurements of Raquette River at Piercefield, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 2 | 7.69 | 2,540 | Feb. 21 | 6.28 | 1,470 | July 19 | 3.61 | 369 |
| Feb. 3 | 4.44 | 609 | Apr. 18 | 8.39 | 3,230 | | | |

*Daily discharge, in second-feet, of Raquette River at Piercefield, N. Y., for the years ending September 30, 1924 and 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1923–24 | | | | | | | | | | | | |
| 1 | 269 | 515 | 873 | | 1,660 | 702 | 1,020 | 4,340 | 2,410 | 840 | 444 | 677 |
| 2 | 385 | 485 | 638 | | 1,620 | 236 | 831 | 4,560 | 2,670 | 840 | 347 | 818 |
| 3 | 222 | 470 | 1,330 | | 836 | 490 | 800 | 4,680 | 2,580 | 755 | 304 | 908 |
| 4 | 255 | 229 | 1,560 | | 1,310 | 515 | 907 | 5,040 | 2,400 | 715 | 420 | 885 |
| 5 | 253 | 376 | 1,430 | | 1,430 | 565 | 967 | 5,540 | 2,220 | 696 | 444 | 862 |
| 6 | 158 | 515 | 1,520 | 1,300 | 1,320 | 548 | 580 | 5,670 | 2,090 | 696 | 490 | |
| 7 | 101 | 500 | 1,590 | | 1,220 | 860 | 1,290 | 5,800 | 1,980 | 677 | 537 | |
| 8 | 89 | 530 | 1,520 | | 1,220 | 857 | 1,620 | 5,670 | 1,370 | 750 | 587 | |
| 9 | 297 | 548 | 1,310 | | 1,460 | 254 | 1,660 | 5,540 | 1,840 | 755 | 587 | |
| 10 | 410 | 530 | 1,800 | | 609 | 442 | 1,760 | 5,540 | 1,760 | 715 | 554 | 900 |
| 11 | 228 | 261 | 1,800 | | 887 | 565 | 1,840 | 5,410 | 1,660 | 755 | 648 | |
| 12 | 175 | 415 | 1,700 | 1,400 | 1,130 | 500 | 1,940 | 5,410 | 1,560 | 599 | 677 | |
| 13 | 153 | 548 | 1,700 | 1,090 | 1,220 | 762 | 1,520 | 5,410 | 1,440 | 521 | 677 | |
| 14 | 95 | 565 | 1,760 | 1,730 | 1,190 | 500 | 2,160 | 5,280 | 1,320 | 594 | 677 | 755 |
| 15 | 78 | 548 | 1,730 | 1,840 | 817 | 626 | 2,410 | 5,410 | 554 | 604 | 658 | 818 |
| 16 | 77 | 515 | 1,230 | 1,870 | 998 | 210 | 2,490 | 5,410 | 813 | 570 | 640 | 908 |
| 17 | 117 | 530 | 1,670 | 2,010 | 575 | 408 | 2,660 | 5,410 | 998 | 537 | 570 | 885 |
| 18 | 326 | 276 | 1,730 | 2,090 | 727 | 644 | 2,660 | 5,280 | 1,040 | 505 | 521 | 885 |
| 19 | 385 | 398 | 1,730 | 2,090 | 902 | 500 | 2,930 | 5,280 | 779 | 384 | 587 | 1,080 |
| 20 | 272 | 530 | 1,700 | 2,010 | 1,050 | 500 | 3,020 | 5,160 | 651 | 347 | 677 | 998 |
| 21 | | 530 | 1,560 | 2,090 | 874 | 760 | 3,500 | 5,020 | 783 | 450 | 658 | 570 |
| 22 | | 530 | 1,460 | 2,090 | 696 | 869 | 3,700 | 4,760 | 304 | 474 | 677 | 604 |
| 23 | | 587 | | 1,940 | 710 | 270 | 3,800 | 4,630 | 491 | 459 | 776 | 978 |
| 24 | 350 | 428 | | 1,900 | 218 | 854 | 3,900 | 4,380 | 583 | 459 | 677 | 900 |
| 25 | | 207 | | 1,940 | 635 | 1,020 | 4,010 | 3,900 | 677 | 474 | 885 | 850 |
| 26 | | 352 | 1,300 | 1,870 | 754 | 792 | 4,010 | 3,900 | 755 | 401 | 952 | 807 |
| 27 | | 548 | | 1,350 | 746 | 772 | 3,900 | 3,680 | 840 | 360 | 975 | 908 |
| 28 | 141 | 530 | | 1,780 | 565 | 777 | 4,230 | 3,460 | 885 | 468 | 975 | 420 |
| 29 | 316 | 548 | | 1,760 | 565 | 862 | 4,230 | 3,250 | 840 | 474 | 975 | 776 |
| 30 | 455 | 530 | | 1,650 | ------- | 465 | 4,230 | 3,050 | 862 | 474 | 862 | 1,140 |
| 31 | 485 | ------- | | 1,730 | ------- | 851 | ------- | 2,850 | ------ | 459 | 776 | ----- |
| 1924–25 | | | | | | | | | | | | |
| 1 | 1,830 | 975 | 1,430 | | | | 3,790 | 3,570 | 1,300 | 975 | 1,070 | 840 |
| 2 | 2,400 | 383 | 1,290 | | 420 | | 4,020 | 3,570 | 1,500 | 998 | 800 | 776 |
| 3 | 2,760 | 750 | 1,200 | | | | 4,140 | 3,460 | 1,720 | 1,020 | 1,140 | 696 |
| 4 | 2,850 | 816 | 1,120 | | 430 | | 3,900 | 3,680 | 1,900 | 662 | 1,020 | 604 |
| 5 | 2,670 | 763 | 1,080 | 700 | 459 | | 4,140 | 3,680 | 2,060 | 715 | 1,020 | 474 |
| 6 | 2,850 | 755 | 1,180 | | 570 | | 4,140 | 3,680 | 2,060 | 952 | 998 | 340 |
| 7 | 2,760 | 587 | 890 | | 520 | | 3,790 | 3,680 | 1,830 | 975 | 952 | 140 |
| 8 | 2,580 | 587 | 1,100 | 758 | 349 | 1,900 | 3,680 | 3,680 | 1,860 | 930 | 952 | 289 |
| 9 | 2,490 | 330 | 1,140 | 639 | 450 | | 3,680 | 3,680 | 1,760 | 840 | 623 | 459 |
| 10 | 2,400 | 555 | 1,220 | 698 | 604 | | 3,460 | 3,460 | 1,620 | 797 | 954 | 415 |
| 11 | 2,310 | 604 | 1,290 | 363 | 622 | | 3,680 | 3,460 | 1,440 | 677 | 818 | 294 |
| 12 | 1,980 | 604 | 1,100 | 641 | 640 | | 3,570 | 3,250 | 1,350 | 365 | 818 | 194 |
| 13 | 2,060 | 664 | 1,280 | 604 | 840 | | 3,680 | 3,050 | 1,300 | 573 | 776 | 696 |
| 14 | 1,980 | 604 | 988 | 521 | 1,040 | | 3,570 | 2,950 | 1,030 | 840 | 797 | 735 |
| 15 | 1,900 | 587 | 1,270 | 587 | 1,070 | 1,760 | 3,460 | 2,850 | 1,090 | 1,170 | 786 | 658 |
| 16 | 1,830 | 326 | 1,220 | 587 | 1,380 | 1,980 | 3,460 | 2,670 | 975 | 1,200 | 643 | 908 |
| 17 | 1,690 | 450 | 1,200 | 570 | 1,440 | 1,980 | 3,350 | 2,360 | 862 | 1,220 | 885 | 1,300 |
| 18 | 1,620 | 604 | | 353 | 1,500 | 1,940 | 3,250 | 2,360 | 755 | 1,140 | 797 | |
| 19 | 1,500 | 587 | | | 1,500 | 1,980 | 3,150 | 2,220 | 622 | 640 | 797 | |
| 20 | 1,440 | 506 | | | 1,500 | 1,980 | 3,350 | 2,140 | 640 | 951 | 975 | |
| 21 | 1,540 | 511 | | | 1,530 | 1,980 | 3,250 | 1,900 | 908 | 1,100 | 776 | |
| 22 | 1,440 | 514 | | | 1,320 | 1,860 | 3,150 | 1,800 | 952 | 1,320 | 908 | 1,800 |
| 23 | 1,340 | 303 | | | 1,690 | 2,140 | 3,150 | 1,660 | 975 | 1,380 | 1,220 | |
| 24 | 1,230 | 520 | 900 | | 1,830 | 2,140 | 3,250 | 1,470 | 930 | 998 | 1,140 | |
| 25 | 1,160 | 806 | | 500 | 1,940 | 2,140 | 3,250 | 1,760 | 952 | 885 | 908 | |
| 26 | 723 | 998 | | | 2,060 | 2,670 | 3,250 | 1,760 | 885 | 642 | 862 | |
| 27 | 934 | 1,170 | | | 2,060 | 3,150 | 3,460 | 1,660 | 885 | 916 | 885 | 1,560 |
| 28 | 1,020 | 1,370 | | | 2,060 | 3,460 | 3,460 | 1,530 | 633 | 885 | 570 | 2,490 |
| 29 | 955 | 1,360 | | | ------- | 3,460 | 3,460 | 1,440 | 938 | 998 | 505 | 2,400 |
| 30 | 901 | 1,140 | | | ------- | 3,450 | 3,460 | 1,380 | 975 | 1,020 | 459 | 2,060 |
| 31 | 985 | ------- | | | ------- | 3,570 | ---- | 1,170 | ------ | 1,020 | 421 | ------ |

NOTE.—Water-stage recorder did not operate satisfactorily Oct. 20–27, 1923, Dec. 23, 1923, to Jan. 11, 1924, Sept. 6–13, 24, 25, 1924, Dec. 17, 1924, to Jan. 7, 1925, Jan. 19 to Feb. 3, Mar. 1–14, Aug. 29, and Sept. 18–26, 1925; discharge estimated by comparison with flow at stations on adjacent streams. Braced figures show mean discharge for periods indicated. Records in the above table for the period May 21 to Sept. 30, 1924, supersede those published in Water-Supply Paper 584.

*Monthly discharge of Raquette River at Piercefield, N. Y., for the years ending September 30, 1924 and 1925*

[Drainage area, 723 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1923-24 | | | | | |
| October | 485 | 77 | 265 | 0.367 | 0.42 |
| November | 587 | 207 | 469 | .649 | .72 |
| December | 1,800 | 638 | 1,450 | 2.01 | 2.32 |
| January | 2,090 | 1,090 | 1,630 | 2.25 | 2.59 |
| February | 1,660 | 218 | 964 | 1.33 | 1.43 |
| March | 1,020 | 210 | 615 | .851 | .98 |
| April | 4,230 | 580 | 2,490 | 3.44 | 3.84 |
| May | 5,800 | 2,850 | 4,800 | 6.64 | 7.66 |
| June | 2,670 | 304 | 1,310 | 1.81 | 2.02 |
| July | 940 | 347 | 574 | .794 | .92 |
| August | 975 | 304 | 653 | .903 | 1.04 |
| September | 1,140 | 420 | 854 | 1.18 | 1.32 |
| The year | 5,800 | 77 | 1,340 | 1.85 | 25.26 |
| 1924-25 | | | | | |
| October | 2,850 | 723 | 1,810 | 2.50 | 2.88 |
| November | 1,370 | 303 | 691 | .956 | 1.07 |
| December | 1,430 | | 1,050 | 1.45 | 1.67 |
| January | 758 | 353 | 572 | .791 | .91 |
| February | 2,060 | 349 | 1,100 | 1.52 | 1.58 |
| March | 3,570 | 1,760 | 2,200 | 3.04 | 3.50 |
| April | 4,140 | 3,150 | 3,550 | 4.91 | 5.48 |
| May | 3,680 | 1,170 | 2,610 | 3.61 | 4.16 |
| June | 2,060 | 622 | 1,220 | 1.69 | 1.89 |
| July | 1,380 | 365 | 929 | 1.28 | 1.48 |
| August | 1,220 | 421 | 848 | 1.17 | 1.35 |
| September | 2,490 | 140 | 1,150 | 1.59 | 1.72 |
| The year | 4,140 | 140 | 1,480 | 2.05 | 27.74 |

NOTE.—Records May to September, 1924, supersede those published in Water-Supply Paper 584.

### ST. REGIS RIVER AT BRASHER CENTER, N. Y.

LOCATION.—600 feet above steel highway bridge in Brasher Center, St. Lawrence County, 6 miles below junction of East and West Branches of St. Regis River, 7 miles above Deer River, and 15 miles above mouth.

DRAINAGE AREA.—616 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 22, 1910, to November 10, 1917, and January 1, 1919, to September 30, 1925.

GAGE.—Gurley 7-day graph water-stage recorder on left bank; inspected by Alfred Berry.

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

CHANNEL AND CONTROL.—Rock ledge, small boulders, and coarse gravel; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 9.48 feet at 1.30 a. m. February 12 (discharge, 5,880 second-feet); minimum stage, 5.78 feet at midnight September 6 (discharge, 174 second-feet).

1910-1925: Maximum stage recorded, 9.1 feet (old datum) at 7 a. m. March 27, 1914 (discharge, 16,200 second-feet); minimum stage, 5.25 feet at 5 p. m. August 8, 1917 (discharge, about 34 second-feet).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation practically permanent except as affected by ice. Rating curve well defined between 200 and 5,000 second-feet. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of gage-height graph or, for days of considerable fluctuation, by averaging discharge for intervals of day. Records good, except during periods of ice effect and estimate, for which they are fair.

*Discharge measurements of St. Regis River at Brasher Center, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Feb. 6 | *6.99 | 325 | June 10 | 6.52 | 774 |
| Mar. 28 | 8.57 | 3,990 | Sept. 19 | 7.70 | 2,530 |
| May 5 | 7.11 | 1,460 | | | |

* Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of St. Regis River at Brasher Center, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5,290 | 426 | 800 | 420 | 320 | 2,270 | 3,420 | 1,480 | 1,150 | 610 | 1,050 | 236 |
| 2 | 5,080 | 409 | 750 | 420 | 320 | 1,740 | 3,330 | 1,590 | 1,860 | 580 | 1,260 | 249 |
| 3 | 4,180 | 418 | 700 | 420 | 300 | 1,410 | 3,240 | 1,570 | 2,360 | 551 | 1,210 | 225 |
| 4 | 3,150 | 401 | 650 | 480 | 340 | 1,260 | 2,880 | 1,480 | 2,080 | 496 | 1,000 | 184 |
| 5 | 2,270 | 401 | 550 | 480 | 320 | 1,100 | 2,610 | 1,550 | 1,760 | 505 | 807 | 219 |
| 6 | 1,800 | 401 | 900 | 460 | 320 | 1,030 | 2,360 | 1,580 | 1,470 | 580 | 692 | 207 |
| 7 | 1,470 | 401 | 1,200 | 440 | 320 | 1,100 | 2,110 | 1,510 | 1,160 | 647 | 712 | 213 |
| 8 | 1,340 | 451 | 1,500 | 460 | 320 | 1,200 | 1,950 | 1,410 | 969 | 1,530 | 786 | 230 |
| 9 | 1,200 | 477 | 2,000 | 460 | 400 | 1,130 | 1,840 | 1,400 | 849 | 1,500 | 796 | 207 |
| 10 | 1,060 | 477 | 1,800 | 420 | 1,500 | 1,350 | 1,770 | 1,360 | 796 | 1,130 | 723 | 262 |
| 11 | 925 | 468 | 1,700 | 440 | 3,200 | 3,390 | 1,710 | 1,300 | 796 | 860 | 620 | 289 |
| 12 | 838 | 486 | 1,500 | 380 | 4,400 | 2,700 | 1,720 | 1,330 | 786 | 734 | 580 | 255 |
| 13 | 765 | 505 | 1,400 | 400 | 2,400 | 2,270 | 1,820 | 1,230 | 712 | 754 | 523 | 351 |
| 14 | 702 | 580 | 1,300 | 380 | 2,400 | 2,060 | 1,720 | 1,110 | 630 | 702 | 496 | 1,820 |
| 15 | 670 | 640 | 1,500 | 340 | 2,200 | 1,980 | 1,720 | 1,000 | 580 | 610 | 468 | 1,980 |
| 16 | 650 | 650 | 1,200 | 380 | 1,900 | 1,880 | 1,760 | 947 | 630 | 580 | 434 | 2,190 |
| 17 | 610 | 550 | 950 | 360 | 1,700 | 1,680 | 1,820 | 1,140 | 776 | 702 | 409 | 2,880 |
| 18 | 590 | 460 | 850 | 340 | 1,600 | 1,800 | 1,720 | 1,360 | 723 | 765 | 369 | 2,700 |
| 19 | 560 | 360 | 700 | 340 | 1,500 | 3,340 | 1,580 | 1,230 | 630 | 681 | 346 | 2,520 |
| 20 | 542 | 460 | 600 | 340 | 1,200 | 3,420 | 1,470 | 1,080 | 600 | 590 | 392 | 2,080 |
| 21 | 514 | 550 | 550 | 360 | 1,300 | 3,060 | 1,430 | 992 | 718 | 496 | 409 | 2,060 |
| 22 | 514 | 660 | | 360 | 2,400 | 3,240 | 1,540 | 1,200 | 1,080 | 468 | 392 | 1,710 |
| 23 | 532 | 1,930 | | 360 | 2,700 | 2,790 | 1,570 | 1,370 | 1,050 | 514 | 354 | 1,440 |
| 24 | 523 | 2,440 | 500 | 340 | 4,480 | 2,440 | 1,590 | 1,550 | 881 | 640 | 332 | 1,200 |
| 25 | 542 | 2,110 | | 360 | 3,060 | 2,360 | 1,620 | 1,400 | 712 | 640 | 296 | 1,040 |
| 26 | 523 | 1,700 | | 360 | 2,880 | 2,270 | 1,580 | 1,200 | 692 | 600 | 276 | 925 |
| 27 | 496 | 1,400 | 420 | 340 | 2,790 | 2,440 | 1,570 | 1,090 | 712 | 560 | 262 | 849 |
| 28 | 477 | 1,240 | 420 | 340 | 2,880 | 4,300 | 1,480 | 992 | 712 | 580 | 249 | 838 |
| 29 | 460 | 1,000 | | 300 | ------- | 4,580 | 1,400 | 925 | 712 | 818 | 249 | 914 |
| 30 | 451 | 850 | 420 | 320 | ------- | 4,000 | 1,270 | 1,190 | 640 | 1,000 | 242 | 903 |
| 31 | 443 | ------- | | 340 | ------- | 3,800 | ------- | 1,050 | ------- | 1,040 | 230 | ------ |

NOTE.—Discharge Dec. 22–26, 29–31, Jan. 1, 2, 15, 16, 28–30, Feb. 23–27 estimated from discharge hydrograph and otherwise; no gage-height record. Discharge Nov. 16–21 and Nov. 29 to Feb. 22, determined from gage heights corrected for ice effect from one discharge measurement, study of gage-height graph and weather records, and comparison with records for stations in adjacent drainage areas.

*Monthly discharge of St. Regis River at Brasher Center, N. Y., for the year ending September 30, 1925*

[Drainage area, 616 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 5,290 | 443 | 1,260 | 2.05 | 2.36 |
| November | 2,440 | 360 | 777 | 1.26 | 1.41 |
| December | 2,000 | 420 | 894 | 1.45 | 1.67 |
| January | 480 | 300 | 385 | .625 | .72 |
| February | 4,480 | 300 | 1,770 | 2.87 | 2.99 |
| March | 4,580 | 1,030 | 2,370 | 3.85 | 4.44 |
| April | 3,420 | 1,270 | 1,920 | 3.12 | 3.48 |
| May | 1,590 | 925 | 1,280 | 2.08 | 2.40 |
| June | 2,360 | 580 | 974 | 1.58 | 1.76 |
| July | 1,530 | 468 | 725 | 1.18 | 1.36 |
| August | 1,260 | 230 | 547 | .888 | 1.02 |
| September | 2,880 | 184 | 1,040 | 1.69 | 1.89 |
| The year | 5,290 | 184 | 1,160 | 1.88 | 25.50 |

### RICHELIEU RIVER AT FORT MONTGOMERY, 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, 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 New York State engineer and surveyor).

RECORDS AVAILABLE.—1875 to September 30, 1925.

GAGE.—Vertical staff 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 the fort which was formerly used. Elevation of zero of gage, 92.50 feet above mean sea level. Gage read to hundredths once daily by Thomas Bourke, caretaker of the fort.

EXTREMES OF STAGE.—Maximum elevation recorded during year, 98.78 feet at 10 a. m. April 28; minimum elevation, 93.17 feet at 10 a. m. November 17.

1869–1925: Maximum elevation recorded, 103.28 feet April, 1869;[8] 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.

*Daily gage height, in feet, of Richelieu River at Fort Montgomery, Rouses Point, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.90 | 1.48 | 1.25 | 1.37 | 1.30 | 4.05 | 6.25 | 4.90 | 3.35 | 2.47 | 2.40 | 1.75 |
| 2 | 1.92 | .95 | 1.25 | 1.38 | 1.30 | 4.10 | 6.27 | 4.70 | 3.37 | 2.45 | 2.57 | 1.73 |
| 3 | 2.07 | 1.08 | 1.42 | 1.38 | 1.30 | 4.12 | 6.28 | 4.65 | 3.38 | 2.42 | 2.60 | 1.75 |
| 4 | 2.12 | 1.10 | 1.20 | 1.39 | 1.30 | 4.08 | 6.18 | 4.68 | 3.34 | 2.65 | 2.60 | 1.65 |
| 5 | 2.08 | 1.08 | 1.35 | 1.38 | 1.30 | 4.00 | 6.10 | 4.62 | 3.32 | 2.38 | 2.62 | 1.57 |
| 6 | 1.92 | 1.45 | 1.28 | 1.38 | 1.30 | 3.98 | 6.13 | 4.75 | 3.28 | 2.40 | 2.62 | 1.50 |
| 7 | 1.90 | 1.00 | 1.32 | 1.37 | 1.31 | 3.95 | 6.15 | 4.60 | 3.23 | 2.40 | 2.58 | 1.65 |
| 8 | 1.83 | .98 | 1.32 | 1.35 | 1.32 | 3.95 | 5.75 | 4.55 | 3.08 | 2.37 | 2.58 | 1.48 |
| 9 | 1.78 | .98 | 1.50 | 1.32 | 1.36 | 3.93 | 5.97 | 4.53 | 3.10 | 2.40 | 2.60 | 1.50 |
| 0 | 1.80 | 1.10 | 1.40 | 1.30 | 1.28 | 4.00 | 5.78 | 4.58 | 3.15 | 2.45 | 2.67 | 1.80 |

[8] Hoyt, J. C., U. S. Geol. Survey Water-Supply Paper 97, p. 340.

*Daily gage height, in feet, of Richelieu River at Fort Montgomery, Rouses Point, N. Y., for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 1.82 | 1.35 | 1.63 | 1.28 | 1.37 | 4.05 | 5.70 | 4.45 | 3.00 | 2.40 | 2.60 | 1.50 |
| 12 | 1.70 | 1.08 | 1.68 | 1.26 | 1.70 | 4.27 | 5.65 | 4.47 | 3.05 | 2.28 | 2.48 | 1.38 |
| 13 | 1.70 | .80 | 1.71 | 1.24 | 2.25 | 4.45 | 5.68 | 4.42 | 3.22 | 2.30 | 2.57 | 1.42 |
| 14 | 1.72 | .88 | 1.75 | 1.24 | 2.63 | 4.55 | 5.95 | 4.35 | 3.02 | 2.27 | 2.60 | 1.62 |
| 15 | 1.73 | .92 | 1.67 | 1.25 | 2.78 | 4.62 | 5.60 | 4.20 | 2.80 | 2.30 | 2.55 | 1.70 |
| 16 | 1.75 | 1.10 | 1.68 | 1.25 | 2.97 | 4.72 | 5.35 | 4.25 | 2.92 | 2.70 | 2.43 | 1.80 |
| 17 | 1.70 | .67 | 1.57 | 1.24 | 3.00 | 4.75 | 5.32 | 4.10 | 2.80 | 2.22 | 2.50 | 2.03 |
| 18 | 1.77 | .70 | 1.60 | 1.24 | 3.13 | 4.70 | 5.10 | 3.95 | 2.85 | 2.25 | 2.38 | 2.18 |
| 19 | 1.60 | 1.05 | 1.60 | 1.24 | 3.20 | 4.77 | 5.15 | 4.07 | 2.68 | 2.25 | 2.25 | 2.20 |
| 20 | 1.55 | .95 | 1.59 | 1.23 | 3.15 | 4.82 | 4.80 | 4.05 | 2.68 | 2.25 | 2.22 | 3.20 |
| 21 | 1.52 | .93 | 1.58 | 1.23 | 3.20 | 4.95 | 5.00 | 3.85 | 2.60 | 2.57 | 2.17 | 2.25 |
| 22 | 1.40 | .90 | 1.58 | 1.24 | 3.24 | 4.93 | 4.97 | 3.90 | 2.54 | 2.20 | 2.10 | 2.45 |
| 23 | 1.42 | .93 | 1.58 | 1.25 | 3.35 | 4.95 | 4.92 | 3.75 | 2.52 | 2.22 | 2.17 | 2.67 |
| 24 | 1.40 | 1.20 | 1.57 | 1.25 | 3.52 | 5.00 | 4.98 | 3.80 | 2.53 | 2.16 | 2.16 | 2.75 |
| 25 | 1.42 | 1.32 | 1.55 | 1.26 | 3.77 | 4.93 | 5.15 | 3.72 | 2.58 | 2.25 | 2.15 | 2.35 |
| 26 | 1.37 | 1.35 | 1.53 | 1.26 | 3.93 | 4.95 | 4.96 | 3.65 | 2.50 | 2.24 | 1.96 | 2.70 |
| 27 | 1.35 | 1.75 | 1.51 | 1.28 | 4.05 | 5.00 | 4.90 | 3.62 | 2.52 | 2.20 | 1.80 | 2.60 |
| 28 | 1.30 | 1.38 | 1.50 | 1.28 | 4.02 | 5.38 | 4.88 | 3.53 | 2.48 | 2.25 | 1.85 | 2.35 |
| 29 | 1.28 | 1.28 | 1.47 | 1.29 | ------- | 5.40 | 4.83 | 3.50 | 2.50 | 2.38 | 1.96 | 2.22 |
| 30 | 1.25 | 1.30 | 1.44 | 1.30 | ------- | 5.85 | 4.70 | 3.47 | 2.50 | 2.30 | 2.00 | 2.40 |
| 31 | 1.50 | ------- | 1.38 | 1.30 | ------- | 6.08 | ------- | 3.42 | ------- | 2.40 | 1.83 | ------- |

### 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, 1925.

GAGE.—Staff. Comparisons of gage readings indicate that zero of gage at Burlington is at practically the same elevation as that of gage at Fort Montgomery, 92.5 feet above mean sea level. Gage read by employee of the Champlain Transportation Co.

EXTREMES OF STAGE.—Maximum stage recorded during year, 6.56 feet April 2; minimum stage, 0.90 foot November 21.

1907–1925: 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 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 subject to inaccuracies due to wave action.

COOPERATION.—Gage heights furnished by D. A. Loomis, general manager of the Champlain Transportation Co.

*Daily gage height, in feet, of Lake Champlain at Burlington, Vt., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 1.44 | | | | | 6.50 | | 3.68 | 2.76 | 2.72 | |
| 2 | | | | 1.70 | | 4.39 | 6.56 | | 3.66 | 2.74 | | 1.96 |
| 3 | 2.22 | 1.44 | 1.56 | | | | 6.55 | | | 2.74 | 2.86 | 1.96 |
| 4 | 2.22 | 1.42 | | | | | 6.55 | | 3.60 | | 2.86 | |
| 5 | | 1.38 | 1.54 | | | 4.33 | | 4.95 | 3.60 | 2.68 | 2.86 | 1.86 |
| 6 | 2.20 | 1.20 | 1.54 | | | | 6.46 | 4.93 | 3.55 | 2.66 | | 1.84 |
| 7 | 2.20 | | | | | 4.30 | 6.38 | 4.92 | | | | |
| 8 | 2.20 | | 1.56 | 1.56 | | | 6.32 | 4.86 | 3.42 | 2.70 | 2.88 | 1.74 |
| 9 | 2.18 | | | 1.56 | 1.56 | 4.26 | 6.20 | 4.86 | | 2.68 | | 1.72 |
| 10 | 2.17 | 1.16 | | | 1.64 | 4.26 | 6.16 | | 3.35 | | 2.84 | |
| 11 | 2.15 | | | | 1.72 | 4.40 | 6.10 | 4.72 | | | | 1.69 |
| 12 | | | | | 2.00 | 4.60 | | 4.72 | 3.27 | | 2.81 | |
| 13 | 2.10 | 1.15 | | | | 4.70 | 5.90 | 4.68 | | 2.60 | 2.80 | |
| 14 | | 1.16 | | | | 4.75 | 5.72 | | | | 2.76 | 1.96 |
| 15 | 2.02 | | | | | | | | 3.10 | 2.54 | 2.67 | 2.09 |
| 16 | 1.96 | | 1.92 | | 3.29 | 4.98 | 5.64 | 4.47 | | | | 2.19 |
| 17 | | | 1.90 | | | 5.00 | 5.52 | | 3.02 | 2.49 | 2.62 | 2.35 |
| 18 | 1.94 | 1.04 | 1.90 | | | 5.00 | 5.52 | 4.37 | | | 2.60 | 2.40 |
| 19 | | 1.00 | | | 3.45 | 5.04 | | 4.32 | 2.97 | 2.51 | 2.54 | 2.49 |
| 20 | 1.86 | | | 1.48 | | 5.12 | 5.46 | | | | | |
| 21 | | .90 | | | 3.50 | 5.22 | 5.36 | | | | 2.50 | |
| 22 | 1.75 | | | | | | | 4.20 | 2.88 | | | 2.76 |
| 23 | 1.72 | | | | | 5.28 | 5.36 | | 2.86 | | | |
| 24 | 1.70 | 1.28 | 1.80 | | 3.80 | | 5.35 | | | | 2.34 | |
| 25 | 1.66 | 1.46 | | | 4.00 | 5.22 | | 4.00 | 2.86 | 2.50 | 2.31 | 2.73 |
| 26 | | 1.52 | | 1.48 | 4.18 | 5.21 | | | 2.72 | | 2.28 | 2.78 |
| 27 | 1.62 | | 1.75 | | | 5.20 | 5.22 | 3.86 | | 2.52 | 2.23 | |
| 28 | 1.60 | 1.56 | | | | 5.35 | 5.20 | 3.82 | 2.70 | | | |
| 29 | 1.59 | 1.58 | | | | | 5.15 | | 2.70 | 2.70 | | 2.76 |
| 30 | 1.56 | | 1.73 | | | 6.20 | 5.13 | 3.70 | 2.74 | | | 2.76 |
| 31 | | | | | | 6.42 | | | | | 2.02 | |

### SARANAC RIVER NEAR PLATTSBURG, N.Y.

LOCATION.—At Indian Rapids power plant (formerly known as Lozier Dam) of Plattsburg Gas & Electric Co., 6 miles above mouth at Plattsburg, Clinton County.

DRAINAGE AREA.—607 square miles (measured on topographic maps).

RECORDS AVAILABLE.—March 27, 1903, to September 30, 1925.

GAGES.—Gurley 7-day graph water-stage recorder on retaining wall above power house on right side of river gives elevation of water surface in the forebay of the plant. Tailrace gage is a vertical staff spiked to cribwork in dike between tailrace and river about 50 feet below power house. Records of kilowatt output are obtained at half-hour intervals from wattmeter on switchboard. Gages and wattmeters read by power-house operators.

DISCHARGE MEASUREMENTS.—Made from a cable at head of Indian Rapids, a quarter of a mile below dam, or by wading under cable or in tailrace.

DETERMINATION OF DISCHARGE.—Records include the discharge over concrete spillway 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, 6,200 second-feet March 29; minimum daily discharge, 178 second-feet November 19.

1903–1925: Maximum daily discharge, 6,410 second-feet April 20, 1914; minimum daily discharge, 15 second-feet August 4, 1908.

ICE.—The crest of the spillway is usually kept free from ice so that the stage-discharge relation is not affected.

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 permanent except for slight ice effect for a few days in January and February, allowance for which has been made. Spillway rating curve fairly well defined between 100 and 5,000 second-feet; turbine ratings fairly well defined throughout. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Discharge over the spillway ascertained by averaging discharge for intervals of day. Discharge through the turbines ascertained by applying to their ratings the mean kilowatt output and head for periods of run. Records fair.

COOPERATION.—Record of power-plant operation furnished by Plattsburg Gas & Electric Co.

No discharge measurements were made at this station during the year.

*Daily discharge, in second-feet, of Saranac River near Plattsburg, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,900 | 440 | 460 | 320 | 380 | 900 | 3,550 | 1,380 | 1,240 | 630 | 700 | 430 |
| 2 | 1,360 | 305 | 560 | 485 | 410 | 880 | 3,000 | 1,440 | 1,120 | 710 | 1,000 | 445 |
| 3 | 1,140 | 400 | 660 | 400 | 420 | 730 | 2,750 | 1,380 | 1,180 | 580 | 960 | 435 |
| 4 | 1,040 | 385 | 495 | 415 | 420 | 730 | 2,460 | 1,360 | 1,100 | 530 | 980 | 450 |
| 5 | 930 | 420 | 510 | 415 | 480 | 700 | 2,240 | 1,700 | 1,040 | 600 | 970 | 455 |
| 6 | 920 | 390 | 475 | 400 | 530 | 740 | 1,980 | 1,700 | 1,120 | 590 | 830 | 395 |
| 7 | 870 | 370 | 610 | 400 | 470 | 840 | 1,920 | 1,540 | 950 | 540 | 1,020 | 320 |
| 8 | 690 | 365 | 590 | 430 | 530 | 760 | 1,760 | 1,520 | 1,060 | 750 | 970 | 410 |
| 9 | 720 | 250 | 860 | 415 | 550 | 780 | 1,700 | 1,400 | 940 | 680 | 770 | 440 |
| 10 | 780 | 360 | 880 | 360 | 610 | 1,220 | 1,520 | 1,240 | 1,000 | 630 | 790 | 420 |
| 11 | 700 | 445 | 900 | 380 | 920 | 2,420 | 1,460 | 1,200 | 940 | 610 | 700 | 460 |
| 12 | 510 | 395 | 700 | 465 | 1,400 | 2,000 | 1,300 | 1,220 | 920 | 520 | 730 | 475 |
| 13 | 560 | 380 | 750 | 400 | 1,280 | 1,500 | 1,400 | 1,260 | 900 | 450 | 630 | 475 |
| 14 | 560 | 385 | 560 | 420 | 1,120 | 1,460 | 1,280 | 1,160 | 680 | 355 | 660 | 1,120 |
| 15 | 520 | 350 | 560 | 240 | 960 | 540 | 1,400 | 1,120 | 840 | 405 | 485 | 750 |
| 16 | 560 | 305 | 470 | 365 | 890 | 660 | 1,320 | 1,100 | 840 | 425 | 415 | 1,080 |
| 17 | 500 | 295 | 610 | 370 | 790 | 780 | 1,280 | 940 | 830 | 415 | 480 | 1,240 |
| 18 | 495 | 242 | 560 | 390 | 850 | 830 | 1,200 | 1,040 | 820 | 420 | 480 | 1,140 |
| 19 | 355 | 178 | 480 | 415 | 950 | 830 | 1,180 | 950 | 760 | 370 | 465 | 1,080 |
| 20 | 450 | 395 | 355 | 425 | 870 | 870 | 1,240 | 950 | 780 | 380 | 495 | 910 |
| 21 | 455 | 410 | 385 | 470 | 820 | 1,320 | 1,260 | 890 | 750 | 420 | 440 | 2,140 |
| 22 | 500 | 420 | 475 | 465 | 1,200 | 2,080 | 1,340 | 970 | 820 | 425 | 200 | 1,600 |
| 23 | 410 | 1,500 | 485 | 440 | 1,440 | 1,700 | 1,380 | 930 | 840 | 620 | 180 | 1,320 |
| 24 | 540 | 1,260 | 440 | 385 | 1,560 | 1,500 | 1,620 | 830 | 800 | 620 | 360 | 1,180 |
| 25 | 410 | 1,020 | 400 | 480 | 1,720 | 1,680 | 1,500 | 850 | 830 | 660 | 385 | 1,080 |
| 26 | 375 | 1,020 | 310 | 445 | 1,600 | 1,860 | 1,340 | 870 | 780 | 750 | 490 | 960 |
| 27 | 325 | 920 | 295 | 460 | 1,180 | 2,140 | 1,380 | 850 | 730 | 780 | 460 | 750 |
| 28 | 420 | 1,060 | 300 | 405 | 920 | 4,650 | 1,400 | 860 | 590 | 840 | 420 | 980 |
| 29 | 465 | 940 | 380 | 435 | ------- | 6,200 | 1,340 | 820 | 650 | 960 | 435 | 860 |
| 30 | 405 | 690 | 475 | 430 | ------- | 4,800 | 1,260 | 880 | 641 | 820 | 420 | 810 |
| 31 | 395 | ------- | 385 | 405 | ------- | 4,250 | ------- | 920 | ------- | 670 | 415 | ------ |

NOTE.—Operator's gage readings used in determining spillway discharge Oct. 1, 2, 10, 11, 23-25, Nov. 1, 8, 13-15, 17-22, Dec. 1-6, 11-13, 26, 27, Jan. 1, 10, 17, 24, Feb. 1, 12, 22-24, 28, Mar. 1-6, 8, 14, Apr. 5, May 3-9, June 21, July 18-22, and Aug. 8; water-stage recorder not operating satisfactorily.

*Monthly discharge of Saranac River near Plattsburg, N. Y., for the year ending September 30, 1925*

[Drainage area, 607 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 1,900 | 325 | 654 | 1.08 | 1.24 |
| November | 1,500 | 178 | 543 | .895 | 1.00 |
| December | 900 | 295 | 528 | .870 | 1.00 |
| January | 485 | 240 | 411 | .677 | .78 |
| February | 1,720 | 380 | 902 | 1.49 | 1.55 |
| March | 6,200 | 540 | 1,690 | 2.78 | 3.20 |
| April | 3,550 | 1,180 | 1,660 | 2.73 | 3.05 |
| May | 1,700 | 820 | 1,140 | 1.88 | 2.17 |
| June | 1,240 | 641 | 883 | 1.45 | 1.62 |
| July | 960 | 355 | 586 | .965 | 1.11 |
| August | 1,020 | 180 | 605 | .997 | 1.15 |
| September | 2,140 | 320 | 820 | 1.35 | 1.51 |
| The year | 6,200 | 178 | 867 | 1.43 | 19.38 |

NOTE.—The monthly discharge in second-feet per square mile and run-off 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 drainage 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, and 4 miles below Lake Placid.

DRAINAGE AREA.—116 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 7, 1916, to December 31, 1917, and July 15, 1919, to September 30, 1925.

GAGE.—Staff in two sections on right bank; lower section, inclined, graduated from 1.4 to 8.65 feet; upper section vertical, graduated from 8.7 to 11.0 feet; read by Mrs. Ethel Fuller.

DISCHARGE MEASUREMENTS.—Made from cable 300 feet above gage or by wading.

CHANNEL AND CONTROL.—Solid rock; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.0 feet at 7 a. m. October 1 (discharge, 6,480 second-feet); minimum discharge, 34 second-feet February 1 (stage-discharge relation affected by ice).

1916–1917; 1919–1925: Maximum stage 10.0 feet at 4.30 p. m. March 10, 1921 (stage-discharge relation affected by ice). Maximum open-water stage, 9.0 feet at 7 a. m. October 1, 1924 (discharge, about 5,150[9] second-feet); minimum stage, 1.60 feet at 7.30 p. m. September 13, 1920, caused by closing gates in dam (discharge, practically zero).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve fairly well defined between 30 and 2,000 second-feet. Gage read to quarter-tenths twice daily except from November 16 to March 30, when it was read once a day. Daily discharge ascertained by applying mean daily gage height to rating table or, for days of great range in stage, by averaging discharge for intervals of day. Records only fair, since mean daily gage height determined from one or two gage readings may be subject to error due to fluctuation in stage resulting from regulation upstream.

[9] As the result of the revision of rating curve, maximum discharge 1916–17 and 1919–1924 as published in Water-Supply Paper 584 has been revised to 4,380 second-feet.

*Discharge measurements of West Branch of Ausable River near Newman, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Feb. 22 | a 3.65 | 244 | May 6 | 4.10 | 530 |
| Mar. 30 | 5.58 | 1,520 | July 20 | 2.88 | 102 |

a Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of West Branch of Ausable River near Newman, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4,170 | 76 | 75 | 46 | 34 | 130 | 640 | 534 | 695 | 240 | 113 | 38 |
| 2 | 880 | 58 | 65 | 46 | 36 | 130 | 485 | 485 | 1,550 | 240 | 353 | 37 |
| 3 | 485 | 52 | 60 | 46 | | 120 | 439 | 395 | 815 | 194 | 353 | 41 |
| 4 | 353 | 48 | 50 | 50 | | 120 | 395 | 395 | 586 | 153 | 353 | 42 |
| 5 | 313 | 52 | 50 | 50 | | 120 | 374 | 880 | 395 | 142 | 179 | 40 |
| 6 | 240 | 48 | 60 | 50 | 36 | 120 | 313 | 510 | 313 | 142 | 179 | 37 |
| 7 | 153 | 61 | 75 | 50 | | 130 | 275 | 395 | 275 | 120 | 586 | 42 |
| 8 | 153 | 52 | 110 | 48 | | 180 | 275 | 275 | 240 | 208 | 395 | 48 |
| 9 | 142 | 51 | 750 | 46 | | 180 | 275 | 240 | 208 | 179 | 258 | 47 |
| 10 | 113 | 52 | 380 | 48 | 90 | 180 | 240 | 462 | 258 | 153 | 208 | 45 |
| 11 | 90 | 51 | 340 | 46 | 750 | 240 | 224 | 586 | 194 | 166 | 153 | 45 |
| 12 | 94 | 51 | 280 | 46 | 1,900 | 224 | 275 | 485 | 166 | 98 | 179 | 44 |
| 13 | 72 | 48 | 180 | 46 | 600 | 240 | 258 | 353 | 153 | 107 | 130 | 153 |
| 14 | 70 | 53 | 130 | 44 | 440 | 258 | 240 | 353 | 130 | 80 | 153 | 586 |
| 15 | 66 | 51 | 110 | 42 | 330 | 439 | 510 | 294 | 130 | 87 | 111 | 313 |
| 16 | 87 | 48 | 90 | 42 | 240 | 395 | 510 | 275 | 208 | 122 | 107 | 510 |
| 17 | 105 | 46 | 100 | 42 | 190 | 294 | 353 | 534 | 153 | 224 | 94 | 560 |
| 18 | 56 | 46 | 95 | 42 | 150 | 179 | 275 | 439 | 113 | 208 | 83 | 395 |
| 19 | 94 | 40 | 90 | 40 | 120 | 294 | 240 | 275 | 117 | 179 | 76 | 294 |
| 20 | 105 | 42 | 75 | 40 | 120 | 374 | 208 | 258 | 142 | 130 | 88 | 224 |
| 21 | 87 | 44 | 75 | | 140 | 258 | 194 | 275 | 153 | 113 | 70 | 640 |
| 22 | 58 | 50 | 65 | 38 | 260 | 240 | 208 | 258 | 240 | 695 | 64 | 353 |
| 23 | 57 | 1,400 | 65 | | 380 | 224 | 640 | 258 | 194 | 613 | 66 | 240 |
| 24 | 57 | 650 | 65 | 36 | 900 | 179 | 640 | 258 | 153 | 240 | 48 | 194 |
| 25 | 70 | 400 | 65 | 36 | 400 | 258 | 880 | 294 | 142 | 153 | 66 | 208 |
| 26 | 100 | 280 | 65 | | 300 | 275 | 1,080 | 258 | 166 | 153 | 46 | 208 |
| 27 | 87 | 190 | 65 | | 200 | 617 | 725 | 240 | 142 | 153 | 45 | 142 |
| 28 | 52 | 130 | 60 | | 150 | 2,990 | 534 | 240 | 333 | 153 | 56 | 130 |
| 29 | 73 | 100 | 60 | 36 | | 2,050 | 374 | 313 | 374 | 153 | 42 | 179 |
| 30 | 56 | 90 | 55 | | | 1,470 | 313 | 313 | 240 | 130 | 46 | 194 |
| 31 | 66 | | 50 | | | 945 | | 353 | | 120 | 41 | |

NOTE.—Discharge Jan. 21–23, 26–31, Feb. 3–11, 17, and 18 estimated from comparative studies; no gage-height record. Discharge Nov. 16 to Mar. 11 determined from gage heights corrected for ice effect from one discharge measurement, study of gage-height graph, weather records, and comparison with records for other stations in Ausable River Basin.

*Monthly discharge of West Branch of Ausable River near Newman, N. Y., for the year ending September 30, 1925*

[Drainage area, 116 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 4,170 | 52 | 278 | 2.40 | 2.77 |
| November | 1,400 | 40 | 145 | 1.25 | 1.40 |
| December | 750 | 50 | 124 | 1.07 | 1.23 |
| January | 50 | 36 | 42.3 | .365 | .42 |
| February | 1,900 | 34 | 285 | 2.46 | 2.56 |
| March | 2,990 | 120 | 447 | 3.85 | 4.44 |
| April | 1,080 | 194 | 413 | 3.56 | 3.97 |
| May | 880 | 240 | 370 | 3.19 | 3.68 |
| June | 1,550 | 113 | 299 | 2.58 | 2.88 |
| July | 695 | 80 | 189 | 1.63 | 1.88 |
| August | 586 | 41 | 153 | 1.32 | 1.52 |
| September | 640 | 37 | 201 | 1.73 | 1.93 |
| The year | 4,170 | 34 | 245 | 2.11 | 28.68 |

### AUSABLE RIVER AT AUSABLE FORKS, N. Y.

LOCATION.—In Ausable Forks, Clinton County, 1,000 feet below junction of East and West Branches of Ausable River and 15 miles above mouth of river.

DRAINAGE AREA.—444 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 17, 1910, to September 30, 1925.

GAGE.—Chain on left bank; read by A. S. Baker.

DISCHARGE MEASUREMENTS.—Made from cable 1½ miles below gage or by wading.

CHANNEL AND CONTROL.—Coarse gravel and small boulders; occasionally shifting. Channel is divided by an island opposite the gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.1 feet at 5 p. m. March 28 (discharge, about 16,000 second-feet); minimum stage, 3.53 feet at 5 p. m. September 4 (discharge, 110 second-feet).

1910-1925: Maximum stage recorded, 10.2 feet in the evening of March 27, 1913 (discharge, roughly, 25,000 second-feet); minimum stage, 3.0 feet at 7 a. m. July 21, 1912 (discharge, practically zero).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation changed slightly at the time of the flood on October 1 and again with the flood of March 29. Rating curve used during first period fairly well defined between 150 and 3,000 second-feet; curve used subsequent to March 29 fairly well defined between 150 and 10,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table or, for days of great range in stage, by averaging discharge for intervals of day. Records only fair since mean daily gage height determined from two gage readings may be subject to error due to fluctuation in stage caused by power operations upstream.

*Discharge measurements of Ausable River at Ausable Forks, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Nov. 12 | 3.55 | 187 | Mar. 31 | 5.67 | 3,530 | July 20 | 3.90 | 380 |
| Jan. 31 | a3.79 | 155 | Apr. 22 | 4.25 | 726 | Sept. 15 | 4.38 | 934 |
| Feb. 23 | a4.44 | 959 | May 5 | 5.15 | 2,280 | Sept. 16 | 4.97 | 1,790 |
| Mar. 29 | 7.42 | 9,040 | May 26 | 4.23 | 704 | | | |

a Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Ausable River at Ausable Forks, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11,600 | 242 | 280 | 200 | 150 | 500 | 1,970 | 1,970 | 1,460 | 616 | 510 | 124 |
| 2 | 3,160 | 242 | 220 | 200 | 160 | 500 | 1,560 | 1,660 | 3,860 | 450 | 732 | 124 |
| 3 | 1,620 | 242 | 220 | 200 | 150 | 480 | 1,370 | 1,200 | 2,640 | 413 | 540 | 124 |
| 4 | 1,070 | 250 | 220 | 190 | 160 | 500 | 1,280 | 1,370 | 1,760 | 404 | 638 | 115 |
| 5 | 825 | 242 | 200 | 220 | 150 | 550 | 1,200 | 2,080 | 1,120 | 342 | 806 | 124 |
| 6 | 634 | 242 | 220 | 220 | 160 | 550 | 980 | 1,660 | 819 | 276 | 520 | 120 |
| 7 | 546 | 227 | 260 | 220 | 150 | 550 | 884 | 1,200 | 672 | 309 | 2,300 | 134 |
| 8 | 426 | 214 | 500 | 220 | 160 | 600 | 884 | 994 | 530 | 708 | 1,200 | 129 |
| 9 | 407 | 189 | 1,900 | 200 | 170 | 650 | 819 | 924 | 561 | 450 | 780 | 124 |
| 10 | 388 | 202 | 1,200 | 200 | 420 | 650 | 884 | 910 | 696 | 386 | 708 | 134 |
| 11 | 328 | 227 | 900 | 190 | 3,400 | 1,700 | 858 | 1,460 | 540 | 333 | 530 | 124 |
| 12 | 311 | 227 | 700 | 190 | 6,500 | 1,800 | 858 | 1,280 | 480 | 309 | 480 | 143 |
| 13 | 345 | 196 | 600 | 180 | 2,400 | 1,000 | 832 | 1,050 | 432 | 276 | 395 | 317 |
| 14 | 294 | 214 | 550 | 170 | 1,400 | 950 | 832 | 966 | 309 | 225 | 395 | 2,190 |
| 15 | 311 | 250 | 440 | 170 | 1,100 | 1,100 | 1,120 | 884 | 301 | 203 | 386 | 966 |
| 16 | 302 | 189 | 360 | 170 | 800 | 800 | 1,370 | 884 | 325 | 261 | 358 | 2,300 |
| 17 | 280 | 180 | 360 | 180 | 600 | 700 | 1,020 | 1,280 | 309 | 649 | 309 | 2,760 |
| 18 | 272 | 160 | 300 | 180 | 460 | 650 | 924 | 1,200 | 358 | 510 | 301 | 1,370 |
| 19 | 294 | 170 | 300 | 180 | 400 | 900 | 806 | 819 | 342 | 490 | 218 | 1,010 |
| 20 | 302 | 190 | 280 | 170 | 440 | 1,200 | 732 | 768 | 317 | 432 | 284 | 750 |
| 21 | 257 | 200 | 280 | 180 | 460 | 1,010 | 660 | 780 | 342 | 320 | 247 | 2,080 |
| 22 | 257 | 260 | 300 | 170 | 900 | 903 | 884 | 780 | 480 | 1,400 | 218 | 994 |
| 23 | 272 | 4,990 | 280 | 180 | 1,100 | 800 | 2,300 | 793 | 422 | 1,760 | 167 | 708 |
| 24 | 272 | 2,490 | 280 | 180 | 2,800 | 611 | 2,640 | 884 | 342 | 871 | 143 | 520 |
| 25 | 214 | 1,350 | 260 | 170 | 1,700 | 813 | 2,200 | 732 | 395 | 530 | 161 | 490 |
| 26 | 214 | 970 | 240 | 170 | 1,100 | 864 | 3,110 | 732 | 432 | 732 | 173 | 480 |
| 27 | 208 | 776 | 240 | 170 | 600 | 1,040 | 2,300 | 672 | 395 | 672 | 185 | 510 |
| 28 | 221 | 600 | 240 | 170 | 500 | 12,500 | 1,660 | 616 | 525 | 594 | 179 | 550 |
| 29 | 264 | 500 | 240 | 160 | ------- | 10,100 | 1,280 | 660 | 950 | 561 | 185 | 708 |
| 30 | 272 | 360 | 240 | 160 | ------- | 5,340 | 1,040 | 806 | 650 | 490 | 167 | 561 |
| 31 | 257 | ------- | 220 | 160 | ------- | 3,110 | ------- | 800 | ------- | 376 | 143 | ----- |

NOTE.—Discharge Apr. 25, May 31, June 28–30, July 21, 22, and Sept. 20 estimated from record at automatic station 1½ miles below; no gage-height record. Discharge Nov. 17–22 and Nov. 28 to Mar. 20 determined from gage heights corrected for ice effect from two discharge measurements, study of gage-height graph and weather records, and by comparison with records for other stations in Ausable River Basin.

*Monthly discharge of Ausable River at Ausable Forks, N. Y., for the year ending September 30, 1925*

[Drainage area, 444 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 11,600 | 208 | 852 | 1.92 | 2.21 |
| November | 4,990 | 160 | 560 | 1.26 | 1.41 |
| December | 1,900 | 200 | 414 | .932 | 1.07 |
| January | 220 | 160 | 185 | .417 | .48 |
| February | 6,500 | 150 | 1,020 | 2.30 | 2.40 |
| March | 12,500 | 480 | 1,720 | 3.87 | 4.46 |
| April | 3,110 | 660 | 1,310 | 2.95 | 3.29 |
| May | 2,080 | 616 | 1,060 | 2.39 | 2.76 |
| June | 3,860 | 301 | 759 | 1.71 | 1.91 |
| July | 1,760 | 203 | 527 | 1.19 | 1.37 |
| August | 2,300 | 143 | 463 | 1.04 | 1.20 |
| September | 2,760 | 115 | 693 | 1.56 | 1.74 |
| The year | 12,500 | 115 | 794 | 1.79 | 24.30 |

**AUSABLE RIVER NEAR AUSABLE FORKS, N. Y.**

LOCATION.—1½ miles below junction of East and West Branches of Ausable River at Ausable Forks, Clinton County, and 13 miles above mouth.

DRAINAGE AREA.—446 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 22, 1924, to September 30, 1925.

GAGE.—Au 60-day continuous water-stage recorder on left bank; inspected by employees of J. & J. Rogers Co.

DISCHARGE MEASUREMENTS.—Made from cable 200 feet above gage or by wading.

CHANNEL AND CONTROL.—Coarse gravel and boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage from water-stage recorder during period September 22, 1924, to September 30, 1925, 10.55 feet at 3 a. m. October 1 (discharge, about 19,100 second-feet); minimum stage, 1.08 feet at 7.15 p. m. November 9 (discharge, about 93 second-feet).

ICE.—Stage-discharge relation affected by ice.

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 the station.

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

*Discharge measurements of Ausable River near Ausable Forks, N. Y., during the period September 21, 1924, to September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| 1924 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* |
| Sept. 21 | 1.40 | 175 | Feb. 23 | 2.79 | 959 | May 26 | 2.45 | 704 |
| Nov. 12 | 1.44 | 187 | Mar. 29 | 7.16 | 9,040 | July 20 | 1.92 | 380 |
| | | | Mar. 31 | 4.72 | 3,530 | Sept. 15 | 2.70 | 934 |
| 1925 | | | Apr. 22 | 2.53 | 726 | Sept. 16 | 3.56 | 1,790 |
| Jan. 31 | [a]3.08 | 155 | May 5 | 4.04 | 2,280 | | | |

[a] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Ausable River near Ausable Forks, N. Y., for the period September 22, 1924, to September 30, 1925*

| Day | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 11,800 | 206 | 300 | 200 | 150 | 500 | 2,120 | 1,870 | 1,370 | 697 | 356 | 160 |
| 2 | | 2,920 | 191 | 280 | 200 | 160 | 500 | 1,640 | 1,640 | 3,170 | 600 | 682 | 172 |
| 3 | | 1,440 | 204 | 240 | 200 | 160 | | 1,420 | 1,260 | 2,470 | 466 | 549 | 169 |
| 4 | | 876 | 211 | 240 | 190 | 160 | | 1,310 | 1,060 | 1,580 | 397 | 680 | 166 |
| 5 | | 626 | 191 | 220 | 200 | 150 | 500 | 1,210 | 1,940 | 1,120 | 363 | 780 | 175 |
| 6 | | 484 | 194 | 240 | 220 | | | 1,010 | 1,690 | 858 | 321 | 555 | 158 |
| 7 | | 422 | 191 | 260 | 200 | 160 | | 924 | 1,310 | 683 | 381 | 2,280 | 160 |
| 8 | | 355 | 191 | 380 | 200 | | 600 | 916 | 1,090 | 587 | 712 | 1,420 | 175 |
| 9 | | 346 | 185 | 1,900 | 200 | | 627 | 834 | 975 | 542 | 518 | 834 | 178 |
| 10 | | 316 | 188 | 1,200 | 200 | 420 | 607 | 834 | 858 | 704 | 387 | 697 | 172 |
| 11 | | 308 | 218 | 900 | | 3,400 | 1,450 | 826 | 1,270 | 568 | 372 | 568 | 166 |
| 12 | | 270 | 201 | 700 | | 6,500 | 1,640 | 867 | 1,490 | 466 | 377 | 483 | 178 |
| 13 | | 277 | 188 | 600 | 180 | 2,400 | 1,010 | 858 | 1,090 | 392 | 316 | 412 | 343 |
| 14 | | 270 | 225 | 550 | | 1,400 | 924 | 772 | 1,010 | 334 | 266 | 417 | 1,840 |
| 15 | | 252 | 232 | 440 | | 1,100 | 1,080 | 1,130 | 916 | 321 | 247 | 387 | 983 |
| 16 | | 245 | 200 | 380 | 170 | 800 | 810 | 1,580 | 803 | 339 | 278 | 310 | 2,010 |
| 17 | | 235 | 180 | 360 | 180 | 600 | 690 | 1,030 | 1,100 | 392 | 597 | 325 | 2,310 |
| 18 | | 225 | 170 | 320 | 180 | 466 | 620 | 818 | 1,160 | 344 | 581 | | 1,390 |
| 19 | | 212 | 180 | 320 | 170 | 407 | 840 | 756 | 826 | 304 | 512 | | 924 |
| 20 | | 225 | 190 | 300 | 170 | 450 | 1,210 | 712 | 683 | 299 | 407 | 270 | 724 |
| 21 | | 228 | 220 | 300 | 170 | 422 | 941 | 668 | 741 | 346 | 330 | | 1,700 |
| 22 | 195 | 216 | 240 | 300 | 170 | 907 | 941 | 875 | 850 | 477 | 1,370 | 255 | 1,120 |
| 23 | 192 | 210 | 4,600 | 300 | 170 | 1,140 | 741 | 1,970 | 787 | 422 | 1,820 | | 734 |
| 24 | 214 | 212 | 2,220 | 280 | 170 | 2,700 | 634 | 2,330 | 907 | 339 | 916 | | 562 |
| 25 | 234 | 205 | 1,160 | 280 | 160 | 1,580 | 704 | 2,120 | 741 | 363 | 594 | | 542 |
| 26 | 217 | 182 | 756 | 240 | 170 | 1,100 | 795 | 3,090 | 690 | 501 | 455 | 180 | 518 |
| 27 | 202 | 202 | 542 | 240 | 160 | 574 | 1,100 | 2,330 | 668 | 438 | 634 | | 438 |
| 28 | 167 | 209 | 477 | 240 | 160 | 500 | 10,600 | 1,580 | 634 | 523 | 574 | | 536 |
| 29 | 181 | 198 | 397 | 240 | 160 | ------- | 10,100 | 1,160 | 654 | 957 | 627 | 175 | 704 |
| 30 | 7,930 | 210 | 340 | 240 | 160 | ------- | 5,520 | 1,000 | 787 | 661 | 512 | 170 | 562 |
| 31 | ------ | 193 | ------- | 220 | 150 | ------- | 3,360 | ------- | 780 | ------ | 397 | 165 | ------- |

NOTE.—Discharge Oct. 16–18, Dec. 9–15, Jan. 11–15, 22, Feb. 6–17, Mar. 3–7, and Aug. 18 to Sept. 2 estimated largely from record at Ausable Forks; gage-height record either faulty or missing. Discharge Nov. 16–22, Nov. 30 to Feb. 5, and Feb. 28 to Mar. 8 determined from gage heights corrected for ice effect from one discharge measurement, study of gage-height graph and weather records, and comparison with records at other stations in Ausable River Basin.

*Monthly discharge of Ausable River near Ausable Forks, N. Y., for the period September 22, 1924, to September 30, 1925*

[Drainage area, 446 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1924 | | | | | |
| September 22–30 | 7,930 | 167 | 1,060 | 2.38 | 0.80 |
| 1924–25 | | | | | |
| October | 11,800 | 182 | 786 | 1.76 | 2.03 |
| November | 4,600 | 170 | 496 | 1.11 | 1.24 |
| December | 1,900 | 220 | 420 | .942 | 1.09 |
| January | 220 | 150 | 180 | .404 | .47 |
| February | 6,500 | 150 | 1,010 | 2.26 | 2.35 |
| March | 10,600 | 500 | 1,650 | 3.70 | 4.27 |
| April | 3,090 | 668 | 1,290 | 2.89 | 3.22 |
| May | 1,940 | 634 | 1,040 | 2.33 | 2.69 |
| June | 3,170 | 299 | 729 | 1.63 | 1.82 |
| July | 1,820 | 247 | 549 | 1.23 | 1.42 |
| August | 2,280 | 165 | 474 | 1.06 | 1.22 |
| September | 2,310 | 158 | 666 | 1.49 | 1.66 |
| The year | 11,800 | 150 | 772 | 1.73 | 23.48 |

### BLACK BROOK AT BLACK BROOK, N. Y.

LOCATION.—100 feet below power plant of J. & J. Rogers Co., three-fourths of a mile below Black Brook, Clinton County, 1¼ miles above junction with West Branch of Ausable River, and 5½ miles west of Ausable Forks.

DRAINAGE AREA.—47.2 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 7, 1924, to September 30, 1925.

GAGE.—Slope gage on right bank; read by employees of J. & J. Rogers Co.

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

CHANNEL AND CONTROL.—Gravel and small boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during period, September 7, 1924, to September 30, 1925, 6.6 feet about midnight March 28 (backwater from logs, discharge, about 695 second-feet); minimum discharge, about 5 second-feet, occurs frequently during low-water periods following shutdowns at plant.

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

REGULATION.—Seasonal distribution of flow largely regulated by storage in Fern Lake and Taylor Pond. Diurnal distribution of flow during low-water periods completely controlled by operation of power plant.

DIVERSIONS.—During low-water period some water is diverted from Little Black Brook by a flume half a mile above East Kilns.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined below 100 second-feet. 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.

*Discharge measurements of Black Brook at Black Brook, N. Y., during the period September 7, 1924, to September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| 1924 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* |
| Sept. 7 | 1.42 | 6.74 | Jan. 29 | 2.00 | 48.5 | May 5 | 2.40 | 80.7 |
| Sept. 22 | 2.04 | 39.6 | Do | 1.88 | 36.7 | Do | 2.13 | 46.8 |
| Do | 1.97 | 35.8 | Do | 1.70 | 28.4 | May 26 | 1.66 | 15.7 |
| Do | 1.86 | 26.0 | Feb. 23 | 2.32 | 69.8 | July 21 | 2.06 | 41.3 |
| Do | 1.67 | 16.0 | Do | 2.28 | 66.0 | Sept. 14 | 2.56 | 99.6 |
| Nov. 12 | 2.04 | 41.0 | Do | 2.22 | 61.8 | | | |
| | | | Do | 2.12 | 54.0 | | | |
| 1925 | | | Apr. 22 | 2.37 | 84.8 | | | |
| Jan. 29 | 2.05 | 57.5 | Do | 2.30 | 74.2 | | | |

*Daily discharge, in second-feet, of Black Brook at Black Brook, N. Y., for the period September 7, 1924, to September 30, 1925*

| Day | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 205 | 35 | 36 | 31 | 17 | 50 | 181 | 58 | 44 | 35 | 34 | 34 |
| 2 | | 121 | 24 | 34 | 37 | 33 | 54 | 141 | 66 | 56 | 30 | 21 | 27 |
| 3 | | 58 | 35 | 34 | 38 | 33 | 43 | 118 | 60 | 61 | 21 | 38 | 35 |
| 4 | | 41 | 31 | 35 | 15 | 29 | 43 | 125 | 55 | 50 | 13 | 40 | 37 |
| 5 | | 33 | 35 | 35 | 37 | 27 | 39 | 106 | 63 | 42 | 19 | 32 | 32 |
| 6 | | 36 | 35 | 26 | 35 | 29 | 40 | 93 | 66 | 32 | 21 | 25 | 20 |
| 7 | 6.7 | 37 | 38 | 9 | 34 | 30 | 24 | 75 | 66 | 27 | 28 | 106 | 42 |
| 8 | 27 | 25 | 40 | 59 | 25 | 13 | 47 | 89 | 64 | 24 | 101 | 84 | 39 |
| 9 | 29 | 20 | 20 | 67 | 28 | 27 | 43 | 61 | 54 | 27 | 76 | 49 | 40 |
| 10 | 24 | 31 | 35 | 57 | 35 | 24 | 46 | 61 | 48 | 24 | 44 | 54 | 42 |
| 11 | 30 | 19 | 34 | 48 | 27 | 56 | 82 | 60 | 61 | 28 | 35 | 46 | 42 |
| 12 | 22 | 5 | 37 | 40 | 36 | 107 | 135 | 56 | 51 | 20 | 36 | 40 | 42 |
| 13 | 26 | 27 | 35 | 39 | 33 | 79 | 142 | 62 | 47 | 27 | 36 | 33 | 16 |
| 14 | 8.3 | 19 | 40 | 25 | 32 | 76 | 134 | 59 | 42 | 15 | 37 | 36 | 88 |
| 15 | 21 | 23 | 36 | 34 | 26 | 75 | 116 | 50 | 43 | 29 | 29 | 30 | 58 |

*Daily discharge, in second-feet, of Black Brook at Black Brook, N. Y., for the period September 7, 1924, to September 30, 1925*—Continued

| Day | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 20 | 28 | 14 | 20 | 32 | 73 | 109 | 53 | 49 | 14 | 37 | 9 | 75 |
| 17 | 28 | 26 | 38 | 30 | 28 | 60 | 95 | 52 | 46 | 24 | 24 | 33 | 109 |
| 18 | 27 | 24 | 41 | 28 | 17 | 49 | 109 | 51 | 38 | 22 | 30 | 34 | 76 |
| 19 | 24 | 15 | 40 | 30 | 31 | 43 | 116 | 64 | 31 | 27 | 36 | 38 | 88 |
| 20 | 28 | 29 | 32 | 28 | 22 | 40 | 142 | 66 | 33 | 18 | 51 | 40 | 34 |
| 21 | 18 | 32 | 34 | 24 | 28 | 37 | 110 | 52 | 33 | 23 | 42 | 34 | 84 |
| 22 | 35 | 26 | 32 | 38 | 30 | 48 | 275 | 58 | 41 | 29 | 42 | 33 | 85 |
| 23 | 19 | 31 | 116 | 36 | 26 | 66 | 273 | 74 | 41 | 21 | 42 | 13 | 54 |
| 24 | 21 | 29 | 144 | 24 | 30 | 85 | 200 | 79 | 43 | 20 | 42 | 30 | 43 |
| 25 | 36 | 27 | 77 | 6 | 14 | 105 | 198 | 62 | 45 | 21 | 42 | 37 | 50 |
| 26 | 37 | 9 | 55 | 33 | 22 | 122 | 132 | 58 | 36 | 33 | 42 | 38 | 36 |
| 27 | 24 | 33 | 36 | 45 | 24 | 84 | 153 | 52 | 35 | 26 | 42 | 37 | 15 |
| 28 | 7.1 | 33 | 38 | 21 | 35 | 67 | 500 | 57 | 31 | 40 | 42 | 31 | 33 |
| 29 | 31 | 37 | 35 | 38 | 26 | ------- | 750 | 67 | 33 | 45 | 42 | 36 | 51 |
| 30 | 39 | 32 | 24 | 29 | 27 | ------- | 382 | 54 | 31 | 35 | 40 | 13 | 52 |
| 31 | ------- | 34 | ------- | 25 | 32 | ------- | 216 | ------- | 34 | ------- | 35 | 34 | ------- |

NOTE.—Discharge estimated Sept. 7, 1924. Stage-discharge relation Mar. 28–29 affected by backwater from logs; discharge ascertained from effective gage-height graph.

*Monthly discharge of Black Brook at Black Brook, N. Y. for the period September 7, 1924, to September 30, 1925*

[Drainage area, 47.2 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1924 | | | | | |
| September 7–30 | 39 | 6.7 | 24.5 | 0.519 | 0.46 |
| 1924–25 | | | | | |
| October | 205 | 5 | 36.9 | .782 | .90 |
| November | 144 | 14 | 42.2 | .894 | 1.00 |
| December | 67 | 6 | 33.3 | .706 | .81 |
| January | 38 | 14 | 28.8 | .610 | .70 |
| February | 122 | 13 | 54.8 | 1.16 | 1.21 |
| March | 750 | 24 | 155 | 3.28 | 3.78 |
| April | 181 | 50 | 74.5 | 1.58 | 1.76 |
| May | 66 | 31 | 46.6 | .987 | 1.14 |
| June | 61 | 14 | 30.1 | .638 | .71 |
| July | 101 | 13 | 38.5 | .816 | .94 |
| August | 106 | 9 | 37.4 | .792 | .91 |
| September | 109 | 15 | 49.3 | 1.04 | 1.16 |
| The year | 750 | 5 | 52.3 | 1.11 | 15.02 |

NOTE.—The monthly discharge in second-feet per square mile and run-off in inches shown by the table do not necessarily represent the natural flow from the basin because of 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 highway bridge in Ausable Forks, Essex County, 100 feet above dam, 250 feet above power plant of J. & J. Rogers Co., and 400 feet above junction of East and West Branches of Ausable River.

DRAINAGE AREA.—199 square miles (from report of State engineer and surveyor).

RECORDS AVAILABLE.—September 5, 1924, to September 30, 1925.

GAGE.—Vertical staff on downstream side of left bridge abutment; read by employees of J. & J. Rogers Co.

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

CHANNEL AND CONTROL.—Control is crest of a timber dam 100 feet below gage; permanent.

EXTREMES OF DISCHARGE.—Maximum stage during period, September 5, 1924, to September 30, 1925, 11.4 feet during afternoon of March 28, determined by leveling from floodmarks (discharge not yet determined); minimum stage, 0.56 foot September 3 (discharge, 41 second-feet).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined between 50 and 5,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table or, for days of great range in stage, by averaging discharge for intervals of day. Records good except during periods of ice effect and estimate, for which they are fair.

*Discharge measurements of East Branch of Ausable River at Ausable Forks, N. Y., during the period September 19, 1924, to September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| 1924 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* | 1925 | *Feet* | *Sec.-ft.* |
| Sept. 19 | 0.65 | 70.1 | Feb. 24 | 2.59 | 1,520 | May 26 | 1.13 | 287 |
| Sept. 22 | .60 | 50.3 | Mar. 29 | 4.87 | 4,910 | July 20 | .83 | 146 |
| Nov. 12 | .65 | 73.4 | Mar. 30 | 3.38 | 2,450 | Sept. 14 | 2.01 | 898 |
| | | | Mar. 31 | 2.76 | 1,700 | Sept. 16 | 2.02 | 918 |
| 1925 | | | Apr. 22 | 1.27 | 380 | | | |
| Jan. 29 | [a]1.06 | 52.6 | May 5 | 2.24 | 1,140 | | | |

[a] Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of East Branch of Ausable River at Ausable Forks, N. Y., for the period September 5, 1924, to September 30, 1925*

| Day | Sept. | Oct. | Nov | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ------ | 6,930 | 99 | 130 | 90 | 55 | 260 | 945 | 1,040 | 628 | 297 | 164 | 52 |
| 2 | ------ | 1,390 | 99 | 110 | 85 | 55 | 260 | 702 | 740 | 1,500 | 238 | 286 | 47 |
| 3 | ------ | 702 | 99 | 95 | 85 | 50 | 240 | 628 | 556 | 1,080 | 188 | 212 | 41 |
| 4 | ------ | 426 | 95 | 85 | 85 | 50 | 240 | 590 | 490 | 702 | 160 | 264 | 49 |
| 5 | 95 | 325 | 95 | 75 | 85 | 55 | 260 | 590 | 900 | 496 | 151 | 366 | 49 |
| 6 | 91 | 254 | 99 | 85 | 90 | 55 | 260 | 457 | 702 | 371 | 129 | 275 | 48 |
| 7 | 99 | 207 | 99 | 120 | 95 | 55 | 260 | 414 | 590 | 297 | 129 | 1,500 | 47 |
| 8 | 91 | 178 | 79 | 180 | 90 | 55 | 280 | 426 | 470 | 259 | 227 | 628 | 52 |
| 9 | 83 | 146 | 75 | 700 | 85 | 60 | 280 | 383 | 414 | 212 | 160 | 389 | 52 |
| 10 | 445 | 138 | 68 | 550 | 85 | 220 | 300 | 395 | 366 | 286 | 129 | 348 | 49 |
| 11 | 275 | 129 | 72 | 300 | 80 | 1,700 | 800 | 383 | 590 | 212 | 133 | 269 | 47 |
| 12 | 198 | 125 | 68 | 260 | 75 | 3,800 | 700 | 401 | 665 | 174 | 133 | 238 | 47 |
| 13 | 156 | 116 | 72 | 240 | 75 | 1,100 | 420 | 395 | 490 | 160 | 108 | 188 | 190 |
| 14 | 138 | 108 | 79 | 220 | 75 | 550 | 340 | 438 | 483 | 129 | 83 | 188 | 1,040 |
| 19 | 112 | 108 | 75 | 200 | 70 | 380 | 340 | 556 | 414 | 129 | 83 | 174 | 502 |
| 16 | 95 | 108 | 75 | 190 | 70 | 300 | 280 | 740 | 366 | 138 | 91 | 150 | 1,040 |
| 17 | 87 | 104 | 70 | 180 | 70 | 260 | 260 | 522 | 556 | 156 | 248 | 129 | 1,130 |
| 18 | 79 | 91 | 60 | | 70 | 190 | 275 | 407 | 522 | 133 | 227 | 112 | 522 |
| 19 | 75 | 99 | 55 | | 65 | 190 | 407 | 360 | 377 | 125 | 188 | 104 | 420 |
| 20 | 64 | 99 | 70 | | 65 | 190 | 522 | 371 | 308 | 112 | 151 | 116 | 350 |
| 21 | 60 | 91 | 85 | 140 | 65 | 200 | 383 | 302 | 348 | 156 | 112 | 112 | 917 |
| 22 | 56 | 91 | 90 | | 65 | 380 | 371 | 383 | 371 | 183 | 924 | 95 | 483 |
| 23 | 49 | 87 | 2,800 | | 65 | 480 | 275 | 1,080 | 336 | 156 | 836 | 85 | 325 |
| 24 | 83 | 87 | 1,200 | | 60 | 1,500 | 238 | 1,180 | 383 | 129 | 420 | 79 | 254 |
| 25 | 75 | 91 | 650 | | 60 | 650 | 275 | 1,040 | 314 | 129 | 275 | 75 | 248 |
| 26 | 68 | 99 | 400 | 120 | 60 | 480 | 314 | 1,500 | 297 | 198 | 202 | 68 | 238 |
| 27 | 60 | 99 | 300 | 110 | 60 | 300 | 420 | 1,130 | 291 | 183 | 371 | 64 | 240 |
| 28 | 60 | 99 | 240 | 110 | 55 | 260 | 6,860 | 780 | 259 | 183 | 302 | 60 | 254 |
| 29 | 52 | 99 | 180 | 100 | 55 | ------ | 5,080 | 590 | 286 | 401 | 360 | 52 | 319 |
| 30 | 5,930 | 99 | 150 | 100 | 55 | ------ | 2,530 | 476 | 325 | 254 | 259 | 50 | 269 |
| 31 | ------ | 99 | ------ | 100 | 55 | ------ | 1,610 | ------ | 342 | ------ | 198 | 49 | ------ |

NOTE.—Discharge Nov. 19, 20, Dec. 12, 13, 15, 16, 18–25, Aug. 16, 23, 30, Sept. 6, 13, 20, and 27, estimated from comparative studies; no gage-height record. Discharge Nov. 16 to Mar. 17 determined from gage heights corrected for ice effect from two discharge measurements, study of gage-height graph and weather records, and comparison with records for other stations in Ausable River Basin.

*Monthly discharge of East Branch of Ausable River at Ausable Forks, N. Y., for the period September 5, 1924, to September 30, 1925*

[Drainage area, 199 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| 1924 | | | | | |
| September 5-30 | 5,930 | 49 | 334 | 1.68 | 1.62 |
| 1925 | | | | | |
| October | 6,930 | 87 | 414 | 2.08 | 2.40 |
| November | 2,800 | 55 | 257 | 1.29 | 1.44 |
| December | 700 | 75 | 177 | .889 | 1.02 |
| January | 95 | 55 | 72.4 | .364 | .42 |
| February | 3,800 | 50 | 486 | 2.44 | 2.54 |
| March | 6,860 | 240 | 817 | 4.11 | 4.74 |
| April | 1,500 | 302 | 619 | 3.11 | 3.47 |
| May | 1,040 | 259 | 471 | 2.37 | 2.73 |
| June | 1,500 | 112 | 309 | 1.55 | 1.73 |
| July | 924 | 83 | 242 | 1.22 | 1.41 |
| August | 1,500 | 49 | 222 | 1.12 | 1.29 |
| September | 1,130 | 41 | 311 | 1.56 | 1.74 |
| The year | 6,930 | 41 | 365 | 1.83 | 24.93 |

### BOUQUET RIVER AT WILLSBORO, N. Y.

LOCATION.—Half a mile south of Willsboro, Essex County, 2½ miles below mouth of North Branch of Bouquet River, and 3 miles above mouth of river.

DRAINAGE AREA.—271 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 23, 1923, to September 30, 1925.

GAGE.—Gurley 7-day graph water-stage recorder on right bank; inspected by employees of New York & Pennsylvania Co.

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

CHANNEL AND CONTROL.—Coarse gravel and boulders; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 10.85 feet at 10 a. m. October 1 (discharge, about 11,800 second-feet); minimum stage, about 2.38 feet September 3–5 (discharge, about 61 second-feet).

1923–1925: Maximum stage recorded, that of October 1, 1924; minimum stage, 2.17 feet at 9 a. m. October 23, 1923 (discharge, 30 second-feet).

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

ACCURACY.—Stage-discharge relation practically permanent except as affected by ice. Rating curve well defined below 2,500 second-feet. Operation of water-stage recorder unsatisfactory during parts of the year owing to partly obstructed inlet. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of gage-height graph or, for days of considerable fluctuation, by averaging discharge for intervals of day. Records good except during periods of ice effect and estimate, for which they are fair.

*Discharge measurements of Bouquet River at Willsboro, N. Y., during the year ending September 30, 1925*

| Date | Gage height | Discharge | Date | Gage height | Discharge | Date | Gage height | Discharge |
|---|---|---|---|---|---|---|---|---|
| | *Feet.* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* | | *Feet* | *Sec.-ft.* |
| Oct. 22 | 2.64 | 125 | Mar. 31 | 4.96 | 1,850 | May 26 | 2.98 | 271 |
| Nov. 13 | 2.60 | 109 | Do | 4.91 | 1,840 | July 21 | 2.63 | 121 |
| Jan. 27 | *3.06 | 87.1 | Apr. 23 | 4.17 | 1,050 | Sept. 15 | 3.05 | 316 |
| Feb. 25 | 4.21 | 1,060 | May 5 | 3.96 | 881 | | | |

* Stage-discharge relation affected by ice.

*Daily discharge, in second-feet, of Bouquet River at Willsboro, N. Y., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8,400 | 100 | 170 | 120 | 75 | | 1,490 | 660 | 368 | 170 | 266 | 63 |
| 2 | 1,940 | 100 | 150 | 110 | 75 | | 1,180 | | 613 | 151 | 396 | 63 |
| 3 | 750 | 87 | 130 | 110 | 70 | | 990 | | 632 | 130 | 342 | 61 |
| 4 | 435 | 100 | 110 | 110 | 70 | | 860 | | 418 | 117 | 266 | 61 |
| 5 | 316 | 103 | 110 | 110 | 75 | 340 | 785 | | 321 | 100 | 256 | 61 |
| 5 | 266 | 106 | 130 | 120 | 75 | | 687 | | 266 | 98 | 266 | 63 |
| 7 | 228 | 106 | 160 | 130 | 75 | | 597 | | 233 | 124 | 342 | 63 |
| 8 | 206 | 109 | 240 | 120 | 80 | 280 | 543 | | 202 | 215 | 555 | 65 |
| 9 | 194 | 109 | 900 | 120 | 85 | 316 | 507 | | 247 | 155 | 402 | 65 |
| 10 | 185 | 92 | 750 | 120 | 340 | 541 | 489 | | 331 | 114 | 316 | 65 |
| 11 | 181 | 106 | | | 1,600 | 1,180 | 489 | | 233 | 106 | 261 | 69 |
| 12 | 170 | 106 | | | 3,400 | 1,300 | 483 | | 181 | 111 | 228 | 76 |
| 13 | 155 | 106 | | | 2,160 | 764 | 489 | | 162 | 106 | 189 | 87 |
| 14 | 147 | 117 | | | 1,020 | 585 | 525 | 490 | | 85 | 170 | 236 |
| 15 | 144 | 134 | | | 715 | 701 | 573 | | | 80 | 158 | 300 |
| 16 | 137 | 130 | 260 | | 567 | 591 | 615 | | 140 | 87 | 147 | 678 |
| 17 | 134 | 90 | | | 471 | 495 | 561 | | | 155 | 134 | 1,060 |
| 18 | 137 | 90 | | | 408 | 501 | 477 | | | 228 | 121 | 543 |
| 19 | 134 | 80 | | 95 | 386 | 828 | 435 | | | 170 | 106 | 353 |
| 20 | 127 | 90 | | | 380 | 1,040 | 424 | | | 147 | 103 | 290 |
| 21 | 124 | 100 | 200 | | 375 | 764 | 430 | | 174 | 121 | 100 | 541 |
| 22 | 121 | 140 | 200 | | 453 | 764 | 537 | | 194 | 277 | 98 | 436 |
| 23 | 121 | 1,660 | 190 | | 615 | 667 | 981 | | 158 | 559 | 95 | 280 |
| 24 | 117 | 1,210 | 180 | | 1,120 | 561 | 1,440 | | 130 | 337 | 90 | 228 |
| 25 | 114 | 603 | 170 | | 1,130 | 555 | 1,020 | | 134 | 237 | 83 | 206 |
| 26 | 109 | 435 | 170 | | 785 | 660 | 892 | 270 | 219 | 189 | 76 | 194 |
| 27 | 100 | 360 | 160 | 85 | 555 | 820 | 836 | 275 | 189 | 388 | 72 | 177 |
| 28 | 103 | 300 | 160 | 85 | 408 | 3,690 | 729 | 261 | 166 | 459 | 67 | 166 |
| 29 | 100 | 240 | 150 | 85 | ------- | 6,840 | 628 | 256 | 198 | 447 | 65 | 198 |
| 30 | 100 | 200 | 150 | 80 | ------- | 3,520 | 555 | 290 | 202 | 435 | 65 | 185 |
| 31 | 100 | ------- | 140 | 75 | ------- | 2,190 | ------- | 280 | ------- | 306 | 63 | ------ |

NOTE.—Discharge Oct. 3–12, Dec. 7–20, 22–28, Jan. 2, 3, 8–31, Feb. 28 to Mar. 7, Apr. 14–16, May 2–25, June 14–20, Aug. 29 to Sept. 12 estimated from slope gage readings, available automatic record, and by comparison with record of East Branch of Ausable River at Ausable Forks; gage-height record either faulty, owing to partly obstructed inlet, or missing. Discharge Nov. 17–22, Nov. 27 to Dec. 6, Dec. 21 to Jan. 10, and Jan. 27 to Feb. 12 determined from gage-heights corrected for ice effect from one discharge measurement, study of gage-height graph and weather records, and comparison with record of East Branch of Ausable River.

*Monthly discharge of Bouquet River at Willsboro, N. Y., for the year ending September 30, 1925*

[Drainage area, 271 square miles]

| Month | Discharge in second-feet | | | | Run-off in inches |
|---|---|---|---|---|---|
| | Maximum | Minimum | Mean | Per square mile | |
| October | 8,400 | 100 | 503 | 1.86 | 2.14 |
| November | 1,660 | 80 | 244 | .900 | 1.00 |
| December | 900 | 110 | 236 | .871 | 1.00 |
| January | 130 | 75 | 100 | .369 | .43 |
| February | 3,400 | 70 | 627 | 2.31 | 2.40 |
| March | 6,840 | 280 | 1,050 | 3.87 | 4.46 |
| April | 1,440 | 424 | 708 | 2.61 | 2.91 |
| May | 660 | 256 | 453 | 1.67 | 1.92 |
| June | 632 | 130 | 232 | .856 | .96 |
| July | 559 | 80 | 207 | .764 | .88 |
| August | 555 | 63 | 190 | .701 | .81 |
| September | 1,060 | 61 | 231 | .852 | .95 |
| The year | 8,400 | 61 | 397 | 1.46 | 19.86 |

### 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, 1925.

GAGE.—Vertical staff attached to dock structure set by water level to same datum as gage formerly used near steamboat landing. Datum 3.15 feet below crest of dam at outlet of lake. Gage read to hundredths once daily by an employee of International Paper Co.

EXTREMES OF STAGE.—Maximum stage recorded during year, 4.40 feet May 3; minimum stage, 1.47 feet January 25, 27, and 28.

1913–1925: 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, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.70 | 2.07 | 1.82 | 1.65 | 1.57 | 2.35 | 4.00 | 4.25 | 3.75 | 3.70 | 3.92 | ------ |
| 2 | 2.80 | 2.10 | 1.80 | 1.62 | 1.60 | 2.37 | 4.10 | 4.35 | 3.77 | 3.67 | 3.90 | ------ |
| 3 | 2.85 | 2.05 | 1.77 | 1.60 | 1.62 | 2.40 | 4.07 | 4.40 | 3.77 | 3.65 | 3.90 | ------ |
| 4 | 2.80 | 2.02 | 1.75 | 1.62 | 1.65 | 2.42 | 4.05 | 4.35 | 3.75 | 3.67 | 3.92 | ------ |
| 5 | 2.72 | 2.00 | 1.87 | 1.65 | 1.65 | 2.35 | 4.05 | 4.20 | 3.72 | 3.70 | 3.95 | ------ |
| 6 | 2.70 | 1.97 | 1.80 | 1.62 | 1.67 | 2.35 | 4.07 | 4.25 | 3.72 | 3.67 | 3.97 | ------ |
| 7 | 2.65 | 1.95 | 1.82 | 1.65 | 1.70 | 2.37 | 4.05 | 4.20 | 3.70 | 3.65 | 3.95 | 3.40 |
| 8 | 2.60 | 1.92 | 1.85 | 1.62 | 1.70 | 2.37 | 4.02 | 4.15 | 3.67 | 3.67 | 3.92 | 3.35 |
| 9 | 2.57 | 1.90 | 1.92 | 1.60 | 1.65 | 2.40 | 3.97 | 4.12 | 3.67 | 3.65 | 3.95 | 3.30 |
| 10 | 2.55 | 1.87 | 1.95 | 1.60 | 1.62 | 2.45 | 4.00 | 4.07 | 3.65 | 3.62 | 3.97 | 3.27 |
| 11 | 2.52 | 1.85 | 1.90 | 1.57 | 1.67 | 2.55 | 3.95 | 4.05 | 3.60 | 3.62 | 3.95 | 3.25 |
| 12 | 2.50 | 1.82 | 1.92 | 1.57 | 1.67 | 2.57 | 3.97 | 4.00 | 3.65 | 3.60 | 3.92 | 3.30 |
| 13 | 2.52 | 1.80 | 1.90 | 1.55 | 2.00 | 2.62 | 4.00 | 3.97 | 3.62 | 3.65 | 3.92 | 3.42 |
| 14 | 2.47 | 1.77 | 1.90 | 1.52 | 2.05 | 2.70 | 4.02 | 4.00 | 3.60 | 3.62 | 3.92 | 3.47 |
| 15 | 2.47 | 1.77 | 1.87 | 1.52 | 2.10 | 2.80 | 4.00 | 3.92 | 3.62 | 3.60 | 3.90 | 3.50 |

*Daily gage height, in feet, of Lake George at Rogers Rock, N. Y., for the year ending September 30, 1925*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 2.42 | 1.80 | 1.85 | 1.55 | 2.12 | 2.85 | 3.97 | 3.87 | 3.60 | 3.65 | 3.87 | 3.60 |
| 17 | 2.45 | 1.75 | 1.82 | 1.50 | 2.15 | 2.90 | 4.00 | 3.90 | 3.57 | 3.60 | 3.85 | 3.65 |
| 18 | 2.42 | 1.72 | 1.85 | 1.52 | 2.15 | 3.00 | 3.95 | 3.87 | 3.60 | 3.60 | 3.87 | 3.70 |
| 19 | 2.40 | 1.62 | 1.82 | 1.52 | 2.12 | 3.05 | 3.90 | 3.85 | 3.57 | 3.65 | 3.85 | 3.65 |
| 20 | 2.37 | 1.67 | 1.80 | 1.55 | 2.12 | 3.10 | 3.90 | 3.85 | 3.55 | 3.62 | 3.82 | 3.65 |
| 21 | 2.35 | 1.70 | 1.80 | 1.52 | 2.10 | 3.15 | 3.97 | 3.82 | 3.52 | 3.60 | 3.80 | 3.60 |
| 22 | 2.32 | 1.72 | 1.77 | 1.52 | 2.07 | 3.20 | 4.07 | 3.80 | 3.55 | 3.62 | 3.70 | 3.55 |
| 23 | 2.30 | 1.85 | 1.75 | 1.50 | 2.10 | 3.25 | 4.10 | 3.75 | 3.50 | 3.65 | 3.70 | 3.52 |
| 24 | 2.27 | 1.90 | 1.70 | 1.50 | 2.15 | 3.30 | 4.15 | 3.70 | 3.50 | 3.67 | 3.67 | 3.50 |
| 25 | 2.25 | 1.95 | 1.72 | 1.47 | 2.17 | 3.35 | 4.17 | 3.67 | 3.52 | 3.70 | 3.65 | 3.42 |
| 26 | 2.20 | 1.90 | 1.70 | 1.50 | 2.22 | 3.40 | 4.20 | 3.65 | 3.55 | 3.67 | 3.62 | 3.47 |
| 27 | 2.17 | 1.85 | 1.67 | 1.47 | 2.27 | 3.45 | 4.25 | 3.62 | 3.60 | 3.70 | 3.57 | 3.45 |
| 28 | 2.15 | 1.87 | 1.70 | 1.47 | 2.30 | 3.75 | 4.20 | 3.65 | 3.67 | 3.80 | 3.65 | 3.40 |
| 29 | 2.00 | 1.80 | 1.72 | 1.50 | ------ | 3.80 | 4.15 | 3.67 | 3.70 | 3.90 | 3.62 | 3.35 |
| 30 | 2.12 | 1.85 | 1.70 | 1.52 | ------ | 3.90 | 4.20 | 3.70 | 3.72 | 3.92 | 3.60 | 3.30 |
| 31 | 2.00 | ------ | 1.67 | 1.55 | ------ | 3.95 | ------ | 3.75 | ------ | 3.90 | ------ | ------ |

NOTE.—Gage not read Aug. 31 to Sept. 6. Levels of July 21 indicate that gage reads 0.09 foot high due, presumably, to settling of dock. No correction has been applied to above gage heights on account of uncertainty as to the time from which this error dates.

### 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.—About 20 square miles.

RECORDS AVAILABLE.—January 23, 1915, to March 16, 1921, and December 3, 1922, to September 30, 1925.

GAGE.—Inclined staff on left bank in pool back of weir; read by P. M. Trescott.

DISCHARGE MEASUREMENTS.—Made at footbridge half a mile downstream from weir or at old bridge half a mile above weir.

CHANNEL AND CONTROL.—Sharp-crested compound weir 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 milldam 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, 3.50 feet at 9 a. m. March 29 (discharge, 435 second-feet); minimum stage, 0.16 foot at 5 p. m. September 6 (discharge, 2.2 second-feet).

1915–1921; 1922–1925: Maximum discharge (determined from high-water marks and extension of rating curve), 710 second-feet on April 12, 1919; minimum discharge, 2.2 second-feet August 11–12, 1923, and September 6, 1925.

ICE.—Weir and weir crest kept clear of ice during winter; stage-discharge relation not affected by ice.

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 probably permanent. Rating curve fairly well defined. Gage read to hundredths twice a day. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

No discharge measurements made during the year.

*Daily discharge, in second-feet, of Green River at Garfield, Vt., for the year ending September 30, 1925*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 87 | 7.4 | 16 | 8.3 | 5.7 | 29 | 157 | 30 | 18 | 15 | 23 | 2.6 |
| 2 | 61 | 7.4 | 15 | 8.3 | 5.7 | 29 | 123 | 36 | 23 | 12 | 50 | 2.6 |
| 3 | 30 | 7.1 | 15 | 8.0 | 5.7 | 25 | 116 | 36 | 20 | 9.5 | 43 | 2.4 |
| 4 | 19 | 7.4 | 14 | 8.0 | 5.4 | 23 | 109 | 29 | 16 | 9.8 | 94 | 2.4 |
| 5 | 14 | 8.0 | 14 | 8.0 | 5.4 | 20 | 87 | 49 | 13 | 13 | 51 | 2.4 |
| 6 | 12 | 7.4 | 14 | 8.0 | 5.7 | 19 | 73 | 50 | 11 | 11 | 25 | 2.2 |
| 7 | 11 | 8.0 | 21 | 8.3 | 6.3 | 18 | 76 | 45 | 9.2 | 23 | 25 | 2.6 |
| 8 | 11 | 8.6 | 29 | 8.0 | 7.4 | 18 | 87 | 43 | 7.4 | 63 | 23 | 2.6 |
| 9 | 10 | 8.3 | 61 | 8.0 | 8.6 | 18 | 70 | 42 | 7.4 | 30 | 16 | 2.4 |
| 10 | 9.5 | 8.0 | 52 | 8.0 | 10 | 19 | 67 | 36 | 11 | 17 | 12 | 4.0 |
| 11 | 8.9 | 8.0 | 43 | 7.7 | 17 | 24 | 73 | 34 | 18 | 12 | 9.8 | 3.7 |
| 12 | 8.6 | 7.7 | 31 | 8.0 | 67 | 32 | 65 | 37 | 14 | 11 | 8.6 | 4.8 |
| 13 | 8.0 | 7.7 | 25 | 8.0 | 138 | 42 | 57 | 30 | 9.2 | 16 | 7.7 | 55 |
| 14 | 7.7 | 8.6 | 20 | 7.7 | 126 | 47 | 52 | 26 | 7.7 | 11 | 8.0 | 55 |
| 15 | 7.4 | 8.0 | 18 | 7.7 | 102 | 48 | 56 | 30 | 6.8 | 8.6 | 7.4 | 61 |
| 16 | 7.4 | 8.0 | 17 | 7.7 | 69 | 43 | 69 | 32 | 14 | 12 | 6.8 | 64 |
| 17 | 7.1 | 7.4 | 16 | 7.4 | 57 | 37 | 53 | 29 | 23 | 34 | 5.7 | 123 |
| 18 | 7.1 | 6.8 | 15 | 7.4 | 49 | 29 | 45 | 29 | 14 | 23 | 5.2 | 85 |
| 19 | 8.0 | 6.3 | 15 | 7.1 | 42 | 29 | 40 | 23 | 10 | 14 | 4.8 | 47 |
| 20 | 8.9 | 5.7 | 14 | 7.1 | 39 | 32 | 36 | 18 | 8.9 | 10 | 5.4 | 29 |
| 21 | 9.8 | 6.3 | 14 | 6.8 | 36 | 33 | 36 | 17 | 8.6 | 7.4 | 5.2 | 71 |
| 22 | 9.8 | 7.4 | 12 | 6.8 | 33 | 39 | 45 | 25 | 16 | 12 | 4.6 | 65 |
| 23 | 10 | 168 | 12 | 6.8 | 32 | 37 | 47 | 24 | 20 | 29 | 4.4 | 29 |
| 24 | 11 | 220 | 11 | 6.6 | 39 | 37 | 45 | 20 | 12 | 18 | 4.0 | 18 |
| 25 | 11 | 102 | 11 | 6.6 | 42 | 36 | 39 | 18 | 13 | 11 | 3.5 | 19 |
| 26 | 11 | 49 | 10 | 6.3 | 40 | 47 | 41 | 18 | 20 | 12 | 3.5 | 19 |
| 27 | 9.8 | 32 | 10 | 6.3 | 37 | 85 | 47 | 16 | 19 | 17 | 3.0 | 15 |
| 28 | 8.9 | 24 | 9.8 | 6.0 | 32 | 251 | 37 | 14 | 16 | 18 | 3.0 | 39 |
| 29 | 8.0 | 23 | 9.2 | 6.0 | ------- | 410 | 30 | 13 | 18 | 40 | 3.0 | 59 |
| 30 | 7.7 | 18 | 8.9 | 5.7 | ------- | 270 | 25 | 14 | 18 | 36 | 2.8 | 35 |
| 31 | 7.4 | ------- | 8.3 | 5.7 | ------- | 196 | ------- | 16 | ------- | 18 | 2.6 | ------- |

*Monthly discharge, in second-feet, of Green River at Garfield, Vt., for the year ending September 30, 1925*

| Month | Maximum | Minimum | Mean | Month | Maximum | Minimum | Mean |
|---|---|---|---|---|---|---|---|
| October | 87 | 7.1 | 14.5 | May | 50 | 13 | 28.4 |
| November | 220 | 5.7 | 26.7 | June | 23 | 6.8 | 14.1 |
| December | 61 | 8.3 | 18.7 | July | 63 | 7.4 | 18.5 |
| January | 8.3 | 5.7 | 7.30 | August | 94 | 2.6 | 15.2 |
| February | 138 | 5.4 | 38.0 | September | 123 | 2.2 | 30.8 |
| March | 410 | 18 | 65.2 | | | | |
| April | 157 | 25 | 63.4 | The year | 410 | 2.2 | 28.3 |

## 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, 1925*

| Date | Stream | Tributary to— | Locality | Gage height | Discharge |
|---|---|---|---|---|---|
| | | | | *Feet* | *Sec.-ft.* |
| Oct. 15 | Pine River | Menominee River | In secs. 23 and 26, T. 39 N., R. 17 E., at former gaging station "Pine River near Florence, Wis." | 1.48 | 216 |
| 16 | do | do | do | 1.46 | 205 |
| June 17 | do | do | do | 2.70 | 617 |
| 17 | do | do | do | 2.70 | 617 |
| July 13 | Cuyahoga River | Lake Erie | Half a mile above mouth of Little Cuyahoga River, near Akron, Ohio. | ------- | 257 |
| Oct. 29 | do | do | Just below dam at Brecksville, Ohio. | .23 | 115 |
| Nov. 21 | do | do | do | .34 | 147 |
| Jan. 11 | do | do | do | .11 | 46.8 |
| Mar. 17 | do | do | do | 1.60 | 1,560 |
| Apr. 14 | do | do | do | .64 | 374 |
| May 5 | do | do | do | .81 | 531 |
| Oct. 29 | Ohio Canal feeder | Cuyahoga River | Brecksville, Ohio | .63 | 71.5 |
| Nov. 21 | do | do | do | .55 | 71.0 |
| Jan. 11 | do | do | do | .90 | 112 |
| Mar. 17 | do | do | do | .82 | 49.3 |
| Apr. 14 | do | do | do | 1.00 | 80.9 |
| May 5 | do | do | do | .94 | 85.6 |

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