Surface Water Supply of the United States 1958

Part 4. St. Lawrence River Basin

Prepared under the direction of J. V. B. WELLS, *Chief, Surface Water Branch*

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1557

Prepared in cooperation with the States of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Vermont, and Wisconsin, and with other agencies

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FRED A. SEATON, *Secretary*

GEOLOGICAL SURVEY

Thomas B. Nolan, *Director*

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PREFACE

This report was prepared by the Geological Survey in cooperation with the States of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Vermont, and Wisconsin, and with other agencies, by personnel of the Water Resources Division, L. B. Leopold, chief, under the general direction of J. V. B. Wells, chief, Surface Water Branch, and F. J. Flynn, chief, Basic Records Section.

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CALENDAR FOR WATER YEAR 1958

OCTOBER 1957

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SEPTEMBER 1958

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SURFACE WATER SUPPLY OF ST. LAWRENCE RIVER BASIN, 1958

SCOPE OF WORK

This volume is one of a series of 18 reports presenting measurements of stage, discharge, and content of streams, lakes, and reservoirs in the United States during the water year ending September 30, 1958. Since 1888, when the United States Geological Survey first studied streamflow in relation to problems of irrigation, similar measurements have been made at more than 14,000 gaging stations in the 48 States and at many others in the Territories of Alaska and Hawaii. On September 30, 1958, the Geological Survey and cooperating organizations were maintaining 7,090 gaging stations, including those in Alaska and Hawaii. Partial-record stations for low flow or for flood flow have been operated at many other points. In addition discharge measurements are made at miscellaneous sites. The records for the water year October 1, 1957, to September 30, 1958, at gaging stations, partial-record stations, and miscellaneous sites in the St. Lawrence River basin are given in this report.

COOPERATION

Many State, municipal, and private organizations have cooperated with the Geological Survey in this work by either furnishing or helping to collect data. Organizations that supplied data are acknowledged in station descriptions, and organizations that assisted in the collection of data through cooperative agreements with the Survey are:

Illinois: State Department of Public Works and Buildings, E. A. Rosenstone, director, through Division of Waterways, T. B. Casey, chief engineer; and Department of Highways, Cook County, W. H. Erickson, president of the Board of County Commissioners and W. J. Mortimer, superintendent.

Indiana: State Department of Conservation, E. K. Marlin, director, through Division of Water Resources, C. H. Bechert, director; State Highway Commission, John Peters, chairman, and C. E. Vogelgesang, chief engineer; Indiana Flood Control and Water Resources Commission, Anton Hulman, Jr., chairman, and J. I. Perrey, chief engineer; State Board of Health, Dr. A. C. Offutt, commissioner, and B. A. Poole, director, Bureau of Sanitary Engineering; and city of Fort Wayne Filtration Plant, L. R. Matthews, superintendent.

Michigan: State Department of Conservation, G. E. Eddy, director, through Geological Survey Division, W. L. Daoust, State geologist; Fish and Fisheries Division, F. A. Westerman, chief; General Operations Division, G. A. Walker, chief; and Parks Division, A. C. Elmer, chief; State Water Resources Commission, M. P. Adams, executive secretary; and State Highway Department, J. C. Mackie, commissioner.

Minnesota: State Department of Conservation, Division of Waters, S. A. Frellsen, director; and Minnesota State Iron Range Resources and Rehabilitation Commission, K. J. Otava, commissioner.

New York: State Department of Health, Water Pollution Control Board, H. E. Hilleboe, commissioner; State Department of Law, L. J. Lefkowitz, attorney general; State Department of Public Works, J. W. Johnson, superintendent; Board of Black

River Regulating District, L. P. Gaylord, chief engineer; Oswegatchie River-Cranberry Reservoir Commission, A. E. Boughner, commissioner; city of Auburn, G. F. Train, city manager.

Ohio: State Department of Highways, C. M. Noble, director; State Department of Natural Resources, H. B. Eagon, director.

Vermont: Water Conservation Board, R. W. Thieme, commissioner.

Wisconsin: Public Service Commission of Wisconsin, Warren Oakey, chief engineer; and Wisconsin Committee on Water Pollution, T. F. Wisniewski, director.

Assistance in the form of funds or services was given by the Corps of Engineers, Department of the Army, in collecting records published herein for 75 gaging stations, of which 3 were in Indiana, 30 in Michigan, 2 in Minnesota, 18 in New York, 13 in Ohio, 3 in Vermont, and 6 in Wisconsin.

Assistance was also furnished by the Weather Bureau of the United States Department of Commerce, Fish and Wildlife Service of the United States Department of the Interior, and the United States Department of State.

On waters adjacent to the international boundary, certain gaging stations are maintained by the United States (or Canada) under agreement with Canada (or the United States), and the records are obtained and compiled in a manner equally acceptable in both countries. These stations are designated herein as "International gaging stations."

The following organizations aided in collecting records:

Indiana: Indiana & Michigan Electric Co., and Sanitary District of Chicago.

Michigan: Macomb County Board of Supervisors; Macomb County Road Commission; Oakland County Department of Public Works; Oakland County Drain Commission; Wayne County Road Commission; Huron-Clinton Metropolitan Authority; Southeastern Oakland Co. Sewage Disposal District; cities of Adrian, Allegan, Battle Creek, Birmingham, Crystal Falls, Dearborn, Detroit, Flint, Grand Rapids, Jackson, Lansing, Niles, and Owosso; American Boxboard Co.; Consumers Power Co.; Detroit Edison Co.; Dow Chemical Co.; Hanna Coal and Ore Corp.; Michigan Gas & Electric Co.; Wisconsin-Michigan Power Co.; and Upper Peninsular Power Co.

New York: Municipalities of Batavia, Canandaigua, Oneida, Rochester, and Syracuse; villages of Lancaster and Williamsville; Cornell University; New York State Electric & Gas Corp.; Niagara Mohawk Power Corp.; and Rochester Gas & Electric Corp.

Wisconsin: State Conservation Department; Lake Superior District Power Co.; Wisconsin-Michigan Power Co.; and Wisconsin Public Service Corp.

DIVISION OF WORK

The stream-gaging work was done by the Water Resources Division of the Geological Survey, under the direction of personnel shown in the preface. The data for stations in the several States were collected and prepared for publication in the district offices listed below.

State	District office	Address
Illinois	Champaign	605 South Neil Street.
Indiana	Indianapolis	611 North Park Avenue.
Michigan a/	Lansing	407 Capitol Savings & Loan Building.
Minnesota	St. Paul	1610 Post Office Building.
New York	Albany	343 Federal Building.
Ohio	Columbus	1509 Hess Street.
Vermont	Boston, Mass	141 Milk Street.
Wisconsin b/	Madison	699 State Office Building.

a Except Menominee River below Koss but including Brule and Menominee Rivers near Florence, Wis.
b Except Brule and Menominee Rivers near Florence but including Menominee River below Koss, Mich.

Information of a more detailed nature than that published for most of the gaging stations given in this report is on file in the district offices listed on page 2. All gaging-station records for Indiana and some for Illinois and Vermont have been analyzed by electronic computer to give: (1) the number of days in each year that the daily discharge was between selected limits (duration tables); and (2) the lowest mean discharge for periods of 7, 15, 30, 60, 120, and 183 consecutive days in each year. In addition, the records for Illinois and Vermont give the highest mean discharge for periods of 3, 7, 15, 30, and 120 consecutive days in each year. Provisional records of discharge, information on the availability of electronic computer results, and other unpublished data concerning the gaging-station records may generally be obtained from the district offices.

DEFINITION OF TERMS AND ABBREVIATIONS

The terms of streamflow and other hydrologic data, as used in this report, are defined as follows:

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of gage height or discharge are obtained. When used in connection with a discharge record, the term is applied herein only to those gaging stations where a continuous record of discharge is obtained.

Partial-record station is a particular site where limited streamflow data are collected systematically over a period of years for use in hydrologic analyses.

Cubic foot per second (cfs) is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

Cubic feet per second per square mile (cfsm) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Runoff in inches (in.) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Acre-foot (ac-ft) is the quantity of water required to cover an acre to the depth of 1 foot and is equivalent to 43,560 cubic feet.

Cfs-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.983471 acre-feet, or 646,317 gallons, and represents a runoff of 0.0372 inch from 1 square mile.

Stage-discharge relation is the relation between gage height and the amount of water flowing in a channel, expressed as volume per unit of time.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, a long reach of the channel, or an artificial structure.

Contents is the volume of water in a reservoir. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

The drainage area of a stream at a specified location is that area, measured in a horizontal plane, which is so enclosed by a topographic divide that direct surface runoff from precipitation normally would drain by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

DOWNSTREAM ORDER AND STATION NUMBERS

Beginning with the series of reports for the water year ending September 30, 1951, the order of listing gaging-station records was changed. In this report, in a downstream direction along the main stem all stations on a tributary entering above a main-stem station are listed before that station. If a tributary enters between two main-stem stations, it is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. To indicate the rank of any tributary on which a gaging station is situated and the stream to which it is immediately tributary, each indention in the listing of gaging stations in the table of contents of this report represents one rank. This downstream order and system of indention show which gaging stations are on tributaries between any two stations on a main stem and the rank of the tributary on which each gaging station is situated.

The order of listing used before the publication of the 1951 report listed first all stations on the main stem from headwaters toward mouth, then all stations on the uppermost tributary to the main stem from the tributary's source to mouth, and then all stations from source to mouth of the uppermost tributary to the tributary.

As an added means of identification, each gaging station and partial-record station has been assigned a station number. The numbers have been assigned in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and regular gaging stations, so that the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the numbers to allow for new stations that may be established; hence the numbers are not consecutive. The complete number for each station has eight digits, but the station number as shown in this report, just to the left of the station name, consists of only the essential digits of the complete number. For example, for a station with the complete number 04-0405.00, the station number shown in this report is 405. The notation in the two places to the left of the hyphen is the part number; it is 4 for all stations in this report and is therefore omitted.

EXPLANATION OF DATA

The base data collected at gaging stations consist of records of stage and measurements of discharge. In addition, observations of factors affecting the stage-discharge relation, weather records, and other information are used to supplement base data in determining the daily flow. The records of stage are obtained either from direct readings on a nonrecording gage or from a water-stage recorder that gives a continuous record of fluctuations. Measurements of discharge are made with a current meter by the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in Water-Supply Paper 888 and are also outlined in standard textbooks on the measurement of stream discharge.

Rating tables giving the discharge for any stage are prepared from stage-discharge relation curves defined by discharge measurements. If extensions to the rating curves are necessary to define the extremes of discharge, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs, and by other methods), velocity-area studies, and logarithmic plotting. The application of the daily mean gage height to those rating

tables gives the daily mean discharge, from which the monthly and the yearly mean discharge are computed. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is essentially the shifting-control method.

At some gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in determining discharge. Information requisite for determining the slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage. If so, the rate of change in stage is used as a factor in the determination of discharge.

At most gaging stations in the northern part of the United States and at some in the mountainous regions of other parts the stage-discharge relation is affected by ice during the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements, consideration being given to the available information on temperature and precipitation, notes by gage observers and engineers, and comparable records of discharge for other stations in the same or nearby basins. If the stage-discharge relation is affected by ice, this information is given in a note to the table. No mention is made of occasional days of ice effect if the degree of accuracy of daily records is not changed.

The data herein presented generally comprise a description of the station, a skeleton rating table, and a table showing the daily discharge and monthly and yearly discharge of the stream. Records are published for the water year which begins on October 1 and ends on September 30. A calendar for the water year 1958 is shown on page IV for the purpose of finding the day of the week for any date.

The description of the station gives the location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, general remarks, and notations of revisions of the previously published record. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "Location" for some stations, is that determined and used by the Corps of Engineers unless otherwise noted. Under "Records available" are given the periods for which there are published records generally equivalent to those at the present site. Under "Gage" are given the type of gage currently in use and the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of records available. Under "Average discharge" is given the average discharge for the number of years indicated. It is not given for stations having fewer than five complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. Under "Extremes" are given the maximum discharge and gage height; the minimum discharge if there is little or no regulation; the minimum daily discharge if there is extensive regulation (also the minimum discharge if useful); and the minimum gage height (unless it is

of no importance). In the first paragraph, the data given are for the complete current water year unless otherwise specified. In the second paragraph, the data given are for the periods of record within the calendar year dates in the heading (not necessarily those for the complete years indicated by the heading dates). Reliable information concerning major floods that have occurred outside the period of record are given in the third or last paragraph under "Extremes." Unless otherwise qualified, the maximum discharge corresponds to the crest stage obtained by use of a water-stage recorder, a crest-stage indicator, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur at the same time as the maximum discharge, it is given separately. Information pertaining to the accuracy of the records and conditions which affect the natural flow at the gaging station is given under "Remarks."

Previously published records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual reports. In order to make it easier to find such revised records, a paragraph headed "Revisions (water years)" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1933 stands for the water year October 1, 1932, to September 30, 1933. If no daily, monthly, or annual figures of discharge are concerned in the revision, that fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

Skeleton rating tables are published for all stations except those at which the daily discharge for the greater part of the open-water period was determined by the shifting-control method, the slope method, or other special methods involving an equivalent adjustment to the gage height of more than one-tenth foot. Skeleton rating tables are generally not published for stations on canals.

For stations equipped with water-stage recorders, except those on streams subject to sudden or rapid fluctuation, the daily table gives the discharge corresponding to the daily mean gage height. For stations subject to such fluctuation, the daily mean gage height may not indicate the true daily mean discharge, which must be obtained by averaging the discharge for parts of the day or by using the discharge integrator, an instrument for obtaining the daily mean discharge from a continuous gage-height graph and containing, as an essential element, a curve representing the stage-discharge relation at the station. For stations equipped with nonrecording gages, the table of daily discharge gives the discharge corresponding to once-daily readings of the gage, or to the mean of twice-daily readings, or to the mean gage height determined from gage-height graphs based on gage readings. For periods of rapidly changing stage, the daily mean discharge is determined

from gage-height graphs based on gage readings, the frequency of which is stated in the station description.

In the table of daily discharge, the figures for the maximum day and the minimum day for each month are underlined. If the figure is repeated, it is underlined only on the first day of its occurrence.

In the monthly summary below the daily table, the line headed "Total" gives the sum of the daily figures; it is the total cfs-days for the month. The line headed "Mean" gives the average flow in cubic feet per second during the month. Discharge for the month may be expressed in cubic feet per second per square mile (line headed "Cfsm"), or in inches (line headed "In."), or in acre-feet (line headed "Ac-ft"). Figures for cubic feet per second per square mile and runoff in inches are omitted if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches.

In the yearly summary below the monthly summary, the figures of maximum are the maximum daily discharges, not the momentary discharges when the water was at crest stage. Likewise, the minimums in this summary are the minimum daily discharges.

Peak discharges and the times of their occurrence and corresponding gage heights of most stations are listed below the table of daily and monthly discharge. All independent peaks above the selected base are given. The base discharge, which is given in parentheses, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man.

Footnotes to the table of daily discharge indicate periods when discharge was computed or estimated by unusual or special methods during periods of no gage-height record and ice effect, or by other effects that reduce the degree of accuracy of the records. Days on which discharge measurements were made are indicated by asterisk and footnote unless they were made at frequent regular intervals, in which instance the general frequency of discharge measurements is given under "Remarks" in the station description.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published each year for all reservoirs for which records are published on a daily basis, but is not published for reservoirs for which only monthly data are given.

At many gaging stations water samples are collected from the streams for the purpose of making chemical analyses, computing dissolved solids, suspended sediment loads, and particle-size distribution, or measuring water temperatures. For most of these samples the results are published in an annual series of water-supply papers entitled "Quality of Surface Waters of the United States" which is issued in four volumes. In this report under "Remarks" a reference is made to quality-of-water records collected at gaging stations on a regular basis and published in the quality-of-water reports. At many other gaging stations quality-of-water data are obtained at irregular intervals and published as "miscellaneous analyses" in quality-of-water reports; such records are not referred to in "Remarks" paragraph in this report. At many gaging stations water temperature is obtained also at the time a discharge measurement is made; such temperature readings are not reported in the quality-of-water annual reports.

Data collected at partial-record stations and at miscellaneous sites are given at the end of each report. Partial-record stations are presented in two tables. The first is

a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements at miscellaneous sites are given in a third table. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are given in special tables after the list of measurements at miscellaneous sites.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description states the degree of accuracy of the records. "Excellent" indicates that, in general, the error in the daily records is believed to be less than 5 percent; "good," less than 10 percent; "fair," less than 15 percent; and "poor," probably more than 15 percent. The records of monthly and yearly mean discharge and runoff are, in general, more nearly accurate than the daily records.

Discharge at some stations, as indicated by the monthly mean, may vary widely from natural runoff, owing to diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur when relatively large negative adjustments are made or when evaporation is large in comparison with the observed discharge.

Many gaging stations on streams in the irrigated areas of the United States are situated above most of the diversions from those streams, and therefore the discharge recorded does not actually show the water supply available at the stations for further development, because water must first be supplied to existing irrigation systems.

PUBLICATIONS

To facilitate publication of the annual series of reports, the area of the United States is divided into 14 parts whose boundaries coincide with certain natural drainage lines. Formerly, the results of streamflow measurements were published in 14 volumes, one for each of the 14 parts. Beginning with the reports for 1951, the records are published in 18 volumes, there being 2 volumes each for Parts 1, 2, 3, and 6. The boundaries of the various parts are indicated by the following list and the map in figure 1.

Part 1. North Atlantic slope basins, in two volumes:
- A, North Atlantic slope basins, Maine to Connecticut.
- B, North Atlantic slope basins, New York to York River.

2. South Atlantic slope and eastern Gulf of Mexico basins, in two volumes:
- A, South Atlantic slope basins, James River to Savannah River.
- B, South Atlantic slope and eastern Gulf of Mexico basins, Ogeechee River to Pearl River.

3. Ohio River basin, in two volumes:
- A, Ohio River basin except Cumberland and Tennessee River basins.
- B, Cumberland and Tennessee River basins.

4. St. Lawrence River basin.

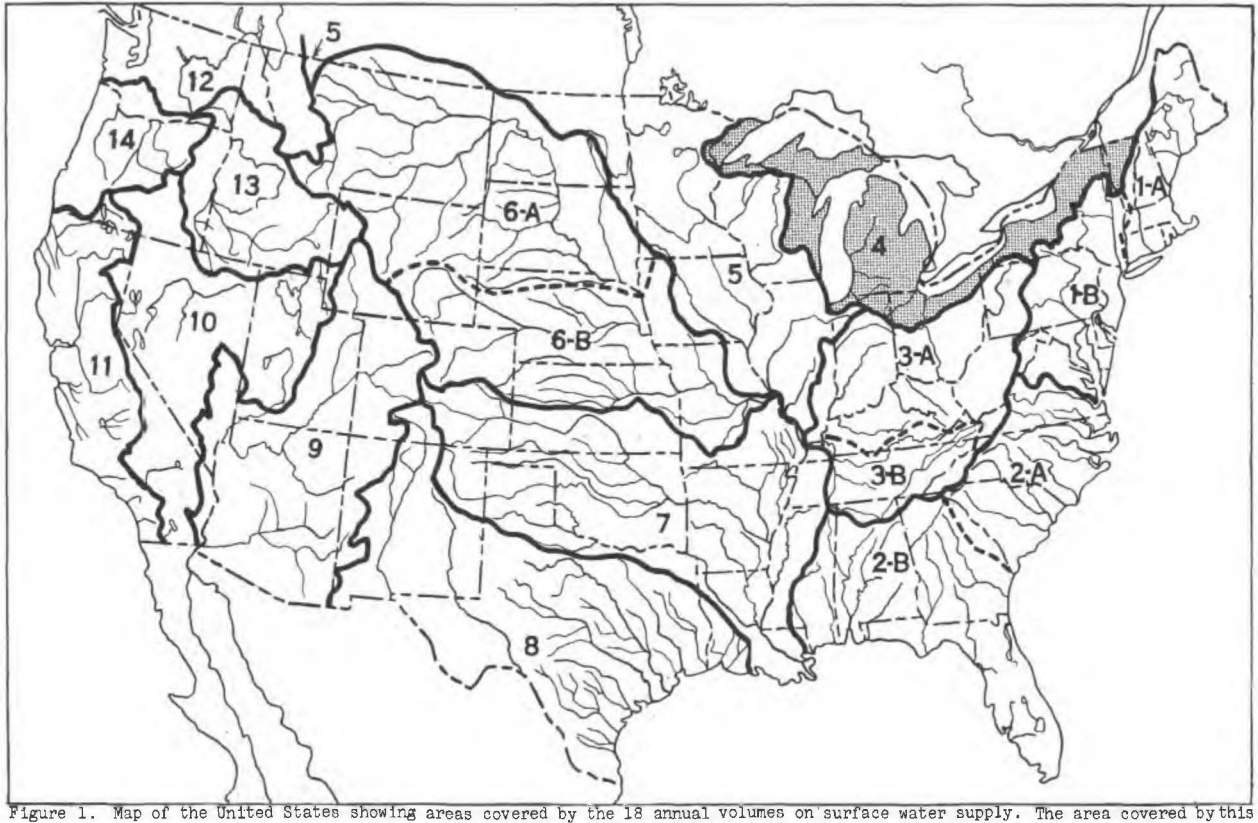


Figure 1. Map of the United States showing areas covered by the 18 annual volumes on surface water supply. The area covered by this report is shaded.

Part 5. Hudson Bay and upper Mississippi River basins.
6. Missouri River basin, in two volumes:
A, Missouri River basin above Sioux City, Iowa.
B, Missouri River basin below Sioux City, Iowa.
7. Lower Mississippi River basin.
8. Western Gulf of Mexico basins.
9. Colorado River basin.
10. The Great Basin.
11. Pacific slope basins in California.
12. Pacific slope basins in Washington and upper Columbia River basin.
13. Snake River basin.
14. Pacific slope basins in Oregon and lower Columbia River basin.

Water-supply papers and other publications of the Geological Survey containing data on the water resources of the United States may be purchased or consulted as follows:

1. Copies may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., who will, on application, furnish lists giving prices. A list of Geological Survey publications may also be obtained by applying to the Director, Geological Survey, Washington, D. C.

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

3. Sets are available for consultation in the offices of the Water Resources Division of the Geological Survey. Addresses of the offices in the area covered by this report are given on page 2.

Early records of the flow of streams in the United States are published in the reports listed below. In many of these reports records for years earlier than those indicated have been included for some streams.

Streamflow data for the years 1884-1901, in reports of the Geological Survey

(A = Annual Report; B = Bulletin)

Report	Character of data	Year
10th A, pt. 2	Descriptive information only.	
11th A, pt. 2	Monthly discharge and descriptive information	1884 to September 1890.
12th A, pt. 2	....do	1884 to June 30, 1891.
13th A, pt. 3	....do	1884-92.
14th A, pt. 2	Monthly discharge	1888-93.
B 131	Descriptions, measurements, gage heights, and ratings	1893-94.
16th A, pt. 2	Descriptive information only.	
B 140	Descriptions, measurements, gage heights, ratings, and monthly discharge.	1895.
WSP 11	Gage heights	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge	1895-96.
WSP 15	Descriptions, measurements, and gage heights of streams east of the Mississippi River, and Missouri River and tributaries above Kansas River.	1897.
WSP 16	Descriptions, measurements, and gage heights of streams west of the Mississippi River, except Missouri River and tributaries above Kansas River.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge.	1897.
WSP 27	Measurements, ratings, and gage heights of streams east of the Mississippi River, and Missouri River and tributaries.	1898.
WSP 28	Measurements, ratings, and gage heights of streams west of the Mississippi River, except Missouri River and tributaries.	1898.
20th A, pt. 4	Monthly discharge	1898.
WSP 35 to 39.	Descriptions, measurements, gage heights, and ratings	1899.
21st A, pt. 4	Monthly discharge	1899.
WSP 47 to 52.	Descriptions, measurements, gage heights, and ratings	1900.
22d A, pt. 4.	Monthly discharge	1900.
WSP 65, 66...	Descriptions, measurements, gage heights, and ratings	1901.
WSP 75	Monthly discharge	1901.

Reports on surface-water supply containing records from 1899 to date for drainage basins in this report are listed on the following page. The data for any particular gaging station will, in general, be found in the reports covering the years during which the station was maintained.

Numbers of water-supply papers containing results of stream measurements in St. Lawrence River basin, 1899-1958

Year	WSP	Year	WSP	Year	WSP	Year	WSP	Year	WSP
1899	36	1912	324	1925	604	1937	824	1949	1144
1900	49	1913	354	1926	624	1938	854	1950	1174
1901	65,75	1914	384	1927	644	1939	874	1951	1207
1902	a82,83	1915	404	1928	664	1940	894	1952	1237
1903	97	1916	434	1929	684	1941	924	1953	1277
1904	129	1917	454	1930	699	1942	954	1954	1337
1905	170	1918	474	1931	714	1943	974	1955	1387
1906	206	1919-20	504	1932	729	1944	1004	1956	1437
1907-8	244	1921	524	1933	744	1945	1034	1957	1507
1909	264	1922	544	1934	759	1946	1054	1958	1557
1910	284	1923	564	1935	784	1947	1084		
1911	304	1924	584	1936	804	1948	1114		

a Lake Ontario and tributaries to St. Lawrence River proper.

A compilation of records for the area covered by this report through September 1950 has been published as Water-Supply Paper 1307. That report contains a summary of monthly and annual discharges for all previously published records as well as some records not contained in the annual series of water-supply papers. All records were reexamined and revised where warranted. Estimates of discharge were made to fill short gaps whenever practical.

The reports listed in the foregoing tables contain the customary records of discharge collected during the systematic operation of gaging stations. Detailed information on the stage and discharge of many streams during major floods has been included in special reports on these floods published by the Geological Survey or other agencies. The more recent of these special reports also contain other pertinent hydrologic information and analyses and compilations of data relating to earlier notable floods. The following list gives the numbers and titles of these reports:

Report	Issued by
WSP 147: Destructive floods in the United States in 1904.	U. S. Geological Survey.
WSP 162: Destructive floods in the United States in 1905.	Do.
WSP 636-C: The New England flood of November 1927.	Do.
WSP 771: Floods in the United States, magnitude and frequency.	Do.
WSP 773-E: The New York State flood of July 1935.	Do.
WSP 798: The floods of March 1936, part 1, New England Rivers.	Do.
WSP 799: The floods of March 1936, part 2, Hudson River to Susquehanna River region.	Do.
WSP 847: Maximum discharges at stream-measurement stations through September 1938.	Do.
WSP 867: Hurricane floods of September 1938.	Do.
WSP 1137-G: Floods of 1950 in the Upper Mississippi River and Lake Superior basins in Minnesota.	Do.
WSP 1137-I: Summary of floods in the United States during 1950.	Do.
WSP 1227-D: Summary of floods in the United States during 1951.	Do.
WSP 1260-F: Summary of floods in the United States during 1952.	Do.
WSP 1320-E: Summary of floods in the United States during 1953.	Do.
WSP 1370-B: Floods of October 1954 in the Chicago area, Illinois, and Indiana.	Do.
WSP 1370-C: Summary of floods in the United States during 1954.	Do.
Bull. 1: Magnitude and frequency of floods in Minnesota.	Minnesota Division of Waters.
Bull. 7: Floods in Ohio, magnitude and frequency.	Ohio Water Resources Board.
Bull. 14: Local floods in Ohio during 1947.	Do.

RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE GEOLOGICAL SURVEY

The table on the following page contains a list of gaging stations for the area covered by this report, at which records of discharge were collected during the water year October 1957 to September 1958 by agencies other than the Geological Survey. The records of these stations are not contained in publications of the Geological Survey.

Records of discharge collected by agencies other than the Geological Survey

Stream	Location	Period	Collected by
Cayuga Lake Outlet...	Lock 1 (Mud lock), N. Y.....	1926-58	State Department of Public Works, Syracuse, N. Y.
Clyde River.....	Clyde, N. Y.....	1924-58	Do.
Indian River.....	Theresa, N. Y.....	1934-58	Niagara Mohawk Power Corporation, Syracuse, N. Y.
Oswegatchie River, East Branch.	Brown Falls, N. Y.....	1934-58	Do.
Oswego River.....	Dam O-5, Minetto, N. Y.....	1928-58	State Department of Public Works, Syracuse, N. Y.
Do.....	Lower Dam, Fulton, N. Y.....	1928-58	Oswego River Watershed Corporation, Fulton, N. Y.
Do.....	High Dam, Oswego, N. Y.....	1940-58	Niagara Mohawk Power Corporation, Syracuse, N. Y.
Raquette River.....	Colton, N. Y.....	1934-58	Do.
St. Regis River, West Branch.	Parishville, N. Y.....	1934-58	Do.
Salmon River.....	Bennetts Bridge, Altmar, N. Y..	1934-58	Do.
Saranac River.....	Kents Falls, N. Y.....	1934-58	System Properties, Inc., Cadyville, N. Y.
Seneca River.....	Seneca Falls, N. Y.....	1931-58	New York State Electric & Gas Corp., Geneva, N. Y.
Do.....	Waterloo, N. Y.....	1931-58	Do.
Skaneateles Lake Outlet.	Skaneateles, N. Y.....	1922-58	City of Syracuse, N. Y.

Note.--Records for the stations given in the above table are unpublished but are available at the office of the organization by which the station was operated. In addition to the records listed in the above table, the Agricultural Research Service of the U. S. Department of Agriculture (beginning in 1941) has collected records of runoff from 3 areas of less than 2 acres each near East Lansing, Mich.

HYDROLOGIC CONDITIONS

In the area covered by this report, few significant extremes of streamflow occurred during the 1958 water year. In the northern part of the Lower Peninsula of Michigan runoff was deficient for seven consecutive months from March to September, and was record-low for May and August. During May and June, runoff was deficient in most parts of Michigan and Wisconsin. Runoff of Fox River at Berlin, Wis., was record-low for August and was 25 percent less than the previous August low in 60 years of record. No noteworthy floods occurred during the year.

Figure 2 on the following page, for which records of two long-term gaging stations were used, shows a comparison of the monthly and yearly mean discharges during the 1958 water year with the median discharge for the period 1921-45.

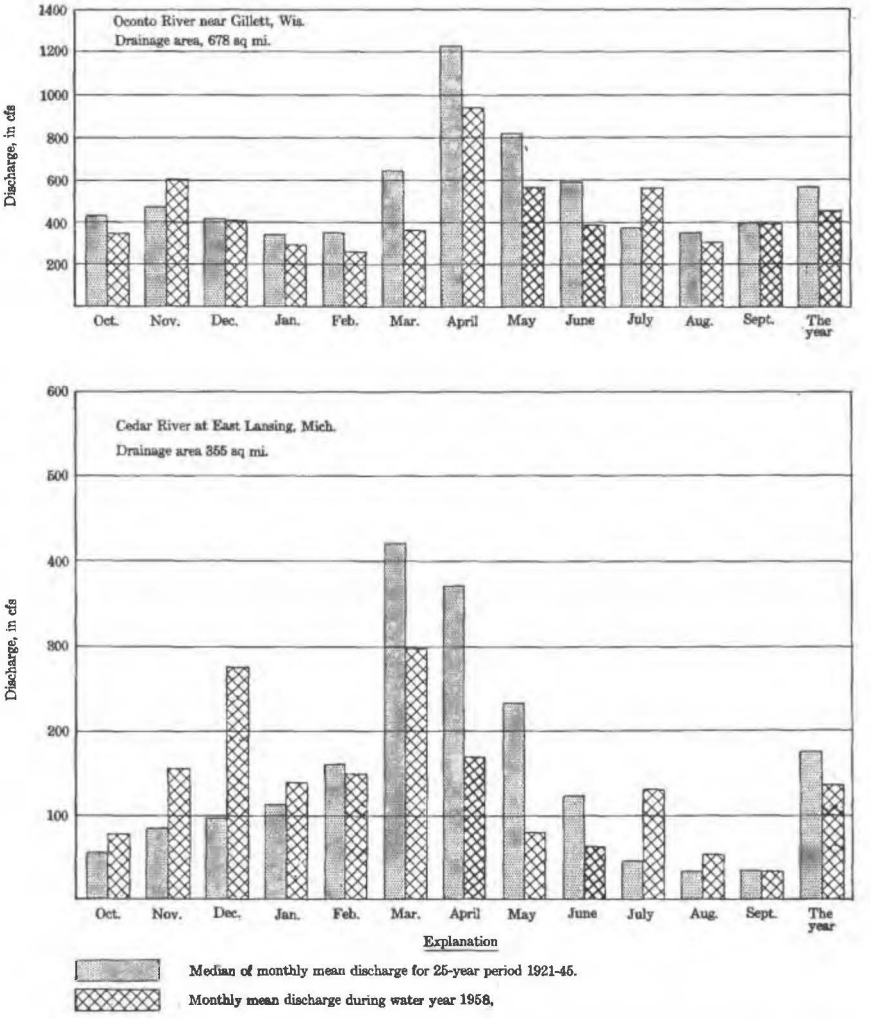


Figure 2. Comparison of discharge at two key gaging stations during 1958 water year with median discharge for 25-year period.

STREAMS TRIBUTARY TO LAKE SUPERIOR

105. Pigeon River at Middle Falls, below International Bridge, Minn.

(International gaging station)

Location.--Lat 48°00'44", long 89°36'58", in NE¼ sec.24, T.64 N., R.6 E., on right bank 400 ft upstream from Middle Falls, 3½ miles upstream from mouth, and 5¾ miles downstream from International Bridge.
Drainage area.--600 sq mi.
Records available.--June to October 1921, May to November 1922, May 1923, July 1923 to September 1958. Published as "at International Bridge" April 1924 to September 1940. Monthly discharge only for some periods, published in WSP 1307. June 1921 to September 1958 in reports of Water Resources Branch, Department of Northern Affairs and National Resources, Canada.
Gage.--Water-stage recorder. Datum of gage is 789.58 ft above mean sea level, datum of 1929. Prior to Sept. 2, 1936, staff gage and Sept. 2, 1936, to Sept. 30, 1940, wire-weight gage at International Bridge, 5¾ miles upstream at datum 100.24 ft higher.
Average discharge.--35 years (1923-58), 495 cfs.
Extremes.--Maximum discharge during year, 793 cfs Apr. 16 (gage height, 3.04 ft); minimum, 55 cfs Aug. 29 (gage height, 0.40 ft).
1923-58: Maximum discharge, 11,000 cfs May 5, 1934 (gage height, 7.6 ft, site and datum then in use), from rating curve extended above 7,000 cfs; minimum, 27 cfs Nov. 4, 1945 (gage height, -0.08 ft).
Remarks.--Records good except those for periods of ice effect, which are fair.
Cooperation.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.
Revisions (water years).--WSP 744: 1927, 1928. WSP 804: 1934(M). WSP 974: Drainage area. WSP 1337: 1924(M), 1925, 1926-28(M), 1931(M), 1938(M), 1941(M), 1945-46(M), 1947, 1948(M), 1950(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.4	55
.8	103
1.0	137
2.0	414
3.0	775

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	112	109	128	86	98	96	125	338	186	91	68	314
2	109	122	125	86	96	95	139	314	173	91	65	317
3	108	178	120	84	96	95	160	300	160	90	64	402
4	106	202	118	84	94	94	180	288	158	85	63	494
5	104	189	116	84	92	94	235	274	178	85	63	371
6	103	173	111	84	90	94	260	250	217	85	62	323
7	102	163	108	84	88	92	290	236	215	86	59	314
8	104	150	105	85	87	92	310	234	189	86	57	335
9	106	140	104	*87	85	92	325	223	170	90	60	311
10	104	135	103	88	84	90	340	223	155	93	63	261
11	102	145	101	90	83	90	355	234	142	93	63	239
12	99	168	100	92	83	88	380	231	133	93	63	247
13	99	178	100	94	82	88	430	220	122	86	62	231
14	98	212	99	96	81	88	500	204	114	80	71	236
15	*109	230	100	98	81	88	580	194	108	76	73	178
16	135	200	101	98	81	90	771	186	99	74	74	*170
17	142	165	103	97	81	90	749	178	94	72	68	220
18	133	140	105	96	81	90	658	161	90	68	63	247
19	124	125	106	95	81	90	575	181	85	65	*60	252
20	116	140	107	93	81	88	510	183	82	64	59	294
21	116	165	107	92	82	90	471	*173	82	60	58	329
22	118	180	107	91	85	90	564	170	79	*60	57	288
23	118	*195	106	90	90	90	697	158	80	59	62	320
24	116	200	105	*88	94	90	606	158	*85	63	64	402
25	115	190	101	88	100	91	517	191	100	71	64	433
26	112	175	98	90	102	92	455	217	135	74	63	426
27	109	160	97	91	104	95	395	247	148	76	59	461
28	108	150	96	93	*98	*97	374	255	128	77	57	436
29	106	145	94	96	-	101	*371	236	108	77	58	420
30	106	130	92	98	-------	108	344	215	94	74	65	534
31	106	-------	90	99	-------	118	-------	196	-------	73	126	-------
Total	3,445	4,954	3,253	2,817	2,480	2,886	12,666	6,888	3,909	2,417	2,013	9,805
Mean	111	165	105	90.9	88.6	93.1	422	222	130	78.0	64.9	327
Cfsm	0.185	0.275	0.175	0.152	0.148	0.155	0.703	0.370	0.217	0.130	0.108	0.545
In.	0.21	0.31	0.20	0.17	0.15	0.18	0.79	0.43	0.24	0.15	0.12	0.61

Calendar year 1957: Max 5,280 Min 90 Mean 397 Cfsm 0.662 In. 8.98
Water year 1957-58: Max 771 Min 57 Mean 158 Cfsm 0.263 In. 3.56

Peak discharge (base, 3,000 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 8-11, Nov. 15 to Apr. 15.

125. Poplar River at Lutsen, Minn.

Location.--Lat 47°38', long 90°42', in sec. 33, T.60 N., R.3 W., on right bank 350 ft upstream from concrete bridge on U. S. Highway 61 at Lutsen and 1,650 ft upstream from mouth.

Drainage area.--114 sq mi.

Records available.--May 1911 to September 1912 (gage heights only, published as "at mouth"), October 1912 to September 1917, July 1928 to September 1947, August 1952 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder and concrete control. Datum of gage is 697.89 ft above mean sea level. May 6 to Nov. 4, 1911, staff gage at site 1,250 ft downstream and Aug. 22, 1912, to Sept. 30, 1917, at site 900 ft downstream at different datum. July 17, 1928, to Mar. 30, 1937, chain gage at site 150 ft downstream at datum 6.90 ft lower.

Average discharge.--30 years (1912-17, 1928-47, 1952-58), 105 cfs.

Extremes.--Maximum discharge during year, 238 cfs June 5 (gage height, 3.84 ft); maximum gage height, 5.44 ft Dec. 12 (from high-water mark; backwater from ice); minimum discharge, 4.6 cfs Aug. 22, 23 (gage height, 1.86 ft).
1912-17, 1928-47, 1952-58: Maximum discharge, 1,880 cfs May 1, 1954 (gage height, 6.23 ft); minimum, 2.3 cfs Dec. 3, 1939 (gage height, 1.73 ft).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Revisions (water years).--WSP 894: 1938-39. WSP 974: Drainage area. WSP 1337: 1914(M), 1928, 1930-35, 1936(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Jan. 9-14)

1.8	3.0	2.8	46
2.0	8.3	3.1	81
2.2	14	3.5	153
2.5	26	4.0	290

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31	46	50	a41	36	26	36	82	56	70	22	88
2	30	89	48	a39	35	27	44	76	50	76	21	58
3	30	a120	47	a37	34	28	50	80	50	63	20	68
4	30	117	48	a35	34	29	69	76	66	52	19	68
5	29	90	48	a35	34	29	93	70	217	48	20	62
6	28	77	48	a35	32	29	99	66	151	46	20	178
7	28	69	48	a37	31	29	94	60	111	45	17	160
8	29	121	47	a39	29	29	99	60	94	42	14	113
9	30	88	47	*39	29	28	96	60	84	52	14	81
10	29	88	47	39	28	27	93	58	77	60	16	57
11	28	80	47	38	26	27	92	56	69	48	15	45
12	27	74	46	38	26	27	94	52	59	42	15	39
13	27	76	46	39	26	28	94	48	54	38	12	36
14	27	72	46	38	26	26	111	45	49	36	11	38
15	*41	110	46	36	26	26	132	43	45	33	11	54
16	186	111	46	36	24	26	130	42	43	32	9.7	43
17	155	80	46	37	23	26	128	42	41	29	8.6	*38
18	119	69	46	37	23	27	121	52	38	28	7.5	35
19	92	42	48	37	23	28	111	50	39	25	7.8	32
20	77	60	48	37	22	29	104	46	44	24	*7.8	32
21	73	74	48	37	22	29	99	*42	46	23	6.4	33
22	82	77	48	37	23	28	132	42	48	*22	4.8	29
23	78	*71	48	36	22	28	126	40	*54	22	7.0	27
24	69	70	48	36	23	28	117	40	54	24	13	28
25	59	77	48	36	25	27	106	44	54	27	11	58
26	52	70	48	36	26	27	99	46	52	26	10	48
27	52	59	48	36	26	*27	92	63	48	41	9.4	37
28	48	54	48	36	*26	28	92	57	44	45	9.4	34
29	45	52	47	37	-	28	*86	54	42	36	12	31
30	46	54	45	38	-------	29	82	56	39	27	19	29
31	46	-------	a43	37	-------	32	-------	59	-------	24	131	-------
Total	1,723	2,337	1,462	1,151	760	860	2,921	1,707	1,918	1,206	521.4	1,679
Mean	55.6	77.9	47.2	37.1	27.1	27.7	97.4	55.1	63.9	38.9	16.8	56.0
Cfsm	0.488	0.683	0.414	0.325	0.238	0.243	0.854	0.483	0.561	0.341	0.147	0.491
In.	0.56	0.76	0.48	0.38	0.25	0.28	0.95	0.56	0.63	0.39	0.17	0.55

Calendar year 1957: Max 1,120 Min 26 Mean 129 Cfsm 1.13 In. 15.33
Water year 1957-58: Max 217 Min 4.8 Mean 50.0 Cfsm 0.439 In. 5.96

Peak discharge (base, 500 cfs).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for Baptism River near Beaver Bay.
Note.--Stage-discharge relation affected by ice Nov. 20-23, 25, 26, Dec. 1-15, 29, 30, Apr. 1-11.

145. Baptism River near Beaver Bay, Minn.

Location.--Lat 47°20'15", long 91°12'00", in SE¼NE¼ sec.15, T.56 N., R.7 W., on right bank 260 ft upstream from bridge on U. S. Highway 61, 0.2 mile upstream from mouth, 4 miles northeast of Silver Bay, and 7 miles northeast of village of Beaver Bay.

Drainage area.--140 sq mi.

Records available.--October 1927 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 609.97 ft above mean sea level (Corps of Engineers bench mark). Prior to Oct. 5, 1934, staff gage at same site and datum.

Average discharge.--31 years, 163 cfs.

Extremes.--Maximum discharge during year, 928 cfs Sept. 6 (gage height, 4.14 ft); minimum, 11 cfs Feb. 18-22 (gage height, 1.90 ft).
1927-58: Maximum discharge recorded, 9,350 cfs Aug. 9, 1939 (gage height, 8.11 ft), from rating curve extended above 4,000 cfs; minimum daily, 0.4 cfs Jan. 5, 6, 1940.

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 894: 1939. WSP 1337: 1933-34(M), 1935.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-15, June 5 to Aug. 10				Oct. 16 to June 4, Aug. 11 to Sept. 30			
2.0	14	3.0	113	1.9	11	3.0	122
2.2	23	3.2	182	2.0	14	3.2	195
2.4	36	3.4	292	2.2	24	3.4	296
2.6	53	3.7	570	2.4	37	3.7	500
2.8	75	4.0	875	2.6	55	4.1	880
				2.8	81		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	46	54	22	22	22	51	142	122	315	42	500
2	29	109	51	21	22	21	62	129	110	339	34	357
3	27	195	50	19	21	21	78	122	98	255	27	285
4	25	187	47	18	20	20	92	115	138	286	22	232
5	23	138	45	18	20	20	102	103	610	348	23	205
6	22	108	42	18	20	20	130	91	580	315	22	836
7	21	104	40	18	19	21	150	86	490	268	18	761
8	26	214	38	19	18	20	168	81	540	212	18	508
9	26	159	38	20	16	20	179	81	370	197	30	345
10	25	112	38	20	16	19	182	155	262	221	584	232
11	26	110	38	20	15	18	188	155	221	162	448	167
12	25	112	38	20	14	18	199	142	166	116	339	125
13	24	135	38	20	14	18	223	117	119	89	232	98
14	23	172	38	21	14	18	264	105	91	70	152	119
15	51	223	38	22	13	18	326	91	77	58	98	*187
16	191	179	37	22	12	18	333	83	63	48	71	167
17	163	142	37	22	12	18	308	80	55	41	51	148
18	*108	110	37	22	11	18	269	90	48	34	38	129
19	80	91	36	22	11	19	237	88	43	29	*39	110
20	68	82	35	22	11	20	204	80	44	25	100	98
21	65	74	34	21	11	20	187	*67	39	23	103	90
22	71	69	33	21	11	21	333	62	37	*19	73	78
23	71	*100	32	21	13	21	308	63	*36	18	63	73
24	67	81	31	*21	14	21	264	57	33	17	67	68
25	62	96	30	20	15	22	214	59	32	21	63	98
26	54	86	31	21	20	24	175	68	29	18	60	100
27	51	76	31	22	26	*26	145	88	26	37	53	91
28	45	64	29	22	*23	28	145	91	25	113	46	81
29	43	56	28	23	-	33	*159	83	23	91	51	74
30	43	55	26	23	-------	39	145	80	26	67	96	70
31	45	-------	24	22	-------	42	-------	103	-------	54	470	-------
Total	1,632	3,485	1,144	643	454	684	5,820	2,957	4,553	3,906	3,533	6,432
Mean	52.6	116	36.9	20.7	16.2	22.1	194	95.4	152	126	114	214
Cfsm	0.376	0.829	0.264	0.148	0.116	0.158	1.39	0.681	1.09	0.900	0.814	1.53
In.	0.43	0.93	0.30	0.17	0.12	0.18	1.55	0.79	1.21	1.04	0.94	1.71

Calendar year 1957: Max 2,780 Min 11 Mean 179 Cfsm 1.28 In. 17.31
Water year 1957-58: Max 836 Min 11 Mean 96.6 Cfsm 0.690 In. 9.37

Peak discharge (base, 1,300 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 20 to Dec. 29, Jan. 7-22, 28-31, Feb. 25 to Mar. 1, Mar. 31 to Apr. 12.

155. Second Creek near Aurora, Minn.

Location.--Lat 47°31'25", long 92°11'35", in SW¼ sec.12, T.58 N., R.15 W., on left bank 0.1 mile downstream from First Creek, 0.4 mile upstream from mouth, and 2.1 miles east of Aurora.

Drainage area.--26.3 sq mi.

Records available.--March 1955 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,410.36 ft above mean sea level, datum of 1929 (levels by Erie Mining Co.).

Extremes.--Maximum discharge during year, 109 cfs July 1 (gage height, 4.77 ft); maximum gage height, 4.88 ft Mar. 2 (backwater from ice); minimum daily discharge, 2.5 cfs Feb. 10, 11, 14-17; minimum gage height, 3.18 ft Jan. 25.
1955-58: Maximum discharge, 208 cfs Apr. 21, 1957; maximum gage height, 5.75 ft Mar. 28, 1957 (backwater from ice); minimum discharge, 1.9 cfs Aug. 3, 1956 (gage height, 3.18 ft).

Remarks.--Records good except those for periods of ice effect and no gage-height record, which are fair. Records of chemical analyses and water temperatures for the water year 1958 are given in WSP 1571.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

3.1	1.7	3.7	17
3.2	2.8	3.9	28
3.3	4.5	4.2	54
3.5	9.4	4.6	91

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	11	8.5	5.4	2.6	12	18	13	15	88	28	32
2	11	13	8.8	5.3	2.7	12	20	13	13	72	20	26
3	11	14	9.0	5.1	2.6	12	22	10	12	56	14	63
4	11	14	9.1	4.9	2.6	11	22	8.3	23	41	14	60
5	9.1	14	9.3	4.7	2.8	11	20	7.8	51	29	24	56
6	9.7	12	9.5	4.5	2.8	11	19	9.1	45	25	17	54
7	9.1	13	9.4	4.4	2.7	11	19	8.0	50	20	14	48
8	12	15	9.3	4.2	2.6	11	18	7.0	58	19	12	38
9	11	14	9.3	4.0	2.6	10	18	6.7	37	17	9.7	30
10	10	15	9.8	3.8	2.5	10	17	8.9	35	23	9.1	27
11	9.4	15	9.9	3.6	2.5	10	16	8.9	32	22	8.3	20
12	9.1	15	10	3.5	2.7	11	15	8.0	25	18	7.8	17
13	8.0	20	10	3.3	2.6	11	14	9.7	20	16	7.2	14
14	7.8	24	10	3.2	2.5	11	13	11	15	15	7.2	35
15	8.6	26	10	3.0	2.5	11	13	8.6	11	13	7.0	42
16	11	25	10	2.9	2.5	11	13	8.0	9.1	12	7.0	38
17	13	22	*9.9	2.9	2.5	11	13	7.2	8.6	10	6.5	36
18	13	19	9.8	2.9	2.6	11	13	9.7	8.6	8.9	5.6	31
19	12	18	9.4	3.1	2.7	12	13	11	10	7.5	5.4	*25
20	12	*17	8.6	3.2	2.8	12	13	13	12	7.0	8.3	23
21	12	15	8.1	*2.9	3.0	12	12	12	10	7.8	8.0	19
22	*13	14	7.5	2.9	3.2	13	11	11	10	6.3	*7.8	16
23	13	13	7.2	2.9	3.5	12	*11	*10	10	6.0	6.7	16
24	13	11	7.1	2.8	4.8	12	11	8.3	12	6.5	6.7	25
25	14	9.7	6.7	2.8	*6.2	*14	10	8.6	13	*12	6.3	45
26	10	9.3	6.3	2.8	8.5	14	9.1	8.6	12	14	6.7	32
27	11	8.9	6.1	2.9	9.7	15	8.3	12	*11	56	6.3	27
28	9.7	8.5	5.8	2.9	11	16	9.1	12	7.8	61	6.5	22
29	9.4	8.3	5.8	2.8	-	17	10	11	6.7	56	7.8	19
30	10	8.3	5.7	2.7	-------	17	11	8.3	9.1	48	11	20
31	11	-------	5.6	2.7	-------	17	-------	11	-------	40	29	-------
Total	334.9	442.0	261.5	109.0	102.3	381	431.5	299.7	591.9	833.0	334.9	956
Mean	10.8	14.7	8.44	3.52	3.65	12.3	14.4	9.67	19.7	26.9	10.8	31.9
Cfsm	0.411	0.559	0.321	0.134	0.139	0.468	0.548	0.368	0.749	1.02	0.411	1.21
In.	0.47	0.63	0.37	0.15	0.14	0.54	0.61	0.42	0.84	1.18	0.47	1.35

Calendar year 1957: Max 198 Min 5.6 Mean 19.8 Cfsm 0.753 In. 10.20
Water year 1957-58: Max 88 Min 2.5 Mean 13.9 Cfsm 0.529 In. 7.17

Peak discharge (base, 60 cfs).--June 7 (7 to 8 p.m.) 82 cfs (4.51 ft); July 1 (10:30 to 11:30 a.m.) 109 cfs (4.77 ft); July 27 (8 to 10 a.m.) 60 cfs (4.28 ft); Sept. 3 (time unknown) 65 cfs (4.33 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 19, 26-28, Dec. 1 to Jan. 15, Jan. 26 to Mar. 20, Mar. 28-30. No gage-height record Apr. 6-22, Sept. 3-5; discharge estimated on basis of weather records, records for stations on nearby streams, and recorded range in stage.

160. Partridge River near Aurora, Minn.

Location.--Lat 47°31'02", long 92°11'24", in SE¼SW¼ sec.12, T.58 N., R.15 W., on right bank at upstream side of highway bridge, 1,000 ft downstream from Second Creek, 2½ miles east of Aurora, and 2⅝ miles upstream from mouth.
Drainage area.--156 sq mi.
Records available.--August 1942 to September 1958.
Gage.--Water-stage recorder. Datum of gage is 1,402.30 ft above mean sea level, datum of 1929. Aug. 5, 1942, to Aug. 25, 1944, staff gage and Aug. 26, 1944, to July 1, 1956, water-stage recorder, at site 45 ft downstream at same datum.
Average discharge.--16 years, 132 cfs (adjusted for storage and diversion).
Extremes.--Maximum discharge during year, 300 cfs Sept. 28 (gage height, 3.68 ft); minimum daily, 7.5 cfs Feb. 12-20.
1942-58: Maximum discharge, 3,230 cfs May 10, 1950 (gage height, 7.86 ft); minimum, 3.1 cfs Sept. 22, 23, 1948 (gage height, 0.77 ft).
Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated at times by storage in off-channel Partridge Reservoir, formerly known as Whitewater Lake. Reservoir formed from lake by levees around marsh areas and natural outlet. Available capacity, 20,000 acre-ft between elevation 1,410 ft (natural lake level) and 1,440 ft. Storage began Apr. 9, 1955. Storage in reservoir obtained from Colby Lake during periods of high flow; release from storage returned to Colby Lake to maintain lake elevation during diversion for iron ore processing. Diversion began Feb. 7, 1956. Some seepage losses from reservoir bypass station. Records of chemical analyses and water temperatures for the water year 1958 are given in WSP 1571.
Revisions (water years).--WSP 974: 1942. WSP 1307: 1943(M).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 1-14)

Oct. 1 to Mar. 31				Apr. 1 to Sept. 30			
1.1	6.8	2.1	32	1.6	20	3.0	125
1.3	10	2.3	42	2.0	35	3.5	241
1.5	14	2.6	73	2.5	66	4.0	411
1.7	20	2.8	100				
1.9	25						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	39	37	22	8.2	21	38	43	50	160	134	59
2	39	41	38	22	8.2	21	41	46	49	184	122	69
3	39	46	33	22	8.2	20	45	42	55	254	107	87
4	38	36	34	21	8.1	19	48	40	63	257	99	82
5	34	38	34	20	8.0	19	48	39	85	215	106	99
6	34	42	34	19	8.0	19	47	41	85	212	93	128
7	34	52	35	18	7.8	19	46	38	113	194	90	174
8	38	62	34	17	7.8	19	51	38	125	170	83	254
9	34	54	34	17	7.7	19	48	37	117	144	75	270
10	33	63	33	17	7.6	19	48	41	140	139	65	247
11	33	69	32	16	7.6	20	45	45	194	122	58	204
12	32	73	31	16	7.5	21	44	41	209	111	51	161
13	31	82	30	15	7.5	21	46	44	199	102	47	127
14	30	92	32	14	7.5	20	45	43	172	87	43	142
15	32	83	30	14	7.5	19	43	40	140	76	40	159
16	34	56	28	14	7.5	19	45	39	118	66	38	196
17	36	51	*29	13	7.5	19	45	43	98	59	36	224
18	36	46	30	13	7.5	19	45	45	82	52	33	224
19	37	45	30	12	7.5	19	45	41	79	45	32	194
20	38	*50	29	12	7.5	19	41	46	75	41	33	*165
21	40	41	27	*12	7.7	19	44	45	69	38	30	108
22	*36	43	27	11	8.0	19	41	41	67	34	*27	111
23	36	42	26	11	8.5	19	*43	*44	66	31	27	146
24	38	41	26	11	10	19	42	40	66	31	25	181
25	41	39	26	10	12	*20	40	40	66	*36	22	244
26	40	36	25	10	15	21	39	43	62	36	22	263
27	34	40	25	9.5	18	23	40	46	*60	86	21	290
28	35	38	24	9.2	21	25	43	44	55	111	20	297
29	35	38	23	9.0	-	27	39	45	50	140	24	287
30	37	34	23	8.5	-------	29	41	41	52	140	30	229
31	38	-------	23	8.3	-------	32	-------	48	-------	134	54	-------
Total	1,112	1,512	922	443.5	254.9	644	1,316	1,309	2,861	3,507	1,687	5,401
Mean	35.9	50.4	29.7	14.3	9.10	20.8	43.9	42.2	95.4	113	54.4	180
(†)	+4.3	+20.9	+1.4	+0.1	+0.06	0	+53.8	+33.9	+34.0	+20	+3.9	+26

Adjusted for storage and diversion

Mean	40.2	71.3	31.1	14.4	9.16	20.8	97.7	76.1	129	133	58.3	206
Cfsm	0.258	0.457	0.199	0.092	0.059	0.133	0.626	0.488	0.827	0.853	0.374	1.32
In.	0.30	0.51	0.23	0.11	0.06	0.15	0.70	0.56	0.92	0.98	0.43	1.47

	Observed					Adjusted			
Calendar year 1957:	Max	1,480	Min	10	Mean	95.9	Mean	113	Cfsm 0.723 In. 9.84
Water year 1957-58:	Max	297	Min	7.5	Mean	57.5	Mean	73.9	Cfsm 0.474 In. 6.42

Peak discharge (base, 500 cfs).--No peak above base.

* Discharge measurement made on this day.
† Change in contents in Partridge Reservoir and diversion to iron-ore-processing plant, equivalent in cubic feet per second; furnished by Erie Mining Co.
Note.--Stage-discharge relation affected by ice Jan. 7-12, Jan. 25 to Mar. 31.

165. St. Louis River near Aurora, Minn.

Location.--Lat 47°29'30", long 92°14'20", in SW¼ sec.22, T.58 N., R.15 W., on left bank at upstream side of highway bridge, three-quarters of a mile downstream from Partridge River and 1½ miles south of Aurora.
Drainage area.--312 sq mi.
Records available.--August 1942 to September 1958.
Gage.--Water-stage recorder. Datum of gage is 1,371.24 ft above mean sea level, datum of 1929. Prior to Aug. 26, 1944, chain gage at same site and datum.
Average discharge.--16 years, 250 cfs (adjusted for storage and diversion).
Extremes.--Maximum discharge during year, 592 cfs June 9, 10 (gage height, 2.97 ft); minimum daily, 21 cfs Feb. 19-21; minimum gage height, 1.09 ft Feb. 23.
1942-58: Maximum discharge, 5,380 cfs May 14, 1950 (gage height, 8.37 ft); minimum, 4.0 cfs Oct. 2, 3, 1948 (gage height, 0.30 ft).
Remarks.--Records good except those for period of ice effect, which are fair. Flow regulated at times by storage in off-channel Partridge Reservoir, formerly known as Whitewater Lake. Reservoir formed from lake by levees around marsh areas and natural outlet. Available capacity, 20,000 acre-ft between elevation 1,410 ft (natural lake level) and 1,440 ft. Storage began Apr. 9, 1955. Storage in reservoir obtained from Colby Lake during periods of high flow; release from storage returned to Colby Lake to maintain lake elevation during diversion for iron ore processing. Diversion began Feb. 7, 1956. Some seepage losses from reservoir enter above station. Records of chemical analyses for the water year 1958 are given in WSP 1571.
Revisions (water years).--WSP 1337: 1950.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 18)

1.0	43	2.0	233
1.2	62	2.5	390
1.5	102	3.0	605

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	76	94	52	28	44	74	162	168	414	281	138
2	64	80	92	50	27	42	83	162	168	488	266	155
3	64	89	90	49	27	41	90	162	175	506	243	231
4	63	86	90	48	26	40	105	160	201	492	223	215
5	59	86	88	48	25	39	115	155	278	418	251	218
6	57	91	86	48	24	37	130	148	314	394	226	275
7	58	99	86	48	24	36	128	140	387	370	210	336
8	61	114	84	48	24	36	130	131	546	328	193	410
9	60	118	82	46	24	35	128	127	587	304	173	422
10	58	140	78	46	24	35	126	129	582	301	158	402
11	56	143	74	45	23	35	122	129	578	278	136	362
12	55	143	70	45	22	35	120	124	560	260	124	318
13	55	158	66	43	22	36	118	118	515	240	110	284
14	53	175	66	41	22	37	116	120	462	218	102	336
15	55	180	66	40	22	38	116	112	414	196	96	374
16	57	168	68	39	22	38	118	104	358	176	89	446
17	65	155	*68	38	22	38	127	104	318	160	86	426
18	66	148	68	37	22	38	124	124	281	140	82	418
19	66	146	68	36	21	39	127	118	269	122	82	390
20	70	*150	66	35	21	39	129	120	257	110	77	*362
21	73	150	64	*34	21	39	131	120	240	99	74	321
22	*77	150	62	33	22	40	143	116	223	89	71	318
23	72	145	60	32	23	41	*148	*114	220	82	*70	336
24	74	140	58	31	25	43	158	114	212	77	71	394
25	77	135	58	31	*29	*45	158	112	201	*78	68	470
26	80	125	58	30	35	46	155	120	191	78	65	466
27	74	115	58	30	44	49	152	140	*180	180	65	474
28	71	105	58	30	45	52	160	138	165	216	64	458
29	71	100	56	30	-	58	165	140	127	281	71	426
30	72	95	56	30	-------	62	162	136	140	301	77	386
31	74	-------	54	29	-------	66	-------	136	-------	291	122	-------
Total	2,022	3,805	2,192	1,222	716	1,299	3,858	4,035	9,317	7,687	4,026	10,567
Mean	65.2	127	70.7	39.4	25.6	41.9	129	130	311	248	130	352
(†)	+4.3	+20.9	+1.4	+0.1	+0.1	0	+53.8	+33.9	+34.0	+19.5	+3.9	+25.7

Adjusted for storage and diversion

Mean	69.5	148	72.1	39.5	25.7	41.9	183	164	345	268	134	378
Cfsm	0.223	0.474	0.231	0.127	0.082	0.134	0.587	0.526	1.11	0.859	0.429	1.21
In.	0.26	0.53	0.27	0.15	0.085	0.15	0.65	0.59	1.24	0.96	0.49	1.35

	Observed			Adjusted		
Calendar year 1957:	Max 1,980	Min 27	Mean 204	Mean 221	Cfsm 0.708	In. 9.62
Water year 1957-58:	Max 587	Min 21	Mean 139	Mean 156	Cfsm 0.500	In. 7.48

Peak discharge (base, 600 cfs).--No peak above base.

* Discharge measurement made on this day.
† Change in contents in Partridge Reservoir and diversion to iron-ore-processing plant, equivalent in cubic feet per second; furnished by Erie Mining Co.
Note.--Stage-discharge relation affected by ice Nov. 19 to Apr. 12.

170. Embarrass River at Embarrass, Minn.

Location.--Lat 47°39'24", long 92°11'51", in NW¼ sec.25, T.60 N., R.15 W., on left bank at Embarrass, 30 ft upstream from highway bridge and 100 ft upstream from railroad bridge.

Drainage area.--93.8 sq mi.

Records available.--August 1942 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,410.36 ft above mean sea level, datum of 1929. Prior to Aug. 28, 1944, chain gage at same site and datum.

Average discharge.--16 years, 71.2 cfs.

Extremes.--Maximum discharge during year, 199 cfs July 2 (gage height, 3.62 ft); minimum, 3.3 cfs Feb. 19-21 (gage height, 0.79 ft).
1942-58: Maximum discharge, 1,740 cfs May 8, 9, 1950; maximum gage height, 10.92 ft May 9, 1950; minimum daily discharge, 1.9 cfs Mar. 15-22, 1949; minimum gage height, 0.67 ft Mar. 20, 21, 1949.

Remarks.--Records good except those for periods of ice effect, which are fair. Records of chemical analyses and water temperatures for the water year 1958 are given in WSP 1571.

Revisions (water years).--WSP 1307: 1947(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 20-28)

0.8	3.0	2.0	83
.9	4.7	2.5	124
1.0	8.7	3.0	159
1.2	20	4.0	226
1.5	41		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	27	27	8.2	4.1	18	31	69	52	114	27	44
2	29	27	26	7.5	4.1	16	41	64	49	195	21	42
3	26	32	24	7.3	4.1	12	50	63	46	177	16	41
4	24	36	22	6.5	4.1	9.7	58	61	61	142	13	41
5	20	35	22	5.9	4.1	8.7	64	55	142	115	16	43
6	20	33	22	5.2	3.9	8.2	72	52	151	93	16	64
7	19	32	22	4.9	3.8	7.2	74	48	132	73	11	81
8	24	35	20	4.9	3.8	7.2	74	46	118	58	9.2	72
9	26	37	20	4.8	3.7	7.7	69	45	96	48	6.7	56
10	26	36	20	4.8	3.6	6.2	64	55	81	53	6.7	47
11	24	35	19	4.6	3.6	8.2	62	62	85	53	8.2	38
12	23	39	18	4.6	3.5	7.7	62	58	72	52	8.7	32
13	22	53	16	4.5	3.5	7.2	60	52	59	47	7.7	28
14	22	63	16	4.6	3.5	6.7	60	51	48	39	6.7	31
15	22	75	16	4.6	3.5	6.3	63	50	40	31	5.9	49
16	26	74	15	4.6	3.5	6.3	66	45	34	26	5.2	47
17	*37	65	*15	4.6	3.4	6.3	68	41	39	23	4.7	41
18	39	57	14	4.6	3.4	6.3	70	67	24	20	3.9	*35
19	34	53	14	4.5	3.3	6.3	68	82	29	16	4.0	32
20	30	58	14	4.5	3.3	6.3	66	71	39	13	6.3	32
21	30	54	13	4.2	3.3	6.3	66	58	39	11	13	35
22	32	*48	13	4.1	3.4	6.3	72	52	38	9.7	7.7	33
23	34	43	12	*4.1	3.8	6.7	79	*47	49	8.7	6.7	27
24	34	39	12	4.1	4.0	7.7	77	41	49	*7.7	7.2	27
25	31	36	12	4.2	4.4	8.7	*72	39	43	12	5.9	70
26	29	35	12	4.3	5.0	*12	65	37	*41	15	4.4	94
27	25	33	12	4.3	*9.7	14	58	43	35	22	4.2	83
28	23	32	12	4.3	14	17	58	43	33	57	3.9	69
29	23	31	11	4.3	-	20	69	38	24	62	3.9	57
30	23	29	10	4.1	-------	23	72	35	20	49	5.2	52
31	26	-------	9.0	4.1	-------	26	-------	39	-------	36	23	-------
Total	836	1,280	510.0	151.8	121.4	318.2	1,930	1,609	1,768	1,678.1	289.0	1,443
Mean	27.0	42.7	16.5	4.90	4.34	10.3	64.3	51.9	58.9	54.1	9.32	48.1
Cfsm	0.288	0.455	0.176	0.052	0.046	0.110	0.690	0.553	0.628	0.577	0.099	0.513
In.	0.33	0.51	0.20	0.06	0.05	0.13	0.77	0.64	0.70	0.67	0.11	0.57

Calendar year 1957 : Max 921 Min 3.9 Mean 61.7 Cfsm 0.658 In. 8.93
Water year 1957-58 : Max 195 Min 3.3 Mean 32.7 Cfsm 0.349 In. 4.74

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 8-10, 18-20, Dec. 20 to Feb. 16, Mar. 30 to Apr. 7.

180. Embarrass River near McKinley, Minn.

Location.--Lat 47°27'10", long 92°23'00", in NW¼ sec.4, T.57 N., R.16 W., on left bank 40 ft upstream from highway bridge, 0.9 mile downstream from outlet of Esquagama Lake, and 4½ miles southeast of McKinley.

Records available.--October 1953 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,338.65 ft above mean sea level, datum of 1929.

Average discharge.--5 years, 112 cfs.

Extremes.--Maximum discharge during year, 344 cfs June 8 (gage height, 6.33 ft); minimum, 13 cfs Apr. 9 (gage height, 2.69 ft).
1953-58: Maximum discharge, 1,690 cfs Apr. 20, 1954 (gage height, 11.72 ft); minimum, 11 cfs Sept. 7, 1955 (gage height, 2.92 ft).

Remarks.--Records good except those for periods of ice effect, which are fair. Records of chemical analyses for the water year 1958 are given in WSP 1571.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.7	13	4.0	95
2.9	20	5.0	198
3.2	35	7.0	418
3.6	61		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	68	55	71	30	23	90	42	102	69	269	59	42
2	70	56	69	29	23	99	47	101	81	249	61	40
3	67	57	66	28	24	81	51	102	82	195	61	58
4	63	54	64	27	24	64	57	102	102	229	64	52
5	60	54	60	27	24	54	69	100	145	238	85	69
6	163	51	57	28	24	47	81	100	138	241	70	196
7	196	54	56	28	23	42	47	96	178	232	61	194
8	108	59	54	27	23	38	14	95	323	214	54	124
9	77	61	50	27	22	36	20	58	324	211	50	101
10	63	61	47	27	22	35	62	16	304	214	49	91
11	56	61	45	27	22	34	75	35	272	183	45	89
12	132	62	43	27	21	33	86	58	243	165	48	87
13	131	64	42	26	21	32	110	66	221	148	42	131
14	91	65	42	26	21	32	135	80	196	132	38	185
15	72	68	42	26	21	32	138	82	174	118	34	168
16	65	71	*42	26	21	32	157	81	151	108	31	145
17	63	75	41	26	21	32	128	78	131	93	30	124
18	58	84	40	25	21	32	114	82	114	83	28	109
19	55	95	39	25	21	32	107	75	111	76	29	99
20	54	*100	38	25	21	32	98	74	105	67	27	102
21	54	101	37	*25	22	32	86	77	91	58	26	*105
22	*58	99	36	25	23	32	99	86	89	55	24	94
23	60	97	36	25	24	32	*103	88	83	51	*25	84
24	60	95	34	25	25	32	104	*92	80	50	26	94
25	59	91	34	25	*27	*32	103	90	77	*51	24	128
26	57	87	33	25	35	32	101	95	77	48	24	121
27	56	82	33	25	48	33	100	97	*74	92	24	113
28	56	79	32	25	65	34	104	85	73	87	25	108
29	56	75	32	24	-	35	104	79	71	71	28	107
30	56	73	31	24	-------	37	103	78	78	63	33	112
31	55	-------	30	23	-------	39	-------	83	-------	60	46	-------
Total	2,339	2,186	1,376	808	712	1,279	2,645	2,533	4,277	4,151	1,271	3,272
Mean	75.5	72.9	44.4	26.1	25.4	41.3	88.2	81.7	143	134	41.0	109
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957 : Max 1,230 Min 20 Mean 122 Cfsm - In. -
Water year 1957-58 : Max 324 Min 14 Mean 73.6 Cfsm - In. -

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 29 to Dec. 4, Dec. 7, Dec. 10 to Mar. 1, Mar. 8, 10-12.

190. West Two River near Iron Junction, Minn.

Location.--Lat 47°24'05", long 92°42'10", in SW¼SW¼ sec.24, T.57 N., R.19 W., on right bank 40 ft upstream from bridge on Stage Highway 216, 5 miles southwest of Iron Junction, and 9¼ miles upstream from St. Louis River.

Records available.--October 1953 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,322.05 ft above mean sea level, datum of 1929 (Minnesota Highway Department bench mark).

Average discharge.--5 years, 46.3 cfs.

Extremes.--Maximum discharge during year, 328 cfs June 10 (gage height, 6.60 ft); minimum daily, 6.5 cfs Jan. 3-7; minimum gage height, 2.45 ft May 26.
1953-58: Maximum discharge, 916 cfs Apr. 17, 1954 (gage height, 9.85 ft); minimum daily, 3.0 cfs Jan. 22 to Feb. 6, 1957; minimum gage height, 2.43 ft Oct. 24, 25, 1956.

Remarks.--Records good except those for periods of ice effect, which are fair. Records of chemical analyses for the water year 1958 are given in WSP 1571.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 14-25)

2.4	12	4.0	110
2.7	26	5.0	186
3.0	44	7.0	370

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	20	19	6.8	6.6	20	38	27	22	228	46	37
2	16	21	17	6.6	6.6	19	54	26	20	308	36	31
3	15	23	15	6.5	6.7	18	60	26	20	310	30	32
4	15	24	14	6.5	6.9	18	65	24	33	214	28	26
5	14	24	14	6.5	7.0	17	65	22	100	125	30	36
6	14	22	13	6.5	7.1	17	62	21	167	84	26	50
7	16	24	13	6.5	6.9	17	58	20	174	64	23	61
8	18	21	12	6.6	6.7	17	53	20	214	49	21	55
9	20	20	12	6.7	6.6	18	50	20	293	44	22	37
10	26	19	11	7.0	6.6	18	44	20	322	55	31	31
11	21	19	10	7.3	6.6	18	42	20	246	49	25	28
12	17	21	9.2	7.4	6.6	18	38	18	176	42	22	26
13	16	24	8.6	7.4	6.6	18	36	16	121	36	21	24
14	15	27	8.2	7.3	6.6	19	34	19	82	31	20	40
15	16	29	8.0	7.2	6.6	19	32	22	60	27	18	54
16	18	30	8.0	7.1	6.6	19	31	21	47	23	*16	58
17	22	29	7.8	7.1	6.7	20	31	19	37	21	15	46
18	24	28	7.6	7.0	6.9	20	33	20	34	19	15	42
19	22	*27	7.5	7.0	7.0	20	30	20	*31	*18	16	36
20	22	25	*7.4	7.0	7.3	21	27	18	32	16	15	33
21	22	24	7.3	6.9	7.5	21	24	16	28	16	15	33
22	22	24	7.3	6.9	7.9	21	24	15	24	15	14	30
23	22	24	7.5	6.8	8.3	22	22	*14	22	14	15	30
24	22	25	7.9	6.8	9.0	22	22	14	24	15	15	39
25	22	26	8.2	6.8	10	22	22	14	23	18	14	62
26	21	25	8.2	6.7	12	23	*20	14	22	22	14	*78
27	*21	25	8.0	*6.7	*16	23	18	18	20	60	14	67
28	19	24	8.0	6.7	19	*23	20	18	18	109	14	56
29	18	23	7.8	6.7	-	25	25	18	16	*116	16	49
30	18	21	7.5	6.6	-------	28	26	16	20	90	20	44
31	20	-------	7.0	6.6	-------	31	-------	18	-------	60	36	-------
Total	590	718	307.0	212.2	224.9	632	1,106	594	2,448	2,298	663	1,271
Mean	19.0	23.9	9.90	6.85	8.03	20.4	36.9	19.2	81.6	74.1	21.4	42.4
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 769 Min 3.0 Mean 49.8 Cfsm - In. -
Water year 1957-58: Max 322 Min 6.5 Mean 30.3 Cfsm - In. -

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Oct. 26-28, Nov. 8 to Apr. 6.

195. East Swan River near Toivola, Minn.

Location.--Lat 47°16'55", long 92°50'05", in NE¼NE¼ sec.2, T.55 N., R.20 W., on left bank 350 ft downstream from bridge on St. Louis County Road 442, 4.8 miles upstream from confluence with West Swan River, 8 miles northwest of Toivola, and 8¾ miles upstream from St. Louis River.

Drainage area.--112 sq mi.

Records available.--September 1953 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,260.46 ft above mean sea level, datum of 1929.

Average discharge.--5 years, 89.5 cfs.

Extremes.--Maximum discharge during year, 814 cfs July 28 (gage height, 13.44 ft); minimum daily, 23 cfs Feb. 7-16; minimum gage height, 3.37 ft May 26.
1953-58: Maximum discharge, 1,690 cfs Apr. 15, 1956 (gage height, 17.94 ft); maximum gage height, 18.45 ft Apr. 12, 1954 (backwater from ice); minimum daily discharge, 13 cfs Jan. 28 to Feb. 3, 1955; minimum gage height, 3.24 ft Nov. 10, 1954.
Flood in May 1950 reached a stage of about 20.0 ft, from information by local residents.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-7)

Oct. 1 to Apr. 13		Apr. 14 to Sept. 30			
3.5	24	3.3	22	6.0	145
4.0	39	3.5	27	8.0	284
5.0	81	4.0	43	11.0	548
		5.0	88	14.0	885

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	38	49	35	27	25	32	65	44	67	359	126	106
2	38	50	34	27	25	35	80	38	53	673	93	86
3	37	62	33	27	25	36	82	37	49	532	72	86
4	36	71	32	27	24	32	78	37	79	320	60	86
5	36	62	32	27	24	30	75	37	254	222	84	92
6	36	56	32	28	24	28	72	36	328	166	73	177
7	36	53	33	27	23	27	68	37	252	134	59	171
8	55	53	33	27	23	27	65	35	357	123	49	129
9	54	53	32	27	23	26	62	33	334	110	45	96
10	49	54	32	27	23	25	59	30	273	159	116	77
11	44	55	32	27	23	25	55	30	275	162	228	66
12	41	57	31	27	23	25	53	29	226	167	185	60
13	41	60	31	27	23	25	51	31	167	156	100	54
14	42	61	31	27	23	25	49	39	126	116	76	89
15	43	62	32	27	23	24	46	45	100	92	66	196
16	51	58	32	27	23	24	46	36	83	76	57	174
17	72	50	33	26	24	24	45	31	68	61	*46	*132
18	71	46	34	26	24	24	44	34	57	51	43	107
19	64	43	34	26	24	25	39	35	49	*45	51	90
20	60	42	34	26	25	25	36	32	*48	39	48	78
21	57	42	*34	26	26	25	34	31	46	36	40	88
22	63	41	33	26	27	25	35	32	43	34	38	89
23	67	40	32	27	28	26	36	*30	42	33	37	78
24	66	40	32	27	29	26	37	27	46	32	43	76
25	60	*39	31	27	30	26	34	26	48	50	44	192
26	53	39	30	27	32	27	30	25	45	52	41	233
27	*51	39	29	27	31	28	*28	32	39	468	40	191
28	55	38	28	*27	*29	30	29	31	31	772	37	144
29	54	37	28	26	-	*32	48	31	30	*547	43	116
30	46	36	27	26	-------	38	48	28	32	313	59	104
31	46	-------	27	25	-------	46	-------	33	-------	189	92	-------
Total	1,562	1,488	983	828	706	873	1,529	1,032	3,647	6,289	2,171	3,463
Mean	50.4	49.6	31.7	26.7	25.2	28.2	51.0	33.3	122	203	70.0	115
Cfsm	0.450	0.443	0.283	0.238	0.225	0.252	0.455	0.297	1.09	1.81	0.625	1.03
In.	0.52	0.49	0.33	0.27	0.23	0.29	0.51	0.34	1.21	2.09	0.72	1.15

Calendar year 1957: Max 1,340 Min 14 Mean 95.6 Cfsm 0.854 In. 11.58
Water year 1957-58: Max 772 Min 23 Mean 67.3 Cfsm 0.601 In. 8.15

Peak discharge (base, 400 cfs).--July 2 (1:30 p.m.) 685 cfs (12.34 ft); July 28 (6:30 a.m.) 814 cfs (13.44 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Oct. 25-29, Nov. 8 to Apr. 13.

200. Swan River near Toivola, Minn.

Location.--Lat 47°15'02", long 92°48'36", in NE¼NE¼ sec.13, T.55 N., R.20 W., on left bank at upstream side of bridge on St. Louis County Highway 5, 0.4 mile downstream from confluence of East Swan and West Swan Rivers, 3½ miles upstream from mouth, and 5⅝ miles north of Toivola.

Drainage area.--254 sq mi.

Records available.--October 1952 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,251.78 ft above mean sea level, datum of 1929.

Average discharge.--6 years, 180 cfs.

Extremes.--Maximum discharge during year, 2,070 cfs July 28 (gage height, 13.64 ft, from graph based on gage readings); minimum daily, 31 cfs Feb. 1-9; minimum gage height observed, 2.60 ft July 19.

1952-58: Maximum discharge, 2,980 cfs Apr. 13, 1954 (gage height, 17.17 ft, backwater from ice); minimum, 20 cfs Nov. 13, 1952, Jan. 5 to Feb. 5, 1957; minimum gage height, 2.33 ft July 26, 1954.

Remarks.--Records good except those for period of ice effect, which are fair.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.6	40	9.0	985
3.0	71	12.0	1,650
4.0	180	14.0	2,160
6.0	440		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	66	49	41	31	65	118	66	106	428	575	145
2	54	68	48	41	31	72	138	60	108	1,080	357	119
3	51	83	47	41	31	74	155	57	99	985	233	133
4	49	106	46	41	31	66	149	59	154	687	190	136
5	47	97	46	41	31	64	151	59	405	474	223	143
6	47	89	47	41	31	60	138	53	517	347	206	288
7	49	83	45	40	31	58	117	53	479	278	170	295
8	60	90	44	40	31	56	115	53	692	234	137	234
9	74	81	45	40	31	52	104	49	662	209	121	175
10	68	80	47	40	32	51	94	46	582	319	166	136
11	62	86	47	40	32	49	85	46	595	322	302	112
12	58	86	47	40	33	48	77	46	494	323	235	102
13	54	103	46	39	33	47	75	45	376	312	161	86
14	55	102	46	38	34	46	73	53	282	249	128	134
15	56	104	47	38	35	45	71	71	215	198	107	318
16	61	101	48	37	36	45	71	64	174	160	95	292
17	87	89	49	37	38	44	67	53	140	128	*75	*230
18	95	66	49	36	40	44	66	59	114	109	66	185
19	85	59	50	36	42	44	60	66	111	60	67	154
20	78	76	50	35	44	45	55	59	*104	*76	66	129
21	75	92	*50	35	46	45	54	53	92	70	55	163
22	79	78	50	35	48	46	53	53	82	60	51	168
23	88	68	50	35	52	47	53	50	77	63	51	142
24	86	69	49	35	56	49	53	*46	75	59	55	121
25	84	*66	48	35	64	52	50	42	75	100	59	244
26	85	62	47	34	72	56	44	41	72	91	54	314
27	*63	65	46	33	74	62	*42	48	64	1,340	53	275
28	75	63	45	*32	*68	70	44	51	51	1,970	49	210
29	81	58	44	32	-	*78	59	49	44	*1,600	53	170
30	65	50	42	32	-------	90	69	46	46	1,250	81	150
31	62	-------	42	32	-------	101	-------	52	-------	907	109	-------
Total	2,089	2,386	1,456	1,152	1,158	1,771	2,500	1,648	7,087	14,488	4,350	5,503
Mean	67.4	79.5	47.0	37.2	41.4	57.1	8.33	53.2	236	467	140	183
Cfsm	0.265	0.313	0.185	0.146	0.163	0.225	0.328	0.209	0.929	1.84	0.551	0.720
In.	0.31	0.35	0.21	0.17	0.17	0.26	0.37	0.24	1.04	2.12	0.64	0.81

Calendar year 1957: Max 2,480 Min 20 Mean 163 Cfsm 0.642 In. 8.68
Water year 1957-58: Max 1,970 Min 31 Mean 125 Cfsm 0.492 In. 6.69

Peak discharge (base, 900 cfs).--July 2 (6 p.m.) 1,120 cfs (9.64 ft); July 28 (12:15 a.m.) 2,070 cfs (13.64 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 30 to Apr. 14. Discharge computed from twice-daily outside staff-gage readings June 25 to Sept. 30.

240. St. Louis River at Scanlon, Minn.

Location.--Lat 46°42'12", long 92°25'07", in NW¼ sec.30, T.49 N., R.16 W., on right bank 25 ft downstream from lower bridge on U. S. Highway 61 at Scanlon, 0.6 mile downstream from Minnesota Power & Light Co. powerplant, 3 miles upstream from Thomson Reservoir, and 3.2 miles upstream from Midway River.

Drainage area.--3,430 sq mi, approximately.

Records available.--January 1908 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Published as "near Thomson" 1908-50.

Gage.--Water-stage recorder. Datum of gage is 1,101.23 ft above mean sea level, datum of 1929. Oct. 5, 1909, to Sept. 5, 1914, chain gage 3 miles downstream and 50 ft below powerplant at datum about 420 ft lower. Sept. 6, 1914, to Aug. 4, 1953, powerplant record at Thomson hydroelectric plant.

Average discharge.--50 years, 2,209 cfs (unadjusted).

Extremes.--Maximum discharge during year, 16,300 cfs July 1 (gage height, 9.34 ft); minimum, 406 cfs May 29 (gage height, 2.32 ft).
1908-58: Maximum daily discharge, 37,900 cfs May 9, 1950; maximum gage height, 15.8 ft May 9, 1950, from Minnesota Highway Department (discharge uncertain); minimum daily discharge, 109 cfs Feb. 7, 1924.

Remarks.--Records good. Diurnal fluctuation caused by powerplant upstream. Flow regulated by Whiteface Reservoir and Boulder, Island, Rice, and Fish Lakes (combined capacity, 332,160 acre-ft).

Revisions (water years).--WSP 1337: 1911-12.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 24, July 2 to Sept. 16				May 25 to July 1, Sept. 17 to Sept. 30			
2.5	570	5.0	4,170	2.5	510	5.0	4,100
3.0	985	6.0	6,250	3.0	900	6.0	6,200
3.5	1,510	8.0	11,800	3.5	1,450	8.0	11,800
4.0	2,350	9.0	15,100	4.0	2,200		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	895	810	1,080	1,420	1,310	*1,640	1,970	1,380	1,010	11,700	3,880	1,730
2	778	852	1,200	1,370	1,340	1,800	2,210	1,220	1,100	14,800	3,030	1,950
3	746	1,000	1,170	1,300	1,340	1,470	2,240	1,440	1,400	12,400	2,420	1,930
4	778	1,070	1,640	1,320	1,310	1,470	1,780	1,170	1,480	9,780	2,030	3,050
5	738	1,150	1,620	1,350	1,260	1,630	1,520	1,270	2,830	7,790	1,850	3,000
6	666	1,200	1,810	1,380	1,260	1,680	1,630	1,200	4,350	6,390	2,000	3,660
7	666	1,140	1,540	1,380	1,250	1,600	1,620	1,040	4,370	5,130	1,930	4,950
8	730	1,260	1,840	1,370	1,150	1,630	1,500	1,110	4,670	4,290	1,660	4,670
9	827	1,240	1,630	1,380	1,160	1,640	1,520	985	6,100	3,980	1,320	4,060
10	810	1,180	1,860	*1,410	1,140	1,830	1,410	958	6,030	4,150	1,230	3,740
11	852	1,060	1,440	1,460	1,130	1,690	1,130	958	5,910	4,510	1,290	3,180
12	827	1,130	1,420	1,410	1,130	1,740	1,160	931	5,740	4,130	1,900	2,730
13	698	1,350	1,600	1,410	1,150	1,710	1,140	770	4,900	4,080	2,000	2,310
14	770	1,380	1,820	1,440	1,160	1,710	1,140	770	4,160	3,520	1,500	2,620
15	666	1,470	1,640	1,430	1,150	1,690	1,110	810	3,430	3,070	1,500	4,630
16	904	1,430	1,580	1,420	1,210	1,860	1,150	818	2,740	2,580	1,480	5,320
17	1,120	1,410	1,630	1,410	1,160	1,810	1,200	794	2,360	2,080	1,460	4,670
18	836	1,410	1,660	1,310	1,100	1,830	1,170	870	1,950	1,900	1,460	4,000
19	852	1,020	1,830	1,370	1,030	1,830	1,150	*794	1,750	1,430	*1,270	3,450
20	895	746	1,640	1,380	1,020	1,740	1,160	770	1,620	1,290	985	3,100
21	870	1,040	1,660	1,370	1,080	1,710	1,100	794	1,860	*1,120	985	2,720
22	870	1,140	1,840	1,290	1,100	1,580	*1,110	786	1,580	1,000	978	*2,430
23	*886	1,510	1,800	1,340	1,110	1,270	1,040	778	*1,390	1,170	1,080	2,400
24	940	1,380	1,800	1,360	1,050	*1,360	994	818	1,580	1,150	940	2,050
25	886	1,230	1,800	1,360	1,110	1,440	1,170	*838	1,860	1,150	1,030	2,080
26	895	1,240	1,620	1,360	1,350	1,460	1,080	587	1,540	1,420	1,000	2,610
27	861	1,200	1,500	1,350	1,560	1,510	976	601	1,250	2,000	985	2,880
28	810	1,150	1,510	1,350	1,590	1,520	1,000	608	1,180	6,120	994	2,510
29	810	1,120	1,360	1,370	-	1,520	1,130	615	1,000	7,900	1,010	2,290
30	827	985	1,240	1,360	-------	1,560	1,140	682	960	6,570	1,200	2,200
31	844	-------	1,310	1,360	-------	1,730	-------	730	-------	5,030	1,580	-------
Total	25,553	35,303	47,690	42,590	33,730	50,460	39,630	27,493	81,920	143,630	47,975	92,920
Mean	824	1,177	1,538	1,374	1,205	1,628	1,321	887	2,731	4,633	1,548	3,097
(†)	-111	+233	-1,133	-1,096	-795	-987	+922	+218	+917	+705	-278	+803
Adjusted for change in reservoir contents												
Mean	935	1,410	405	278	410	641	2,243	1,105	3,648	5,338	1,270	3,900
Cfsm	0.273	0.411	0.118	0.081	0.120	0.187	0.654	0.322	1.06	1.56	0.370	1.14
In.	0.31	0.46	0.14	0.09	0.13	0.22	0.73	0.37	1.18	1.80	0.43	1.27

	Observed			Adjusted		
Calendar year 1957:	Max 17,800	Min 660	Mean 2,329	Mean 2,296	Cfsm 0.669	In. 9.07
Water year 1957-58:	Max 14,800	Min 587	Mean 1,833	Mean 1,801	Cfsm 0.525	In. 7.13

* Discharge measurement made on this day.
† Change in contents, equivalent in cubic feet per second, in Whiteface Reservoir and Boulder, Island, Rice, and Fish lakes; records furnished by Minnesota Power and Light Co.
Note.--Stage-discharge relation affected by ice Dec. 23-25, Feb. 9-15, Feb. 27 to Mar. 1. No gage-height record Feb. 9-15; discharge estimated on basis of powerplant records.

245. Amnicon Lake near South Range, Wis.

Location.--Lat 46°29'00", long 92°04'05", in sec.12, T.46 N., R.14 W., in northwest corner of lake, 15 miles southwest of South Range.

Drainage area.--5 sq mi, approximately.

Records available.--August 1936 to September 1958 (fragmentary).

Gage.--Staff gage. Datum of gage is 1,188.00 ft above mean sea level (State Highway Commission levels). Gage readings have been reduced to elevations above mean sea level.

Extremes.--Maximum elevation observed during year, 1,197.48 ft July 5; minimum observed, 1,196.54 ft Aug. 23, 27.
1936-58: Maximum elevation observed, 1,199.32 ft May 9, 1950; minimum observed, 1,195.82 ft Oct. 28, 1948.

Remarks.--Lake has natural outlet. Lake was ice covered Dec. 6 to Apr. 14.

Revisions (water years).--WSP 854: 1937.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-					-	-	-	-	-	-
2	6.94	6.80					-	-	-	7.24	6.76	-
3	-	-					-	6.86	-	-	-	6.78
4	-	-					-	-	6.60	-	-	-
5	6.88	-					-	-	-	7.48	-	-
6	-	6.80	6.88				-	-	6.75	-	6.74	6.86
7	-	-					-	6.74	6.74	-	-	-
8	-	-					6.73	-	-	-	-	-
9	6.84	6.86					-	-	-	7.40	6.70	-
10	-	-					-	6.70	-	-	-	6.88
11	-	-					-	-	6.76	-	-	-
12	6.82	-				6.62	6.83	-	-	7.30	-	-
13	-	6.86					-	-	-	-	6.62	6.86
14	-	-					-	6.68	6.74	-	-	-
15	-	-					-	-	-	-	-	-
16	6.82	6.90					6.73	-	-	7.18	6.56	-
17	6.80	-					6.83	6.62	-	-	-	6.88
18	-	-					-	-	6.70	-	-	-
19	6.70	-					6.80	-	-	7.06	-	-
20	-	7.00					-	-	-	7.01	6.56	6.88
21	-	-					-	6.58	6.64	-	-	-
22	-	-		6.78			-	-	-	-	-	-
23	-	7.00					6.86	-	-	6.94	6.54	-
24	-	-					-	6.56	-	-	-	6.84
25	-	-					-	-	6.60	-	-	-
26	6.80	-					6.90	-	-	6.94	-	-
27	-	6.96					-	-	-	-	6.54	6.82
28	-	-					-	6.56	6.60	-	-	-
29	-	-					-	-	-	-	-	-
30	6.80	6.90					6.86	-	-	6.85	6.60	-
31	-							6.56		-	-	

Note.--Add 1,190 ft to obtain elevation above mean sea level.

255. Bois Brule River at Brule, Wis.

Location.--Lat 46°32'15", long 91°35'45", in NW¼ sec.23, T.47 N., R.10 W., on right bank 1.4 miles southwest of Brule Post Office, 1.4 miles downstream from Nebagamon Creek, and 1.7 miles upstream from Little Brule River.

Drainage area.--113 sq mi.

Records available.--October 1942 to September 1958. Prior to January 1943 monthly discharge only, published in WSP 1307.

Gage.--Chain gage read once daily. Datum of gage is 948.49 ft above mean sea level, datum of 1929.

Average discharge.--16 years, 175 cfs.

Extremes.--Maximum discharge during year, 832 cfs July 1 (gage height, 3.8 ft, from graph based on gage readings); minimum daily, 122 cfs Aug. 22.
1942-58: Maximum discharge, 1,520 cfs June 5, 1944 (gage height, 5.2 ft, from graph based on gage readings), from rating curve extended above 750 cfs; minimum observed, 67 cfs Mar. 13, 1943.

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 1207: Drainage area. WSP 1337: 1943(M), 1944, 1945-50(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.4	111	2.3	295
1.6	140	2.6	379
1.8	175	3.0	506
2.0	219	3.6	745

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	137	142	a150	145	a138	140	186	156	a160	741	134	300
2	134	173	150	140	a138	137	208	160	173	*620	134	264
3	134	198	155	140	138	140	251	a153	166	496	153	*238
4	134	194	160	140	138	137	241	146	181	462	153	214
5	134	181	164	140	136	140	251	150	208	400	179	188
6	131	173	*156	140	138	142	231	150	*183	325	171	264
7	137	158	a150	140	138	142	208	146	173	a306	164	248
8	140	162	a145	145	138	138	208	146	a170	287	150	233
9	143	a160	143	145	138	142	203	143	168	336	143	415
10	140	a155	154	148	138	145	203	143	158	330	137	328
11	137	154	150	148	138	148	198	142	154	308	137	264
12	137	173	140	148	138	142	198	138	151	282	143	224
13	137	177	140	148	138	*136	198	138	154	256	137	201
14	137	181	145	145	138	138	194	136	148	231	137	183
15	137	181	151	145	138	138	194	136	145	226	140	205
16	143	181	145	143	138	a138	190	136	145	221	131	192
17	*150	177	148	143	138	137	*183	136	142	208	131	179
18	150	166	145	a142	138	136	179	145	138	194	128	175
19	140	190	151	a141	138	136	175	a144	138	181	125	171
20	140	186	142	140	138	134	171	132	132	169	125	164
21	143	175	a142	140	138	134	167	130	132	*167	125	160
22	150	171	a144	137	138	136	196	130	132	158	122	156
23	153	171	145	*145	138	136	188	130	132	154	125	153
24	153	167	a146	137	138	134	179	132	138	154	175	150
25	143	164	a146	a137	138	134	175	138	136	158	167	210
26	143	164	146	a137	140	137	167	130	132	154	156	179
27	140	164	146	138	140	138	164	136	130	145	143	171
28	137	164	a148	138	137	137	167	136	130	148	140	160
29	140	164	a148	138	-	a148	164	132	126	142	164	156
30	143	a150	150	142	-------	158	160	130	167	136	188	153
31	140	-------	150	138	-------	162	-------	148	-------	136	339	-------
Total	4,357	5,116	4,595	4,393	3,865	4,340	5,797	4,348	4,540	8,231	4,696	6,298
Mean	141	171	148	142	138	140	193	140	151	266	151	210
Cfsm	1.25	1.51	1.31	1.26	1.22	1.24	1.71	1.24	1.34	2.35	1.34	1.86
In.	1.43	1.68	1.51	1.45	1.27	1.43	1.91	1.43	1.49	2.71	1.55	2.07

Calendar year 1957: Max 479 Min 111 Mean 163 Cfsm 1.44 In. 19.54
Water year 1957-58: Max 741 Min 122 Mean 166 Cfsm 1.47 In. 19.93

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for White River near Ashland and Bad River near Odanah.
Note.--Stage-discharge relation affected by ice Dec. 2-4, 11-14, Dec. 30 to Jan. 15, Jan. 21, Feb. 3, 4, 6-24 (no gage-height record Dec. 31, Jan. 1, 4, 5, 11, 12, Feb. 8, 9, 16, 22, 23).

270. Bad River near Odanah, Wis.

Location.--Lat 46°29'15", long 90°41'45", in SW¼ sec.2, T.46 N., R.3 W., at downstream end of center pier of Elm Hoist Bridge, 5.0 miles downstream from Potato River, 8.5 m es south of Odanah, and 23 miles upstream from mouth.

Drainage area.--611 sq mi.

Records available.--July 1914 to December 1922, May 1948 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Altitude of gage is 680 ft (from river-profile map). Prior to Nov. 11, 1922, water-stage recorder at site 2 miles downstream at different datum.

Average discharge.--18 years, 621 cfs.

Extremes.--Maximum discharge during year, 6,410 cfs July 2 (gage height, 10.00 ft); minimum, 94 cfs Aug. 4 (gage height, 2.25 ft).
1914-22, 1948-58: Maximum discharge, 16,500 cfs July 4, 1949 (gage height, 17.3 ft, from floodmark); minimum, 50 cfs Nov. 29, 1948 (gage height, 2.02 ft).
Flood of June 24, 1946, reached a stage of at least 22.2 ft (top of bridge submerged), from information by Indian Service.

Remarks.--Records good except those for periods of ice effect, which are poor.

Revisions (water years).--WSP 1207 : Drainage area. WSP 1337: 1922.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.2	85	4.0	820
2.4	127	5.0	1,430
2.6	186	7.0	3,050
3.0	345	9.4	5,750

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	149	160	310	210	170	350	900	539	183	3,630	127	2,500
2	140	170	300	200	170	360	1,030	511	223	*5,670	116	*1,790
3	130	193	300	200	170	360	1,820	465	219	4,410	111	1,200
4	130	262	290	190	170	360	2,090	421	239	2,540	102	864
5	125	270	280	190	165	350	2,460	379	282	1,630	120	695
6	120	239	280	190	165	340	2,330	341	374	1,220	140	1,770
7	118	223	*276	190	160	320	1,850	307	*366	1,090	132	1,970
8	122	223	270	185	155	310	1,910	287	316	936	122	1,450
9	125	180	260	185	150	300	1,840	266	258	1,760	116	1,570
10	122	190	250	180	150	290	1,750	250	219	2,450	1,390	1,680
11	125	210	250	180	140	290	1,690	239	193	1,680	1,560	1,240
12	122	320	240	180	135	280	1,660	223	173	1,190	1,080	919
13	122	426	240	180	130	274	1,600	*208	170	809	750	700
14	120	534	240	180	130	270	1,540	183	151	720	488	553
15	125	725	240	180	130	260	1,510	170	138	1,960	345	506
16	127	775	240	180	130	260	1,450	160	127	1,400	362	605
17	138	645	240	180	130	250	1,250	167	120	978	223	534
18	*149	539	240	180	130	245	*1,060	250	116	*700	204	465
19	138	387	240	180	130	245	864	303	116	520	183	404
20	125	300	260	175	130	250	720	266	113	404	154	358
21	120	320	280	175	130	245	605	212	100	328	138	324
22	132	370	290	175	130	240	870	183	104	274	125	311
23	143	390	300	*175	140	240	1,440	154	116	235	120	274
24	138	400	300	175	160	240	1,290	151	116	216	140	250
25	140	400	300	175	180	250	1,030	223	122	216	193	497
26	140	390	300	170	220	260	804	291	125	196	227	461
27	135	380	290	170	320	280	650	287	130	170	193	362
28	132	360	280	170	340	330	572	266	125	176	167	295
29	130	330	260	170	-	400	586	227	120	183	167	250
30	138	320	240	170	-------	500	534	201	140	164	311	219
31	143	-------	220	170	-------	660	-------	180	-------	140	2,220	-------
Total	4,063	10,631	8,306	5,610	4,560	9,609	39,705	8,310	5,294	37,985	11,726	25,016
Mean	131	354	268	181	163	310	1,324	268	176	1,225	378	834
Cfsm	0.214	0.579	0.439	0.296	0.267	0.507	2.17	0.439	0.288	2.00	0.619	1.37
In.	0.25	0.65	0.51	0.34	0.28	0.58	2.42	0.51	0.32	2.31	0.71	1.52

Calendar year 1957: Max 5,560 Min 94 Mean 437 Cfsm 0.715 In. 9.72
Water year 1957-58: Max 5,670 Min 100 Mean 468 Cfsm 0.766 In. 10.40

Peak discharge (base, 3,000 cfs).--July 2 (10 a.m.) 6,410 cfs (10.00 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 9, 10, Nov. 20 to Apr. 2 (doubtful gage-height record Dec. 13-20, 22-26, Dec. 28 to Jan. 3, Jan. 5-10, 12-17, 19-22, 27-31, Feb. 2-14, Feb. 16 to Mar. 12, Mar. 14-31).

275. White River near Ashland, Wis.

Location.--Lat 46°29'50", long 90°54'15", in sec.6, T.46 N., R.4 W., at downstream end of powerplant of Lake Superior District Power Co., 0.3 mile downstream from bridge on State highway over dam, and 4.5 miles south of Ashland city limits.

Drainage area.--269 sq mi.

Records available.--May 1948 to September 1958.

Gage.--Chain gage read twice daily or more often when plant load is changed. Datum of gage is 660.15 ft above mean sea level, datum of 1929 (Lake Superior District Power Co. bench mark).

Average discharge.--10 years, 318 cfs.

Extremes.--Maximum discharge during year, 1,430 cfs July 1 (gage height, 3.20 ft, from graph based on gage readings); minimum, 86 cfs Dec. 12, 29 (gage height, 0.75 ft). 1948-58: Maximum discharge, 6,270 cfs July 1, 1953 (gage height, 7.90 ft); minimum, 3.1 cfs Apr. 28-30, 1949 (gage height, 0.09 ft).

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation caused by powerplant at gage.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 31				Apr. 1 to Sept. 30			
0.8	96	1.5	343	0.9	129	2.0	585
.9	120	1.7	434	1.1	188	2.5	898
1.1	180	1.9	532	1.3	256	3.0	1,270
1.3	256	2.1	641	1.6	388		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	162	207	120	180	145	271	586	229	202	*927	173	348
2	168	213	195	200	160	261	569	224	244	666	173	278
3	168	213	124	210	165	190	564	219	202	1,070	157	*270
4	162	286	170	190	140	253	537	217	225	1,010	168	215
5	162	256	220	210	231	261	494	214	225	701	196	253
6	168	213	232	230	200	214	397	212	213	570	218	609
7	174	237	*251	200	155	206	366	197	219	397	201	463
8	174	189	220	195	130	190	321	182	*187	325	157	402
9	176	231	214	190	170	215	303	204	192	366	168	505
10	174	207	220	190	160	223	278	186	170	477	303	512
11	174	250	124	190	150	190	269	181	181	453	216	507
12	174	239	109	190	160	219	229	191	181	477	182	472
13	163	262	147	190	150	195	245	198	181	379	168	406
14	174	286	268	190	140	*208	214	175	175	343	168	334
15	174	286	251	185	120	219	237	181	175	339	157	248
16	174	262	220	175	140	190	223	181	181	303	162	286
17	*192	256	220	165	150	214	214	176	176	303	168	223
18	174	256	209	185	165	203	*216	187	176	303	166	257
19	176	128	214	165	140	237	209	231	168	*208	166	218
20	170	142	220	240	140	208	209	186	176	208	166	218
21	176	211	217	164	135	217	189	191	174	207	161	195
22	176	262	217	164	145	237	324	191	149	196	149	218
23	195	309	244	164	140	233	420	194	192	196	177	200
24	207	298	221	*181	160	250	384	194	172	191	182	195
25	176	295	195	195	180	297	356	219	174	175	202	240
26	183	286	231	250	256	330	243	201	169	175	172	275
27	183	286	211	170	343	439	217	224	166	196	172	195
28	195	286	202	217	271	546	233	207	149	200	172	223
29	176	286	118	200	-	568	219	195	166	201	168	198
30	201	286	97	200	-------	595	234	195	176	190	259	195
31	183	-------	166	200	-------	595	-------	191	-------	184	334	-------
Total	5,484	7,424	6,067	5,975	4,741	8,674	9,499	6,173	5,536	11,936	5,781	9,158
Mean	177	247	196	193	169	280	317	199	185	385	186	305
Cfsm	0.658	0.918	0.729	0.717	0.628	1.04	1.18	0.740	0.688	1.43	0.691	1.13
In.	0.76	1.03	0.84	0.83	0.66	1.20	1.31	0.85	0.77	1.65	0.80	1.27

Calendar year 1957: Max 830 Min 97 Mean 245 Cfsm 0.911 In. 12.37
Water year 1957-58: Max 1,070 Min 97 Mean 237 Cfsm 0.881 In. 11.97

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 1-19, Jan. 29 to Feb. 4, Feb. 6-25.

300. Montreal River near Saxon, Wis.

Location.--Lat 46°32'45", long 90°24'05", in NW¼ sec.23, T.48 N., R.49 W., on right bank 2 miles upstream from mouth and 3.5 miles north of Saxon.

Drainage area.--281 sq mi.

Records available.--September 1938 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 760 ft (from power company data).

Average discharge.--20 years, 338 cfs.

Extremes.--Maximum discharge during year, 3,260 cfs Apr. 15 (gage height, 5.27 ft); minimum, 11 cfs Nov. 9 (gage height, 1.25 ft).
1938-58: Maximum discharge, 5,700 cfs July 18, 1942 (gage height, 6.93 ft); minimum, 2 cfs Sept. 21, Oct. 8, 1939.

Remarks.--Records good except those for period of ice effect, which are fair. Diurnal fluctuation caused by Saxon Falls powerplant 1.5 miles upstream. Flow regulated by Gile Reservoir on West Branch Montreal River (capacity, 29,610 acre-ft) since April 1941.

Revisions (water years).--WSP 894: 1938-39. WSP 924: 1939-40. WSP 1307: 1948(M).

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	40	2.6	357
1.8	73	3.0	593
2.1	152	3.5	990
2.3	226	4.0	1,520

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	176	62	190	200	190	160	610	247	127	489	170	1,110
2	176	50	190	200	165	170	710	226	136	776	170	*1,120
3	176	93	190	190	155	190	900	203	170	833	170	808
4	162	105	185	200	200	215	1,280	180	173	607	170	685
5	176	95	185	200	195	205	1,520	176	180	362	170	593
6	180	98	200	205	195	200	1,430	173	176	247	88	1,160
7	176	95	200	200	190	190	1,110	173	*176	195	66	1,320
8	127	121	*165	200	175	190	1,310	173	180	173	136	990
9	103	79	130	200	150	190	1,240	170	176	303	180	784
10	100	69	130	195	160	195	1,200	166	176	477	468	737
11	93	136	105	185	195	200	1,160	168	173	393	372	635
12	77	162	82	180	190	195	1,160	166	173	290	268	527
13	69	222	94	180	190	185	1,130	166	176	218	195	448
14	84	281	92	190	190	*140	1,190	166	176	184	176	403
15	88	465	110	190	150	110	1,320	166	173	567	176	393
16	86	465	120	190	135	160	1,220	166	170	436	176	465
17	86	362	115	190	180	200	945	170	166	308	176	398
18	82	290	120	185	175	190	769	173	166	230	166	388
19	*68	180	140	185	160	175	*600	173	166	*176	166	388
20	50	176	185	200	165	160	454	170	166	166	159	388
21	70	214	200	200	120	140	372	170	166	162	176	388
22	78	321	200	195	110	125	527	170	143	159	176	388
23	86	326	205	195	125	120	567	170	162	170	180	393
24	79	303	200	*190	140	130	442	170	162	170	176	403
25	77	372	205	190	140	120	348	170	166	166	176	431
26	57	348	205	190	160	100	334	166	170	166	176	398
27	57	214	205	190	110	140	243	166	170	166	176	393
28	71	214	200	190	110	200	218	176	166	170	176	393
29	72	210	195	190	-	290	218	173	111	170	176	393
30	67	200	200	190	-------	400	203	170	143	170	210	393
31	62	-------	200	190	-------	500	-------	173	-------	170	1,170	-------
Total	3,111	6,328	5,143	5,975	4,520	5,885	24,730	5,443	4,934	9,269	6,786	17,713
Mean	100	211	166	193	161	190	824	176	164	299	219	590
Cfsm	0.356	0.751	0.591	0.687	0.573	0.676	2.93	0.626	0.584	1.06	0.779	2.10
In.	0.41	0.84	0.68	0.79	0.60	0.78	3.27	0.72	0.65	1.23	0.90	2.34

Calendar year 1957: Max 2,810 Min 47 Mean 223 Cfsm 0.794 In. 10.78
Water year 1957-58: Max 1,520 Min 50 Mean 274 Cfsm 0.975 In. 13.21

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 29 to Apr. 2 (no gage-height record Feb. 14-25; discharge computed on basis of daily generation at Saxon Falls and Superior Falls powerplants).

310. Black River near Bessemer, Mich.

Location.--Lat 46°30'55", long 90°04'10", in SE¼ sec.32, T.48 N., R.46 W., on right bank 450 ft downstream from bridge on county highway, 500 ft downstream from Powder Mill Creek, and 2½ miles north of Bessemer.

Drainage area.--202 sq mi.

Records available.--October 1954 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,150 ft (from topographic map).

Extremes.--Maximum discharge during year, 2,090 cfs Apr. 15 (gage height, 6.13 ft); minimum, 23 cfs Aug. 8, 9 (gage height, 0.99 ft).
1954-58: Maximum discharge, 5,420 cfs Apr. 21, 1957 (gage height, 9.76 ft); minimum, 15 cfs Aug. 21, 22, 23, 1957 (gage height, 0.91 ft).

Remarks.--Records good except those for periods of ice effect, which are fair. Some ground water pumped from mines at Bessemer. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.0	24
1.3	78
2.0	250
3.0	594
6.0	2,020

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	93	53	145	64	72	130	311	293	110	822	a58	586
2	*76	54	140	63	72	135	462	250	112	1,120	a50	*391
3	80	68	135	62	71	135	682	232	*107	*894	a43	350
4	98	*74	*130	63	71	*135	984	201	107	658	*a38	327
5	89	80	125	64	*71	130	1,160	172	114	473	51	270
6	82	80	125	66	70	130	1,140	146	110	340	40	666
7	76	80	120	68	69	125	1,010	*131	105	287	37	695
8	87	98	115	*70	68	120	1,230	119	117	224	32	512
9	105	110	115	70	68	115	*1,270	110	105	344	35	371
10	98	125	110	70	67	110	1,300	126	89	527	327	290
11	78	146	110	69	66	105	1,410	122	85	412	318	232
12	37	185	105	68	65	105	1,500	105	78	302	237	190
13	34	240	105	67	64	102	1,580	82	74	224	206	155
14	32	327	100	67	63	100	*1,790	74	64	211	153	134
15	32	546	100	67	62	98	2,000	66	56	381	126	180
16	34	498	100	67	62	96	1,850	62	51	278	98	153
17	47	401	105	66	62	94	1,560	68	45	203	87	134
18	44	334	105	66	62	93	1,230	82	40	155	70	117
19	40	310	105	66	64	91	935	72	40	119	62	102
20	38	280	100	67	65	91	716	58	38	96	54	89
21	38	250	96	68	67	91	562	53	35	80	51	82
22	51	230	92	68	73	100	699	53	37	70	42	72
23	56	210	88	69	80	98	682	49	47	64	44	62
24	56	200	84	70	86	102	550	64	45	60	89	62
25	58	190	81	71	95	102	451	105	42	62	96	87
26	51	180	78	72	105	114	364	98	80	58	80	70
27	47	170	75	73	110	119	302	93	80	56	72	58
28	44	160	72	74	120	143	278	86	64	87	64	51
29	42	155	70	74	-	160	261	82	56	93	70	51
30	44	150	68	73	-------	195	250	78	56	a80	307	54
31	51	-------	66	73	-------	242	-------	89	-------	a70	804	-------
Total	1,838	5,984	3,165	2,115	2,070	3,706	28,519	3,420	2,189	8,852	3,841	6,593
Mean	59.3	199	102	68.2	73.9	120	951	110	73.0	286	124	220
Cfsm	0.294	0.985	0.505	0.338	0.366	0.594	4.71	0.545	0.361	1.42	0.614	1.09
In.	0.34	1.10	0.58	0.39	0.38	0.68	5.26	0.63	0.40	1.64	0.71	1.22

Calendar year 1957: Max 4,830 Min 20 Mean 179 Cfsm 0.886 In. 12.03
Water year 1957-58: Max 2,000 Min 32 Mean 198 Cfsm 0.980 In. 13.33

Peak discharge (base, 1,500 cfs).--Apr. 15 (9:30 p.m.) 2,090 cfs (6.13 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and records for nearby stations.
Note.--Stage-discharge relation affected by ice Nov. 9, 10, Nov. 19 to Mar. 12, Mar. 14-17.

315. Presque Isle River at Marenisco, Mich.

Location.--Lat 46°22', long 89°41', in NW¼ sec.21, T.46 N., R.43 W., on left bank a quarter of a mile upstream from highway bridge in Marenisco and 2¼ miles downstream from confluence of East and West Branches of Presque Isle River.

Drainage area.--175 sq mi.

Records available.--February 1945 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,489.30 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to May 27, 1949, wire-weight gage at site a quarter of a mile downstream at different datum.

Average discharge.--13 years, 178 cfs.

Extremes.--Maximum discharge during year, 762 cfs July 3 (gage height, 7.00 ft); minimum, 44 cfs Sept. 30 (gage height, 3.33 ft); minimum gage height, 3.20 ft Oct. 7.
1945-58: Maximum discharge, 2,670 cfs Apr. 21, 1952 (gage height, 9.90 ft); minimum observed, 13 cfs Sept. 30, 1948 (gage height, 2.25 ft, site and datum then in use).

Remarks.--Records good except those for periods of ice effect, which are fair

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-7		Oct. 7 to May 27		May 27 to Sept. 30	
3.2	62	3.4	47	3.3	42
3.4	88	4.0	131	3.5	58
		5.0	328	4.0	119
		6.0	568	5.0	287
				7.0	762

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	82	80	120	86	86	92	170	220	163	529	98	235
2	*69	77	120	82	85	92	*202	210	152	*712	84	*198
3	70	79	120	80	84	91	240	206	138	720	73	166
4	70	*93	120	77	83	90	291	193	*133	566	*66	136
5	64	94	*120	75	82	*88	343	180	191	446	74	111
6	64	89	115	75	*81	88	363	164	196	325	78	166
7	63	83	115	77	80	88	354	*155	168	283	70	204
8	60	90	115	79	80	88	401	143	144	251	62	206
9	66	98	110	*79	79	88	*430	136	129	305	63	188
10	66	105	110	79	78	87	440	133	115	422	166	162
11	64	115	110	79	78	87	444	134	111	417	231	144
12	67	129	110	79	78	86	454	129	101	354	220	129
13	63	152	105	79	78	86	466	121	95	283	182	115
14	66	175	105	79	79	86	485	112	84	231	144	105
15	72	226	105	79	80	86	*519	106	74	257	129	126
16	71	240	105	80	80	86	534	100	65	244	119	123
17	71	228	110	80	79	86	521	93	60	211	104	118
18	75	198	110	80	78	86	473	110	57	186	88	112
19	77	180	115	80	77	86	413	110	55	158	80	102
20	57	170	115	78	77	86	361	97	55	140	73	92
21	57	160	115	77	77	86	313	89	54	125	65	85
22	66	155	115	76	77	87	337	82	54	109	62	79
23	77	150	115	76	78	89	379	77	59	101	60	68
24	94	145	115	76	80	91	370	79	64	92	72	63
25	96	140	110	76	82	94	337	94	67	104	80	60
26	90	135	105	78	87	98	288	99	81	111	76	56
27	80	130	105	81	90	100	256	99	82	119	70	51
28	80	125	100	84	92	110	238	94	72	157	64	48
29	75	125	96	86	-	120	258	88	61	157	68	46
30	73	120	92	86	----- --	135	230	88	99	136	106	45
31	79	-------	90	86	-------	150	-------	144	-------	116	218	-------
Total	2,224	4,086	3,413	2,464	2,265	2,913	10,910	3,685	2,979	8,367	3,145	3,539
Mean	71.7	136	110	79.5	80.9	94.0	364	125	99.3	270	101	118
Cfam	0.410	0.777	0.629	0.454	0.462	0.537	2.08	0.714	0.567	1.54	0.577	0.674
In.	0.47	0.87	0.73	0.52	0.48	0.62	2.32	0.82	0.63	1.78	0.67	0.75

Calendar year 1957: Max 1,500 Min 35 Mean 137 Cfsm 0.783 In. 10.60
Water year 1957-58: Max 720 Min 45 Mean 138 Cfsm 0.789 In. 10.66

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 8-11, Nov. 19 to Apr. 1.

320. Presque Isle River near Tula, Mich.

Location.--Lat 46°33', long 89°46', in sec.23, T.48 N., R.44 W., on downstream handrail of bridge on State Highway 28, 2 miles east of Tula, 5 miles downstream from Little Presque Isle River, and 7 miles southwest of Merriweather.

Drainage area.--260 sq mi.

Records available.--February 1945 to September 1958.

Gage.--Wire-weight gage and crest-stage indicator; gage read once daily. Datum of gage is 1,299.66 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--13 years, 276 cfs.

Extremes.--Maximum discharge during year, 1,660 cfs Apr. 16 (gage height, 9.93 ft); minimum, 72 cfs Oct. 13, 14 (gage height, 4.63 ft).
1945-58: Maximum discharge, 4,200 cfs Apr. 30, 1951 (gage height, 13.55 ft); minimum, 22 cfs Oct. 5, 6, 1948 (gage height, 4.22 ft).

Remarks.--Records good except those for periods of ice effect or shifting control, which are fair.

Revisions (water years).--WSP 1387: 1945.

Rating table, water year 1957-58, except periods of ice effect or shifting control (gage height, in feet, and discharge, in cubic feet per second)

4.6	67
5.0	133
6.0	340
8.0	900
10.0	1,700

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*124	106	175	115	110	135	310	359	205	357	123	340
2	111	106	170	110	110	135	442	345	197	798	109	*266
3	101	108	170	110	105	135	574	323	*179	*1,020	98	235
4	97	*111	*165	110	105	135	720	290	168	940	85	216
5	91	126	160	110	*105	*135	906	259	194	825	*88	181
6	86	124	160	110	105	135	1,040	*235	230	600	91	268
7	83	121	155	110	105	135	1,130	213	207	496	89	330
8	78	135	155	*110	105	130	1,160	199	190	398	80	340
9	78	142	150	110	105	130	*1,090	184	184	416	81	288
10	80	150	150	110	105	130	966	205	159	569	220	233
11	78	164	150	110	105	130	981	205	154	644	364	201
12	75	192	150	110	105	130	1,030	199	143	572	311	182
13	72	228	150	110	105	130	1,070	181	136	450	248	168
14	72	266	150	110	105	130	*1,230	166	124	328	192	155
15	75	411	150	110	105	130	1,480	157	110	398	161	164
16	81	463	155	110	105	130	1,640	147	97	408	145	175
17	93	400	155	110	105	130	1,520	142	88	328	130	164
18	94	328	155	110	105	130	1,270	155	81	259	113	152
19	96	181	160	110	105	130	984	155	77	196	104	142
20	88	239	160	110	105	130	790	150	77	165	94	135
21	86	250	160	105	110	135	650	130	75	147	86	125
22	93	260	160	105	110	135	580	128	78	131	80	111
23	108	250	160	105	115	140	616	119	89	121	80	102
24	121	235	155	110	115	140	605	123	88	114	100	91
25	126	220	150	115	120	145	538	150	88	123	119	101
26	126	210	145	115	125	150	460	168	130	131	114	96
27	110	200	140	120	130	155	400	170	148	150	102	86
28	106	190	135	120	135	165	338	164	121	179	94	80
29	102	185	130	115	-	180	352	147	105	190	91	73
30	101	180	125	115	-------	205	345	140	94	166	104	73
31	101	-------	120	115	-------	240	-------	164	-------	142	310	-------
Total	2,933	6,279	4,725	3,445	3,070	4,425	25,217	5,872	4,016	11,761	4,204	5,273
Mean	94.6	209	152	111	110	143	841	189	134	379	136	176
Cfsm	0.364	0.804	0.585	0.427	0.423	0.550	3.23	0.727	0.515	1.46	0.523	0.677
In.	0.42	0.90	0.67	0.49	0.44	0.63	3.60	0.84	0.57	1.68	0.60	0.76

Calendar year 1957: Max 3,320 Min 42 Mean 208 Cfsm 0.800 In. 10.83
Water year 1957-58: Max 1,640 Min 72 Mean 223 Cfsm 0.858 In. 11.60

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 21 to Apr. 1. No gage-height record Sundays and holidays; discharge interpolated. Shifting-control method used July 1-18, Sept. 2-11.

330. Middle Branch Ontonagon River near Paulding, Mich.

Location.--Lat 46°21'30", long 89°04'40", in sec.29, T.46 N., R.38 W., on right bank 25 ft downstream from highway bridge, 2¼ miles upstream from Bond Falls Reservoir, and 5¾ miles southeast of Paulding.

Drainage area.--About 175 sq mi.

Records available.--June 1942 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 1,485.66 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Sept. 28, 1942, reference point on downstream side of bridge at same datum.

Average discharge.--16 years, 175 cfs.

Extremes.--Maximum discharge during year, 698 cfs July 2 (gage height, 6.67 ft); minimum, 51 cfs about Nov. 19 (gage height, 3.27 ft, from recorded range in stage).
1942-58: Maximum discharge, 2,050 cfs Apr. 30, 1951 (gage height, 10.0 ft, from high-water mark); minimum, 27 cfs Nov. 22, 1946 (result of freezeup); minimum gage height, 2.96 ft Nov. 26, 1942 (result of freezeup).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 24		Mar. 25 to Sept. 30	
3.5	72	3.5	72
4.0	132	4.0	140
5.0	307	5.0	322
		7.0	784

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*105	105	100	90	94	105	118	203	150	452	107	150
2	102	100	100	90	92	105	*140	190	138	685	100	126
3	100	100	*98	88	90	105	172	192	*116	*651	95	111
4	98	*100	96	88	*94	*105	197	186	122	518	90	*105
5	96	100	96	88	92	105	215	174	244	410	93	104
6	94	100	94	86	90	105	222	*161	264	352	*93	134
7	94	100	92	*84	90	105	206	151	212	344	89	145
8	94	115	92	88	90	105	228	145	199	314	87	135
9	92	130	92	90	90	105	242	140	179	282	89	122
10	92	140	90	92	90	105	*258	159	159	290	110	111
11	92	145	90	94	90	100	284	170	156	280	132	104
12	90	150	90	94	90	100	306	156	142	224	119	98
13	90	160	88	94	90	100	328	151	132	203	110	95
14	90	185	86	92	92	100	356	138	122	195	98	95
15	90	215	84	92	92	100	*395	129	111	395	92	102
16	94	160	82	92	92	100	417	119	104	393	88	105
17	100	130	82	90	90	100	404	119	97	324	89	100
18	98	100	86	90	90	98	371	138	93	240	87	97
19	96	72	90	90	88	98	328	132	90	201	83	93
20	94	105	92	90	86	96	288	119	88	174	82	92
21	92	115	92	90	88	96	260	108	84	156	82	94
22	94	120	90	90	88	96	276	108	83	145	81	92
23	100	120	88	88	88	94	296	104	88	132	81	84
24	110	120	86	88	90	94	282	101	98	124	89	80
25	120	120	94	90	92	95	257	118	140	127	97	81
26	120	115	92	90	96	95	239	116	210	129	92	83
27	115	115	88	90	100	98	217	119	226	134	88	79
28	110	110	90	92	105	100	212	111	174	158	86	78
29	105	105	82	92	-	102	228	107	142	148	101	79
30	105	105	86	92	-------	105	212	108	148	130	130	81
31	105	-------	90	94	-------	110	-------	138	-------	116	153	-------
Total	3,077	3,657	2,798	2,798	2,561	3,127	7,954	4,310	4,311	8,406	3,013	3,055
Mean	99.3	122	90.3	90.3	91.5	101	265	139	144	271	97.2	102
Cfsm	0.567	0.697	0.516	0.516	0.523	0.577	1.51	0.794	0.823	1.55	0.555	0.583
In.	0.65	0.78	0.59	0.59	0.54	0.67	1.68	0.92	0.92	1.79	0.64	0.65

Calendar year 1957: Max 1,050 Min 72 Mean 128 Cfsm 0.731 In. 9.93
Water year 1957-58: Max 685 Min 72 Mean 134 Cfsm 0.766 In. 10.42

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice from about Nov. 20 to Mar. 24. No gage-height record Oct. 1 to Dec. 3; discharge estimated on basis of weather records, recorded range in stage, 3 discharge measurements, and records for nearby stations.

335. Bond Falls Canal near Paulding, Mich.

Location.--Lat 46°24'10", long 89°09'00", in sec.11, T.46 N., R.39 W., on left bank 40 ft upstream from intake to pipeline No. 2, 1.4 miles southeast of Paulding, and 1.5 miles downstream from Bond Falls Reservoir on Middle Branch Ontonagon River.

Records available.--July 1942 to September 1958.

Gage.--Staff gage and concrete control; gage read once daily. Datum of gage is 1,444.59 ft above mean sea level, datum of 1929.

Average discharge.--16 years, 128 cfs.

Extremes.--Maximum discharge during year, 360 cfs Sept. 20-26 (gage height, 3.10 ft); minimum, 3.4 cfs Apr. 7-15, 17-22 (gage height, 0.18 ft).
1942-58: Maximum discharge, 362 cfs Aug. 27, 1947 (gage height, 3.13 ft, from graph based on gage readings); minimum, 2.5 cfs Nov. 3, 4, 11, 12, 1943; minimum gage height, -1.25 ft May 29, 1943 (two drain holes in weir open and canal gate closed).

Remarks.--Records excellent except those below 20 cfs, which are fair. Canal diverts water from Bond Falls Reservoir to South Branch Ontonagon River; water is used for power production at Victoria Dam near Rockland.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.1	1.3	1.0	56
.2	4.0	1.5	109
.3	7.8	2.0	174
.5	18	3.1	360

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	127	63	101	202	94	4.0	12	86	22	25	27
2	75	127	63	100	202	94	4.0	12	86	21	25	27
3	75	127	63	100	202	76	4.0	12	*86	21	25	27
4	75	127	98	98	*200	55	4.0	12	86	22	25	27
5	75	*127	131	96	200	55	4.0	12	86	22	26	27
6	75	126	131	100	200	55	3.7	12	87	22	26	27
7	75	126	131	128	200	55	3.4	28	87	22	26	27
8	75	126	131	*154	200	55	3.4	48	87	22	26	27
9	74	126	131	154	200	84	3.4	58	87	22	26	27
10	74	126	131	157	200	101	3.4	86	87	23	26	27
11	74	126	129	155	200	130	3.4	85	88	23	26	27
12	109	126	129	155	200	154	3.4	85	42	23	27	27
13	128	126	129	155	200	154	3.4	85	20	23	27	27
14	128	126	129	154	200	154	3.4	85	19	24	27	27
15	128	115	129	154	200	154	3.4	85	19	24	27	82
16	128	100	129	154	200	154	3.7	85	19	24	27	220
17	128	100	129	154	200	153	3.4	85	19	24	27	233
18	128	87	129	154	200	152	3.4	85	19	25	27	233
19	128	62	129	154	200	152	3.4	85	19	25	27	233
20	128	77	98	154	200	152	3.4	85	19	25	27	291
21	128	123	67	152	200	189	3.4	85	19	25	27	360
22	128	123	67	150	200	210	7.0	85	19	25	27	360
23	128	99	67	150	200	209	12	85	20	25	27	360
24	128	63	68	150	200	207	12	85	20	25	27	360
25	127	63	68	150	200	207	12	86	20	25	27	360
26	127	63	86	150	182	207	12	86	20	25	27	302
27	127	63	101	150	171	204	12	86	20	25	27	244
28	127	63	101	174	123	204	12	86	20	25	27	244
29	127	63	101	202	-	202	12	86	20	25	27	244
30	127	63	101	202	-------	201	12	86	20	25	27	243
31	127	-------	100	202	-------	85	-------	86	-------	25	27	-------
Total	3,356	3,096	3,259	4,565	5,482	4,358	178.0	2,084	1,346	734	822	4,747
Mean	108	103	105	147	196	141	5.93	67.2	44.9	23.7	26.5	158
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 319 Min 7.8 Mean 126 Cfsm - In. -
Water year 1957-58: Max 360 Min 3.4 Mean 93.2 Cfsm - In. -

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 11-13, 20, 22-28, Feb. 4-26.

340. Bond Falls Reservoir near Paulding, Mich.

Location.--Lat 46°24'29", long 89°07'42", in SW¼ sec.1, T.46 N., R.39 W., at Bond Falls Dam on Middle Branch Ontonagon River, 2¼ miles east of Paulding.

Drainage area.--About 210 sq mi.

Records available.--June 1942 to September 1958. Prior to October 1950, published in WSP 1307.

Gage.--Staff gage read once daily. Datum of gage is 1,335.59 ft above mean sea level, datum of 1929.

Remarks.--Reservoir is formed by earthfill and concrete dam with one taintor gate; dam completed in 1937. Usable capacity, 1,730,000,000 cu ft between gage heights of 121 ft (maximum drawdown) and 141 ft (full pond). Dead storage unknown. Water diverted to South Branch Ontonagon River through Bond Falls Canal; water used for power production at Victoria Dam near Rockland.

Cooperation.--Gage-height record furnished by Upper Peninsula Power Co.

Month-end gage height and contents, water year October 1957 to September 1958

Date	Gage height (feet)†	Contents (millions of cubic feet)	Change in contents (millions of) cubic feet)
Sept.30	130.02	767	-
Oct. 31	128.94	676	-91
Nov. 30	129.77	750	+74
Dec. 31	129.30	709	-41
Calendar year 1957	-	-	-371
Jan. 31	127.16	535	-174
Feb. 28	123.69	255	-280
Mar. 31	121.68	111	-144
Apr. 30	130.49	808	+697
May 31	131.76	919	+111
June 30	133.76	1,090	+171
July 31	139.77	1,670	+580
Aug. 31	140.26	1,730	+60
Sept.30	137.72	1,460	-270
Water year 1957-58	-	-	+693

† Gage height at about 8:30 a.m.

345. Middle Branch Ontonagon River near Trout Creek, Mich.

Location.--Lat 46°28'45", long 89°05'25", in sec.8, T.47 N., R.38 W., on right bank 0.1 mile upstream from State Highway 28, 3½ miles west of village of Trout Creek, and 6½ miles downstream from Bond Falls Reservoir.

Drainage area.--About 225 sq mi.

Records available.--June 1942 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,132.03 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Nov. 4, 1942, staff gage at same site and datum.

Average discharge.--16 years, 83.5 cfs.

Extremes.--Maximum discharge during year, 198 cfs July 10 (gage height, 2.35 ft); minimum, 38 cfs Mar. 9, 12, 22, 23, 24 (gage height, 1.57 ft).
1942-58: Maximum discharge, 1,750 cfs Nov. 7, 1951 (gage height, 5.05 ft); minimum, 14 cfs sometime during period Jan. 23 to Feb. 13, 1947 (gage height, 1.14 ft, from recorded range in stage), caused by ice jams upstream.

Remarks.--Records excellent except those for periods of no gage-height record, which are good. Flow regulated by Bond Falls Reservoir (see preceding page). Diversion to South Branch Ontonagon River by Bond Falls Canal (see p. 35).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	41
1.8	72
2.0	114

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*49	50	48	50	50	46	55	49	58	86	56	63
2	49	50	49	49	50	46	59	48	58	70	56	61
3	50	50	*b50	b50	50	46	63	48	*56	*61	56	*61
4	50	50	b50	b50	*50	*45	68	48	61	59	58	59
5	50	*49	50	50	50	45	72	48	72	59	*58	61
6	50	48	49	50	50	45	70	*48	61	59	58	63
7	50	48	49	*49	50	45	64	48	61	61	58	61
8	50	50	48	48	b50	45	66	49	63	59	58	59
9	50	50	49	50	b50	45	64	49	59	76	59	59
10	50	49	49	50	b50	46	64	53	63	88	61	58
11	50	49	b50	50	b50	48	66	50	63	64	59	58
12	50	50	50	50	b50	45	66	49	59	61	63	58
13	50	52	49	50	b50	46	66	48	58	58	61	58
14	50	55	49	50	b50	46	*68	48	56	61	61	58
15	50	58	49	50	50	46	66	48	56	66	61	58
16	50	53	48	50	50	48	61	48	56	61	61	61
17	52	50	48	50	50	48	58	49	56	58	63	50
18	52	50	49	50	50	48	53	49	55	58	61	49
19	50	b50	48	50	50	48	52	48	55	56	61	48
20	50	52	48	50	50	48	52	48	55	56	61	48
21	50	50	48	50	49	48	50	48	55	56	61	48
22	52	48	48	50	49	48	52	49	56	56	61	48
23	53	50	49	50	49	48	52	48	56	58	63	48
24	52	49	48	50	49	49	50	50	58	56	63	48
25	52	48	49	50	49	49	50	49	63	58	63	48
26	50	49	48	50	49	49	49	49	80	58	63	48
27	50	50	48	50	49	49	49	49	68	59	63	48
28	50	49	48	50	48	49	50	48	59	58	63	49
29	50	46	46	50	-	50	49	49	58	58	63	49
30	50	45	b48	50	-------	52	49	53	61	56	66	49
31	50	-------	b50	50	-------	52	-------	58	-------	56	66	-------
Total	1,561	1,497	1,509	1,546	1,391	1,468	1,753	1,423	1,795	1,906	1,885	1,634
Mean	50.4	49.9	48.7	49.9	49.7	47.4	58.4	49.1	59.8	61.5	60.8	54.5
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 110 Min 45 Mean 52.5 Cfsm - In. -
Water year 1957-58: Max 88 Min 45 Mean 53.3 Cfsm - In. -

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Jan. 9 to Feb. 4, Feb. 15-20; discharge estimated on basis of records of released flow from Bond Falls Dam.

350. East Branch Ontonagon River near Mass, Mich.

Location.--Lat 46°41'20", long 89°04'20", on line between secs.32 and 33, T.50 N., R.38 W., on right bank 700 ft downstream from highway bridge, 1,000 ft downstream from Adventure Creek, 5 miles south of Mass, and 6½ miles upstream from mouth.

Drainage area.--265 sq mi.

Records available.--July 1942 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 873.55 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Oct. 1, 1949, wire-weight gage at bridge 700 ft upstream at same datum.

Average discharge.--16 years, 263 cfs.

Extremes.--Maximum discharge during year, 1,300 cfs June 26 (gage height, 6.75 ft); minimum, 98 cfs Aug. 23 (gage height, 3.40 ft).
1942-58: Maximum discharge, 4,590 cfs July 1, 1953 (gage height, 10.57 ft); minimum, 60 cfs Aug. 25, 1948 (gage height, 3.55 ft, from graph based on gage readings, site then in use).

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 31		Apr. 1 to Sept. 30	
3.5	109	3.4	98
4.0	212	4.0	213
5.0	515	5.0	515
6.0	940	7.0	1,450

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*138	138	140	115	130	180	376	424	225	712	129	316
2	131	135	140	115	130	180	547	305	197	*823	121	237
3	125	133	*140	120	125	180	823	253	*173	543	116	*240
4	120	133	135	120	*115	*180	985	230	165	468	111	235
5	118	136	135	125	120	180	1,040	202	304	311	*109	177
6	a120	140	135	125	130	180	886	*184	394	280	108	215
7	a120	138	135	*125	130	180	639	169	325	357	104	235
8	a120	173	130	130	125	180	*723	177	630	394	101	206
9	a120	257	130	135	125	175	677	188	339	417	106	177
10	a120	236	125	135	120	175	677	325	242	904	159	153
11	a120	230	125	130	115	175	727	348	280	575	159	140
12	120	249	125	130	115	175	740	263	245	427	145	131
13	118	310	130	125	115	175	765	211	195	322	131	126
14	120	407	135	125	115	170	895	182	169	225	128	124
15	118	681	135	125	115	170	*967	167	147	447	119	153
16	120	511	135	125	115	170	846	153	135	394	112	145
17	135	376	130	125	110	170	715	151	124	283	109	138
18	142	284	130	125	110	170	559	173	117	213	108	129
19	140	184	135	120	110	170	434	169	114	184	108	124
20	a135	212	135	120	110	170	354	149	112	163	106	121
21	a135	220	140	120	110	175	299	136	109	149	104	119
22	a140	210	145	120	115	175	319	136	117	140	101	117
23	a150	200	150	125	115	180	360	140	149	136	109	116
24	a170	180	150	125	120	185	313	157	167	140	136	114
25	a165	170	145	125	130	190	260	237	340	188	145	117
26	156	160	145	125	145	205	227	227	1,160	167	135	114
27	a150	150	140	125	160	215	206	587	832	159	122	111
28	a140	150	130	130	175	225	206	305	493	184	117	109
29	a135	145	125	130	-	245	237	245	345	175	121	109
30	a135	140	120	130	-------	265	260	232	242	153	161	114
31	*136	-------	115	130	-------	300	-------	232	-------	138	291	-------
Total	4,112	6,788	4,165	3,880	3,450	5,865	17,062	7,057	8,586	10,171	3,931	4,662
Mean	133	226	134	125	123	189	569	228	286	328	127	155
Cfsm	0.502	0.853	0.506	0.472	0.464	0.713	2.15	0.860	1.08	1.24	0.479	0.585
In.	0.58	0.95	0.58	0.54	0.48	0.82	2.40	0.99	1.20	1.43	0.55	0.65

Calendar year 1957: Max 2,970 Min 82 Mean 205 Cfsm 0.774 In. 10.49
Water year 1957-58: Max 1,160 Min 101 Mean 218 Cfsm 0.823 In. 11.17

Peak discharge (base, 1,400 cfs).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.
Note.--Stage-discharge relation affected by ice Nov. 11, Nov. 21 to Mar. 31.

355. Middle Branch Ontonagon River near Rockland, Mich.

Location.--Lat 46°42'05", long 89°09'40", in sec.27, T.50 N., R.39 W., on downstream side of bridge on U. S. Highway 45, 300 ft downstream from East Branch and 2½ miles southeast of Rockland.

Drainage area.--670 sq mi, approximately.

Records available.--July 1942 to September 1958.

Gage.--Wire-weight gage and crest-stage indicator; gage read once daily. Datum of gage is 661.1 ft above mean sea level, datum of 1929.

Average discharge.--16 years, 545 cfs.

Extremes.--Maximum discharge during year, 3,200 cfs Apr. 5 (gage height, 8.64 ft); maximum gage height, 9.17 ft June 26; minimum daily discharge, 190 cfs Aug. 7, 22; minimum gage height, 5.03 ft Oct. 9.
1942-58: Maximum discharge, 27,000 cfs Aug. 22, 1942 (gage height, 21.2 ft, from floodmarks), from rating curve extended above 7,500 cfs on basis of slope-area measurement of peak flow; minimum observed, 157 cfs Dec. 1, 1948; minimum gage height observed, 4.39 ft Aug. 13, 1942.

Remarks.--Records good except those for periods of ice effect, no gage-height record, or those above 1,500 cfs, which are fair. Flow regulated by Bond Falls Reservoir (see p. 36). Diversion to South Branch Ontonagon River by Bond Falls Canal (see p. 35).

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 30				Apr. 30 to Sept. 30			
5.0	203	7.0	1,280	5.2	185	8.0	1,580
5.5	360	8.0	2,330	6.0	440	9.0	2,500
6.0	590	9.0	3,740	7.0	910		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*236	251	a280	a240	270	370	1,500	760	468	1,710	233	a580
2	239	248	280	240	a270	a380	2,000	578	380	*1,460	221	a450
3	227	245	*280	245	265	385	2,790	520	*325	1,000	212	*338
4	227	248	275	255	*260	*390	3,030	436	303	872	193	a430
5	222	248	270	a255	255	390	3,070	364	670	596	*212	a330
6	222	254	270	260	250	390	2,400	*354	735	515	a205	a400
7	219	254	265	*265	250	385	1,340	300	515	715	a190	a430
8	222	278	a265	265	250	390	*1,660	309	1,040	760	a200	a370
9	211	515	260	270	a250	a380	1,440	332	628	800	a230	a310
10	230	a450	260	270	245	380	1,380	750	430	2,080	a305	a280
11	225	384	260	270	245	380	1,480	740	461	1,120	290	*252
12	225	585	265	a270	240	390	1,470	487	405	780	a265	239
13	225	700	265	270	235	390	1,450	360	322	551	a250	a230
14	227	976	270	265	230	385	1,600	303	287	440	a235	a240
15	225	a1,400	a270	265	230	385	*1,700	268	255	760	218	296
16	225	976	270	260	a225	a390	1,500	233	230	660	212	261
17	248	620	265	255	225	390	1,260	230	224	464	a205	252
18	254	458	265	255	225	395	911	293	212	354	a205	230
19	251	a360	270	a250	225	400	724	284	207	309	a200	221
20	236	400	280	250	230	410	600	242	212	277	a200	a220
21	242	410	290	250	235	420	510	212	207	261	a200	a215
22	254	380	a300	250	235	430	585	209	201	245	a190	215
23	263	350	305	250	a245	450	670	212	280	242	a220	212
24	300	a320	305	250	255	465	575	248	290	391	a255	212
25	281	310	a300	255	270	485	495	440	533	491	a270	221
26	266	300	295	a255	295	510	427	384	2,290	338	a250	209
27	263	290	290	260	320	550	388	1,120	2,200	394	a230	a205
28	254	285	275	265	350	600	364	660	877	464	a220	a210
29	248	280	a260	270	-	680	458	483	569	348	227	215
30	248	280	245	270	-------	780	498	468	419	280	a320	218
31	*248	-------	235	270	-------	1,000	-------	556	-------	245	a540	-------
Total	7,463	13,055	8,485	8,020	7,080	14,095	38,275	13,135	16,175	19,922	7,403	8,491
Mean	241	435	274	259	253	455	1,276	424	539	643	239	283
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 6,570 Min 193 Mean 408 Cfsm - In. -
Water year 1957-58: Max 3,070 Min 190 Mean 443 Cfsm - In. -

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records, records of discharge of Victoria Dam and nearby stations, and stage readings at site 200 ft downstream.
Note.--Stage-discharge relation affected by ice Nov. 20 to Apr. 2.

360. West Branch Ontonagon River near Bergland, Mich.

Location.--Lat 46°35'30", long 89°32'20", in sec.3, T.48 N., R.42 W., on right bank a quarter of a mile downstream from dam at outlet of Gogebic Lake and 1¼ miles east of Bergland.

Drainage area.--160 sq mi, approximately.

Records available.--July 1942 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,290.81 ft above mean sea level, datum of 1929. Prior to Nov. 5, 1942, staff gage a quarter of a mile upstream at different datum.

Average discharge.--16 years, 176 cfs.

Extremes.--Maximum discharge during year, 436 cfs Apr. 17 (gage height, 3.63 ft); minimum, 18 cfs Nov. 15 (gage height, 0.87 ft).
1942-58: Maximum discharge, 1,300 cfs May 3, 1954; maximum gage height, 5.73 ft May 2, 1951; minimum daily discharge, 6 cfs Apr. 27 to May 3, 1949; minimum gage height observed, 0.48 ft Apr. 29, 1949.

Remarks.--Records excellent. Flow regulated by Gogebic Lake (capacity, about 50,000 acre-ft).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

0.9	19	2.5	152
1.5	47	3.0	255
2.0	85	3.5	392

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	48	34	128	215	200	128	102	162	79	102	25
2	25	44	35	127	215	198	129	110	156	80	102	24
3	29	45	36	126	210	195	132	102	*149	*83	108	24
4	30	51	*79	126	205	195	142	99	140	85	202	*23
5	30	*50	102	127	*200	*194	152	100	137	86	*222	23
6	30	65	115	128	190	192	165	*100	126	86	203	24
7	30	51	120	128	190	186	182	93	108	87	215	23
8	34	46	123	*128	190	180	196	75	102	88	180	22
9	54	61	123	126	195	179	213	77	105	90	99	21
10	75	71	125	124	185	177	228	81	107	90	103	21
11	70	78	142	120	185	173	244	81	105	91	100	21
12	69	71	156	117	180	169	266	82	97	92	99	21
13	69	68	152	117	177	167	294	84	101	95	97	21
14	62	67	149	115	173	165	*326	82	101	97	97	22
15	67	62	145	115	170	162	354	82	100	176	97	48
16	65	22	142	115	170	160	379	83	97	81	99	123
17	57	18	138	115	168	156	310	84	97	184	96	54
18	55	20	138	115	175	154	153	83	97	253	74	21
19	58	36	147	140	200	152	95	83	99	253	55	21
20	55	40	145	160	205	149	87	106	83	246	61	21
21	61	40	143	150	200	145	85	132	69	271	78	22
22	57	50	141	146	200	144	86	140	71	360	85	21
23	46	57	140	142	203	140	85	134	72	348	88	21
24	51	55	138	140	210	138	83	138	73	309	87	22
25	50	59	137	140	215	135	82	132	73	269	84	22
26	53	61	136	139	215	134	82	147	73	260	78	22
27	54	60	135	139	205	132	82	104	73	219	79	21
28	55	34	134	140	200	130	108	78	73	100	74	41
29	47	31	133	150	-	128	110	80	73	100	77	144
30	50	32	132	160	-------	128	105	95	77	99	63	135
31	54	-------	130	210	-------	128	-------	116	-------	100	26	-------
Total	1,567	1,494	3,843	4,153	5,446	4,985	5,083	3,085	2,996	4,855	3,230	1,074
Mean	50.5	49.8	124	134	194	161	169	99.5	99.9	157	104	35.8
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 884 Min 10 Mean 113 Cfsm 0.706 In. 9.58
Water year 1957-58: Max 379 Min 19 Mean 115 Cfsm 0.719 In. 9.76

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 5-8, Dec. 20 to Jan. 7, Jan. 11 to Mar. 4; discharge estimated on basis of recorded range in stage, observer's notes, and records of stage at site ¼ mile upstream.

375. Cisco Branch Ontonagon River at Cisco Lake Outlet, Mich.

Location.--Lat 46°15', long 89°27', in sec.32, T.45 N., R.41 W., on right bank 80 ft downstream from Cisco Lake Dam, 2½ miles upstream from Langford Lake Outlet, 4¾ miles upstream from U. S. Highway 2, and 13 miles southwest of Watersmeet.

Drainage area.--50 sq mi, approximately.

Records available.--October 1944 to September 1958.

Gage.--Staff gage read once daily. Datum of gage is 1,676.69 ft above mean sea level, datum of 1929.

Average discharge.--14 years, 46.3 cfs.

Extremes.--Maximum discharge during year, 150 cfs July 5-7 (gage height, 1.50 ft); minimum daily, 1.7 cfs Sept. 14.
1944-58: Maximum discharge, 288 cfs May 1-4, 1951 (gage height, 2.10 ft); minimum daily, 0.2 cfs May 29 to June 17, 1948.

Remarks.--Records good. Flow regulated by Cisco Lake (usable capacity, 15,600 acre-ft).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 11				Apr. 11 to Sept. 30			
0.3	5.0	0.8	40	0.1	0.5	0.6	23
.4	9.0	1.2	93	.2	2.1	.9	54
.6	22	1.4	129	.3	5.2	1.2	94
				.4	9.8	1.5	150

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	26	69	28	28	28	26	5.9	18	91	7.8	25
2	*14	26	64	28	28	28	26	5.9	44	125	7.8	*29
3	14	26	64	28	28	28	26	5.9	52	*125	7.8	30
4	9.9	*26	47	28	28	29	26	5.9	*62	138	*6.8	33
5	7.6	26	*40	28	28	29	26	6.8	78	150	5.9	34
6	7.6	26	40	28	*28	*29	28	13	83	150	5.9	53
7	7.6	26	36	28	28	29	49	*22	83	150	5.2	72
8	7.6	46	32	28	28	29	69	27	83	120	5.2	58
9	7.6	67	28	*28	28	29	72	27	78	110	5.2	43
10	7.6	81	26	28	28	29	*72	27	40	110	16	15
11	7.6	105	28	28	28	28	81	27	25	84	16	4.4
12	7.6	116	28	28	28	28	86	27	23	68	6.9	3.1
13	7.6	112	28	28	28	28	86	27	13	64	4.4	3.1
14	6.0	112	28	28	28	28	86	27	6.5	54	3.8	1.7
15	5.3	112	28	28	28	28	*86	15	5.2	70	3.8	12
16	6.0	100	28	28	28	28	44	7.8	5.2	85	3.8	18
17	6.0	95	28	28	28	28	12	7.8	5.2	50	3.8	19
18	6.0	92	28	28	28	28	5.9	7.8	5.2	15	3.8	19
19	6.0	107	28	28	28	28	6.8	7.8	5.2	6.8	3.8	19
20	6.0	112	28	28	28	28	7.8	7.8	5.2	7.9	3.8	19
21	6.0	121	28	28	28	28	7.8	7.8	5.2	9.8	3.8	19
22	6.0	127	28	28	28	28	7.8	8.8	5.2	9.8	3.1	19
23	21	127	28	28	28	28	7.8	8.8	5.2	17	2.6	17
24	28	123	28	28	28	28	7.8	11	5.2	20	2.6	17
25	26	123	28	28	28	28	6.8	11	5.2	20	3.1	17
26	26	116	28	28	28	28	5.9	11	5.2	20	3.1	17
27	26	112	28	28	28	28	5.9	9.8	5.2	37	3.1	9.2
28	26	108	28	28	28	28	5.9	7.8	5.2	56	3.1	5.2
29	26	105	28	28	-	28	6.8	6.8	5.2	41	3.1	5.2
30	26	81	28	28	-------	26	5.9	6.8	5.2	18	14	5.2
31	26	-------	28	28	-------	26	-------	6.8	-------	8.7	22	-------
Total	404.6	2,582	1,036	868	784	871	989.9	404.8	771.7	2,031.0	191.1	641.1
Mean	13.1	86.1	33.4	28.0	28.0	28.1	33.0	13.1	25.7	65.5	6.16	21.4
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 127 Min 1.3 Mean 32.1 Cfsm 0.642 In. 8.72
Water year 1957-58: Max 150 Min 1.7 Mean 31.7 Cfsm 0.634 In. 8.61

* Discharge measurement made on this day.

395. South Branch Ontonagon River at Ewen, Mich.

Location.--Lat 46°32'05", long 89°16'30", in sec.26, T.48 N., R.40 W., on left bank on piers of old State Highway M28 bridge in Ewen.

Drainage area.--About 320 sq mi.

Records available.--April 1942 to September 1958.

Gage.--Staff gage and crest-stage indicator; gage read twice daily. Datum of gage is 1,113.04 ft above mean sea level, datum of 1929. Prior to Jan. 16, 1943, reference mark or chain gage on upstream side of bridge at same site and datum.

Average discharge.--16 years, 490 cfs.

Extremes.--Maximum discharge during year, 1,900 cfs Apr. 6 (gage height, 9.72 ft); minimum, 99 cfs Aug. 22 (gage height, 0.92 ft).
1942-58: Maximum discharge, 6,710 cfs Apr. 19, 1952; maximum gage height, 18.86 ft June 25, 1946; minimum discharge observed, 76 cfs Sept. 23, 1948, June 7, Aug. 9, 22, 1949 (gage height, 0.88 ft).

Remarks.--Records good except those for period of ice effect, which are fair. Some diversion from Middle Branch Ontonagon River by Bond Falls Canal (see p. 35). Some regulation at medium and low flows by Cisco Lake (capacity, 15,600 acre-ft).

Revisions (water years).--WSP 1307: 1942(M).

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 24		Mar. 25 to Sept. 30	
1.6	163	0.9	97
4.0	516	2.0	220
6.0	934	5.0	726
		9.0	1,680
		10.0	1,980

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	231	249	a280	240	310	330	a540	355	282	657	197	258
2	*224	249	a280	240	305	300	596	365	274	*1,570	163	225
3	200	249	a280	240	290	280	952	325	*247	1,290	143	*204
4	189	252	*280	235	310	270	1,330	302	261	a900	133	239
5	179	*252	300	235	*320	*260	1,720	264	549	567	*130	224
6	179	249	300	a235	320	260	1,860	*239	623	497	134	254
7	174	247	300	240	320	250	1,520	216	486	526	125	281
8	173	255	300	*270	320	250	1,460	230	455	553	118	355
9	a173	294	300	290	315	270	*1,480	226	432	576	110	333
10	173	312	300	290	a315	300	1,430	284	365	1,220	180	258
11	170	305	300	280	310	320	1,420	358	390	1,140	226	215
12	173	372	300	280	310	340	1,450	330	323	661	210	169
13	209	484	300	280	310	350	1,430	293	216	450	212	147
14	209	a650	290	275	310	350	1,420	269	181	344	174	134
15	204	848	290	275	310	350	*1,510	261	162	a470	148	143
16	205	844	290	275	300	350	1,450	239	139	589	a130	155
17	211	666	290	275	300	350	1,240	224	a130	434	115	304
18	218	545	290	270	300	350	934	239	a120	352	110	323
19	214	a550	290	270	300	350	686	250	a115	300	108	323
20	206	a540	280	270	300	360	560	233	a110	236	104	328
21	206	520	250	270	300	400	463	216	a110	188	102	405
22	a210	a500	230	260	310	410	450	a210	a110	169	100	429
23	222	a470	230	270	320	410	702	a210	a110	166	102	429
24	235	a430	230	275	340	420	682	a215	116	155	112	427
25	255	a400	240	270	350	419	544	221	124	170	117	429
26	258	a370	260	260	360	a410	538	226	224	186	110	429
27	263	a340	260	260	360	a410	371	217	341	a300	108	342
28	259	a320	260	280	360	a410	328	214	289	461	108	326
29	255	a310	260	300	-	a410	354	a220	190	400	a110	326
30	254	a290	250	310	-------	406	355	a230	168	300	140	320
31	a250	-------	240	310	-------	477	-------	241	-------	250	223	-------
Total	6,581	12,362	8,550	8,330	8,875	10,822	29,775	7,922	7,622	16,077	4,302	8,734
Mean	212	412	276	269	317	349	992	256	254	519	139	291
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 4,380 Min 125 Mean 380 Cfsm - In. -
Water year 1957-58: Max 1,860 Min 100 Mean 356 Cfsm - In. -

Peak discharge (base, 2,000 cfs).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.
Note.--Stage-discharge relation affected by ice Nov. 19 to Mar. 24.

400. Ontonagon River near Rockland, Mich.

Location.--Lat 46°43'15", long 89°12'25", in sec.20, T.50 N., R.39 W., in downstream side of left pier of bridge on highway between Rockland and Victoria, 1¼ miles southwest of Rockland and 2.4 miles downstream from confluence of Middle and West Branches.

Drainage area.--1,290 sq mi, approximately.

Records available.--June 1942 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 638.87 ft above mean sea level, datum of 1929. Prior to Nov. 23, 1943, wire-weight, chain, and staff gages on downstream side of bridge at same site and datum.

Average discharge.--16 years, 1,425 cfs.

Extremes.--Maximum discharge during year, 9,460 cfs Apr. 14 (gage height, 13.56 ft); minimum daily, 316 cfs Oct. 6.
1942-58: Maximum discharge, 42,000 cfs Aug. 22, 1942 (gage height, 28.6 ft, from floodmark), from rating curve extended above 14,000 cfs on basis of slope-area measurement of peak flow; minimum daily, 260 cfs Sept. 6, 1948.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by Victoria powerplant on West Branch 5 miles above station, by Bond Falls Reservoir (see p. 36), and by Gogebic and Cisco Lakes (combined usable capacity, about 65,600 acre-ft).

Revisions (water years).--WSP 1387: 1943, 1946-47.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

5.4	310	8.0	1,960
6.0	540	11.0	5,630
7.0	1,130	12.0	7,120

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*681	562	910	590	780	1,070	2,100	1,540	900	2,420	708	1,040
2	525	642	800	740	830	1,010	3,000	1,500	904	*3,380	559	876
3	512	549	740	760	910	1,080	5,000	1,260	*888	3,200	530	*824
4	552	698	600	620	840	1,100	6,000	1,140	880	2,210	498	1,080
5	394	752	510	550	810	1,000	6,600	920	1,110	1,440	*643	1,070
6	316	618	810	620	810	920	5,600	*815	1,260	1,200	592	1,080
7	529	641	840	700	790	920	4,400	778	1,310	1,300	486	1,250
8	532	595	790	710	770	880	*4,680	774	1,850	1,450	590	1,140
9	516	888	770	720	740	920	4,510	700	1,410	1,700	637	1,070
10	568	849	750	680	810	920	4,460	797	1,130	4,240	554	1,010
11	457	918	710	640	790	920	4,780	918	1,060	2,850	672	668
12	372	1,060	670	580	750	900	4,970	978	944	1,780	645	540
13	398	1,200	730	780	720	900	4,940	994	809	1,230	679	490
14	638	2,030	820	800	720	920	5,740	828	716	1,020	729	450
15	540	4,060	780	760	740	950	6,100	760	622	1,510	564	513
16	516	2,840	800	720	600	900	5,370	692	629	1,680	490	555
17	592	1,870	740	670	760	920	4,530	630	642	1,270	477	640
18	543	1,390	760	650	770	930	3,360	568	667	1,070	490	667
19	495	1,140	800	660	680	900	2,040	659	710	902	442	634
20	513	841	850	780	760	900	1,820	600	544	999	403	585
21	689	898	900	760	720	960	1,390	659	390	934	406	618
22	520	970	820	660	740	980	1,390	668	459	769	459	706
23	651	1,070	900	740	820	1,010	1,820	636	504	871	477	688
24	605	1,100	770	720	880	1,030	1,770	612	536	840	508	705
25	564	1,100	870	720	820	1,050	1,440	696	710	1,030	526	692
26	713	1,050	910	540	870	1,080	1,270	986	2,670	913	486	702
27	534	1,030	910	780	930	1,180	1,170	2,250	2,300	1,130	459	684
28	668	1,000	830	770	1,020	1,250	995	1,520	1,430	1,590	438	539
29	677	930	800	700	-	1,250	1,000	1,190	988	1,210	454	614
30	666	1,000	800	770	-------	1,500	1,040	902	742	1,030	545	690
31	*594	-------	590	780	-------	1,750	-------	878	-------	928	1,020	-------
Total	17,070	34,291	24,280	21,670	22,180	32,000	103,285	28,848	29,714	48,096	17,166	22,820
Mean	551	1,143	783	699	792	1,032	3,443	931	990	1,551	554	761
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 13,200 Min 316 Mean 1,060 Cfsm 0.822 In. 11.16
Water year 1957-58: Max 6,600 Min 316 Mean 1,100 Cfsm 0.853 In. 11.58

Peak discharge (base, 9,000 cfs).--Apr. 14 (9 p.m.) 9,460 cfs (13.56 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice from about Nov. 24 to about Apr. 1. No gage-height record Nov. 24 to Apr. 7; discharge estimated on basis of weather records, records for nearby stations, and records of discharge at Victoria Dam.

405. Sturgeon River near Sidnaw, Mich.

Location.--Lat 46°35', long 88°35', in sec.5, T.48 N., R.34 W., on right bank 40 ft downstream from highway bridge, 2 miles downstream from Rock River, 3½ miles northwest of Covington, 4 miles upstream from Perch River, and 9 miles northeast of Sidnaw.

Drainage area.--171 sq mi.

Records available.--October 1912 to September 1915, April 1943 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 1,214.40 ft above mean sea level, datum of 1929. October 1912 to September 1915, staff gage at site 200 ft upstream at different datum. Apr. 2, 1943, to Oct. 1, 1946, chain and staff gages at old timber bridge 20 ft upstream at present datum.

Average discharge.--18 years, 204 cfs.

Extremes.--Maximum discharge during year, 1,630 cfs Apr. 17 (gage height, 7.89 ft); minimum, 27 cfs Aug. 23 (gage height, 3.88 ft).
1912-15, 1943-58: Maximum discharge, 3,670 cfs Apr. 30, 1951, Apr. 21, 1957; maximum gage height, 10.40 ft Apr. 21, 1957; minimum discharge, 4.6 cfs Oct. 8, 1948 (gage height, 3.47 ft).

Remarks.--Records excellent except those for period of ice effect, which are fair.

Revisions.--WSP 1507: Drainage area.

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 28				Mar. 29 to Sept. 30			
4.1	44	5.5	346	3.9	28	5.5	346
4.5	95	6.5	765	4.1	44	6.5	780
5.0	197			4.5	95	8.0	1,710
				5.0	197		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	137	92	170	88	82	105	153	339	259	549	117	168
2	119	89	160	84	80	105	210	332	230	598	99	171
3	106	83	150	82	78	105	312	306	195	515	86	143
4	95	80	145	80	76	96	417	277	171	395	75	171
5	86	80	135	78	74	90	506	242	230	326	65	173
6	80	77	130	76	70	84	527	214	244	306	55	175
7	74	76	125	76	68	82	*490	190	217	356	47	182
8	70	99	120	76	66	80	485	182	274	356	42	175
9	70	186	*120	76	64	76	481	179	283	356	40	168
10	72	202	115	78	*62	*78	523	233	244	515	61	149
11	72	214	115	78	60	74	608	265	210	481	60	125
12	70	202	115	78	58	74	690	244	184	398	71	104
13	63	220	110	*80	56	74	802	214	164	296	109	89
14	60	290	110	80	54	74	1,010	184	137	247	97	80
15	55	549	110	80	52	74	*1,320	157	115	366	75	88
16	57	549	110	78	52	72	*1,570	133	99	363	59	83
17	67	490	110	78	52	72	1,600	123	86	309	52	77
18	88	395	115	78	52	72	1,560	168	76	236	43	71
19	92	262	120	78	52	74	1,350	175	70	186	40	63
20	88	280	120	78	52	74	1,020	147	70	155	35	57
21	82	290	125	78	52	74	775	121	63	131	31	57
22	88	280	125	78	54	74	655	113	61	117	28	52
23	108	270	125	76	60	76	585	111	70	104	28	44
24	135	260	125	76	66	76	506	113	84	410	37	41
25	143	240	120	76	72	76	433	151	299	336	48	40
26	129	*220	115	76	82	76	363	171	*956	286	54	35
27	115	210	110	78	*90	78	312	309	1,320	271	53	34
28	108	200	105	80	98	84	283	*309	1,190	233	*45	32
29	102	190	100	82	-	95	290	265	765	207	41	32
30	*95	180	*95	*84	-------	106	*280	239	532	*193	47	*32
31	94	-------	92	84	-------	*127	-------	262	-------	147	92	-------
Total	2,820	6,855	3,742	2,448	1,834	2,575	20,116	6,468	8,898	9,744	1,832	2,911
Mean	91.0	228	121	79.0	65.5	83.1	671	209	297	314	59.1	97.0
Cfsm	0.532	1.33	0.708	0.462	0.383	0.486	3.92	1.22	1.74	1.84	0.346	0.567
In.	0.61	1.48	0.82	0.53	0.40	0.56	4.37	1.41	1.94	2.12	0.40	0.63

Calendar year 1957 : Max 3,400 Min 8.5 Mean 176 Cfsm 1.03 In. 13.96
Water year 1957-58 : Max 1,600 Min 28 Mean 192 Cfsm 1.12 In. 15.27

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 20 to Mar. 28.

415. Sturgeon River near Alston, Mich.

Location.--Lat 46°44', long 88°40', in SE¼ sec.15, T.50 N., R.35 W., on right bank in powerhouse of Upper Peninsula Power Co. at Prickett Dam, 3 miles upstream from Clear Creek and 5 miles southeast of Alston.

Drainage area.--346 sq mi.

Records available.--February 1932 to June 1941, October 1942 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 670.3 ft above mean tide at New York City (levels by Corps of Engineers).

Average discharge.--24 years (1932-40, 1942-58), 415 cfs.

Extremes.--Maximum discharge during year, 2,650 cfs Apr. 19 (gage height, 48.24 ft); minimum daily, 13 cfs Aug. 24, 31, Sept. 1, 14, 21, 28.
1932-41, 1942-58: Maximum discharge, 5,000 cfs Apr. 29, 1951 (gage height, 51.12 ft); minimum, 7.9 cfs Oct. 24, 1948.

Remarks.--Records good. Flow regulated by powerplant at station.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 16				Apr. 17 to Sept. 30			
43.7	84	45.0	490	43.0	9	44.3	250
44.1	170	46.0	1,040	43.2	23	45.0	520
44.5	288	48.0	2,460	43.4	45	46.0	1,040
				43.8	115	48.0	2,480

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	327	231	180	178	210	211	*355	556	389	849	341	13
2	295	225	320	246	214	149	456	552	372	1,090	329	310
3	260	211	330	200	140	207	555	556	370	836	122	290
4	272	223	240	170	138	319	661	556	417	695	257	310
5	105	284	220	145	209	429	1,130	556	467	605	173	310
6	101	204	220	216	202	279	1,200	556	560	541	223	310
7	153	200	230	214	216	279	888	556	530	680	183	240
8	260	217	300	216	219	275	912	556	552	663	164	314
9	155	321	290	209	153	175	917	552	428	846	204	324
10	170	314	296	208	232	153	*927	257	444	1,150	102	252
11	150	315	303	212	198	228	1,100	247	*538	853	250	254
12	170	326	299	208	222	216	1,170	278	441	674	251	241
13	210	345	214	207	139	218	1,270	351	450	597	193	187
14	240	382	207	249	137	217	1,540	344	442	514	218	13
15	220	546	223	246	138	219	1,800	362	185	636	192	324
16	220	861	225	207	135	217	*1,970	355	175	598	198	288
17	220	714	233	213	219	218	*2,000	355	213	620	152	220
18	220	706	225	206	218	162	1,940	273	300	534	269	117
19	200	639	233	210	134	231	1,830	299	129	534	235	166
20	135	530	231	204	133	218	1,250	273	209	408	240	166
21	220	540	230	216	238	218	1,080	273	124	403	236	13
22	220	545	267	214	140	172	960	270	89	394	218	246
23	160	535	267	219	133	166	880	263	344	434	267	243
24	220	540	263	215	212	138	780	266	361	338	13	245
25	160	*540	328	156	131	151	650	270	361	340	153	235
26	160	545	315	151	213	145	556	320	833	542	172	124
27	160	540	263	218	*211	138	540	*360	1,720	329	*224	114
28	210	535	272	217	205	182	538	446	1,740	366	154	13
29	220	442	272	202	-	215	*538	421	1,020	*490	200	*260
30	*230	350	*238	215	-------	219	542	266	974	336	180	157
31	225	-------	242	*211	-------	308	-------	436	-------	337	13	-------
Total	6,268	12,904	7,976	6,398	5,089	6,672	30,935	11,981	15,177	18,232	6,126	6,299
Mean	202	430	257	206	182	215	1,031	386	506	588	198	210
Cfsm	0.584	1.24	0.743	0.595	0.526	0.621	2.98	1.12	1.46	1.70	0.572	0.607
In.	0.67	1.38	0.86	0.69	0.55	0.72	3.32	1.29	1.63	1.96	0.66	0.68

Calendar year 1957: Max 4,590 Min 13 Mean 342 Cfsm 0.988 In. 13.38
Water year 1957-58: Max 2,000 Min 13 Mean 367 Cfsm 1.06 In. 14.41

* Discharge measurement made on this day.
Note.--No gage-height record Oct. 10-30, Nov. 30 to Dec. 9, Apr. 22, 23, 25, 27, May 26, 27, July 25, Aug. 29, 30, Sept. 2-6; discharge estimated on basis of records of kilowatt output.

425. Otter River near Elo, Mich.

Location.--Lat 46°52', long 88°37', in sec.34, T.52 N., R.34 W., on downstream side of highway bridge, 1¼ miles southeast of old Elo school and 3 miles upstream from Otter Lake.

Drainage area.--165 sq mi.

Records available.--October 1942 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Wire-weight gage and crest-stage indicator; gage read twice daily. Datum of gage is 617.88 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--16 years, 220 cfs.

Extremes.--Maximum discharge during year, 1,520 cfs Apr. 16 (gage height, 9.18 ft); minimum, 80 cfs Aug. 22 (gage height, 3.02 ft); minimum gage height, 2.98 ft Oct. 7, 10, 14. 1942-58: Maximum discharge, 4,540 cfs Apr. 19, 1952 (gage height, 13.52 ft); minimum observed, 68 cfs Nov. 18, 1947 (discharge measurement); minimum gage height, 2.88 ft Aug. 3, 1957.

Remarks.--Records good except those for period of ice effect, which are fair.

Revisions.--WSP 1507: Drainage area.

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 13		Apr. 14 to Sept. 30	
2.9	77	3.0	78
4.0	233	4.0	226
6.0	610	6.0	610
7.0	860	9.0	1,460

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	90	93	135	100	110	130	*276	413	179	376	102	338
2	88	93	125	100	110	130	389	326	158	440	88	228
3	87	93	120	100	105	130	487	275	148	289	94	163
4	87	93	115	100	105	130	537	234	132	218	90	358
5	87	95	110	100	105	130	660	200	174	218	89	316
6	87	95	110	105	105	125	600	181	165	221	85	358
7	87	95	110	105	100	125	434	166	146	214	86	387
8	87	108	105	105	98	120	*453	170	421	181	83	302
9	87	170	105	110	96	120	449	174	296	299	82	241
10	86	137	105	110	96	115	491	178	214	760	107	194
11	88	131	105	110	96	115	542	178	*171	451	96	160
12	87	138	105	110	94	115	630	158	144	309	117	146
13	87	140	105	110	94	115	722	144	132	216	117	134
14	*86	164	105	110	94	115	932	134	120	173	102	129
15	87	170	105	110	94	115	1,270	129	115	376	95	184
16	90	259	105	110	94	115	*1,350	122	107	306	84	190
17	98	194	110	105	94	115	*1,080	117	102	214	86	156
18	96	170	110	105	94	115	915	148	99	170	88	142
19	93	137	110	105	94	115	628	134	96	145	86	133
20	90	160	115	105	96	115	482	122	104	129	84	124
21	93	170	115	105	100	115	390	113	99	117	83	117
22	106	175	115	105	105	115	368	120	96	110	82	113
23	113	175	115	105	110	115	349	120	108	245	85	108
24	120	175	115	105	110	118	292	123	124	282	129	103
25	108	*175	115	105	120	121	252	195	197	282	144	111
26	103	175	110	105	*125	128	214	178	818	238	115	115
27	99	170	110	105	125	138	194	*218	632	170	*106	106
28	96	165	105	105	130	150	187	190	333	181	102	99
29	95	155	100	110	-	170	*246	170	238	*150	100	*102
30	*95	145	*100	110	-------	198	240	171	186	123	130	104
31	93	-------	100	*110	-------	232	-------	194	-------	110	372	-------
Total	2,896	4,415	3,415	3,285	2,899	4,005	16,059	5,495	6,054	7,713	3,309	5,461
Mean	93.4	147	110	106	104	129	535	177	202	249	107	182
Cfsm	0.566	0.891	0.667	0.642	0.630	0.782	3.24	1.07	1.22	1.51	0.648	1.10
In.	0.65	0.99	0.77	0.74	0.66	0.90	3.62	1.23	1.36	1.74	0.75	1.23

Calendar year 1957: Max 3,500 Min 72 Mean 180 Cfsm 1.09 In. 14.78
Water year 1957-58: Max 1,350 Min 82 Mean 178 Cfsm 1.08 In. 14.64

Peak discharge (base, 1,300 cfs).--Apr. 16 (8 a.m.) 1,520 cfs (9.18 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 20 to Mar. 22.

430. Sturgeon River near Arnheim, Mich.

Location.--Lat 46°56', long 88°33', in SE¼ sec.1, T.52 N., R.34 W., on right bank a quarter of a mile downstream from Otter Lake, 3 miles northwest of Arnheim, and 8½ miles northeast of Pelkie.

Drainage area.--703 sq mi.

Records available.--October 1942 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Staff gage read once daily. Datum of gage is 605.98 ft above mean tide at New York City (Corps of Engineers bench mark).

Average discharge.--16 years, 813 cfs.

Extremes.--Maximum discharge during year, 3,460 cfs Apr. 17 (gage height, 9.80 ft); minimum, 285 cfs Sept. 30 (gage height, 1.25 ft).
1942-58: Maximum discharge, 15,500 cfs Apr. 20, 1952 (gage height, 14.57 ft, from graph based on gage readings); minimum, 200 cfs Sept. 14, 1948; minimum gage height, 0.98 ft Aug. 30, 1957.

Remarks.--Records good.

Revisions (water years).--WSP 1387: 1943-45(M), 1950-52. WSP 1507: Drainage area.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Rate of change in stage used as a factor Apr. 5-9, 11-16, 19-23, June 28-30, July 2)

1.2	273
5.0	1,350
9.0	3,060
10.0	3,560

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	671	382	710	430	393	481	702	1,130	822	1,690	582	526
2	615	382	568	420	380	475	888	1,210	817	1,940	551	475
3	551	393	520	420	380	481	1,180	1,220	766	1,700	526	442
4	484	395	534	420	370	464	1,500	1,160	750	1,480	495	598
5	456	388	506	420	356	450	1,920	1,100	755	1,320	421	710
6	382	408	520	430	350	440	2,260	1,030	750	1,170	398	708
7	326	406	492	432	350	430	2,200	972	817	1,070	380	789
8	311	408	492	440	340	420	2,010	945	939	1,040	369	778
9	346	440	480	434	340	410	*1,950	939	1,100	1,040	344	716
10	331	492	480	461	330	410	1,960	921	1,030	1,320	338	671
11	326	528	470	429	330	400	2,010	834	951	1,680	349	626
12	311	526	460	429	330	400	2,120	772	*909	1,610	338	559
13	307	540	460	434	320	390	2,330	722	822	1,360	390	506
14	326	590	460	429	320	390	2,580	722	772	1,180	406	458
15	356	635	460	429	320	390	3,090	694	733	1,100	395	424
16	375	888	460	447	320	390	3,450	682	607	1,120	380	395
17	377	1,040	460	445	320	400	*3,440	660	492	1,100	364	458
18	388	1,050	475	440	320	400	3,420	666	442	1,040	349	470
19	388	1,050	481	429	330	400	3,180	626	447	927	344	437
20	382	972	492	424	330	400	2,850	598	421	850	369	401
21	362	900	542	424	330	400	2,370	559	395	794	372	356
22	362	853	540	419	330	400	1,970	554	364	694	369	344
23	393	822	556	414	340	400	1,780	542	349	694	364	314
24	382	859	570	414	340	410	1,630	526	393	778	380	344
25	393	*836	573	403	350	410	1,450	570	526	794	393	380
26	362	864	560	401	*360	414	1,290	598	719	750	338	390
27	356	879	540	380	390	432	1,150	*638	1,410	794	*344	382
28	346	882	510	388	440	461	1,060	744	1,950	800	344	334
29	356	864	480	388	-	509	1,020	839	1,920	*652	338	*309
30	*369	822	450	*403	--------	548	*1,010	822	1,700	694	356	285
31	372	--------	*440	401	--------	*615	--------	806	--------	632	416	--------
Total	12,062	20,494	15,741	13,077	9,709	13,420	59,770	24,801	24,868	33,813	12,102	14,585
Mean	389	683	508	422	347	433	1,992	800	829	1,091	390	486
Cfsm	0.553	0.972	0.723	0.600	0.494	0.616	2.83	1.14	1.18	1.55	0.555	0.691
In.	0.64	1.08	0.83	0.69	0.51	0.71	3.16	1.31	1.32	1.79	0.64	0.77

Calendar year 1957: Max 8,480 Min 226 Mean 644 Cfsm 0.916 In. 12.43
Water year 1957-58: Max 3,450 Min 285 Mean 697 Cfsm 0.991 In. 13.45

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 9-17, Dec. 26 to Jan. 6, Feb. 2-4, 6-28, Mar. 5-25.

455. Tahquamenon River near Tahquamenon Paradise, Mich.

Location.--Lat 46°34'30", long 85°16'10", in NE¼ sec.11, T.48 N., R.8 W., on left bank 0.7 mile upstream from Tahquamenon (Big) Falls, 11.5 miles west of Tahquamenon Paradise, and 19 miles northeast of Newberry.

Drainage area.--790 sq mi.

Records available.--August 1953 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 697 ft (from river-profile map).

Average discharge.--5 years, 809 cfs.

Extremes.--Maximum daily discharge during year, 2,770 cfs Nov. 21, 22; minimum discharge, 163 cfs Aug. 8 (gage height, 2.97 ft).
1953-58: Maximum discharge, 5,740 cfs Apr. 26, 1957 (gage height, 9.43 ft); minimum, 157 cfs July 26, 1955 (gage height, 2.88 ft).

Remarks.--Records excellent.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 11-30)

2.9	152	5.0	1,030
3.5	334	6.0	1,700
4.0	522	8.0	3,760

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	462	596	1,440	1,180	458	390	1,030	1,960	514	368	237	522
2	438	570	1,290	1,100	462	400	1,180	1,860	502	415	225	561
3	423	548	1,200	1,020	466	412	1,350	1,760	466	466	204	539
4	400	526	1,100	940	482	423	1,540	1,660	434	466	204	514
5	379	510	1,030	866	458	431	1,720	1,590	393	606	195	514
6	361	510	930	785	455	442	1,900	1,490	419	904	189	544
7	351	486	850	730	450	450	2,000	1,410	419	1,040	177	637
8	341	526	780	691	440	458	2,100	1,260	419	1,100	174	740
9	334	700	710	642	430	466	2,100	1,160	498	1,110	183	795
10	337	866	660	596	415	470	*2,080	1,060	522	1,110	192	850
11	344	958	600	561	400	470	2,040	928	518	1,100	216	910
12	344	*1,030	*544	544	390	470	2,030	833	510	1,040	222	928
13	344	1,100	526	522	370	466	2,070	765	474	976	231	916
14	337	1,200	518	506	365	462	2,140	*673	458	877	237	904
15	*331	1,500	514	494	360	458	*2,280	606	423	755	234	838
16	351	1,720	514	490	350	454	2,410	565	382	*650	240	750
17	397	1,980	510	482	350	454	2,530	518	*351	578	228	678
18	478	2,150	506	474	*340	*454	2,570	518	324	502	*231	*614
19	531	2,470	601	466	340	458	2,580	608	305	462	240	552
20	548	2,690	822	446	340	462	2,550	664	278	450	222	494
21	544	2,770	1,050	*434	345	470	2,500	682	264	415	213	446
22	531	2,770	1,190	431	344	494	2,460	664	264	372	210	466
23	439	2,700	1,300	427	344	514	2,530	660	255	341	213	462
24	601	2,550	1,420	423	344	535	2,510	624	246	315	246	434
25	668	2,350	1,490	419	348	556	2,550	601	255	292	328	408
26	696	2,210	1,510	419	348	583	2,520	642	289	289	390	397
27	700	2,070	1,490	419	351	614	2,460	637	341	273	400	372
28	678	1,980	1,450	423	368	668	2,340	637	386	261	372	358
29	660	1,860	1,400	427	-	715	2,220	642	375	258	354	354
30	632	1,620	1,320	442	-------	800	2,100	592	358	246	379	341
31	614	-------	1,250	446	-------	904	-------	581	-------	240	462	-------
Total	14,694	45,516	30,515	18,245	10,893	15,803	64,390	28,828	11,640	18,277	7,848	17,838
Mean	474	1,517	984	589	389	510	2,148	930	388	590	253	595
Cfsm	0.600	1.92	1.25	0.746	0.492	0.646	2.72	1.18	0.491	0.747	0.320	0.753
In.	0.69	2.14	1.44	0.86	0.51	0.74	3.04	1.36	0.55	0.86	0.37	0.84

Calendar year 1957: Max 5,730 Min 213 Mean 995 Cfsm 1.26 In. 17.08
Water year 1957-58: Max 2,770 Min 174 Mean 779 Cfsm 0.986 In. 13.40

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Feb. 6-21.

460. Black River near Garnet, Mich.

Location.--Lat 46°07'05", long 85°21'55", in SE¼ sec.13, T.43 N., R.9 W., on right bank 10 ft upstream from highway bridge, 15 ft downstream from unnamed tributary entering from right, 3½ miles upstream from Lake Michigan, and 4 miles southwest of Garnet.

Drainage area.--28 sq mi, approximately.

Records available.--September 1951 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 629.7 ft above mean sea level, datum of 1929.

Average discharge.--7 years, 25.5 cfs.

Extremes.--Maximum discharge during year, 148 cfs Nov. 15, 19 (gage height, 4.48 ft); minimum, 7.5 cfs Aug. 23 (gage height, 2.21 ft).
1951-58: Maximum discharge, 690 cfs Apr. 20, 1957 (gage height, 7.95 ft), from rating curve extended above 400 cfs by logarithmic plotting; minimum, 4.9 cfs Mar. 11, 1956 (gage height, 2.10 ft).

Remarks.--Records good. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.2	7.3	4.0	107
2.4	14	5.0	200
3.0	41		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	18	30	28	16	15	40	44	17	13	8.6	16
2	14	18	28	26	17	15	48	39	16	13	8.6	16
3	14	17	27	25	17	15	57	46	15	12	8.6	15
4	13	16	26	24	17	15	73	40	14	12	8.6	16
5	13	16	25	22	16	15	113	36	15	28	8.3	14
6	13	15	24	b21	b16	15	99	33	15	24	8.3	21
7	12	17	24	b21	16	14	69	30	14	22	8.6	22
8	12	44	22	b20	16	14	61	28	19	20	8.3	26
9	12	61	22	20	16	14	51	26	17	19	8.6	24
10	12	49	22	20	15	13	*48	25	16	28	10	28
11	12	43	b21	20	b15	13	52	25	16	23	9.2	24
12	12	*43	*20	19	b15	13	55	23	15	20	8.9	22
13	12	41	20	19	b14	13	55	21	14	17	8.6	20
14	11	59	20	18	b14	12	55	*20	13	15	8.9	18
15	*11	140	20	18	14	12	*56	19	13	15	8.6	16
16	31	125	20	18	b13	12	56	18	13	*16	8.6	14
17	38	108	19	18	b13	12	*54	18	*12	14	8.9	13
18	32	86	20	16	*b13	*12	51	28	12	14	*8.3	*12
19	28	140	46	17	b12	12	46	28	12	14	7.8	11
20	24	125	58	17	12	13	43	24	12	13	8.1	10
21	22	85	67	*16	13	13	40	22	11	12	7.8	12
22	21	65	62	16	13	14	55	21	11	11	7.8	13
23	32	56	63	16	13	15	71	20	11	11	8.3	12
24	33	54	61	16	13	16	71	19	11	10	15	12
25	28	45	51	16	13	16	75	22	12	10	13	13
26	25	40	46	16	13	18	64	20	14	9.8	10	13
27	23	36	40	16	14	19	56	22	14	9.5	9.5	12
28	22	36	38	17	15	22	51	21	12	9.8	9.2	12
29	20	35	34	17	-	24	52	19	11	9.5	9.5	12
30	20	32	32	18	-------	28	45	18	12	9.5	12	13
31	20	-------	30	18	-------	34	-------	18	-------	8.9	19	-------
Total	607	1,665	1,038	591	406	486	1,762	793	409	463.0	293.5	482
Mean	19.6	55.5	33.5	19.1	14.5	15.7	58.7	25.6	13.6	14.9	9.47	16.1
Cfsm	0.700	1.98	1.20	0.682	0.518	0.561	2.10	0.914	0.486	0.532	0.338	0.575
In.	0.81	2.21	1.38	0.79	0.54	0.65	2.34	1.05	0.54	0.61	0.39	0.64

Calendar year 1957: Max 497 Min 9.2 Mean 31.9 Cfsm 1.14 In. 15.45
Water year 1957-58: Max 140 Min 7.8 Mean 24.7 Cfsm 0.882 In. 11.95

Peak discharge (base, 120 cfs).--Nov. 15 (5 a.m.) 148 cfs (4.48 ft); Nov. 19 (1 p.m.) 148 cfs (4.48 ft); Apr. 5 (6 a.m.) 123 cfs (4.20 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

495. Manistique River at Germfask, Mich.

Location.--Lat 46°14'00", long 85°55'40", in SE¼ sec.4, T.44 N., R.13 W., on left bank 600 ft upstream from bridge on State Highway 77, 1 mile south of Germfask, 1½ miles upstream from Grays Creek, and at mile 62.5.

Drainage area.--341 sq mi.

Records available.--March 1938 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 662.40 ft above mean sea level (levels by Michigan Department of Conservation). Prior to Dec. 29, 1938, staff gage at site 600 ft downstream at different datum.

Average discharge.--20 years, 434 cfs.

Extremes.--Maximum discharge during year, 861 cfs Nov. 20 (gage height, 3.90 ft); maximum gage height, 5.41 ft Feb. 9 (ice jam); minimum discharge, 162 cfs Aug. 9 (gage height, 0.88 ft).

1938-58: Maximum discharge, 2,130 cfs Apr. 1, 1938 (gage height, 8.50 ft, from graph based on gage readings, site and datum then in use); minimum, 135 cfs July 25, 26, 1955 (gage height, 0.77 ft).

Remarks.--Records excellent except those for periods of ice effect, which are good. Since July 1948, summer low flows affected by regulation of Manistique Lake.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.8	151
2.0	363
4.0	888

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	341	384	530	500	388	365	480	626	282	235	190	305
2	352	379	520	490	388	361	522	610	273	266	177	379
3	343	372	510	480	390	359	582	605	260	276	174	354
4	350	365	500	470	390	359	629	589	252	264	170	345
5	352	363	490	460	384	363	664	571	248	381	168	345
6	348	363	483	460	380	365	704	543	252	475	165	361
7	343	363	480	450	380	359	677	511	248	483	165	398
8	341	404	460	440	370	359	699	488	248	550	164	449
9	341	504	430	440	370	359	*664	470	262	540	165	449
10	348	530	400	440	360	359	650	462	260	558	180	446
11	354	532	*350	430	350	356	640	459	254	535	202	444
12	352	*548	370	430	350	352	640	396	252	488	204	428
13	348	566	390	430	350	350	656	*303	247	428	196	406
14	345	592	390	430	350	350	680	282	240	384	199	370
15	341	680	394	426	350	348	*718	273	228	368	201	348
16	*361	710	408	420	340	348	748	264	*218	370	196	335
17	408	723	428	420	340	*350	764	255	214	*359	190	*322
18	426	734	459	410	340	350	766	301	207	337	*188	307
19	424	820	532	410	*340	348	758	370	202	337	185	295
20	411	858	621	400	350	348	748	370	201	335	180	290
21	396	834	634	400	360	348	726	348	201	312	178	288
22	388	794	621	*400	360	356	740	316	199	250	174	305
23	428	760	640	400	370	359	785	295	196	222	170	314
24	457	712	658	400	380	359	780	282	196	215	198	301
25	454	672	648	398	380	359	785	291	198	214	245	293
26	444	672	626	394	380	363	780	314	217	209	255	293
27	426	613	600	388	380	370	750	316	247	201	240	288
28	406	584	584	388	372	379	712	312	252	198	225	282
29	396	563	561	391	-	391	677	297	230	198	215	278
30	388	545	540	394	------	411	642	286	222	196	217	280
31	386	------	520	391	------	444	------	284	------	198	271	------
Total	11,798	17,539	15,777	13,180	10,242	11,247	20,766	12,089	7,006	10,382	6,047	10,298
Mean	381	585	509	425	366	363	692	390	234	335	195	343
Cfsm	1.12	1.72	1.49	1.25	1.07	1.06	2.03	1.14	0.686	0.982	0.572	1.01
In.	1.29	1.92	1.72	1.44	1.11	1.22	2.26	1.31	0.77	1.13	0.66	1.13

Calendar year 1957: Max 1,720 Min 165 Mean 433 Cfsm 1.27 In. 17.23
Water year 1957-58: Max 858 Min 164 Mean 401 Cfsm 1.18 In. 15.96

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 23, Dec. 1-5, 7-14, Dec. 30 to Jan. 14, Jan. 16-24, Feb. 3, 4, 6-27.

550. Manistique River near Blaney, Mich.

Location.--Lat 46°05'05", long 86°03'35", in SE¼ sec.28, T.43 N., R.14 W., on left bank 40 ft downstream from logging bridge, half a mile downstream from Duck Creek, 7 miles southwest of Blaney, and at mile 34.5.

Drainage area.--704 sq mi.

Records available.--March 1938 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 612.55 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to July 24, 1939, chain gage on downstream side of bridge 40 ft upstream at same datum.

Average discharge.--20 years, 806 cfs.

Extremes.--Maximum discharge during year, 1,980 cfs Nov. 21 (gage height, 13.35 ft); minimum, 226 cfs Aug. 23 (gage height, 5.83 ft).
1938-58: Maximum discharge, 9,300 cfs Apr. 1, 1938 (gage height, 19.42 ft, from graph based on gage readings), from rating curve extended above 6,100 cfs by logarithmic plotting; minimum, 182 cfs July 26, 1955.

Remarks.--Records excellent except those for period of shifting-control, which are good, and those for period of ice effect, which are fair. Since July 1948, summer low flows slightly affected by regulation of Manistique Lake level.

Revisions (water years).--WSP 874: 1938. WSP 1387: 1945.

Rating tables, water year 1957-58, except periods of ice effect or shifting control (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 24		Mar. 25 to Sept. 30	
7.0	405	5.8	222
12.0	1,580	7.0	427
14.0	2,180	13.0	1,910

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	494	539	1,080	820	620	630	1,120	1,330	497	383	319	438
2	492	532	1,000	800	620	630	1,290	1,290	475	447	292	462
3	498	524	930	770	620	620	1,450	1,230	453	469	272	489
4	498	514	870	750	620	620	1,600	1,210	438	460	262	484
5	498	508	810	740	620	620	1,680	1,170	431	658	254	475
6	480	502	760	730	620	620	1,800	1,110	431	989	248	502
7	472	504	720	720	610	630	1,870	1,030	438	1,030	246	566
8	464	566	680	710	600	630	1,870	965	440	1,040	245	616
9	466	782	650	700	590	630	*1,840	900	445	1,050	240	638
10	460	862	620	700	580	620	1,770	835	451	1,050	248	634
11	444	*869	*600	700	570	620	1,720	809	467	1,060	266	623
12	442	888	600	690	560	620	1,700	775	451	998	281	614
13	434	931	600	680	550	610	1,710	*665	449	893	276	588
14	*428	994	610	680	540	610	1,720	585	427	792	269	555
15	422	1,230	640	680	540	610	1,700	*552	407	*756	272	515
16	450	1,400	670	680	540	610	1,780	528	*385	753	269	486
17	528	1,480	710	680	*540	*610	*1,780	506	363	722	266	*464
18	566	1,500	760	670	550	610	1,770	522	352	680	257	445
19	566	1,680	830	660	560	620	1,730	621	342	665	*250	423
20	547	1,930	930	*660	570	620	1,660	638	331	643	244	407
21	528	1,970	990	650	590	630	1,590	618	323	612	236	399
22	516	1,880	1,010	650	610	640	1,580	583	316	563	232	409
23	558	1,770	1,020	640	630	650	1,690	535	311	484	230	434
24	649	1,730	1,030	640	640	660	1,740	522	305	442	257	431
25	661	1,570	1,010	640	650	698	1,760	526	307	412	311	423
26	644	1,510	980	640	650	710	1,730	546	327	387	338	407
27	622	1,440	950	630	650	727	1,660	568	373	369	329	403
28	595	1,320	920	630	640	765	1,570	555	395	358	310	393
29	570	1,260	900	630	-	816	1,490	530	381	347	295	383
30	556	1,190	870	630	-------	885	1,390	513	361	338	303	381
31	547	-------	840	630	-------	991	-------	502	-------	326	358	-------
Total	16,095	34,375	25,590	21,230	16,680	20,562	49,760	23,269	11,872	20,176	8,475	14,487
Mean	519	1,146	825	685	596	663	1,659	751	396	651	273	483
Cfsm	0.737	1.63	1.17	0.973	0.847	0.942	2.36	1.07	0.562	0.925	0.388	0.686
In.	0.85	1.82	1.35	1.12	0.88	1.09	2.63	1.23	0.63	1.07	0.45	0.77

Calendar year 1957: Max 3,660 Min 205 Mean 788 Cfsm 1.12 In. 15.20
Water year 1957-58: Max 1,970 Min 230 Mean 719 Cfsm 1.02 In. 13.89

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 2 to Mar. 24 (no gage-height record Feb. 24 to Mar. 10; discharge estimated on the basis of recorded range in stage, weather records, and records for nearby stations). Shifting-control method used Apr. 27 to June 12.

565. Manistique River near Manistique, Mich.

Location.--Lat 46°01'50", long 86°09'40", in SE¼ sec.15, T.42 N., R.15 W., on left bank 1 mile downstream from West Branch, 6 miles northeast of Manistique, and at mile 19.5.

Drainage area.--1,100 sq mi, approximately.

Records available.--March 1938 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 608 ft (from river-profile map). Prior to July 15, 1939, chain gage at site 1,600 ft upstream at different datum.

Average discharge.--20 years, 1,321 cfs.

Extremes.--Maximum discharge during year, 3,700 cfs Apr. 25, 26 (gage height, 8.12 ft); minimum, 383 cfs Aug. 23 (gage height, 1.54 ft).
1938-58: Maximum discharge, 13,600 cfs Apr. 27, 1939 (gage height, 12.59 ft, present site and datum); minimum, 288 cfs Oct. 4, 1948; minimum gage height, 1.01 ft Aug. 23, 1941.

Remarks.--Records excellent except those for periods of no gage-height record, which are good, and those for period of ice effect, which are fair. Since July 1948, summer flows slightly affected by regulation of Manistique Lake level.

Revisions (water years).--WSP 1387: 1938-39, 1940(M), 1942(M), 1943, 1945.

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to July 8		July 9 to Sept. 30	
2.0	500	1.5	372
4.0	1,240	3.0	860
7.0	2,880	5.0	1,740
9.0	4,520	6.0	2,300

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	754	818	1,800	1,220	940	930	1,520	2,730	886	768	564	669
2	750	803	1,640	1,200	940	920	1,760	2,580	855	848	538	706
3	740	792	1,500	1,160	940	920	2,020	2,470	822	918	506	730
4	730	775	1,400	1,140	940	920	2,330	2,370	789	954	478	737
5	720	768	1,300	1,100	930	920	2,580	2,250	772	1,160	463	734
6	700	758	1,200	1,100	920	920	2,850	2,120	754	1,640	451	764
7	680	754	1,150	1,080	900	920	3,060	1,960	744	1,880	439	835
8	660	826	1,100	1,060	880	920	3,150	1,840	761	1,990	436	920
9	650	1,070	1,050	1,060	870	920	3,170	1,710	764	2,110	424	980
10	650	1,270	1,000	1,050	850	920	3,120	1,590	764	2,110	433	988
11	640	1,330	970	1,040	840	920	*3,070	1,500	782	2,080	439	960
12	640	1,380	950	1,030	820	910	3,030	1,440	782	1,880	460	932
13	630	*1,440	950	1,030	810	910	3,020	1,340	775	1,660	469	892
14	*630	1,520	950	1,020	800	910	3,060	1,190	744	1,460	460	849
15	620	1,800	970	1,020	790	900	3,150	*1,100	712	*1,310	457	802
16	660	2,110	1,020	1,010	780	900	3,260	1,030	*678	1,270	445	754
17	720	2,360	1,100	1,000	*780	900	3,380	982	636	1,220	442	*717
18	800	2,520	1,180	990	800	900	3,500	990	610	1,160	433	686
19	822	2,800	1,280	980	820	*900	3,610	1,080	588	1,110	*418	659
20	807	3,000	1,380	*960	850	910	3,610	1,140	575	1,060	418	635
21	786	3,100	1,450	960	880	920	3,540	1,120	556	1,010	406	621
22	768	3,150	1,520	960	900	940	3,480	1,070	540	948	392	618
23	803	3,150	1,530	960	920	960	3,500	1,000	528	849	389	625
24	906	3,050	1,520	960	940	980	3,620	958	512	774	421	650
25	966	2,900	1,500	960	960	1,000	3,690	950	512	734	484	650
26	968	2,710	1,480	960	960	1,050	3,680	958	559	696	532	640
27	954	2,600	1,420	950	950	1,100	3,570	978	655	666	538	620
28	926	2,400	1,380	950	940	1,140	3,380	978	733	645	519	600
29	894	2,210	1,340	950	-	1,180	3,170	938	768	621	493	590
30	866	2,060	1,300	940	-------	1,250	2,940	910	750	605	509	576
31	840	-------	1,260	940	-------	1,380	-------	894	-------	586	570	-------
Total	23,678	56,224	39,590	31,740	24,650	30,170	92,820	44,166	20,906	36,722	14,426	22,139
Mean	764	1,874	1,277	1,024	880	973	3,094	1,425	697	1,185	465	738
Cfsm	0.695	1.70	1.16	0.931	0.800	0.885	2.81	1.30	0.634	1.08	0.423	0.671
In.	0.80	1.90	1.34	1.07	0.83	1.02	3.14	1.50	0.71	1.24	0.49	0.75

Calendar year 1957: Max 7,270 Min 331 Mean 1,304 Cfsm 1.19 In. 16.11
Water year 1957-58: Max 3,690 Min 389 Mean 1,198 Cfsm 1.09 In. 14.79

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 3 to Mar. 27. No gage-height record Oct. 2-18, Nov. 19-25, Sept. 24-29; discharge estimated on basis of weather records, 1 discharge measurement, observer's readings, recorded range in stage, and records for nearby stations.

570. Indian River near Manistique, Mich.

Location.--Lat 45°59'30", long 86°17'15", in NE¼ sec.34, T.42 N., R.16 W., on shore of Indian Lake just upstream from highway bridge over outlet of Indian Lake, 2 miles northwest of Manistique.

Drainage area.--302 sq mi.

Records available.--March 1938 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 608.66 ft above mean sea level (levels by Michigan Department of Conservation). Prior to July 9, 1942, chain gage at highway bridge 30 ft downstream at same datum. Since Jan. 18, 1944, auxiliary staff gage on right bank 1½ miles downstream at same datum, read twice daily.

Average discharge.--20 years, 371 cfs.

Extremes.--Maximum daily discharge during year, 623 cfs Nov. 27; maximum gage height, 5.18 ft Nov. 22; minimum daily discharge, 86 cfs Nov. 5; minimum gage height, 3.72 ft Feb. 22-26.

1938-58: Maximum discharge, 1,550 cfs June 24, 1943 (gage height, 7.79 ft), from rating curve extended above 660 cfs on basis of computation of peak flow over dam; minimum daily, about 20 cfs Nov. 23, 1946 (caused by ice jams at outlet of Indian Lake); minimum gage height, 2.22 ft Nov. 17, 1955 (ice jam at outlet of Indian Lake); almost no flow occasionally when ice jams form at lake outlet.

Remarks.--Records good except those below 200 cfs, which are fair. Indian Lake regulated by needles in gate section of concrete dam 1½ miles below gage.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	358	303	579	444	331	282	307	*515	154	366	133	484
2	352	303	560	435	329	288	311	501	151	380	150	473
3	349	224	541	427	325	294	320	514	141	386	155	475
4	344	94	543	418	323	291	327	505	135	382	143	480
5	341	86	529	404	316	291	327	501	170	410	137	465
6	340	90	520	404	314	294	346	494	146	464	149	482
7	336	120	511	403	316	294	375	485	156	524	172	474
8	334	337	496	393	313	294	389	480	175	551	160	467
9	336	340	483	389	309	294	393	465	167	560	145	473
10	326	352	484	388	313	294	397	460	177	570	159	463
11	323	*423	475	381	306	294	408	455	154	572	143	450
12	317	428	463	374	300	294	414	445	323	575	155	447
13	314	428	*477	368	296	294	417	440	395	562	150	435
14	*312	441	438	366	289	294	421	435	390	560	150	435
15	304	464	423	360	288	294	428	*423	380	556	150	430
16	311	477	424	358	288	294	439	412	370	551	150	424
17	311	491	416	357	288	297	450	404	362	*534	150	404
18	305	498	414	353	288	297	455	409	*357	536	136	401
19	303	568	426	344	*286	*300	459	403	352	526	*146	*389
20	300	590	429	346	282	297	462	398	91	502	146	375
21	304	596	430	345	282	297	463	390	132	493	151	372
22	304	542	430	*341	280	297	486	385	150	484	150	370
23	303	613	438	337	278	297	490	375	176	471	149	364
24	311	596	445	335	279	294	510	371	125	469	211	356
25	311	611	444	335	279	294	518	378	169	463	247	351
26	311	620	454	338	279	291	514	365	393	450	246	347
27	306	623	449	338	285	291	511	144	374	300	243	340
28	303	614	459	335	285	294	514	98	375	254	243	332
29	303	604	459	328	-	296	529	98	380	251	255	334
30	307	594	452	332	------	299	519	113	376	244	273	337
31	303	------	448	335	------	303	------	114	------	137	350	------
Total	9,882	13,070	14,509	11,411	8,347	9,124	12,899	11,975	7,376	14,083	5,497	12,429
Mean	319	436	468	368	298	294	430	386	246	454	177	414
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 691 Min 31 Mean 356 Cfsm 1.18 In. 16.02
Water year 1957-58: Max 623 Min 86 Mean 358 Cfsm 1.19 In. 16.15

* Discharge measurement made on this day.

Note.--No gage-height record May 7-14, July 27, Aug. 13-17, 31; discharge estimated on basis of weather records, and gage-height records at 1 of 2 gages.

580. Middle Branch Escanaba River near Ishpeming, Mich.

Location.--Lat 46°23'40", long 87°45'30", in NW¼SW¼ sec.12, T.46 N., R.28 W., on left bank half a mile downstream from County Highway 581, 6 miles southwest of Ishpeming, and 10 miles east of Republic.

Drainage area.--128 sq mi.

Records available.--June 1954 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,389.02 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Extremes.--Maximum discharge during year, 714 cfs Apr. 18 (gage height, 6.04 ft); minimum, 29 cfs Mar. 22 (gage height, 1.44 ft).
1954-58: Maximum discharge, 1,510 cfs Apr. 15, 1955 (gage height, 9.56 ft); minimum, 12 cfs Aug. 21-23, 1957; minimum gage height, 1.17 ft Aug. 22, 23, 1957.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 25 to Sept. 30)

1.4	26
1.7	55
2.0	96
6.0	707

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	71	100	78	46	60	83	193	120	337	88	88
2	67	67	95	74	46	60	106	187	118	456	72	69
3	60	64	91	70	45	59	146	180	104	466	63	65
4	58	72	86	68	44	58	191	184	99	334	54	109
5	58	68	83	66	44	57	236	162	262	260	47	121
6	51	62	80	64	44	56	264	141	349	246	42	130
7	45	55	78	63	43	54	244	127	262	313	39	144
8	51	65	76	62	43	52	280	121	214	367	36	145
9	45	111	75	62	43	50	270	113	212	306	37	142
10	42	127	*74	62	*43	*50	292	125	176	280	65	113
11	41	131	74	62	43	50	*328	145	187	262	76	95
12	39	118	75	62	43	52	370	135	197	202	67	78
13	37	116	75	*62	43	52	416	120	160	162	69	65
14	*37	*138	76	62	43	52	468	*104	131	142	68	58
15	37	228	76	61	43	52	535	95	109	181	60	60
16	43	308	77	61	43	51	*614	89	92	218	52	59
17	60	313	78	60	44	50	685	85	*81	177	45	54
18	65	244	78	60	44	50	695	103	69	138	41	*54
19	68	162	90	60	44	51	636	107	65	114	40	58
20	65	180	120	60	45	52	549	93	90	100	35	45
21	62	190	130	59	46	52	445	83	104	88	33	41
22	59	180	121	57	47	52	374	79	88	76	31	37
23	75	170	117	55	48	53	336	75	92	*71	32	34
24	104	155	110	54	50	54	300	74	127	241	36	33
25	111	140	102	53	51	54	253	81	318	230	43	32
26	102	130	100	52	54	53	218	85	574	155	*41	32
27	92	125	96	51	56	54	191	82	678	132	38	32
28	85	120	95	50	59	58	180	85	693	153	38	30
29	85	110	93	49	-	60	200	82	532	155	42	30
30	82	105	89	48	-------	67	201	85	313	125	48	30
31	76	-------	82	47	-------	71	-------	95	-------	102	75	-------
Total	1,976	4,125	2,792	1,854	1,287	1,696	10,106	3,515	6,616	6,589	1,553	2,083
Mean	63.7	138	90.1	59.8	46.0	54.7	337	113	221	213	50.1	69.4
Cfsm	0.498	1.08	0.704	0.467	0.359	0.427	2.63	0.883	1.75	1.66	0.391	0.542
In.	0.57	1.20	0.81	0.54	0.37	0.49	2.93	1.02	1.93	1.91	0.45	0.60

Calendar year 1957: Max 1,370 Min 12 Mean 103 Cfsm 0.805 In. 10.94
Water year 1957-58: Max 695 Min 30 Mean 121 Cfsm 0.945 In. 12.82

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 20-23, 25, 26, Nov. 29 to Dec. 17, Jan. 1 to Mar. 11. No gage-height record Feb. 11-19, May 10-13; discharge estimated on basis of weather records, recorded range in stage, and records for nearby stations.

585. East Branch Escanaba River at Gwinn, Mich.

Location.--Lat 46°17'10", long 87°26'00", in NE¼ sec.21, T.45 N., R.25 W., on right bank in county park at Gwinn, 1 mile upstream from mouth.

Drainage area.--125 sq mi.

Records available.--October 1954 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,079.2 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 761 cfs Apr. 17 (gage height, 10.97 ft); minimum, 26 cfs Mar. 12 (gage height, 6.63 ft).
1954-58: Maximum discharge, 1,030 cfs Apr. 15, 1955 (gage height, 12.01 ft); minimum, 23 cfs Aug. 22, 23, 1957 (gage height, 6.54 ft).

Remarks.--Records good except those for periods of no gage-height record, which are fair. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

6.7	29	8.0	158
7.0	47	9.0	330
7.5	95	11.0	768

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	44	49	69	55	37	53	105	162	81	141	81	76
2	41	47	67	52	36	53	132	154	87	225	70	59
3	39	46	64	49	36	53	174	150	78	201	61	58
4	38	44	62	46	35	52	220	143	71	138	55	103
5	36	44	61	46	35	51	274	131	129	170	50	94
6	36	42	60	46	35	50	287	120	236	200	46	101
7	35	41	58	46	35	49	242	114	186	250	44	117
8	34	53	57	45	35	46	283	112	148	290	42	103
9	34	108	55	45	34	44	251	111	134	240	41	93
10	34	101	*54	44	*34	*43	245	114	113	220	66	79
11	35	95	53	44	34	43	*265	125	103	200	77	66
12	32	84	54	44	34	44	303	119	97	150	64	59
13	32	90	54	*43	33	45	362	105	93	120	61	53
14	32	*118	55	43	33	46	444	*92	78	105	57	51
15	*31	230	55	42	33	45	582	87	72	135	53	48
16	35	300	54	42	33	46	*739	81	63	160	49	46
17	41	250	53	42	33	46	725	78	*58	125	49	45
18	45	200	53	41	34	46	639	113	54	100	46	*48
19	45	130	66	41	35	46	516	120	53	82	44	42
20	42	140	85	41	36	46	400	100	54	70	42	40
21	39	150	91	40	37	46	328	85	61	62	40	42
22	38	140	85	40	39	46	310	80	55	56	38	38
23	49	125	84	39	41	47	303	77	55	*53	38	36
24	78	115	82	39	43	48	267	74	71	218	43	35
25	77	105	81	39	44	49	233	77	117	454	44	35
26	67	94	75	39	47	51	204	76	196	428	*42	39
27	60	87	73	40	52	55	185	72	224	225	39	37
28	54	81	70	40	53	60	172	71	169	175	38	55
29	51	76	64	39		66	178	68	117	166	41	34
30	49	72	60	38		78	169	70	95	129	45	33
31	50		56	37		95		78		99	57	
Total	1,353	3,257	2,010	1,327	1,046	1,588	9,537	3,159	3,148	5,387	1,563	1,745
Mean	43.6	109	64.8	42.8	37.4	51.2	318	102	105	174	50.4	58.2
Cfsm	0.349	0.872	0.518	0.342	0.299	0.410	2.54	0.816	0.840	1.39	0.403	0.466
In.	0.40	0.97	0.60	0.39	0.31	0.47	2.83	0.94	0.94	1.60	0.46	0.52

Calendar year 1957: Max 648 Min 24 Mean 79.8 Cfsm 0.638 In. 8.66
Water year 1957-58: Max 739 Min 31 Mean 96.2 Cfsm 0.770 In. 10.43

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 8 to Feb. 22, Mar. 9-13, 22-28. No gage-height record Nov. 15 to Dec. 9, July 5-22; discharge estimated on basis of weather records and records for nearby stations.

590. Escanaba River at Cornell, Mich.

Location.--Lat 45°54'40", long 87°12'50", in sec.32, T.41 N., R.24 W., on right bank 50 ft downstream from highway bridge, half a mile downstream from Bob's Creek, three-quarters of a mile northeast of Cornell, and 15 miles upstream from mouth.

Drainage area.--870 sq mi.

Records available.--August 1903 to December 1912, January 1913 to November 1915 (gage heights only), October 1950 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Published as "near Escanaba" 1903-15.

Gage.--Water-stage recorder. Datum of gage is 749.26 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). August 1903 to November 1915 chain gage at site 11 miles downstream at different datum.

Average discharge.--17 years (1903-12, 1950-58), 943 cfs.

Extremes.--Maximum discharge during year, 4,510 cfs Apr. 18 (gage height, 3.54 ft); maximum gage height, 4.18 ft Dec. 29 (ice jam); minimum discharge, 130 cfs Oct. 14 (gage height, 1.22 ft).

1903-12, 1950-58: Maximum discharge, 10,000 cfs Apr. 19, 1952; maximum gage height, 5.72 ft Apr. 7, 1956 (ice jam); minimum discharge observed, 90 cfs July 5, 1910 (gage height, 1.5 ft), but may have been less during extended periods of no gage-height record during winter seasons of 1903-12.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diurnal fluctuation and occasional slight regulation caused by Boney Falls powerplant 8 miles above station, since 1950.

Revisions (water years).--WSP 1387: 1904.

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 4		Apr. 5 to Sept. 30			
1.3	168	1.3	155	2.5	1,730
1.6	395	1.6	395	3.0	2,920
2.0	850	2.0	890	4.0	6,220
2.6	1,930				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	526	474	560	490	420	340	600	1,180	476	1,250	544	386
2	548	423	450	400	370	300	800	1,340	462	1,640	437	366
3	488	436	430	340	340	290	950	1,310	737	1,730	241	698
4	390	324	440	370	370	360	1,200	994	693	1,610	211	926
5	354	458	410	230	380	370	1,500	1,100	646	2,240	346	1,270
6	196	384	470	300	380	360	1,780	1,090	*724	2,260	305	1,320
7	292	442	420	380	350	370	1,540	1,010	872	2,030	296	1,040
8	343	446	330	400	370	400	1,720	1,110	742	1,900	285	1,120
9	354	707	280	340	300	270	1,680	950	957	1,710	270	982
10	398	498	500	430	230	200	1,690	993	828	1,540	190	842
11	250	560	440	340	310	350	*1,810	1,030	825	1,250	211	728
12	260	746	400	290	280	*380	2,060	968	660	1,090	334	550
13	250	738	430	230	300	370	2,330	1,190	590	832	308	241
14	307	*950	460	400	*320	360	2,880	1,140	590	852	334	389
15	*224	1,510	460	440	330	360	3,380	960	554	668	*392	777
16	388	1,720	*300	*400	250	270	*4,010	900	384	820	332	368
17	400	1,690	400	370	240	330	4,290	700	306	668	211	*360
18	404	1,510	500	350	300	340	4,220	400	418	774	169	352
19	276	1,530	650	300	340	350	3,810	*470	394	780	254	241
20	266	1,720	620	280	320	360	3,310	877	372	434	233	183
21	414	1,790	600	450	300	340	2,720	868	481	318	282	197
22	404	1,500	580	400	260	370	2,560	662	254	500	224	225
23	406	1,480	540	410	250	250	2,480	639	374	773	211	211
24	664	947	670	370	280	280	2,140	615	562	680	183	225
25	740	738	600	390	310	370	1,920	308	700	*1,070	190	211
26	504	1,080	450	300	320	420	1,770	430	1,000	1,170	252	204
27	437	982	550	320	360	510	1,610	682	1,410	834	197	183
28	394	815	650	380	340	400	1,500	632	1,540	890	204	155
29	584	575	540	400	-	370	1,380	519	1,340	752	252	162
30	584	671	360	380	-------	520	1,410	370	1,260	665	416	169
31	493	-------	470	400	-------	700	-------	584	-------	620	409	-------
Total	12,538	27,844	14,960	11,280	8,920	11,280	65,050	26,021	21,151	34,350	8,723	15,081
Mean	404	928	483	364	319	363	2,168	839	705	1,108	281	503
Cfsm	0.464	1.07	0.555	0.418	0.367	0.417	2.49	0.964	0.810	1.27	0.323	0.578
In.	0.53	1.19	0.64	0.48	0.38	0.48	2.78	1.11	0.90	1.46	0.37	0.64

Calendar year 1957: Max 5,160 Min 144 Mean 615 Cfsm 0.707 In. 9.59
Water year 1957-58: Max 4,290 Min 155 Mean 705 Cfsm 0.810 In. 10.96

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 1 to Apr. 4. No gage-height record Jan. 7-16, May 15-19; discharge estimated on basis of weather records and records of kilowatt-hour output at Boney Falls powerplant.

595. Ford River near Hyde, Mich.

Location.--Lat 45°45'20", long 87°12'05", in SW¼ sec.19, T.39 N., R.23 W., on right bank 40 ft downstream from county highway bridge, 1.4 miles downstream from Tenmile Creek, and 1½ miles north of Hyde.

Drainage area.--450 sq mi.

Records available.--October 1954 to September 1958 (discontinued).

Gage.--Water-stage recorder. Datum of gage is 677.9 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 2,150 cfs July 5 (gage height, 4.95 ft); minimum, 34 cfs Aug. 23 (gage height, 1.48 ft).
1954-58: Maximum discharge, 3,120 cfs Apr. 14-16, 1955; maximum gage height, 5.89 ft Apr. 15, 1955; minimum discharge, 23 cfs Aug. 22, 23, 1957 (gage height, 1.39 ft).

Remarks.--Records good except those for period of ice effect, which are fair. Records of water temperatures for water year 1958 are given in WSP 1571.

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 1				Apr. 2 to Sept. 30			
1.6	50	2.5	305	1.5	36	2.8	445
1.8	86	3.0	530	1.8	86	3.5	890
2.0	134	4.0	1,220	2.2	195	5.0	2,200

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	185	160	198	110	75	100	370	698	241	764	88	154
2	160	154	180	105	74	105	445	640	293	912	80	169
3	137	148	160	105	73	110	554	646	297	876	71	206
4	121	143	150	97	72	110	659	633	274	965	64	435
5	108	140	140	95	72	105	718	590	255	*2,040	58	506
6	99	129	135	92	71	*100	778	542	*226	2,030	53	620
7	97	121	130	90	70	100	*560	*489	212	*1,850	52	724
8	93	146	125	86	69	100	*750	456	255	1,600	49	730
9	90	206	120	86	68	100	820	440	255	*1,420	47	666
10	82	259	120	89	68	100	*855	500	255	1,140	58	572
11	78	234	115	90	*67	100	905	584	259	876	57	462
12	75	*286	115	90	66	100	972	602	230	678	*62	375
13	73	293	115	90	66	100	1,040	596	202	530	62	313
14	71	321	115	*90	65	105	*1,130	542	173	420	58	262
15	*69	509	115	90	65	105	1,260	478	154	343	55	225
16	82	645	*115	89	64	105	1,400	409	131	286	49	200
17	88	749	110	88	64	105	1,490	370	116	248	44	*169
18	104	762	110	87	64	105	1,560	375	104	216	40	154
19	108	978	120	86	64	105	1,570	394	97	189	39	137
20	113	957	140	85	64	110	1,530	414	101	166	39	124
21	113	845	155	84	64	115	1,420	414	95	146	37	111
22	116	716	160	83	65	120	1,390	380	113	131	36	99
23	143	615	165	82	68	125	1,330	322	131	118	36	90
24	176	597	165	81	71	135	1,240	282	137	121	44	86
25	212	459	165	81	76	145	1,140	274	189	113	42	84
26	225	416	160	80	81	*160	1,060	259	297	101	42	80
27	216	416	150	79	90	175	965	248	366	104	47	75
28	202	398	140	78	96	190	869	230	404	116	50	67
29	189	340	135	78	-	210	820	212	414	108	47	64
30	176	241	125	77	-------	250	744	198	506	104	69	65
31	166	-------	120	76	-------	300	-------	196	-------	95	104	-------
Total	3,967	12,383	4,268	2,723	1,972	3,995	30,344	13,415	6,782	18,806	1,679	8,024
Mean	128	413	138	87.8	70.4	129	1,011	433	226	607	54.2	267
Cfsm	0.284	0.918	0.307	0.195	0.156	0.287	2.25	0.962	0.502	1.35	0.120	0.593
In.	0.33	1.02	0.35	0.22	0.16	0.33	2.51	1.11	0.56	1.56	0.14	0.66

Calendar year 1957: Max 2,750 Min 24 Mean 265 Cfsm 0.589 In. 7.98
Water year 1957-58: Max 2,040 Min 36 Mean 297 Cfsm 0.660 In. 8.95

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 2 to Apr. 1.

605. Iron River at Caspian, Mich.

Location.--Lat 46°03'31", long 88°37'38", on line between SE¼ and SW¼ sec.1, T.42 N., R.35 W., on downstream side of highway bridge in Caspian, 5½ miles upstream from mouth.

Drainage area.--84 sq mi, approximately.

Records available.--March 1948 to September 1958.

Gage.--Wire-weight gage and crest-stage indicator; gage read twice daily. Datum of gage is 1,438.78 ft above mean sea level, datum of 1929.

Average discharge.--10 years, 83.3 cfs.

Extremes.--Maximum discharge during year, 294 cfs July 1 (gage height, 6.53 ft); minimum, 37 cfs Sept. 29; minimum gage height, 3.79 ft Oct. 17.
1948-58: Maximum discharge, 1,430 cfs July 2, 1953 (gage height, 10.20 ft); minimum observed, 29 cfs Mar. 13, 1954 (gage height, 3.41 ft).

Remarks.--Records good. Flow regulated by ground water pumped from mines into river above station.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 29 to Sept. 30)

3.7	36
4.0	54
5.0	129
6.0	231

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49	50	52	56	55	53	56	77	64	*201	59	41
2	*47	52	*49	54	55	55	59	70	*66	200	55	*40
3	55	53	48	50	*52	*54	61	78	61	167	52	44
4	50	*52	48	54	56	53	81	78	71	166	*52	51
5	55	52	47	54	50	50	93	*59	69	90	53	47
6	52	48	52	*57	52	50	87	59	65	94	47	49
7	54	50	49	56	56	55	76	58	66	81	55	50
8	53	66	49	55	53	53	80	53	63	80	48	47
9	55	61	52	54	53	46	90	53	63	87	49	47
10	49	56	51	52	53	55	*82	80	61	80	58	44
11	51	55	53	54	55	53	101	61	58	80	50	43
12	50	55	50	54	55	53	106	58	59	78	44	45
13	48	56	53	53	53	53	98	59	59	74	49	48
14	48	64	51	52	54	55	115	52	60	66	49	44
15	48	81	49	53	55	56	98	52	62	78	47	44
16	52	70	51	55	55	53	101	58	54	77	49	44
17	42	61	49	53	54	53	105	67	55	71	43	44
18	46	55	50	55	53	53	89	80	55	78	43	48
19	47	58	53	56	51	52	85	75	52	66	44	49
20	49	51	53	53	52	54	78	66	56	59	45	43
21	47	49	55	55	53	55	81	64	54	59	41	41
22	50	50	55	53	58	56	81	58	56	61	44	43
23	59	55	56	55	56	54	87	61	58	57	44	39
24	55	53	52	53	52	54	81	66	61	56	50	41
25	52	53	58	55	58	56	87	66	77	66	44	40
26	52	52	57	55	59	55	68	66	86	61	46	44
27	52	53	43	52	53	56	68	67	73	61	42	41
28	49	50	53	56	52	56	78	68	66	65	46	40
29	52	52	54	53	-	53	75	68	75	62	41	38
30	50	48	55	52	-------	55	82	63	84	59	49	42
31	52	-------	55	52	-------	56	-------	66	-------	58	47	-------
Total	1,570	1,661	1,602	1,671	1,513	1,665	2,529	2,006	1,909	2,638	1,483	1,321
Mean	50.6	55.4	51.7	53.9	54.0	53.7	84.3	64.7	63.6	85.1	47.8	44.0
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 195 Min 42 Mean 62.2 Cfsm - In. -
Water year 1957-58: Max 201 Min 38 Mean 59.1 Cfsm - In. -

* Discharge measurement made on this day.

610. Brule River near Florence, Wis.

Location.--Lat 45°57'30", long 88°15'55", in SE¼ sec.11, T.41 N., R.32 W., Michigan meridian, on left bank 40 ft upstream from highway bridge, 1 mile upstream from Paint River, 3½ miles north of Florence, and 6 miles upstream from confluence with Michigamme River.

Drainage area.--380 sq mi.

Records available.--January 1914 to February 1916, June 1944 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,210 ft (from topographic map). Prior to Aug. 29, 1944, wire-weight or chain gages at bridge 40 ft downstream at same datum.

Average discharge.--15 years (1914-15, 1944-58), 349 cfs.

Extremes.--Maximum discharge during year, 1,360 cfs July 2 (gage height, 3.77 ft); maximum gage height, 6.82 ft Nov. 28, 29 (ice jam); minimum daily discharge, 180 cfs Feb. 15-19; minimum gage height, 1.93 ft Aug. 22, 23.
1914-16, 1944-58: Maximum discharge, 4,700 cfs July 2, 1953 (gage height, 6.57 ft); maximum gage height, 7.70 ft Apr. 5, 1954 (ice jam); minimum discharge, 155 cfs Aug. 16, 22, 1949; minimum gage height, 1.86 ft Aug. 27, Sept. 13, 1948.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow not adjusted for ground water pumped from mines into Iron River above station at Caspian, Mich.

Revisions (water years).--WSP 1387: 1914-16.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 24 to June 22)

1.7	138	3.0	745
2.0	211	4.0	1,590
2.5	436		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	253	*238	210	210	205	240	310	338	442	*885	225	279
2	238	238	*215	210	200	240	340	338	*363	1,350	221	*238
3	231	235	215	210	*200	*235	380	353	301	1,210	218	245
4	238	235	215	210	200	230	425	358	279	900	*208	315
5	231	235	215	210	200	225	447	*333	420	780	205	274
6	221	231	215	*210	200	220	442	315	504	656	208	348
7	221	231	215	210	200	215	373	296	394	533	205	328
8	218	258	210	210	195	210	431	296	324	458	203	287
9	221	315	210	210	195	210	436	287	296	420	205	266
10	218	279	210	210	190	205	*447	315	258	420	258	258
11	214	280	200	210	190	205	470	315	242	394	262	245
12	211	279	205	210	190	200	509	292	231	363	238	251
13	211	283	215	210	185	200	544	274	221	333	228	228
14	211	319	215	210	185	200	623	262	221	315	211	225
15	214	399	215	210	180	200	689	258	208	358	205	231
16	231	394	215	210	180	200	717	245	203	363	205	228
17	238	353	215	210	180	200	689	249	194	324	208	218
18	221	324	220	210	180	200	636	358	191	301	205	211
19	214	310	220	210	180	200	562	363	194	287	200	208
20	218	290	225	210	185	200	498	305	197	274	200	205
21	221	275	230	205	190	200	442	270	194	262	194	205
22	225	260	230	200	195	205	415	253	197	253	191	203
23	266	250	230	210	205	205	415	238	214	245	197	194
24	287	240	230	210	210	210	399	242	221	253	205	194
25	282	230	230	210	220	210	383	274	305	253	205	197
26	245	225	230	210	230	215	368	266	420	249	200	197
27	238	220	230	210	235	220	343	249	394	245	203	191
28	238	215	225	210	240	230	333	238	333	262	197	189
29	235	210	220	210	-	245	353	238	283	249	203	189
30	238	210	210	210	-------	260	338	504	324	238	221	189
31	238	-------	205	205	-------	280	-------	453	-------	228	310	-------
Total	7,166	8,061	6,745	6,490	5,545	6,715	13,757	9,375	8,568	13,661	6,644	7,016
Mean	231	269	218	209	198	217	459	302	286	441	214	234
Cfsm	0.608	0.708	0.574	0.550	0.521	0.571	1.21	0.795	0.753	1.16	0.563	0.616
In.	0.70	0.79	0.66	0.63	0.54	0.66	1.35	0.92	0.84	1.34	0.65	0.69

Calendar year 1957: Max 874 Min 189 Mean 271 Cfsm 0.713 In. 9.69
Water year 1957-58: Max 1,350 Min 180 Mean 273 Cfsm 0.718 In. 9.77

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 11, Nov. 19 to about Mar. 20. No gage-height record Mar. 3 to Apr. 3; discharge estimated on basis of weather records, recorded range in stage, and records for nearby stations.

615. Paint River at Crystal Falls, Mich.

Location.--Lat 46°06'20", long 88°20'05", in SE¼ sec.20, T.43 N., R.32 W., on right bank 150 ft downstream from municipal powerplant at Crystal Falls and 13 miles upstream from mouth.

Drainage area.--616 sq mi.

Records available.--August 1944 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,306.1 ft above mean sea level (Wisconsin-Michigan Power Co. bench mark).

Average discharge.--14 years, 568 cfs.

Extremes.--Maximum discharge during year, 2,860 cfs July 2 (gage height, 5.17 ft); minimum, 61 cfs Feb. 19 (gage height, 1.47 ft); minimum daily, 210 cfs Aug. 23.
1944-58: Maximum discharge, 10,700 cfs July 2, 1953 (gage height, 9.70 ft); minimum, 7.7 cfs Sept. 17, 1950 (gage height, 0.89 ft); minimum daily, 81 cfs Nov. 1, 1947.

Remarks.--Records excellent. Diurnal fluctuation caused by powerplant immediately above station.

Revisions (water years).--WSP 1174: 1947-48(m).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.0	184	4.0	1,540
2.5	375	6.0	3,980
3.0	662		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	300	*278	351	282	263	286	435	595	388	*1,630	464	419
2	*320	276	*372	271	258	274	503	570	*390	2,690	404	395
3	312	264	330	276	*280	*293	590	568	369	2,320	362	406
4	290	274	322	261	254	282	691	602	363	1,670	*352	382
5	260	286	348	239	260	284	818	*572	434	1,420	315	392
6	252	281	361	*277	268	278	880	509	786	1,270	284	444
7	257	280	344	261	278	277	812	471	859	1,110	286	495
8	244	317	336	260	292	279	897	452	820	1,060	266	466
9	252	389	326	269	261	272	930	444	810	951	254	445
10	252	396	326	274	278	272	984	512	712	1,010	296	382
11	257	408	300	280	260	258	*1,020	635	638	1,020	338	358
12	253	416	282	272	262	262	1,100	614	588	894	328	324
13	226	439	308	281	264	258	1,170	564	535	791	308	302
14	244	515	312	262	264	262	1,250	506	478	710	300	284
15	230	655	310	274	270	258	1,370	464	436	924	275	290
16	246	775	301	272	250	254	1,450	435	382	1,150	261	293
17	242	769	305	272	299	262	1,500	416	354	990	237	278
18	252	728	307	274	262	267	1,440	496	315	804	240	270
19	244	518	320	257	238	266	1,330	532	305	690	232	268
20	243	534	328	272	250	268	1,190	469	286	602	224	228
21	245	638	315	266	258	268	1,080	423	284	526	219	243
22	250	568	302	272	250	264	978	386	252	461	216	237
23	277	562	338	260	248	263	925	362	284	419	210	236
24	322	569	316	255	272	273	868	348	326	444	227	234
25	314	498	308	274	299	272	780	360	668	484	233	230
26	300	496	314	257	298	274	713	382	1,130	524	233	237
27	273	497	311	277	311	287	688	368	1,390	530	220	220
28	284	470	300	266	302	302	638	359	1,340	670	*223	244
29	274	396	297	270	-	321	625	352	1,210	706	248	252
30	272	392	275	273	-------	336	622	359	1,100	645	308	243
31	310	-------	270	284	-------	373	-------	366	-------	554	415	-------
Total	8,297	13,884	9,835	8,340	7,549	8,643	28,277	14,491	18,212	29,669	8,778	9,497
Mean	268	463	317	269	270	279	943	467	607	957	283	317
Cfsm	0.435	0.752	0.515	0.437	0.438	0.453	1.53	0.758	0.985	1.55	0.459	0.515
In.	0.50	0.84	0.59	0.50	0.46	0.52	1.71	0.87	1.10	1.79	0.53	0.57

Calendar year 1957: Max 3,980 Min 164 Mean 409 Cfsm 0.664 In. 9.01
Water year 1957-58: Max 2,690 Min 210 Mean 453 Cfsm 0.735 In. 9.98

* Discharge measurement made on this day.

625. Michigamme River near Crystal Falls, Mich.

Location.--Lat 46°06'50", long 88°12'55", in NW¼ sec.20, T.43 N., R.31 W., on right bank 400 ft upstream from highway bridge, 4½ miles downstream from Michigamme Reservoir, 6 miles east of Crystal Falls, and 16 miles upstream from confluence with Brule River.

Drainage area.--670 sq mi.

Records available.--August 1944 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,300 ft (from topographic map).

Average discharge.--14 years, 684 cfs.

Extremes.--Maximum discharge during year, 5,300 cfs July 2 (gage height, 9.14 ft); minimum daily, 72 cfs Nov. 2.
1944-58: Maximum discharge, 6,340 cfs May 3, 1954 (gage height, 10.11 ft); minimum daily, 71 cfs Nov. 26, 1950.

Remarks.--Records excellent. Flow regulated by powerplants and by Michigamme Reservoir (capacity, 119,950 acre-ft) 4.5 miles above station.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.4	68	4.0	685
2.0	121	5.0	1,220
2.5	192	7.0	2,730
3.0	304	9.0	5,100

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	595	454	595	785	735	698	502	104	466	*3,680	750	118
2	595	72	649	785	735	694	618	104	*346	*4,500	800	128
3	595	86	703	785	735	690	672	107	265	1,500	795	145
4	595	*412	703	785	730	685	712	149	259	900	*790	154
5	590	582	703	780	730	685	726	*122	268	800	785	147
6	590	582	703	780	730	685	374	116	117	605	785	156
7	586	582	698	775	726	680	527	113	123	660	785	147
8	590	451	698	775	726	676	830	114	128	917	780	138
9	590	92	*703	775	721	676	840	112	123	1,010	790	486
10	586	117	750	775	721	672	664	119	123	1,050	790	694
11	586	118	790	770	*721	667	*120	119	119	1,000	790	694
12	586	118	760	770	716	*662	118	117	281	810	790	694
13	586	120	800	770	716	662	126	114	304	810	785	690
14	586	125	795	*770	716	658	138	113	117	850	780	690
15	586	131	800	770	708	654	270	112	119	1,050	780	690
16	590	133	785	770	716	654	83	110	434	1,100	780	685
17	586	128	795	765	721	649	170	114	622	1,100	780	685
18	586	131	800	765	721	821	150	123	806	1,100	780	685
19	586	133	800	765	712	915	141	487	644	1,000	780	685
20	582	226	795	765	712	895	131	676	640	800	780	680
21	582	287	795	760	712	880	123	676	640	800	760	680
22	582	405	795	760	708	810	118	672	640	800	710	680
23	590	604	795	760	708	810	114	582	640	800	780	676
24	586	600	795	760	708	805	113	483	597	800	760	676
25	586	613	795	755	703	716	108	463	667	800	760	676
26	262	604	795	755	703	649	107	463	685	800	640	676
27	84	595	790	750	703	590	106	463	685	800	580	676
28	389	595	790	745	698	546	107	463	672	800	*550	672
29	582	450	790	740	-	538	104	463	667	800	491	672
30	582	399	790	740	-------	490	104	466	953	800	534	608
31	582	-------	785	740	-------	456	-------	474	-------	800	515	-------
Total	17,179	9,945	23,540	23,745	20,091	21,368	9,016	8,893	12,950	34,042	22,735	15,883
Mean	554	332	759	766	718	689	301	287	432	1,098	733	529
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 932 Min 72 Mean 522 Cfsm - In. -
Water year 1957-58: Max 4,500 Min 72 Mean 601 Cfsm - In. -

* Discharge measurement made on this day.

Note.--No gage-height record July 3-5, 9-11, July 14 to Aug. 1, Aug. 11, 12, 15-27; discharge estimated on basis of recorded range in stage, observers' readings, and records of discharge at Way Dam powerplant.

630. Menominee River near Florence, Wis.

Location.--Lat 45°57'04", long 88°11'13", in NE¼ sec.16, T.41 N., R.31 W., on left bank half a mile downstream from confluence of Brule and Michigamme Rivers and 3½ miles northeast of Florence.

Records available.--July 1950 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,120 ft (from topographic map).

Average discharge.--8 years, 1,865 cfs.

Extremes.--Maximum discharge during year, 11,100 cfs July 1 (gage height, 10.12 ft); minimum, 92 cfs Jan. 12 (gage height, 1.43 ft); minimum daily, 614 cfs Nov. 3.
1950-58: Maximum discharge, 20,500 cfs July 2 or 3, 1953 (gage height, 13.81 ft, from floodmarks), from rating curve extended above 12,000 cfs by logarithmic plotting; minimum, 57 cfs Sept. 18, 1950 (gage height, 1.28 ft); minimum daily, 220 cfs Feb. 4, 1951.

Remarks.--Records excellent except those for periods of no gage-height record, which are good. Flow regulated by powerplants, and by Michigamme Reservoir (capacity, 119,950 acre-ft) and Peavy Pond (capacity, 33,860 acre-ft) on Michigamme River, and by many other smaller reservoirs on tributaries above station.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.7	590	8.0	6,840
3.5	1,110	10.0	10,800
5.0	2,540		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,380	1,070	1,250	1,100	940	1,200	1,760	921	812	*7,540	1,430	740
2	1,380	968	*1,300	1,350	1,540	1,000	1,950	1,020	*911	*9,300	1,510	940
3	1,380	614	1,280	1,400	*1,610	*1,350	2,120	878	962	5,680	1,400	1,090
4	1,330	*1,130	1,150	1,350	1,710	1,310	1,730	710	914	2,860	*1,330	1,230
5	1,270	1,170	1,450	1,300	1,570	1,360	1,920	*1,100	858	4,250	1,630	1,340
6	944	1,140	1,400	*1,500	1,570	1,320	1,240	1,120	964	3,170	1,650	1,300
7	1,410	1,130	1,050	1,510	1,590	1,300	2,000	1,000	1,160	2,470	1,370	988
8	1,310	1,160	700	1,290	1,630	1,350	1,880	1,200	1,130	2,560	1,530	1,300
9	1,320	866	1,100	1,450	1,480	1,390	1,660	1,220	1,600	2,460	1,430	1,340
10	1,280	724	1,450	1,460	1,480	1,550	1,730	1,260	1,470	2,500	1,360	1,250
11	1,310	1,150	1,400	1,350	1,450	1,550	2,030	920	1,540	2,330	1,400	1,300
12	1,140	1,050	1,450	1,290	1,450	1,550	2,270	974	1,280	2,370	1,310	1,230
13	1,110	880	1,650	1,320	1,300	1,720	2,010	997	1,270	2,210	1,380	1,000
14	1,280	1,000	1,450	1,310	1,350	1,580	*1,790	992	1,410	2,220	1,380	1,250
15	1,020	920	1,250	1,360	1,350	1,530	1,520	978	1,380	2,250	1,440	1,170
16	1,200	1,350	1,350	1,280	1,300	1,360	1,500	942	1,440	2,540	1,260	1,300
17	1,150	1,500	1,400	1,320	1,400	1,440	1,140	942	1,500	2,470	1,240	1,300
18	948	1,560	1,400	1,300	1,350	1,480	1,570	863	1,530	2,230	1,330	1,250
19	920	1,600	1,400	1,320	1,300	1,580	1,780	1,060	1,230	2,150	1,300	1,200
20	900	1,450	1,300	1,310	1,300	1,770	1,960	868	908	1,950	1,220	1,210
21	1,190	1,500	1,300	1,360	1,400	1,700	1,970	959	1,110	2,030	1,100	1,220
22	1,180	1,150	1,300	1,480	1,200	1,760	1,650	980	1,080	1,730	1,000	1,280
23	966	1,050	1,400	1,440	800	1,740	1,590	889	1,240	1,520	922	1,240
24	932	950	1,350	1,480	1,400	1,810	1,560	935	1,340	1,630	778	1,250
25	916	1,000	1,250	1,270	1,350	1,540	1,520	996	1,490	1,820	1,100	1,210
26	882	1,200	1,300	1,360	1,350	1,400	1,210	990	2,060	1,230	934	1,220
27	940	1,300	1,250	1,460	1,350	1,470	780	1,000	2,140	1,300	*1,050	1,200
28	1,090	1,000	1,300	1,470	1,350	1,440	1,150	1,010	2,210	2,000	960	934
29	1,060	1,250	1,300	1,510	-	1,400	1,180	980	2,100	2,050	977	1,250
30	988	1,250	1,400	1,550	-------	1,250	1,130	1,000	2,530	1,560	925	1,010
31	1,000	-------	1,500	1,530	-------	1,540	-------	840	-------	1,390	764	-------
Total	35,106	34,082	40,830	42,780	38,870	45,720	49,280	30,544	41,589	83,770	38,410	35,542
Mean	1,132	1,136	1,317	1,380	1,388	1,475	1,643	985	1,386	2,702	1,239	1,185
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 3,950 Min 506 Mean 1,295 Cfsm - In. -
Water year 1957-58: Max 9,300 Min 614 Mean 1,415 Cfsm - In. -

* Discharge measurement made on this day.
Note.--No gage-height record Nov. 11 to Dec. 2, Dec. 4 to Jan. 6, Feb. 12 to Mar. 3, May 6-8, Aug. 28, Sept. 2, 6, 8, 10, 11, 19, 27, 29; discharge estimated on basis of records of Brule and Peavy Falls powerplants.

645. Pine River at Pine River powerplant, near Florence, Wis.

Location.--Lat 45°49'40", long 88°14'55", in sec.28, T.39 N., R.18 E., at powerplant of Wisconsin-Michigan Power Co., 5.0 miles downstream from Popple River and 6.5 miles south of Florence.

Drainage area.--528 sq mi.

Records available.--October 1923 to September 1958.

Average discharge.--35 years, 417 cfs.

Extremes.--Maximum daily discharge during year, 1,600 cfs July 5; minimum daily, 52 cfs Aug. 16, 21.
1923-58: Maximum daily discharge, 4,380 cfs Apr. 9, 1929; no flow at times in 1924, 1926-27, 1930-31, 1933, 1940.

Remarks.--Records good except those above 700 cfs, which are fair. Daily discharge determined from powerplant records. Flow regulated by powerplant at station, but pondage is small and monthly discharge is very nearly natural flow.

Cooperation.--Records of daily discharge computed by Wisconsin-Michigan Power Co. on basis of load-discharge rating of hydroelectric units as developed by Geological Survey and gate ratings based on theoretical formulas.

Revisions.--WSP 1237: Drainage area.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	208	208	182	182	182	182	312	520	364	840	143	416
2	182	182	208	156	156	182	403	468	390	1,580	143	390
3	208	208	286	156	182	156	494	520	358	1,470	130	312
4	182	208	195	156	156	169	520	494	364	1,250	130	364
5	182	195	208	143	156	182	615	559	338	1,600	130	377
6	156	208	286	130	156	156	589	477	416	1,530	78	481
7	169	169	208	156	143	156	509	416	442	1,200	130	598
8	156	208	208	156	143	208	588	364	416	884	156	520
9	182	312	208	156	143	156	744	346	364	740	130	546
10	156	286	208	156	143	208	744	364	312	724	182	481
11	156	208	182	156	143	156	744	351	312	624	208	442
12	130	312	182	156	130	156	744	312	234	624	247	468
13	156	312	182	156	104	156	824	312	208	459	234	468
14	143	390	182	156	156	156	939	312	208	468	156	312
15	234	520	182	156	104	156	1,020	312	182	312	130	358
16	169	546	195	156	130	156	1,220	312	182	312	52	312
17	195	572	182	156	130	156	1,140	208	182	312	156	338
18	182	520	182	156	104	156	1,280	312	143	312	156	208
19	208	364	208	156	130	156	1,160	364	208	312	117	312
20	156	208	286	182	104	156	1,080	364	286	208	182	208
21	182	468	208	156	130	182	984	338	130	182	52	208
22	208	468	208	156	130	156	904	312	182	182	156	208
23	208	442	260	156	104	156	864	312	208	195	182	156
24	312	468	208	156	130	156	834	208	208	182	130	156
25	312	364	117	156	156	156	744	277	507	182	73	182
26	260	293	312	182	156	182	669	208	624	182	115	182
27	208	390	182	156	182	182	624	312	624	208	91	156
28	208	312	182	156	156	208	598	208	520	182	117	150
29	208	312	182	156	-	260	520	208	390	143	130	130
30	208	208	182	156	-------	208	585	208	416	182	208	130
31	208	-------	182	156	-------	312	-------	286	-------	130	312	-------
Total	6,032	9,861	6,383	4,875	3,939	5,473	22,995	10,564	9,718	17,711	4,556	9,569
Mean	195	329	206	157	141	177	766	341	324	571	147	319
Cfsm	0.369	0.623	0.390	0.297	0.267	0.335	1.45	0.646	0.614	1.08	0.278	0.604
In.	0.42	0.69	0.45	0.34	0.28	0.39	1.62	0.74	0.68	1.25	0.32	0.67

Calendar year 1957: Max 1,440 Min 52 Mean 282 Cfsm 0.534 In. 7.24
Water year 1957-58: Max 1,600 Min 52 Mean 306 Cfsm 0.580 In. 7.85

655. Sturgeon River near Foster City, Mich.

Location.--Lat 45°54'30", long 87°45'15", in NW¼ sec.36, T.41 N., R.28 W., on left bank 30 ft downstream from bridge on County Highway 569, 1¾ miles downstream from confluence of East and West Branches, and 4 miles south of Foster City.

Drainage area.--244 sq mi.

Records available.--October 1954 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 966.6 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 927 cfs July 5 or 6 (gage height, 6.91 ft, from recorded range in stage); minimum, 27 cfs Aug. 22, 23 (gage height, 2.19 ft).
1954-58: Maximum daily discharge, 1,400 cfs Apr. 14, 15, 1955; minimum discharge, 20 cfs Aug. 23, 1957 (gage height, 2.17 ft).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Small diversions for irrigation. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1, Nov. 15-24)

2.1	20	4.0	282
2.5	58	7.0	950
3.0	121		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	98	88	110	69	66	71	197	244	216	314	57	135
2	88	86	100	66	66	72	222	235	256	468	51	110
3	81	82	92	63	65	72	264	244	250	518	47	113
4	76	84	86	62	64	72	316	254	227	533	42	*306
5	69	81	80	61	63	70	374	256	202	730	39	284
6	66	77	75	62	*62	*68	374	232	179	900	*37	286
7	60	74	72	63	60	68	*304	207	165	800	41	300
8	60	99	69	63	59	67	359	194	168	700	42	261
9	59	144	66	*63	58	66	·386	194	167	580	41	213
10	60	164	65	63	57	66	400	218	154	*503	48	176
11	58	147	64	62	55	65	*418	266	144	422	57	142
12	56	*147	63	62	54	65	442	278	129	375	62	121
13	56	144	62	61	53	65	472	270	118	320	55	104
14	54	153	62	61	52	65	505	240	106	270	49	94
15	54	228	62	60	51	65	551	210	97	230	42	85
16	*66	284	*63	60	50	66	603	180	88	200	37	76
17	88	305	64	60	50	67	644	170	79	170	36	71
18	107	296	65	60	49	68	656	180	*76	145	33	68
19	107	300	68	59	48	70	634	220	79	130	32	66
20	98	287	73	59	47	73	580	237	85	115	32	64
21	88	268	84	59	47	75	511	213	93	100	30	60
22	82	254	91	58	48	77	464	186	97	90	28	54
23	*103	245	95	58	49	80	446	*159	108	82	27	49
24	127	218	95	58	51	83	416	146	121	76	32	48
25	135	181	93	58	53	86	380	153	168	71	37	49
26	131	171	90	58	56	*90	347	152	244	68	40	47
27	120	153	87	58	60	96	314	146	293	68	39	49
28	107	140	83	60	67	105	284	135	287	74	39	54
29	102	130	79	62	-	120	266	127	250	72	41	48
30	95	120	75	63	-------	135	250	125	222	68	54	45
31	90	-------	72	65	-------	160	-------	140	-------	62	117	-------
Total	2,641	5,150	2,405	1,896	1,560	2,468	12,379	6,211	4,868	9,254	1,364	3,577
Mean	85.2	172	77.6	61.2	55.7	79.6	413	200	162	299	44.0	119
Cfsm	0.349	0.705	0.318	0.251	0.228	0.326	1.69	0.820	0.664	1.23	0.180	0.488
In.	0.40	0.79	0.37	0.29	0.24	0.38	1.89	0.95	0.74	1.42	0.21	0.54

Calendar year 1957: Max 1,010 Min 22 Mean 127 Cfsm 0.520 In. 7.07
Water year 1957-58: Max 900 Min 27 Mean 147 Cfsm 0.602 In. 8.22

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 29 to Mar. 31. No gage-height record May 13-19, July 6-9, July 12 to Aug. 5, Aug. 10-13; discharge estimated on basis of weather records, recorded range in stage, and records for nearby stations.

660. Menominee River near Pembine, Wis.

Location.--Lat 45°35'25", long 87°46'35", in sec.21, T.37 N., R.28 W., Michigan meridian, on left bank 700 ft upstream from Pemene Creek, 4 miles west of Nathan, Mich., 15 miles southeast of Pembine, and at mile 65.3.

Drainage area.--3,240 sq mi, approximately.

Records available.--October 1949 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Altitude of gage is 745 ft (from river-profile map).

Average discharge.--9 years, 3,016 cfs.

Extremes.--Maximum discharge during year, 13,200 cfs July 2 (gage height, 9.15 ft); minimum, 816 cfs Aug. 27 (gage height, 2.03 ft).
1949-58: Maximum discharge, 25,500 cfs July 3, 1953 (gage height, 13.06 ft); minimum, 805 cfs Aug. 12, 13, 1957 (gage height, 1.85 ft).

Remarks.--Records good except those for period of ice effect, which are fair. Flow regulated by powerplants and by Michigamme Reservoir (capacity, 119,950 acre-ft) and Peavy Pond (capacity, 33,860 acre-ft) on the Michigamme River, and by many smaller reservoirs above station.

Revisions (water years).--WSP 1277: 1952.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 28 to Apr. 20, July 25 to Sept. 26)

2.0	970	6.0	6,550
3.0	2,110	7.0	8,460
4.0	3,380	9.0	12,800
5.0	4,900		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,990	1,570	1,850	1,900	1,850	1,900	2,420	2,550	1,720	*5,830	1,920	1,860
2	1,910	1,800	1,850	1,850	2,000	1,700	2,830	2,460	1,790	12,000	1,800	1,380
3	1,940	1,520	1,900	1,750	1,900	1,750	3,150	2,420	1,760	11,000	1,870	1,580
4	1,950	1,400	1,850	1,900	1,950	1,750	3,260	2,530	1,690	7,340	1,590	1,940
5	2,030	1,620	2,000	1,900	2,000	1,800	3,350	2,430	2,050	7,920	1,790	2,210
6	1,540	1,550	2,000	1,900	2,100	1,800	3,350	2,420	1,790	7,170	1,650	2,720
7	1,620	*1,610	1,950	1,900	2,100	1,900	3,390	2,400	1,940	6,980	1,990	2,920
8	1,880	1,680	1,800	1,900	1,750	1,900	3,510	2,240	2,290	5,700	1,840	2,690
9	1,790	1,890	1,700	2,000	2,050	1,900	3,740	2,120	2,000	5,650	1,820	2,460
10	1,860	1,860	1,900	1,800	1,800	1,900	3,860	1,940	2,310	4,900	1,580	2,270
11	1,780	1,660	1,700	1,900	1,600	1,900	4,070	2,090	2,290	4,360	1,570	2,210
12	1,640	1,640	1,550	1,900	1,750	2,050	4,600	2,120	2,550	3,900	1,740	2,130
13	1,780	1,970	1,800	1,700	1,800	2,200	4,610	2,010	2,240	3,820	1,710	2,160
14	1,570	2,050	1,900	1,800	1,800	2,300	4,010	2,110	1,840	3,580	1,860	2,050
15	1,690	2,580	1,850	1,850	1,800	2,150	3,980	2,010	1,990	3,190	1,530	1,840
16	1,890	2,750	1,700	1,900	1,650	2,100	3,950	2,070	1,910	3,670	*1,820	1,850
17	1,570	3,220	1,800	1,800	1,600	2,000	4,000	1,880	1,930	3,370	1,580	1,840
18	1,540	3,480	2,000	1,800	1,700	1,950	*4,040	1,860	1,950	2,850	1,270	2,040
19	1,830	3,700	1,900	1,850	1,600	2,000	4,440	1,930	1,780	2,900	1,630	1,690
20	1,490	3,420	2,150	1,900	1,700	2,100	4,550	2,000	1,930	2,960	1,320	1,550
21	1,530	3,110	2,050	1,800	1,650	2,100	4,400	1,840	1,790	2,640	1,390	1,880
22	1,480	2,640	2,100	1,850	1,650	2,100	3,700	1,870	1,510	2,340	1,310	1,500
23	1,930	2,510	2,200	1,900	1,600	2,200	3,830	1,780	1,600	2,240	1,240	*1,780
24	1,950	2,230	2,100	1,900	1,650	2,200	3,670	1,650	2,060	2,090	1,120	1,850
25	1,990	2,400	2,150	2,000	1,650	2,200	3,740	1,840	2,130	1,950	1,140	1,460
26	1,870	2,230	2,050	1,800	1,700	2,000	3,220	1,760	3,000	2,050	1,120	1,350
27	1,700	2,350	2,050	1,900	1,800	1,900	2,840	1,700	3,120	2,110	1,090	1,510
28	1,570	2,170	2,000	2,000	1,900	2,000	2,690	*1,770	3,190	2,030	1,120	1,390
29	1,520	2,210	1,900	2,000	-	2,290	2,550	1,760	3,110	2,360	1,120	1,360
30	1,640	2,000	1,800	2,050	-------	2,350	2,600	1,750	3,250	2,100	1,800	1,480
31	1,700	-------	2,000	2,100	-------	2,360	-------	1,720	-------	2,150	1,830	-------
Total	54,170	66,820	59,550	58,500	50,100	62,750	108,350	63,030	64,510	133,150	48,160	56,950
Mean	1,747	2,227	1,921	1,887	1,789	2,024	3,612	2,033	2,150	4,295	1,554	1,898
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 8,380 Min 1,020 Mean 2,122 Cfsm - In. -
Water year 1957-58: Max 12,000 Min 1,090 Mean 2,263 Cfsm - In. -

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 1 to Mar. 27.

665. Pike River at Amberg, Wis.

Location.--Lat 45°29'50", long 87°59'40", in SW¼ sec.15, T.35 N., R.20 E., on left bank 500 ft upstream from Chicago, Milwaukee, St. Paul and Pacific Railroad bridge, 0.2 mile south of Amberg, and 1.2 miles downstream from confluence of North and South Branches.

Drainage area.--253 sq mi.

Records available.--February 1914 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 865 ft above mean sea level (from survey level line along railroad). Prior to May 23, 1931, chain gage at railway bridge at datum 1 ft higher. May 23, 1931, to Aug. 4, 1934, chain gage at highway bridge three-quarters of a mile downstream at different datum. Aug. 5, 1934, to Oct. 6, 1946, staff gage at present site and datum.

Average discharge.--44 years, 218 cfs.

Extremes.--Maximum discharge during year, 788 cfs July 6 (gage height, 4.27 ft); minimum, 86 cfs Aug. 9 (gage height, 1.67 ft).
1914-58: Maximum discharge, 2,800 cfs Apr. 10, 1922 (gage height, 7.8 ft, from graph based on gage readings, site and datum then in use), from rating curve extended above 1,100 cfs; minimum observed, 26 cfs Dec. 27, 1925 (gage height, 1.30 ft, site and datum then in use).

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair.

Revisions (water years).--WSP 699: 1927. WSP 1207: Drainage area. WSP 1337: 1914(M), 1916-19(M), 1921-24(M), 1926(M), 1928(M), 1929, 1930(M), 1931, 1932-33(M), 1935, 1936-37(M), 1938, 1939-46(M).

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	121	142	170	100	*110	110	220	253	138	*196	104	156
2	114	138	160	100	110	115	255	253	134	382	100	138
3	112	136	150	100	110	120	273	294	127	364	98	136
4	112	131	145	100	110	120	276	318	127	312	94	196
5	110	127	140	105	110	120	276	285	138	572	92	215
6	109	123	135	100	110	120	280	255	138	764	89	232
7	107	*121	130	100	105	120	318	240	129	650	90	255
8	107	151	125	100	105	120	423	226	131	478	90	226
9	116	206	120	105	105	120	500	212	134	348	90	198
10	114	190	115	110	105	120	525	206	127	330	114	209
11	107	190	*100	115	100	*120	488	206	121	297	127	198
12	109	186	105	115	100	120	444	204	121	237	118	173
13	109	183	120	115	100	120	413	196	116	206	107	161
14	109	204	130	110	95	120	389	186	114	190	100	156
15	112	276	130	110	95	120	382	176	107	178	*99	146
16	144	321	135	105	95	125	370	163	107	176	96	142
17	166	351	130	105	95	135	358	161	104	166	96	136
18	156	316	130	105	95	140	*339	215	100	156	96	129
19	140	310	150	100	95	140	315	220	107	144	99	125
20	129	310	160	100	100	135	306	204	118	140	107	119
21	129	320	160	100	105	135	279	178	121	134	109	116
22	136	320	160	100	115	135	279	168	118	127	102	110
23	188	290	160	100	125	130	264	156	121	123	104	107
24	249	250	140	105	135	130	273	154	129	119	112	*110
25	226	230	135	120	140	130	294	166	154	119	116	112
26	190	210	135	125	140	135	309	178	215	121	109	112
27	168	201	135	125	140	140	294	188	204	123	102	105
28	156	193	120	120	130	150	276	*151	158	127	99	104
29	154	188	110	115	-	160	276	140	129	121	98	102
30	154	180	105	115	-------	175	261	134	123	112	118	110
31	149	-------	105	110	-------	200	-------	134	-------	109	163	-------
Total	4,302	6,496	4,145	3,335	3,080	4,080	9,955	6,220	3,910	7,621	3,238	4,534
Mean	139	217	134	108	110	132	332	201	130	246	104	151
Cfsm	0.549	0.858	0.530	0.427	0.435	0.522	1.31	0.794	0.514	0.972	0.411	0.597
In.	0.63	0.95	0.61	0.49	0.45	0.60	1.46	0.91	0.57	1.12	0.48	0.67

Calendar year 1957: Max 970 Min 78 Mean 173 Cfsm 0.684 In. 9.27
Water year 1957-58: Max 764 Min 89 Mean 167 Cfsm 0.660 In. 8.94

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 10, 11, 19-26, Nov. 30 to Apr. 1, Apr. 6 (no gage-height record Feb. 11-15, 17-22, Feb. 24 to Mar. 1, Mar. 3, 4).

670. Menominee River below Koss, Mich.

Location.--Lat 45°21'50", long 87°39'20", in sec.9, T.34 N., R.27 W., Michigan meridian, on left bank at powerplant of Wisconsin Public Service Corp., 0.5 mile upstream from Little Cedar River, 3.6 miles southeast of Koss, and at mile 24.7.

Drainage area.--3,790 sq mi, approximately.

Records available.--July 1907 to March 1909 (published as "at Koss"), July 1913 to September 1958.

Gage.--Headwater and tailwater gages and generation data entered hourly in daily log sheet by company employees. Prior to June 1913, chain gage on railroad bridge 4 miles upstream.

Average discharge.--46 years (1907-8, 1913-58), 3,129 cfs.

Extremes.--Maximum daily discharge, 10,700 cfs July 3; minimum daily, 1,170 cfs Aug. 28. 1908, 1913-58: Maximum daily discharge, 23,200 cfs Apr. 23, 25, 1916; minimum daily, 162 cfs Sept. 15, 1931.

Remarks.--Records fair. Daily discharge computed on basis of average daily load and load-discharge rating of combined hydroelectric units. Flow regulated by powerplants, and by Michigamme Reservoir (capacity, 119,950 acre-ft) and Peavy Pond (capacity, 33,860 acre-ft) on Michigamme River, and by many smaller reservoirs above station.

Cooperation.--Records of daily discharge furnished by Wisconsin Public Service Corp.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,250	1,850	1,700	2,000	2,210	1,980	2,760	3,010	1,860	3,590	1,960	1,900
2	2,000	1,770	2,020	1,920	1,800	1,940	3,180	2,680	1,860	7,390	2,000	2,020
3	1,940	2,110	1,920	1,900	1,790	1,730	3,590	2,920	1,830	10,700	1,800	1,540
4	1,940	1,920	2,040	1,940	2,000	1,870	3,510	3,260	1,820	10,400	1,620	2,020
5	1,970	2,370	2,160	1,900	1,880	1,730	3,510	2,660	1,700	7,810	1,500	2,320
6	1,870	1,480	2,280	1,940	2,110	1,920	3,460	3,060	2,380	9,060	1,720	2,730
7	1,590	1,340	2,160	1,850	2,210	1,860	3,890	2,580	1,980	9,790	1,800	2,820
8	1,730	1,580	2,280	1,950	2,220	2,070	4,440	2,590	2,290	7,580	2,020	3,150
9	1,900	1,840	2,100	1,970	1,810	1,770	4,900	2,440	2,400	6,650	2,020	2,860
10	1,780	1,980	1,750	2,010	1,940	1,940	5,020	2,290	2,300	6,430	1,800	2,780
11	1,660	2,100	1,840	1,980	1,640	2,070	5,170	2,300	2,320	6,660	2,140	2,300
12	1,770	1,940	1,760	2,010	1,700	2,010	5,250	2,400	2,130	4,530	1,580	2,250
13	1,960	1,900	1,720	1,890	1,580	2,340	5,970	2,340	1,900	4,260	1,940	2,280
14	1,370	2,350	2,040	1,710	1,800	2,400	5,300	2,320	2,470	3,610	1,800	2,250
15	1,640	2,730	2,120	1,860	1,870	2,280	5,210	2,300	1,780	4,140	1,940	2,120
16	1,880	3,630	2,160	1,900	1,750	2,210	5,020	2,110	1,870	3,880	1,800	2,100
17	2,040	3,620	1,900	1,870	1,570	2,180	4,980	2,440	2,050	3,860	1,660	1,920
18	1,860	3,000	2,070	1,830	1,620	2,040	4,890	2,500	2,080	3,220	1,820	1,880
19	1,680	4,070	2,180	1,800	1,680	2,070	4,560	2,050	1,940	2,860	1,510	1,990
20	1,860	4,700	2,330	1,740	1,580	2,090	4,870	2,220	1,660	2,990	1,580	2,030
21	1,680	4,370	2,530	1,830	1,730	2,400	4,720	2,180	1,900	3,080	1,440	1,680
22	1,570	3,890	2,520	1,740	1,580	2,400	5,090	1,980	2,140	2,650	1,470	1,910
23	1,840	3,530	2,580	1,870	1,610	2,020	4,620	2,080	1,340	2,210	1,440	1,580
24	2,110	3,110	2,430	1,800	1,730	2,500	5,000	2,040	1,650	2,220	1,380	1,760
25	2,210	1,860	2,400	1,940	1,730	2,500	4,360	1,790	2,180	2,130	1,380	1,940
26	2,240	2,500	2,300	2,000	1,730	2,400	4,270	2,120	2,840	2,120	1,340	1,560
27	2,080	2,520	2,210	1,800	1,800	2,210	3,440	1,920	3,310	2,090	1,410	1,570
28	1,940	2,650	2,140	1,940	2,000	2,330	3,390	1,870	3,200	2,180	1,170	2,000
29	1,800	2,500	2,110	2,110	-	2,620	3,190	1,860	3,250	2,140	1,370	1,350
30	1,730	2,430	1,890	1,980	-------	2,850	3,000	1,910	3,100	2,490	1,440	1,340
31	1,800	-------	1,800	2,160	-------	2,890	-------	1,880	-------	1,900	1,540	-------
Total	57,690	77,640	65,440	59,140	50,870	67,620	130,560	72,100	65,530	144,620	51,390	61,950
Mean	1,861	2,588	2,111	1,908	1,810	2,181	4,352	2,326	2,184	4,665	1,658	2,065
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 8,370 Min 864 Mean 2,260 Cfsm - In. -
Water year 1957-58: Max 10,700 Min 1,170 Mean 2,478 Cfsm - In. -

675. Menominee River near McAllister, Wis.

Location.--Lat 45°19'20", long 87°39'40", in sec.17, T.33 N., R.23 E., on right bank 400 ft above highway bridge, 2¼ miles downstream from Little Cedar River, 2.9 miles east of McAllister, 14.5 miles east of Wausaukee, and at mile 22.3.

Drainage area.--4,020 sq mi, approximately.

Records available.--March 1945 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 630 ft (from river-profile map). Prior to May 15, 1945, wire-weight gage.

Average discharge.--13 years, 3,263 cfs.

Extremes.--Maximum discharge during year, 12,300 cfs July 4 (gage height, 13.84 ft); minimum, 1,120 cfs Oct. 5 (gage height, 7.93 ft); minimum daily, 1,410 cfs Aug. 25, 26.
1945-58: Maximum discharge, 25,700 cfs Apr. 15, 1951 (gage height, 17.83 ft); minimum observed, 538 cfs Oct. 6, 1946 (gage height, 7.29 ft).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by powerplants, by Michigamme Reservoir (capacity, 119,950 acre-ft) and Peavy Pond (capacity, 33,860 acre-ft) on the Michigamme River, and by many smaller reservoirs above station.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

8.2	1,380	12.0	7,750
9.0	2,270	13.0	10,000
10.0	3,820	13.7	11,900
11.0	5,680		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,450	1,980	1,900	2,150	2,500	2,150	a3,600	3,530	2,000	*3,870	2,130	1,880
2	2,100	1,830	2,150	2,100	2,050	2,000	a3,500	3,450	1,990	7,490	2,180	2,220
3	2,080	2,180	2,150	2,100	2,000	2,000	a3,700	3,340	1,950	11,600	2,030	1,670
4	1,940	2,060	2,300	2,100	2,100	1,900	a3,800	3,840	1,940	11,700	1,990	1,830
5	1,930	2,410	2,350	2,100	2,050	1,900	a3,800	3,110	1,910	9,270	1,680	2,260
6	1,950	*1,780	2,400	2,050	2,300	2,100	a3,850	3,340	2,510	9,980	1,680	2,940
7	1,660	1,420	2,350	2,000	2,400	2,050	a4,200	3,220	2,120	10,600	1,890	3,130
8	1,770	1,750	2,450	2,100	2,350	2,250	a4,700	2,940	2,370	8,810	2,030	3,670
9	2,000	1,950	2,200	2,150	2,050	2,000	a5,200	2,800	2,700	7,100	2,040	3,260
10	1,890	2,120	1,990	2,200	2,100	2,150	5,420	2,540	2,400	6,740	1,900	2,940
11	1,890	2,420	2,000	2,150	1,800	2,200	5,520	2,510	2,550	5,900	2,270	2,600
12	1,880	2,150	1,950	2,200	1,800	2,200	5,540	2,640	2,370	4,630	1,640	2,540
13	2,040	2,080	1,900	2,000	1,700	2,500	6,200	2,550	2,120	4,470	1,950	2,440
14	1,470	2,550	2,200	1,900	1,900	2,550	5,720	2,640	2,680	3,870	1,920	2,380
15	1,750	3,140	2,300	2,000	2,000	2,500	5,370	2,520	1,870	3,950	2,000	2,260
16	1,920	4,290	2,350	2,050	1,850	2,450	5,310	2,240	1,890	3,870	*1,890	2,270
17	2,130	4,490	2,100	2,050	1,700	2,350	5,310	2,400	1,980	4,040	1,690	2,060
18	a2,000	3,840	2,250	2,000	1,800	2,250	*5,290	2,820	2,130	3,650	1,900	2,060
19	a1,850	5,200	2,450	1,950	1,750	2,250	5,290	2,330	2,140	3,110	1,560	2,000
20	a2,050	5,720	2,580	1,900	1,700	2,300	5,660	2,670	1,780	3,190	1,620	1,920
21	a1,830	a5,100	2,720	2,000	1,850	2,550	5,560	2,540	1,950	3,270	1,690	1,710
22	a1,700	a4,650	2,800	1,900	1,700	2,650	5,290	2,240	2,440	2,910	1,550	2,100
23	a1,920	4,360	2,800	2,000	1,800	2,250	4,720	2,090	1,460	2,380	1,500	1,690
24	a2,290	3,650	2,700	2,000	1,850	2,600	4,760	2,140	1,680	2,470	1,450	*1,870
25	a2,450	a2,070	2,600	2,100	1,900	2,700	4,760	2,000	2,280	2,140	1,410	2,200
26	2,600	2,790	2,540	2,100	1,900	2,550	4,700	2,220	3,210	2,270	1,410	1,810
27	2,840	2,760	2,400	2,000	2,000	2,500	4,270	*2,120	3,630	2,140	1,450	1,640
28	2,140	2,780	2,320	2,100	2,100	2,510	3,960	2,000	3,530	2,270	1,490	2,040
29	2,010	2,930	2,200	2,300	-	3,460	3,720	2,010	3,550	2,230	1,500	1,560
30	1,980	2,380	2,100	2,150	-------	3,500	3,600	2,070	3,340	2,680	1,490	1,450
31	1,990	-------	2,000	2,400	-------	3,770	-------	2,030	-------	2,280	1,640	-------
Total	62,500	88,830	71,500	64,300	55,000	75,090	142,320	80,890	70,470	154,880	54,570	66,400
Mean	2,016	2,961	2,306	2,074	1,964	2,422	4,744	2,609	2,349	4,996	1,760	2,213
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 10,300 Min 1,020 Mean 2,528 Cfsm - In. -
Water year 1957-58: Max 11,700 Min 1,410 Mean 2,703 Cfsm - In. -

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for station below Koss.
Note.--Stage-discharge relation affected by ice Dec. 1-9, 11-19, 21-25, Dec. 27 to Mar. 27.

695. Peshtigo River at Peshtigo, Wis.

Location.--Lat 45°02'50", long 87°44'40", in NE¼ sec.30, T.30 N., R.22 E., on left bank 75 ft downstream from Chicago and North Western Railway bridge, half a mile downstream from Wisconsin Public Service Corp. powerplant in Peshtigo, and 11½ miles upstream from mouth.

Drainage area.--1,124 sq mi, approximately.

Records available.--June 1953 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 584.64 ft above mean sea level, datum of 1929.

Average discharge.--5 years, 709 cfs.

Extremes.--Maximum discharge during year, 3,290 cfs Apr. 8 (gage height, 6.66 ft); minimum, 70 cfs Feb. 21 (gage height, 1.29 ft); minimum daily, 147 cfs Aug. 23.
1953-58: Maximum discharge, 4,380 cfs May 3, 1954 (gage height, 7.78 ft); minimum, 32 cfs Aug. 28, 1953 (gage height, 1.46 ft); minimum daily, 84 cfs Aug. 5, 1957.

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation caused by powerplant half a mile above station.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-29, June 26 to Sept. 30)

1.5	120	4.0	1,300
2.0	287	5.0	1,920
2.5	492	6.0	2,690
3.0	743		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	464	580	450	470	398	627	786	899	463	758	364	330
2	227	645	490	360	421	543	834	836	457	1,050	248	366
3	326	528	588	270	350	414	896	1,240	733	1,240	282	414
4	432	410	775	370	480	592	939	1,200	728	1,270	217	841
5	322	546	543	390	347	915	1,010	668	645	1,590	310	1,070
6	326	*436	625	405	419	899	1,450	840	726	2,020	283	860
7	188	502	892	350	460	639	1,870	813	604	2,100	260	1,350
8	325	552	584	250	340	605	2,590	1,170	497	2,220	170	1,020
9	232	947	504	400	350	677	2,080	1,170	489	2,100	326	1,210
10	372	847	790	580	255	*643	2,180	1,150	717	2,020	380	1,390
11	434	554	270	440	340	594	2,070	947	596	1,820	432	1,160
12	274	757	*370	320	320	876	2,010	487	598	1,820	537	1,110
13	311	830	460	300	280	941	1,790	634	645	1,380	524	1,070
14	406	806	440	290	320	906	1,270	811	675	638	492	864
15	489	987	463	506	380	600	1,420	790	384	435	511	413
16	360	1,480	290	788	400	548	1,560	772	262	624	583	698
17	392	1,360	409	616	410	470	1,760	810	507	328	*394	663
18	426	1,340	513	340	270	590	1,780	936	577	540	162	761
19	552	1,710	648	300	255	833	*1,560	891	418	665	408	618
20	354	2,100	797	220	250	991	1,280	894	460	297	280	823
21	256	1,520	965	320	245	935	1,140	782	420	248	480	388
22	468	1,130	738	310	235	908	1,210	778	319	674	534	216
23	628	1,370	543	302	220	871	1,460	948	335	510	147	*319
24	474	1,180	541	484	270	526	1,250	861	510	507	296	395
25	566	826	569	490	340	747	1,500	959	637	533	278	507
26	934	994	530	524	465	1,110	1,360	732	791	361	450	679
27	440	1,150	487	371	633	850	1,330	*952	827	370	315	529
28	374	1,100	800	345	570	868	900	814	699	266	243	329
29	630	836	520	535	-	763	1,140	566	588	451	676	236
30	456	1,060	450	476	-------	606	1,140	929	*558	415	635	349
31	504	-------	440	*367	-------	542	-------	402	-------	392	391	-------
Total	12,942	28,883	17,484	12,489	10,023	22,629	43,565	26,681	16,865	29,642	11,608	20,978
Mean	417	963	564	403	358	730	1,452	861	562	956	374	699
Cfsm	0.371	0.857	0.502	0.359	0.319	0.649	1.29	0.766	0.500	0.851	0.333	0.622
In.	0.43	0.96	0.58	0.41	0.33	0.75	1.44	0.88	0.56	0.98	0.38	0.69

Calendar year 1957: Max 2,940 Min 84 Mean 639 Cfsm 0.569 In. 7.73
Water year 1957-58: Max 2,590 Min 147 Mean 695 Cfsm 0.618 In. 8.39

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 11-14, 16, Dec. 29 to Jan. 14, Jan. 18-22, Feb. 3, 7-25.

700. Wheeler Lake near Lakewood, Wis.

Location.--Lat 45°19', long 88°29', in sec.27, T.33 N., R.16 E., on southwest shore of lake at George Tyrell's cottage, 3½ miles east of Lakewood.

Drainage area.--2 sq mi, approximately.

Records available.--August 1936 to September 1958 (fragmentary).

Gage.--Staff gage. Prior to Apr. 19, 1939, gage was located at Chas. J. Vogt's across the lake.

Extremes.--Maximum elevation observed during year, 94.77 ft Apr. 17; minimum observed, 94.26 ft Aug. 23, 30, Sept. 3.
1936-58: Maximum elevation observed, 96.50 ft Oct. 5, Nov. 9, 1943; minimum observed, 93.45 ft Feb. 5, 1950.

Remarks.--Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin. No outlet.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					4.60			-	-	4.50	-	4.28
2								-	4.44	-	4.42	-
3								-	-	-	-	4.26
4								-	4.40	4.52	4.40	-
5								-	-	-	-	-
6								-	4.41	-	-	4.40
7								-	-	4.68	4.35	-
8		4.39						-	4.44	-	-	4.38
9								-	-	4.64	4.32	-
10			4.57					-	4.42	-	4.42	4.42
11						4.50		-	-	-	-	-
12								-	-	4.68	-	-
13								-	4.40	-	4.44	-
14								-	-	4.65	-	-
15								-	4.36	-	4.40	-
16								-	-	-	4.40	-
17							4.77	-	-	4.63	4.36	-
18								-	4.32	-	-	-
19								-	-	4.60	-	-
20								4.48	-	-	4.34	-
21								-	4.38	4.58	-	-
22								-	-	-	-	-
23								-	4.36	4.54	4.26	-
24								4.50	-	-	-	4.30
25								-	4.36	4.54	-	-
26								4.52	-	-	4.28	-
27								-	-	-	-	-
28								4.48	4.34	4.50	-	-
29								4.48	-	-	-	-
30					-------			-	4.31	-	4.26	-
31		-------			-------		-------	4.46	-------	4.46		-------

Note.--Add 90 ft to obtain elevation above datum assumed for this lake by the Public Service Commission of Wisconsin.

705. Boot Lake near Townsend, Wis.

Location.--Lat 45°16'20", long 88°37'55", in sec.9, T.32 N., R.15 E., on pier of Pine Ridge Lodge at north end of lake, 5½ miles southwest of Townsend and 6 miles southwest of Lakewood.

Drainage area.--1.5 sq mi, approximately.

Records available.--August 1936 to September 1958 (fragmentary).

Gage.--Staff gage.

Extremes.--Maximum elevation observed during year, 94.92 ft Apr. 20; minimum observed, 94.44 ft Nov. 6.
1936-58: Maximum elevation observed, 98.25 ft June 28, 1943; minimum observed, 93.82 ft Oct. 6, 1949.

Remarks.--Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin. No outlet. Lake was ice covered Nov. 25 to Apr. 16.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-			4.66		-	-	-	4.74	4.68	-
2	-	4.50			-		-	-	-	-	-	-
3	-	-			-		-	-	-	-	4.66	-
4	-	-			-		-	-	-	-	-	-
5	-	-			-		-	4.90	-	4.84	-	-
6	-	4.44			-		-	-	4.68	-	4.60	-
7	-	-			-		-	-	-	4.80	-	-
8	-	4.51			-		-	-	4.74	-	-	-
9	-	-			-		-	-	-	-	4.58	-
10	-	-	4.67		-		-	4.84	-	-	-	-
11	-	-			-	4.66	-	4.82	-	-	4.78	-
12	-	-			-		-	-	4.68	-	-	-
13	-	-			-		4.85	-	4.66	-	-	-
14	-	-			-		-	-	-	-	-	-
15	-	-			-		-	-	-	-	4.73	-
16	-	4.70			-		-	-	-	-	-	-
17	4.60	-			-		4.90	-	-	-	-	-
18	-	-			-		-	-	-	-	-	-
19	4.56	-			-		-	-	-	-	4.68	-
20	-	-			-		4.92	-	-	-	-	-
21	-	-			-		-	-	4.62	-	-	-
22	-	-			-		-	4.72	-	-	-	-
23	4.56	-			-		-	-	4.62	-	-	-
24	-	-			-		-	4.78	-	-	-	4.58
25	4.54	-			-		-	4.74	-	-	-	-
26	4.54	-			4.63		-	-	-	-	-	-
27	-	-			-		-	-	-	-	-	-
28	-	-			-		-	-	4.54	-	-	-
29	-	-			-		-	4.70	-	4.74	-	-
30	-	-					-	-	-	-	-	4.54
31	-							-		-	-	

Note.--Add 90.00 ft to obtain elevation above datum assumed for this lake by the Public Service Commission of Wisconsin.

710. Oconto River near Gillett, Wis.

Location.--Lat 44°52', long 88°18', in sec.34, T.28 N., R.18 E., on left bank just upstream from highway bridge, 2 miles upstream from Christy Brook, 2 miles south of Gillett, and at mile 29.

Drainage area.--678 sq mi.

Records available.--June 1906 to March 1909, October 1913 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Altitude of gage is 735 ft (from river-profile map). Prior to March 1909, chain gage on bridge at datum 4.0 ft lower. Jan. 6, 1914, to Aug. 24, 1938, chain gage on bridge at present datum.

Average discharge.--47 years (1906-8, 1913-58), 572 cfs.

Extremes.--Maximum discharge during year, 1,500 cfs Apr. 10 (gage height, 3.08 ft); maximum gage height, 4.27 ft Dec. 5 (backwater from ice); minimum discharge, 180 cfs Oct. 15.

1906-9, 1913-58: Maximum discharge observed, 8,400 cfs Apr. 10, 1922 (gage height, 11.2 ft, from floodmarks), caused by failure of dam at Pulcifer, 4 miles above station; minimum, 93 cfs Nov. 26, 1941 (gage height, 0.13 ft), flow retarded by anchor ice above station.

Remarks.--Records excellent except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 384: Drainage area. WSP 1207: 1922. WSP 1307: 1907-8(M), 1914-16(M), 1918-21(M), 1923-33(M), 1937-38(M), 1943(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.6	210	1.5	572
.8	275	2.3	992
1.1	390	3.1	1,510

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	310	378	505	300	265	325	463	749	394	394	275	310
2	308	374	490	300	260	330	472	708	382	582	247	318
3	300	370	475	300	260	330	481	728	370	718	244	303
4	292	362	480	295	260	330	494	780	362	796	234	300
5	289	*354	490	295	260	330	547	791	374	833	228	386
6	282	346	490	295	260	330	959	754	390	855	225	527
7	278	346	475	300	250	335	1,160	713	382	910	225	542
8	275	358	460	300	245	335	1,360	672	411	981	228	622
9	278	419	445	295	240	335	1,440	632	494	1,020	247	582
10	286	490	*422	290	235	335	1,490	602	542	948	334	807
11	292	467	410	295	230	335	1,450	577	522	780	445	582
12	292	424	410	300	230	*332	1,390	552	472	703	513	508
13	286	467	400	305	230	330	1,240	537	428	708	532	467
14	272	515	400	310	230	330	1,140	522	394	672	419	432
15	247	577	405	315	230	330	1,050	499	378	572	346	407
16	322	672	415	305	230	330	1,000	476	358	513	296	382
17	394	770	420	290	230	335	*970	463	342	577	*282	362
18	419	817	425	280	240	340	959	485	326	504	272	330
19	403	942	425	280	250	355	921	547	303	454	275	322
20	394	992	420	280	260	370	888	537	318	398	289	322
21	366	998	410	280	265	385	866	508	314	386	306	314
22	358	937	395	280	270	390	833	490	318	370	292	*300
23	366	830	375	280	280	390	796	463	322	358	261	292
24	441	790	360	275	290	390	807	445	346	350	268	296
25	458	765	345	275	300	390	839	463	398	342	286	300
26	472	780	330	275	305	390	871	*508	398	318	296	300
27	458	810	330	275	315	390	882	513	403	296	286	296
28	432	687	325	275	320	405	855	481	378	278	275	289
29	390	627	315	270	-	435	807	450	354	282	272	282
30	378	570	310	*270	-------	454	775	428	*342	278	292	282
31	378	-------	305	270	-------	458	-------	411	-------	292	303	-------
Total	10,714	18,232	12,682	8,955	7,240	11,179	28,205	17,484	11,515	17,468	9,293	11,762
Mean	346	608	408	289	259	361	940	564	384	563	300	392
Cfsm	0.510	0.897	0.602	0.426	0.382	0.532	1.39	0.832	0.566	0.830	0.442	0.578
In.	0.59	1.00	0.69	0.49	0.40	0.61	1.55	0.96	0.63	0.96	0.51	0.65

Calendar year 1957: Max 1,470 Min 170 Mean 405 Cfsm 0.597 In. 8.09
Water year 1957-58: Max 1,490 Min 225 Mean 451 Cfsm 0.665 In. 9.04

Peak discharge (base, 1,500 cfs).--Apr. 10 (11 a.m. to 10 p.m.) 1,500 cfs (3.08 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 23-27, Nov. 30 to Mar. 29.

725. Silver Lake at Portage, Wis.

Location.--Lat 43°33', long 89°29', in sec.6, T.12 N., R.9 E., in southeast end of lake at outlet culvert on Silver Lake Street in Portage.

Drainage area.--1 sq mi, approximately.

Records available.--August 1936 to September 1958 (fragmentary).

Gage.--Staff gage.

Extremes.--Maximum elevation observed during year, 91.68 ft Nov. 19, 24, Dec. 8; minimum observed, 90.60 ft Sept. 23, 28.
1936-58: Maximum elevation observed, 93.68 ft Apr. 13, 1952, Apr. 24, 1955; minimum observed, that of Sept. 23, 28, 1958.

Remarks.--Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin. Outlet flows intermittently. Lake covered by ice Dec. 4 to about Apr. 5.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-	6.64				-	-	6.44	-	-	-
2	-	-	-				-	-	-	-	-	-
3	-	6.52	-				-	-	-	-	6.05	-
4	-	-	-				-	6.48	-	-	-	-
5	-	-	-				-	-	-	-	-	-
6	6.56	-	-				6.62	-	-	6.32	-	-
7	-	-	-				6.60	-	-	-	-	5.73
8	-	-	6.68				-	-	6.36	-	6.06	-
9	-	-	-				-	-	-	-	-	-
10	-	6.54	-				-	-	-	-	6.03	-
11	-	-	-				-	-	-	-	-	-
12	-	-	-				-	6.56	-	-	-	-
13	6.50	-	-	6.63			6.54	-	-	6.24	-	-
14	-	-	-	-			-	-	-	-	-	5.65
15	-	-	-				-	-	6.28	-	-	-
16	-	-	-				-	-	-	-	-	-
17	-	6.64	-				-	-	-	-	5.92	-
18	-	-	-				-	6.50	-	-	-	-
19	-	6.68	-		6.58		-	-	-	-	-	-
20	6.52	-	-				6.48	-	-	6.24	-	-
21	-	-	-				-	-	-	-	-	5.62
22	-	-	-				-	-	6.30	-	-	-
23	-	-	-				-	-	-	-	-	5.60
24	6.57	6.68	-				-	-	-	-	5.81	-
25	-	-	-				-	6.40	-	-	-	-
26	-	-	-				-	-	-	-	-	-
27	6.56	-	-				6.52	-	-	6.16	-	-
28	-	-	-				-	-	-	-	-	5.60
29	-	-	-				-	-	6.22	-	-	-
30	-	-	-				-	-	6.22	-	-	-
31	-		-					-		-	5.75	

Note.--Add 85 ft to obtain elevation above datum assumed for this lake by the Public Service Service Commission of Wisconsin.

730. Little Green Lake near Markesan, Wis.

Location.--Lat 43°44'10", long 88°58'25", in sec.32, T.15 N., R.13 E., 200 ft north of lake outlet and 2 miles north of Markesan.

Drainage area.--3.35 sq mi.

Records available.--August 1936 to September 1958 (fragmentary).

Gage.--Staff gage. From Apr. 28, 1949, to Sept. 26, 1956, at site 0.5 mile north at same datum.

Extremes.--Maximum elevation observed during year, 95.45 ft Mar. 14, 15; minimum observed, 94.17 ft Sept. 30.
1936-58: Maximum elevation observed, 96.74 ft June 23, 24, 1940; minimum observed, that of Sept. 30, 1958.

Remarks.--Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin. Outlet flows intermittently. Lake ice covered Nov. 26 to Apr. 4.

Revisions.--WSP 1437: Drainage area.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.92	4.82			-	5.16	5.10	5.04	4.80	4.74	4.32	4.32
2	4.91	4.81			-	5.16	5.10	5.02	4.77	4.74	4.32	4.32
3	4.90	4.82			-	5.17	5.10	5.02	4.76	4.76	4.31	4.32
4	4.88	4.81			5.05	5.17	5.10	5.04	4.76	4.80	4.30	4.32
5	4.87	4.81			5.05	5.18	5.10	5.02	4.76	4.80	4.58	4.38
6	4.86	4.80			5.00	5.18	5.14	5.00	4.76	4.80	4.58	4.40
7	4.85	4.80			5.00	5.19	5.14	5.00	4.75	4.60	4.57	4.40
8	4.85	4.82			5.00	5.19	5.14	4.98	4.72	4.60	4.55	4.38
9	4.84	4.86	_ 5.02		5.05	5.24	5.12	4.98	4.70	4.58	4.53	4.36
10	4.83	4.84			5.05	5.30	5.12	4.98	4.69	4.56	4.51	4.36
11	4.82	4.83			5.05	5.35	5.12	4.96	4.68	4.54	4.51	4.34
12	4.81	4.82			5.05	5.44	5.12	4.96	4.67	4.52	4.51	4.34
13	4.80	4.81			5.05	5.44	5.12	4.94	4.66	4.50	4.51	4.34
14	4.80	4.83			5.05	5.45	5.10	4.94	4.66	4.52	4.50	4.34
15	4.81	4.83			5.05	5.45	5.10	4.94	4.64	4.58	4.49	4.34
16	4.82	4.86			5.05	5.40	5.09	4.92	4.62	4.56	4.48	4.34
17	4.82	4.88			5.05	5.36	5.08	4.92	4.60	4.54	4.47	4.34
18	4.80	4.89			5.05	5.32	5.08	4.88	4.58	4.52	4.46	4.36
19	4.78	4.88			5.05	5.20	5.08	4.86	4.62	4.52	4.44	4.35
20	4.78	4.87			5.05	5.16	5.08	4.84	4.62	4.50	4.42	4.32
21	4.77	4.86			5.05	5.14	5.08	4.82	4.62	4.48	4.40	4.30
22	4.78	4.86			5.05	5.14	5.08	4.80	4.80	4.46	4.38	4.29
23	4.80	4.84			5.05	5.14	5.12	4.78	4.78	4.44	4.36	4.28
24	4.88	4.84			5.10	5.14	5.12	4.78	4.76	4.42	4.36	4.27
25	4.86	4.84			5.12	5.14	5.12	4.80	4.62	4.42	4.35	4.26
26	4.85	-			5.12	5.14	5.12	4.78	4.80	4.40	4.34	4.24
27	4.84	-		5.01	5.16	5.14	5.10	4.78	4.78	4.40	4.33	4.23
28	4.82	-			5.16	5.14	5.08	4.76	4.78	4.38	4.32	4.20
29	4.80	-			-	5.14	5.06	4.74	4.77	4.36	4.32	4.18
30	4.81	-			-------	5.15	5.06	4.72	4.76	4.34	4.32	4.17
31	4.82	-------			-------	5.15	-------	4.74	-------	4.34	4.32	-------

Note.--Add 90 ft to obtain elevation above datum assumed for this lake by the Public Service Commission of Wisconsin.

735. Fox River at Berlin, Wis.

Location.--Lat 43°57'15", long 88°57'10", in NE¼ sec.16, T.17 N., R.13 E., on left bank 0.3 mile downstream from government lock, 1 mile south of Huron Street Bridge in Berlin, 2.5 miles upstream from Barnes Creek, and at mile 89.0.

Drainage area.--1,430 sq mi, approximately.

Records available.--January 1898 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 744.52 ft above mean tide at New York City (by Corps of Engineers). Prior to Oct. 27, 1954, staff gage at site 0.3 mile upstream at same datum.

Average discharge.--60 years, 1,095 cfs.

Extremes.--Maximum discharge during year, 1,380 cfs Apr. 10 (gage height, 9.31 ft); minimum, 282 cfs Aug. 22 (gage height, 6.22 ft).
1898-1958: Maximum discharge observed, 6,900 cfs Mar. 17, 18, 1946 (gage height, 15.5 ft); minimum observed, 248 cfs Sept. 16, 1948 (gage height, 6.1 ft).

Remarks.--Records good except those for period of ice effect, which are fair. About 20 cfs diverted into basin from the Wisconsin River throughout most of the year.

Revisions (water years).--WSP 1337: 1910.

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 29 to Sept. 30)

Oct. 1 to Mar. 16				Mar. 17 to Sept. 30			
6.7	370	8.1	738	6.2	290	8.2	880
7.1	452	8.7	961	6.6	376	8.8	1,130
7.5	550	9.5	1,310	7.0	474	9.4	1,430
				7.6	654		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	452	553	730	580	500	650	707	988	538	418	343	339
2	*482	556	780	570	500	670	693	904	588	456	332	322
3	477	527	690	540	500	700	696	916	682	466	361	319
4	457	529	660	490	500	710	672	904	*711	544	345	350
5	459	537	690	460	500	720	678	828	718	644	317	352
6	430	542	730	440	510	740	920	812	661	664	372	385
7	417	581	700	420	500	770	1,100	808	664	647	388	392
8	459	596	640	440	460	790	1,280	808	620	591	358	385
9	461	665	620	440	440	790	1,350	770	594	570	372	394
10	457	596	610	450	440	780	1,380	781	598	573	339	383
11	468	581	600	460	410	770	1,370	792	576	558	317	361
12	434	*611	580	460	400	780	1,360	682	585	518	*315	372
13	437	620	590	460	410	800	1,360	682	549	504	336	376
14	448	633	590	470	410	*820	*1,320	686	544	469	367	381
15	480	820	510	480	420	960	1,260	661	507	535	397	404
16	509	903	540	490	420	1,100	1,210	601	485	544	365	354
17	519	873	*560	500	410	1,300	1,160	607	493	532	363	330
18	492	907	570	500	390	976	1,120	637	501	538	356	339
19	504	942	600	460	380	864	880	614	474	512	341	369
20	512	1,060	670	460	390	844	781	576	479	498	374	363
21	470	1,030	690	480	410	812	736	558	411	428	350	376
22	512	960	710	480	430	792	777	558	433	430	290	339
23	537	1,140	740	480	450	789	770	496	397	461	298	358
24	494	1,160	780	480	470	732	820	523	443	426	347	381
25	509	1,040	730	480	550	682	956	523	479	394	300	399
26	540	1,160	730	480	600	725	1,000	544	477	378	334	*376
27	542	1,130	690	*500	640	725	988	555	423	390	321	358
28	545	890	650	510	650	721	992	504	409	345	354	328
29	547	780	600	520	-	736	984	507	453	376	347	347
30	542	700	570	520	-------	725	960	507	*443	399	358	376
31	516	-------	570	500	-------	700	-------	529	-------	383	361	-------
Total	15,108	23,622	20,110	15,000	13,090	24,673	30,280	20,861	15,935	15,191	10,718	10,908
Mean	487	787	649	484	468	796	1,009	673	531	490	346	364
Cfsm	0.341	0.550	0.454	0.338	0.327	0.557	0.706	0.471	0.371	0.343	0.242	0.255
In.	0.39	0.61	0.52	0.39	0.34	0.64	0.79	0.54	0.41	0.40	0.28	0.28

Calendar year 1957: Max 1,690 Min 409 Mean 783 Cfsm 0.548 In. 7.40
Water year 1957-58: Max 1,380 Min 290 Mean 590 Cfsm 0.413 In. 5.59

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 22 to Mar. 16.

755. Wolf River above West Branch Wolf River, Wis.

Location.--Lat 44°56'10", long 88°39'15", in E½ sec.3, T.28 N., R.15 E., near center of span on downstream side of highway bridge, half a mile upstream from West Branch Wolf River, 4 miles north of Keshena, and at mile 140.1.

Drainage area.--633 sq mi.

Records available.--October 1927 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Wire-weight gage read once daily. Datum of gage is 856.57 ft above mean sea level (levels by Wisconsin Power & Light Co.). Prior to Sept. 21, 1956, chain gage at same site and datum.

Average discharge.--31 years, 558 cfs.

Extremes.--Maximum discharge during year, 1,300 cfs July 6 (gage height, 3.97 ft, from graph based on gage readings); minimum daily, 274 cfs Aug. 3, 5.
1927-58: Maximum discharge, 2,640 cfs Apr. 8, 1929 (gage height, 6.20 ft, from garph based on gage readings); minimum observed, 199 cfs Feb. 20, 1936.

Remarks.--Records good except those for period of ice effect, which are fair.

Revisions (water years).--WSP 1337: 1929-30(M), 1931, 1934-35(M), 1939(M), 1941(M), 1944-50(M).

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.5	256	3.0	788
2.0	391	3.5	1,040
2.5	564	4.0	1,320

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	376	362	370	300	350	400	570	662	431	662	284	329
2	371	374	360	300	350	380	550	657	431	*872	276	371
3	359	371	350	300	350	380	550	675	437	862	274	348
4	329	371	340	300	350	380	560	769	474	837	276	406
5	318	342	330	300	350	380	700	726	533	1,080	274	421
6	310	356	320	300	350	380	970	675	518	1,270	278	503
7	279	345	320	300	350	380	1,130	662	503	1,160	276	514
8	302	*385	310	300	350	380	1,220	644	521	1,040	276	484
9	323	386	310	310	350	380	1,150	626	506	968	278	544
10	326	387	310	320	350	380	1,090	529	506	937	474	525
11	310	388	300	330	350	380	1,120	518	464	892	518	484
12	315	481	*305	330	350	*376	1,120	544	443	806	467	467
13	302	453	300	340	350	380	1,120	514	424	721	447	443
14	334	453	300	350	350	380	1,100	506	412	584	*440	427
15	365	529	300	350	350	390	1,120	492	400	560	400	453
16	379	666	300	350	350	390	*1,110	488	382	515	356	440
17	403	712	300	350	350	400	1,100	478	374	470	323	437
18	374	693	300	350	350	400	1,050	470	323	447	297	427
19	359	593	310	350	350	410	1,030	456	342	434	304	424
20	354	533	310	350	350	420	993	450	329	421	299	403
21	340	424	320	350	350	430	942	440	323	400	302	397
22	385	440	340	350	350	450	902	424	318	382	304	409
23	415	500	350	350	390	460	877	406	320	368	316	394
24	467	520	340	350	400	480	882	437	348	359	328	*376
25	453	510	330	350	410	490	877	450	424	356	340	382
26	427	510	330	350	420	500	862	456	412	334	329	385
27	406	490	320	350	430	510	842	447	388	323	312	374
28	397	470	310	350	430	520	812	424	379	315	307	374
29	403	430	300	350	-	530	812	415	356	304	302	371
30	385	390	300	*349	-------	540	712	*406	337	294	397	342
31	371	-------	300	350	-------	570	-------	418	-------	291	351	-------
Total	11,237	13,864	9,885	10,329	10,180	13,226	27,873	16,264	12,358	19,264	10,405	12,654
Mean	362	462	319	333	364	427	929	525	412	621	336	422
Cfsm	0.572	0.730	0.504	0.526	0.575	0.675	1.47	0.829	0.651	0.981	0.531	0.667
In.	0.66	0.81	0.58	0.61	0.60	0.78	1.64	0.96	0.73	1.13	0.61	0.74

Calendar year 1957: Max 1,490 Min 230 Mean 421 Cfsm 0.665 In. 9.02
Water year 1957-58: Max 1,270 Min 274 Mean 459 Cfsm 0.725 In. 9.85

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 22 to Apr. 4 (no gage-height record Nov. 23, Dec. 6, 7, 10, 11, 13, Jan. 5, Apr. 1).

770. Wolf River at Keshena Falls, Wis.

Location.--Lat 44°53'30", long 88°39'20", in E½ sec.22, T.28 N., R.15 E., on right bank 500 ft downstream from Keshena Falls, 1.7 miles upstream from Keshena, 3.1 miles downstream from West Branch Wolf River, and at mile 136.4.

Drainage area.--812 sq mi.

Records available.--May 1907 to March 1909, October 1910 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Published as "at Keshena" prior to April 1928.

Gage.--Water-stage recorder. Datum of gage is 820.0 ft above mean sea level (levels by Wisconsin Power and Light Co.). Prior to March 1909, staff gage and February 1911 to March 1928, chain gage, at bridge in Keshena 1.7 miles downstream at datum 4.03 ft lower.

Average discharge.--49 years (1907-8, 1910-58), 754 cfs.

Extremes.--Maximum discharge during year, 1,600 cfs Apr. 6 (gage height, 6.94 ft); minimum, 260 cfs June 23 (gage height, 5.07 ft).
1907-9, 1910-58: Maximum discharge observed, 4,390 cfs Apr. 10, 1922, from rating curve extended above 2,100 cfs; maximum gage height, 13.83 ft Nov. 17, 1943 (backwater from ice); minimum discharge, 91 cfs Dec. 22, 1939 (gage height, 4.67 ft), result of ice storage.

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation caused by powerplant upstream.

Revisions (water years).--WSP 664: Drainage area (site at Keshena). WSP 1337: 1914-15(M), 1918-19(M), 1921, 1923(M), 1926(M), 1928(M), 1933.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

5.1	274
5.5	482
6.0	840
6.5	1,230
7.0	1,650

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	430	514	470	400	460	740	740	848	540	581	381	447
2	465	441	450	400	450	700	720	848	*560	*1,040	331	470
3	459	482	450	400	450	670	727	971	560	1,100	302	447
4	453	476	460	410	450	640	764	994	588	1,020	350	514
5	424	476	400	420	450	620	817	924	668	1,380	365	553
6	360	430	370	450	460	610	1,430	893	653	1,510	365	623
7	331	424	370	430	470	600	1,300	863	602	1,360	312	668
8	402	*508	360	420	460	580	1,420	832	546	1,170	370	646
9	424	588	340	450	450	540	1,500	802	668	1,090	370	764
10	419	514	320	490	450	520	1,400	742	668	1,050	533	764
11	408	476	310	480	450	500	1,340	705	705	1,030	660	727
12	392	567	310	480	450	*479	1,340	697	816	939	609	668
13	331	560	*308	480	460	460	1,340	675	553	863	560	609
14	375	602	330	480	470	480	1,320	660	533	749	*553	495
15	453	697	360	480	480	490	1,310	638	514	683	520	495
16	602	825	380	470	490	500	*1,310	602	470	638	488	495
17	588	930	370	460	500	530	1,300	602	465	602	430	488
18	527	910	370	460	510	550	1,290	631	441	574	386	527
19	482	700	370	460	520	570	1,260	631	436	508	331	514
20	459	610	370	450	530	580	1,210	546	436	514	370	508
21	447	590	380	460	560	600	1,150	560	424	508	402	495
22	430	620	410	470	620	620	1,090	560	419	495	386	501
23	520	650	450	470	680	630	1,050	546	424	419	331	470
24	602	680	450	470	740	640	1,090	546	441	441	350	430
25	602	670	430	470	770	650	1,130	631	465	459	436	*424
26	514	660	430	470	780	670	1,090	616	501	447	436	424
27	553	630	460	470	790	680	1,050	595	514	419	413	470
28	527	600	460	470	780	680	1,010	588	495	397	408	470
29	501	560	450	460	-	675	955	553	476	365	424	465
30	441	500	520	*456	-------	710	901	527	453	397	470	459
31	482	-------	400	450	-------	730	-------	520	-------	397	470	-------
Total	14,403	17,890	12,208	14,086	15,130	18,664	34,354	21,346	15,934	23,145	13,112	16,030
Mean	465	596	394	454	540	602	1,145	689	531	747	423	534
Cfsm	0.573	0.734	0.485	0.559	665	0.741	1.41	0.849	0.654	0.920	0.521	0.658
In.	0.66	0.82	0.56	0.65	0.69	0.85	1.57	0.98	0.73	1.06	0.60	0.73

Calendar year 1957: Max 2,020 Min 260 Mean 544 Cfsm 0.670 In. 9.11
Water year 1957-58: Max 1,510 Min 302 Mean 593 Cfsm 0.730 In. 9.90

Peak discharge (base, 1,500 cfs).--Apr. 6 (10 p.m.) 1,600 cfs (6.94 ft); July 6 (10 a.m.) 1,520 cfs (6.89 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 17 to Mar. 28, Mar. 30 to Apr. 2 (no gage-height record Feb. 9-14, 16-21, Feb. 23 to Mar. 2, Mar. 4, 8).

785. Embarrass River near Embarrass, Wis.

Location.--Lat 44°43', long 88°44', in sec.18, T.26 N., R.15 E., on left bank 10 ft downstream from highway bridge, three-quarters of a mile downstream from Mill Creek, and 4 miles northwest of Embarrass.

Drainage area.--395 sq mi.

Records available.--June 1919 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 800 ft (from survey level line in vicinity). Prior to Aug. 23, 1938, chain gage on downstream side of bridge at same datum.

Average discharge.--39 years, 282 cfs.

Extremes.--Maximum discharge during year, 1,160 cfs Apr. 8 (gage height, 5.10 ft); minimum, 32 cfs Aug. 5 (gage height, 2.55 ft).
1919-58: Maximum discharge, 6,920 cfs Apr. 10, 1922 (gage height, 11.6 ft, from graph based on gage readings), from rating curve extended above 2,800 cfs; minimum observed, 23 cfs Aug. 3, 6, 7, 1931.

Remarks.--Records good except those for periods of ice effect, which are fair. Slight diurnal fluctuation caused by powerplants above station.

Revisions (water years).--WSP 1337: 1920-26(M), 1928, 1929-30(M), 1933-34, 1936-37, 1938(M), 1940.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-5, July 28 to Aug. 14)

2.5	42
3.0	158
3.5	345
4.0	585
5.0	1,110

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	82	85	168	90	89	140	228	207	125	109	61	66
2	66	151	174	60	71	145	195	228	114	*113	52	106
3	101	80	300	65	73	148	209	339	*140	106	48	175
4	69	106	250	75	76	148	235	512	104	156	52	80
5	73	138	184	80	69	145	248	463	127	212	51	72
6	108	142	117	68	69	140	539	382	161	251	45	154
7	62	158	90	90	76	135	994	302	196	294	56	254
8	61	155	142	90	75	132	1,110	263	241	245	61	220
9	65	*218	74	92	61	132	1,040	230	165	174	46	336
10	103	90	70	95	65	135	848	218	215	153	91	534
11	61	142	137	110	97	149	641	212	251	108	132	499
12	66	141	146	120	80	138	465	173	216	101	146	363
13	89	145	*124	90	74	*146	412	157	190	109	175	301
14	70	156	179	100	70	96	371	165	146	94	*100	208
15	94	187	56	100	67	107	331	155	151	132	87	185
16	156	263	48	90	65	106	*332	145	107	98	72	120
17	98	385	87	100	66	131	330	143	137	96	62	112
18	111	413	111	100	78	120	334	153	117	86	72	116
19	119	486	192	90	86	134	276	149	92	86	110	114
20	140	481	109	84	80	149	273	143	105	102	82	111
21	78	375	164	115	72	157	291	139	101	82	69	102
22	79	305	64	112	67	158	265	117	101	77	71	78
23	91	262	102	110	64	140	231	108	101	72	62	75
24	168	216	160	110	64	168	260	113	103	72	60	75
25	95	230	88	108	80	173	339	158	158	68	67	*98
26	176	186	100	105	100	199	372	152	155	66	86	148
27	71	186	120	70	110	186	348	153	113	52	73	110
28	116	186	130	80	125	206	313	148	107	60	80	64
29	118	180	140	*82	--	200	278	140	132	62	86	85
30	110	176	100	82	-------	207	237	126	90	56	80	128
31	140	-------	80	82	-------	200	-------	103	-------	59	86	-------
Total	3,036	6,424	4,006	2,845	2,169	4,670	12,345	6,196	4,261	3,551	2,421	5,089
Mean	97.9	214	129	91.8	77.5	151	412	200	142	115	78.1	170
Cfsm	0.248	0.542	0.327	0.232	0.196	0.382	1.04	0.506	0.359	0.291	0.198	0.430
In.	0.29	0.60	0.38	0.27	0.20	0.44	1.16	0.58	0.40	0.33	0.23	0.48

Calendar year 1957: Max 1,240 Min 44 Mean 167 Cfsm 0.423 In. 5.73
Water year 1957-58: Max 1,110 Min 45 Mean 156 Cfsm 0.395 In. 5.36

Peak discharge (base, 1,100 cfs).--Apr. 8 (10:30 a.m.) 1,160 cfs (5.10 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 25, 27-29, Dec. 1 to Mar. 17.

790. Wolf River at New London, Wis.

Location.--Lat 44°23', long 88°44', in sec.12, T.22 N., R.14 E., on right bank 100 ft downstream from Pearl Street Bridge in New London, 0.2 mile downstream from Embarrass River, and at mile 56.3.

Drainage area.--2,240 sq mi, approximately.

Records available.--March 1896 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 749.37 ft above mean sea level (levels by Corps of Engineers). Prior to Oct. 4, 1951, staff gage at same site and datum.

Average discharge.--62 years, 1,698 cfs.

Extremes.--Maximum discharge during year, 3,210 cfs Apr. 14 (gage height, 5.78 ft); minimum, 364 cfs Aug. 6 (gage height, -0.14 ft).
1896-1958: Maximum daily discharge, 15,500 cfs Apr. 13, 1922; minimum daily, 150 cfs Mar. 1, 1900.
Maximum stage known, 11.6 ft Apr. 16, 1888, from information by Corps of Engineers.

Remarks.--Records good except those for period of ice effect, which are fair.

Revisions (water years).--WSP 1114: 1943(M). WSP 1337: 1931.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-19, May 20 to July 4)

-0.10	380	2.0	1,230
0.0	420	4.0	2,140
1.0	820	6.0	3,370

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*732	848	1,150	850	720	1,550	1,310	2,210	916	*764	548	700
2	744	828	1,050	810	720	1,600	1,390	2,030	880	748	524	720
3	720	808	1,050	800	720	1,600	1,410	2,020	*896	804	472	660
4	676	856	1,050	780	720	1,600	1,450	2,070	884	1,050	444	692
5	716	772	1,050	780	710	1,600	1,500	2,210	924	1,340	436	744
6	724	764	1,000	690	710	1,550	1,840	2,280	956	1,480	380	892
7	708	784	1,000	700	710	1,500	2,320	2,240	1,010	1,600	360	1,250
8	688	812	990	740	710	1,450	2,650	2,170	1,040	1,730	416	1,390
9	608	*744	960	740	700	1,430	2,830	2,070	1,120	1,760	456	1,410
10	576	736	940	740	680	1,410	2,920	1,900	1,200	1,800	452	1,460
11	628	820	840	740	670	1,400	3,000	1,800	1,240	1,780	560	1,600
12	680	856	780	740	670	1,350	3,080	1,630	1,250	1,740	784	1,710
13	668	872	740	740	670	1,350	3,160	1,530	1,280	1,670	*880	1,680
14	668	884	740	730	660	1,320	3,200	1,360	1,190	1,620	952	1,570
15	684	988	740	730	660	1,300	*3,170	1,270	1,100	1,540	892	1,410
16	708	1,100	740	720	660	1,300	3,040	1,260	988	1,380	800	1,240
17	752	1,360	790	720	660	1,280	2,950	1,210	892	1,250	748	1,020
18	864	1,490	840	720	660	1,270	2,870	1,170	840	1,110	660	928
19	876	1,840	900	720	660	1,260	2,780	1,110	832	1,020	648	900
20	840	1,990	960	720	660	1,260	2,660	1,040	804	960	588	888
21	836	2,080	1,050	720	670	1,250	2,580	1,020	736	920	528	868
22	816	2,060	1,150	720	680	1,230	2,460	1,000	696	860	480	840
23	784	1,840	1,100	720	700	1,230	2,400	956	676	820	476	824
24	776	1,680	1,100	720	740	1,230	2,390	936	672	804	536	788
25	800	1,860	1,050	720	800	1,220	2,420	916	684	764	480	768
26	884	1,850	1,050	720	1,000	1,220	2,420	944	752	660	500	*816
27	904	1,800	980	720	1,300	1,220	2,450	1,040	776	624	460	768
28	940	1,630	920	*721	1,450	1,230	2,420	1,050	804	624	488	728
29	936	1,550	880	720	-	1,250	2,380	1,040	808	640	536	740
30	856	1,400	820	720	-------	1,310	2,310	1,020	772	592	624	740
31	840	-------	790	720	-------	1,290	-------	976	-------	560	708	-------
Total	23,532	37,902	29,200	22,831	21,070	42,060	73,760	45,478	27,618	35,014	17,836	30,744
Mean	759	1,263	942	736	752	1,357	2,459	1,467	921	1,129	575	1,025
Cfsm	0.339	0.564	0.421	0.329	0.336	0.606	1.10	0.655	0.411	0.504	0.257	0.458
In.	0.39	0.63	0.48	0.38	0.35	0.70	1.22	0.76	0.46	0.58	0.30	0.51

Calendar year 1957: Max 3,310 Min 416 Mean 1,061 Cfsm 0.474 In. 6.41
Water year 1957-58: Max 3,200 Min 380 Mean 1,115 Cfsm 0.498 In. 6.76

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 29 to Mar. 28.

800. Little Wolf River at Royalton, Wis.

Location.--Lat 44°24'45", long 88°51'55", in NW¼ sec.1, T.22 N., R.13 E., on right bank 50 ft upstream from highway bridge in Royalton and 6 miles upstream from mouth.

Drainage area.--485 sq mi.

Records available.--January 1914 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 774.00 ft above mean sea level, datum of 1929. Prior to Aug. 20, 1915, chain gage at highway bridge at datum 0.75 ft lower. Aug. 20, 1915, to Apr. 23, 1934, staff gage at present site and datum.

Average discharge.--44 years, 401 cfs.

Extremes.--Maximum discharge during year, 1,150 cfs Sept. 6 (gage height, 2.81 ft); minimum, 75 cfs Aug. 3, 4, 17, 18 (gage height, 0.78 ft).
1914-58: Maximum discharge, 6,950 cfs Mar. 30, 1943 (gage height, 8.00 ft), from rating curve extended above 3,500 cfs; maximum gage height, 11.95 ft Mar. 28, 1950 (backwater from ice); minimum discharge, 57 cfs Feb. 10, 1934.

Remarks.--Records good except those for periods of ice effect, which are fair. Frequent fluctuation caused by powerplant 6 miles above station.

Revisions (water years).--WSP 1337: 1914-16(M), 1918-19(M), 1921-25(M), 1927(M), 1928-37, 1939(M), 1940, 1945-46(M), 1948(M), 1950(M). WSP 1507: 1943.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 28, July 8 to Sept. 9		Mar. 1 to July 7		Sept. 10-30	
0.8	78	1.0	135	0.9	78
1.0	114	1.3	220	1.1	131
1.3	211	1.6	352	1.3	205
1.6	350	2.0	591	1.6	352
2.0	591	2.4	860		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*130	158	200	110	120	430	229	250	158	*152	119	227
2	154	144	190	105	120	300	201	247	208	160	81	174
3	144	192	200	105	125	260	242	342	*155	180	77	141
4	144	158	180	105	130	290	282	460	185	168	83	146
5	141	144	174	110	155	310	240	454	166	287	130	200
6	119	141	171	120	145	210	572	332	250	180	119	571
7	119	164	192	120	130	230	819	293	251	279	83	496
8	138	151	170	140	125	240	757	327	201	178	122	509
9	141	220	170	150	140	190	683	247	231	144	119	328
10	136	223	150	140	140	225	521	272	249	151	81	300
11	141	154	200	140	140	220	413	230	250	138	117	316
12	133	223	150	135	140	205	368	230	247	133	141	250
13	138	*158	150	135	130	214	332	239	207	133	*141	197
14	136	250	160	110	140	247	327	183	177	133	144	189
15	144	196	170	140	140	182	*332	212	166	133	136	155
16	200	299	170	145	140	201	293	207	166	136	117	184
17	215	425	167	135	145	228	312	185	158	130	81	151
18	174	323	*233	125	160	*214	302	180	171	133	81	149
19	158	578	196	120	190	174	276	183	155	128	136	166
20	148	466	247	170	80	224	293	214	152	130	133	108
21	144	448	239	120	100	228	292	160	150	114	119	190
22	167	400	269	125	250	214	238	155	145	86	89	143
23	138	250	125	130	260	166	189	174	140	119	110	136
24	269	310	180	140	280	241	347	192	140	86	117	108
25	151	400	195	145	440	213	419	163	148	133	112	153
26	151	205	140	155	450	269	436	204	220	119	89	*175
27	171	287	200	160	480	194	407	201	191	88	117	97
28	144	231	150	160	400	188	322	171	194	94	122	143
29	181	307	210	*152	-	250	250	201	152	138	133	270
30	151	323	110	140	-------	195	332	158	148	138	207	102
31	192	-------	120	160	-------	207	-------	152	-------	136	256	-------
Total	4,812	7,928	5,578	4,147	5,395	7,149	11,006	7,178	5,531	4,457	3,712	6,474
Mean	155	264	180	134	193	231	367	232	184	144	120	216
Cfsm	0.320	0.544	0.371	0.276	0.398	0.476	0.757	0.478	0.379	0.297	0.247	0.445
In.	0.37	0.61	0.43	0.32	0.41	0.55	0.84	0.55	0.42	0.34	0.28	0.50

Calendar year 1957: Max 1,040 Min 94 Mean 231 Cfsm 0.476 In. 6.47
Water year 1957-58: Max 819 Min 77 Mean 201 Cfsm 0.414 In. 5.62

Peak discharge (base, 1,600 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 22-26, Dec. 1-4, 8-16, Dec. 24 to Mar. 12.

810. Waupaca River near Waupaca, Wis.

Location.--Lat 44°21', long 88°59', near north line of sec.1, T.21 N., R.12 E., on right bank 10 ft downstream from highway bridge, 1½ miles downstream from Crystal River, and 4 miles downstream from Waupaca.

Drainage area.--305 sq mi.

Records available.--June 1916 to September 1958. Published as "near Weyauwega" June 1916 to October 1917.

Gage.--Water-stage recorder. Altitude of gage is 780 ft (from survey level line along railroad). Prior to Oct. 19, 1917, chain gage at site 1 mile downstream at different datum. Oct. 19, 1917, to Nov. 23, 1938, chain gage on bridge at present site and datum.

Average discharge.--42 years, 240 cfs.

Extremes.--Maximum discharge during year, 375 cfs Apr. 6 (gage height, 2.02 ft); maximum gage height, 3.40 ft Dec. 1 (backwater from ice); minimum discharge, 53 cfs Sept. 26 (gage height, 0.80 ft); minimum daily, 101 cfs Aug. 23.
1916-58: Maximum discharge, 2,520 cfs Mar. 20, 1948 (gage height, 6.90 ft); maximum gage height, 8.06 ft Mar. 28, 1950 (backwater from ice); minimum discharge, 38 cfs June 7, 1947; minimum daily, 50 cfs Jan. 22, 28, 1926.

Remarks.--Records good except those for period of ice effect, which are fair. Considerable diurnal fluctuation caused by powerplants above station.

Revisions (water years).--WSP 1054: 1926(m). WSP 1084: 1919, 1922-24, 1938, 1940, 1942(M), 1944(M), 1945-46. WSP 1337: 1917-28(M), 1930, 1931-35(M), 1937-38(M), 1946, 1947(m), 1950(M). WSP 1507: 1949(M).

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.0	89
1.5	202
2.0	367

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*149	140	180	135	150	310	166	170	147	135	133	162
2	152	156	180	130	145	260	173	163	156	159	124	145
3	148	166	170	130	140	220	166	179	143	143	106	152
4	147	167	170	130	140	190	160	200	*146	124	122	139
5	153	163	175	135	140	175	180	175	136	155	117	139
6	147	166	180	145	135	170	313	189	148	163	121	231
7	152	156	185	150	125	170	341	183	155	153	120	244
8	151	169	185	150	120	200	270	166	165	148	120	191
9	154	177	180	150	120	220	233	162	152	146	118	181
10	153	174	170	145	120	230	230	167	159	146	120	172
11	153	165	140	140	120	344	217	156	162	146	138	167
12	156	*161	120	135	120	183	207	152	151	145	*128	156
13	132	175	120	135	120	171	198	148	140	141	137	146
14	134	185	125	135	115	*167	*178	158	139	136	129	146
15	157	182	130	135	115	170	182	136	148	124	117	138
16	170	194	145	140	110	174	179	146	136	137	103	140
17	175	214	160	145	110	158	175	158	134	144	121	141
18	176	214	*170	150	110	165	175	145	143	133	135	149
19	158	264	210	150	110	167	175	150	136	133	104	121
20	161	260	230	150	110	170	175	138	128	122	106	140
21	161	228	250	150	110	166	167	164	132	122	129	119
22	159	216	260	145	120	162	175	145	136	132	128	140
23	170	224	260	135	145	168	178	153	119	136	101	123
24	171	199	240	135	180	160	189	146	134	134	110	145
25	167	201	230	130	230	169	207	146	151	139	133	127
26	164	204	180	140	280	165	198	153	145	122	111	*133
27	162	187	200	145	340	162	183	135	147	131	132	130
28	152	182	205	*160	330	164	178	151	127	131	108	121
29	164	178	160	160	-	161	184	139	131	142	112	142
30	172	180	140	160	-------	168	174	136	*140	137	150	122
31	158	-------	140	160	-------	162	-------	124	-------	115	225	-------
Total	4,878	5,647	5,590	4,435	4,210	5,821	5,926	4,833	4,286	4,274	3,858	4,502
Mean	157	188	180	143	150	188	198	156	143	138	124	150
Cfsm	0.515	0.616	0.590	0.469	0.492	0.616	0.649	0.511	0.469	0.452	0.407	0.492
In.	0.59	0.69	0.68	0.54	0.51	0.71	0.72	0.59	0.52	0.52	0.47	0.55

Calendar year 1957: Max 338 Min 120 Mean 172 Cfsm 0.564 In. 7.67
Water year 1957-58: Max 344 Min 101 Mean 160 Cfsm 0.525 In. 7.09

Peak discharge (base, 670 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 30 to Mar. 10.

825. Lake Winnebago at Oshkosh, Wis.

Location.--Lat 44°00'40", long 88°32'00", in sec.24, T.18 N., R.17 E., in mouth of Upper Fox River at Chicago and North Western Railway bridge, 0.2 mile downstream from Main Street Bridge in Oshkosh and 18 miles up lake from Menasha Dam and outlet.

Drainage area.--6,030 sq mi, approximately, at lake outlet at Menasha Dam.

Records available.--October 1938 to September 1958 in reports of Geological Survey. Records from 1857 to 1938 in files of Corps of Engineers. A report on Fox River by Corps of Engineers, published as House Document No. 146, 67th Congress, 2d session, contains semimonthly records of inflow to Lake Winnebago for the period 1896-1917.

Gage.--Staff gage read once daily. Datum of gage is 745.05 ft above mean tide at New York City (levels by Corps of Engineers). Prior to 1882, lake levels were referred to Deuchman gage at lake outlet of Menasha Dam. Datum of Deuchman gage, which is still in existence, is 745.00 ft above mean tide at New York City.

Extremes.--Maximum gage height observed during year, 2.54 ft July 15; minimum observed, 0.91 ft Feb. 28, Mar. 3.
1857-1958: Maximum gage height observed, 5.33 ft (Deuchman gage) Nov. 8, 1881; minimum observed, -2.00 ft (Deuchman gage) Nov. 28, 1891.

Remarks.--Lake elevations controlled by dams at Menasha and Neenah which are operated in the interest of navigation. Crests of both dams are at elevation 746.73 ft. Present limits of regulation are from 21½ in. above crest of Menasha Dam down to crest during navigation season, plus additional 18 to 24 in. below crest during winter. Oshkosh staff gage gives true level of lake, while Deuchman gage readings are affected by loss of head in channel between lake and dam.

Cooperation.--Records furnished by Corps of Engineers.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.10	2.05	2.40	2.20	1.43	0.95	1.13	2.22	2.22	2.28	2.40	2.05
2	2.10	2.05	2.36	2.20	1.41	.92	1.12	2.22	2.32	2.30	2.36	2.10
3	2.10	2.05	2.35	2.08	1.40	.91	1.16	2.22	2.34	2.32	2.32	2.08
4	2.10	2.05	2.35	2.04	1.38	.95	1.15	2.30	2.32	2.38	2.38	2.09
5	2.10	2.05	2.35	2.00	1.35	1.00	1.22	2.32	2.24	2.40	2.32	2.08
6	2.10	2.05	2.38	2.00	1.33	1.02	1.35	2.32	2.28	2.46	2.34	2.05
7	2.10	2.05	2.36	2.00	1.30	.98	1.28	2.35	2.30	2.44	2.35	2.07
8	2.08	2.05	2.36	1.97	1.29	.97	1.32	2.30	2.24	2.48	2.31	2.13
9	2.05	2.05	2.30	1.97	1.29	.97	1.48	2.35	2.34	2.50	2.30	2.10
10	2.05	2.05	2.30	1.90	1.28	.96	1.50	2.42	2.30	2.46	2.28	2.12
11	2.05	2.05	2.32	1.85	1.26	.98	1.52	2.40	2.30	2.48	2.30	2.12
12	2.05	2.05	2.32	1.85	1.25	.98	1.55	2.36	2.30	2.46	2.18	2.10
13	2.08	2.05	2.32	1.85	1.19	1.00	1.60	2.50	2.31	2.46	2.23	2.07
14	2.08	2.05	2.28	1.80	1.20	1.00	1.63	2.45	2.30	2.48	2.20	2.07
15	2.00	2.15	2.29	1.78	1.15	1.00	1.68	2.40	2.32	2.54	2.22	2.14
16	2.02	2.18	2.25	1.75	1.14	1.00	1.72	2.43	2.30	2.53	2.24	2.20
17	2.00	2.20	2.25	1.72	1.12	1.00	1.75	2.42	2.29	2.53	2.22	2.22
18	2.00	2.20	2.22	1.70	1.10	1.00	1.88	2.40	2.29	2.52	2.15	2.20
19	2.00	2.24	2.25	1.69	1.09	1.03	1.90	2.38	2.28	2.47	2.12	2.20
20	2.00	2.35	2.25	1.67	1.09	1.03	1.90	2.43	2.28	2.50	2.08	2.17
21	2.00	2.35	2.22	1.62	1.00	1.03	1.91	2.48	2.28	2.49	2.10	2.20
22	2.00	2.40	2.22	1.60	1.00	1.01	1.88	2.45	2.28	2.48	2.10	2.16
23	2.05	2.40	2.25	1.59	1.08	1.00	1.90	2.40	2.29	2.49	2.05	2.18
24	2.05	2.42	2.25	1.60	1.08	1.00	1.97	2.38	2.28	2.49	2.05	2.20
25	2.05	2.39	2.20	1.58	1.00	1.00	2.03	2.38	2.30	2.46	2.05	2.15
26	2.05	2.40	2.22	1.58	.95	1.00	2.11	2.40	2.28	2.45	2.12	2.22
27	2.05	2.40	2.20	1.52	.95	1.00	2.12	2.30	2.30	2.47	2.08	2.20
28	2.03	2.40	2.20	1.50	.91	1.05	2.13	2.32	2.32	2.46	2.06	2.17
29	2.05	2.40	2.20	1.48	-	1.01	2.10	2.28	2.30	2.42	2.08	2.10
30	2.05	2.40	2.20	1.50	-------	1.01	2.13	2.28	2.30	2.42	2.14	2.10
31	2.05	-------	2.20	1.47	-------	1.03	-------	2.23	-------	2.40	2.18	-------

840. Lake de Neveu near Fond du Lac, Wis.

Location.--Lat 43°44'10", long 88°23'45", in SW¼ sec.30, T.15 N., R.18 E., at boathouse near north end of lake on farm of Nick Giebel, 3.9 miles southeast of the intersection of Main and Division Streets in Fond du Lac.

Drainage area.--0.9 sq mi, approximately.

Records available.--August 1936 to September 1958 (fragmentary).

Gage.--Reference point in lake bed.

Extremes.--Maximum elevation observed during year, 97.54 ft Apr. 8; minimum observed, 97.21 ft Sept. 2.
1936-58: Maximum elevation observed, 98.32 ft Mar. 27, 1950; minimum observed, 96.90 ft Aug. 15, 1936.

Remarks.--Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin. Natural outlet. Lake ice covered Nov. 26 to about Apr. 5.

Revisions.--WSP 1437: Drainage area.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.24	7.39	-	-	-	-	7.42	-	-	7.38	7.30	-
2	-	-	-	-	-	-	-	7.44	-	-	-	7.21
3	-	-	-	-	-	-	-	-	7.24	-	-	-
4	7.23	-	7.41	-	-	7.48	7.42	-	-	7.44	-	-
5	-	7.40	-	-	-	-	-	7.38	-	-	7.25	7.30
6	-	7.43	7.40	-	-	-	-	7.41	7.23	-	-	-
7	-	-	-	7.44	-	7.49	-	-	-	-	-	-
8	7.24	7.42	-	-	-	-	7.54	-	-	7.43	7.30	-
9	-	-	-	-	-	-	-	7.41	7.24	-	-	7.30
10	-	-	7.40	7.41	-	-	-	-	7.24	-	-	-
11	7.24	-	-	-	-	7.48	7.52	-	-	7.43	-	-
12	-	7.47	-	-	-	-	-	-	-	-	7.33	7.30
13	-	-	7.36	-	-	-	-	7.38	7.24	-	-	-
14	-	-	-	7.41	-	7.45	-	-	-	7.38	-	-
15	7.25	7.53	-	-	-	-	7.49	-	-	7.47	7.26	-
16	-	-	-	-	-	-	-	7.34	-	-	-	7.30
17	-	-	7.36	-	-	-	-	-	7.22	-	-	-
18	7.28	-	-	7.38	7.33	7.43	7.46	-	-	7.45	-	-
19	-	7.50	-	-	-	-	-	-	-	-	7.25	7.30
20	-	-	7.45	-	-	-	-	-	7.22	-	-	-
21	-	-	-	7.39	7.35	7.43	-	7.28	-	-	-	-
22	7.27	7.48	-	-	-	-	7.43	-	-	7.39	7.29	-
23	-	-	-	-	-	-	-	7.25	-	-	-	7.28
24	-	-	7.44	-	-	-	-	-	7.25	-	-	-
25	7.36	-	-	-	7.41	7.43	7.43	-	-	7.37	-	-
26	-	7.47	-	-	-	-	-	-	-	-	7.26	7.34
27	-	-	7.47	-	-	-	-	7.24	7.30	-	-	-
28	-	-	-	-	7.52	7.42	-	-	-	-	-	-
29	7.37	7.45	-	-	-	-	7.43	-	-	7.33	7.23	-
30	-	-	-	-	-------	-	-	7.24	-	-	-	7.27
31	-	-------	7.46	-	-------	-	-------	-	-------	-	-	-------

Note.--Add 90 ft to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

845. Fox River at Rapide Croche Dam, near Wrightstown, Wis.

Location.--Lat 44°19', long 88°12', in sec.4, T.21 N., R.19 E., at Rapide Croche Dam, 2 miles upstream from Wrightstown and 18 miles upstream from mouth.

Drainage area.--6,150 sq mi, approximately.

Records available.--March 1896 to September 1917 (monthly discharge only), October 1917 to September 1958.

Gage.--Recording headwater and tailwater gages and electric generation data taken each half hour are used to compute the discharge records.

Average discharge.--62 years, 4,157 cfs.

Extremes.--Maximum daily discharge during year, 4,220 cfs Jan. 3; minimum daily, 728 cfs Sept. 1.
1917-58: Maximum daily discharge, 24,000 cfs Apr. 18, 1952; minimum daily, 138 cfs Aug. 2, 1936.

Remarks.--Records good. Flow regulated by storage in Lake Winnebago, usable capacity 582,000 acre-ft (see p. 82). Daily discharge determined from records of flow through turbines, head, gate openings, and lockages through navigation canal. About 20 cfs diverted into basin from Wisconsin River.

Cooperation.--Figures of daily discharge furnished by Corps of Engineers. Records reviewed by Geological Survey.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,390	2,040	2,730	3,880	3,500	2,900	1,700	2,130	1,160	1,020	1,250	728
2	1,540	1,910	2,940	4,200	3,220	2,920	1,750	2,220	1,060	1,340	1,310	1,350
3	1,550	1,890	2,960	4,220	3,450	3,050	1,630	2,370	1,280	1,010	1,150	1,230
4	1,440	1,900	2,940	4,070	3,320	2,980	1,770	1,950	1,260	1,560	1,260	1,070
5	1,420	1,940	2,930	3,820	3,340	3,020	1,790	2,190	1,290	1,620	1,040	1,190
6	1,400	1,840	2,870	3,470	3,270	3,070	1,910	2,160	1,400	1,430	1,180	1,350
7	1,500	1,930	2,760	3,840	3,340	2,970	1,940	2,160	1,540	1,480	1,240	1,170
8	1,490	2,030	2,690	3,900	3,240	3,000	1,400	2,310	1,460	1,390	1,220	1,280
9	1,470	1,770	2,800	3,950	3,100	2,780	1,670	2,260	1,180	1,560	1,280	1,370
10	1,300	1,730	2,350	3,830	3,400	3,070	1,630	2,390	1,260	1,670	1,170	1,170
11	1,380	1,920	2,620	3,510	3,200	3,040	1,780	2,060	1,220	1,440	1,410	974
12	1,580	1,970	3,000	3,490	3,360	2,990	1,840	2,300	1,370	1,380	1,260	1,350
13	1,300	1,780	2,990	3,700	3,270	3,030	1,790	1,800	1,360	1,430	1,100	1,290
14	1,340	1,970	3,040	3,700	3,260	2,790	1,800	1,960	1,360	1,630	1,180	1,390
15	1,430	1,800	2,860	3,680	3,050	2,660	1,930	1,560	1,280	1,440	1,150	1,190
16	1,590	1,920	2,850	3,700	3,060	2,530	1,870	2,540	1,040	1,450	1,170	1,190
17	1,290	1,680	2,760	3,580	3,500	2,700	1,880	2,430	1,290	1,460	1,040	1,230
18	1,220	2,110	2,880	3,500	3,130	2,500	1,840	1,840	1,260	1,650	1,080	1,080
19	1,440	2,800	2,980	3,300	3,000	2,640	1,880	1,890	1,390	1,410	1,100	1,360
20	1,510	2,070	3,030	3,960	2,890	2,590	1,980	2,000	1,270	1,380	1,210	1,250
21	1,390	2,220	3,090	3,300	3,160	2,530	1,840	1,810	1,170	1,450	1,290	1,220
22	1,380	3,120	2,780	3,370	2,990	2,580	1,840	1,940	1,170	1,470	942	1,300
23	1,260	2,890	3,000	3,500	2,980	2,560	1,830	1,940	1,380	1,450	1,170	1,420
24	1,080	2,740	4,080	3,490	3,090	2,190	2,190	2,000	1,380	1,480	1,190	1,590
25	1,290	2,920	4,140	3,480	3,180	1,600	2,210	1,660	1,340	1,480	1,090	1,370
26	1,290	3,130	4,010	3,380	3,240	1,470	1,930	2,060	1,260	1,380	970	1,940
27	1,320	3,000	4,110	3,450	3,000	1,630	1,870	1,940	1,260	1,230	1,170	1,640
28	1,450	2,510	3,980	3,200	3,010	1,640	2,240	1,720	1,280	1,500	1,030	1,570
29	1,420	3,010	4,070	3,330	-	1,610	2,050	1,240	1,590	1,460	1,180	1,850
30	2,170	2,640	4,100	3,280	-------	1,550	2,260	1,200	1,900	1,200	1,660	1,580
31	2,020	-------	3,480	3,310	-------	1,640	-------	1,400	-------	1,350	992	-------
Total	44,650	67,180	97,820	112,390	89,550	78,230	56,040	61,430	39,460	44,200	36,484	39,692
Mean	1,440	2,239	3,155	3,625	3,198	2,524	1,868	1,982	1,315	1,426	1,177	1,323
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 5,830 Min 1,080 Mean 2,684 Cfsm - In. -
Water year 1957-58: Max 4,220 Min 728 Mean 2,102 Cfsm - In. -

855. Cedar Lake near Kiel, Wis.

Location.--Lat 43°55'35", long 87°56'25", in SW¼ sec.24, T.17 N., R.21 E., at Cedar Lake Resort on narrows of lake, 5.8 miles east of Kiel.

Drainage area.--1.33 sq mi.

Records available.--August 1936 to September 1942, April 1945 to September 1958 (fragmentary).

Gage.--Staff gage.

Extremes.--Maximum elevation observed during year, 94.68 ft Nov. 30, Dec. 7, 28, and Feb. 22; minimum observed, 93.37 ft Sept. 27.
1936-42, 1945-58: Maximum elevation observed, 98.72 ft Mar. 9, 1946; minimum observed, that of Sept. 27, 1958.
An elevation of 100.37 ft was observed May 20, 1929, by Public Service Commission of Wisconsin.

Remarks.--Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-	-	-	4.66	4.64	-	-	-	-	-	-
2	-	4.48	-	-	-	-	-	-	-	-	3.69	-
3	-	-	-	-	-	-	-	4.39	-	-	-	-
4	-	-	-	4.64	-	-	-	-	-	-	-	-
5	4.64	-	-	-	-	-	4.62	-	-	3.90	-	-
6	-	4.47	-	-	-	-	-	4.37	-	-	-	3.47
7	-	-	4.68	4.63	-	-	-	-	4.01	-	-	-
8	-	-	-	-	4.64	4.66	4.64	-	-	-	-	-
9	-	4.56	-	-	-	-	-	-	-	-	3.57	-
10	-	-	-	-	-	-	-	4.38	4.04	-	-	-
11	4.54	-	-	4.64	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	4.57	-	-	3.80	-	-
13	-	-	-	-	-	-	-	-	-	-	-	3.43
14	-	-	4.66	-	-	-	-	-	4.00	3.84	-	-
15	-	-	-	-	4.66	4.62	-	-	-	-	-	-
16	-	4.64	-	-	-	-	-	-	-	-	3.49	-
17	-	-	-	-	-	-	-	4.28	-	-	-	-
18	-	-	-	4.66	-	-	-	-	-	-	-	-
19	4.56	-	-	-	-	-	4.49	-	-	3.80	3.40	-
20	-	-	-	-	-	-	-	-	-	-	-	3.39
21	-	-	4.64	-	-	-	-	-	3.90	-	-	-
22	-	-	-	-	4.68	4.62	-	-	-	-	-	-
23	-	4.66	-	-	-	-	-	-	-	-	3.47	-
24	-	-	-	-	-	-	-	4.18	-	-	-	-
25	-	-	-	4.66	-	4.58	-	-	-	-	-	-
26	4.52	-	-	-	-	-	4.43	-	-	3.78	-	-
27	-	-	-	-	-	-	-	-	-	-	-	3.37
28	-	-	4.68	-	-	-	-	-	3.82	-	-	-
29	-	-	-	-	-	4.58	-	-	-	-	-	-
30	-	4.68	-	-	-------	-	-	-	-	-	3.43	-
31	-	-------	-	-	-------	4.58	-------	4.11	-------	-	-	-------

Note.--Add 90 ft to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

860. Sheboygan River at Sheboygan, Wis.

Location.--Lat 43°44'25", long 87°45'35", in E½ sec.29, T.15 N., R.23 E., on left bank near State Highway 28, 0.7 mile west of bridge over Sheboygan River on State Highway 28 and 4.2 miles upstream from mouth.

Drainage area.--432 sq mi (revised).

Records available.--June 1916 to September 1924 (published as "near Sheboygan"), November 1950 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 584.00 ft above mean sea level, datum of 1929. June 1916 to June 1924 chain gage at site 0.7 mile downstream at different datum. November 1950 to June 1951 staff gage at site 0.3 mile downstream at datum 3.15 ft lower.

Average discharge.--15 years (1916-24, 1951-58), 225 cfs.

Extremes.--Maximum discharge during year, 379 cfs Apr. 7 (gage height, 3.43 ft); minimum, 3.5 cfs Aug. 5 (gage height, 1.15 ft).
1916-24, 1950-58: Maximum discharge observed, 7,140 cfs Mar. 26, 1920 (gage height, 9.40 ft, datum then in use); minimum observed, about 1 cfs Aug. 27, 1922 (gage height, 1.48 ft, datum then in use), caused by shutdown of powerplants.

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation caused by numerous powerplants above station.

Revisions (water years).--WSP 1307: 1917(M), 1919(M), 1921(M), 1923(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.2	5.0	2.2	93
1.4	12.5	2.5	147
1.6	22	3.0	256
1.8	38	3.3	340
2.0	62		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17.6	32	28	40	20	82	93	114	41	16.2	16.2	11.6
2	22	29	27	39	19	86	95	119	45	24	11.6	10.8
3	19.6	24	27	39	17	90	93	110	33	23	9.9	13.0
4	26	28	29	39	16	100	85	91	33	23	5.3	13.0
5	17.6	27	30	38	16	130	90	82	29	36	6.6	12.1
6	18.1	*29	30	38	15	160	183	*62	26	34	10.4	22
7	14.8	28	29	37	14	180	336	48	23	24	13.0	19.1
8	19.1	40	27	*37	14	190	300	40	23	20	16.2	28
9	16.2	41	25	37	14	185	226	35	23	18.6	14.3	22
10	20	35	23	37	13	180	213	32	*22	23	12.1	18.1
11	21	44	21	37	13	170	202	32	29	22	11.6	17.6
12	30	46	19	38	13	165	181	33	22	22	10.4	20
13	24	46	17	39	13	160	171	29	24	20	10.8	19.6
14	18.6	61	21	36	12	140	159	38	27	21	10.8	18.6
15	25	90	24	33	12	132	145	34	32	*21	9.1	19.6
16	21	91	26	31	12	143	134	34	22	22	7.6	18.6
17	32	65	28	29	12	128	128	31	19.1	18.6	6.3	18.6
18	36	82	30	27	12	123	103	29	21	20	*9.1	20
19	37	117	38	26	11	124	103	29	18.1	16.2	9.1	28
20	37	145	60	25	*11	115	100	24	18.1	12.5	10.4	29
21	40	107	68	25	11	119	91	22	17.6	12.5	11.2	24
22	32	50	75	24	12	128	90	25	13.4	15.7	13.0	23
23	36	47	80	24	16	121	90	21	12.5	14.3	11.6	19.6
24	48	58	62	24	25	112	114	21	20	15.3	10.4	24
25	65	60	56	24	40	*119	139	20	23	17.1	9.1	24
26	49	59	50	25	55	119	143	21	34	14.3	10.4	26
27	44	71	46	27	70	105	121	22	34	22	9.1	30
28	42	53	43	24	76	100	110	19.6	34	21	12.5	19.1
29	30	47	41	23	-	93	112	20	20	17.1	15.3	22
30	29	34	40	22	-------	103	117	23	17.1	13.4	17.6	17.6
31	28	-------	40	21	-------	90	-------	27	-------	15.3	16.2	-------
Total	915.6	1,686	1,160	965	584	3,992	4,267	1,287.6	755.9	615.1	347.2	608.6
Mean	29.5	56.2	37.4	31.1	20.9	129	142	41.5	25.2	19.8	11.2	20.3
Cfsm	0.068	0.130	0.087	0.072	0.048	0.299	0.329	0.096	0.058	0.046	0.026	0.047
In.	0.08	0.15	0.10	0.08	0.05	0.34	0.37	0.11	0.07	0.05	0.03	0.05

Calendar year 1957: Max 649 Min 10 Mean 108 Cfsm 0.250 In. 3.41
Water year 1957-58: Max 336 Min 5.3 Mean 47.1 Cfsm 0.109 In. 1.48

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 24, 25, Dec. 1 to Mar. 14.

865. Cedar Creek near Cedarburg, Wis.

Location.--Lat 43°19'25", long 87°58'50", on line between secs.14 and 23, T.10 N., R.21 E., on upstream side of highway bridge, 2 miles north of Cedarburg and 6 miles upstream from mouth.

Drainage area.--113 sq mi.

Records available.--August 1930 to September 1958.

Gage.--Wire-weight gage read twice daily. Altitude of gage is 790 ft (from topographic map). Prior to June 11, 1958, chain gage read once daily.

Average discharge.--28 years, 60.7 cfs.

Extremes.--Maximum discharge during year, about 180 cfs Mar. 1 (gage height, 6.55 ft, backwater from ice); minimum observed, 1.3 cfs Aug. 20 (gage height, 4.97 ft).
1930-58: Maximum discharge observed, 3,500 cfs Mar. 20, 1952 (gage height, 11.40 ft); maximum gage height observed, 12.00 ft Feb. 7, 1938 (backwater from ice); minimum discharge observed, 0.2 cfs Aug. 9-12, 1936.

Remarks.--Records good except those for periods of ice effect, which are poor.

Revisions (water years).--WSP 804: Drainage area. WSP 1307: 1932-34(M), 1937(M), 1939(M), 1945(M), 1948-49(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

4.9	1.0	5.4	20
5.0	2.1	5.5	33
5.1	4.0	5.7	72
5.2	7.0	5.9	124
5.3	12	6.1	182

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.2	10.0	11	11	10	170	32	24	45	5.2	3.2	5.2
2	5.2	9.0	11	11	10	170	29	24	48	7.5	3.6	4.3
3	5.8	9.0	11	11	9.5	170	29	26	42	8.5	2.9	3.8
4	5.8	9.0	11	11	9.5	160	29	26	32	16.8	2.5	3.0
5	5.8	9.0	12	11	9.0	150	35	24	24	13.6	2.1	3.8
6	5.8	*9.0	13	11	9.0	140	82	*21	16.0	12.0	3.4	12.8
7	5.8	11.0	13	12	8.5	130	96	21	12.0	11.5	6.1	14.4
8	5.8	11	11	*12	8.5	110	82	19.2	12.0	9.5	5.8	8.0
9	6.4	13	8.0	13	8.0	105	72	19.2	10.5	8.0	5.2	7.0
10	6.4	14	6.5	13	8.0	105	59	19.2	7.5	7.0	4.9	6.7
11	5.8	15.2	5.0	14	*7.9	110	50	17.6	*7.0	6.4	3.8	5.8
12	5.8	15.2	5.0	14	7.5	110	43	16.0	8.5	6.1	3.6	4.3
13	5.2	13.6	5.5	14	7.5	105	36	16.0	8.5	5.8	3.2	4.0
14	5.2	13.6	6.5	14	7.5	95	32	12.0	8.0	5.5	2.5	4.0
15	5.8	18.4	9.0	14	7.0	86	32	12.0	7.0	*5.8	2.5	3.8
16	6.4	23	9.3	14	7.0	75	29	10.5	7.0	5.8	2.5	3.4
17	5.8	25	9.5	14	7.0	58	29	10.5	6.4	5.8	1.7	6.4
18	5.2	28	11	14	7.0	43	26	8.0	6.4	5.5	1.6	9.5
19	5.2	28	14	14	7.0	44	24	8.0	6.4	5.2	1.4	9.0
20	5.2	25	20	14	7.0	44	24	8.0	7.0	4.3	*1.8	7.0
21	5.2	23	25	14	7.5	44	24	6.7	7.0	4.0	4.9	5.8
22	6.4	20	30	13	11	44	24	6.7	7.0	3.8	4.6	5.2
23	11.5	18	27	13	17	42	26	6.7	8.0	3.2	4.9	5.2
24	19.2	17	26	13	35	38	32	6.7	8.0	2.0	3.8	16.8
25	16.0	17	24	12	60	*35	38	6.7	9.0	2.9	3.2	24
26	12.8	16	25	12	110	32	38	7.5	12.8	2.5	3.4	17.6
27	12.8	16	16	12	150	32	32	7.5	10.5	3.2	3.4	12.0
28	11.5	15	14	12	160	32	29	6.1	9.0	4.9	3.2	9.0
29	11.5	14	13	11	-	32	29	6.1	6.7	4.6	3.4	8.0
30	10.5	12	12	11	-------	29	26	5.5	4.9	4.3	2.9	7.0
31	10.5	-------	11	11	-------	29	-------	26	-------	4.3	5.2	-------
Total	241.5	477.0	425.3	390	712.9	2,569	1,168	434.4	404.1	196.4	107.2	236.8
Mean	7.79	15.9	13.7	12.6	25.5	82.9	38.9	14.0	13.5	6.34	3.46	7.89
Cfsm	0.069	0.141	0.121	0.112	0.226	0.734	0.344	0.124	0.119	0.056	0.031	0.070
In.	0.08	0.16	0.14	0.13	0.23	0.85	0.38	0.14	0.13	0.06	0.04	0.08

Calendar year 1957: Max 246 Min 5.0 Mean 33.7 Cfsm 0.298 In. 4.07
Water year 1957-58: Max 170 Min 1.4 Mean 20.2 Cfsm 0.179 In. 2.42

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 8-10, Nov. 21 to Mar. 23.

870. Milwaukee River at Milwaukee, Wis.

Location.--Lat 43°06'00", long 87°54'30", in NE¼ sec.5, T.7 N., R.22 E., on left bank near north limits of Milwaukee, 2,000 ft downstream from Port Washington Road Bridge and 6 miles upstream from mouth.

Drainage area.--686 sq mi (revised).

Records available.--April 1914 to September 1958. Published as "near Milwaukee" prior to 1936.

Gage.--Water-stage recorder. Datum of gage is 607.3 ft above mean sea level, adjustment of 1912. Prior to Apr. 6, 1929, staff or chain gage near present site at different datum. Apr. 6, 1929, to Jan. 8, 1934, chain gage at bridge half a mile upstream at different datum.

Average discharge.--44 years, 382 cfs.

Extremes.--Maximum discharge during year, 2,440 cfs Sept. 24 (gage height, 4.63 ft); minimum, 3.0 cfs Nov. 7 (gage height, 1.55 ft).
1914-58: Maximum discharge, 15,100 cfs Mar. 20, 1918, Aug. 6, 1924 (gage height, 9.00 ft, datum then in use, from floodmark for 1918, from graph based on gage readings for 1924); no flow Sept. 8, 1943.

Remarks.--Records good except those for period of ice effect, which are fair. Occasional regulation caused by dams above station.

Revisions (water years).--WSP 564: 1918(M). WSP 924: 1940. WSP 1207: 1936(M). WSP 1337: 1915-17(M), 1918, 1919-21(M), 1922, 1923(M), 1924, 1925-33(M).

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	5	2.2	132
1.7	15	2.4	224
1.8	29	2.7	391
1.9	46	3.1	660
2.0	69		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	48	92	60	90	70	120	195	149	214	60	41	44
2	51	89	84	90	70	130	190	136	166	60	39	51
3	51	84	95	90	70	150	195	125	136	62	38	51
4	53	81	98	90	70	165	195	105	118	72	38	44
5	48	286	98	88	68	185	245	86	101	81	38	53
6	48	112	95	88	68	200	294	95	92	69	51	67
7	51	*47	86	86	66	215	373	*108	81	78	43	92
8	51	132	72	86	66	230	465	216	86	75	41	95
9	51	112	62	*86	66	240	471	50	78	67	39	86
10	53	108	58	84	65	245	397	7	78	62	132	84
11	58	162	67	82	*65	250	338	13	69	62	60	60
12	55	122	80	82	65	250	304	75	*69	62	48	53
13	72	118	90	80	64	250	245	75	72	58	48	53
14	72	281	92	78	64	250	200	69	64	60	44	51
15	78	185	94	76	64	250	209	81	69	*60	41	55
16	92	214	94	74	64	250	204	84	67	60	39	51
17	89	219	94	72	64	250	195	92	64	58	36	161
18	105	408	94	72	64	250	190	86	129	55	36	72
19	89	356	94	70	64	250	171	72	122	51	41	62
20	81	415	94	70	64	250	141	67	125	46	160	60
21	81	350	94	70	64	245	129	60	108	46	*165	60
22	89	294	94	70	64	245	145	60	89	44	55	55
23	112	224	94	70	64	256	145	60	81	43	55	53
24	105	175	92	70	66	261	240	60	89	41	58	626
25	115	136	92	70	71	235	209	60	95	39	55	141
26	136	112	92	70	76	*214	229	60	101	38	53	101
27	122	162	92	70	88	200	200	60	105	107	51	81
28	105	190	92	70	100	195	219	55	86	53	48	64
29	98	145	92	70	-	200	195	55	75	41	48	58
30	105	108	90	70	-------	195	185	112	69	41	55	60
31	95	-------	90	70	-------	195	-------	245	-------	43	83	---------
Total	2,459	5,519	2,715	2,404	1,914	6,821	7,113	2,678	2,898	1,794	1,779	2,644
Mean	79.3	184	87.6	77.5	68.4	220	237	86.4	96.6	57.9	57.4	88.1
Cfsm	0.116	0.268	0.128	0.113	0.100	0.321	0.345	0.126	0.141	0.084	0.084	0.128
In.	0.13	0.30	0.15	0.13	0.10	0.37	0.39	0.15	0.16	0.10	0.10	0.14

Calendar year 1957: Max 1,100 Min 41 Mean 209 Cfsm 0.305 In. 4.14
Water year 1957-58: Max 626 Min 7 Mean 112 Cfsm 0.163 In. 2.22

Peak discharge (base, 2,000 cfs).--Sept. 24 (6 a.m.) 2,440 cfs (4.63 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 1 to Mar. 21 (no gage-height record Mar. 13-21).

875. Hart ditch at Munster, Ind.

Location.--Lat 41°33'40", long 87°28'50", in N½ sec.20, T.36 N., R.9 W., on left bank at city limits of Munster, a quarter of a mile downstream from U. S. Highway 41 and 0.4 mile upstream from mouth.

Drainage area.--69.2 sq mi.

Records available.--September 1942 to September 1958.

Gage.--Water-stage recorder and concrete control. Datum of gage is 591.21 ft above mean sea level, datum of 1929.

Average discharge.--16 years, 56.8 cfs.

Extremes.--Maximum discharge during year, 960 cfs June 10 (gage height, 3.76 ft); minimum, 4.5 cfs Oct. 5, 20, 21; minimum gage height, 0.52 ft Oct. 5.
1942-58: Maximum discharge, 2,600 cfs Oct. 11, 1954; maximum gage height, 7.83 ft Oct. 11, 1954; minimum discharge, 1.2 cfs July 29, 1946; minimum gage height, 0.47 ft July 29, 1946, Sept. 2, 1948.

Remarks.--Records good except those for period of no gage-height record, which are fair. Flow from this ditch discharges into Little Calumet River near Munster. Practically all of this flow discharges into the Calumet Sag Channel or Grand Calumet River.

Revisions.--WSP 1337: Drainage area

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

0.5	3.9	1.0	70
.6	12	1.5	192
.7	22	2.0	348
.8	35	4.0	1,030

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.8	19	21	76	20	222	26	16	62	19	53	12
2	6.4	17	21	*53	17	192	26	16	49	20	34	12
3	5.8	16	20	40	15	116	25	18	28	32	24	12
4	5.8	16	18	31	14	85	22	28	19	25	18	10
5	5.8	16	19	26	14	68	26	22	15	19	15	9.6
6	5.1	16	19	26	15	98	51	17	12	16	15	9.6
7	5.8	15	25	24	14	91	93	15	9.6	15	61	9.6
8	5.8	18	25	21	13	68	66	14	146	13	38	8.7
9	5.8	17	21	19	a10	53	46	14	750	12	25	8.7
10	5.8	16	20	18	a8.3	45	40	12	785	12	18	8.7
11	5.8	16	15	18	a8.0	40	32	12	364	13	25	8.7
12	6.4	16	14	17	a7.5	35	28	10	161	17	28	8.7
13	6.4	26	13	16	a7.1	35	24	9.6	398	16	17	8.7
14	7.2	242	14	16	a7.0	35	22	9.6	544	16	*13	8.0
15	7.2	380	14	17	a7.0	32	21	9.6	222	19	498	8.0
16	12	164	14	17	a6.9	30	19	*9.0	116	18	478	8.7
17	6.4	98	15	17	a6.8	28	18	8.7	87	15	156	18
18	5.8	121	25	16	a6.7	26	*18	14	83	14	87	14
19	5.1	172	106	14	a6.6	*26	18	9.6	59	13	57	9.6
20	5.1	*102	369	14	a6.6	31	31	8.7	49	12	40	8.0
21	4.5	70	246	16	*a6.6	34	30	8.0	40	*10	49	7.2
22	9.5	53	126	20	8.0	30	34	10	32	10	35	6.4
23	27	45	87	18	71	28	37	10	34	9.6	25	6.4
24	55	41	66	*19	252	29	35	12	37	9.6	29	6.4
25	*36	35	76	20	237	38	28	9.6	*66	8.7	24	5.8
26	32	32	138	20	184	35	21	8.0	57	8.0	19	*6.4
27	45	31	87	21	159	32	19	8.0	35	12	17	6.4
28	41	30	91	21	332	32	21	8.0	26	13	15	6.4
29	31	28	76	21	-	32	21	7.2	20	9.6	14	6.4
30	24	25	66	21	-------	31	18	6.4	19	9.6	13	7.2
31	20	-------	83	20	-------	29	-------	9.9	-------	57	14	-------
Total	450.3	1,893	1,950	713	1,460.1	1,706	916	369.9	4,324.6	493.1	1,954	266.3
Mean	14.5	63.1	62.9	23.0	52.1	55.0	30.5	11.9	144	15.9	63.0	8.88
Cfsm	0.210	0.912	0.909	0.332	0.753	0.795	0.441	0.172	2.08	0.230	0.910	0.128
In.	0.24	1.02	1.05	0.38	0.78	0.92	0.49	0.20	2.32	0.27	1.05	0.14

Calendar year 1957: Max 1,540 Min 3.6 Mean 52.3 Cfsm 0.756 In. 10.27
Water year 1957-58: Max 785 Min 4.5 Mean 45.2 Cfsm 0.653 In. 8.86

Peak discharge (base, 800 cfs).--June 10 (1:30 a.m.) 960 cfs (3.76 ft); Aug. 15 (10 p.m.) 820 cfs (3.35 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.

880. Thorn Creek at Glenwood, Ill.

Location.--Lat 41°31'50", long 87°36'20", in SW¼SE¼ sec.9, T.35 N., R.14 E., on right bank 20 ft downstream from Baltimore & Ohio Chicago Terminal Railroad bridge, 0.7 mile north of Chicago Heights, 0.8 mile south of Glenwood, and 1 mile upstream from Deer Creek.

Drainage area.--25.4 sq mi.

Records available.--May 1949 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 610.97 ft above mean sea level, datum of 1929.

Average discharge.--9 years, 30.7 cfs.

Extremes.--Maximum discharge during year, 950 cfs Aug. 15 (gage height, 9.52 ft); minimum daily, 11 cfs Sept. 14, 21, 28.
1949-58: Maximum discharge, 2,460 cfs July 13, 1957 (gage height, 11.14 ft); minimum daily, 6.0 cfs July 4, Aug. 21, Sept. 5, 11, 25, 1949.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Figures of discharge include about 6 cfs pumped from ground-water sources for municipal supply of Chicago Heights and undetermined amount of ground-water pumpage for industrial use above station. Undetermined amount of pumpage diverted by commercial livestock feeding pens above station.

Revisions (water years).--WSP 1207: Drainage area. WSP 1437: 1955.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 14, June 10 to July 1)

3.0	10	5.0	159
3.2	17	6.0	278
3.5	31	8.0	593
4.0	68		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	16	19	32	16	64	21	20	77	19	31	13
2	17	14	21	27	15	56	21	20	26	41	21	16
3	17	14	21	24	15	46	21	20	23	50	18	17
4	16	15	21	22	17	42	20	23	21	27	19	17
5	15	16	20	20	18	39	23	21	21	23	19	17
6	14	16	21	22	19	46	40	21	21	22	32	15
7	16	15	23	22	b17	43	44	20	17	21	32	12
8	*16	20	19	21	b15	37	34	19	307	21	29	15
9	17	13	21	21	b14	29	30	19	474	20	19	16
10	16	12	b20	20	b15	30	27	17	341	21	17	19
11	15	15	b19	19	b16	28	26	15	79	23	31	17
12	14	15	b18	17	b17	28	22	17	48	29	23	17
13	13	36	b18	19	b17	29	20	18	344	16	21	13
14	16	230	19	19	b16	25	22	18	111	30	22	11
15	17	91	18	19	b14	22	22	17	43	26	a550	16
16	34	51	21	19	b13	21	23	17	40	*22	a330	17
17	18	34	21	19	b14	23	23	16	44	21	a140	36
18	17	68	37	19	b15	23	22	24	39	21	a90	17
19	15	65	*43	19	b15	*22	21	17	34	18	a55	16
20	13	42	115	17	b15	22	35	*16	34	15	a45	13
21	15	34	49	19	b15	22	*25	17	30	19	a60	11
22	36	28	33	22	18	20	41	39	30	19	28	14
23	103	25	29	19	62	19	36	21	*29	19	a25	14
24	63	22	26	18	94	22	36	18	34	19	a35	15
25	23	24	44	17	81	24	27	13	32	20	a23	15
26	23	23	48	17	*68	23	23	16	24	17	a21	15
27	19	23	34	20	79	22	21	17	24	47	*20	12
28	19	20	39	19	113	23	22	18	21	49	19	11
29	18	20	31	*18	-	21	23	18	19	23	19	13
30	17	19	28	18	-------	20	21	14	19	23	17	17
31	16	-------	34	17	-------	22	-------	25	-------	61	16	-------
Total	685	1,036	930	621	843	913	792	585	2,404	802	1,827	467
Mean	22.1	34.5	30.0	20.0	30.1	29.5	26.4	18.9	80.1	25.9	58.9	15.6
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 1,460 Min 11 Mean 38.4 Cfsm - In. -
Water year 1957-58: Max 550 Min 11 Mean 32.6 Cfsm - In. -

Peak discharge (base, 240 cfs).--Oct. 23 (8 p.m.) 265 cfs (5.90 ft); Nov. 14 (2 p.m.) 384 cfs (6.70 ft); June 10 (12:30 a.m.) 610 cfs (8.14 ft); June 13 (12:30 p.m.) 593 cfs (7.95 ft); July 2 (10:30 p.m.) 272 cfs (5.93 ft); July 27 (9 p.m.) 344 cfs (6.45 ft); Aug. 15 (10 a.m.) 950 cfs (9.52 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for station at Thornton and other stations in Thorn Creek basin.
b Stage-discharge relation affected by ice.

885. Deer Creek near Chicago Heights, Ill.

Location.--Lat 41°31'15", long 87°35'25", 0.1 mile west of center of sec.14, T.35 N., R.14 E., on left bank at downstream side of bridge on Joe Orr Road, 0.4 mile east of Cottage Grove Avenue, 1 mile north of U. S. Highway 30, 1.5 miles northeast of Chicago Heights, and 1.6 miles west of Torrence Avenue.

Drainage area.--24.4 sq mi.

Records available.--May 1948 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 615.95 ft above mean sea level, datum of 1929. Prior to Jan. 11, 1949, wire-weight gage at same site and datum. Jan. 11, 1949, to Oct. 9, 1956, water-stage recorder at same site and datum. Oct. 10, 1956, to Sept. 24, 1957, staff gage 250 ft downstream at same datum. Sept. 25, 1957, to Aug. 12, 1958, wire-weight gage at present site and datum.

Average discharge.--10 years, 13.9 cfs.

Extremes.--Maximum discharge during year, 471 cfs June 10 (gage height, 10.50 ft); minimum, 0.3 cfs Oct. 1-3.
1948-58: Maximum discharge, 1,380 cfs July 13, 1957 (gage height, 11.75 ft); no flow for several days in 1949, 1953, 1956.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Undetermined amount of flow diverted for irrigation.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Jan. 18, 19, Feb. 24)

1.9	0.3	4.0	26
2.0	.5	5.0	53
2.1	.9	7.0	137
2.2	1.3	9.0	272
2.5	3.5	10.0	387
3.0	8.8	11.0	600
3.5	16		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	2.1	5.3	21	3.1	78	4.4	3.7	a25	4.0	7.8	1.9
2	.3	1.8	4.9	15	3.0	a60	4.9	3.7	17	3.7	4.2	1.7
3	.4	1.8	4.6	9.9	2.6	41	4.4	4.9	9.4	9.0	a2.5	1.5
4	.5	*1.6	3.8	8.6	2.5	26	4.4	a7.0	6.0	9.8	1.7	1.2
5	.4	1.6	4.2	7.8	2.8	35	4.4	6.3	4.4	7.0	1.4	1.0
6	.4	1.5	4.5	7.6	2.8	38	a13	4.6	2.8	a5.6	1.3	.9
7	*.4	1.4	6.7	7.2	2.8	26	19	3.7	2.3	4.6	2.0	.9
8	.4	1.4	5.2	5.8	2.2	19	14	3.0	208	3.7	2.4	.7
9	.4	1.2	4.4	5.4	2.0	a15	8.2	2.8	402	*2.6	1.4	.9
10	.4	1.2	3.9	5.4	2.0	12	7.0	2.0	333	2.5	a.9	.9
11	.4	1.2	3.1	5.2	2.2	12	6.0	a1.9	131	2.2	1.1	.8
12	.4	1.2	*2.7	4.6	2.0	11	5.4	1.8	62	4.6	1.8	.7
13	.4	5.6	2.8	4.3	1.9	9.4	a5.0	1.6	143	a3.0	1.2	.6
14	.4	66	2.7	4.4	2.0	8.8	4.0	1.6	123	3.7	1.2	.6
15	a.5	122	2.8	*4.2	a2.0	8.6	1.9	1.4	a50	6.0	320	.6
16	a1.7	52	2.8	4.2	a1.9	a7.5	1.6	1.3	31	4.2	141	.8
17	a1.1	36	2.8	4.0	a1.8	*6.4	1.3	1.3	24	3.3	44	3.8
18	.9	29	14	3.5	a1.7	6.0	1.6	a2.4	22	2.8	25	2.8
19	.9	38	53	3.2	a1.7	6.5	1.6	*1.8	16	2.0	17	1.5
20	.7	28	78	3.0	a1.8	6.5	a5.0	1.4	14	a2.0	12	1.1
21	.6	20	64	4.3	a1.9	6.5	3.5	1.3	12	1.9	14	.8
22	1.8	16	36	6.2	a2.1	6.5	*6.6	1.3	a10	1.8	10	.7
23	9.7	13	21	4.9	a2.5	a6.0	12	1.9	8.8	1.6	7.2	.6
24	12	11	14	4.2	65	5.4	15	1.8	*10	1.4	6.9	.6
25	7.7	9.3	40	3.9	110	6.7	9.4	a1.5	12	1.3	*5.3	.6
26	6.8	8.3	40	4.0	82	6.0	7.0	1.3	12	1.1	3.9	.6
27	6.0	7.6	26	3.9	66	6.0	a6.7	1.1	8.2	a1.8	3.2	.6
28	5.0	6.9	22	2.8	107	6.5	6.7	1.1	6.5	1.9	2.9	.4
29	4.0	6.4	19	3.5	-	6.5	5.6	1.1	a5.4	1.8	2.4	.5
30	3.0	5.8	17	3.3	-------	a5.6	4.6	1.1	4.6	2.0	2.2	1.0
31	2.4	-------	18	3.1	-------	4.9	-------	2.2	-------	4.2	2.6	-------
Total	70.4	498.9	529.2	178.4	481.3	499.3	194.2	73.9	1,715.4	107.1	650.5	31.3
Mean	2.27	16.6	17.1	5.75	17.2	16.1	6.47	2.38	57.2	3.45	21.0	1.04
Cfsm	0.093	0.680	0.701	0.236	0.705	0.660	0.265	0.098	2.34	0.141	0.861	0.043
In.	0.11	0.76	0.81	0.27	0.73	0.76	0.30	0.11	2.61	0.16	0.99	0.05

Calendar year 1957: Max 860 Min 0.3 Mean 16.5 Cfsm 0.676 In. 9.17
Water year 1857-58: Max 402 Min 0.3 Mean 13.8 Cfsm 0.566 In. 7.66

Peak discharge (base, 250 cfs).--June 10 (1 a.m.) 471 cfs (10.50 ft); June 13 (9 p.m.) 263 cfs (8.90 ft); Aug. 15 (10:30 a.m.) 453 cfs (10.42 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for Butterfield Creek at Flossmoor and other stations in Thorn Creek basin.

890. Butterfield Creek at Flossmoor, Ill.

Location.--Lat 41°32'25", long 87°38'55", in NE¼NW¼ sec.8, T.35 N., R.14 E., on left bank at downstream side of Reigle Road Bridge at Homewood city limits, 0.1 mile north of Holbrook Road and three-quarters of a mile east of Flossmoor.

Drainage area.--22.9 sq mi.

Records available.--May 1948 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 616.80 ft above mean sea level, datum of 1929. Prior to Sept. 9, 1948, wire-weight gage at same site and datum.

Average discharge.--10 years, 16.5 cfs.

Extremes.--Maximum discharge during year, 311 cfs June 13 (gage height, 7.86 ft); minimum, 0.2 cfs Sept. 22, 27, 28.
1948-58: Maximum discharge, 2,550 cfs July 13, 1957 (gage height, 11.78 ft); no flow at times in 1948.

Remarks.--Records good except those for periods of ice effect, which are poor.

Revisions (water years).--WSP 1437: 1948(M), 1953, 1955.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 4, Sept. 13-30)

3.7	0.2	4.4	10
3.8	.4	4.7	23
3.9	.7	5.0	38
4.0	1.4	6.0	105
4.1	2.5	7.0	198
4.2	4.2	8.0	332

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	1.3	3.2	17	2.7	59	4.2	4.7	36	5.0	16	2.1
2	.7	1.3	3.0	b12	2.5	53	4.5	4.2	24	7.8	7.8	1.7
3	.6	1.7	2.7	b9.0	2.3	38	4.2	5.0	13	22	4.5	1.5
4	.8	*1.4	2.5	7.8	2.3	28	4.0	8.1	8.1	13	3.2	1.6
5	.7	1.2	2.4	6.8	2.4	24	5.1	7.1	6.0	8.7	2.4	1.3
6	1.0	1.3	2.7	7.4	2.5	32	13	6.0	4.5	6.5	2.6	1.3
7	*.6	1.2	3.7	7.1	2.4	28	19	5.2	3.7	5.2	5.9	1.0
8	1.0	1.8	3.4	5.8	2.2	23	14	5.0	166	4.2	4.7	1.0
9	1.0	2.0	2.8	5.5	2.1	18	10	4.7	276	3.7	2.7	.8
10	1.0	1.6	2.5	5.0	b2.2	15	8.4	4.2	227	3.4	2.1	1.2
11	1.0	1.5	2.2	4.7	b2.3	13	7.4	4.0	91	3.6	6.0	1.0
12	1.0	1.4	*1.8	4.0	b2.3	11	6.3	3.9	60	4.5	2.9	.8
13	1.0	4.8	2.0	4.0	b2.3	10	5.8	3.5	183	3.4	2.1	.8
14	.9	60	2.1	3.9	b2.2	10	5.2	3.2	144	3.9	1.6	1.0
15	.8	60	2.0	*3.7	b2.1	9.0	5.2	2.7	67	3.5	175	1.5
16	4.0	33	2.0	3.4	b1.9	8.7	4.5	2.4	48	*2.8	101	1.8
17	2.6	18	1.8	3.2	b1.8	*7.8	4.5	2.5	40	2.4	48	3.0
18	1.3	30	3.7	2.8	b1.8	6.8	4.5	6.1	36	2.4	30	.8
19	1.7	41	11	2.7	b1.8	6.3	5.0	*2.5	29	2.3	20	.5
20	2.0	24	46	2.7	b1.9	6.3	12	2.3	24	2.2	14	.4
21	1.8	16	33	3.0	b2.0	6.3	*9.4	2.0	20	2.0	25	.3
22	3.8	11	20	3.7	b2.1	6.0	15	5.6	16	2.0	16	.3
23	20	8.4	15	3.2	2.3	5.5	14	4.5	*14	1.8	11	.4
24	14	7.8	10	2.8	69	5.5	14	3.0	15	1.8	9.4	.5
25	4.2	6.5	18	3.0	b110	6.0	9.7	2.5	19	1.6	6.5	.7
26	2.7	5.5	31	3.4	89	5.8	7.1	2.2	15	1.4	*5.0	.8
27	2.4	5.2	19	3.4	60	5.5	6.5	2.0	11	3.8	3.9	.4
28	2.0	5.0	20	3.0	78	5.5	6.5	1.7	9.0	7.7	3.4	.3
29	1.3	4.2	16	2.8	-	5.2	6.0	1.6	7.4	2.8	2.8	.5
30	1.3	3.9	13	2.7	-------	5.0	5.2	1.6	6.3	2.4	2.5	.7
31	1.4	-------	16	2.7	-------	4.7	-------	5.1	-------	14	2.8	-------
Total	79.6	362.0	314.5	152.2	456.4	467.9	240.2	119.1	1,619.0	151.8	540.8	30.0
Mean	2.57	12.1	10.1	4.91	16.3	15.1	8.01	3.84	54.0	4.90	17.4	1.00
Cfsm	0.112	0.528	0.441	0.214	0.712	0.659	0.350	0.168	2.36	0.214	0.760	0.044
In.	0.13	0.59	0.51	0.25	0.74	0.76	0.39	0.19	2.63	0.25	0.88	0.05

Calendar year 1957: Max 1,500 Min 0.3 Mean 19.8 Cfsm 0.865 In. 11.73
Water year 1957-58: Max 276 Min 0.3 Mean 12.4 Cfsm 0.541 In. 7.37

Peak discharge (base, 240 cfs).--June 9 (1 a.m.) 304 cfs (7.82 ft); June 13 (3 p.m.) 311 cfs (7.86 ft); Aug. 15 (9 a.m.) 304 cfs (7.80 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

895. Lansing ditch near Lansing, Ill.

Location.--Lat 41°31'40", long 87°31'45", at north boundary of sec.17, T.35 N., R.15 E., on right bank at upstream side of bridge on farm road, 0.2 mile west of Indiana State line, 0.5 mile east of Burnham Avenue, and 2 miles south of Lansing.

Drainage area.--8.3 sq mi, approximately.

Records available.--May 1948 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 607.16 ft above mean sea level, datum of 1929. Prior to Sept. 20, 1948, wire-weight gage at same site and datum.

Average discharge.--10 years, 8.00 cfs.

Extremes.--Maximum discharge during year, 150 cfs June 8 (gage height, 7.02 ft); minimum daily, 0.4 cfs Dec. 11.
1948-58: Maximum discharge, 461 cfs May 10 or 11, 1948 (gage height, 9.24 ft, from floodmark); maximum gage height, 10.18 ft Oct. 11, 1954; no flow at times.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Undetermined amount of flow diverted for irrigation above station.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 14 to Mar. 30, Aug. 15 to Sept. 6)

2.7	0.2	3.4	4.9
2.8	.5	3.8	11
2.9	.8	4.2	18
3.0	1.4	5.0	50
3.2	2.7	7.0	150

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	2.1	1.2	6.2	b1.5	16	a1.6	3.6	18	6.5	4.6	2.4
2	1.4	2.6	1.2	4.5	b.9	14	a2.0	2.9	7.5	5.9	4.1	2.7
3	2.4	2.2	1.0	4.1	b1.0	9.5	a4.5	2.5	7.1	8.8	2.0	3.4
4	2.8	*2.1	1.0	2.7	b1.6	7.2	a2.1	1.8	7.3	6.1	2.4	3.7
5	3.6	2.3	1.0	2.8	b1.7	6.8	3.0	3.1	3.7	4.3	5.0	1.8
6	1.8	2.1	1.0	2.9	b1.5	9.8	2.9	3.1	3.5	3.8	4.4	3.4
7	*2.6	2.0	1.0	2.4	1.1	7.6	8.7	1.4	2.6	5.6	7.1	1.6
8	2.9	2.3	1.1	2.1	b1.0	6.8	9.3	1.7	76	7.2	3.8	2.3
9	3.3	1.9	.8	2.1	b.9	5.5	6.2	1.4	135	6.2	3.8	2.6
10	2.6	1.7	.9	3.0	.8	4.1	5.0	1.1	105	6.2	1.6	2.0
11	2.8	2.1	.4	2.4	a1.0	3.6	5.3	1.5	59	5.1	6.1	3.9
12	2.0	2.0	*.8	2.5	a.9	3.7	4.3	1.1	42	6.0	7.0	3.7
13	2.0	2.2	1.4	2.3	a.8	4.3	3.5	1.0	92	2.8	4.2	3.2
14	3.2	23	1.3	2.3	a.8	5.0	3.1	1.0	72	5.2	3.2	1.3
15	3.2	36	.8	1.9	a.9	4.2	4.3	1.0	30	5.4	82	3.2
16	2.9	13	1.0	*1.8	a.8	3.9	2.0	1.0	17	5.7	75	2.1
17	2.7	8.1	.9	1.8	a.7	3.3	1.8	.9	15	*4.5	22	5.2
18	2.6	9.0	1.3	1.7	a.7	*4.2	2.6	1.4	18	3.4	13	4.4
19	2.6	15	5.3	1.6	a.7	3.8	3.4	.8	14	5.2	8.0	2.3
20	2.4	8.2	30	1.7	a.8	2.3	5.1	*.7	12	2.6	6.9	4.1
21	2.5	5.7	14	2.3	a.9	2.4	5.5	.7	11	5.7	9.7	1.7
22	3.2	3.9	8.1	1.8	a1.0	3.0	*5.7	1.9	6.8	6.8	6.0	4.2
23	3.9	3.9	5.9	1.6	a5.0	2.9	6.2	2.0	7.4	6.4	3.7	4.9
24	4.4	3.0	4.2	1.6	a25	3.1	5.5	1.2	*8.8	6.4	2.7	3.9
25	3.0	2.2	5.3	1.7	b30	3.3	4.6	1.2	13	3.6	3.9	2.0
26	3.1	3.1	10	1.2	20	3.1	3.8	1.0	12	5.0	3.7	4.3
27	3.0	3.5	6.3	2.0	13	2.4	2.5	1.0	12	1.8	3.8	4.6
28	3.2	2.6	6.6	b1.8	28	3.3	3.2	1.0	10	4.1	2.7	2.0
29	2.7	2.2	5.3	b1.4	-	2.6	2.6	.8	6.4	4.2	*2.8	2.8
30	2.6	1.3	5.2	b1.5	-------	3.0	3.0	1.0	5.9	4.0	4.6	6.2
31	2.3	-------	6.2	b1.4	-------	2.2	-------	2.7	-------	6.4	4.8	-------
Total	84.7	171.3	130.5	71.1	143.0	156.9	123.3	47.5	830.0	160.9	314.6	95.9
Mean	2.73	5.71	4.21	2.29	5.11	5.06	4.11	1.53	27.7	5.19	10.1	3.20
Cfsm	0.329	0.688	0.507	0.276	0.616	0.610	0.495	0.184	3.34	0.625	1.22	0.386
In.	0.38	0.77	0.58	0.32	0.64	0.70	0.55	0.21	3.72	0.72	1.41	0.43

Calendar year 1957: Max 231 Min 0.1 Mean 7.15 Cfsm 0.861 In. 11.67
Water year 1957-58: Max 135 Min 0.4 Mean 6.38 Cfsm 0.769 In. 10.43

Peak discharge (base, 140 cfs).--June 8 (12 p.m.) 150 cfs (7.02 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage when available, weather records, and records for North Creek near Lansing and Deer Creek near Chicago Heights.
b Stage-discharge relation affected by ice.

900. North Creek near Lansing, Ill.

Location.--Lat 41°32'45", long 87°33'30", in SE¼SE¼ sec.1, T.35 N., R.14 E., on right bank at downstream side of Torrence Avenue Bridge, 1.1 miles south of Lansing and 2.7 miles north of U. S. Highway 30.

Drainage area.--18.2 sq mi.

Records available.--May 1948 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 599.29 ft above mean sea level, datum of 1929. Prior to Dec. 16, 1948, wire-weight gage at same site and datum.

Average discharge.--10 years, 15.2 cfs.

Extremes.--Maximum discharge during year, 269 cfs June 9 (gage height, 7.69 ft); minimum, 0.3 cfs Sept. 29.
1948-58: Maximum discharge, 730 cfs Mar. 20, 1948 (gage height, 8.51 ft, from floodmark); maximum gage height, 8.96 ft Oct. 10, 1954; no flow at times.

Remarks.--Records good except those below 2 cfs, which are fair, and those for periods of ice effect or no gage-height record, which are poor. Undetermined amount of flow diverted for irrigation above station.

Revisions (water years).--WSP 1337: 1948(M).

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.2	3.7	2.7	28	2.3	37	1.7	4.6	50	7.8	8.4	3.9
2	.8	3.4	2.4	a21	2.5	36	2.6	3.7	40	6.7	5.3	3.3
3	1.4	3.9	2.3	16	2.2	28	5.3	3.7	25	15	2.9	4.7
4	1.8	*2.9	1.9	11	b2.8	20	3.1	3.8	21	13	1.7	4.7
5	3.0	3.3	1.9	10	b2.9	18	2.4	3.5	14	7.9	3.7	3.5
6	2.0	3.1	2.5	11	b2.5	26	4.3	4.2	9.1	4.5	5.5	3.3
7	*1.9	2.5	2.9	a6.0	b2.2	25	11	2.9	6.7	5.1	7.2	2.4
8	2.8	3.3	2.4	a4.0	b2.0	21	19	1.7	77	7.8	5.0	1.7
9	3.1	3.4	2.5	a4.0	b1.8	17	13	2.1	260	7.6	3.7	2.9
10	2.8	2.8	2.2	5.9	b1.6	13	10	1.5	227	6.6	2.4	2.6
11	2.5	2.5	1.6	3.7	b2.0	9.6	8.4	1.3	110	6.4	4.9	3.2
12	2.3	3.4	.8	3.7	b1.8	8.4	6.4	1.7	64	5.9	11	4.5
13	1.7	4.9	*1.0	3.8	b1.6	9.1	4.6	.9	149	4.8	5.8	3.8
14	2.2	39	2.0	4.0	b1.6	11	3.4	.9	164	4.2	3.2	2.1
15	3.8	77	1.5	*3.4	b1.8	10	4.5	1.1	61	5.4	84	2.0
16	4.9	48	1.7	3.2	b1.6	8.3	2.1	1.2	36	6.1	124	1.8
17	3.9	31	1.4	2.9	b1.4	6.1	1.2	1.2	28	*5.6	56	5.3
18	3.4	33	3.1	2.6	b1.4	5.3	.8	2.7	30	3.6	29	6.1
19	3.3	49	21	2.5	b1.4	*7.6	2.9	*1.8	26	3.9	19	3.5
20	2.9	35	60	2.5	b1.6	4.7	6.6	1.3	21	3.7	13	2.8
21	2.9	24	58	2.8	b1.8	4.0	11	1.2	17	2.9	20	2.5
22	4.1	17	36	5.2	b2.2	4.7	*12	2.0	11	5.0	17	1.8
23	8.8	15	28	2.7	b10	4.3	16	5.2	8.8	3.2	9.8	4.9
24	14	11	20	2.7	b37	4.0	15	2.3	*12	4.8	7.6	4.6
25	8.6	8.1	20	2.7	42	5.0	11	1.5	22	4.3	6.4	2.2
26	6.3	7.1	35	2.5	31	4.7	8.9	1.2	24	4.4	7.1	2.6
27	12	9.6	27	2.2	29	3.3	6.6	1.2	21	3.4	*6.9	3.8
28	9.6	7.9	26	2.8	44	3.4	5.5	1.1	18	4.7	5.2	3.4
29	7.4	6.3	26	2.7	-	3.2	4.6	1.0	11	4.9	3.7	.8
30	5.6	3.7	21	2.3	-------	3.1	3.4	1.0	6.4	4.0	6.6	4.4
31	5.0	-------	24	2.8	-------	2.2	-------	2.2	-------	8.8	9.6	-------
Total	136.0	464.8	438.8	180.6	236.0	363.0	207.3	65.7	1,570.0	182.0	495.8	99.1
Mean	4.39	15.5	14.2	5.83	8.43	11.7	6.91	2.12	52.3	5.87	16.0	3.30
Cfsm	0.241	0.852	0.780	0.320	0.463	0.643	0.380	0.116	2.87	0.323	0.879	0.181
In.	0.28	0.95	0.90	0.37	0.48	0.74	0.42	0.13	3.21	0.37	1.01	0.20

Calendar year 1957: Max 456 Min 0 Mean 14.4 Cfsm 0.791 In. 10.71
Water year 1957-58: Max 260 Min 0.8 Mean 12.2 Cfsm 0.670 In. 9.06

Peak discharge (base, 210 cfs).--June 9 (8 to 11 a.m.) 269 cfs (7.69 ft); June 13 (8 to 10 p.m.) 232 cfs (7.52 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for Lansing ditch near Lansing and other stations in the Thorn Creek basin.
b Stage-discharge relation affected by ice.

905. Thorn Creek at Thornton, Ill.

Location.--Lat 41°34'05", long 87°36'30", near center of N½ sec.34, T.36 N., R.14 E., on right bank at downstream side of Ridge Road Bridge in Thornton, 1 mile downstream from North Creek and 1½ miles upstream from Grand Trunk Railway.

Drainage area.--106 sq mi.

Records available.--May 1948 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 586.43 ft above mean sea level, datum of 1929. Prior to Dec. 18, 1948, wire-weight gage at same site and datum.

Average discharge.--10 years, 89.4 cfs.

Extremes.--Maximum discharge during year, 1,560 cfs Aug. 16 (gage height, 12.12 ft); minimum daily, 15 cfs Oct. 6.
1948-58: Maximum discharge, 4,700 cfs July 13, 1957 (gage height, 16.00 ft); minimum daily, 4.4 cfs Sept. 11, 1949.
Flood of Apr. 5, 1947, reached a stage of 14.34 ft, from floodmark (discharge, 4,200 cfs).

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Some diurnal fluctuation caused by pumping operations above station. Figures of discharge include about 6 cfs pumped from ground-water sources for municipal supply of Chicago Heights and undetermined amount of ground-water pumpage for industrial use above station.

Revisions.--WSP 1207: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 24 to Nov. 8, Nov. 19-22, Dec. 18 to Jan. 3, June 21 to Sept. 30; stage-discharge relation affected by ice Dec. 12, 13, Feb. 21; backwater from logjam June 16-20)

2.3	10	3.0	98
2.4	17	5.0	335
2.6	35	8.0	720
2.8	63	11.0	1,350

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	19	27	140	27	379	44	33	355	25	129	22
2	20	17	30	61	25	335	45	31	198	30	54	28
3	20	17	32	49	25	302	47	33	86	*178	30	39
4	19	19	32	42	26	264	44	45	56	74	23	44
5	17	20	30	36	28	225	42	42	45	52	22	42
6	15	20	31	40	31	236	84	36	35	43	30	31
7	19	22	34	43	29	236	127	35	29	39	103	17
8	*18	*33	29	39	25	174	91	33	508	39	73	27
9	20	26	29	36	a24	115	74	31	1,230	*36	32	34
10	22	23	29	36	a25	81	60	27	1,350	35	23	53
11	22	25	25	36	a27	70	47	23	841	37	76	36
12	19	27	23	32	a29	63	43	24	600	79	100	41
13	16	67	24	32	a29	63	36	26	880	31	45	32
14	20	407	23	34	28	60	38	26	882	64	35	19
15	24	562	23	33	a24	56	36	25	510	77	826	27
16	56	402	27	33	a23	51	35	25	370	59	1,340	38
17	26	269	30	*32	a23	48	32	25	290	48	880	137
18	22	272	46	30	a24	48	30	46	215	44	536	81
19	18	307	*88	31	a25	*47	30	28	165	32	192	58
20	16	194	341	30	a24	48	71	24	110	23	100	35
21	19	162	335	34	24	45	63	*24	67	28	231	20
22	41	97	203	43	a25	42	100	54	47	33	145	23
23	282	76	137	36	26	39	90	38	40	36	68	30
24	322	60	65	33	103	42	100	25	75	35	79	32
25	43	48	95	33	282	51	70	19	141	38	*47	36
26	29	44	225	38	357	50	52	19	116	29	40	36
27	30	42	174	40	346	48	44	23	*76	47	38	32
28	27	42	158	35	368	50	*43	22	48	148	32	24
29	23	35	114	32	-	47	38	21	30	38	34	25
30	21	33	72	31	-------	44	34	18	25	36	30	33
31	21	-------	107	30	-------	45	-------	28	-------	159	35	-------
Total	1,288	3,387	2,638	1,230	2,050	3,404	1,690	909	9,420	1,672	5,428	1,132
Mean	41.5	113	85.1	39.7	73.2	110	56.3	29.3	314	53.9	175	37.7
Cfsm	0.392	1.07	0.803	0.375	0.691	1.04	0.531	0.276	2.96	0.508	1.65	0.356
In.	0.45	1.19	0.93	0.43	0.72	1.19	0.59	0.32	3.30	0.59	1.90	0.40

Calendar year 1957: Max 3,250 Min 11 Mean 102 Cfsm 0.962 In. 13.00
Water year 1957-58: Max 1,350 Min 15 Mean 93.8 Cfsm 0.885 In. 12.01

Peak discharge (base, 520 cfs).--Nov. 14 (12 p.m.) 645 cfs (7.48 ft); June 10 (7 a.m.) 1,460 cfs (11.27 ft); June 14 (1 a.m.) 1,040 cfs (9.81 ft); Aug. 16 (1:30 a.m.) 1,560 cfs (12.12 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for station at Glenwood.

910. Little Calumet River at South Holland, Ill.

Location.--Lat 41°36'05", long 87°34'38", in SW¼SW¼ sec.13, T.36 N., R.14 E., on right bank at downstream side of bridge on U. S. Highway 6, 0.6 mile downstream from Thorn Creek, 1.6 miles east of South Holland, and 4.1 miles upstream from former gaging station at Harvey.

Records available.--October 1947 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 575.00 ft above mean sea level. Prior to Oct. 27, 1947, wire-weight gage at same site and datum. Auxiliary water-stage recorder at Dixmoor, 6.1 miles downstream. Prior to Nov. 17, 1947, auxiliary wire-weight gage at same site read twice daily.

Average discharge.--11 years, 162 cfs.

Extremes.--Maximum discharge during year, 1,930 cfs June 10 (gage height, 13.79 ft); minimum daily, 27 cfs Oct. 14.
1947-58: Maximum discharge, 4,440 cfs July 14, 1957 (gage height, 20.11 ft); minimum daily, 7.9 cfs Oct. 6, 1950; minimum gage height, 3.99 ft Sept. 26, 1949.
Flood of Apr. 6, 1947, reached a stage of 19.24 ft, from floodmark (discharge, 4,760 cfs).

Remarks.--Records good except those for periods of ice effect, which are poor. Flow from about 330 sq mi of upper Little Calumet River basin above a point in Gary, Ind., is diverted to Lake Michigan by Burns ditch (see p. 100). Calumet Sag Channel, 8 miles below station, usually diverts the entire low flow to the Mississippi River basin.

Revisions (water years).--1507: 1950, 1953.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	61	73	255	68	515	78	62	267	65	198	47
2	34	56	68	b200	b60	416	77	56	248	69	114	42
3	34	56	72	b150	b56	340	74	62	157	180	74	46
4	34	53	70	b110	b56	241	73	131	106	125	56	47
5	34	*54	65	b90	59	194	70	98	87	91	51	46
6	32	51	69	b85	64	220	119	78	67	74	48	44
7	31	48	77	b95	65	241	188	64	55	62	106	38
8	*32	62	77	b90	58	207	175	58	211	62	115	38
9	32	60	68	b85	52	169	135	53	1,220	58	75	40
10	33	45	69	b82	47	139	112	48	1,860	57	53	43
11	34	42	b56	81	b50	132	98	44	1,500	58	53	39
12	32	45	b52	72	b48	120	85	40	688	87	119	36
13	30	80	*53	68	b46	117	76	42	937	64	72	36
14	27	396	51	72	b45	113	67	42	1,500	59	56	33
15	32	815	48	74	b44	108	67	40	892	84	434	31
16	69	575	47	*72	b43	100	63	39	515	79	1,380	40
17	70	357	51	72	b45	90	59	40	340	67	858	95
18	44	316	64	69	b47	*90	56	78	255	*61	443	86
19	40	452	180	65	b49	88	54	50	262	55	241	53
20	32	366	462	62	b52	91	99	42	255	47	157	44
21	29	248	595	73	b60	96	116	38	181	46	212	37
22	39	188	382	85	b70	90	130	47	130	49	163	34
23	176	157	270	82	b100	80	152	69	117	49	108	37
24	308	140	200	75	426	78	157	46	125	46	104	38
25	164	119	188	72	*575	97	132	38	*175	50	86	38
26	115	113	324	79	479	96	99	*32	188	44	73	37
27	126	105	292	84	366	90	82	34	138	46	67	36
28	112	105	255	82	515	87	*79	32	110	130	*58	32
29	93	93	241	74	-	87	82	32	87	65	55	30
30	78	88	200	77	-------	80	71	30	70	56	52	36
31	68	-------	214	69	-------	76	-------	42	-------	172	56	-------
Total	2,048	5,346	4,933	2,801	3,645	4,688	2,925	1,607	12,743	2,257	5,737	1,279
Mean	66.1	178	159	90.4	130	151	97.5	51.8	425	72.8	185	42.6
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 4,240 Min 27 Mean 184 Cfsm - In. -
Water year 1957-58: Max 1,860 Min 27 Mean 137 Cfsm - In. -

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

920. Midlothian Creek at Oak Forest, Ill.

Location.--Lat 41°36'51", long 87°43'46", in SE¼NW¼ sec.15, T.36 N., R.13 E., on right bank at downstream side of Kilbourn Avenue Bridge in Oak Forest, 4.4 miles upstream from mouth.

Drainage area.--12.7 sq mi.

Records available.--October 1950 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 620.41 ft above mean sea level, datum of 1929 (Cook County Highway Department bench mark).

Average discharge.--8 years, 10.9 cfs.

Extremes.--Maximum discharge during year, 168 cfs June 13 (gage height, 4.01 ft); minimum, 0.3 cfs Sept. 15.
1950-58: Maximum discharge, 569 cfs Oct. 10, 1954 (gage height, 8.49 ft); maximum gage height, 9.00 ft July 13, 1957; no flow at times most years.

Remarks.--Records good except those for periods of ice effect, which are poor. Diurnal fluctuation at low flow caused by small industrial plants upstream.

Revisions (water years).--WSP 1337: 1951-53.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.1	0.4	2.0	34
1.2	1.7	3.0	91
1.3	4.1	4.0	164
1.5	11		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.6	1.1	2.4	11	2.4	38	4.1	3.6	33	2.9	17	0.9
2	.7	1.2	2.4	58.8	2.4	44	4.4	3.4	17	4.6	8.5	.7
3	.6	1.1	2.2	b6.7	2.2	30	4.1	7.6	9.6	32	4.8	.7
4	.6	.9	1.9	b5.1	2.2	22	3.9	60	7.1	14	3.4	.8
5	.7	1.1	1.9	5.1	2.2	19	6.5	31	5.8	22	2.7	1.1
6	.7	1.1	1.9	5.1	2.4	28	15	18	4.1	12	2.2	.7
7	.6	1.1	2.2	b4.4	b2.2	22	17	11	3.4	7.4	1.9	.7
8	.7	1.2	1.9	b3.6	1.7	17	12	8.5	47	5.8	1.7	.5
9	.7	1.5	1.7	3.4	b1.7	14	9.9	6.7	98	4.4	1.4	.6
10	.6	1.2	b1.5	3.4	b1.7	11	8.5	5.8	68	3.6	1.2	.6
11	*.7	1.1	b1.2	3.4	b1.5	9.9	7.4	5.1	40	3.6	1.5	.4
12	.5	1.1	b1.0	2.7	b1.5	8.8	6.4	4.1	26	4.8	2.2	.5
13	.6	*2.8	.9	2.7	b1.5	8.5	5.8	3.6	94	3.1	1.4	.5
14	.5	29	1.1	2.7	b1.5	8.1	5.1	3.6	68	3.1	1.1	.4
15	.7	28	1.1	2.7	b1.5	7.8	4.8	3.6	34	3.6	69	.4
16	2.9	14	1.1	2.7	b1.4	7.1	4.4	3.4	22	2.9	44	.6
17	1.2	8.8	1.2	*2.4	b1.4	6.4	4.4	3.4	16	2.2	30	3.0
18	.6	13	1.9	b2.4	b1.4	6.1	3.9	5.8	13	1.9	18	1.4
19	.6	19	*5.6	2.4	b1.4	5.8	4.4	3.6	10	1.9	11	.8
20	.6	11	19	2.2	b1.5	*5.8	11	2.9	8.1	1.7	8.8	.7
21	.6	8.1	17	2.9	b1.6	6.4	9.6	*2.4	6.4	1.5	25	.6
22	1.6	6.1	11	2.9	b1.7	6.4	13	4.1	5.4	1.7	*17	.5
23	7.4	5.1	9.6	2.9	b5.0	6.1	*11	4.1	4.8	*1.5	9.9	.6
24	7.6	4.8	7.4	2.7	46	5.8	11	2.9	5.4	1.4	6.7	.5
25	3.6	3.9	7.4	2.9	*54	5.8	8.1	2.4	7.1	1.4	4.1	.6
26	2.4	3.6	15	2.9	*51	5.4	6.4	2.2	7.1	1.4	2.9	.7
27	1.9	3.4	13	2.9	46	5.1	6.1	2.2	*5.1	2.4	1.9	.7
28	1.4	3.4	12	2.9	44	5.1	5.8	1.9	4.4	5.0	1.7	.6
29	1.2	3.1	11	2.7	-	5.1	5.1	1.7	3.9	2.2	1.4	.5
30	1.2	2.9	9.6	2.7	-------	4.8	4.1	1.5	3.4	1.7	1.4	.6
31	1.2	-------	11	2.4	-------	4.4	-------	2.8	-------	20	1.4	-------
Total	45.5	183.7	178.1	113.7	285.0	379.7	223.2	222.9	677.1	177.7	305.2	21.9
Mean	1.47	6.12	5.75	3.67	10.2	12.2	7.44	7.19	22.6	5.73	9.85	0.73
Cfsm	0.116	0.482	0.453	0.289	0.803	0.961	0.586	0.566	1.78	0.451	0.776	0.057
In.	0.13	0.54	0.52	0.33	0.83	1.11	0.65	0.65	1.98	0.52	0.89	0.06

Calendar year 1957: Max 406 Min 0.4 Mean 13.0 Cfsm 1.02 In. 13.88
Water year 1957-58: Max 98 Min 0.4 Mean 7.71 Cfsm 0.607 In. 8.21

Peak discharge (base, 220 cfs).--No peak above base.

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

925. Wolf Lake at Chicago, Ill.

Location.--Lat 41°40'00", long 87°32'15", in SW¼ sec.29, T.37 N., R.15 E., at outlet on west shore in Chicago.

Records available.--December 1939 to September 1958.

Gage.--Staff gage read once daily. Datum of gage is 580.45 ft above mean sea level, datum of 1929 (Cook County Highway Department bench mark). Prior to Apr. 6, 1941, staff gage 300 ft north at same datum. Apr. 6, 1941, to Sept. 11, 1957, water-stage recorder 300 ft north at same datum.

Extremes.--Maximum gage height observed during year, 2.14 ft June 14; minimum observed, 1.70 ft July 28, 29.
1939-58: Maximum mean hourly gage height, 3.00 ft Oct. 11, 12, 1954; minimum gage height observed, 0.76 ft Aug. 3, 1940.

Remarks.--Mean hourly values used to determine extremes in order to dampen effects of wind action. Portion of lake at recorder site diked off and drained June 30, 1957, to Sept. 30, 1958.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.88	1.98	1.90	1.96	1.88	1.94	1.86	2.04	1.88	1.94	1.86	1.80
2	1.90	1.96	1.90	1.94	1.84	1.94	1.88	2.06	1.88	1.96	1.86	1.80
3	1.90	1.94	1.94	1.92	1.84	1.92	1.88	2.04	1.86	2.10	1.84	1.78
4	1.90	1.94	1.94	1.92	1.84	1.92	1.90	2.10	1.86	2.04	1.84	1.80
5	1.88	1.94	1.94	1.90	1.84	1.92	1.90	2.10	1.86	2.04	1.82	1.84
6	1.86	1.92	1.92	1.90	1.86	1.94	1.88	2.06	1.88	2.02	1.82	1.80
7	1.86	1.92	1.96	1.90	1.86	1.96	1.88	2.06	1.86	2.00	1.96	1.78
8	1.86	1.92	1.94	1.90	1.84	1.94	1.90	2.06	1.86	1.98	1.94	1.78
9	1.86	1.92	1.92	1.90	1.84	1.92	1.96	2.06	1.98	1.96	1.92	1.78
10	1.86	1.92	1.90	1.88	1.84	1.90	1.98	2.06	2.04	1.96	1.88	1.78
11	1.86	1.90	1.94	1.88	1.82	1.90	1.96	2.00	2.06	1.96	1.90	1.80
12	1.86	1.90	1.94	1.88	1.84	1.90	1.96	1.96	2.04	1.96	1.88	1.80
13	1.84	1.94	1.94	1.86	1.84	1.90	1.96	1.94	2.08	1.94	1.86	1.80
14	1.84	2.04	1.92	1.86	1.86	1.90	1.96	1.94	2.14	1.90	1.84	1.80
15	1.86	2.08	1.90	1.86	1.86	1.88	1.98	1.94	2.10	1.88	1.90	1.80
16	1.94	2.04	1.88	1.86	1.82	1.86	1.98	1.94	2.06	1.86	1.90	1.80
17	1.94	2.04	1.88	1.86	1.82	1.86	1.98	1.94	2.04	1.86	1.86	1.90
18	1.94	2.04	1.88	1.86	1.84	1.86	1.98	1.92	2.06	1.80	1.84	1.92
19	1.94	2.06	1.88	1.84	1.84	1.88	1.98	1.84	2.06	1.78	1.82	1.92
20	1.90	2.02	2.00	1.84	1.84	1.90	2.02	1.84	2.08	1.78	1.82	1.92
21	1.88	2.04	1.98	1.92	1.86	1.90	2.04	1.86	2.04	1.76	1.86	1.88
22	1.94	2.04	1.98	1.90	1.86	1.92	2.04	1.86	1.98	1.76	1.88	1.88
23	2.04	2.04	1.90	1.90	1.84	1.90	2.08	1.86	1.98	1.74	1.86	1.88
24	2.06	2.04	1.94	1.90	1.86	1.90	2.00	1.86	1.98	1.74	1.86	1.90
25	2.06	2.04	1.94	1.88	1.86	1.92	2.08	1.80	2.06	1.74	1.84	1.88
26	2.06	2.02	1.96	1.88	1.90	1.92	2.10	1.80	2.06	1.74	1.84	1.90
27	2.06	2.00	1.94	1.88	1.92	1.90	2.08	1.76	2.06	1.72	1.84	1.88
28	2.04	2.04	1.96	1.88	1.94	1.90	2.08	1.76	2.04	1.70	1.84	1.86
29	2.02	2.00	1.96	1.88	-	1.90	2.06	1.76	1.96	1.70	1.84	1.84
30	2.00	1.96	1.96	1.90	------	1.88	2.06	1.78	1.94	1.72	1.82	1.80
31	2.00	------	1.96	1.88	------	1.86	------	1.76	------	1.80	1.82	------

930. Deep River at Lake George Outlet, at Hobart, Ind.

Location.--Lat 41°32'10", long 87°15'25", in NW¼ sec.32, T.36 N., R.7 W., on left bank at upstream side of highway bridge, 300 ft upstream from Duck Creek and 400 ft downstream from Lake George Dam.

Drainage area.--125 sq mi.

Records available.--April 1947 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 588.17 ft above mean sea level, datum of 1929 (levels by Indiana Flood Control and Water Resources Commission). Prior to July 30, 1952, staff gage and July 30, 1952, to July 20, 1955, water-stage recorder, at site 400 ft upstream at datum 11.80 ft higher.

Average discharge.--11 years, 91.0 cfs.

Extremes.--Maximum discharge during year, 720 cfs June 10 (gage height, 8.61 ft); minimum, 10 cfs Oct. 4 (gage height, 3.51 ft).
1947-58: Maximum discharge, 3,880 cfs Oct. 11, 1954 (gage height, 7.68 ft, site and datum then in use); minimum, 2.0 cfs (regulated) Oct. 8, 1956; minimum gage height, 3.35 ft Sept. 21, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Revisions (water years).--WSP 1337: 1953, drainage area. WSP 1507: 1956.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 17 to Aug. 7, Aug. 10-14, Aug. 18 to Sept. 3, Sept. 23-30)

3.5	9.9	5.0	130
3.7	18	7.0	420
4.0	36	9.0	800
4.5	76		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	50	52	154	40	305	48	26	44	38	204	35
2	12	45	47	130	35	290	43	26	53	40	246	33
3	12	42	46	b96	35	275	40	29	46	59	148	33
4	12	40	44	b80	33	204	42	30	38	63	91	30
5	12	37	42	67	34	166	45	31	29	51	67	27
6	12	35	43	67	34	166	56	30	25	42	55	26
7	12	30	45	63	32	166	67	30	22	37	95	22
8	13	39	57	b59	29	148	76	29	54	34	401	19
9	13	29	63	b52	a24	118	72	26	309	35	386	20
10	13	29	54	49	a21	102	67	27	660	36	204	16
11	15	29	47	48	a19	91	59	24	660	39	190	16
12	13	29	43	45	a18	76	55	22	474	57	290	18
13	13	34	39	44	a17	72	50	21	403	72	218	15
14	13	152	39	43	a16	67	44	22	510	63	*136	17
15	15	438	38	42	a16	63	42	*19	564	59	170	18
16	23	510	40	42	a16	63	40	18	420	56	386	23
17	24	352	40	40	a15	57	*37	21	290	49	456	41
18	22	232	47	39	a15	54	33	22	246	42	305	57
19	20	*246	*96	35	a15	*52	35	19	218	37	204	59
20	18	218	281	36	a16	50	37	17	166	35	154	46
21	17	178	492	41	*18	51	39	15	142	33	136	35
22	22	136	456	45	21	53	39	16	118	31	118	27
23	52	112	290	45	55	52	36	19	96	*29	96	22
24	124	91	204	*45	246	52	40	22	*86	26	96	23
25	*166	81	166	44	369	54	40	19	81	24	86	*19
26	148	76	218	43	352	57	39	18	76	24	76	18
27	124	72	218	45	275	57	38	17	67	25	63	16
28	107	63	190	44	290	57	37	13	57	26	57	15
29	86	63	166	43	-	55	36	15	51	24	52	15
30	72	58	148	42	-------	53	33	15	42	26	49	16
31	58	-------	148	40	-------	51	-------	19	-------	75	41	-------
Total	1,273	3,546	3,899	1,708	2,106	3,177	1,365	677	6,047	1,287	5,276	775
Mean	41.1	118	126	55.1	75.2	102	45.5	21.8	202	41.5	170	25.8
Cfsm	0.329	0.944	1.01	0.441	0.602	0.816	0.364	0.174	1.62	0.332	1.36	0.206
In.	0.38	1.05	1.16	0.51	0.63	0.94	0.41	0.20	1.81	0.38	1.57	0.23

Calendar year 1957: Max 1,420 Min 11 Mean 96.0 Cfsm 0.768 In. 10.42
Water year 1957-58: Max 660 Min 12 Mean 85.3 Cfsm 0.682 In. 9.27

Peak discharge (base, 700 cfs).--June 10 (9:30 p.m.) 720 cfs (8.61 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.
b Stage-discharge relation affected by ice.

935. Burns ditch at Gary, Ind.

Location.--Lat 41°34'30", long 87°17'20", in N½ sec.13, T.36 N., R.8 W., on left bank on downstream side of bridge on Central Avenue, 0.4 mile east of Gary and 0.4 mile downstream from confluence of Deep River and Little Calumet River.

Drainage area.--About 160 sq mi.

Records available.--October 1943 to September 1958 (high-water records only, October 1950 to September 1955).

Gage.--Water-stage recorder. Datum of gage is 577.04 ft above mean sea level, datum of 1929. Prior to July 28, 1955, wire-weight gage at same site and datum.

Average discharge.--10 years (1943-50, 1955-58), 130 cfs.

Extremes.--Maximum discharge during year, 755 cfs June 11 (gage height, 7.88 ft); minimum, 12 cfs May 28; minimum gage height, 3.41 ft Oct. 3, 4.
1943-58: Maximum discharge, 3,430 cfs Oct. 11, 1954; maximum gage height, 16.44 ft Mar. 16, 1944, from graph based on gage readings; minimum determined, 1.8 cfs Oct. 14, 1946.

Remarks.--Records fair. Burns ditch is an artificial channel which reverses the direction of flow of part of Little Calumet River and flows into Lake Michigan at Wickliffe.

Revisions (water years).--WSP 1034: 1944. WSP 1337: Drainage area.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 22 to Dec. 10, Dec. 12-19, Apr. 15 to June 8, Aug. 10-24, Sept. 19-30)

3.4	14	6.0	379
3.7	35	8.0	778
4.3	107		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	92	100	230	60	379	78	47	84	52	160	54
2	18	84	93	190	56	362	75	41	75	60	246	49
3	18	80	90	167	b54	345	69	48	70	80	174	49
4	15	76	88	130	49	278	69	56	56	79	107	47
5	16	74	84	114	48	246	72	56	44	67	79	42
6	17	69	89	100	b48	230	93	53	35	54	63	41
7	18	63	93	b114	b45	246	100	52	29	46	94	37
8	19	69	107	b93	b40	214	107	49	92	40	311	33
9	20	70	107	b80	35	182	107	44	311	36	415	33
10	19	58	107	76	30	152	100	42	603	40	278	32
11	19	57	b95	72	27	130	85	38	732	45	214	29
12	19	57	81	68	26	122	75	33	603	60	311	30
13	20	69	76	64	25	114	70	31	545	74	*278	29
14	20	187	76	62	b24	107	68	30	603	73	190	29
15	21	451	75	62	b24	107	63	*26	665	61	206	32
16	43	545	79	62	b23	100	60	24	583	56	362	36
17	44	469	81	60	b22	92	*54	24	415	48	488	57
18	42	345	93	57	b22	86	48	31	328	40	397	69
19	40	311	*144	53	22	*84	48	24	294	33	278	73
20	34	*311	328	53	23	85	62	21	246	30	206	61
21	32	262	507	61	*26	85	62	18	190	29	190	49
22	44	230	526	68	30	86	67	21	152	*27	160	43
23	102	198	397	67	64	85	66	24	130	25	137	38
24	214	174	278	*64	246	85	73	28	*122	24	137	36
25	*230	152	230	64	397	88	73	24	122	23	122	*35
26	230	137	278	64	415	89	69	20	114	20	107	30
27	190	130	278	66	362	90	67	18	100	21	89	28
28	167	130	262	64	345	92	67	14	86	26	78	26
29	137	122	246	63	-	89	64	14	75	23	68	25
30	122	114	214	62	-------	85	56	15	62	23	63	26
31	107	-------	206	61	-------	83	-------	25	-------	85	61	-------
Total	2,056	5,186	5,508	2,611	2,588	4,618	2,167	991	7,566	1,400	6,069	1,198
Mean	66.3	173	178	84.2	92.4	149	72.2	32.0	252	45.2	196	39.9
Cfsm	0.414	1.08	1.11	0.526	0.578	0.931	0.451	0.200	1.58	0.282	1.22	0.249
In.	0.48	1.20	1.28	0.61	0.60	1.07	0.50	0.23	1.76	0.33	1.41	0.28

Calendar year 1957: Max 1,600 Min 12 Mean 135 Cfsm 0.844 In. 11.46
Water year 1957-58: Max 732 Min 14 Mean 115 Cfsm 0.719 In. 9.75

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

940. Little Calumet River at Porter, Ind.

Location.--Lat 41°37'18", long 87°05'13", in NE¼ sec.34, T.37 N., R.6 W., near center of span on downstream side of highway bridge, three-quarters of a mile northwest of Porter and 4.5 miles upstream from Salt Creek.

Drainage area.--62.9 sq mi.

Records available.--May 1945 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 603.48 ft above mean sea level, datum of 1929. Prior to June 26, 1952, wire-weight gage at same site and datum.

Average discharge.--13 years, 70.5 cfs.

Extremes.--Maximum discharge during year, 490 cfs Feb. 28 (gage height, 6.82 ft); minimum, 19 cfs Sept. 14; minimum gage height, 2.38 ft July 24, 25.
1945-58: Maximum discharge, 3,110 cfs Oct. 10, 1954 (gage height, 11.66 ft); minimum, 18 cfs Aug. 10, 11, 1946, Sept. 30, 1953, Jan. 11-13, 1954, Jan. 1, 1957; minimum gage height, 2.14 ft Aug. 22, 1949.

Remarks.--Records fair.

Revisions (water years).--WSP 1084: 1945. WSP 1337: 1946-47, drainage area.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-23, Jan. 15 to Feb. 16, Feb. 22-24, Mar. 9 to Apr. 7, July 29 to Aug. 1, Aug. 7, 8, Aug. 11 to Sept. 30)

2.1	20	5.0	175
3.0	47	6.0	305
4.0	97	7.0	560

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	66	62	a115	52	355	42	36	72	31	86	21
2	28	64	64	a88	50	250	43	37	57	40	46	21
3	28	64	62	a78	50	195	42	39	42	48	36	22
4	27	64	59	a71	48	161	41	43	37	40	31	22
5	27	62	57	a66	50	144	41	42	35	36	28	22
6	27	62	62	a66	49	144	62	39	33	34	28	22
7	28	59	76	a64	49	141	72	38	32	34	35	21
8	28	72	82	a53	43	118	57	36	39	32	66	20
9	28	82	72	a60	45	100	51	36	119	31	42	20
10	28	72	66	a60	46	82	48	35	97	31	33	21
11	28	66	64	a56	42	74	46	35	62	36	115	20
12	28	64	64	a53	43	69	44	34	48	36	165	21
13	29	72	64	a51	43	66	44	33	102	33	*65	20
14	28	125	64	51	44	64	44	32	205	33	40	20
15	30	250	62	52	45	62	43	*32	124	36	41	20
16	42	200	69	51	40	59	42	32	69	33	38	24
17	46	133	72	51	b38	57	*42	31	55	31	29	31
18	39	122	85	52	b37	55	40	34	54	30	26	38
19	40	144	*170	49	b38	*54	40	32	48	29	24	29
20	37	*133	281	49	*b40	55	45	30	46	28	33	26
21	36	104	335	54	b44	55	44	30	41	28	27	25
22	39	88	195	64	50	53	43	30	38	27	25	24
23	108	79	137	*59	55	50	44	31	37	*26	23	24
24	*200	74	144	57	89	49	50	31	*38	25	28	24
25	185	69	100	57	170	53	46	31	47	26	25	*25
26	144	66	137	57	281	49	42	30	48	25	23	25
27	114	66	118	57	435	47	41	30	40	25	22	25
28	91	64	118	57	475	50	42	29	36	25	22	24
29	82	64	122	57	-	49	41	29	34	36	22	23
30	74	64	104	55	------	46	38	28	32	56	21	24
31	72	------	100	54	------	44	------	32	------	77	22	------
Total	1,769	2,714	3,267	1,864	2,491	2,850	1,360	1,039	1,767	1,058	1,267	704
Mean	57.1	90.5	105	60.1	89.0	91.9	45.3	33.5	58.9	34.1	40.9	23.5
Cfsm	0.908	1.44	1.67	0.955	1.41	1.46	0.720	0.533	0.936	0.542	0.650	0.374
In.	1.05	1.61	1.92	1.10	1.47	1.68	0.80	0.61	1.04	0.62	0.75	0.42

Calendar year 1957: Max 645 Min 25 Mean 63.5 Cfsm 1.01 In. 13.72
Water year 1957-58: Max 475 Min 20 Mean 60.7 Cfsm 0.965 In. 13.07

Peak discharge (base, 700 cfs).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.
b Stage-discharge relation affected by ice.

945. Salt Creek near McCool, Ind.

Location.--Lat 41°35'48", long 87°08'40", in SE¼ sec.6, T.36 N., R.6 W., on left bank on downstream side of highway bridge, 50 ft downstream from New York Central Railroad bridge, 1¼ miles north of McCool, and 1.5 miles upstream from Little Calumet River.

Drainage area.--78.7 sq mi.

Records available.--May 1945 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 594.10 ft above mean sea level, datum of 1929 (levels by Indiana Flood Control and Water Resources Commission). Prior to July 25, 1955, wire-weight gage at same site and datum.

Average discharge.--13 years, 70.1 cfs.

Extremes.--Maximum discharge during year, 456 cfs Nov. 15 (gage height, 7.44 ft); minimum, 22 cfs Oct. 2, Sept. 15; minimum gage height, 2.79 ft Sept. 15.
1945-58: Maximum discharge, 3,180 cfs Oct. 11, 1954 (gage height, 14.12 ft); minimum, 6.3 cfs Aug. 24, 1955 (gage height, 2.31 ft).

Remarks.--Records fair.

Revisions (water years).--WSP 1337: 1946-48(M), 1950(M), drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 21, June 11-13, 15-28, July 2-4, 11-16, July 31 to Aug. 4, Aug. 7-22, 24, 25, Sept. 16-19)

2.8	20	5.0	159
3.0	28	6.0	266
3.5	53	7.0	398
4.0	80	7.5	472
4.5	114		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	56	50	99	50	179	48	32	66	31	159	28
2	23	50	50	77	48	149	48	32	53	43	83	26
3	24	50	50	68	48	122	46	36	38	56	53	28
4	24	50	48	63	48	99	46	40	33	40	43	28
5	24	48	48	58	48	89	46	38	32	33	36	28
6	24	46	50	58	48	99	66	33	30	33	32	26
7	24	43	68	56	48	89	83	32	29	31	40	26
8	24	56	77	50	40	77	66	32	92	31	172	25
9	24	66	63	56	43	71	58	32	290	28	136	25
10	25	53	60	56	40	66	53	30	328	28	71	25
11	24	48	48	53	38	63	50	30	169	53	80	26
12	24	48	53	50	40	58	46	29	99	63	89	26
13	24	56	53	48	40	58	46	29	151	46	*66	25
14	23	188	56	48	40	58	43	29	292	40	48	24
15	24	426	53	48	46	58	40	*29	165	53	91	25
16	43	254	53	48	40	58	40	28	92	46	179	38
17	53	122	53	48	37	56	*38	28	77	38	96	50
18	33	114	63	48	35	53	38	33	89	33	63	66
19	33	169	*182	46	34	*53	36	29	74	32	50	43
20	29	*106	290	46	*34	53	40	28	66	30	43	36
21	27	86	370	50	40	53	40	26	56	29	50	31
22	32	77	169	63	56	53	38	28	48	29	46	29
23	118	68	106	*58	85	50	38	30	43	*28	38	28
24	*254	63	86	56	302	50	50	28	*46	27	46	28
25	254	58	86	53	328	56	46	27	63	27	38	*28
26	199	58	140	53	231	53	40	26	58	26	36	28
27	114	58	99	56	199	50	38	25	46	25	32	28
28	92	56	99	56	199	53	38	26	40	27	30	27
29	74	56	99	53	-	53	38	26	36	28	29	26
30	66	53	83	53	-------	50	33	25	32	32	29	28
31	58	-------	86	50	-------	48	-------	30	-------	88	28	-------
Total	1,837	2,682	2,891	1,725	2,285	2,177	1,376	926	2,733	1,154	2,032	905
Mean	59.3	89.4	93.3	55.6	81.6	70.2	45.9	29.9	91.1	37.2	65.5	30.2
Cfsm	0.753	1.14	1.19	0.706	1.04	0.892	0.583	0.380	1.16	0.473	0.832	0.384
In.	0.87	1.27	1.37	0.81	1.08	1.03	0.65	0.44	1.29	0.55	0.96	0.43

Calendar year 1957: Max 605 Min 23 Mean 67.4 Cfsm 0.856 In. 11.64
Water year 1957-58: Max 426 Min 23 Mean 62.3 Cfsm 0.792 In. 10.75

Peak discharge (base, 600 cfs).--No peak above base.

* Discharge measurement made on this day.

965. East Branch Coldwater River at Coldwater, Mich.

Location.--Lat 41°56'25", long 85°01'00", in NW¼ sec.21, T.6 S., R.6 W., on downstream side of Jay Street Bridge at Coldwater, 1 mile upstream from mouth.

Drainage area.--About 60 sq mi.

Records available.--October 1937 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Wire-weight gage and crest-stage indicator; gage read twice daily. Datum of gage is 930.72 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Oct. 1, 1947, staff gage at site 400 ft downstream at same datum.

Average discharge.--21 years, 45.1 cfs.

Extremes.--Maximum discharge during year, 99 cfs Dec. 20 (gage height, 5.08 ft); minimum, 2.9 cfs Oct. 14 (gage height, 4.10 ft).
1937-58: Maximum discharge, 735 cfs Apr. 24, 1950 (gage height, 6.60 ft); minimum, 0.1 cfs Dec. 13, 15-18, 1946, Sept. 12-18, 24, 1953, Sept. 21, 22, 1955.

Remarks.--Records good except those below 10 cfs, which are fair. Flow infrequently affected by contribution to or from Coldwater Lake. Regulation caused by dam at outlet of Marble Lake.

Revisions (water years).--WSP 1307: 1938-39(M), 1945(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 14)

3.97	3.1	4.5	28
4.0	3.8	4.8	80
4.1	6.5	5.1	102
4.2	10		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.6	8.1	33	63	27	59	37	30	12	10	30	24
2	4.6	8.1	33	83	26	56	37	28	*11	9.7	31	20
3	4.3	7.7	32	60	27	*52	35	27	10	10	29	21
4	4.0	7.7	32	28	32	50	33	32	10	11	29	19
5	3.8	7.7	30	27	25	50	32	30	9.7	11	*29	19
6	3.5	7.3	32	45	24	50	44	28	9.3	12	29	18
7	3.5	*7.7	43	45	24	57	50	*27	9.3	11	29	18
8	3.5	8.5	40	30	23	57	50	26	9.3	*11	29	17
9	3.8	9.7	*39	39	22	54	*47	24	10	10	27	*18
10	3.5	13	41	40	21	52	43	23	14	10	26	19
11	3.3	14	30	36	22	50	43	23	10	14	30	18
12	3.1	14	35	25	21	46	43	22	10	12	29	17
13	3.1	13	36	28	21	47	42	19	10	12	29	16
14	3.1	26	32	28	21	47	41	19	10	11	29	16
15	3.3	72	28	28	20	47	39	19	10	20	30	15
16	4.9	41	29	27	19	45	40	18	10	16	27	14
17	7.3	39	28	27	20	43	38	18	10	23	27	21
18	4.9	37	32	27	19	42	37	19	10	28	27	16
19	4.3	39	79	32	20	41	33	17	10	23	26	14
20	3.8	41	84	*30	20	44	33	16	10	20	24	14
21	3.8	39	93	25	20	43	33	16	9.3	24	39	14
22	4.0	36	79	29	19	43	32	15	8.5	24	32	14
23	11	36	73	27	19	41	32	14	8.9	27	28	14
24	12	37	70	26	21	41	41	14	10	25	30	12
25	10	33	68	25	28	40	37	14	11	25	27	14
26	8.5	33	86	27	33	39	32	14	10	24	27	14
27	7.7	33	77	27	33	37	32	14	10	24	26	13
28	7.7	32	79	27	50	38	31	12	11	27	24	12
29	7.7	33	68	26	-	40	30	12	12	27	23	12
30	6.9	33	65	27	-------	39	30	11	10	27	23	12
31	7.7	-------	63	27	-------	39	-------	12	-------	27	24	-------
Total	167.2	766.5	1,589	1,021	677	1,429	1,127	613	305.3	565.7	869	485
Mean	5.39	25.6	51.3	32.9	24.2	46.1	37.6	19.8	10.2	18.2	28.0	16.2
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 93 Min 2.4 Mean 19.3 Cfsm - In. -
Water year 1957-58: Max 93 Min 3.1 Mean 26.3 Cfsm - In. -

* Discharge measurement made on this day.

975. St. Joseph River at Three Rivers, Mich.

Location.--Lat 41°56'25", long 85°38'00", in S½ sec.18, T.6 S., R.11 W., on right bank in Scidmore Park at Three Rivers, 250 ft downstream from Rocky River and at mile 112.

Drainage area.--1,320 sq mi, approximately.

Records available.--May 1953 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 781.34 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--5 years, 919 cfs.

Extremes.--Maximum discharge during year, 2,330 cfs Mar. 4, 5 (gage height, 5.54 ft); minimum, 142 cfs July 2; minimum daily, 260 cfs July 2.
1953-58: Maximum discharge, 3,740 cfs May 12, 1956 (gage height, 7.34 ft); minimum daily, 96 cfs Aug. 30, 1953.

Remarks.--Records good. Flow regulated by powerplants above station.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 28 to Nov. 20, May 29 to Sept. 30)

2.2	240
2.5	370
3.0	625
6.0	2,700

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	436	778	966	1,760	784	2,040	986	922	520	339	504	455
2	*494	540	1,040	1,460	844	2,170	990	975	463	260	408	666
3	494	570	1,010	1,400	1,040	2,150	944	826	434	495	360	538
4	480	672	938	1,340	910	*2,150	930	1,010	*548	488	528	560
5	430	664	814	1,240	926	2,120	804	1,170	436	530	*440	562
6	422	630	856	1,260	818	2,080	994	*1,130	512	525	395	438
7	462	*501	924	1,330	820	1,970	1,160	1,130	464	393	420	388
8	454	620	887	1,150	723	1,890	1,110	1,060	454	350	450	481
9	592	566	1,040	1,190	730	1,960	*1,170	1,040	432	545	364	*431
10	456	600	*984	1,170	1,000	1,850	1,240	804	559	*423	302	528
11	345	824	860	1,150	816	1,580	1,290	834	536	538	478	568
12	402	670	788	1,200	773	1,700	1,170	896	387	382	424	488
13	403	736	876	1,240	919	1,640	1,180	805	429	405	517	322
14	472	933	856	1,130	870	1,540	1,200	794	514	458	490	356
15	351	1,080	847	1,120	732	1,360	1,160	770	490	346	622	486
16	504	1,280	978	1,080	849	1,440	1,100	658	435	503	522	496
17	534	1,490	988	973	926	1,350	1,050	672	577	568	432	642
18	536	1,660	981	936	902	1,390	1,110	680	550	566	582	698
19	484	1,530	1,110	970	871	1,270	958	750	407	448	463	716
20	461	1,530	1,600	1,000	856	1,230	1,030	568	484	536	468	456
21	398	1,340	1,720	*1,090	726	1,260	1,110	552	388	593	680	528
22	468	1,340	1,930	1,020	671	1,240	1,010	622	370	533	624	718
23	740	1,230	2,000	976	694	1,290	990	552	336	497	493	574
24	924	1,260	1,960	984	972	1,160	1,020	598	454	481	508	541
25	827	1,160	1,860	888	1,000	1,060	1,010	526	395	531	682	554
26	841	1,090	1,910	982	1,030	1,110	848	308	540	420	532	524
27	914	1,110	1,890	1,120	1,500	1,110	916	322	432	366	586	384
28	1,040	900	1,840	1,010	1,950	1,100	1,110	424	444	536	540	463
29	914	1,140	1,860	1,040	-	968	1,020	424	384	506	545	671
30	850	1,000	1,850	1,010	-------	982	880	478	352	512	440	536
31	704	-------	1,810	992	-------	1,040	-------	482	-------	507	415	-------
Total	17,832	29,444	39,973	35,211	25,652	47,200	31,490	22,782	13,726	14,670	15,214	15,768
Mean	575	981	1,289	1,136	916	1,523	1,050	735	458	473	491	526
Cfsm	0.436	0.743	0.977	0.861	0.694	1.15	0.795	0.557	0.347	0.358	0.372	0.398
In.	0.50	0.83	1.13	0.99	0.72	1.33	0.89	0.64	0.39	0.41	0.43	0.44

Calendar year 1957: Max 2,160 Min 224 Mean 803 Cfsm 0.608 In. 8.24
Water year 1957-58: Max 2,170 Min 260 Mean 846 Cfsm 0.641 In. 8.70

* Discharge measurement made on this day.

985. Fawn River near White Pigeon, Mich.

Location.--Lat 41°47'00", long 85°35'00", in SW¼ sec.10, T.8 S., R.11 W., on right bank a quarter of a mile downstream from bridge on county highway, 3.1 miles east of White Pigeon and 3½ miles upstream from outlet of Klinger Lake.

Drainage area.--191 sq mi.

Records available.--July 1903 to July 1904 (gage heights and discharge measurements only), October 1957 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 805.4 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 230 cfs Feb. 28 (gage height, 3.05 ft); maximum gage height, 3.37 ft Jan. 8, ice affected; minimum discharge, 49 cfs Oct. 6 (gage height, 1.92 ft).

Remarks.--Records good except those for period of no gage-height record, which are fair. Small diurnal fluctuation caused by powerplants above station.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 31 to Aug. 20; stage-discharge relation affected by ice Jan. 7, 8)

Oct. 1 to Aug. 20		Aug. 21 to Sept. 30	
2.0	58	2.2	86
2.5	126	2.8	193
3.0	220		
3.1	240		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*69	118	139	200	128	220	146	126	81	72	162	94
2	70	112	146	162	118	210	144	116	*76	73	188	91
3	71	107	129	158	121	200	144	120	80	80	198	89
4	69	112	129	174	131	*202	140	120	80	100	196	94
5	59	108	126	176	124	204	139	118	80	120	*192	96
6	60	92	129	168	137	206	162	115	80	140	178	91
7	64	*108	139	160	118	210	168	*129	80	150	160	91
8	68	120	147	160	106	214	162	120	80	160	151	93
9	63	126	*151	164	95	210	*155	118	85	*160	140	*98
10	64	128	147	158	98	206	155	116	90	150	144	119
11	63	123	103	156	96	204	155	106	100	140	137	126
12	68	126	104	160	106	200	153	95	100	130	137	137
13	63	126	142	155	104	194	160	106	100	120	124	130
14	65	137	139	155	102	192	158	98	100	120	123	126
15	70	180	136	155	104	190	155	88	100	126	128	121
16	70	190	146	153	106	182	155	92	95	126	128	117
17	95	196	139	146	102	178	153	87	90	131	134	121
18	106	200	142	139	100	174	146	96	80	137	139	135
19	112	194	158	123	96	174	144	94	75	139	123	153
20	108	188	182	*118	98	174	140	94	75	132	112	173
21	95	178	198	132	106	168	144	85	75	131	123	177
22	94	168	200	137	104	174	142	80	75	131	114	177
23	113	170	204	142	113	172	139	88	75	126	119	164
24	142	160	204	132	136	162	151	78	75	128	123	162
25	155	146	200	139	174	164	139	78	75	126	117	161
26	144	151	202	132	190	160	146	77	72	120	114	155
27	134	155	212	131	208	158	139	77	72	110	108	150
28	134	132	208	134	224	156	126	81	72	112	108	155
29	126	129	204	137	-	155	128	76	72	118	101	159
30	121	140	200	131	-------	151	120	81	72	132	101	152
31	118	-------	196	129	-------	142	-------	75	-------	144	94	-------
Total	2,853	4,320	5,001	4,616	3,445	5,706	4,408	3,030	2,462	3,884	4,216	3,907
Mean	92.0	144	161	149	123	184	147	97.7	82.1	125	136	130
Cfsm	0.482	0.754	0.843	0.780	0.644	0.963	0.770	0.512	0.430	0.654	0.712	0.681
In.	0.56	0.84	0.97	0.90	0.67	1.11	0.86	0.59	0.48	0.76	0.82	0.76

Calendar year 1957: Max - Min - Mean - Cfsm - In. -
Water year 1957-58: Max 224 Min 59 Mean 131 Cfsm 0.686 In. 9.32

* Discharge measurement made on this day.
Note.--No gage-height record June 3 to July 14; discharge estimated on basis of records for Battle Creek at Battle Creek and Thornapple River near Hastings.

990. St. Joseph River at Mottville, Mich.

Location.--Lat 41°48'05", long 85°45'15", in SW¼ sec.6, T.8 S., R.12 W., Michigan meridian, on right bank 500 ft upstream from bridge on U. S. Highway 112 at Mottville, 0.4 mile downstream from Michigan Gas & Electric Co. hydroelectric plant, 4 miles upstream from Pigeon River, and at mile 96.

Drainage area.--1,860 sq mi, approximately.

Records available.--October 1923 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 755.3 ft above mean sea level (Michigan Gas & Electric Co. bench mark). Prior to Oct. 1, 1951, at site 0.4 mile upstream at datum 4.2 ft higher.

Average discharge.--35 years, 1,516 cfs.

Extremes.--Maximum discharge during year, 3,050 cfs Mar. 5 (gage height, 5.13 ft); minimum recorded, 65 cfs June 3, July 11; minimum daily, 395 cfs Oct. 19.
1923-58: Maximum discharge, 10,700 cfs Apr. 27, 1950 (gage height, 6.56 ft, site and datum then in use); minimum daily, 44 cfs Oct. 17, 1937.

Remarks.--Records good. Flow regulated by powerplants above station.

Revisions (water years).--WSP 1387: 1930, 1932, 1938, 1940-42, 1945.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	471	962	1,020	2,180	1,020	2,520	1,410	1,240	652	650	947	729
2	*615	780	1,440	1,830	948	2,620	1,340	1,370	*894	650	862	877
3	600	610	1,260	1,680	1,450	2,750	1,310	1,110	*723	674	878	927
4	683	1,000	1,190	1,730	1,210	*2,660	1,320	1,070	638	610	1,020	877
5	831	899	1,160	1,610	1,170	2,690	1,090	1,610	734	884	1,010	884
6	477	*851	1,020	1,630	1,260	2,650	1,440	1,480	681	793	*1,040	812
7	604	*810	1,210	1,620	1,060	2,580	1,650	*1,440	586	755	963	724
8	506	799	860	1,640	867	2,470	1,480	1,460	502	740	998	792
9	626	589	1,460	1,520	737	2,460	*1,470	1,420	721	983	927	716
10	598	765	*1,270	1,530	1,110	2,460	1,710	1,130	951	*828	615	*993
11	561	1,330	1,190	1,400	1,070	2,350	1,730	765	952	997	1,020	896
12	476	888	1,010	1,430	1,230	2,060	1,610	1,470	724	608	889	1,050
13	451	1,080	1,000	1,530	1,060	2,160	1,440	1,190	793	759	1,010	523
14	478	1,240	1,060	1,530	1,320	2,090	1,720	916	646	910	881	763
15	596	1,390	1,070	1,510	905	1,790	1,520	1,120	745	885	1,000	805
16	554	1,510	1,220	1,450	1,070	1,800	1,420	1,010	646	791	996	850
17	725	1,500	1,210	1,430	1,010	1,960	1,270	681	680	997	778	1,080
18	927	2,020	1,430	1,000	1,140	1,740	1,490	878	672	980	968	1,110
19	395	1,950	1,390	1,210	1,310	1,760	1,200	1,180	727	854	954	1,180
20	642	1,830	1,830	1,380	1,080	1,700	1,270	912	744	866	792	843
21	558	1,750	1,920	*1,440	1,040	1,710	1,500	832	436	954	1,320	895
22	689	1,560	2,250	1,360	711	1,590	1,530	836	481	989	1,250	1,150
23	1,110	1,540	2,270	1,250	830	1,580	1,220	811	661	883	727	978
24	954	1,500	2,370	1,370	1,310	1,780	1,450	578	629	888	902	935
25	1,290	1,500	2,340	1,020	1,350	1,540	1,480	799	663	963	1,040	1,110
26	841	1,360	2,240	1,110	1,470	1,400	1,090	951	706	731	1,080	1,060
27	1,210	1,250	2,220	1,580	1,690	1,580	1,000	654	716	746	1,000	659
28	1,180	1,190	2,340	1,320	2,190	1,460	1,560	657	561	836	932	856
29	1,250	1,320	2,240	1,310	-	1,490	1,330	578	483	901	940	1,050
30	996	1,260	2,140	1,340	-------	1,120	1,170	518	700	1,140	764	989
31	982	-------	2,340	1,280	-------	1,560	-------	689	-------	1,000	827	-------
Total	22,876	37,033	48,970	45,220	32,618	62,080	42,220	31,355	20,447	26,245	29,330	27,113
Mean	738	1,234	1,580	1,459	1,165	2,003	1,407	1,011	682	847	946	904
Cfsm	0.397	0.663	0.849	0.784	0.626	1.08	0.756	0.544	0.367	0.455	0.509	0.486
In.	0.46	0.74	0.98	0.90	0.65	1.24	0.84	0.63	0.41	0.52	0.59	0.54

Calendar year 1957: Max 2,600 Min 318 Mean 1,086 Cfsm 0.584 In. 7.92
Water year 1957-58: Max 2,750 Min 395 Mean 1,166 Cfsm 0.627 In. 8.50

* Discharge measurement made on this day.

995. Pigeon Creek at Hogback Lake Outlet, near Angola, Ind.

Location.--Lat 41°37'24", long 85°05'44", in NE¼NW¼ sec.36, T.37 N., R.12 E., on right bank 200 ft north of lake outlet, 2 miles southeast of Flint, and 5.1 miles west of Angola.

Drainage area.--102 sq mi.

Records available.--October 1945 to September 1958. Prior to October 1947, published as "near Flint."

Gage.--Water-stage recorder. Datum of gage is 940.00 ft above mean sea level, datum of 1929. Prior to October 1947, wire-weight gage at site 1½ miles downstream at different datum. October 1947 to Aug. 3, 1953, staff gage at site 600 ft downstream at same datum.

Average discharge.--13 years, 80.0 cfs.

Extremes.--Maximum discharge during year, 274 cfs Sept. 20, 21; maximum gage height, 11.04 ft Sept. 21); minimum, 14 cfs Oct. 5-16; minimum gage height, 7.47 ft Oct. 15.
1945-58: Maximum discharge, 744 cfs Apr. 8, 1950 (gage height, 14.95 ft); minimum, 5.2 cfs Oct. 19-25, 1953; minimum gage height, 7.24 ft Sept. 9, 10, 1953.

Remarks.--Records good except those for period of ice effect, which are fair.

Revisions (water years).--WSP 1144: 1948. WSP 1337: Drainage area.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 30 to Apr. 6)

7.4	13	9.0	84
7.6	18	10.0	164
8.0	32	11.0	274
8.5	56		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	51	51	175	46	175	61	51	26	28	32	32
2	15	46	48	154	46	186	*61	48	26	*26	41	30
3	*15	44	46	135	44	197	58	46	24	26	46	30
4	15	41	44	126	44	186	56	48	24	26	48	28
5	14	38	*44	110	44	175	56	48	*23	24	46	28
6	14	36	41	103	*44	*175	61	48	22	24	44	26
7	14	34	44	96	44	175	72	*48	22	23	46	26
8	14	34	46	90	41	186	96	46	22	22	46	24
9	14	34	54	84	41	175	110	46	24	22	46	26
10	14	34	61	*78	38	164	126	46	28	21	44	28
11	14	36	66	72	36	154	126	44	30	22	41	*28
12	14	36	66	66	36	135	126	41	32	22	38	30
13	14	36	61	66	34	126	118	41	34	22	36	30
14	14	*44	61	61	34	118	110	38	36	23	34	30
15	14	56	58	58	32	110	103	38	38	26	36	30
16	15	72	54	56	b31	103	96	36	36	28	38	48
17	17	96	54	56	b30	96	90	34	36	32	38	96
18	18	118	54	54	b30	90	84	36	34	38	41	175
19	18	126	58	51	b29	84	78	34	34	44	44	241
20	19	118	84	48	b28	84	78	34	32	46	44	274
21	19	110	135	48	28	84	72	34	30	44	51	274
22	20	103	197	48	28	78	72	32	28	41	58	263
23	24	96	241	48	28	78	66	32	28	38	66	241
24	30	84	252	48	30	72	66	30	26	36	66	208
25	41	78	252	48	44	72	61	30	28	32	61	186
26	51	72	241	48	72	72	61	28	30	30	58	164
27	58	66	241	48	110	66	58	26	32	28	54	135
28	61	61	241	48	154	66	56	26	32	26	48	118
29	61	58	230	48	-	66	54	26	32	26	44	110
30	58	54	219	48	------	66	51	26	30	*26	38	96
31	54	------	197	46	------	61	------	26	------	28	34	------
Total	779	1,912	3,541	2,265	1,246	3,675	2,383	1,167	879	900	1,407	3,055
Mean	25.1	63.7	114	73.1	44.5	119	79.4	37.6	29.3	29.0	45.4	102
Cfsm	0.246	0.625	1.12	0.717	0.436	1.17	0.778	0.369	0.287	0.284	0.445	1.00
In.	0.28	0.70	1.29	0.83	0.45	1.35	0.87	0.43	0.32	0.33	0.51	1.12

Calendar year 1957 : Max 317 Min 14 Mean 70.4 Cfsm 0.690 In. 9.34
Water year 1957-58 : Max 274 Min 14 Mean 63.6 Cfsm 0.624 In. 8.48

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1002. North Branch Elkhart River near Cosperville, Ind.

Location.--Lat 41°29'32", long 85°26'54", in SW¼ NE¼ sec.14, T.35 N., R.9 E., at downstream side of county road bridge over outlet of Waldron Lake at extreme west end of lake, 1.5 miles northeast of Cosperville and 6.6 miles northwest of Albion.

Drainage area.--133 sq mi.

Records available.--October 1950 to September 1958.

Gage.--Wire-weight gage read twice daily. Datum of gage is 880.00 ft above mean sea level, datum of 1929. Prior to Aug. 7, 1956, staff gage at same site and datum.

Average discharge.--8 years, 117 cfs.

Extremes.--Maximum discharge during year, 494 cfs Sept. 20 (gage height, 7.97 ft); minimum daily, 15 cfs Oct. 1, 2; minimum gage height, 4.64 ft June 8.
1950-58: Maximum discharge observed, 717 cfs May 13, 1956 (gage height, 8.78 ft); minimum daily, 3.5 cfs Sept. 12, Oct. 3, 1953; minimum gage height, 4.50 ft Oct. 3, 1953.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 7 to June 8)

Oct. 1 to Dec. 29				Dec. 30 to Sept. 30			
4.6	12	5.5	111	4.7	15	6.0	165
4.8	28	6.0	178	4.9	32	7.0	318
5.0	48	7.0	330	5.2	62	8.0	494
				5.5	99		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	55	65	253	72	118	86	64	23	41	92	45
2	15	54	65	238	70	118	86	62	25	37	106	39
3	18	53	62	223	69	118	80	62	24	39	106	37
4	23	49	60	208	67	112	80	69	23	51	99	36
5	24	49	59	193	67	118	80	68	21	53	86	37
6	25	47	*58	179	67	*132	86	66	20	54	80	34
7	*24	45	68	172	66	144	99	60	20	56	80	33
8	24	46	82	158	63	144	*99	*55	19	53	86	30
9	23	49	85	144	62	144	99	51	30	49	80	*28
10	23	55	85	132	62	138	99	49	48	*47	73	86
11	23	53	82	125	b62	132	99	46	62	61	73	144
12	21	52	b86	112	b60	132	106	45	64	80	70	151
13	20	53	92	106	b58	125	106	42	70	86	63	144
14	19	61	92	99	*b55	125	106	39	80	92	60	132
15	19	*92	85	*99	b54	118	99	40	80	112	62	125
16	23	111	80	92	b52	112	99	39	74	125	62	238
17	32	111	77	86	b51	112	99	37	69	125	58	389
18	33	118	85	86	b50	112	86	39	62	112	52	458
19	33	111	130	80	b49	106	86	38	55	106	45	476
20	25	98	178	80	b48	106	86	33	51	92	40	494
21	28	92	220	80	b47	106	86	29	49	86	75	476
22	28	85	234	80	b47	106	86	28	44	74	118	458
23	48	82	234	80	48	106	86	30	41	67	125	440
24	68	80	234	80	60	106	86	28	*38	61	118	422
25	77	77	234	80	99	99	86	26	41	56	112	404
26	76	75	250	80	118	99	80	25	48	60	99	369
27	70	71	266	80	118	99	72	22	50	55	80	352
28	65	70	266	80	118	92	69	23	48	51	69	318
29	60	67	266	74	-	92	68	21	45	51	60	301
30	58	67	253	74	-------	86	68	20	43	*52	53	269
31	55	-------	253	74	-------	86	-------	21	-------	66	49	-------
Total	1,095	2,128	4,386	3,727	1,859	3,543	2,653	1,277	1,367	2,150	2,431	6,945
Mean	35.3	70.9	141	120	66.4	114	88.4	41.2	45.6	69.4	78.4	232
Cfsm	0.265	0.533	1.06	0.902	0.499	0.857	0.665	0.310	0.343	0.522	0.589	1.74
In.	0.31	0.59	1.22	1.04	0.52	0.99	0.74	0.36	0.38	0.60	0.68	1.94

Calendar year 1957: Max 406 Min 7.7 Mean 94.6 Cfsm 0.711 In. 9.66
Water year 1957-58: Max 494 Min 15 Mean 91.9 Cfsm 0.691 In. 9.37

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1005. Elkhart River at Goshen, Ind.

Location.--Lat 41°35', long 85°50', near line between secs. 8 and 9, T.36 N., R.6 E., on right bank 20 ft downstream from River Avenue Bridge at Goshen and half a mile upstream from Rock Run.

Drainage area.--580 sq mi.

Records available.--April 1931 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 769.43 ft above mean sea level, datum of 1929. Prior to Nov. 20, 1931, chain gage at same site and datum.

Average discharge.--27 years, 502 cfs.

Extremes.--Maximum discharge during year, 1,660 cfs Dec. 21 (gage height, 5.22 ft); minimum daily, 30 cfs Oct. 9.
1931-58: Maximum discharge, 5,440 cfs Apr. 4, 1950 (gage height, 10.15 ft); maximum gage height, 10.33 ft July 10, 1951; minimum daily discharge, 11 cfs Oct. 15, 1953.

Remarks.--Records good except those for periods of shifting control or ice effect, which are fair. Flow regulated by three powerplants above station.

Revisions (water years).--WSP 1337: 1939(M), drainage area. Revised figures of discharge, in cubic feet per second, for the water year 1954, superseding those published in WSP 1337, are given herewith:

Mar. 27, 1954..... 1,540

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
March 1954.....	20,031	1,930	362	646	1.11	1.28
Water year 1953-54.....	-	3,330	11	458	.790	10.71
Calendar year 1954.....	-	4,320	51	677	1.17	15.83

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	148	215	282	995	352	830	352	282	182	*248	1,100	410
2	43	212	224	830	335	780	352	282	185	248	1,100	390
3	53	221	203	830	335	780	352	300	182	300	780	430
4	179	206	230	735	300	735	335	282	176	335	690	370
5	129	203	230	830	300	735	335	282	164	570	610	335
6	49	194	248	780	335	830	390	300	161	390	530	318
7	185	182	265	690	335	830	530	300	161	352	530	300
8	149	191	390	650	300	735	490	282	176	318	735	282
9	30	227	490	570	140	690	430	265	221	300	780	265
10	64	224	*430	570	237	690	410	265	300	300	610	300
11	182	218	335	530	335	610	410	248	335	335	530	370
12	137	212	156	510	282	570	410	170	318	490	*610	390
13	36	212	231	470	265	530	410	*185	335	610	530	410
14	170	265	352	470	265	510	410	215	470	570	490	410
15	188	570	370	430	282	490	390	209	410	570	650	410
16	91	690	430	450	b270	470	*390	203	370	570	1,100	530
17	144	530	470	430	b255	430	390	212	335	570	1,100	830
18	203	530	510	390	b250	*450	318	227	318	570	885	1,100
19	188	470	885	300	*b245	430	318	206	318	530	690	1,320
20	164	*450	1,380	352	b240	430	352	203	300	490	530	1,320
21	170	430	1,540	*370	b240	410	352	188	300	470	830	1,380
22	124	390	1,220	370	248	410	352	191	282	430	1,160	1,440
23	*161	370	995	370	265	410	352	194	265	410	940	*1,440
24	370	335	885	370	450	390	352	185	265	370	780	1,440
25	390	335	885	370	995	390	352	182	318	*352	690	1,380
26	352	335	1,160	370	940	352	335	173	335	318	610	1,320
27	318	318	1,270	352	830	370	318	173	335	318	570	1,270
28	282	300	1,100	370	830	390	318	170	300	300	530	1,160
29	248	282	1,100	352	-	370	300	170	300	300	490	1,160
30	230	265	1,050	352	-------	370	282	161	265	370	470	1,050
31	221	-------	995	352	-------	352	-------	170	-------	610	430	-------
Total	5,398	9,582	20,311	15,810	10,456	16,769	11,087	6,875	8,382	12,914	22,080	23,530
Mean	174	319	655	510	373	541	370	222	279	417	712	784
Cfsm	0.300	0.550	1.13	0.879	0.643	0.933	0.638	0.383	0.481	0.719	1.23	1.35
In.	0.35	0.61	1.30	1.01	0.67	1.08	0.71	0.44	0.54	0.83	1.42	1.51

Calendar year 1957: Max 1,760 Min 30 Mean 404 Cfsm 0.697 In. 9.45
Water year 1957-58: Max 1,540 Min 30 Mean 447 Cfsm 0.771 In. 10.47

Peak discharge (base, 1,800 cfs).--No peak above base.

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--Shifting-control method used Oct. 1 to Dec. 13, June 9 to Sept. 30.

1010. St. Joseph River at Elkhart, Mich.

Location.--Lat 41°41'30", long 85°58'25", in NE¼ sec.5, T.37 N., R.5 E., on left bank 100 ft downstream from Elkhart River, 200 ft upstream from Main Street Bridge in Elkhart, and 1,900 ft downstream from Christiana Creek.

Drainage area.--3,339 sq mi.

Records available.--August 1947 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 700.00 ft above mean sea level, datum of 1929.

Average discharge.--11 years, 3,152 cfs.

Extremes.--Maximum discharge during year, 5,160 cfs Mar. 4; maximum gage height, 20.94 ft Dec. 20, Sept. 22; minimum daily discharge, 776 cfs Oct. 15.
1947-58: Maximum discharge, 18,400 cfs Apr. 5, 1950 (gage height, 27.82 ft); minimum daily, 564 cfs Nov. 1, 5, 1956.

Remarks.--Records fair. Flow regulated by Elkhart Hydroelectric Plant, 2,400 ft upstream, and by hydroelectric plant on Elkhart River at Goshen.

Revisions.--WSP 1337: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 1 to May 24, July 12 to Sept. 30)

17.7	725
18.3	1,340
19.0	2,200
21.0	5,160

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,140	1,970	2,140	4,370	2,180	4,610	2,560	2,250	1,620	1,550	2,390	1,860
2	926	1,910	2,290	3,740	2,540	4,650	2,480	2,250	1,840	1,640	3,040	1,930
3	1,140	1,620	2,360	3,610	2,420	4,730	2,440	2,170	1,540	1,890	2,630	2,060
4	1,150	1,880	2,230	3,400	2,450	4,580	2,430	2,120	1,420	2,380	2,500	1,930
5	1,180	1,870	2,160	3,370	2,120	4,590	2,280	2,540	1,450	3,000	2,350	1,900
6	1,040	1,790	1,990	3,620	2,310	4,680	2,730	2,590	1,440	2,620	2,330	1,840
7	1,140	1,700	2,120	3,370	2,110	4,660	3,080	2,400	1,280	2,420	2,270	1,750
8	1,180	1,700	2,360	3,070	1,870	4,470	3,080	2,440	1,430	2,020	2,410	1,670
9	1,020	1,690	2,540	3,120	1,300	4,320	2,860	2,390	1,860	2,140	2,440	1,740
10	1,150	1,660	*2,480	3,200	a1,500	4,300	2,930	2,120	2,130	2,030	2,090	2,120
11	946	2,270	2,360	3,060	a1,800	4,130	3,010	1,910	2,180	2,220	2,160	2,170
12	1,160	2,180	1,070	2,880	a2,000	3,840	3,020	2,200	2,180	2,130	*2,130	2,320
13	989	1,730	1,840	2,860	a1,900	3,680	2,740	*2,280	1,850	2,300	2,180	1,850
14	958	2,410	2,220	2,960	a2,000	3,810	3,060	1,770	1,750	2,260	2,000	1,960
15	776	3,100	2,250	2,780	a2,400	3,440	2,920	1,820	2,290	2,330	2,340	1,910
16	987	3,420	2,370	2,770	a1,900	3,290	*2,750	2,020	1,380	2,150	2,610	2,000
17	1,190	3,180	2,400	2,690	a2,000	3,430	2,470	1,530	1,800	2,280	2,680	2,660
18	1,420	3,480	2,820	2,320	a1,650	*3,150	2,560	1,880	1,730	2,270	2,550	2,970
19	1,430	3,540	3,560	2,380	*a2,000	3,150	2,500	2,190	1,870	2,190	2,310	3,300
20	1,420	3,300	4,540	2,520	2,070	3,080	2,440	1,940	1,790	2,150	2,120	3,310
21	1,350	*3,220	4,800	*2,510	1,950	3,070	2,610	1,580	1,460	2,140	2,820	3,000
22	1,300	3,050	4,520	2,680	1,860	2,920	2,710	1,660	1,580	2,040	3,200	3,560
23	*1,840	2,880	4,350	2,530	1,930	2,860	2,500	1,680	1,780	2,000	2,470	*3,350
24	2,460	2,810	4,330	2,490	2,480	3,020	2,500	1,350	1,620	1,840	2,560	3,320
25	2,460	2,730	4,390	2,340	3,750	2,890	2,660	1,600	1,710	*1,870	2,610	3,220
26	2,440	2,700	4,560	2,330	3,730	2,600	2,210	2,040	1,720	1,700	2,500	3,230
27	2,420	2,350	4,580	2,720	3,650	2,780	2,160	1,390	*1,870	1,750	2,290	2,990
28	2,260	2,540	4,630	2,600	4,060	2,690	2,460	1,390	1,470	1,740	2,220	2,900
29	2,460	2,310	4,450	2,440	-	2,670	2,650	1,280	1,670	1,810	2,170	3,040
30	2,120	2,540	4,300	2,460	-------	2,340	2,180	949	1,700	2,060	1,950	2,900
31	2,070	-------	4,470	2,420	-------	2,660	-------	1,520	-------	2,510	2,050	-------
Total	45,532	73,530	97,480	89,610	63,930	111,090	78,980	59,229	51,410	65,430	74,370	74,760
Mean	1,469	2,451	3,145	2,891	2,283	3,584	2,633	1,911	1,714	2,111	2,399	2,492
Cfsm	0.440	0.734	0.942	0.866	0.684	1.07	0.789	0.572	0.513	0.632	0.718	0.746
In.	0.51	0.82	1.09	1.00	0.71	1.23	0.88	0.66	0.57	0.73	0.83	0.83

Calendar year 1957 : Max 5,030 Min 776 Mean 2,309 Cfsm 0.692 In. 9.40
Water year 1957-58 : Max 4,800 Min 776 Mean 2,426 Cfsm 0.727 In. 9.86

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records furnished by Elkhart hydroelectric plant and records for nearby streams.

1015. St. Joseph River at Niles, Mich.

Location.--Lat 41°49'45", long 86°15'35", in SW¼ sec.26, T.7 S., R.17 W., on right bank 100 ft upstream from Main Street Bridge at Niles, 0.6 mile downstream from dam of French Paper Co. 1 mile upstream from Dowagiac River, and at mile 44.

Drainage area.--3,620 sq mi, approximately.

Records available.--October 1930 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 635.02 ft above mean sea level, datum of 1929. Oct. 1, 1930, to Feb. 11, 1931, tape gage on Main Street Bridge and Feb. 12 to June 30, 1931, staff gage at site 50 ft upstream from present site (gage heights referred to mean sea level). Since Oct. 1, 1943, auxiliary gage is headwater gage at hydroelectric plant at Buchanan Dam, 8 miles downstream.

Average discharge.--28 years, 3,110 cfs.

Extremes.--Maximum daily discharge during year, 5,620 cfs Dec. 21; maximum gage height, 5.81 ft Dec. 20; minimum daily discharge, 774 cfs June 30.
1930-58: Maximum discharge, 20,200 cfs Apr. 5, 1950 (gage height, 13.10 ft); minimum daily, 420 cfs Aug. 30, 1931.

Remarks.--Records good except those for period of no gage-height record, which are fair. Flow regulated by powerplants above station.

Cooperation.--Gage-height record at auxiliary gage furnished by Indiana and Michigan Electric Co.

Revisions (water years).--WSP 1387: 1931, 1933-36, 1940-43, 1945-46(M), 1949(M).

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,260	2,400	2,200	4,680	2,780	5,130	2,920	2,380	2,000	1,530	3,230	1,780
2	1,340	2,440	2,540	4,740	2,670	5,180	3,240	2,580	2,100	1,750	3,310	1,990
3	*1,510	2,940	2,900	3,940	2,230	5,230	2,730	2,410	*2,000	2,360	2,960	1,640
4	1,430	1,680	2,610	3,650	2,830	5,240	2,690	2,500	1,590	2,310	2,690	2,100
5	1,180	2,560	2,350	3,440	2,660	*5,170	2,820	2,700	1,540	3,750	2,590	1,950
6	1,600	*2,130	2,610	4,030	2,920	5,150	2,900	2,750	1,530	2,830	*2,500	1,830
7	1,380	2,170	2,570	3,950	2,430	5,260	4,070	2,770	1,120	2,640	2,450	1,860
8	1,670	1,810	2,520	3,220	2,100	4,950	3,420	*2,600	1,640	2,280	2,410	1,750
9	1,700	2,230	2,600	3,220	2,000	4,790	3,310	2,600	1,330	1,430	2,390	1,670
10	1,500	1,650	3,350	3,320	2,070	4,820	*3,340	2,600	2,020	2,220	2,680	*1,970
11	1,260	2,260	*2,720	3,260	2,570	4,700	3,240	2,500	2,430	*2,340	2,460	2,210
12	1,070	2,760	2,560	3,040	2,730	4,490	3,110	2,500	2,160	2,230	2,200	2,160
13	1,550	2,230	2,000	3,220	2,780	4,110	2,900	2,700	2,230	1,980	2,090	2,270
14	1,350	2,800	2,380	3,310	2,270	4,300	3,180	2,500	1,930	2,440	2,030	1,840
15	1,520	3,480	2,370	2,950	2,210	3,770	3,240	2,200	2,010	2,400	1,840	2,140
16	2,440	3,780	2,720	2,950	2,100	3,820	3,160	2,400	2,060	2,280	2,750	2,150
17	2,120	3,700	2,850	3,140	2,490	3,660	3,380	2,400	2,230	2,170	2,950	2,730
18	1,880	3,780	3,010	2,760	2,960	3,810	2,320	2,000	1,860	2,240	2,380	3,300
19	1,470	4,230	4,060	2,690	2,340	3,520	3,000	2,400	1,780	2,050	2,650	3,340
20	1,740	3,660	5,090	2,850	2,230	3,560	3,300	2,300	1,750	2,100	2,000	3,670
21	1,600	3,680	5,620	3,080	2,100	3,550	2,880	2,100	1,510	2,130	2,870	3,240
22	1,980	3,440	5,390	*2,960	2,210	3,490	2,260	2,100	1,040	2,260	2,610	3,330
23	2,700	3,100	4,970	2,990	2,020	3,110	2,870	2,300	1,780	2,070	2,830	3,760
24	3,080	3,320	5,000	2,870	2,490	3,370	2,790	2,000	2,010	2,030	2,440	3,670
25	2,520	3,340	4,900	2,850	3,900	3,370	3,150	1,500	2,110	1,950	2,550	3,420
26	2,900	2,960	5,110	2,610	4,480	3,160	2,590	2,000	2,140	1,980	2,640	3,400
27	2,530	2,580	5,190	2,860	4,150	3,070	2,510	2,100	1,750	1,460	2,340	3,310
28	3,180	2,950	5,150	3,090	4,990	3,190	2,390	2,000	1,790	1,910	2,380	3,090
29	2,970	2,440	4,980	2,770	-	2,900	3,180	1,900	1,110	1,930	1,960	3,110
30	2,540	2,820	4,870	2,880	-------	2,880	2,540	1,500	774	2,210	1,850	2,400
31	2,110	-------	5,000	2,870	-------	3,030	-------	1,800	-------	2,570	1,790	-------
Total	59,060	85,320	112,190	100,690	75,710	125,780	89,410	71,090	53,324	67,830	76,800	78,080
Mean	1,905	2,844	3,619	3,248	2,704	4,057	2,980	2,293	1,777	2,188	2,477	2,603
Cfsm	0.526	0.786	1.00	0.897	0.747	1.12	0.823	0.633	0.491	0.604	0.684	0.719
In.	0.61	0.88	1.15	1.03	0.78	1.29	0.92	0.73	0.55	0.70	0.79	0.80

Calendar year 1957: Max 6,360 Min 977 Mean 2,610 Cfsm 0.721 In. 9.80
Water year 1957-58: Max 5,620 Min 774 Mean 2,727 Cfsm 0.753 In. 10.23

* Discharge measurement made on this day.
Note.--No gage-height record May 9 to June 3; discharge estimated on basis of powerplant records and records for stations at Mottville and at Three Rivers.

1025. Paw Paw River at Riverside, Mich.

Location.--Lat 42°11'10", long 86°22'05", in SE¼ sec.23, T.3 S., R.18 W., on left bank at upstream side of county highway bridge, three-quarters of a mile east of Riverside.

Drainage area.--391 sq mi.

Records available.--October 1951 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 588.80 ft above mean sea level, datum of 1929.

Average discharge.--7 years, 402 cfs.

Extremes.--Maximum discharge during year, 1,080 cfs Mar. 5 (gage height, 8.20 ft); minimum, 167 cfs Oct. 13, 14; minimum gage height, 3.16 ft Sept. 1, 2.
1951-58: Maximum discharge, 1,650 cfs Jan. 23, 1952 (gage height, 8.72 ft); minimum, 151 cfs Sept. 7, 28, Oct. 5, 1953; minimum gage height, 2.92 ft Sept. 7, 1953.

Remarks.--Records good except those for period of ice effect, which are fair. Diurnal fluctuation, principally during low flow, caused by papermill above station.

Revisions.--WSP 1337: Drainage area.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	191	289	298	598	345	972	333	337	251	242	219	185
2	190	283	332	564	288	936	334	325	276	220	217	194
3	*187	254	383	501	304	966	329	314	308	231	212	206
4	187	240	366	354	310	1,060	332	333	*306	226	205	209
5	185	*278	346	301	310	*1,080	330	333	308	216	215	211
6	182	271	328	321	310	1,060	346	386	300	233	215	206
7	193	263	323	386	310	1,020	398	396	266	232	*207	200
8	205	266	278	438	300	930	484	*369	248	226	209	202
9	193	279	308	465	250	865	501	335	255	226	210	220
10	194	240	360	386	250	820	*503	320	285	224	197	243
11	193	261	*352	355	290	784	495	287	292	222	203	*252
12	190	298	326	324	300	744	473	280	284	221	211	238
13	169	306	280	332	320	702	417	308	279	218	215	233
14	171	338	278	365	300	657	383	292	281	245	212	224
15	184	471	268	355	260	625	361	281	281	257	211	209
16	200	582	308	352	260	595	344	274	300	262	199	226
17	210	575	371	350	290	551	331	262	285	*269	191	235
18	221	547	366	343	330	511	323	257	273	259	198	240
19	229	578	434	293	380	474	305	254	264	248	206	248
20	218	605	608	299	400	442	275	269	255	228	201	255
21	227	590	728	343	350	430	303	264	252	224	208	227
22	252	557	752	*349	300	392	340	257	246	221	211	211
23	284	509	764	346	300	330	344	254	256	212	215	224
24	357	435	860	338	300	364	351	246	247	217	218	221
25	435	413	890	318	447	444	336	242	243	214	203	231
26	441	349	975	278	519	455	307	236	248	212	217	231
27	380	340	820	308	648	452	281	245	249	205	223	231
28	366	303	752	362	835	371	308	245	234	219	203	220
29	357	276	702	359	--	353	338	242	238	215	204	212
30	282	285	657	354	-------	348	338	226	206	214	196	249
31	288	-------	622	353	-------	336	-------	232	-------	213	191	-------
Total	7,561	11,281	15,335	11,390	9,806	20,069	10,843	8,901	8,016	7,071	6,442	6,693
Mean	244	376	495	367	350	647	361	287	267	228	208	223
Cfsm	0.624	0.962	1.27	0.939	0.895	1.65	0.923	0.734	0.683	0.583	0.532	0.570
In.	0.72	1.07	1.46	1.08	0.93	1.91	1.03	0.85	0.76	0.67	0.61	0.64

Calendar year 1957: Max 890 Min 169 Mean 338 Cfsm 0.864 In. 11.74
Water year 1957-58: Max 1,080 Min 169 Mean 338 Cfsm 0.864 In. 11.73

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Feb. 4-24.

1035. Kalamazoo River at Marshall, Mich.

Location.--Lat 42°15'55", long 84°57'55", on line between secs. 25 and 26, T.2 S., R.6 W., on left bank at upstream side of bridge on U. S. Highway 27 at Marshall.

Drainage area.--449 sq mi.

Records available.--October 1948 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 877.09 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Nov. 11, 1948, wire-weight gage at same site and datum.

Average discharge.--10 years, 332 cfs.

Extremes.--Maximum discharge during year, 701 cfs Mar. 1 (gage height, 5.48 ft); minimum, 34 cfs Oct. 14; minimum daily, 36 cfs July 24; minimum gage height, 3.29 ft Aug. 5, 1948-58: Maximum discharge, 2,130 cfs Mar. 29, 1950 (gage height, 8.20 ft); minimum, 26 cfs Aug. 30, 1952; minimum daily, that of July 24, 1958.

Remarks.--Records good. Diurnal fluctuation caused by powerplant above station.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 16 to Nov. 29)

3.2	30	4.5	307
3.4	50	5.0	495
3.6	77	6.0	950
4.0	158		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	134	172	196	336	172	588	237	249	238	160	118	58
2	124	176	220	308	184	508	222	193	*140	90	102	130
3	128	192	220	242	176	*456	197	244	178	235	171	98
4	162	139	206	248	177	407	230	225	218	220	*134	167
5	128	122	244	256	247	398	241	*235	142	218	37	96
6	143	158	216	302	206	336	264	273	132	190	180	202
7	*83	164	214	244	180	376	*315	204	206	154	124	178
8	165	*170	275	219	204	358	358	268	208	*178	133	90
9	92	176	*210	222	194	358	328	195	170	109	108	*107
10	156	193	254	258	112	296	353	240	184	168	166	80
11	118	148	198	246	223	356	326	212	162	284	154	154
12	128	170	210	184	204	248	330	186	160	280	114	142
13	120	224	216	220	267	308	312	246	195	144	158	112
14	92	273	228	215	135	339	270	321	176	132	94	166
15	151	359	220	280	166	300	296	70	176	137	114	122
16	180	367	209	184	178	254	319	168	93	147	126	102
17	170	392	220	196	192	242	242	160	128	148	151	221
18	194	380	228	200	122	248	328	204	100	144	51	89
19	168	340	332	184	170	295	219	160	157	136	114	174
20	144	269	462	*188	215	278	230	175	141	132	173	174
21	161	297	524	206	166	242	226	189	120	131	194	189
22	152	287	530	244	192	244	209	198	168	73	166	148
23	216	216	516	180	168	226	193	192	96	38	194	106
24	320	237	380	228	186	242	230	155	115	36	204	156
25	299	288	420	192	254	250	257	184	156	105	116	134
26	222	226	393	194	388	230	236	182	143	186	192	110
27	282	198	423	215	455	251	266	104	159	201	182	157
28	204	224	424	201	442	226	278	194	165	113	166	150
29	228	258	310	188	-	229	234	159	158	42	144	116
30	219	204	390	178	--------	216	196	164	82	174	186	173
31	194	--------	287	176	--------	207	--------	139	--------	176	160	--------
Total	5,277	7,019	9,373	6,935	5,975	9,512	7,942	6,088	4,666	4,681	4,428	4,101
Mean	170	234	302	224	213	307	265	196	156	151	143	137
Cfsm	0.379	0.521	0.673	0.499	0.474	0.684	0.590	0.437	0.347	0.336	0.318	0.305
In.	0.44	0.58	0.78	0.57	0.49	0.79	0.66	0.50	0.39	0.39	0.37	0.34

Calendar year 1957: Max 595 Min 83 Mean 238 Cfsm 0.530 In. 7.20
Water year 1957-58: Max 588 Min 36 Mean 208 Cfsm 0.463 In. 6.30

* Discharge measurement made on this day.

1050. Battle Creek at Battle Creek, Mich.

Location.--Lat 42°19'55", long 85°09'15", in sec.5, T.2 S., R.7 W., on right bank 350 ft upstream from Emmett Street Bridge at Battle Creek and 3 miles upstream from mouth.

Drainage area.--241 sq mi.

Records available.--October 1930 to September 1931, October 1932 to July 1933, January 1934 to September 1958. Monthly discharge only for some periods, published in WSP 1307

Gage.--Water-stage recorder. Datum of gage is 823.24 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to May 14, 1951, staff gage at same site and datum.

Average discharge.--25 years (1930-31, 1934-58), 198 cfs.

Extremes.--Maximum discharge during year, 739 cfs Mar. 2 (gage height, 1.81 ft); minimum, 36 cfs Oct. 14; minimum gage height, 0.55 ft Oct. 14, Aug. 4-6.
1930-31, 1932-58: Maximum discharge, 3,640 cfs Apr. 7, 1947 (gage height, 4.48 ft, from floodmark); minimum, 22 cfs Aug. 14, 1934; minimum gage height, about -0.5 ft in July 1936 and on Aug. 31, 1939, due to opening of gates at dam forming control.

Remarks.--Records good except those for periods of ice effect, which are fair. Occasional slight regulation prior to November 1943.

Revisions (water years).--WSP 1387: 1931, 1944. WSP 1507: 1956.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.5	32	1.0	203
.6	54	1.5	480
.8	118	2.0	910

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43	122	150	232	104	640	150	122	81	54	45	57
2	45	115	146	180	122	739	146	118	108	54	45	52
3	45	108	142	172	104	667	142	118	115	111	43	54
4	45	*98	130	b160	101	624	138	118	101	150	*43	54
5	45	98	126	b160	111	552	138	*118	*84	134	41	52
6	43	94	126	b160	118	488	154	115	72	134	45	54
7	*39	91	138	b150	104	*448	*162	111	69	130	63	57
8	39	98	142	b150	108	422	190	108	63	118	72	*60
9	39	118	138	b150	108	404	232	104	78	101	66	60
10	41	122	138	146	104	376	252	101	94	87	63	63
11	43	126	101	138	104	338	237	98	94	78	63	63
12	43	126	*115	130	104	327	213	94	87	75	60	63
13	41	134	111	122	100	273	203	91	101	72	57	60
14	39	162	118	118	98	252	198	84	115	66	52	54
15	39	237	118	118	98	242	190	81	111	66	52	54
16	50	294	118	118	98	232	172	75	108	66	47	54
17	63	398	118	118	b100	223	158	75	94	66	45	63
18	63	460	126	115	b100	218	154	75	81	63	45	78
19	60	434	172	108	b100	208	146	75	78	57	43	78
20	57	388	242	101	b100	203	142	72	78	54	47	75
21	54	338	316	111	b100	198	142	72	78	50	75	72
22	52	300	428	111	b100	194	142	72	72	50	98	69
23	84	268	544	111	104	190	142	75	69	50	111	66
24	146	237	536	*115	108	190	142	75	66	50	115	57
25	190	213	454	111	130	185	146	72	69	47	101	57
26	213	194	398	118	194	180	142	69	72	45	81	57
27	232	176	349	118	284	172	138	66	69	45	72	60
28	218	172	338	122	415	167	134	63	66	45	66	60
29	185	162	332	118	-	162	130	63	60	45	63	60
30	150	158	322	118	-------	162	126	63	57	47	60	60
31	134	-------	284	118	-------	154	-------	63	-------	47	60	-------
Total	2,580	6,041	7,016	4,117	3,521	9,830	4,901	2,706	2,490	2,257	1,939	1,823
Mean	83.2	201	226	133	126	317	163	87.3	83.0	72.8	62.5	60.8
Cfsm	0.345	0.834	0.938	0.552	0.523	1.32	0.676	0.362	0.344	0.302	0.259	0.252
In.	0.40	0.93	1.08	0.64	0.54	1.52	0.76	0.42	0.38	0.35	0.30	0.28

Calendar year 1957: Max 975 Min 36 Mean 162 Cfsm 0.672 In. 9.12
Water year 1957-58: Max 739 Min 39 Mean 135 Cfsm 0.560 In. 7.60

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1055. Kalamazoo River near Battle Creek, Mich.

Location.--Lat 42°19'22", long 85°11'29", in SW¼ sec.1, T.2 S., R.8 W., on downstream end of center pier of bridge on Washington Avenue in Battle Creek. Prior to Oct. 1, 1957, at site 5.0 miles downstream.

Drainage area.--824 sq mi.

Records available.--July 1937 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Staff gage read twice daily. Altitude of gage is 815 ft (from topographic map). Prior to Oct. 1, 1957, water-stage recorder at site 5.0 miles downstream at different datums.

Average discharge.--21 years, 674 cfs.

Extremes.--Maximum discharge during year, 1,400 cfs Mar. 2 (gage height, 3.0 ft, from graph based on gage readings); minimum daily, 131 cfs Aug. 20.
1937-58: Maximum discharge, 7,290 cfs Apr. 7, 1947 (gage height, 9.13 ft, site and datum then in use); minimum, 50 cfs Sept. 22, 1939; minimum daily, that of Aug. 20, 1958.

Remarks.--Records fair except those for periods of indefinite stage-discharge relation, which are poor. Diurnal fluctuation, below 1,500 cfs, caused by powerplants above station.

Revisions (water years).--WSP 924: 1938-39. WSP 1387: 1938, 1945-46, 1948.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	294	458	458	778	368	1,200	500	410	345	284	330	196
2	294	425	450	688	368	1,300	500	410	425	323	290	188
3	284	425	450	665	368	1,250	500	382	442	368	290	239
4	294	*390	450	476	345	1,200	500	442	345	494	*280	266
5	266	382	450	442	368	1,100	500	476	*356	368	290	248
6	266	368	500	476	410	1,020	514	*451	313	410	290	230
7	257	368	500	458	368	*900	642	395	303	*404	345	257
8	*232	410	550	442	410	950	*620	368	334	368	323	*253
9	294	425	550	442	395	925	665	368	395	345	284	275
10	284	442	500	442	382	875	598	345	368	334	334	266
11	284	410	450	442	345	755	620	345	368	368	323	239
12	266	382	400	425	345	800	665	334	334	494	294	257
13	257	442	*395	425	345	620	620	334	382	410	294	248
14	257	620	410	458	395	688	620	334	425	323	284	213
15	257	778	494	425	345	710	534	334	425	323	266	239
16	303	778	395	425	368	688	494	303	410	313	230	275
17	327	825	356	395	368	650	534	323	356	323	275	275
18	323	925	442	368	345	650	476	345	356	334	266	275
19	323	825	554	368	323	650	476	334	345	315	163	266
20	313	755	778	395	368	650	534	313	356	284	131	275
21	294	710	1,000	425	345	600	476	275	345	294	313	239
22	323	710	1,050	395	388	600	458	313	345	275	275	266
23	368	620	1,050	*368	356	600	442	284	368	248	266	257
24	514	620	1,000	368	395	550	476	284	323	188	230	230
25	665	554	900	395	534	550	494	294	323	171	222	239
26	514	534	900	425	755	550	494	275	410	250	239	248
27	554	494	850	395	900	550	425	257	368	250	230	230
28	554	442	950	395	1,050	550	458	266	368	200	239	213
29	476	442	850	425	-	500	494	266	356	200	275	248
30	458	458	778	395	-------	500	425	275	345	250	239	239
31	514	-------	732	368	-------	500	-------	266	-------	250	257	-------
Total	10,909	16,417	19,592	13,789	12,032	23,631	15,754	10,401	10,934	9,759	8,377	7,389
Mean	352	547	632	445	430	762	525	336	364	315	270	246
Cfsm	0.427	0.664	0.767	0.540	0.522	0.925	0.637	0.408	0.442	0.382	0.328	0.299
In.	0.49	0.74	0.88	0.62	0.54	1.07	0.71	0.47	0.49	0.44	0.38	0.33

Calendar year 1957: Max 1,510 Min 230 Mean 514 Cfsm 0.611 In. 8.28
Water year 1957-58: Max 1,300 Min 131 Mean 436 Cfsm 0.529 In. 7.16

* Discharge measurement made on this day.

Note.--Stage-discharge relation indefinite Dec. 2-12, Mar. 17 to Apr. 5, July 26 to Aug. 6; discharge computed on basis of records for Kalamazoo River at Comstock and sum of records for Kalamazoo River at Marshall and Battle Creek at Battle Creek.

1060. Kalamazoo River at Comstock, Mich.

Location.--Lat 42°17'05", long 85°30'50", in NE¼ sec.19, T.2 S., R.10 W., on left bank at downstream side of bridge on River Street, in Comstock, a quarter of a mile downstream from Comstock Creek.

Drainage area.--1,010 sq mi, approximately.

Records available.--April to August 1931, October 1932 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 759.12 ft above mean sea level, datum of 1929. Prior to October 1936, staff gage and October 1936 to October 1945 wire-weight gage, at same site and datum.

Average discharge.--26 years (1932-58), 842 cfs.

Extremes.--Maximum discharge during year, 1,780 cfs Mar. 4 (gage height, 2.70 ft); minimum, 119 cfs May 29 (gage height, 0.09 ft).
1931, 1932-58: Maximum discharge, 6,910 cfs Apr. 8, 1947 (gage height, 7.94 ft); minimum, that of May 29, 1958.

Remarks.--Records good except those for periods of doubtful or no gage-height record, which are fair. Flow regulated by powerplants above station.

Revisions (water years).--WSP 824: 1933-36. WSP 1387: 1933, 1934(M), 1935, 1936(M), 1938(M), 1940(M), 1941.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 21 to Mar. 8)

0.7	245
1.0	400
1.5	760
2.0	1,200
3.0	1,920

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	320	550	662	976	688	1,400	583	564	376	679	472	346
2	325	500	662	904	679	1,550	576	430	461	569	478	370
3	340	480	614	614	706	1,720	583	582	427	555	466	305
4	335	*448	590	527	614	1,720	562	679	*470	548	478	315
5	330	534	606	606	590	1,650	548	682	424	598	422	305
6	330	478	548	976	622	*1,610	583	*478	352	606	436	305
7	346	472	638	859	606	1,510	724	340	330	562	*376	310
8	*352	555	688	654	569	1,420	*895	468	310	502	376	*370
9	346	654	778	548	496	1,260	895	514	388	496	358	376
10	346	697	606	646	454	1,180	886	520	406	502	370	340
11	335	638	606	751	472	1,180	904	541	436	478	424	315
12	320	576	*412	697	496	1,080	787	595	454	484	460	330
13	320	630	430	646	496	1,040	814	448	520	622	376	330
14	320	805	706	630	569	859	841	478	541	715	388	335
15	330	1,290	670	638	583	904	638	593	569	502	400	340
16	376	1,320	548	646	638	994	630	535	460	490	330	346
17	569	1,260	548	638	520	958	778	376	406	*478	320	376
18	555	1,280	598	569	562	796	646	400	382	394	364	430
19	508	1,290	706	541	622	796	590	573	418	320	340	576
20	450	1,370	1,070	630	534	751	778	379	502	400	325	346
21	400	1,140	1,310	606	548	733	598	416	430	534	338	330
22	450	976	1,400	606	541	733	527	425	436	460	448	442
23	500	931	1,370	*622	555	751	576	339	534	520	388	484
24	600	913	1,370	614	688	814	654	344	527	502	496	363
25	800	805	1,420	622	778	706	733	418	527	460	583	346
26	700	724	1,370	598	895	697	555	518	508	460	413	382
27	700	841	1,180	670	1,220	688	520	421	514	448	400	320
28	715	622	1,180	638	1,380	590	670	277	508	460	394	330
29	805	742	1,220	697	-	576	598	281	548	472	412	370
30	700	654	1,090	760	-------	606	646	352	742	472	330	376
31	600	-------	940	706	-------	630	-------	376	-------	490	335	-------
Total	14,423	24,175	26,536	20,835	18,121	31,902	20,318	14,242	13,906	15,778	12,516	10,809
Mean	465	806	856	672	647	1,029	677	459	464	509	404	360
Cfsm	0.460	0.798	0.848	0.665	0.641	1.02	0.670	0.454	0.459	0.504	0.400	0.356
In.	0.53	0.89	0.98	0.77	0.67	1.17	0.75	0.52	0.51	0.58	0.46	0.40

Calendar year 1957: Max 1,760 Min 250 Mean 673 Cfsm 0.666 In. 9.05
Water year 1957-58: Max 1,720 Min 276 Mean 612 Cfsm 0.606 In. 8.23

* Discharge measurement made on this day.
Note.--No gage-height record Oct. 6, 12, 13, 20-27, Oct. 30 to Nov. 3; discharge estimated on basis of records for stations near Battle Creek and near Fennville. Doubtful gage-height record June 4 to Aug. 7; discharge computed from available record and compared with records for stations near Battle Creek and near Fennville.

1065. Portage Creek at Kalamazoo, Mich.

Location.--Lat 42°16'30", long 85°34'35", on line between secs.22 and 27, T.2 S., R.11 W., on upstream side of Reed Street Bridge at Kalamazoo, 1½ miles upstream from mouth.

Drainage area.--48 sq mi, approximately.

Records available.--October 1947 to September 1958 (discontinued). Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 761.50 ft above mean sea level, datum of 1929. December 1947 to Feb. 24, 1948, staff gage and Feb. 25, 1948, to Dec. 7, 1955, wire-weight gage, at same site and datum.

Average discharge.--11 years, 56.5 cfs.

Extremes.--Maximum discharge during year, 221 cfs July 2 (gage height, 3.81 ft); minimum, 7.0 cfs July 1 (gage height, 1.67 ft).
1947-58: Maximum discharge, 580 cfs sometime in July 1954, from rating curve extended above 165 cfs by logarithmic plotting (gage height, 5.25 ft), caused by momentary gate opening of millpond; minimum, 2.0 cfs May 8, 1956 (gage height, 1.50 ft).

Remarks.--Records good. Flow regulated by St. Regis Paper Co. ponds upstream from station.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.1	26
2.3	39
3.0	110

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	39	44	41	47	43	67	40	49	58	37	45	32
2	38	39	46	47	39	61	40	50	52	71	43	36
3	39	38	45	50	39	58	40	51	50	60	41	38
4	38	39	44	46	41	57	45	62	*49	50	40	38
5	38	*39	45	44	42	56	52	55	48	48	41	37
6	35	40	47	48	43	*59	61	*53	45	45	47	37
7	36	38	50	49	41	57	65	52	39	44	*52	33
8	*37	49	41	46	43	54	*59	50	42	41	46	*32
9	36	49	44	47	39	50	54	47	47	39	42	45
10	36	45	45	47	42	52	52	45	49	40	38	46
11	35	45	42	46	44	52	52	39	45	41	41	38
12	31	46	*43	41	43	48	52	49	44	41	40	36
13	30	52	43	43	43	48	49	42	63	37	38	36
14	32	80	44	45	44	48	49	44	60	39	40	35
15	34	109	41	45	43	47	49	41	44	48	43	36
16	53	72	43	44	41	44	48	42	42	45	39	38
17	52	62	45	45	41	44	48	41	42	*44	38	49
18	45	61	52	44	41	46	49	49	41	33	37	48
19	41	64	64	40	41	47	45	46	45	36	37	44
20	40	58	60	43	42	52	47	46	43	38	40	43
21	39	57	65	48	41	52	46	43	41	37	50	39
22	43	52	58	48	42	52	49	43	41	41	42	41
23	88	50	56	*45	45	50	49	42	45	42	39	41
24	99	50	51	46	52	48	52	41	45	41	43	43
25	77	48	49	45	59	46	51	40	52	45	40	43
26	57	48	56	41	63	45	47	40	49	40	39	41
27	50	47	53	43	75	44	45	41	46	36	38	40
28	46	49	55	45	76	44	47	40	43	49	38	42
29	48	48	45	45	-	42	48	39	41	49	38	40
30	45	46	49	44	------	40	49	39	38	47	35	45
31	45	------	51	43	------	40	------	47	------	46	32	------
Total	1,398	1,564	1,533	1,400	1,288	1,550	1,479	1,408	1,389	1,352	1,262	1,192
Mean	45.1	52.1	49.5	45.2	46.0	50.0	49.3	45.4	46.3	43.6	40.7	39.7
Cfsm	0.940	1.09	1.03	0.942	0.958	1.04	1.03	0.946	0.965	0.908	0.848	0.827
In.	1.08	1.21	1.19	1.08	1.00	1.20	1.15	1.09	1.08	1.05	0.98	0.92

Calendar year 1957: Max 112 Min 20 Mean 47.7 Cfsm 0.994 In. 13.48
Water year 1957-58: Max 109 Min 30 Mean 46.1 Cfsm 0.960 In. 13.03

* Discharge measurement made on this day.

1085. Kalamazoo River near Fennville, Mich.

Location.--Lat 42°36', long 85°59', in NE¼ sec.5, T.2 N., R.14 W., on left bank 40 ft upstream from bridge on State Highway 89, 2 miles downstream from Swan Creek, 3½ miles downstream from Calkins Dam, and 6½ miles east of Fennville.

Drainage area.--1,600 sq mi, approximately.

Records available.--April 1929 to September 1936, October 1937 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Published as "near Allegan" April 1929 to September 1932; as "at Calkins Bridge, near Allegan" October 1932 to September 1936, October 1937 to September 1938; as "at Calkins Dam, near Allegan" October 1938 to September 1950.

Gage.--Water-stage recorder. Datum of gage is 586.51 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). April 1929 to September 1936 at bridge and October 1937 to September 1950 in powerplant, 3½ miles upstream at mean sea level datum (levels by city of Allegan).

Average discharge.--28 years, 1,343 cfs.

Extremes.--Maximum discharge during year, 3,400 cfs Mar. 1 (gage height, 11.62 ft); minimum, 125 cfs May 25 (gage height, 3.68 ft); minimum daily, 422 cfs May 25.
1929-36, 1937-58: Maximum discharge, 17,500 cfs Apr. 11, 1947 (gage height, 606.76 ft, site and datum then in use); minimum daily, 73 cfs Aug. 31, 1941.

Remarks.--Records good except those for period of ice effect, which are fair. Flow regulated at low and medium stages by powerplants above station, and since June 1936 by Calkins Dam and powerplant 3½ miles above station.

Revisions (water years).--WSP 1387: 1929(M), 1930, 1933, 1934-36(M), 1938(M), 1939-40, 1942.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,040	1,420	1,340	1,570	1,300	3,240	1,350	816	644	952	875	677
2	1,020	1,400	1,040	1,400	1,170	3,110	1,350	682	1,250	954	819	592
3	1,000	807	1,300	1,400	1,140	2,380	1,320	813	1,270	986	628	629
4	*706	1,050	1,260	1,360	1,090	2,280	1,320	995	914	676	1,010	754
5	472	*1,150	1,040	1,330	1,100	2,600	1,320	1,460	*907	808	840	594
6	423	1,130	1,340	1,340	1,140	*2,810	1,100	1,400	682	1,060	690	544
7	630	1,130	958	1,250	1,160	*3,010	1,020	1,440	582	1,150	*930	550
8	952	1,120	1,140	1,460	1,180	2,970	1,380	1,390	736	1,210	790	599
9	1,080	1,130	940	1,420	1,170	2,710	1,370	*1,120	1,250	1,240	862	701
10	866	862	1,270	1,340	1,210	2,210	1,420	1,010	1,280	1,250	754	850
11	709	1,060	1,340	1,300	1,180	1,760	*1,440	762	666	871	754	*930
12	593	1,120	1,040	772	b1,100	1,650	1,380	994	764	848	960	876
13	514	1,410	995	934	b1,100	1,620	1,350	773	680	622	782	704
14	946	1,190	1,250	1,280	b1,100	1,630	1,430	830	840	580	926	636
15	1,070	1,670	640	1,330	b1,000	1,510	1,400	1,320	1,180	838	794	562
16	744	2,160	840	972	b900	1,430	1,340	1,320	1,230	*888	917	508
17	718	2,140	*1,140	1,340	b1,100	1,580	1,200	982	932	1,190	688	739
18	968	2,130	1,120	1,000	b1,100	1,670	1,160	765	1,290	660	961	968
19	1,080	2,060	1,240	1,200	b1,100	1,620	1,140	958	1,270	802	761	1,010
20	810	1,820	1,320	880	b1,100	1,560	1,090	1,020	676	910	886	905
21	1,000	1,790	1,420	1,260	b1,000	1,510	1,160	1,000	790	552	732	823
22	1,090	1,860	1,760	1,370	b800	1,150	1,440	1,010	998	568	728	900
23	1,140	1,750	2,080	1,310	694	1,420	1,390	983	866	608	566	588
24	1,040	1,740	1,540	882	1,090	1,560	1,420	729	1,260	1,180	542	520
25	1,170	1,920	1,720	991	1,200	1,460	1,380	422	1,300	723	904	871
26	1,580	1,630	1,980	1,180	1,290	1,410	1,330	758	944	848	908	915
27	1,580	1,520	1,940	*1,290	2,280	1,420	1,260	970	896	701	647	897
28	1,580	1,370	1,700	1,190	2,830	1,390	1,330	888	840	691	854	686
29	1,480	1,400	1,700	1,040	-	1,300	1,400	910	621	964	946	608
30	1,480	1,400	1,580	1,330	--------	745	830	668	868	745	920	538
31	1,440	--------	1,700	1,000	--------	1,080	--------	588	--------	620	660	--------
Total	30,901	44,339	41,670	37,721	33,624	57,795	38,820	29,756	28,424	26,695	25,034	21,674
Mean	997	1,478	1,344	1,217	1,201	1,864	1,294	960	947	861	808	722
Cfsm	0.623	0.924	0.840	0.761	0.751	1.16	0.809	0.600	0.592	0.538	0.505	0.451
In.	0.72	1.03	0.97	0.88	0.78	1.34	0.90	0.69	0.66	0.62	0.58	0.50

Calendar year 1957: Max 2,680 Min 402 Mean 1,256 Cfsm 0.785 In. 10.65
Water year 1957-58: Max 3,240 Min 422 Mean 1,141 Cfsm 0.713 In. 9.67

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1090. Grand River at Jackson, Mich.

Location.--Lat 42°17'05", long 84°24'30", in sec.22, T.2 S., R.1 W., on left bank at sewage-treatment plant, 1 mile north of Jackson, 2¼ miles upstream from Portage River, and at mile 216.

Drainage area.--174 sq mi.

Records available.--April 1935 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 900.00 ft above mean sea level (Fargo Engineering Co. bench mark). Prior to Sept. 24, 1935, staff gage at same site and datum.

Average discharge.--23 years, 120 cfs.

Extremes.--Maximum discharge during year, 736 cfs Aug. 20 or 21 (gage height, 12.5 ft, from high-water mark); minimum recorded, 14 cfs Feb. 8 (gage height, 8.36 ft); minimum daily, 23 cfs Sept. 1, 14.
1935-58: Maximum discharge, 1,070 cfs June 25, 1937 (gage height, 13.50 ft); minimum, 9.2 cfs Aug. 22, 1936.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Slight regulation by mills above station.

Revisions (water years).--WSP 974: 1937(M). WSP 1387: 1936.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42	87	106	239	96	180	131	77	72	45	25	23
2	42	76	113	210	101	180	88	72	58	83	25	33
3	41	69	110	151	98	192	73	73	55	160	25	41
4	40	80	108	144	95	192	69	77	55	56	25	43
5	31	131	133	131	60	190	69	77	55	44	35	40
6	25	133	136	128	51	*192	118	80	50	35	45	35
7	35	128	148	107	48	183	120	78	43	49	43	29
8	38	151	141	67	34	172	124	76	50	50	40	36
9	*40	130	146	78	37	167	130	68	96	49	35	46
10	40	119	98	72	43	163	130	62	54	54	30	40
11	40	127	62	63	42	156	138	69	49	52	28	39
12	33	118	67	54	40	148	189	66	48	44	27	38
13	27	87	81	62	39	100	190	62	60	38	26	30
14	36	146	73	63	40	87	189	82	37	*39	26	23
15	41	127	66	62	37	80	181	135	31	40	25	*45
16	80	113	80	60	33	74	*171	163	40	38	25	51
17	82	110	80	57	39	81	162	118	43	36	25	86
18	66	125	122	44	40	88	141	58	43	34	25	54
19	66	*148	135	44	40	80	81	51	43	32	35	44
20	62	156	317	57	40	78	81	49	41	30	100	37
21	72	155	337	60	40	80	85	47	32	30	150	32
22	122	150	331	62	37	74	88	45	25	29	*46	42
23	223	131	327	58	47	73	94	45	*35	28	36	43
24	222	120	218	60	73	86	89	45	45	28	48	43
25	212	119	176	60	133	144	85	45	72	27	42	45
26	102	118	181	65	151	146	84	49	48	26	42	43
27	95	113	*172	70	174	144	91	46	42	26	42	34
28	101	118	178	90	183	143	89	46	33	26	43	27
29	102	116	246	*112	-	135	84	*45	28	25	43	34
30	101	114	271	112	-------	130	82	33	46	25	36	43
31	94	-------	263	108	-------	135	-------	44	-------	25	27	-------
Total	2,353	3,615	5,042	2,750	1,691	4,075	3,446	2,083	1,429	1,303	1,225	1,199
Mean	75.9	120	163	88.7	67.5	131	115	67.2	47.6	42.0	39.5	40.0
Cfsm	0.436	0.690	0.937	0.510	0.388	0.753	0.661	0.386	0.274	0.241	0.227	0.230
In.	0.50	0.77	1.08	0.59	0.40	0.87	0.74	0.45	0.31	0.28	0.26	0.26

Calendar year 1957: Max 337 Min 25 Mean 101 Cfsm 0.580 In. 7.89
Water year 1957-58: Max 337 Min 23 Mean 83.3 Cfsm 0.479 In. 6.51

* Discharge measurement made on this day.
Note.--No gage-height record Jan. 25-28, May 21-25, July 15 to Aug. 21; discharge estimated on basis of recorded range in stage and records for station near Eaton Rapids.

1110. Grand River near Eaton Rapids, Mich.

Location.--Lat 42°32'05", long 84°37'25", in NE¼ sec.26, T.2 N., R.3 W., on right bank 400 ft upstream from bridge on Petrieville Highway, 2 miles northeast of Eaton Rapids, 2½ miles downstream from Spring Brook, 25 miles upstream from Cedar River, and at mile 178.

Drainage area.--661 sq mi.

Records available.--October 1950 to September 1958. Gage-height records for flood seasons collected in this vicinity 1905-28 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 852.68 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--8 years, 466 cfs.

Extremes.--Maximum discharge during year, 1,200 cfs Dec. 23 (gage height, 4.10 ft); maximum gage height, 4.19 ft Jan. 9, ice affected; minimum discharge, 42 cfs Oct. 15 (gage height, 1.15 ft); minimum daily, 56 cfs Sept. 14.
1950-58: Maximum discharge, 3,360 cfs May 1, 1956 (gage height, 7.65 ft, from high-water mark); minimum, 18 cfs Sept. 12, 1951; minimum daily, 44 cfs Sept. 22, 1955.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diurnal fluctuation caused by powerplant at Smithville and mills at Eaton Rapids.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 9				Jan. 10 to Sept. 30			
1.4	78	2.5	385	1.2	46	2.0	204
1.7	132	3.0	605	1.5	88	3.0	605
2.0	206	5.0	1,690	1.7	128	4.0	1,140

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	99	246	373	777	328	1,010	404	304	188	110	74	74
2	127	306	440	644	305	997	397	282	151	104	94	85
3	122	312	373	892	350	975	*394	233	225	204	118	92
4	122	292	340	500	386	936	307	292	131	350	*72	*91
5	114	260	351	550	314	898	302	312	134	491	77	88
6	119	268	370	600	306	*876	375	301	137	456	138	128
7	96	278	397	600	336	876	560	274	164	444	142	117
8	136	290	420	400	200	865	574	269	133	310	126	58
9	98	349	440	500	200	832	592	262	130	281	123	94
10	100	377	462	400	220	766	580	230	236	210	120	104
11	113	373	315	400	210	700	580	240	188	188	98	130
12	112	361	350	400	210	670	579	224	174	180	84	95
13	144	385	390	348	210	665	576	212	250	175	84	108
14	83	484	322	350	210	610	595	196	218	172	82	56
15	112	734	422	350	200	555	571	205	200	*144	89	90
16	126	715	560	290	200	528	555	186	192	138	93	76
17	172	730	575	324	200	524	496	178	182	162	111	123
18	*229	730	542	302	200	480	528	a200	139	124	77	174
19	198	*700	615	294	190	468	438	a250	144	156	76	168
20	191	665	816	262	180	452	416	a200	163	120	86	180
21	212	640	948	237	180	458	408	a160	143	95	220	120
22	157	605	1,070	262	180	428	319	a150	154	101	294	137
23	278	575	*1,170	276	188	450	419	a130	108	90	270	113
24	540	508	1,120	274	230	442	378	a150	*125	99	230	112
25	530	519	1,070	275	499	388	400	a150	118	104	182	138
26	522	453	1,050	278	770	414	370	a100	140	99	128	106
27	536	422	975	276	931	448	339	a80	168	112	150	122
28	519	446	931	281	1,010	447	370	a90	160	80	120	120
29	436	402	865	*274	-	434	296	*a90	130	93	112	102
30	342	460	804	280	------	438	302	122	108	91	134	105
31	360	-	782	342	------	411	-------	138	------	124	120	-
Total	7,045	13,885	19,658	12,038	8,943	19,441	13,418	6,210	4,833	5,607	3,904	3,306
Mean	227	463	634	388	319	627	447	200	161	181	126	110
Cfsm	0.343	0.700	0.959	0.587	0.483	0.949	0.676	0.303	0.244	0.274	0.191	0.166
In.	0.40	0.78	1.11	0.68	0.50	1.09	0.75	0.35	0.27	0.32	0.22	0.19

Calendar year 1957: Max 1,250 Min 66 Mean 391 Cfsm 0.592 In. 8.04
Water year 1957-58: Max 1,170 Min 56 Mean 324 Cfsm 0.490 In. 6.66

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, powerplant records, and records for station at Lansing.
Note.--Stage-discharge relation affected by ice Jan. 4-12, 14, 15, Feb. 8-22.

1115. Deer Creek near Dansville, Mich.

Location.--Lat 42°36'30", long 84°19'15", in E½ sec.33, T.3 N., R.1 E., on right bank 15 ft upstream from bridge on Clark Road, 3½ miles north of Dansville, and 7¼ miles upstream from mouth.

Drainage area.--16.3 sq mi.

Records available.--May 1954 to September 1958.

Gage.--Water-stage recorder and concrete control. Datum of gage is 889.08 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Extremes.--Maximum discharge during year, 131 cfs July 4 (gage height, 4.61 ft); minimum, 0.6 cfs Oct. 10, Sept. 14; minimum gage height, 2.57 ft Feb. 20, caused by siphon action.

1954-58: Maximum discharge, 570 cfs May 13, 1956 (gage height, 8.83 ft); minimum, 0.1 cfs Dec. 9, 1956, result of freezeup.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.7	0.3	3.2	14
2.8	1.1	3.3	21
2.9	2.4	3.5	41
3.0	4.7	4.0	92
3.1	8.2		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	.8	2.9	5.6	12	4.0	39	5.6	4.7	5.0	1.1	1.3	0.9
2	.8	2.7	5.3	11	3.5	29	5.6	4.1	4.7	1.0	1.1	.9
3	.8	2.7	4.7	11	3.5	27	5.3	4.1	2.9	28	1.1	.9
4	.8	2.5	4.1	10	3.5	*26	5.0	4.4	2.4	58	1.0	1.0
5	.9	2.4	4.1	9.1	3.5	24	5.0	4.1	2.1	58	.9	.9
6	.9	2.4	5.3	9.6	3.3	29	13	3.6	1.9	26	11	.9
7	.9	2.2	7.4	7.8	3.2	27	33	3.4	1.8	18	19	.9
8	.8	3.1	7.0	7.0	3.0	22	20	3.4	1.9	11	7.8	.8
9	.8	4.4	6.6	6.6	3.0	17	14	3.1	3.1	7.4	4.1	1.0
10	.8	3.6	5.9	7.0	3.0	13	12	2.9	7.0	5.6	2.7	1.1
11	.9	3.4	4.9	5.6	2.8	12	12	2.9	4.4	4.7	2.1	1.0
12	.9	3.4	4.5	4.4	2.8	12	16	2.7	3.1	3.6	1.8	.9
13	1.1	3.8	4.5	5.0	*2.8	12	14	2.7	3.8	3.1	1.5	.8
14	1.1	20	5.0	5.3	2.8	12	12	2.7	4.1	2.7	1.4	.8
15	1.1	33	4.7	5.0	2.8	11	9.1	2.5	3.1	2.7	1.4	.8
16	1.3	19	5.6	4.7	2.5	11	8.2	2.4	2.5	2.4	1.3	.8
17	2.2	13	6.2	4.1	2.5	10	7.4	2.5	2.2	2.2	1.2	1.4
18	1.8	11	14	3.6	2.5	9.6	6.6	2.5	1.9	2.1	1.1	2.5
19	1.5	14	50	3.6	2.5	9.6	5.9	2.1	2.1	1.9	1.0	1.8
20	1.3	11	79	3.8	2.5	9.6	6.6	1.9	2.2	1.8	1.1	1.4
21	*1.2	9.1	44	*4.1	2.5	10	7.4	1.7	2.1	1.7	3.1	1.3
22	1.3	8.2	28	4.1	2.5	9.6	7.8	1.9	1.8	1.5	2.7	1.3
23	4.1	7.4	*23	3.8	2.5	9.1	10	1.7	1.7	1.5	1.9	1.2
24	13	7.0	18	4.1	20	8.6	12	1.7	1.7	1.4	1.7	1.2
25	7.4	5.9	18	4.0	66	8.2	9.6	1.5	2.1	1.3	1.5	1.2
26	5.0	5.6	38	4.0	51	7.8	7.8	1.4	2.1	1.3	1.3	1.2
27	4.1	5.6	25	4.0	48	7.4	7.0	1.4	1.7	1.2	1.2	1.1
28	3.6	*6.2	19	4.0	39	7.4	6.6	1.4	1.5	1.7	1.1	1.0
29	2.9	7.4	16	4.0	-	7.0	6.2	*1.3	1.2	1.9	*1.1	1.0
30	2.9	6.6	14	4.0	-------	6.6	*5.3	1.3	*1.1	*1.4	1.0	*1.1
31	2.9	---	13	4.0	-------	*5.9	--------	2.1	-------	1.4	.9	---
Total	69.9	229.5	490.4	180.3	291.5	448.4	296.0	80.1	79.2	257.6	81.4	33.1
Mean	2.25	7.65	15.8	5.82	10.4	14.5	9.87	2.58	2.64	8.31	2.63	1.10
Cfsm	0.138	0.469	0.969	0.357	0.638	0.890	0.606	0.158	0.162	0.510	0.161	0.067
In.	0.16	0.52	1.12	0.41	0.67	1.02	0.68	0.18	0.18	0.59	0.19	0.08

Calendar year 1957: Max 230 Min 0.6 Mean 10.5 Cfsm 0.644 In. 8.74
Water year 1957-58: Max 79 Min 0.8 Mean 6.95 Cfsm 0.426 In. 5.80

Peak discharge (base, 100 cfs).--Dec. 20 (10 to 11 a.m.) 117 cfs (4.36 ft); July 4 (2 p.m.) 131 cfs (4.61 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 12, 13, Jan. 25 to Feb. 23 (no gage-height record Feb. 8-12).

1120. Sloan Creek near Williamston, Mich.

Location.--Lat 42°40'30", long 84°21'50", in E½ sec.1, T.3 N., R.1 W., on left bank 30 ft downstream from bridge on Meridian Road, 2 miles upstream from mouth, and 4¼ miles west of Williamston.

Drainage area.--9.34 sq mi.

Records available.--June 1954 to September 1958.

Gage.--Water-stage recorder and concrete control with V-notch sharp-crested weir. Datum of gage is 862.12 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Extremes.--Maximum discharge during year, 101 cfs Dec. 20 (gage height, 3.60 ft); minimum, 0.19 cfs Aug. 18, Sept. 30 (gage height, 1.35 ft); minimum gage height, 1.15 ft Feb. 20, caused by siphon action.
1954-58: Maximum discharge, 685 cfs July 11, 1957 (gage height, 7.35 ft); minimum, 0.01 cfs Sept. 11, 1954, Jan. 18, 1957 (gage height, 1.10 ft), caused by unusual regulation; minimum natural discharge, 0.04 cfs Sept. 18-21, 1955.

Remarks.--Records good.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1, 10, Nov. 3-7, July 9-15, Aug. 4-6, 8-22)

1.3	0.12	2.0	2.9
1.4	.27	2.3	7.0
1.5	.47	2.7	18
1.6	.75	3.0	34
1.8	1.6	3.3	65

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.27	0.87	2.4	4.8	1.7	27	2.2	2.0	4.4	0.24	0.47	0.24
2	*.25	.83	2.2	4.1	1.7	20	2.1	1.8	2.7	.22	.38	.25
3	.24	.75	2.0	4.0	1.6	18	2.0	1.9	1.7	2.4	.32	.27
4	.24	.72	1.9	3.7	1.5	16	1.9	1.9	1.2	11	.31	.25
5	.25	.69	1.8	3.5	1.5	16	1.9	1.8	1.0	18	.27	.25
6	.25	.66	2.2	3.4	1.5	21	3.5	1.8	.83	11	.38	.25
7	.27	.63	2.6	3.4	1.5	17	22	1.7	.72	11	.92	.24
8	.27	1.0	2.5	2.8	1.3	13	8.8	1.7	.72	6.2	.95	.24
9	.32	1.3	2.5	2.7	1.2	8.2	6.0	1.6	1.3	3.7	.57	.27
10	.32	1.1	2.5	2.8	1.1	6.2	4.9	1.3	1.3	2.8	.42	.31
11	.29	.99	2.2	2.5	1.2	5.5	4.7	1.2	1.2	2.4	.32	.27
12	.27	.99	2.0	2.2	1.0	5.4	6.0	1.1	.83	2.1	.29	.24
13	.27	1.1	1.9	2.2	1.1	5.4	5.4	1.0	1.2	1.9	.27	.24
14	.29	10	2.0	2.2	1.2	5.2	4.5	.95	1.3	1.5	.25	.24
15	.29	18	2.0	2.2	1.2	4.9	3.9	.91	1.0	1.2	.27	.29
16	.42	7.8	2.3	2.1	1.3	4.7	3.4	.83	.83	.87	.27	.32
17	.75	5.2	2.7	2.0	1.3	4.4	3.0	1.2	.66	.72	.24	.58
18	.50	4.5	9.1	1.8	1.1	4.1	2.8	1.3	.57	.66	.22	.87
19	.42	7.2	36	1.6	1.0	4.1	2.5	.75	.54	.60	.20	.54
20	.42	5.2	57	1.7	1.0	4.1	2.6	.66	.54	.52	.27	.44
21	.34	4.2	29	1.8	1.1	4.0	2.5	.60	.52	.44	1.5	.38
22	.36	3.7	16	1.8	1.1	3.9	2.8	.66	.44	.42	1.2	.34
23	1.2	3.4	*10	1.7	1.3	3.5	3.7	.66	.42	.40	.66	.31
24	5.6	3.1	7.0	1.7	3.8	3.4	4.7	.54	.40	.36	.52	.31
25	2.8	2.7	7.4	1.8	34	3.3	4.1	.47	.56	.34	.42	.31
26	2.0	2.5	20	1.8	34	3.1	3.1	.47	.57	.32	.34	.29
27	1.6	2.5	11	1.7	41	2.9	2.8	.44	.42	.31	.31	.25
28	1.3	*2.5	7.8	1.7	32	2.8	2.8	.42	.34	1.1	.27	.24
29	1.2	2.8	6.2	1.7	-	2.6	2.5	*.42	.31	1.7	*.25	.22
30	1.1	2.8	5.4	1.7	------	2.5	*2.1	.40	*.28	*.79	.25	*.24
31	.99	---	5.1	1.7	-------	*2.4	------	.79	--------	.63	.24	---
Total	25.09	99.73	264.7	74.8	174.3	244.6	125.2	33.27	28.80	85.84	13.55	9.49
Mean	0.809	3.32	8.54	2.41	6.22	7.89	4.17	1.07	0.960	2.77	0.437	0.316
Cfsm	0.087	0.355	0.914	0.258	0.666	0.845	0.446	0.115	0.103	0.297	0.047	0.034
In.	0.10	0.40	1.05	0.30	0.69	0.97	0.50	0.13	0.11	0.34	0.05	0.04

Calendar year 1957: Max 199 Min 0.20 Mean 7.07 Cfsm 0.757 In. 10.28
Water year 1957-58: Max 57 Min 0.20 Mean 3.23 Cfsm 0.346 In. 4.68

Peak discharge (base, 60 cfs).--Dec. 20 (7:30 a.m.) 101 cfs (3.60 ft); Feb. 25 (7 p.m.) 63 cfs (3.28 ft).

* Discharge measurement made on this day.

1125. Cedar River at East Lansing, Mich.

Location.--Lat 42°43'40", long 84°28'40", in SW¼ sec.18, T.4 N., R.1 W., in left downstream bridge abutment of Farm Lane Bridge on Michigan State University Campus in East Lansing, 3 miles upstream from Sycamore Creek and 4 miles upstream from mouth.

Drainage area.--355 sq mi.

Records available.--August 1902 to December 1903, March 1931 to September 1958. Monthly discharge only for some periods, published in WSP 1307. August 1902 to December 1903 published as Red Cedar River at Agricultural College, Mich. Gage-height records collected in this vicinity 1911-19, and for flood seasons only 1920-28, are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder and concrete control. Datum of gage is 824.39 ft above mean sea level, datum of 1929. August 1902 to December 1903 chain gage at site three-quarters of a mile downstream at different datum. March 1931 to November 1940 water-stage recorder at site 250 ft upstream at present datum.

Average discharge.--28 years, 206 cfs.

Extremes.--Maximum discharge during year, 895 cfs Dec. 21 (gage height, 5.33 ft); minimum, 11 cfs Sept. 15 (gage height, 3.09 ft).
1902-3, 1931-58: Maximum discharge, 5,920 cfs Apr. 7, 1947 (gage height, 11.58 ft); minimum, 3 cfs July 31, 1931.

Remarks.--Records good. Occasional regulation at low flow caused by mill at Williamston 16 miles above station.

Revisions (water years).--WSP 1307: 1936(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 31		Jan. 1 to Sept. 30	
3.2	35	3.09	11
3.5	108	3.2	28
4.0	262	3.5	99
5.0	718	4.0	253
6.0	1,290	5.2	800

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	41	89	128	260	99	800	142	110	94	47	47	34
2	41	86	119	201	107	700	142	107	86	49	32	32
3	39	86	111	176	96	*551	139	102	91	81	28	32
4	37	84	97	198	91	478	130	102	81	224	38	28
5	37	84	94	201	102	437	124	102	71	546	32	20
6	39	89	103	201	*105	446	142	105	66	493	43	32
7	39	86	119	185	99	488	264	102	56	380	54	38
8	41	89	133	154	86	446	292	105	56	334	76	36
9	43	97	130	154	78	376	240	105	66	253	78	25
10	43	100	125	151	83	307	207	96	73	182	71	15
11	46	100	71	151	76	303	185	89	91	142	63	14
12	52	100	89	139	73	246	210	78	78	119	63	34
13	54	97	108	130	73	243	233	73	76	102	66	43
14	54	149	105	127	71	240	217	71	73	86	56	30
15	54	378	97	127	73	230	194	71	71	83	66	11
16	68	409	103	124	76	223	172	71	63	81	71	25
17	68	325	108	119	71	210	160	73	61	76	61	34
18	61	273	122	113	73	204	148	76	59	73	51	43
19	66	252	375	94	73	201	139	71	59	68	36	49
20	68	231	682	99	73	201	136	66	51	63	32	47
21	68	206	878	105	73	204	145	66	41	51	81	45
22	71	180	760	107	71	204	145	66	41	51	66	45
23	103	162	595	107	73	194	157	61	41	49	56	38
24	206	148	492	110	86	188	166	61	41	49	51	36
25	228	139	413	110	210	182	179	61	41	*49	47	36
26	180	125	482	113	512	176	157	49	45	49	45	38
27	139	119	516	116	710	169	142	61	47	54	43	36
28	119	*119	436	116	*780	163	136	61	47	61	43	36
29	105	130	378	113	-	160	133	*56	45	59	*38	36
30	97	139	*325	113	-------	*154	*121	54	*45	54	36	*36
31	*92	-------	284	*110	-------	148	-------	56	-------	54	36	-------
Total	2,399	4,671	8,578	4,324	4,193	9,272	5,097	2,427	1,856	4,062	1,606	1,004
Mean	77.4	156	277	139	150	299	170	78.3	61.9	131	51.8	33.5
Cfsm	0.218	0.439	0.780	0.392	0.423	0.842	0.479	0.221	0.174	0.369	0.146	0.094
In.	0.25	0.49	0.90	0.45	0.44	0.97	0.53	0.25	0.19	0.43	0.17	0.11

Calendar year 1957: Max 2,290 Min 37 Mean 217 Cfsm 0.611 In. 8.29
Water year 1957-58: Max 878 Min 11 Mean 136 Cfsm 0.383 In. 5.18

Peak discharge (base, 1,100 cfs).--No peak above base.

* Discharge measurement made on this day.

1130. Grand River at Lansing, Mich.

Location.--Lat 42°45'05", long 84°33'20", in NW¼ sec.9., T.4 N., R.2 W., on right bank 30 ft upstream from North Grand River Avenue Bridge in Lansing, 2 miles downstream from Cedar River, and at mile 152.

Drainage area.--1,230 sq mi, approximately.

Records available.--March 1901 to September 1906, October 1934 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Published as "at North Lansing" 1901-6. Gage-height records collected in this vicinity 1907-10 (flood seasons only), 1911-19, 1920-28 (flood seasons only), and since 1931 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 805.53 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to August 1906, staff gage at same site at different datum. November 1934 to June 1949 water-stage recorder at site 1¾ miles downstream at datum 2.42 ft lower.

Average discharge.--29 years, 847 cfs.

Extremes.--Maximum discharge during year, 2,380 cfs Mar. 1 (gage height, 6.20 ft); minimum, 19 cfs June 25 (gage height, 1.20 ft); minimum daily, 116 cfs Sept. 5.
1901-6, 1934-58: Maximum discharge, 24,500 cfs Mar. 26, 1904 (gage height, 18.60 ft, datum then in use), from rating curve extended above 15,000 cfs by logarithmic plotting; minimum, 4.0 cfs Aug. 28, 1952, July 17, 1954 (gage height, 0.90 ft); minimum daily, 20 cfs Aug. 25, 1941.
Maximum discharge since 1901, 24,500 cfs Mar. 26, 1904.

Remarks.--Records good. Large diurnal fluctuation at medium and low flows caused by powerplants above station.

Revisions (water years).--WSP 1174: 1949. WSP 1387: 1901, 1903-4, 1935, 1937, 1942.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.6	90
2.0	220
4.0	1,100
7.0	2,930

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	185	480	703	1,180	463	2,360	648	476	457	192	239	172
2	185	424	582	978	496	2,290	652	450	385	165	144	178
3	188	430	631	721	437	2,100	*648	456	302	442	140	194
4	181	408	541	829	446	1,890	600	414	346	788	206	*160
5	154	421	518	811	428	1,740	514	442	*258	1,190	149	116
6	156	*363	568	924	520	1,730	698	*470	244	1,410	253	136
7	174	392	613	888	469	1,760	1,050	430	244	1,220	394	230
8	194	474	654	798	374	1,700	1,170	414	252	938	384	179
9	172	500	662	590	332	1,560	1,090	420	302	761	343	185
10	185	550	672	680	318	1,400	1,020	388	322	628	288	176
11	168	546	542	586	356	1,200	969	338	402	454	249	163
12	148	518	424	554	343	1,160	995	331	369	375	224	181
13	175	541	505	546	314	1,080	1,030	359	382	368	232	178
14	198	793	532	500	342	1,080	1,010	330	402	342	148	224
15	171	1,250	541	518	331	1,000	972	270	373	358	176	119
16	272	1,440	559	480	324	946	922	338	334	290	185	153
17	268	1,320	546	486	314	901	856	294	317	303	164	314
18	287	1,240	582	461	324	842	784	285	291	263	237	265
19	334	1,220	924	438	324	824	748	321	262	228	186	258
20	310	1,100	1,790	384	314	811	712	311	238	256	208	297
21	286	1,020	2,210	438	319	816	658	298	242	211	500	254
22	316	960	2,230	412	330	798	632	298	258	204	470	202
23	441	901	2,120	428	340	784	582	266	202	196	497	247
24	944	824	1,960	484	382	784	728	242	200	194	398	196
25	963	748	1,790	436	625	756	630	270	217	*174	294	214
26	870	734	1,810	479	1,360	726	638	234	223	207	250	220
27	804	694	1,820	459	1,980	733	624	210	200	199	230	185
28	737	640	1,720	478	*2,220	757	529	200	230	340	254	135
29	668	694	1,550	*471	-	738	574	219	222	240	224	232
30	596	667	*1,350	462	-	726	493	154	186	214	172	218
31	510	-	1,280	518	-	715	-	314	-	210	210	-
Total	11,240	22,292	32,929	18,417	15,125	36,705	23,176	10,242	8,662	13,360	8,048	5,981
Mean	363	743	1,062	594	540	1,184	773	330	289	431	260	199
Cfsm	0.295	0.604	0.863	0.483	0.439	0.963	0.628	0.268	0.235	0.350	0.211	0.162
In.	0.34	0.67	1.00	0.56	0.46	1.11	0.70	0.31	0.26	0.40	0.24	0.18

Calendar year 1957: Max 3,880 Min 123 Mean 751 Cfsm 0.611 In. 8.28
Water year 1957-58: Max 2,360 Min 116 Mean 565 Cfsm 0.459 In. 6.25

Peak discharge (base, 2,800 cfs).--No peak above base.

* Discharge measurement made on this day.

1140. Grand River at Portland, Mich.

Location.--Lat 42°51'20", long 84°54'45", in NW¼ sec.4, T.5 N., R.5 W., on left bank at downstream side of bridge on Kent Street, 1.0 mile south of Portland, 1.9 miles upstream from Lookingglass River, and at mile 115.

Drainage area.--1,385 sq mi.

Records available.--August 1952 to September 1958. Gage-height records for flood seasons collected in this vicinity 1907-28 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 705.00 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to July 6, 1953, wire-weight gage at same site and datum.

Average discharge.--6 years, 817 cfs.

Extremes.--Maximum discharge during year, 2,810 cfs Mar. 1 (gage height, 7.81 ft); maximum gage height, 9.53 Jan. 4, affected by ice; minimum discharge recorded, 110 cfs Sept. 17; minimum daily, 152 cfs Sept. 29.
1952-58: Maximum discharge, 9,100 cfs May 13, 1956 (gage height, 11.51 ft); minimum, 55 cfs Sept. 9, 1953 (gage height, 4.07 ft); minimum daily, 68 cfs Sept. 9, 1953.

Remarks.--Records good except those for periods of ice effect, which are fair. Slight diurnal fluctuation caused by powerplants above station.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 24 to Sept. 30)

4.3	132
4.5	194
5.0	400
6.0	1,050
8.0	3,040

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	246	601	753	1,380	559	2,760	739	541	486	234	242	242
2	226	577	725	1,240	494	2,720	677	517	565	230	246	212
3	223	505	664	1,000	500	2,540	684	488	430	*257	242	198
4	226	488	670	900	500	2,270	*670	488	368	494	164	238
5	223	483	601	900	500	2,030	619	430	430	1,110	178	238
6	216	*488	613	1,000	483	1,970	601	466	315	1,430	216	205
7	174	440	651	1,000	500	1,990	990	488	277	1,320	265	164
8	230	483	697	900	450	1,940	1,270	461	298	1,160	400	216
9	223	595	704	700	400	1,810	1,240	494	315	908	391	234
10	*246	571	725	750	400	1,620	1,130	396	368	760	378	230
11	219	619	746	650	400	1,450	1,070	405	360	651	333	246
12	219	607	547	600	370	1,270	1,070	342	*435	500	303	208
13	238	601	580	600	370	1,250	1,060	378	435	425	286	198
14	230	739	600	550	370	*1,200	1,060	364	440	373	282	198
15	305	1,340	600	550	370	1,160	*1,050	360	425	386	253	205
16	246	1,660	589	550	360	1,070	998	396	391	425	216	164
17	432	1,570	595	550	350	1,030	930	351	355	351	219	198
18	378	1,440	601	500	350	982	879	252	337	307	216	346
19	368	1,450	739	500	350	922	830	320	333	324	*234	307
20	420	1,300	1,500	450	350	908	795	*337	414	277	269	298
21	378	1,260	2,380	500	350	886	767	378	273	265	355	294
22	368	1,150	2,450	500	370	865	732	346	201	250	601	286
23	461	1,060	*2,350	500	400	816	697	315	265	226	500	*234
24	1,020	1,000	2,160	500	450	830	725	311	269	216	535	265
25	1,130	908	1,950	500	600	816	809	273	234	219	456	238
26	1,080	865	1,910	550	1,500	781	725	315	277	219	337	226
27	952	802	1,960	600	2,150	774	690	294	246	208	290	230
28	900	788	1,900	*600	2,650	774	677	261	250	230	286	201
29	830	732	1,720	600	-	761	632	253	269	328	286	152
30	753	760	1,520	550	-------	753	619	246	261	298	265	198
31	658	-------	1,380	547	-------	739	-------	282	-------	253	242	-------
Total	13,818	25,882	35,580	21,217	16,896	41,707	25,435	11,548	10,322	14,634	9,426	6,869
Mean	446	863	1,148	684	603	1,345	848	373	344	472	304	229
Cfsm	0.322	0.623	0.829	0.494	0.435	0.971	0.612	0.269	0.248	0.341	0.219	0.165
In.	0.37	0.69	0.96	0.57	0.45	1.12	0.68	0.31	0.28	0.39	0.25	0.18

Calendar year 1957: Max 5,190 Min 174 Mean 873 Cfsm 0.630 In. 8.56
Water year 1957-58: Max 2,760 Min 152 Mean 639 Cfsm 0.461 In. 6.25

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 13-15, Jan. 3-30, Feb. 3-5, 7-26.

1145. Lookingglass River near Eagle, Mich.

Location.--Lat 42°49'45", long 84°46'40", in sec.10, T.5 N., R.4 W., on upstream side of highway bridge, 1½ miles northeast of Eagle and 10 miles upstream from mouth.

Drainage area.--281 sq mi.

Records available.--August 1944 to September 1958.

Gage.--Wire-weight gage read twice daily. Datum of gage is 747.09 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--14 years, 182 cfs.

Extremes.--Maximum discharge during year, about 600 cfs Mar. 1 or 2; maximum gage height observed, 4.54 ft Mar. 5, affected by ice; minimum discharge, 21 cfs Aug. 19 (gage height, 1.14 ft).
1944-58: Maximum discharge, 2,860 cfs Apr. 5, 1947 (gage height, 7.70 ft, from graph based on gage readings), from rating curve extended above 1,900 cfs by logarithmic plotting; minimum, 18 cfs Aug. 21, 1953 (gage height, 1.11 ft).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Revisions (water years).--WSP 1387: 1946-47.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.1	19	2.5	225
1.3	33	3.0	350
1.5	55	4.0	650
2.0	125		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	108	a150	a300	100	580	118	104	a60	33	31	a25
2	35	101	147	286	a100	a580	122	95	a70	32	29	24
3	34	a95	145	189	100	500	*113	92	a60	*56	a28	23
4	34	*90	125	165	100	*430	116	a90	55	a75	28	23
5	33	88	113	a200	90	430	106	83	*52	106	27	24
6	a35	80	120	170	90	430	a110	*77	46	a150	27	24
7	*35	80	125	170	90	450	145	74	44	110	27	a25
8	31	89	a130	160	90	450	135	74	a45	107	27	24
9	a30	92	131	160	a90	a430	145	74	45	102	26	23
10	a32	a95	133	150	80	420	157	74	54	100	a26	32
11	a34	a100	102	150	80	400	155	a70	50	95	26	28
12	36	102	189	a150	80	375	157	65	46	86	26	27
13	a40	102	191	140	80	342	a155	62	83	a80	25	26
14	40	133	181	140	70	318	153	57	65	77	24	a25
15	41	250	a150	130	70	285	149	57	a65	88	24	24
16	60	242	133	130	a70	a250	141	54	66	75	25	23
17	67	a250	125	130	70	228	129	54	54	70	a25	25
18	63	255	135	120	70	213	118	a60	46	55	24	48
19	60	288	181	a110	70	201	114	66	46	48	*22	44
20	a60	270	312	110	70	197	a110	68	44	a45	22	41
21	62	270	312	110	70	187	110	50	40	38	63	a40
22	60	250	a400	110	a70	181	108	50	a38	36	56	38
23	80	235	*305	100	a80	a180	110	50	37	33	50	*33
24	225	a220	312	100	100	169	139	50	41	32	a45	33
25	171	197	a300	100	150	167	135	a50	38	32	37	32
26	167	181	a350	a100	250	159	137	a50	42	30	33	31
27	a170	169	a400	100	350	153	a135	a55	44	a30	31	30
28	169	a150	a350	*100	500	149	131	a55	41	31	29	a30
29	155	161	a300	100	-	141	122	a50	a40	32	27	28
30	139	155	305	100	-------	a130	113	a50	37	32	26	27
31	118	-------	330	100	-------	125	-------	a50	-------	31	a25	-------
Total	2,351	4,898	6,642	4,382	3,230	9,250	3,888	2,010	1,494	1,947	941	877
Mean	75.8	163	214	141	115	298	130	64.8	49.8	62.8	30.4	29.2
Cfsm	0.270	0.580	0.762	0.502	0.409	1.06	0.463	0.231	0.177	0.223	0.108	0.104
In.	0.31	0.65	0.88	0.58	0.43	1.22	0.51	0.27	0.20	0.26	0.12	0.12

Calendar year 1957: Max 1,160 Min 30 Mean 188 Cfsm 0.669 In. 9.08
Water year 1957-58: Max 580 Min 22 Mean 115 Cfsm 0.409 In. 5.55

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Cedar River at East Lansing and Shiawassee River at Owosso.
Note.--Stage-discharge relation affected by ice Jan. 6 to Mar. 8.

1150. Maple River at Maple Rapids, Mich.

Location.--Lat 43°06'35", long 84°41'35", in sec.5 T.8 N., R.3 W., on upstream side of highway bridge at Maple Rapids, 30 ft downstream from Pine Creek and three-quarters of a mile upstream from Hayworth Creek.

Drainage area.--434 sq mi.

Records available.--August 1944 to September 1958.

Gage.--Wire-weight gage read twice daily. Datum of gage is 642.58 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--14 years, 255 cfs.

Extremes.--Maximum discharge during year, 1,250 cfs Mar. 4 (gage height, 8.48 ft); minimum, 11 cfs Aug. 19, 20; minimum gage height, 1.91 Aug. 20.
1944-58: Maximum daily discharge, 6,500 cfs Mar. 20, 1948; maximum gage height, 11.22 ft Mar. 20, 1948, from floodmark (backwater from ice); minimum discharge observed, 8.2 cfs Aug. 11, 1944 (gage height, 1.61 ft).
Flood in March 1904 reached a stage of 13.8 ft, from information by local resident.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 15, July 1-5, Aug. 28 to Sept. 30)

1.8	10	5.0	215
2.0	16	6.0	350
2.5	37	7.0	549
3.0	62	8.0	940
4.0	124	8.5	1,260

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31	150	300	a350	100	726	201	166	70	38	25	30
2	29	150	281	326	100	935	191	180	98	32	23	25
3	28	144	264	312	100	1,180	181	150	100	*33	21	22
4	27	137	249	285	100	*1,220	*173	148	98	34	19	21
5	25	132	235	259	100	1,220	162	135	*93	103	18	19
6	26	128	226	254	95	1,180	156	*128	81	120	18	18
7	25	a120	224	244	95	1,130	162	120	72	122	18	19
8	25	a120	216	233	90	1,050	157	115	66	120	18	19
9	25	125	208	216	90	970	163	108	62	112	18	18
10	25	128	200	200	90	830	165	98	58	102	18	20
11	24	128	196	192	85	718	164	93	58	92	18	19
12	25	127	180	183	80	629	163	87	58	77	a40	19
13	25	128	172	170	80	572	160	82	58	66	a35	a19
14	*26	152	158	158	80	535	159	74	64	52	a30	a18
15	27	271	150	150	80	499	155	70	70	44	a25	17
16	32	344	144	146	80	472	151	66	74	56	a20	19
17	48	385	140	137	a80	441	148	64	68	55	a15	21
18	57	441	135	130	a80	418	140	62	62	52	a12	36
19	58	484	157	120	80	394	134	61	55	48	*11	52
20	57	521	206	110	80	374	132	60	50	44	11	54
21	56	516	269	100	80	357	143	60	48	38	36	53
22	56	499	312	*90	80	339	143	59	46	34	50	34
23	65	478	365	95	80	326	146	60	45	31	52	*30
24	100	455	*389	95	80	304	a150	59	46	28	50	27
25	127	430	a400	100	90	290	a160	56	50	26	40	28
26	137	407	405	110	150	274	a160	57	62	26	34	27
27	151	*378	416	110	250	259	a160	55	65	25	30	24
28	160	358	407	110	478	247	a160	53	56	23	29	21
29	161	334	401	110	-	235	a160	50	50	26	24	21
30	160	315	381	110	-------	226	164	48	42	25	27	19
31	156	-------	367	110	-------	213	-------	54	-------	26	28	-------
Total	1,974	8,485	8,153	5,317	3,053	18,563	4,761	2,654	1,925	1,710	813	769
Mean	63.7	283	263	172	109	599	159	85.6	64.2	55.2	26.2	25.6
Cfsm	0.147	0.652	0.606	0.396	0.251	1.38	0.366	0.197	0.148	0.127	0.060	0.059
In.	0.17	0.73	0.70	0.46	0.26	1.59	0.41	0.23	0.16	0.15	0.07	0.07

Calendar year 1957: Max 1,170 Min 24 Mean 255 Cfsm 0.588 In. 7.98
Water year 1957-58: Max 1,220 Min 11 Mean 159 Cfsm 0.366 In. 5.00

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Cedar River at East Lansing and Lookingglass River near Eagle.
Note.--Stage-discharge relation affected by ice Jan. 18 to Feb. 27.

1160. Grand River at Ionia, Mich.

Location.--Lat 42°58'20", long 85°04'10", in NW¼ sec.30, T.7 N., R.6 W., on left bank 15 ft downstream from bridge on State Highway 66 at Ionia, 2.7 miles downstream from Prairie Creek, and at mile 87.

Drainage area.--2,840 sq mi, approximately.

Records available.--March to June 1931, July and September 1931 (fragmentary), July 1951 to September 1958. Gage-height records for flood seasons collected in this vicinity are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 615.38 ft above mean sea level, datum of 1929. Mar. 19 to Sept. 24, 1931, chain gage at site 1½ miles upstream at different datum.

Average discharge.--7 years (1951-58), 1,815 cfs.

Extremes.--Maximum discharge during year, about 6,100 cfs Mar. 2 or 3; maximum gage height, 16.89 ft Mar. 2, affected by ice; minimum discharge, 157 cfs sometime between July 24 and Aug. 20 (gage height, 6.38 ft); minimum daily, 250 cfs July 26.
1931, 1951-58: Maximum discharge, 19,000 cfs May 11, 1956 (gage height, 21.87 ft); minimum, 105 cfs Sept. 8, 9, 1954 (gage height, 6.20 ft); minimum daily, 115 cfs Aug. 27, 1953.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diurnal fluctuation below about 5,000 cfs caused by powerplants above station.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 4-19)

6.7	230
7.0	330
9.0	1,320
13.0	4,100
16.0	6,600

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	530	1,270	1,800	2,460	1,100	5,500	1,450	1,150	747	507	600	476
2	558	1,120	1,700	2,230	1,100	6,000	1,500	1,100	1,190	442	300	494
3	467	1,120	1,600	2,000	1,200	6,000	1,410	1,100	948	615	500	302
4	371	1,020	1,560	1,600	1,000	5,820	*1,300	1,140	739	815	300	435
5	397	1,070	1,500	2,000	1,000	5,340	1,330	1,080	786	1,760	400	326
6	396	972	1,480	2,400	1,100	5,200	1,300	895	688	2,120	400	336
7	444	946	1,460	2,300	1,000	5,170	1,730	1,030	592	2,120	400	406
8	394	941	1,430	2,200	1,100	5,170	1,960	1,010	562	1,780	700	379
9	462	1,120	1,540	2,100	800	4,840	2,040	740	596	1,490	600	316
10	440	1,130	1,470	2,000	700	4,340	1,940	991	601	1,230	700	438
11	400	*1,130	1,300	1,900	750	3,870	1,800	870	652	990	600	434
12	*416	1,240	1,000	1,800	800	3,210	1,780	800	*604	951	600	396
13	395	1,160	1,100	1,600	800	3,060	1,780	710	611	800	600	265
14	438	1,430	1,400	1,500	900	*2,780	1,760	773	745	699	450	342
15	420	2,650	1,300	1,500	800	2,740	*1,740	723	725	*742	450	335
16	564	3,260	1,290	1,500	800	2,500	1,690	*822	746	924	300	454
17	681	3,560	1,260	1,400	700	2,500	1,620	650	674	698	450	398
18	744	3,190	1,270	1,300	650	2,350	1,460	816	592	614	500	632
19	701	3,560	1,440	1,200	750	2,250	1,400	632	639	571	300	644
20	636	3,290	2,200	1,000	900	2,320	1,440	672	623	550	*400	407
21	705	3,240	3,720	1,100	750	2,180	1,460	606	556	477	1,040	460
22	648	3,060	4,070	1,100	700	2,210	1,440	740	521	498	958	534
23	777	2,840	*3,960	1,100	800	2,030	1,340	694	413	446	902	470
24	1,330	2,690	3,670	1,000	1,000	1,910	1,500	614	588	450	803	452
25	1,990	2,430	3,490	1,000	1,000	2,000	1,660	638	583	450	778	*467
26	1,920	2,280	3,480	1,200	1,800	1,780	1,550	523	566	250	688	416
27	1,780	2,110	3,590	1,200	3,000	1,760	1,480	596	597	350	549	382
28	1,650	2,010	3,640	1,200	4,500	1,690	1,420	502	572	350	442	410
29	1,530	1,890	3,260	1,300	-	1,700	1,360	539	552	600	464	377
30	1,440	1,860	3,100	1,200	-------	1,580	1,290	472	511	600	387	348
31	1,360	-------	2,740	1,100	-------	1,630	-------	514	-------	450	497	-------
Total	24,984	59,589	67,820	48,490	31,500	101,430	46,930	24,142	19,719	25,339	17,058	12,531
Mean	806	1,986	2,188	1,564	1,125	3,272	1,564	779	657	817	550	418
Cfsm	0.284	0.699	0.770	0.551	0.396	1.15	0.551	0.274	0.231	0.288	0.194	0.147
In.	0.33	0.78	0.89	0.63	0.41	1.33	0.61	0.32	0.26	0.33	0.22	0.16

Calendar year 1957: Max 9,650 Min 371 Mean 1,970 Cfsm 0.694 In. 9.41
Water year 1957-58: Max 6,000 Min 250 Mean 1,314 Cfsm 0.463 In. 6.27

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 12-15, Jan. 3 to Mar. 3. No gage-height record July 24 to Aug. 20; discharge estimated on basis of recorded range in stage, powerplant records, and records for stations at Portland and at Grand Rapids.

1165. Flat River at Smyrna, Mich.

Location.--Lat 43°03'10", long 85°15'50", in NW¼ sec.28, T.8 N., R.8 W., on right bank at downstream side of highway bridge, 600 ft downstream from dam and inactive powerplant and half a mile south of Smyrna.

Drainage area.--528 sq mi.

Records available.--December 1950 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 729.53 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--7 years (1951-58), 405 cfs.

Extremes.--Maximum discharge during year, 1,630 cfs Oct. 24 (gage height, 5.99 ft); minimum, 8.6 cfs Sept. 4 (gage height, 2.32 ft); minimum daily, 86 cfs Aug. 14.
1950-58: Maximum discharge, 2,380 cfs May 9, 1956 (gage height, 6.75 ft); minimum, 7.4 cfs Sept. 9, 1953; minimum daily, that of Aug. 14, 1958.

Remarks.--Records good. Diurnal fluctuation caused by powerplants above station prior to September 1956; occasional diurnal fluctuation since.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-14, Aug. 2 to Sept. 5)

2.9	84
3.5	260
4.0	440
5.0	960

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	239	420	361	360	392	595	408	254	308	207	158	209
2	209	404	420	311	388	516	400	266	263	185	155	239
3	131	290	512	345	320	530	332	317	369	212	146	188
4	239	317	280	476	246	580	324	320	257	287	107	186
5	236	436	472	384	275	565	332	299	190	407	140	127
6	176	299	424	432	324	540	400	311	*212	328	143	179
7	158	272	424	420	388	625	464	305	209	248	121	188
8	302	320	416	364	314	605	468	305	212	251	106	188
9	202	436	384	388	208	525	456	290	206	245	104	203
10	182	408	368	287	239	565	440	269	209	239	143	227
11	140	384	278	384	320	545	372	293	203	224	164	197
12	*203	*384	320	368	290	436	348	317	165	179	170	272
13	242	311	267	320	352	530	356	296	221	176	126	230
14	242	550	340	317	308	570	348	257	296	173	86	191
15	221	780	436	314	281	448	340	230	278	*188	102	191
16	233	922	372	376	281	500	340	380	130	206	106	200
17	281	936	332	324	302	504	328	227	161	194	119	218
18	324	846	324	302	281	496	248	230	152	188	155	248
19	317	864	396	348	290	492	324	260	173	170	105	236
20	308	852	472	278	278	492	332	*251	194	158	*197	248
21	224	816	675	278	*287	476	388	248	188	118	435	227
22	215	780	615	412	284	468	372	254	164	161	203	227
23	380	700	580	302	302	525	*408	266	173	118	218	224
24	661	575	*388	320	296	*492	336	296	194	161	257	218
25	605	726	590	336	320	492	324	227	302	120	230	*215
26	660	620	650	356	408	484	420	242	251	143	209	212
27	540	456	432	412	468	480	368	224	336	152	215	206
28	440	492	610	364	525	468	284	218	134	122	200	194
29	444	575	476	344	^	424	356	209	161	179	161	209
30	440	516	444	344	-------	424	368	206	316	185	200	203
31	428	-------	416	360	-------	416	-------	227	-------	179	194	-------
Total	9,622	16,687	13,492	10,926	8,967	15,808	10,984	8,294	6,627	6,103	5,175	6,300
Mean	310	556	435	352	320	510	366	268	221	197	167	210
Cfsm	0.587	1.05	0.824	0.667	0.606	0.966	0.693	0.508	0.419	0.373	0.316	0.398
In.	0.68	1.18	0.95	0.77	0.63	1.11	0.77	0.58	0.47	0.43	0.36	0.44

Calendar year 1957: Max 1,010 Min 128 Mean 386 Cfsm 0.731 In. 9.94
Water year 1957-58: Max 936 Min 86 Mean 326 Cfsm 0.617 In. 8.37

* Discharge measurement made on this day.

1170. Quaker Brook near Nashville, Mich.

Location.--Lat 42°33'57", long 85°05'37", in NW¼ sec.13, T.2 N., R.7 W., on left bank 150 ft upstream from culvert on county road, 500 ft upstream from small tributary, and 2½ miles south of Nashville.

Drainage area.--7.60 sq mi.

Records available.--August 1954 to September 1958.

Gage.--Water-stage recorder and concrete control. Datum of gage is 821.89 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Extremes.--Maximum discharge during year, 70 cfs Aug. 6 (gage height, 3.00 ft); minimum, 1.7 cfs Aug. 4, 5, 6, 18, 19, 20; minimum gage height, 1.60 ft Aug. 4, 5, 6.
1954-58: Maximum discharge, 294 cfs Oct. 4, 1954 (gage height, 5.47 ft), from rating curve extended above 140 cfs; minimum, 1.4 cfs Jan. 8, 1956 (gage height, 1.53 ft), result of freezeup.

Remarks.--Records good except those for period of ice effect, which are fair.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	1.7	2.2	11
1.8	3.2	2.3	17
2.0	5.6	2.5	36
2.1	7.7		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.0	3.3	4.2	4.6	4.1	16	3.9	3.1	7.7	2.0	2.2	2.1
2	2.1	3.2	4.2	4.6	4.1	12	4.0	3.0	4.7	2.1	2.0	2.1
3	2.1	3.1	3.9	4.7	3.8	11	3.9	3.5	2.9	4.3	2.1	2.1
4	2.0	3.2	3.7	4.0	3.5	9.6	*3.8	5.4	2.5	4.6	1.9	*2.2
5	2.0	3.0	3.9	4.1	3.5	9.2	3.8	4.8	2.5	5.5	1.8	2.0
6	2.1	2.9	5.9	4.4	3.5	11	10	5.2	2.3	8.4	13	2.0
7	2.1	2.9	5.9	4.2	3.5	*9.6	14	3.3	2.1	*3.2	6.6	2.1
8	2.0	6.4	4.6	3.7	3.4	8.0	6.3	3.9	2.8	2.5	*2.8	2.1
9	2.0	8.0	4.4	3.8	3.2	6.9	4.8	3.0	5.2	2.4	2.4	2.7
10	2.0	5.4	4.2	3.9	3.2	6.1	4.3	3.0	3.4	2.3	2.3	4.6
11	2.1	5.1	3.4	4.1	3.2	5.9	4.4	3.0	*2.7	2.2	2.5	2.8
12	2.1	4.9	3.3	3.7	3.2	5.7	6.1	2.9	2.5	2.1	2.1	2.3
13	*2.1	6.8	*3.3	3.7	3.2	6.1	4.8	2.6	4.0	2.2	2.1	2.3
14	2.2	17	3.7	3.8	3.2	6.1	4.2	2.6	3.6	2.1	1.9	2.2
15	2.1	33	3.6	3.9	3.2	5.6	3.8	*2.6	3.0	3.5	2.1	2.1
16	4.7	11	3.8	3.8	3.2	5.6	3.6	2.6	2.6	2.9	1.9	2.4
17	6.1	6.9	3.7	3.7	3.2	5.6	3.5	2.6	2.3	2.3	1.9	5.4
18	3.7	7.3	5.0	3.6	3.2	5.6	3.3	3.0	2.3	2.2	1.8	7.6
19	3.0	*8.9	12	3.1	3.2	5.2	3.5	2.6	3.5	2.1	1.8	3.3
20	2.8	6.9	24	3.5	3.2	5.4	4.8	2.5	5.0	2.0	8.4	2.8
21	2.7	6.5	16	3.7	3.2	5.4	4.6	2.3	3.1	2.1	22	3.2
22	2.7	5.7	8.0	3.9	3.4	5.1	3.7	2.8	2.7	2.0	6.7	3.1
23	8.4	4.9	6.7	3.8	3.5	4.8	3.8	2.6	2.6	2.0	3.6	2.6
24	21	6.1	5.7	*3.8	4.0	4.6	5.7	2.5	2.5	1.9	3.6	2.6
25	8.5	4.9	6.0	4.0	13	4.4	4.3	2.6	3.1	2.0	3.1	2.5
26	4.6	4.8	11	4.0	19	4.3	3.7	2.4	3.2	1.9	2.6	2.4
27	4.0	4.8	6.7	4.1	33	4.5	3.6	2.3	2.5	2.9	2.5	2.3
28	3.7	5.2	6.5	4.2	22	4.4	3.6	2.3	2.2	2.7	2.3	2.1
29	3.4	5.2	5.6	4.2	-	4.3	3.6	2.3	2.3	2.9	2.1	2.1
30	3.5	4.8	5.2	4.2	------	4.3	*3.2	2.1	2.1	2.3	2.1	2.3
31	3.5	------	5.1	4.2	------	4.0	------	2.8	------	2.3	2.1	------
Total	117.3	201.9	193.2	123.0	168.9	206.1	140.6	92.2	93.9	85.9	118.3	82.4
Mean	3.78	6.73	6.23	3.97	6.03	6.65	4.69	2.97	3.13	2.77	3.82	2.75
Cfsm	0.497	0.886	0.820	0.522	0.793	0.875	0.617	0.391	0.412	0.364	0.503	0.362
In.	0.57	0.99	0.95	0.60	0.83	1.01	0.69	0.45	0.46	0.42	0.58	0.40

Calendar year 1957: Max 71 Min 1.6 Mean 5.36 Cfsm 0.705 In. 9.57
Water year 1957-58: Max 33 Min 1.8 Mean 4.45 Cfsm 0.586 In. 7.95

Peak discharge (base, 50 cfs).--Aug. 6 (4 p.m.) 70 cfs (3.00 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Feb. 4-24.

1175. Thornapple River near Hastings, Mich.

Location.--Lat 42°36'55", long 85°14'15", in sec.27, T.3 N., R.8 W., on downstream side of highway bridge, half a mile downstream from Cedar Creek, 2 miles downstream from Thornapple Lake, and 3½ miles southeast of Hastings.

Drainage area.--385 sq mi.

Records available.--October 1944 to September 1958.

Gage.--Wire-weight gage read twice daily. Datum of gage is 786.71 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--14 years, 312 cfs.

Extremes.--Maximum discharge during year, 1,360 cfs Mar. 1, 2 (gage height, 5.47 ft); minimum, 72 cfs July 2, Aug. 5 (gage height, 2.90 ft).
1944-58: Maximum discharge, 6,810 cfs Apr. 7, 1947 (gage height, 10.20 ft, from graph based on gage readings); minimum, 43 cfs Aug. 26-28, 1946.

Remarks.--Records good except those for period of ice effect, which are fair.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.9	72	4.0	440
3.0	90	5.0	1,030
3.5	230	6.0	1,740

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	79	188	242	309	164	1,290	191	146	115	76	95	98
2	81	176	233	288	170	1,340	185	155	170	72	88	90
3	79	170	224	248	158	1,270	182	152	164	66	83	85
4	79	161	212	224	146	1,160	*179	149	140	102	77	88
5	79	152	194	221	152	981	170	152	128	138	74	90
6	81	146	200	230	150	854	185	143	110	170	88	86
7	79	146	212	233	150	*782	345	135	100	200	182	88
8	81	152	230	218	150	722	415	130	102	188	*242	86
9	83	164	218	206	140	656	420	130	112	161	218	90
10	83	191	206	200	140	570	381	125	122	138	182	102
11	83	203	182	200	140	490	318	120	*120	128	143	108
12	81	200	173	188	140	430	284	120	112	115	125	100
13	*79	206	*170	179	140	386	272	115	115	108	110	95
14	83	242	170	170	140	363	260	110	118	*98	98	92
15	83	420	170	176	140	345	248	*105	115	149	95	86
16	98	575	176	167	140	327	236	100	105	182	90	90
17	146	674	176	173	140	309	215	98	98	170	83	102
18	158	662	176	170	140	292	206	102	86	146	77	140
19	155	*596	227	155	140	276	194	108	88	125	76	149
20	140	555	372	155	140	276	188	102	92	115	86	149
21	128	520	560	161	140	272	200	98	95	100	233	140
22	122	480	686	173	140	268	194	95	90	92	354	120
23	143	410	740	164	140	257	191	95	90	86	581	110
24	236	372	698	*170	150	248	188	90	86	83	327	*105
25	300	345	570	170	170	242	197	88	90	81	236	105
26	340	304	510	176	318	230	194	86	90	79	191	100
27	336	280	490	176	602	224	185	83	90	77	161	95
28	276	272	480	176	939	215	170	83	86	79	138	90
29	245	260	465	173	-	212	158	79	81	88	125	85
30	215	254	415	170	-------	209	146	77	79	95	112	85
31	200	-------	381	170	-------	197	-------	77	-------	100	108	-------
Total	4,451	9,476	10,158	5,969	5,519	15,693	6,897	3,448	3,189	3,627	4,678	3,049
Mean	144	316	328	193	197	506	230	111	106	117	151	102
Cfsm	0.374	0.821	0.852	0.501	0.512	1.31	0.597	0.288	0.275	0.304	0.392	0.265
In.	0.43	0.92	0.98	0.58	0.53	1.52	0.67	0.33	0.31	0.35	0.45	0.29

Calendar year 1957: Max 2,320 Min 63 Mean 275 Cfsm 0.714 In. 9.70
Water year 1957-58: Max 1,340 Min 72 Mean 209 Cfsm 0.543 In. 7.36

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Feb. 8-25.

1180. Thornapple River near Caledonia, Mich.

Location.--Lat 42°48'40", long 85°29'00", in NW¼ sec.22, T.5 N., R.10 W., on right bank 200 ft downstream from LaBarge powerplant, 2.3 miles northeast of Caledonia, and 3.3 miles downstream from Coldwater River.

Drainage area.--773 sq mi.

Records available.--October 1930 to September 1938, October 1951 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Figures of daily discharge for Oct. 1 to Nov. 30, 1930, May 1-31, July 1-31, 1931, June 12 to Oct. 27, 1932, June 11-30, July 8 to Sept. 30, 1933, May 3 to Nov. 20, 1934, Dec. 5, 1934, to Jan. 7, 1935, Feb. 1-13, Sept. 1 to Oct. 31, 1935, Jan. 1-14, Jan. 22 to Feb. 23, May 16 to Sept. 11, Oct. 1 to Dec. 26, 1936, and Aug. 1 to Sept. 30, 1937, published in WSP 714, 729, 744, 759, 784, 804, and 824, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 676.31 ft above mean sea level, unadjusted (Consumers Power Co. bench mark). Oct. 1, 1930, to Sept. 30, 1938, staff gage at same site at mean sea level datum (unadjusted).

Average discharge.--15 years, 506 cfs.

Extremes.--Maximum discharge during year, 1,930 cfs Mar. 3 (gage height, 6.41 ft); minimum, 8.6 cfs Sept. 2 (gage height, 2.41 ft); minimum daily, 134 cfs Aug. 5.
1930-38, 1951-58: Maximum discharge, 6,290 cfs May 10, 1956 (gage height, 10.79 ft); minimum not determined.
Flood of Apr. 7, 1947, reached a stage of 14.4 ft, from information by powerplant operator.

Remarks.--Records excellent except those for periods of no gage-height record, which are fair. Large diurnal fluctuation at low and medium flow caused by powerplant above station.

Revisions (water years).--WSP 824: 1931-36. WSP 1307: 1931-37. See also Records available.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

3.3	126
3.5	181
4.0	402
6.0	1,650
7.0	2,340

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	275	412	598	670	400	1,820	438	387	406	218	214	263
2	225	390	451	634	390	1,910	420	362	429	214	220	230
3	202	389	*436	574	399	*1,900	414	368	364	227	221	258
4	230	414	558	451	399	1,830	*410	364	339	280	191	204
5	*203	353	546	520	352	1,700	414	363	360	250	134	184
6	207	336	492	496	402	1,690	446	367	296	367	217	270
7	176	350	505	546	404	1,500	770	364	231	287	318	181
8	258	349	556	470	377	1,360	862	366	232	374	370	205
9	254	351	480	402	260	1,300	820	340	265	325	346	289
10	216	414	480	507	404	1,200	772	296	332	366	384	280
11	196	453	450	522	288	1,100	694	348	278	261	376	248
12	230	413	350	406	356	940	652	292	268	216	257	228
13	199	440	400	412	346	760	622	274	*281	256	243	230
14	234	520	450	409	346	796	574	300	354	219	220	232
15	198	858	450	430	380	742	550	*267	226	284	220	206
16	306	1,030	400	*434	372	706	550	296	277	*366	196	228
17	318	1,050	400	398	334	676	504	285	277	372	221	308
18	340	1,080	450	401	316	652	438	283	232	320	173	274
19	345	1,140	500	290	352	628	442	268	217	312	188	309
20	299	1,070	600	445	386	622	471	266	238	308	*254	332
21	302	1,000	700	420	336	622	472	249	228	221	503	297
22	297	934	800	396	340	598	477	236	242	218	693	298
23	386	856	920	412	384	616	468	233	248	216	640	271
24	480	850	960	420	452	598	474	248	258	217	622	*255
25	646	820	1,000	410	366	544	552	234	274	215	550	262
26	610	748	950	398	576	538	538	214	284	222	448	249
27	513	700	892	412	1,140	532	405	271	243	155	391	232
28	538	658	862	416	1,620	474	459	236	211	212	337	234
29	532	640	832	426	-	474	434	234	171	220	318	232
30	610	628	790	400	-------	478	414	177	247	215	250	232
31	457	-------	730	418	-------	458	-------	226	-------	211	258	-------
Total	10,282	19,646	18,988	13,945	12,477	29,764	15,956	9,014	8,308	8,144	9,973	7,521
Mean	332	655	613	450	446	960	532	291	277	263	322	251
Cfsm	0.429	0.847	0.793	0.582	0.577	1.24	0.688	0.376	0.358	0.340	0.417	0.325
In.	0.49	0.95	0.91	0.67	0.60	1.43	0.77	0.43	0.40	0.39	0.48	0.36

Calendar year 1957: Max 3,370 Min 142 Mean 584 Cfsm 0.755 In. 10.25
Water year 1957-58: Max 1,910 Min 134 Mean 449 Cfsm 0.581 In. 7.88

* Discharge measurement made on this day.
Note.--No gage-height record Dec. 11-26, Mar. 9-11; discharge estimated on basis of recorded range in stage, powerplant records, and records for station near Hastings.

1185. Rogue River near Rockford, Mich.

Location.--Lat 43°05'00", long 85°35'30", in NE¼ sec.15, T.8 N., R.11 W., on left bank at downstream side of highway bridge, 2.2 miles upstream from mouth and 3.0 miles southwest of Rockford.

Drainage area.--234 sq mi.

Records available.--February 1952 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 625.2 ft above mean sea level (levels by Blass Survey Co.). Prior to Aug. 30, 1952, wire-weight gage at same site and datum.

Average discharge.--6 years, 202 cfs.

Extremes.--Maximum discharge during year, 911 cfs Aug. 20 (gage height, 6.40 ft); minimum, 48 cfs May 16 (gage height, 3.63 ft); minimum daily, 56 cfs Aug. 17-19.
1952-58: Maximum discharge, 1,820 cfs May 7, 1956 (gage height, 7.77 ft); minimum, 30 cfs Oct. 5, 13, 1952 (gage height, 3.55 ft); minimum daily, 49 cfs Aug. 27, 1955.

Remarks.--Remarks good except those for periods of ice effect or no gage-height record, which are fair. Some diurnal fluctuation caused by mills above station.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 8-29)

3.6	44
3.8	72
4.0	109
4.5	243
6.0	785

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	134	165	222	199	182	400	200	137	149	95	74	84
2	76	160	225	193	177	400	190	132	188	93	69	84
3	89	144	205	179	185	*390	180	140	160	153	66	82
4	130	150	179	219	182	380	180	137	142	205	64	82
5	*80	144	185	220	160	370	180	163	90	205	63	79
6	77	142	199	220	165	380	190	144	*107	199	63	79
7	97	144	202	210	171	405	200	137	103	163	68	80
8	97	160	207	210	160	412	200	130	103	134	72	82
9	125	191	213	210	160	369	200	130	127	137	69	101
10	72	185	196	202	160	333	200	127	95	108	66	142
11	89	207	160	196	150	313	190	104	84	89	64	142
12	95	*202	147	190	150	288	180	127	97	101	64	*127
13	93	210	174	190	150	278	170	130	118	97	63	109
14	97	354	174	180	150	272	170	96	118	95	60	101
15	101	528	174	165	150	269	170	122	107	*93	58	109
16	138	601	191	*193	150	259	170	111	130	95	58	86
17	152	589	165	163	150	269	160	97	72	126	56	99
18	150	561	177	160	150	253	150	94	89	85	56	130
19	147	506	246	160	150	246	160	127	97	70	56	130
20	119	444	288	150	150	240	160	*134	100	91	364	114
21	123	398	320	144	150	240	170	80	82	70	*379	107
22	120	365	320	150	150	240	170	127	89	75	402	105
23	188	339	320	152	160	240	*157	130	91	77	379	101
24	310	339	*304	160	170	240	163	125	99	75	216	109
25	288	323	285	163	180	240	174	120	134	74	97	114
26	288	297	301	154	200	230	182	144	152	74	103	118
27	275	281	281	179	300	230	160	109	144	70	99	116
28	256	265	278	174	380	220	168	84	125	72	93	103
29	199	265	234	179	-	210	150	126	109	75	87	128
30	185	243	249	182	-------	200	142	85	99	85	95	83
31	174	-------	237	182	-------	200	-------	127	-------	70	93	-------
Total	4,564	8,902	7,058	5,628	4,892	9,016	5,236	3,776	3,400	3,251	3,616	3,126
Mean	147	297	228	182	175	291	175	122	113	105	117	104
Cfsm	0.628	1.27	0.974	0.778	0.748	1.24	0.748	0.521	0.483	0.449	0.500	0.444
In.	0.73	1.41	1.12	0.89	0.78	1.43	0.83	0.60	0.54	0.52	0.57	0.50

Calendar year 1957: Max 916 Min 56 Mean 212 Cfsm 0.906 In. 12.27
Water year 1957-58: Max 601 Min 56 Mean 171 Cfsm 0.731 In. 9.92

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Jan. 5-9, 12-14, 18-20, Feb. 8 to Mar. 6. No gage-height record Mar. 20 to Apr. 22; discharge estimated on basis of recorded range in stage and records for Flat River near Smyrna and Grand River at Ionia.

1190. Grand River at Grand Rapids, Mich.

Location.--Lat 42°57'50", long 85°40'35", in NE¼ sec.25, T.7 N., R.12 W., on right bank 500 ft upstream from bridge on Fulton Street, 1.7 miles upstream from Plaster Creek, and at mile 41.

Drainage area.--4,900 sq mi, approximately.

Records available.--March 1901 to December 1905, January 1906 to August 1918 (gage heights only), October 1930 to September 1958. Gage-height records collected in this vicinity since 1907 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 585.70 ft above mean sea level, datum of 1929 (levels by city of Grand Rapids). March 1901 to December 1905 and January 1906 to August 1918, staff gage at Fulton Street Bridge 500 ft downstream and Oct. 1, 1930, to Oct. 26, 1953, water-stage recorder at sewage pumping station 1 mile downstream at datum 2.99 ft higher.

Average discharge.--32 years, 3,512 cfs.

Extremes.--Maximum discharge during year, 11,900 cfs Mar. 4 (gage height, 11.15 ft); minimum, 650 cfs Aug. 18 (gage height, 2.60 ft); minimum daily, 790 cfs Aug. 18.
1901-5, 1930-58: Maximum discharge, 54,000 cfs Mar. 28, 1904 (gage height, 19.5 ft, from graph based on gage readings, site then in use); minimum daily, 381 cfs Aug. 9, 17, 1936.
Maximum discharge since 1901, that of Mar. 28, 1904.

Remarks.--Records good except those for periods of ice effect, which are fair. Moderate diurnal fluctuation at low and medium flow caused by powerplants above station.

Revisions (water years).--WSP 924: 1938(M). WSP 1277: 1904(M). WSP 1387: 1901-5, 1940.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 3		Mar. 4 to Sept. 30	
2.7	890	2.7	790
3.0	1,420	3.0	1,280
3.5	3,050	4.0	3,420
4.0	5,860	11.0	11,700
9.0	9,170		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,080	2,750	3,630	4,480	2,200	7,370	2,680	2,270	1,560	988	1,170	1,120
2	1,150	2,340	3,360	4,020	2,100	8,220	2,340	2,050	1,760	1,020	1,050	1,120
3	1,100	2,200	*2,840	2,480	2,100	9,090	2,250	2,070	1,870	1,500	1,050	1,150
4	1,120	2,120	2,840	3,170	2,100	11,400	2,110	2,070	1,660	1,740	910	1,020
5	*1,020	1,950	3,020	3,880	2,000	10,200	2,050	2,180	1,600	1,980	940	1,040
6	1,080	1,950	2,810	4,320	1,840	9,520	2,230	2,180	1,520	2,660	895	925
7	1,080	1,890	2,960	4,110	2,000	9,040	3,440	2,000	1,370	3,110	940	1,000
8	1,120	1,810	2,930	4,400	1,920	8,640	3,740	2,140	1,260	2,830	1,100	972
9	1,100	1,950	2,660	3,940	1,600	8,390	3,540	*2,160	1,280	2,560	1,080	1,080
10	1,170	2,120	2,840	3,540	1,500	7,720	3,730	1,890	*1,210	2,250	1,300	1,260
11	1,080	2,230	2,020	3,500	1,520	7,140	*3,520	2,110	1,370	2,090	1,280	1,300
12	1,070	2,230	1,670	3,340	1,470	6,350	3,050	1,960	1,320	1,810	1,260	*1,260
13	1,030	2,390	2,390	3,170	1,670	5,680	3,050	1,910	1,440	1,680	1,070	1,120
14	1,050	3,380	2,090	3,020	1,780	5,220	2,640	1,790	1,560	1,580	1,080	1,020
15	1,080	4,880	2,480	2,440	1,670	5,170	2,780	1,740	1,560	1,410	1,020	1,020
16	1,220	5,880	2,810	*2,400	1,810	4,760	2,660	1,700	1,410	1,330	956	1,040
17	1,420	6,150	2,780	2,340	1,700	4,410	2,540	1,600	1,410	1,700	925	1,230
18	1,540	6,440	2,520	2,300	1,600	4,390	2,370	1,720	1,300	*1,620	790	1,330
19	1,570	6,430	3,110	2,200	1,670	4,150	2,160	1,660	1,210	1,440	865	1,410
20	1,540	6,450	3,490	2,000	1,900	3,910	2,340	1,480	1,190	1,410	1,330	1,390
21	1,570	6,130	4,630	1,920	*1,700	3,930	2,560	1,320	1,260	1,350	*2,510	1,230
22	1,420	5,880	5,790	1,780	1,700	3,820	2,490	1,420	1,150	1,140	3,210	1,280
23	1,670	5,510	6,150	2,000	1,840	3,700	2,540	1,540	1,210	1,070	2,680	1,260
24	2,750	5,440	6,050	2,000	1,810	3,600	2,300	1,560	1,080	1,100	2,090	1,260
25	3,520	5,130	5,810	2,020	2,090	*3,390	2,680	1,480	1,420	1,020	1,940	1,240
26	3,830	4,660	5,690	2,090	2,300	3,230	2,760	1,480	1,520	1,050	1,790	1,260
27	3,810	4,400	5,780	2,090	4,200	3,030	2,610	1,300	1,370	1,040	1,680	1,150
28	3,460	4,120	5,680	2,160	6,210	2,860	2,460	1,300	1,390	865	1,440	1,100
29	3,190	3,900	5,530	2,340	-	2,860	2,300	1,260	1,280	988	1,320	1,100
30	3,170	3,680	5,150	2,230	-------	2,640	2,300	1,240	1,170	1,070	1,190	1,080
31	2,990	-------	4,970	2,260	-------	2,560	-------	1,260	-------	1,240	1,080	-------
Total	55,000	116,390	116,480	87,940	58,000	176,390	80,220	53,840	41,710	48,641	41,941	34,767
Mean	1,774	3,880	3,757	2,837	2,071	5,690	2,674	1,737	1,390	1,569	1,353	1,159
Cfsm	0.362	0.792	0.767	0.579	0.423	1.16	0.546	0.354	0.284	0.320	0.276	0.237
In.	0.42	0.88	0.88	0.67	0.44	1.34	0.61	0.41	0.32	0.37	0.32	0.26

Calendar year 1957: Max 13,700 Min 1,020 Mean 3,410 Cfsm 0.696 In. 9.43
Water year 1957-58: Max 11,400 Min 790 Mean 2,497 Cfsm 0.510 In. 6.92

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 16, 18-20, 23, 24, Feb. 1-5, 7, 9, 10, 17, 18, 20-22.

1210. Muskegon River near Merritt, Mich.

Location.--Lat 44°20'10", long 84°53'30", in NW¼ sec.2, T.22 N., R.5 W., on right bank 35 ft upstream from bridge on State Highway 55, half a mile upstream from West Branch, 2⅝ miles east of Merritt, 5 miles west of Houghton Lake, and at mile 210.8.

Drainage area.--309 sq mi.

Records available.--October 1946 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,117.82 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to July 13, 1949, wire-weight gage on downstream side of bridge at same datum.

Average discharge.--12 years, 219 cfs.

Extremes.--Maximum discharge during year, 480 cfs Apr. 11 (gage height, 6.64 ft); minimum, 26 cfs Aug. 17, 18-20, Sept. 2-5, 12-15.
1946-58: Maximum discharge, 1,050 cfs Mar. 31, 1953 (gage height, 7.77 ft); maximum gage height, 8.25 ft July 11, 1957; minimum discharge, that of Aug. 17, 18-20, Sept. 2-5, 12-15, 1958.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Occasional regulation by operation of gages at Reedsburg Dam.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 15)

2.2	24	5.0	240
2.7	46	6.0	356
3.5	97	7.0	570

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	180	214	314	230	221	202	303	241	148	50	30	27
2	179	a210	294	230	220	202	312	*a250	150	54	30	26
3	177	a200	a280	*230	210	204	*332	261	136	*54	29	26
4	176	a200	a260	230	210	204	328	273	131	53	29	26
5	175	*a200	a260	230	210	206	326	258	*123	54	29	26
6	173	187	a270	230	210	208	379	252	108	55	28	29
7	172	192	a270	230	200	207	437	240	91	53	28	28
8	170	204	a260	240	200	210	472	231	95	51	28	27
9	169	204	a250	240	190	200	462	226	86	47	28	27
10	167	237	a230	250	190	207	462	210	62	48	27	27
11	*162	230	a230	260	190	205	468	220	59	49	27	*27
12	160	230	*a230	260	180	203	431	208	58	48	27	26
13	161	241	230	265	170	*203	409	185	62	45	27	26
14	160	265	230	265	170	202	382	167	62	44	*27	26
15	161	298	232	260	170	199	350	161	61	44	27	26
16	174	317	230	260	170	198	345	161	59	44	27	27
17	190	324	228	255	170	196	324	161	56	42	27	27
18	187	335	230	255	170	197	273	157	56	38	27	27
19	173	322	249	250	*170	204	292	156	54	38	26	27
20	166	341	270	250	170	210	299	156	54	38	28	27
21	161	366	281	250	180	215	299	158	55	36	28	28
22	166	364	281	260	180	225	302	158	54	34	27	27
23	193	343	277	250	190	234	313	151	53	32	27	27
24	246	330	282	250	200	247	320	144	55	32	27	28
25	254	323	282	240	210	253	320	154	59	32	27	28
26	241	324	286	240	222	261	307	143	54	31	27	28
27	227	322	278	230	208	270	298	128	60	30	27	28
28	216	328	270	221	207	281	288	144	57	32	27	28
29	214	328	260	219	-	288	276	122	49	31	27	28
30	214	325	250	218	-------	295	229	117	53	31	27	30
31	219	-------	240	217	-------	299	-------	123	-------	30	27	-------
Total	5,783	8,304	8,034	7,515	5,388	6,935	10,338	5,716	2,260	1,300	854	815
Mean	187	277	259	242	192	224	345	184	75.3	41.9	27.5	27.2
Cfsm	0.605	0.896	0.838	0.783	0.621	0.725	1.12	0.595	0.244	0.136	0.089	0.088
In.	0.70	1.00	0.97	0.90	0.65	0.84	1.25	0.69	0.27	0.16	0.10	0.10

Calendar year 1957: Max 959 Min 158 Mean 260 Cfsm 0.841 In. 11.42
Water year 1957-58: Max 472 Min 26 Mean 173 Cfsm 0.560 In. 7.63

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for station at Evart.
Note.--Stage-discharge relation affected by ice Dec. 13, 14, Dec. 28 to Jan. 25, Feb. 3-25, Mar. 9.

1215. Muskegon River at Evart, Mich.

Location.--Lat 43°54'00", long 84°15'45", in NE¼ sec.3, T.17 N., R.8 W., on right bank 500 ft downstream from bridge on U. S. Highway 10 at Evart, 0.4 mile upstream from Twin Creek, and at mile 123.9. Prior to Nov. 8, 1957, at site 500 ft upstream.

Drainage area.--1,450 sq mi, qpproximately.

Records available.--October 1930 to September 1931, October 1933 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 977.72 ft above mean sea level, datum of 1929. Prior to Apr. 12, 1934, chain gage at site 500 ft upstream, Apr. 12, 1934, to May 22, 1935, chain gage at site 400 ft upstream, and May 23, 1935, to Nov. 7, 1957, wire-weight gage at site 500 ft upstream at present datum.

Average discharge.--26 years, 950 cfs.

Extremes.--Maximum discharge during year, 2,400 cfs Apr. 9 (gage height, 9.38 ft); maximum gage height, 9.57 ft Jan. 3, 4 (ice jam); minimum discharge, 297 cfs Aug. 19. 1930-31, 1933-58: Maximum discharge, 7,320 cfs July 12, 1957; minimum observed, 164 cfs Dec. 20, 1947 (result of freezeup).

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Records of water temperatures for the water year 1958 are given in WSP 1571.

Revisions (water years).--WSP 1437: 1934, 1947(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

6.4	300
7.0	520
8.0	1,200
10.0	3,000

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	575	757	984	700	800	869	1,380	820	590	435	372	354
2	570	743	946	615	760	911	1,340	765	644	459	358	348
3	565	729	883	660	760	960	1,310	757	638	447	348	340
4	570	715	841	700	750	1,040	1,290	771	626	443	337	365
5	565	701	841	700	740	1,080	1,260	764	610	502	327	344
6	565	680	855	700	720	1,060	1,670	757	585	511	324	418
7	575	*687	869	700	720	1,050	2,110	736	560	493	324	432
8	*575	729	848	720	700	1,050	2,310	715	610	471	348	432
9	565	792	806	740	660	1,050	2,380	701	595	451	330	428
10	560	799	760	760	660	1,000	*2,210	687	575	459	327	424
11	555	792	650	760	640	960	2,060	674	*565	443	327	*400
12	560	785	600	760	630	940	2,030	656	530	439	327	376
13	565	799	600	760	*630	*920	1,990	644	502	428	321	365
14	565	918	600	740	656	900	1,880	638	475	424	*315	354
15	565	1,300	620	740	650	880	1,740	*626	463	a410	309	358
16	595	1,330	650	740	620	876	1,620	610	459	a400	306	358
17	668	1,320	*680	*740	600	848	1,460	590	455	a400	303	358
18	674	1,300	730	740	600	834	1,300	595	443	a390	300	376
19	662	1,480	800	720	600	869	1,170	585	439	a390	303	368
20	644	1,520	900	700	600	925	1,070	570	439	a390	324	358
21	620	1,500	1,000	750	610	1,020	984	565	439	*a380	354	358
22	610	1,410	1,000	800	605	1,080	939	555	435	382	365	358
23	662	1,320	960	800	620	1,140	911	555	432	379	351	354
24	820	1,270	920	800	626	1,180	953	555	435	376	348	372
25	862	1,220	900	800	656	1,210	976	570	459	372	348	414
26	869	1,160	860	800	694	1,250	960	565	475	379	337	382
27	876	1,090	840	820	764	1,300	946	555	480	376	330	372
28	869	1,080	820	841	806	1,340	939	550	475	443	33[illegible]	358
29	848	1,070	800	834	-	1,380	911	540	455	428	334	354
30	820	1,050	760	827	-------	1,390	862	520	451	400	351	362
31	785	-------	740	800	-------	1,390	-------	540	-------	386	365	-------
Total	20,379	31,046	25,063	23,267	18,877	32,702	42,961	19,751	15,339	13,066	10,350	11,240
Mean	657	1,035	808	751	674	1,055	1,432	637	511	421	334	375
Cfsm	0.453	0.714	0.557	0.518	0.465	0.728	0.988	0.439	0.352	0.290	0.230	0.259
In.	0.52	0.80	0.64	0.60	0.48	0.84	1.10	0.51	0.39	0.33	0.27	0.29

Calendar year 1957: Max 7,290 Min 530 Mean 1,078 Cfsm 0.743 In. 10.10
Water year 1957-58: Max 2,380 Min 300 Mean 723 Cfsm 0.499 In. 6.77

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.
Note.--Stage-discharge relation affected by ice Dec. 10 to Jan. 1, Jan. 3-27, Jan. 31 to Feb. 13, Feb. 16-20, Mar. 7-15.

1220. Muskegon River at Newaygo, Mich.

Location.--Lat 43°25', long 85°48', in sec.24, T.12 N., R.13 W., on left bank, in tailrace of powerplant operated by Consumers Power Co. at Newaygo, 600 ft downstream from Penoyer Creek and at mile 39.

Drainage area.--2,350 sq mi, approximately.

Records available.--July to December 1908, July 1909 to July 1915, January 1916 to December 1919, October 1930 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Records for June 1901 to December 1906, published in WSP 129, 170, and 206, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 585.83 ft above mean sea level, datum of 1929. October 1930 to January 1939 staff gage at present site and datum.

Average discharge.--36 years (1909-14, 1916-19, 1930-58), 1,903 cfs.

Extremes.--Maximum discharge during year, 4,360 cfs Oct. 25 (gage height, 49.28 ft); minimum not determined; minimum daily discharge, 784 cfs June 21, 22.
1908-19, 1930-58: Maximum daily discharge observed, 14,950 cfs Mar. 25, 1913; minimum discharge, about 150 cfs June 4, 1941, July 7, 1950; minimum daily observed, 330 cfs Feb. 15, 1914.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Flow regulated by powerplants above station, the largest of which are at Croton Dam, Hardy Dam (since 1931), and Rogers Dam.

Revisions (water years).--WSP 974: 1933, 1935, 1937-38. See also Records available.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 6-13)

Oct. 1 to Mar. 25		Mar. 26 to Sept. 30	
46.8	840	46.7	735
47.5	1,570	47.2	1,140
49.0	3,910	48.0	2,240
		49.0	3,910

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,820	1,620	1,180	1,740	1,170	2,340	2,400	1,160	865	1,040	1,020	835
2	1,820	1,160	1,580	1,260	1,130	2,250	2,420	1,070	928	1,060	858	820
3	1,580	1,160	2,850	1,180	1,760	2,210	2,430	1,100	1,050	1,090	850	812
4	1,160	1,580	3,100	1,090	2,330	2,210	2,430	1,080	1,150	1,070	944	889
5	1,140	*a2,000	2,360	884	2,310	2,150	2,450	1,380	1,190	1,070	1,020	820
6	1,160	a1,900	2,410	1,390	2,310	2,180	2,450	1,760	1,180	1,080	865	826
7	1,250	a1,900	1,190	1,880	2,010	2,180	2,450	1,760	1,030	1,050	858	805
8	1,360	a1,600	1,190	1,850	1,080	2,180	2,650	1,460	1,040	1,070	850	1,100
9	1,390	a1,300	1,810	1,720	1,100	2,170	*2,610	1,050	1,370	1,070	828	1,600
10	*1,330	1,190	*2,370	1,820	1,140	2,180	2,440	1,080	1,730	1,050	828	*1,620
11	1,300	1,540	2,360	1,840	1,130	2,180	2,450	1,080	*1,780	1,060	798	1,330
12	912	a1,900	1,920	1,840	*1,110	*2,180	2,450	1,390	1,460	1,020	820	1,010
13	916	a1,900	2,040	2,060	1,140	2,200	2,450	1,560	1,080	1,040	*820	933
14	1,300	a2,000	1,170	2,310	1,120	1,980	2,840	*1,080	1,020	1,040	850	828
15	1,720	a2,300	1,160	2,310	1,110	1,840	2,650	1,060	1,030	1,060	842	939
16	1,410	a2,600	1,690	*2,310	1,070	1,850	2,330	1,060	1,030	*1,040	828	1,030
17	1,600	a2,400	1,970	1,770	1,780	1,850	2,260	1,060	1,040	1,030	835	1,060
18	1,680	a2,700	1,980	1,150	1,940	1,880	2,090	1,050	1,030	1,040	812	980
19	1,160	3,600	1,760	1,130	2,620	1,880	1,460	1,300	1,030	1,050	853	828
20	885	a2,800	1,770	1,780	2,240	1,900	1,080	1,680	970	1,020	888	828
21	1,030	a3,500	2,390	2,340	2,130	1,940	1,690	1,380	784	1,020	982	828
22	1,430	a2,700	2,390	2,340	1,590	1,900	2,110	1,080	784	972	1,020	813
23	1,760	a2,400	2,390	2,340	1,060	1,920	1,820	1,050	926	835	1,050	791
24	2,230	2,390	2,220	1,910	1,410	2,100	1,840	1,070	1,040	842	1,070	966
25	2,840	2,880	1,970	1,150	1,970	2,860	1,820	1,060	1,090	850	1,050	1,120
26	a2,000	2,920	2,160	1,160	2,690	3,310	1,810	1,060	1,050	865	950	1,210
27	a1,200	2,410	2,410	1,730	3,190	3,290	1,810	1,070	1,060	828	798	1,050
28	1,580	1,360	2,020	2,330	3,220	2,920	1,810	1,060	1,050	865	820	812
29	2,180	1,750	1,970	2,330	-	2,050	1,810	1,030	940	945	805	994
30	2,380	1,460	2,140	2,310	--------	1,780	1,810	828	945	1,050	805	1,270
31	a2,200	--------	2,360	1,930	--------	2,120	--------	842	--------	1,060	820	--------
Total	47,723	62,920	62,280	55,184	48,860	67,980	65,120	36,750	32,672	31,182	27,437	29,729
Mean	1,539	2,097	2,009	1,780	1,745	2,193	2,171	1,185	1,089	1,006	885	991
Cfsm	0.655	0.892	0.885	0.757	0.743	0.933	0.924	0.504	0.463	0.428	0.377	0.422
In.	0.76	1.00	0.99	0.87	0.77	1.08	1.03	0.58	0.52	0.49	0.43	0.47

Calendar year 1957: Max 9,180 Min 867 Mean 2,079 Cfsm 0.885 In. 12.01
Water year 1957-58: Max 3,600 Min 784 Mean 1,556 Cfsm 0.662 In. 8.99

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of powerplant records and records for station at Evart.

1222. White River near Whitehall, Mich.

Location.--Lat 43°27'50", long 86°14'00", in W½ sec.4, T.12 N., R.16 W., on downstream rail of highway bridge on Fruitvale Road, 5 miles downstream from North Branch, and 7½ miles northeast of Whitehall. Prior to Nov. 13, 1957, at site 30 ft downstream.

Drainage area.--380 sq mi, approximately.

Records available.--August 1957 to September 1958.

Gage.--Wire-weight gage. Datum of gage is 594.1 ft above mean sea level, unadjusted. Prior to Nov. 13, 1957, water-stage recorder at site 30 ft downstream at same datum.

Extremes.--1957: Maximum discharge during period August to September, 290 cfs Sept. 21 (gage height, 2.73 ft); minimum, 189 cfs Aug. 2.
1957-58: Maximum daily discharge during water year, 600 cfs Nov. 17; maximum gage height, 5.02 ft Mar. 1 (backwater from ice); minimum discharge, 163 cfs Aug. 18, 19.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Rating tables, Aug. 1, 1957, to Sept. 30, 1958, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 22-24, Sept. 30, 1958)

Aug. 1, 1957, to Apr. 24, 1958				Apr. 25 to Sept. 30, 1958	
1.7	191	4.0	560	1.5	153
2.4	235	5.0	985	2.5	292
3.0	340			3.0	372

Discharge, in cubic feet per second, 1957

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1	205	228	7	195	197	13	193	210	19	194	202	25	197	215
2	200	230	8	194	197	14	193	208	20	193	228	26	195	210
3	194	212	9	194	196	15	198	210	21	193	281	27	194	206
4	194	203	10	195	195	16	204	215	22	193	253	28	194	206
5	195	200	11	195	*195	17	198	210	23	192	238	29	195	206
6	*195	199	12	194	200	18	195	207	24	196	223	30	197	206
												31	200	-
Total													6,064	6,386
Mean													196	213
Cubic feet per second per square mile													0.516	0.561
Runoff in inches													0.59	0.63

* Discharge measurement made on this day.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	206	258	340	310	330	510	374	295	286	196	214	214
2	205	253	330	310	330	550	352	289	305	196	196	211
3	202	248	330	320	330	550	338	295	288	204	188	199
4	200	244	314	320	330	532	329	300	265	207	187	196
5	202	*242	338	310	320	478	314	302	253	232	183	221
6	204	242	321	320	300	456	316	298	242	246	183	231
7	206	255	310	320	280	460	364	290	234	240	188	246
8	206	283	303	320	270	460	370	286	235	222	188	238
9	206	317	301	330	260	442	*356	286	232	208	181	236
10	*206	330	*307	340	260	426	334	280	229	199	178	*264
11	210	319	320	340	260	404	316	268	*221	203	184	244
12	207	308	330	340	*260	*388	310	262	222	200	183	228
13	209	a320	330	340	260	382	298	274	225	198	*184	218
14	210	a360	330	340	280	380	292	*277	226	194	175	212
15	210	a420	330	330	260	384	285	260	222	*199	172	205
16	228	a480	330	*340	250	372	272	244	219	199	169	222
17	262	a600	330	330	250	370	269	246	212	190	165	224
18	271	550	340	330	270	366	264	252	210	187	164	232
19	260	525	360	320	300	372	250	247	208	190	165	234
20	244	500	380	310	290	394	258	241	207	186	175	221
21	232	480	410	330	320	410	265	235	196	182	208	a220
22	231	448	400	360	350	408	278	236	196	178	195	228
23	276	426	380	360	350	406	296	250	199	175	181	225
24	342	408	370	360	340	406	338	235	198	173	200	272
25	392	398	360	350	360	406	372	232	242	173	214	335
26	354	382	350	350	380	406	359	238	254	172	208	348
27	317	370	340	350	410	404	335	235	242	172	196	314
28	289	358	330	340	460	404	322	221	225	271	187	271
29	271	350	320	340	-	402	314	214	215	327	184	259
30	262	344	310	340	-------	394	308	200	200	272	184	271
31	264	-------	310	330	-------	384	-------	247	-------	234	199	-------
Total	7,584	11,018	10,454	10,330	8,660	13,106	9,448	8,035	6,908	6,425	5,778	7,239
Mean	245	367	337	333	309	423	315	259	230	207	186	241
Cfsm	0.645	0.966	0.887	0.876	0.813	1.11	0.829	0.682	0.605	0.545	0.489	0.634
In.	0.74	1.08	1.02	1.01	0.85	1.28	0.92	0.79	0.68	0.63	0.56	0.71

Calendar year 1957: Max - Min - Mean - Cfsm - In. -
Water year 1957-58: Max 600 Min 164 Mean 288 Cfsm 0.758 In. 10.27

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.
Note.--Stage-discharge relation affected by ice Dec. 11 to Mar. 3.

1225. *Pere Marquette River at Scottville, Mich.*

Location.--Lat 43°46'40", long 86°16'45", in NW¼ sec.19, T.18 N., R.16 W., on right bank 20 ft upstream from highway bridge at south edge of Scottville and 5¾ miles downstream from South Branch.

Drainage area.--709 sq mi.

Records available.--August 1939 to September 1958. Published as "at Custer" prior to October 1942.

Gage.--Water-stage recorder. Datum of gage is 606.30 ft above mean sea level, datum of 1929. Prior to June 12, 1943, wire-weight gage at bridge 4¾ miles upstream at different datum.

Average discharge.--19 years, 607 cfs.

Extremes.--Maximum discharge during year, 785 cfs Mar. 3 (gage height, 3.30 ft); maximum gage height, 4.40 ft Jan. 6, 7 (backwater from ice); minimum discharge, 324 cfs Aug. 20.
1939-58: Maximum discharge, 2,550 cfs Apr. 6, 1956 (gage height, 6.00 ft); minimum observed, 310 cfs Aug. 9, 10, 1941 (site and datum then in use).

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 1437: 1941(M), 1943(M), 1949(M), 1950.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 25 to Nov. 13)

1.4	318
2.0	410
3.0	675
4.0	1,090

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	381	381	531	470	502	700	645	470	450	378	357	488
2	380	378	518	470	498	720	630	460	490	375	351	444
3	380	375	498	470	495	745	609	462	495	378	344	408
4	378	*374	480	470	485	731	594	468	450	387	339	394
5	378	374	500	470	470	731	573	470	434	406	336	412
6	378	374	500	470	450	724	600	458	430	410	338	534
7	378	372	492	480	410	728	636	450	430	408	342	585
8	380	400	490	490	380	724	700	444	432	392	345	594
9	*382	430	482	500	370	703	*706	440	450	380	345	546
10	384	460	*475	520	360	672	651	438	*475	394	346	*505
11	384	465	500	520	360	*654	606	434	452	404	348	495
12	386	458	500	520	*360	633	576	430	444	408	346	468
13	387	460	500	520	360	621	549	424	434	387	*339	440
14	387	510	500	520	380	606	531	*420	418	376	338	426
15	387	594	500	*520	360	594	518	418	412	*370	334	424
16	394	669	500	520	350	591	508	414	404	370	332	426
17	406	731	500	520	350	585	495	410	396	368	328	468
18	422	728	520	520	380	579	485	412	388	364	326	478
19	414	703	540	500	430	603	480	412	386	364	326	470
20	404	692	600	470	410	636	472	410	384	363	342	452
21	394	686	620	520	450	648	468	406	384	358	357	436
22	392	666	600	560	500	657	480	406	381	354	364	430
23	424	639	580	540	500	660	482	406	380	351	348	434
24	465	609	560	540	500	660	512	406	390	348	354	442
25	485	591	540	540	500	660	531	410	406	345	364	492
26	468	579	520	540	520	666	543	406	424	346	368	561
27	432	564	500	520	560	669	522	404	424	346	360	570
28	406	549	480	520	620	675	505	398	406	350	376	528
29	388	540	470	520	-	678	492	394	388	372	410	492
30	386	543	470	520	-------	675	482	390	381	390	446	495
31	382	-------	470	520	-------	666	-------	416	-------	370	468	-------
Total	12,392	15,894	15,936	15,780	12,310	20,594	16,581	13,186	12,618	11,612	11,017	14,337
Mean	400	530	514	509	440	664	553	425	421	375	355	478
Cfsm	0.564	0.748	0.725	0.718	0.621	0.937	0.780	0.599	0.594	0.529	0.501	0.674
In.	0.65	0.83	0.84	0.83	0.65	1.08	0.87	0.69	0.66	0.61	0.58	0.75

Calendar year 1957: Max 817 Min 350 Mean 505 Cfsm 0.712 In. 9.67
Water year 1957-58: Max 745 Min 326 Mean 472 Cfsm 0.666 In. 9.04

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 11 to Jan. 30, Feb. 5 to Mar. 2.

1230. Big Sable River near Freesoil, Mich.

Location.--Lat 44°07'15", long 86°16'50", in NE¼ sec.24, T.20 N., R.17 W., on left bank 30 ft downstream from bridge on U. S. Highway 31, 2½ miles northwest of Freesoil, and 6 miles upstream from Hamlin Lake.

Drainage area.--127 sq mi.

Records available.--May 1942 to September 1958.

Gage.--Staff gage read once daily. Datum of gage is 615.32 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--16 years, 135 cfs.

Extremes.--Maximum daily discharge during year, 170 cfs Apr. 9; minimum not determined; minimum daily discharge, 85 cfs Feb. 11.
1942-58: Maximum discharge, 495 cfs Mar. 8, 1946 (gage height, 3.20 ft, from graph based on gage readings); maximum gage height observed, 3.26 ft Jan. 20, 1943 (ice jam); minimum discharge, 81 cfs Aug. 14, 1944, Aug. 7, 1957.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor.

Revisions (water years).--WSP 1437: 1946(M), 1947.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 25, July 31 to Sept. 30		Feb. 26 to July 30	
0.9	84	0.8	86
1.5	144	1.5	148
2.0	210	2.0	210

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	92	104	120	125	110	135	119	134	115	110	92	98
2	92	103	120	125	110	135	120	131	120	110	90	101
3	92	100	120	125	110	135	120	130	120	115	90	105
4	92	100	115	120	110	135	125	127	115	120	90	110
5	94	100	118	115	110	135	126	126	111	125	90	115
6	94	*101	115	115	105	135	130	125	110	125	90	125
7	94	100	118	110	105	130	145	125	108	120	90	135
8	94	115	118	105	95	130	*165	120	111	115	90	125
9	*92	115	115	110	95	130	170	115	114	110	90	*116
10	95	115	110	115	95	135	160	110	*122	105	89	108
11	95	115	105	120	*85	*137	145	110	120	110	89	108
12	95	115	110	121	90	135	135	110	118	110	*86	104
13	90	120	115	121	95	135	133	*112	117	105	88	100
14	90	135	115	122	110	135	133	110	116	105	89	100
15	95	156	115	*121	110	135	134	110	114	*105	89	101
16	100	156	110	119	105	135	134	110	113	105	88	102
17	101	157	110	119	95	140	135	108	113	105	88	101
18	101	155	120	117	100	140	135	106	112	105	88	103
19	105	151	138	110	100	145	135	106	111	105	87	106
20	102	150	144	110	100	150	134	105	111	105	87	110
21	102	149	145	117	105	151	134	106	110	100	87	110
22	108	145	146	118	105	151	134	106	107	105	87	109
23	111	144	150	117	105	152	135	105	106	100	87	110
24	110	140	151	120	105	151	137	103	115	100	88	110
25	105	135	150	125	120	151	135	103	115	105	87	110
26	102	130	151	125	140	152	137	102	115	100	87	112
27	102	130	155	125	130	152	138	102	110	100	87	112
28	102	130	150	125	130	151	136	101	105	97	88	114
29	102	125	145	120	-	145	134	101	102	94	90	114
30	102	125	140	120	-------	135	134	101	102	95	95	114
31	102	-------	130	110	-------	125	-------	105	-------	92	100	-------
Total	3,053	3,816	3,964	3,667	2,975	4,338	4,087	3,465	3,378	3,303	2,763	3,286
Mean	98.5	127	128	118	106	140	136	112	113	107	89.1	110
Cfsm	0.776	1.00	1.01	0.929	0.835	1.10	1.07	0.882	0.890	0.843	0.702	0.866
In.	0.89	1.12	1.16	1.07	0.87	1.27	1.19	1.02	0.99	0.97	0.81	0.97

Calendar year 1957: Max 162 Min 82 Mean 118 Cfsm 0.929 In. 12.58
Water year 1957-58: Max 170 Min 85 Mean 115 Cfsm 0.906 In. 12.33

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 9-18, Dec. 28 to Jan. 11, Jan. 19, 20, Feb. 1-25, 27, 28. No gage-height record Oct. 6, 12-15, 19, Nov. 3-5, 7-14, Nov. 24 to Dec. 4, Dec. 6, Jan. 4, 5, Jan. 24 to Feb. 10, Feb. 12-25, Mar. 1-10, 12-19, 29-31, Apr. 6, 7, 9-12, 17-19, May 8-12, 14-16, May 31 to June 4, June 24-28, July 1-14, 16-26, 30, Aug. 2, 30, 31, Sept. 5-8, 13, 20; discharge estimated on basis of weather records and records for stations on nearby streams.

1235. Manistee River near Grayling, Mich.

Location.--Lat 44°41'35", long 84°50'50", in NW¼ sec.31, T.27 N., R.4 W., on right bank 25 ft upstream from bridge on State Highway 72, 2½ miles downstream from Goose Creek, and 6½ miles northwest of Grayling.

Drainage area.--159 sq mi.

Records available.--October 1942 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 1,120.64 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--16 years, 183 cfs.

Extremes.--Maximum discharge during year, 258 cfs Sept. 7 (gage height, 1.02 ft); maximum gage height, 1.07 ft Nov. 15; minimum discharge, 130 cfs Jan. 8.
1942-58: Maximum discharge, 354 cfs Apr. 12, 1947 (gage height, 1.73 ft); maximum gage height, 2.00 ft Feb. 9, 1951 (ice jam); minimum discharge, 122 cfs Feb. 14, 1943.

Remarks.--Records good except those for periods of ice effect, which are fair. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 30 to July 2)

Oct. 1 to Jan. 11		Jan. 12 to Sept. 30	
0.6	150	0.4	140
1.1	238	.7	178
		1.0	253

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	163	*164	174	149	160	164	*180	*160	158	*164	*145	164
2	160	163	170	*160	159	164	183	160	155	167	144	*155
3	*160	163	*169	156	153	162	183	165	153	160	144	155
4	158	163	164	158	*165	*160	180	165	*152	158	143	206
5	158	164	174	b160	162	159	183	162	155	173	143	220
6	160	163	170	b160	160	159	203	162	154	173	142	233
7	160	163	169	b155	159	159	210	160	152	160	144	250
8	160	174	166	151	150	156	196	160	158	153	145	223
9	161	187	166	b155	149	156	180	160	156	149	145	190
10	160	182	163	170	149	156	176	160	156	165	149	176
11	160	172	148	166	b150	156	173	164	155	169	148	169
12	160	174	163	b170	b160	156	173	159	152	156	147	164
13	158	174	160	178	b160	156	171	158	152	152	146	160
14	157	191	167	186	b165	156	171	158	150	149	146	160
15	158	226	166	176	171	156	171	158	149	150	146	162
16	167	218	163	169	b170	155	171	155	149	155	144	162
17	180	196	160	b160	b165	155	169	155	148	153	144	159
18	172	191	160	156	165	155	167	158	148	149	144	162
19	166	196	174	b150	b165	156	165	155	148	150	145	160
20	163	196	182	b155	b165	158	165	154	156	149	164	158
21	161	187	182	b160	167	156	165	155	153	148	162	162
22	161	180	175	167	167	158	167	155	153	147	149	167
23	174	177	170	160	169	158	167	155	154	147	147	162
24	194	178	170	159	180	158	174	155	159	147	148	167
25	191	175	166	162	171	158	178	159	169	147	152	196
26	178	174	167	162	162	159	173	155	171	147	149	169
27	170	174	164	162	164	162	167	155	169	146	147	160
28	167	175	167	162	164	169	162	154	162	147	153	159
29	166	175	164	160	-	171	162	154	162	147	155	156
30	166	175	158	159	-------	178	159	154	162	146	160	165
31	167	-------	150	160	-------	180	-------	154	-------	145	173	-------
Total	5,136	5,390	5,161	5,013	4,546	4,961	5,244	4,893	4,670	4,768	4,613	5,251
Mean	166	180	166	162	162	160	175	158	156	154	149	175
Cfsm	1.04	1.13	1.04	1.02	1.02	1.01	1.10	0.994	0.981	0.969	0.937	1.10
In.	1.20	1.26	1.20	1.18	1.06	1.16	1.23	1.15	1.09	1.12	1.08	1.23

Calendar year 1957: Max 236 Min 148 Mean 175 Cfsm 1.10 In. 14.95
Water year 1957-58: Max 250 Min 142 Mean 163 Cfsm 1.03 In. 13.96

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1240. Manistee River near Sherman, Mich.

Location.--Lat 44°26'30", long 85°41'45", on line between sec.36, T.24 N., R.12 W., and sec.31, T.24 N., R.11 W., near center span on downstream side of bridge on State Highway 37, 150 ft upstream from Wheeler Creek, three-quarters of a mile north of Sherman, and at mile 60.8.

Drainage area.--900 sq mi.

Records available.--July 1903 to May 1916, October 1930 to September 1931, October 1933 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Wire-weight gage read twice daily. Altitude of gage is 804 ft (from river-profile map). Prior to Apr. 13, 1934, chain gages at various datums. Apr. 13, 1934, to May 22, 1935, staff gage at present datum.

Average discharge.--38 years (1903-15, 1930-31, 1933-58), 1,069 cfs.

Extremes.--Maximum discharge during year, 1,770 cfs Apr. 7 (gage height, 12.70 ft); maximum gage height, 13.13 ft Jan. 1 (ice jam); minimum discharge, 670 cfs Aug. 18, 19.
1903-16, 1930-31, 1933-58: Maximum discharge, 3,570 cfs Mar. 25, 1913 (gage height, 7.1 ft, from graph based on gage readings, datum then in use); minimum observed, 540 cfs Feb. 21-23, 1936.

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 1004: 1936(m). WSP 1437: 1911, 1913-14(M), 1936(M), 1937, 1940(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

9.9	670
11.0	1,030
12.7	1,770

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	805	844	955	860	896	980	1,130	899	835	811	703	802
2	802	844	941	840	885	969	1,140	885	854	832	700	781
3	799	847	920	840	832	962	1,150	896	823	793	700	766
4	796	835	871	840	811	952	1,150	892	805	820	694	835
5	790	835	920	840	838	938	1,160	885	811	874	700	910
6	787	832	927	850	896	927	1,410	871	805	878	694	1,050
7	790	838	934	860	892	902	1,730	857	802	850	700	1,140
8	802	868	927	880	871	885	1,560	854	826	826	700	1,110
9	805	910	910	900	840	888	1,430	850	835	796	700	1,050
10	796	927	896	920	850	878	1,320	850	832	811	700	983
11	790	924	896	950	860	910	1,230	844	829	799	715	902
12	793	927	900	960	870	874	1,170	844	805	796	712	850
13	802	930	900	980	870	857	1,120	829	796	796	700	832
14	790	969	900	990	880	868	1,090	823	781	775	694	820
15	799	1,120	900	1,020	870	868	1,090	820	775	772	691	826
16	814	1,210	900	927	860	864	1,090	820	766	769	682	820
17	847	1,210	900	920	860	864	1,050	814	760	760	691	826
18	868	1,200	927	924	870	874	1,030	820	757	754	676	829
19	857	1,230	972	878	880	896	1,020	826	751	748	685	811
20	838	1,220	1,070	838	910	927	990	808	754	742	850	799
21	826	1,190	1,110	941	920	930	980	802	778	736	871	796
22	817	1,110	1,080	983	940	938	966	805	772	733	805	814
23	844	1,060	1,040	962	960	955	955	799	769	727	769	808
24	934	1,030	1,010	948	1,000	969	994	805	802	724	754	814
25	990	1,010	980	952	1,040	972	1,050	817	841	724	745	808
26	972	986	962	955	1,060	998	1,000	826	835	730	736	814
27	938	*969	948	930	*1,070	1,010	972	814	*841	730	730	860
28	896	969	927	930	1,030	*1,030	952	802	823	727	*739	835
29	871	966	927	910	-	1,070	*938	*796	799	*724	745	*811
30	857	962	*864	*899	-------	1,090	902	799	790	715	793	808
31	*854	-------	874	902	-------	1,120	-------	802	-------	706	838	-------
Total	25,969	29,772	29,188	28,329	25,361	29,165	33,769	25,854	24,052	23,978	22,612	25,910
Mean	838	992	942	914	906	941	1,126	834	802	773	729	864
Cfsm	0.931	1.10	1.05	1.02	1.01	1.05	1.25	0.927	0.891	0.859	0.810	0.960
In.	1.07	1.23	1.21	1.18	1.05	1.21	1.40	1.07	0.99	0.99	0.93	1.07

Calendar year 1957: Max 2,740 Min 787 Mean 1,027 Cfsm 1.14 In. 15.48
Water year 1957-58: Max 1,730 Min 676 Mean 888 Cfsm 0.987 In. 13.40

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 12-17, Jan. 1-14, Feb. 9-25.

1245. East Branch Pine River near Tustin, Mich.

Location.--Lat 44°06'15", long 85°31'30", in NW¼ sec.28, T.20 N., R.10 W., on left bank 75 ft downstream from highway bridge, half a mile upstream from North Branch, 2¾ miles west of Tustin, and 5½ miles northwest of Le Roy.

Drainage area.--63 sq mi, approximately.

Records available.--July 1952 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,077.65 ft above mean sea level, unadjusted (levels by Michigan Department of Conservation).

Average discharge.--6 years, 24.7 cfs.

Extremes.--Maximum discharge during year, 309 cfs Apr. 6 (gage height, 4.13 ft); minimum, 4.1 cfs Mar. 13.
1952-58: Maximum discharge, 1,410 cfs Aug. 4, 1956 (gage height, 6.23 ft), from rating curve extended above 360 cfs by logarithmic plotting; minimum, that of Mar. 13, 1958.

Remarks.--Records good except those for periods of ice effect, which are fair. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Nov. 14		Nov. 15 to Sept. 30			
1.7	6.6	1.6	4.8	3.0	94
1.9	10	1.8	11	3.5	165
2.5	49	2.0	20	4.0	275
		2.5	50		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.3	10	18	13	12	22	34	13	24	12	5.6	10
2	7.3	10	16	13	12	b21	32	13	22	15	5.6	8.2
3	7.3	10	14	13	12	b21	30	19	14	11	5.6	7.8
4	7.3	*10	12	13	11	b21	28	19	11	11	5.3	7.5
5	7.3	10	12	12	11	b20	27	15	15	18	5.3	7.8
6	7.6	9.7	14	13	11	b19	220	13	14	16	6.7	38
7	7.6	10	15	13	11	b18	*189	13	11	12	5.6	28
8	*7.6	16	12	12	10	b17	117	12	23	9.6	6.2	*20
9	8.0	22	*13	11	9.6	b15	74	12	*20	8.2	5.6	19
10	8.0	18	11	11	*9.6	*b15	55	13	14	18	6.2	20
11	8.0	15	10	12	9.6	b14	43	11	14	14	*7.0	14
12	8.3	17	12	11	9.2	b14	36	*10	11	10	6.7	12
13	8.3	18	11	11	8.9	b13	31	10	9.6	8.6	6.2	10
14	8.3	34	11	*11	8.9	15	27	10	8.9	*7.5	5.9	9.2
15	8.0	70	11	11	9.2	16	24	10	8.6	7.5	6.2	12
16	12	51	12	11	9.2	15	23	9.2	7.0	7.2	5.6	15
17	14	36	11	11	8.9	15	21	8.9	7.2	7.0	5.9	14
18	12	33	11	10	8.9	16	19	9.6	7.0	6.7	5.9	16
19	11	44	37	9.6	8.9	18	18	9.2	7.0	7.0	6.2	12
20	10	39	39	10	8.6	24	16	8.6	7.2	6.7	11	11
21	9.7	32	39	10	8.9	29	16	8.2	7.2	6.4	10	11
22	9.7	26	29	11	9.2	30	16	8.6	7.0	6.2	7.2	15
23	16	24	27	11	9.6	32	16	8.9	7.0	5.9	6.7	11
24	25	24	20	11	10	34	27	9.2	8.2	6.2	8.2	11
25	22	20	b18	11	11	33	26	9.2	13	6.2	8.6	14
26	16	20	b17	12	13	37	21	8.9	13	6.2	7.2	12
27	14	20	16	12	22	40	18	8.2	10	5.9	7.0	11
28	12	27	16	12	32	42	16	7.8	8.2	6.7	11	10
29	11	25	15	12	-	41	16	7.8	7.2	6.7	10	9.2
30	11	22	14	12	-------	41	14	7.8	7.0	6.2	14	13
31	11	-------	13	12	-------	37	-------	10	-------	5.6	13	---------
Total	332.6	722.7	526	357.6	305.2	745	1,250	333.1	343.3	281.2	227.2	408.7
Mean	10.7	24.1	17.0	11.5	10.9	24.0	41.7	10.7	11.4	9.07	7.33	13.6
Cfsm	0.170	0.383	0.270	0.183	0.173	0.381	0.662	0.170	0.181	0.144	0.116	0.216
In.	0.20	0.43	0.31	0.21	0.18	0.44	0.74	0.20	0.20	0.17	0.13	0.24

Calendar year 1957: Max 142 Min 5.6 Mean 22.3 Cfsm 0.354 In. 4.83
Water year 1957-58: Max 220 Min 5.3 Mean 16.0 Cfsm 0.254 In. 3.45

Peak discharge (base, 130 cfs).--Apr. 6 (1:30 p.m.) 309 cfs (4.13 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1250. Pine River near Le Roy, Mich.

Location.--Lat 44°03'50", long 85°33'50", in SE¼ sec.6, T.19 N., R.10 W., on right bank 15 ft downstream from highway bridge, 3½ miles downstream from East Branch, 5 miles northwest of Le Roy, and 5½ miles southwest of Tustin.

Drainage area.--118 sq mi.

Records available.--July 1952 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,040 ft (by barometer).

Average discharge.--6 years, 87.0 cfs.

Extremes.--Maximum discharge during year, 572 cfs Apr. 6 (gage height, 5.90 ft); minimum, 42 cfs Aug. 3, 4, 5, 16, 17, 18, 19.
1952-58: Maximum discharge, 1,550 cfs Aug. 4, 1956 (gage height, 10.02 ft, from floodmark), from rating curve extended above 700 cfs by logarithmic plotting; minimum, 42 cfs Jan. 4, 1954 (result of freezeup), Aug. 3, 4, 5, 16, 17, 18, 19, 1958.

Remarks.--Records good except those for periods of ice effect, which are fair. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	40
1.8	46
2.5	80
3.0	125
6.0	590

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	52	61	75	60	60	90	105	60	90	57	44	58
2	52	60	73	b62	60	90	102	58	84	90	44	51
3	51	59	58	64	56	89	99	69	61	62	43	49
4	51	*58	66	63	b56	88	98	73	54	59	43	49
5	51	57	b60	b60	b58	83	94	63	63	105	43	48
6	51	57	66	63	b56	81	410	59	58	90	44	144
7	51	57	71	64	b54	76	*437	57	52	66	47	100
8	*51	74	62	b60	b54	72	276	56	79	56	45	*85
9	51	100	*62	b55	b52	68	170	56	*78	51	44	86
10	51	82	60	b55	*b50	*66	131	56	60	86	44	94
11	51	74	53	60	b52	66	114	54	73	80	*49	69
12	52	80	67	b58	b50	64	103	*52	60	63	46	59
13	52	82	61	b56	b48	62	95	51	55	54	44	56
14	52	123	60	*b56	b50	64	90	50	51	*50	44	53
15	52	240	60	b56	b52	62	86	51	51	49	43	60
16	64	170	61	57	b52	62	82	49	48	48	43	72
17	80	123	57	58	b48	62	78	49	46	46	43	64
18	65	111	60	57	b48	64	74	51	45	46	43	73
19	61	146	125	b52	b48	71	71	51	45	47	42	60
20	58	127	137	b54	b50	86	69	48	45	46	65	56
21	56	110	135	57	53	94	68	48	47	45	67	57
22	56	98	105	58	54	97	70	49	45	44	49	68
23	80	90	99	58	55	98	68	49	45	44	46	56
24	113	92	90	59	58	101	92	49	46	44	50	57
25	95	83	74	60	61	96	94	51	58	46	53	67
26	78	80	b70	60	66	105	80	49	70	45	48	61
27	68	79	66	60	86	111	72	48	55	44	47	57
28	65	96	b65	61	94	117	66	46	49	46	58	53
29	62	93	63	61	-	117	66	46	46	45	57	52
30	61	88	b62	61	------	115	62	45	45	44	71	65
31	62	------	b62	60	------	109	------	53	------	44	69	------
Total	1,895	2,850	2,285	1,825	1,581	2,626	3,522	1,646	1,704	1,742	1,518	1,979
Mean	61.1	95.0	73.7	58.9	56.5	84.7	117	53.1	56.8	56.2	49.0	66.0
Cfsm	0.518	0.805	0.625	0.499	0.479	0.718	0.992	0.450	0.481	0.476	0.415	0.559
In.	0.60	0.90	0.72	0.58	0.50	0.83	1.11	0.52	0.54	0.55	0.48	0.62

Calendar year 1957: Max 381 Min 46 Mean 83.5 Cfsm 0.708 In. 9.60
Water year 1957-58: Max 437 Min 42 Mean 69.0 Cfsm 0.585 In. 7.95

Peak discharge (base, 300 cfs).--Apr. 6 (8:30 p.m.) 572 cfs (5.90 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1255. Pine River near Hoxeyville, Mich.

Location.--Lat 44°12'10", long 85°47'50", in NW¼ sec.20, T.21 N., R.12 W., on right bank 500 ft upstream from bridge on State Highway 37, 4½ miles northwest of Hoxeyville, 7 miles east of Wellston, and 9 miles upstream from mouth.

Drainage area.--251 sq mi.

Records available.--July 1952 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 775 ft (by barometer).

Average discharge.--6 years, 268 cfs.

Extremes.--Maximum discharge during year, 764 cfs Apr. 7 (gage height, 4.26 ft); minimum, 180 cfs Jan. 8.
1952-58: Maximum discharge, 2,440 cfs Aug. 6, 1956 (gage height, 6.82 ft), from rating curve extended above 1,100 cfs by logarithmic plotting; minimum, 168 cfs Jan. 9, 1956.

Remarks.--Records good except those for periods of ice effect, which are fair. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 8-18, July 6, Aug. 6 to Sept. 30)

Oct. 1 to Nov. 14, July 7 to Sept. 30		Nov. 15 to July 6	
2.5	182	2.3	186
3.0	294	3.0	313
4.0	660	4.2	740

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	214	216	255	228	216	269	269	226	243	236	196	227
2	214	214	249	226	216	265	265	225	273	249	195	208
3	214	214	241	223	216	267	261	230	243	241	193	202
4	212	212	232	228	208	265	255	243	226	238	191	200
5	210	210	234	209	214	261	253	236	226	255	189	200
6	210	*210	238	b210	214	261	416	230	230	257	191	263
7	210	210	241	b210	214	257	*708	226	221	230	193	314
8	*212	225	240	198	205	253	560	225	238	208	193	254
9	210	261	*234	b210	201	251	380	223	*261	200	189	*251
10	208	254	234	b210	*212	*247	317	223	245	225	189	258
11	208	237	226	b210	202	247	291	221	234	251	*191	242
12	210	237	221	212	b200	243	276	*219	236	225	191	220
13	210	242	234	223	b200	243	263	217	225	208	184	210
14	210	268	230	*216	b200	243	251	217	221	*202	184	204
15	210	395	230	216	b200	243	243	219	217	204	184	210
16	220	405	228	216	194	243	240	217	217	202	182	220
17	242	338	230	214	199	243	238	217	216	200	184	225
18	234	306	226	212	b200	243	236	221	214	200	184	225
19	222	317	265	201	b200	247	234	221	212	200	184	222
20	216	331	333	221	205	259	234	217	214	200	212	212
21	214	302	324	216	214	273	230	216	214	198	242	210
22	212	284	300	216	212	278	234	217	214	200	208	214
23	230	273	273	214	212	278	234	219	216	198	193	214
24	273	269	263	214	214	280	243	221	221	198	200	210
25	278	267	253	216	217	276	263	225	230	202	204	214
26	251	259	249	216	226	273	249	225	240	202	198	218
27	234	253	245	217	245	280	240	223	238	202	196	210
28	225	259	241	217	271	284	234	221	225	202	208	202
29	220	271	236	217	-	284	232	219	219	202	218	200
30	218	263	234	217	-------	284	228	216	217	198	220	212
31	216	-------	234	216	-------	278	-------	217	-------	196	254	-------
Total	6,867	8,002	7,673	6,669	5,927	8,118	8,577	6,892	6,846	6,629	6,140	6,671
Mean	222	267	248	215	212	262	286	222	228	214	198	222
Cfsm	0.884	1.06	0.988	0.857	0.845	1.04	1.14	0.884	0.908	0.853	0.789	0.884
In.	1.02	1.18	1.14	0.99	0.88	1.20	1.27	1.02	1.01	0.98	0.91	0.99

Calendar year 1957: Max 564 Min 193 Mean 254 Cfsm 1.01 In. 13.71
Water year 1957-58: Max 708 Min 182 Mean 233 Cfsm 0.928 In. 12.59

Peak discharge (base, 650 cfs).--Apr. 7 (3 p.m.) 764 cfs (4.26 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1260. Manistee River near Manistee, Mich.

Location.--Lat 44°16'30", long 86°11'55", in NW¼ sec.36, T.22 N., R.16 W., on right bank 6 miles northeast of Manistee, 6½ miles south of Onekama, 9 miles upstream from Manistee Lake, and at mile 10.8.

Drainage area.--1,780 sq mi, approximately.

Records available.--November 1951 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 585 ft (from river-profile map).

Average discharge.--6 years (1952-58), 1,922 cfs.

Extremes.--Maximum discharge during year, 3,310 cfs Apr. 9 (gage height, 7.26 ft); maximum gage height, 8.05 ft Feb. 27 (backwater from ice); minimum daily discharge, 1,040 cfs Aug. 3, 17, 18.

1951-58: Maximum discharge, 6,800 cfs Apr. 9, 1954 (gage height, 8.16 ft); maximum gage height, 9.15 ft Feb. 12, 1955 (ice jam); minimum daily discharge, 1,040 cfs Aug. 25, Sept. 22, 1957, Aug. 3, 17, 18, 1958.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 9		Apr. 10 to Sept. 30	
4.0	1,100	3.7	1,040
6.0	2,100	6.0	2,140
7.0	2,950	7.0	2,950
7.5	3,840		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,520	1,710	1,440	1,840	1,420	2,220	2,110	1,680	1,490	1,570	1,440	1,390
2	1,460	1,170	1,550	1,530	1,310	1,780	2,140	1,770	1,700	1,730	1,290	1,420
3	1,630	1,110	2,070	2,330	1,480	1,660	1,970	1,570	1,590	1,660	1,040	1,560
4	1,550	1,250	1,880	1,940	1,720	1,810	2,240	1,370	1,710	1,700	1,080	1,650
5	1,200	1,710	1,980	1,300	1,590	1,970	1,890	1,580	1,620	1,580	1,200	1,500
6	1,140	*1,650	1,620	b1,300	1,540	1,830	1,980	1,630	1,550	1,660	1,280	1,610
7	1,260	1,430	1,450	b1,300	1,630	1,830	2,620	1,720	1,380	1,490	1,410	1,980
8	1,660	1,720	1,340	b1,400	1,480	1,760	*3,030	1,660	1,460	1,740	1,360	1,810
9	*1,900	1,850	1,460	b1,700	1,750	1,430	3,260	1,680	1,520	1,670	1,350	*1,980
10	1,470	1,370	b1,800	b2,000	b1,300	1,510	2,930	1,530	*1,720	*1,760	1,150	2,160
11	1,500	1,740	*b1,700	b1,900	b1,700	*1,770	2,740	1,240	1,810	1,720	1,160	1,980
12	1,330	2,000	b1,700	1,740	b1,500	1,470	2,110	1,480	1,750	1,460	*1,380	1,680
13	1,100	2,040	b1,800	b1,800	b1,400	1,690	1,890	*1,570	1,560	1,120	1,470	1,640
14	1,200	1,990	1,750	1,890	b1,600	1,770	1,790	1,710	1,340	1,220	1,470	1,100
15	1,260	2,200	1,200	*1,900	b1,500	1,460	2,130	1,570	1,160	1,540	1,500	1,260
16	1,420	2,160	1,360	1,760	b1,300	1,450	1,950	1,710	1,260	1,630	1,260	1,820
17	1,800	1,890	1,760	1,670	b1,600	1,490	1,900	1,370	1,770	1,450	1,040	1,970
18	1,500	2,160	1,950	1,620	b2,000	1,700	1,840	1,380	1,660	1,290	1,040	1,700
19	1,650	2,440	2,100	1,640	b1,700	1,830	1,650	1,250	1,560	1,400	1,090	1,620
20	1,120	2,330	2,080	b1,700	b1,500	1,760	1,470	1,610	1,740	1,090	1,500	1,530
21	1,210	2,240	1,840	1,690	b1,400	2,120	1,630	1,630	1,360	1,140	1,780	1,100
22	1,650	2,230	1,920	1,490	b1,700	1,700	1,800	1,510	1,120	1,380	1,700	1,230
23	2,120	2,020	1,990	1,560	b1,400	1,580	1,940	1,540	1,140	1,600	1,420	1,590
24	2,450	1,750	2,120	1,700	b1,400	1,850	2,020	1,410	1,300	1,490	1,220	1,590
25	2,300	1,810	1,870	1,770	b2,000	2,030	2,010	1,240	1,640	1,530	1,200	1,690
26	1,700	2,320	2,080	1,420	*b2,000	2,020	1,740	1,430	1,630	1,400	1,350	1,590
27	1,260	2,070	2,120	1,590	b2,000	2,130	1,650	1,690	1,660	1,050	1,480	1,420
28	1,400	1,970	1,730	1,840	b2,200	2,160	1,670	1,580	1,500	1,140	1,480	1,220
29	1,860	1,400	1,320	1,760	-	1,760	1,730	1,560	1,200	1,320	1,560	1,320
30	1,930	1,940	1,650	1,710	-------	1,620	1,810	1,440	1,320	1,310	1,620	1,660
31	1,960	-------	1,990	1,470	-------	1,820	-------	1,320	-------	1,440	1,320	-------
Total	48,510	55,670	54,620	52,260	45,120	54,980	61,640	47,430	45,220	45,280	41,640	47,770
Mean	1,565	1,856	1,762	1,686	1,611	1,774	2,055	1,530	1,507	1,461	1,343	1,592
Cfsm	0.879	1.04	0.990	0.947	0.905	0.997	1.15	0.860	0.847	0.821	0.754	0.894
In.	1.01	1.16	1.14	1.09	0.94	1.15	1.28	0.99	0.94	0.95	0.87	1.00

Calendar year 1957: Max 3,210 Min 1,040 Mean 1,831 Cfsm 1.03 In. 13.93
Water year 1957-58: Max 3,260 Min 1,040 Mean 1,644 Cfsm 0.924 In. 12.52

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1262. Little Manistee River near Freesoil, Mich.

Location.--Lat 44°11'15", long 86°09'55", in NE¼ sec.31, T.21 N., R.15 W., on right bank 25 ft upstream from highway bridge, 6 miles north of Freesoil, 8½ miles upstream from mouth, and 8½ miles southeast of Manistee.

Drainage area.--200 sq mi.

Records available.--October 1956 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 610 ft (from survey-level line in vicinity).

Extremes.--Maximum discharge during year, 212 cfs July 1 (gage height, 2.12 ft); minimum, 71 cfs Feb. 11 (result of freezeup).
1956-58: Maximum discharge, 214 cfs May 23, 1957 (gage height, 2.22 ft); minimum, that of Feb. 11, 1958.

Remarks.--Records good except those for periods of ice effect, which are fair. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 20 to Sept. 6)

Oct. 1 to Dec. 21		Dec. 22 to Sept. 6		Sept. 7-30	
1.6	90	1.3	81	1.8	102
2.5	270	2.0	193	2.0	174

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	114	116	140	137	151	153	150	131	148	144	115	131
2	114	114	136	135	131	148	147	129	153	140	113	124
3	112	114	132	134	129	143	142	132	145	134	110	119
4	110	114	122	135	123	140	140	134	135	143	110	118
5	110	114	138	124	121	140	137	132	132	167	108	119
6	110	*114	138	b125	132	140	167	129	131	159	113	153
7	110	114	134	b120	127	137	185	129	129	145	115	160
8	110	138	134	107	113	137	*193	127	150	135	115	149
9	*110	140	132	119	111	134	167	126	*150	131	113	*145
10	112	136	132	b125	111	131	156	126	150	143	115	142
11	112	128	*114	b130	*92	*129	151	126	142	155	116	136
12	112	126	108	132	94	129	147	123	135	147	*115	125
13	112	128	b125	137	102	129	143	*121	132	137	113	124
14	112	148	b125	129	121	129	140	121	127	*135	111	118
15	112	174	124	*139	123	129	139	123	126	135	111	124
16	118	184	124	137	110	129	137	119	124	134	111	125
17	124	170	120	135	107	129	135	118	123	132	110	129
18	124	162	120	132	116	131	134	121	121	132	110	129
19	130	172	154	102	124	132	132	121	121	132	111	125
20	120	164	172	b120	118	135	132	119	121	131	121	124
21	116	162	174	b130	127	140	132	116	119	129	135	124
22	116	154	174	137	129	142	135	119	119	127	132	122
23	132	148	164	135	132	142	137	118	126	124	121	118
24	144	146	156	132	135	145	150	118	140	124	124	124
25	142	146	153	134	142	147	150	119	143	124	126	124
26	136	144	153	134	148	148	145	119	140	124	123	122
27	126	140	151	132	147	151	140	118	134	121	119	120
28	122	140	151	132	151	156	137	116	126	121	129	115
29	118	140	148	132	-	156	135	116	121	121	123	115
30	116	142	145	132	------	155	132	116	119	118	132	127
31	116	------	143	132	------	151	------	132	------	116	135	------
Total	3,672	4,230	4,336	4,016	3,447	4,337	4,367	3,814	3,982	4,160	3,655	3,830
Mean	118	141	140	130	123	140	146	123	133	134	118	128
Cfsm	0.590	0.705	0.700	0.650	0.615	0.700	0.730	0.615	0.665	0.670	0.590	0.640
In.	0.68	0.79	0.81	0.75	0.64	0.81	0.81	0.71	0.74	0.77	0.68	0.71

Calendar year 1957: Max 205 Min 104 Mean 138 Cfsm 0.690 In. 9.36
Water year 1957-58: Max 193 Min 92 Mean 131 Cfsm 0.655 In. 8.90

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1270. Boardman River near Mayfield, Mich.

Location.--Lat 44°38'35", long 85°31'00", in NE¼ sec.21, T.26 N., R.10 W., on right bank 25 ft downstream from Brown's Bridge, 300 ft downstream from Parker Creek, three-quarters of a mile downstream from Brown's Bridge Dam, 1 mile northeast of Mayfield, 10 miles southeast of Traverse City, and 16 miles upstream from Boardman Lake.

Drainage area.--223 sq mi.

Records available.--June 1952 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 760 ft (by barometer).

Average discharge.--6 years, 191 cfs.

Extremes.--Maximum discharge during year, 387 cfs Dec. 30 (gage height, 4.37 ft); minimum daily, 97 cfs June 15.
1952-58: Maximum discharge, 980 cfs July 8, 1957 (gage height, 6.23 ft); minimum daily, that of June 15, 1958.

Remarks.--Records good. Diurnal fluctuation caused by powerplant three-quarters of a mile upstream.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 12)

Oct. 1 to Feb. 12		Feb. 13 to Sept. 30	
3.1	128	3.0	92
3.5	188	3.5	182
4.0	293	4.0	293
		4.5	422

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	154	157	183	163	154	158	209	167	150	150	125	127
2	151	157	187	170	156	150	212	*150	142	112	123	128
3	150	149	176	*177	166	172	215	154	144	*160	118	161
4	148	148	175	175	173	171	*218	154	144	158	154	182
5	148	*150	183	156	151	171	172	190	*163	196	127	172
6	150	150	169	151	168	171	276	159	163	186	116	270
7	150	150	163	150	167	169	297	163	148	156	133	243
8	*148	161	155	148	143	161	298	163	144	128	139	*219
9	148	178	*176	150	131	148	256	196	148	137	105	186
10	144	175	180	145	156	146	221	161	157	174	122	171
11	184	175	166	134	159	148	188	128	169	184	*139	171
12	138	188	163	138	128	146	173	141	167	136	144	148
13	169	180	160	161	192	*142	180	161	154	133	154	131
14	158	199	214	172	116	140	202	161	133	158	128	142
15	156	254	161	161	139	154	180	169	97	157	126	172
16	129	256	175	156	142	157	178	167	140	176	121	159
17	152	267	175	156	*147	160	176	144	186	133	121	135
18	163	214	158	154	135	159	201	133	158	119	121	140
19	182	225	198	152	140	158	169	160	130	156	121	144
20	134	198	248	173	157	159	169	135	147	128	166	144
21	162	245	232	163	157	157	169	122	158	151	174	142
22	150	219	189	156	157	161	171	152	118	139	155	140
23	165	202	201	170	145	167	171	144	151	138	126	139
24	206	188	186	169	112	147	182	144	171	137	112	144
25	226	198	185	156	159	161	234	146	172	136	144	239
26	169	183	205	157	161	176	171	144	144	127	133	195
27	169	183	177	172	167	176	148	155	154	140	146	176
28	169	185	185	153	169	178	201	158	149	134	148	122
29	169	185	172	171	-	178	180	150	146	139	186	161
30	169	185	165	152	-------	178	176	148	157	125	152	184
31	169	-------	158	161	-------	210	-------	148	-------	142	167	-------
Total	4,979	5,704	5,618	4,922	4,247	5,029	5,993	4,767	4,504	4,545	4,246	4,987
Mean	161	190	181	159	152	162	200	154	150	147	137	166
Cfsm	0.722	0.852	0.812	0.713	0.682	0.726	0.897	0.691	0.673	0.659	0.614	0.744
In.	0.83	0.95	0.94	0.82	0.71	0.84	1.00	0.80	0.75	0.76	0.71	0.83

Calendar year 1957: Max 672 Min 114 Mean 190 Cfsm 0.852 In. 11.60
Water year 1957-58: Max 298 Min 97 Mean 163 Cfsm 0.731 In. 9.94

* Discharge measurement made on this day.

1280. Sturgeon River near Wolverine, Mich.

Location.--Lat 45°17'25", long 84°36'15", in SW¼ sec.31, T.34 N., R.2 W., on left bank 1½ miles north of Wolverine, 2 miles downstream from West Branch, and 11 miles upstream from mouth.

Drainage area.--164 sq mi.

Records available.--April 1942 to September 1958.

Gage.--Staff gage read once daily. Altitude of gage is 750 ft (by barometer). Prior to June 15, 1942, staff gage at site about a quarter of a mile upstream at different datum.

Average discharge.--16 years, 194 cfs.

Extremes.--Maximum daily discharge during year, 310 cfs Nov. 16; minimum discharge, 111 cfs Aug. 6.
1942-58: Maximum discharge, 919 cfs Apr. 1, 1943 (gage height, 5.45 ft); minimum, that of Aug. 6, 1958.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor.

Revisions (water years).--WSP 1307: 1944(M), 1948(M).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to June 30		July 1 to Sept. 30	
2.2	126	2.1	100
2.5	180	2.5	180
3.0	314	2.9	284

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	154	161	180	160	167	187	217	163	145	160	123	159
2	150	159	180	160	165	180	217	165	145	150	123	149
3	150	159	176	160	160	180	222	172	145	150	121	145
4	150	160	176	160	155	175	*225	167	141	150	121	250
5	152	160	176	160	155	175	217	165	141	155	120	*202
6	154	160	176	160	*161	*172	212	159	*145	170	*113	270
7	154	*161	176	160	160	172	214	157	145	*159	115	250
8	154	170	178	155	155	170	207	*161	150	150	121	200
9	152	190	176	155	150	167	197	163	150	145	117	180
10	152	200	*172	165	150	165	194	172	150	150	163	170
11	148	200	160	170	150	163	192	170	150	165	167	163
12	148	190	160	170	155	163	187	167	150	170	141	161
13	148	200	170	170	155	161	190	165	145	160	139	153
14	150	235	170	172	150	163	197	161	140	155	139	147
15	152	280	170	176	150	167	202	159	138	174	139	150
16	*165	310	170	165	150	165	199	155	140	159	135	150
17	180	300	167	160	150	167	199	155	141	141	130	150
18	180	280	178	160	150	170	197	150	145	139	135	150
19	170	293	212	160	150	172	199	150	141	139	140	150
20	160	295	222	160	155	176	197	145	141	139	170	150
21	160	290	214	160	160	178	194	145	141	135	175	155
22	165	260	209	160	160	182	199	145	140	135	150	159
23	180	230	200	160	165	182	200	145	141	139	145	155
24	210	210	195	165	165	185	200	141	148	135	140	151
25	230	190	190	165	170	187	195	141	197	131	139	147
26	210	180	180	165	175	187	180	141	185	129	141	149
27	176	180	175	*163	180	185	180	141	170	127	143	147
28	170	185	170	163	187	194	176	141	141	127	139	145
29	163	185	170	165	-	199	170	141	136	125	143	145
30	165	180	160	170	-------	212	163	141	178	125	153	159
31	165	-------	160	167	-------	214	-------	143	-------	123	163	-------
Total	5,117	6,353	5,568	5,061	4,455	5,515	5,938	4,786	4,465	4,511	4,303	5,011
Mean	165	212	180	163	159	178	198	154	149	146	139	167
Cfsm	1.01	1.29	1.10	0.994	0.970	1.09	1.21	0.939	0.909	0.890	0.848	1.02
In.	1.16	1.44	1.27	1.15	1.01	1.26	1.35	1.08	1.01	1.03	0.98	1.14

Calendar year 1957: Max 390 Min 120 Mean 178 Cfsm 1.09 In. 14.70
Water year 1957-58: Max 310 Min 113 Mean 167 Cfsm 1.02 In. 13.88

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 28 to Jan. 13, Jan. 16-26, Feb. 2-5, 7-27 (no gage-height record Dec. 31, Jan. 7-10, Feb. 12-22). No gage-height record Oct. 2-4, 17-26, Nov. 4-6, 8-13, 15-18, 20-25, Dec. 11-16, 23-27, Mar. 2-5, Apr. 23-25, 29, May 18-23, June 8-14, 26, 27, July 1-6, 8-14, 29, Aug. 5, 16-24, Sept. 4, 6-10, 15-21; discharge estimated on basis of weather records and records for stations on nearby streams.

1295. Indian River at Indian River, Mich.

Location.--Lat 45°24'35", long 84°37'10", in SW¼ sec.24, T.35 N., R.3 W., on left bank at Indian River, an eighth of a mile downstream from Burt Lake and 3½ miles upstream from Mullett Lake.

Drainage area.--583 sq mi.

Records available.--April 1942 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 590.21 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Nov. 12, 1942, staff gage at site 100 ft downstream at same datum.

Average discharge.--16 years, 541 cfs.

Extremes.--Maximum discharge during year, 655 cfs Dec. 15 (gage height, 3.86 ft); maximum daily gage height, 3.91 ft Sept. 8; minimum daily discharge, 291 cfs Mar. 30; minimum daily gage height, 3.34 ft Oct. 21.
1942-58: Maximum discharge, 1,080 cfs Apr. 25, 1943 (gage height, 5.65 ft); maximum daily gage height, 5.53 ft Apr. 25, 1943; minimum daily discharge, 249 cfs Sept. 9, 1955; minimum daily gage height, that of Oct. 21, 1957.

Remarks.--Records fair.

Revisions (water years).--WSP 1437: 1942(M), 1945(M), 1947.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	446	432	607	580	562	550	304	468	445	336	324	323
2	442	437	614	600	562	552	*308	467	435	343	324	321
3	430	441	608	620	562	552	318	479	427	347	321	*321
4	422	442	601	610	561	*550	319	487	*420	354	325	341
5	417	*446	*601	607	558	550	327	495	421	372	*322	341
6	410	442	608	604	*559	550	336	500	407	377	322	359
7	410	446	608	609	561	550	339	497	395	*379	321	369
8	404	457	599	606	561	547	347	*507	399	381	319	370
9	403	480	595	593	561	547	347	508	393	379	316	373
10	394	475	600	580	558	539	352	517	387	381	339	373
11	389	471	600	577	556	537	360	528	384	383	338	365
12	380	474	600	574	558	530	360	529	370	377	332	364
13	380	479	620	564	554	527	364	529	367	375	325	364
14	376	500	632	561	549	522	368	529	352	371	318	360
15	376	522	635	561	549	517	373	536	346	371	314	364
16	*377	535	639	554	551	511	379	531	337	368	305	366
17	386	538	635	554	548	497	379	528	330	360	303	368
18	387	554	635	557	542	477	387	528	323	358	*295	366
19	384	558	631	548	544	456	387	525	*319	356	292	366
20	384	a560	631	545	541	437	392	516	318	351	305	364
21	382	a570	631	545	536	419	396	511	316	345	307	366
22	385	a570	631	542	534	402	404	511	314	339	303	372
23	403	a580	627	540	537	380	412	499	314	*338	298	370
24	415	a600	630	537	537	360	431	498	318	336	304	377
25	415	a600	633	540	539	341	437	499	321	339	302	379
26	415	a600	633	544	539	328	443	488	323	339	300	377
27	416	a600	629	*547	544	308	451	477	325	334	300	381
28	419	599	635	548	547	293	*450	471	327	336	305	375
29	422	596	631	551	-	289	450	461	323	330	311	371
30	426	606	628	558	-------	291	443	454	332	326	318	377
31	429	-------	600	562	-------	295	-------	453	---	326	325	---
Total	12,524	15,810	19,207	17,618	15,410	14,204	11,363	15,526	10,788	11,007	9,733	10,883
Mean	404	520	620	568	550	458	379	501	360	355	314	363
Cfsm	0.693	0.892	1.06	0.974	0.943	0.786	0.650	0.859	0.617	0.609	0.539	0.623
In.	0.80	1.00	1.22	1.12	0.98	0.91	0.73	0.99	0.69	0.70	0.62	0.70

Calendar year 1957: Max 639 Min 293 Mean 489 Cfsm 0.839 In. 11.38
Water year 1957-58: Max 639 Min 291 Mean 449 Cfsm 0.770 In. 10.46

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records, recorded range in stage, and records for Manistee River near Grayling.

1290. Pigeon River near Vanderbilt, Mich.

Location.--Lat 45°10', long 84°26', in SE¼ sec.9, T.32 N., R.1 W., on right bank at Pigeon River Fisheries Experiment Station, 10 miles east of Vanderbilt and 10½ miles southeast of Wolverine.

Drainage area.--63 sq mi, approximately.

Records available.--September 1950 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 886.24 ft above mean sea level, datum of 1929.

Average discharge.--8 years, 73.1 cfs.

Extremes.--Maximum discharge during year, 174 cfs Nov. 15 (gage height, 3.33 ft); minimum, 24 cfs May 22.
1950-58: Maximum discharge, 1,500 cfs May 15, 1957 (gage height, 6.80 ft, from floodmark), from rating curve extended above 500 cfs by logarithmic plotting, result of failure of Lansing Club Dam 4 miles upstream; minimum, 13 cfs Jan. 8, 1957.

Remarks.--Records good except those for periods of ice effect, which are fair. Prior to May 16, 1957, and since Apr. 22, 1958, occasional regulation by Lansing Club Dam 4 miles upstream. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.7	35
2.5	99
3.5	190

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55	64	70	59	61	64	81	65	54	71	40	55
2	54	63	67	60	60	65	82	63	55	57	39	45
3	54	63	64	60	58	64	85	67	53	51	38	55
4	54	62	60	60	56	63	*86	68	50	52	39	118
5	53	63	58	58	56	63	86	64	49	78	38	*74
6	54	63	65	60	*56	*63	91	62	*46	76	*37	119
7	54	*63	67	62	56	62	88	59	45	*59	39	133
8	54	71	67	60	56	60	86	*58	50	58	39	81
9	54	91	63	60	56	60	77	54	51	66	40	76
10	54	79	*63	60	56	60	74	66	51	112	49	62
11	54	72	54	60	58	60	75	87	63	108	47	58
12	55	83	56	62	58	60	75	79	61	51	43	60
13	55	87	58	64	58	60	77	64	48	51	45	50
14	56	104	60	64	58	60	79	43	48	51	40	54
15	55	162	60	64	60	59	84	36	48	47	39	55
16	*62	123	62	64	60	59	86	37	46	67	39	51
17	79	97	63	62	60	60	83	42	46	67	40	54
18	67	88	63	60	60	61	79	55	43	54	40	53
19	63	119	75	60	60	62	75	49	40	51	41	54
20	59	105	87	60	60	63	73	40	41	51	44	52
21	59	87	99	60	60	64	70	37	43	55	43	52
22	58	80	83	62	60	67	74	37	44	49	43	56
23	67	75	79	62	62	67	98	49	45	46	43	57
24	123	77	78	62	62	68	104	59	55	43	43	51
25	104	73	71	60	62	87	125	59	65	41	43	55
26	79	70	71	61	62	70	95	51	75	41	44	52
27	71	69	68	*61	63	71	81	52	55	42	44	51
28	68	81	67	61	63	75	75	44	55	42	45	51
29	68	76	64	61	-	78	72	46	49	41	46	45
30	65	75	60	61	------	80	67	46	46	41	57	52
31	65	---	57	61	------	81	------	47	------	42	55	---
Total	1,970	2,485	2,079	1,891	1,657	2,016	2,483	1,685	1,520	1,761	1,322	1,881
Mean	63.5	82.8	67.1	61.0	59.2	65.0	82.8	54.4	50.7	56.8	42.6	62.7
Cfsm	1.01	1.31	1.07	0.968	0.940	1.03	1.31	0.863	0.805	0.902	0.676	0.995
In.	1.16	1.46	1.23	1.12	0.98	1.19	1.46	0.99	0.90	1.04	0.78	1.11

Calendar year 1957: Max 400 Min 24 Mean 69.7 Cfsm 1.11 In. 15.03
Water year 1957-58: Max 162 Min 36 Mean 62.3 Cfsm 0.989 In. 13.42

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 3-5, 12-16, 29, 30, Jan. 2-25, Feb. 2-26, Mar. 8-11.

1295. Pigeon River at Afton, Mich.

Location.--Lat 45°22'25", long 84°30'50", in NE¼ sec.2, T.34 N., R.2 W., on right upstream abutment of bridge on State Highway 68, three-quarters of a mile west of Afton, 2 miles downstream from Wilkes Creek, and 5½ miles upstream from Mullett Lake.

Drainage area.--159 sq mi.

Records available.--April 1942 to September 1958.

Gage.--Staff gage read twice daily. Altitude of gage is 675 ft (by barometer). Prior to Sept. 13, 1943, staff gage at site 50 ft upstream at same datum.

Average discharge.--16 years, 130 cfs.

Extremes.--Maximum discharge during year, 265 cfs Sept. 7 (gage height, 5.03 ft); maximum gage height, 5.86 ft Jan. 10 (backwater from ice); minimum discharge, 49 cfs Aug. 8. 1942-58: Maximum daily discharge, 1,100 cfs Mar. 31, 1943; maximum gage height, about 10.5 ft Mar. 31, 1943, from floodmarks (ice jam); minimum discharge, that of Aug. 8, 1958.

Remarks.--Records good except those for period of ice effect, which are fair.

Revisions (water years).--WSP 1437: 1945-46, 1950.

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 26		Apr. 27 to Sept. 30	
4.3	82	4.1	50
4.5	120	4.5	120
5.0	254	5.0	254

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	93	108	127	95	90	105	147	116	84	120	50	96
2	86	102	133	95	85	110	*152	112	80	106	53	94
3	87	98	114	95	85	110	152	110	80	100	53	*77
4	87	100	93	95	*85	*110	156	112	*78	106	54	116
5	86	*104	*105	95	85	110	152	112	75	129	*55	201
6	84	100	110	95	85	110	149	108	75	116	56	221
7	84	100	110	100	85	105	156	104	73	*110	53	241
8	84	98	105	95	85	100	159	*100	77	98	50	224
9	84	122	105	95	85	100	154	96	75	94	50	174
10	82	142	100	100	90	100	135	100	77	135	77	135
11	84	129	95	100	90	100	131	127	80	161	75	116
12	84	129	95	105	90	100	131	135	86	133	78	106
13	82	142	100	105	90	100	131	127	80	86	77	88
14	84	156	105	105	90	100	131	114	80	86	63	78
15	84	209	105	105	90	100	135	98	78	88	62	86
16	*95	231	105	105	95	102	142	86	77	110	59	86
17	110	166	105	100	95	100	142	77	73	110	58	80
18	114	187	110	100	95	98	142	78	66	80	59	78
19	104	201	115	90	95	95	135	86	63	80	58	78
20	95	206	120	95	100	96	118	78	65	80	77	78
21	95	189	125	100	95	112	116	75	63	80	78	84
22	98	206	125	100	95	127	120	72	63	77	63	92
23	110	147	120	100	100	133	166	86	65	72	63	86
24	152	152	115	100	100	131	166	96	78	66	63	82
25	189	140	110	100	105	129	161	96	106	63	68	82
26	174	133	110	100	105	131	182	94	116	63	63	80
27	138	131	110	*100	105	140	166	94	114	63	63	80
28	120	129	105	100	105	149	135	84	104	62	65	80
29	114	129	100	100	-	152	127	77	80	60	80	80
30	112	131	100	100	------	154	118	78	100	53	104	82
31	110	------	95	100	------	154	------	80	------	54	98	------
Total	3,205	4,317	3,372	3,070	2,600	3,563	4,307	3,008	2,411	2,841	2,023	3,281
Mean	103	144	109	99.0	92.9	115	144	97.0	80.4	91.6	65.3	109
Cfsm	0.648	0.906	0.686	0.623	0.584	0.723	0.906	0.610	0.506	0.576	0.411	0.686
In.	0.75	1.01	0.79	0.72	0.61	0.83	1.01	0.70	0.56	0.66	0.47	0.77

Calendar year 1957: Max 627 Min 64 Mean 127 Cfsm 0.799 In. 10.84
Water year 1957-58: Max 241 Min 50 Mean 104 Cfsm 0.654 In. 8.88

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5 to Mar. 13.

1300. Cheboygan River near Cheboygan, Mich.

Location.--Lat 45°34'40", long 84°29'15", in SW¼ sec.19, T.37 N., R.1 W., 300 ft downstream from Mullett Lake, 2½ miles upstream from Black River, and 5 miles south of Cheboygan.

Drainage area.--865 sq mi.

Records available.--October 1942 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 591.21 ft above mean sea level, datum of 1929. Auxiliary staff gage at Cheboygan 5 miles downstream read hourly. Datum of auxiliary gage is 590.00 ft above mean sea level, datum of 1929.

Average discharge.--16 years, 763 cfs.

Extremes.--Maximum daily discharge during year, 1,030 cfs Nov. 19, 22; maximum daily gage height, 2.54 ft May 18; minimum daily discharge, 90 cfs Mar. 29, 30; minimum daily gage height, 1.41 ft Mar. 13.
1942-58: Maximum daily discharge, 1,590 cfs Apr. 16, 1943; maximum daily gage height, 3.13 ft Apr. 17, 1945, Apr. 11, 1948; minimum daily discharge, that of Mar. 29, 30, 1958; minimum daily gage height, 1.12 ft Dec. 29, 1952.

Remarks.--Records fair except those for periods of ice effect or indefinite stage-discharge relation, which are poor. Flow affected by variable backwater from powerplant at Cheboygan 5 miles below station.

Cooperation.--Auxiliary gage readings furnished by Consumers Power Co.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	718	e940	430	600	800	821	180	850	e520	495	e280	e800
2	726	607	600	650	750	864	212	723	737	414	256	559
3	754	e500	700	700	700	831	*442	789	709	433	292	525
4	604	691	*650	750	600	830	524	720	472	426	370	651
5	677	627	800	600	*550	*814	516	801	*487	523	275	*678
6	e450	*651	750	650	600	748	467	*780	472	504	266	925
7	589	689	700	700	650	815	410	659	540	500	245	921
8	639	839	450	730	620	740	449	514	699	*438	e180	986
9	616	829	700	*740	550	734	447	376	709	475	289	868
10	677	750	600	800	600	762	419	232	699	482	374	856
11	572	660	500	968	600	768	430	374	649	416	e650	846
12	517	497	550	851	560	764	428	419	614	435	646	857
13	457	620	600	738	600	739	465	517	578	314	508	616
14	516	781	500	841	620	666	442	463	475	354	603	560
15	516	900	350	700	620	598	557	538	e210	e400	437	616
16	530	900	600	800	640	546	e450	449	352	e450	373	578
17	*601	900	620	850	700	663	e450	517	349	e500	348	e450
18	687	897	620	897	680	674	441	e550	308	541	326	555
19	565	1,030	633	700	640	640	477	668	e320	495	318	599
20	471	1,010	807	750	600	596	308	640	e320	374	402	494
21	649	991	892	700	560	579	470	628	e300	349	365	403
22	656	1,030	965	620	520	598	558	452	e260	349	446	667
23	666	1,000	e900	700	450	659	729	384	399	375	436	657
24	781	943	e750	750	e680	654	615	440	495	381	396	647
25	851	869	e700	864	e700	446	764	456	436	561	366	665
26	672	914	650	668	734	338	e850	576	543	506	381	687
27	614	885	750	864	828	336	863	697	420	480	381	663
28	792	895	990	793	800	e110	878	477	389	408	464	576
29	716	856	969	700	-	e90	872	480	444	342	598	647
30	728	e550	964	700	-------	e90	874	556	415	358	e800	656
31	759	-------	944	800	-------	164	-------	675	-------	295	e900	-------
Total	19,766	24,251	21,634	23,174	17,952	18,677	15,987	17,400	14,320	13,373	12,971	20,208
Mean	638	808	698	748	641	602	533	561	477	431	418	674
Cfsm	0.738	0.934	0.807	0.865	0.741	0.696	0.616	0.649	0.551	0.498	0.483	0.779
In.	0.85	1.04	0.93	1.00	0.77	0.80	0.69	0.75	0.61	0.57	0.56	0.87

Calendar year 1957: Max 1,160 Min 290 Mean 765 Cfsm 0.884 In. 12.01
Water year 1957-58: Max 1,030 Min 90 Mean 602 Cfsm 0.696 In. 9.44

* Discharge measurement made on this day.
e Stage-discharge relation indefinite; discharge computed on basis of weather records and records of powerplant operation at Cheboygan and Alverno.
Note.--Stage-discharge relation affected by ice Dec. 1-18, 26, 27, Jan. 1-10, 15-17, 19-24, Jan. 29 to Feb. 23.

1305. Black River near Tower, Mich.

Location.--Lat 45°24', long 84°20', in NW¼ sec.29, T.35 N., R.1 E., on right bank 400 ft downstream from Kleber Dam, 800 ft upstream from Milligan Creek, 3 miles northwest of Tower, and 8 miles upstream from Black Lake.

Drainage area.--313 sq mi.

Records available.--October 1942 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 658.00 ft above mean sea level (Stanley Engineering Co. bench mark). Prior to Aug. 1, 1949, at site 1 mile upstream at different datum.

Average discharge.--16 years, 243 cfs.

Extremes.--Maximum discharge during year, 508 cfs Apr. 2, 3 (gage height, 3.78 ft); minimum, 16 cfs Feb. 14; minimum daily, 69 cfs June 20.
1942-58: Maximum discharge, 1,660 cfs Apr. 1, 1943 (gage height, 5.30 ft, site and datum then in use); minimum, 0.6 cfs Mar. 11, 1950; minimum daily, 4.0 cfs Nov. 27, 1949.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Flow regulated by powerplants at Tower and Kleber Dam.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Aug. 30		Aug. 31 to Sept. 30	
1.9	68	2.0	85
2.5	166	3.0	284
3.0	268	3.5	410
4.0	590	4.0	590

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	147	208	234	117	124	144	321	229	118	177	105	176
2	140	212	178	104	180	190	*294	239	157	207	107	91
3	161	221	240	140	209	223	300	251	199	180	88	*163
4	167	154	230	152	*171	*213	309	231	148	142	97	233
5	175	*a220	*147	175	191	211	302	252	*123	184	*92	200
6	147	a210	229	249	186	164	293	222	141	215	80	286
7	160	a200	232	212	184	223	283	*212	131	207	105	346
8	135	a250	154	*152	121	216	302	207	120	183	79	415
9	166	a180	198	195	131	203	296	198	170	*147	88	282
10	175	a250	174	218	176	172	290	213	138	194	146	264
11	167	a300	120	167	174	197	287	230	159	224	137	173
12	143	a280	123	171	167	172	268	268	173	252	119	172
13	132	a240	140	180	133	198	260	275	172	155	102	197
14	120	a270	192	197	166	187	296	243	119	178	104	160
15	128	316	222	198	102	195	264	181	114	169	96	124
16	141	293	210	174	124	165	228	197	139	160	144	160
17	*152	a330	178	177	150	173	296	203	140	151	106	148
18	163	a380	215	154	145	186	291	152	157	202	106	167
19	197	a380	225	163	155	207	300	191	105	172	81	98
20	162	a420	327	146	160	230	220	176	69	169	126	152
21	169	a310	339	175	177	214	257	141	85	146	155	174
22	191	a330	355	188	110	211	275	152	136	140	130	185
23	203	347	336	186	120	213	264	157	96	117	103	160
24	235	236	297	139	138	267	350	191	144	121	88	185
25	303	308	243	203	158	245	426	151	140	120	120	155
26	298	280	244	198	174	244	432	179	199	138	128	151
27	262	252	234	202	183	241	403	158	175	106	107	151
28	278	212	246	182	200	281	378	177	134	116	113	148
29	287	251	234	183	-	321	330	107	141	92	113	127
30	236	245	178	187	-------	294	287	126	156	116	212	117
31	201	-------	173	193	-------	280	-------	151	-------	92	173	-------
Total	5,743	8,085	6,847	5,479	4,409	6,680	9,102	6,060	4,198	4,972	3,551	5,560
Mean	185	270	221	177	157	215	303	195	140	160	115	185
Cfsm	0.591	0.863	0.706	0.565	0.502	0.687	0.968	0.623	0.447	0.511	0.367	0.591
In.	0.68	0.96	0.81	0.65	0.52	0.79	1.08	0.72	0.50	0.59	0.42	0.66

Calendar year 1957: Max 948 Min 75 Mean 243 Cfsm 0.776 In. 10.54
Water year 1957-58: Max 432 Min 69 Mean 194 Cfsm 0.620 In. 8.38

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records, powerplant operation at Kleber Dam, and records for stations on nearby streams.

1315. Rainy River near Ocqueoc, Mich.

Location.--Lat 45°24'30", long 84°10'35", on line between secs.15 and 22, T.35 N., R.2 E., on upstream side of highway bridge, 3¾ miles upstream from Black Lake and 4½ miles west of Ocqueoc.

Drainage area.--85 sq mi, approximately.

Records available.--October 1952 to September 1958.

Gage.--Wire-weight gage read once daily. Datum of gage is 674.85 ft above mean sea level, unadjusted.

Average discharge.--6 years, 29.7 cfs.

Extremes.--Maximum discharge during year, 108 cfs Apr. 25 (gage height, 2.79 ft, from graph based on gage readings); minimum, 0.6 cfs Aug. 4, 5, 6.
1952-58: Maximum discharge, 600 cfs Apr. 28, 1957 (gage height, 5.00 ft, from graph based on gage readings); minimum, 0.4 cfs Sept. 7, 1955.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.3	0.6	2.0	29
1.5	4.6	2.5	77
1.7	11	3.0	140

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	21	40	31	18	12	76	66	9.6	9.6	1.5	6.2
2	8.1	20	35	28	18	12	*75	62	9.2	9.6	1.5	5.1
3	6.8	19	30	24	19	12	73	60	8.5	9.2	.8	*5.1
4	6.8	17	28	20	*19	*14	73	60	*7.8	12	.6	6.8
5	6.8	*18	*26	18	19	14	70	56	7.1	16	*.8	5.3
6	5.6	17	27	15	19	23	70	a50	6.8	17	.6	14
7	4.8	18	30	14	18	37	70	*45	6.8	14	1.0	20
8	5.1	20	30	*14	16	40	70	40	7.4	12	.8	19
9	5.3	a25	30	14	14	37	69	42	7.1	*10	1.2	18
10	5.6	a30	30	14	13	33	68	42	8.1	13	3.3	18
11	5.1	a26	29	15	12	25	65	51	7.8	19	2.9	15
12	4.6	a26	28	15	12	12	63	46	7.4	16	2.1	16
13	5.1	a32	27	15	11	12	62	43	6.8	14	2.7	12
14	4.6	37	26	15	11	14	68	41	6.2	9.9	2.5	12
15	4.3	53	25	16	10	12	59	35	5.9	8.1	2.1	9.6
16	5.1	69	21	16	10	12	58	31	5.1	8.1	1.6	8.1
17	*8.8	68	18	16	10	12	58	28	4.6	6.8	2.3	7.1
18	9.2	67	18	16	10	12	55	26	4.6	6.2	1.6	6.2
19	8.5	79	37	16	10	16	53	23	4.1	5.9	1.5	6.4
20	7.4	90	49	16	10	22	50	21	3.7	5.9	3.5	5.9
21	7.1	84	74	16	10	27	47	18	3.5	4.8	3.1	6.4
22	7.1	79	69	16	10	35	48	17	3.7	4.8	2.5	7.1
23	16	74	68	16	10	42	78	14	3.3	4.3	2.1	6.8
24	52	72	50	16	10	54	90	14	5.1	3.7	2.3	4.8
25	49	60	51	16	10	56	104	14	14	3.5	2.3	5.6
26	38	55	53	16	11	48	104	14	11	3.3	2.1	6.2
27	31	52	56	15	11	51	98	15	8.1	2.9	1.6	5.3
28	28	53	44	15	12	45	92	12	5.9	2.7	2.9	5.3
29	26	52	42	14	-	50	81	9.9	4.8	2.5	3.3	5.3
30	23	50	40	14	-------	59	73	9.2	5.1	2.5	5.9	5.3
31	21	-------	35	17	-------	68	-------	9.9	-------	1.6	6.8	-------
Total	425.8	1,383	1,166	519	363	918	2,120	1,017.0	199.1	258.9	69.8	273.9
Mean	13.7	46.1	37.6	16.7	13.0	29.6	70.7	32.8	6.64	8.35	2.25	9.13
Cfsm	0.161	0.542	0.442	0.196	0.153	0.348	0.832	0.386	0.078	0.098	0.026	0.107
In.	0.19	0.60	0.51	0.23	0.16	0.40	0.93	0.44	0.09	0.11	0.03	0.12

Calendar year 1957: Max 582 Min 4.0 Mean 45.5 Cfsm 0.535 In. 7.26
Water year 1957-58: Max 104 Min 0.6 Mean 23.9 Cfsm 0.281 In. 3.81

Peak discharge (base, 110 cfs).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record; discharge interpolated or estimated on basis of records for stations on nearby streams.
Note.--Stage-discharge relation affected by ice Dec. 2-5, 8-18, Dec. 30 to Jan. 28, Feb. 1 to Mar. 2, Mar. 8-12.

1320. Black River near Cheboygan, Mich.

Location.--Lat 45°30'00", long 84°19'24", in sec.21, T.36 N., R.1 E., on left bank half a mile downstream from Black Lake, 5½ miles upstream from Alverno Dam, and 12 miles southeast of Cheboygan.

Drainage area.--597 sq mi.

Records available.--October 1942 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 609.26 ft above mean sea level, datum of 1929. Auxiliary water-stage recorder 3 miles downstream at same datum.

Average discharge.--16 years, 411 cfs.

Extremes.--Maximum daily discharge during year, 1,080 cfs Nov. 20; maximum daily gage height, 3.26 ft May 17; minimum daily discharge, 15 cfs Aug. 10; minimum daily gage height, 1.78 ft Mar. 14.
1942-58: Maximum daily discharge, 2,260 cfs Apr. 19, 1952; maximum daily gage height, 5.28 ft Apr. 7, 1943; minimum daily discharge, 11 cfs Aug. 14, 1949; minimum daily gage height, 1.60 ft Sept. 2, 1947.

Remarks.--Records fair except those for periods of ice effect or indefinite stage-discharge relation, which are poor. Flow affected during most of time by backwater from powerplant at Alverno Dam.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	172	824	e70	e300	648	567	e500	400	113	220	66	238
2	293	394	484	e350	304	404	562	427	135	109	41	94
3	370	e80	481	494	b250	393	*570	697	237	226	e20	65
4	90	406	*490	483	b300	397	571	616	168	218	e20	*e100
5	171	460	777	e150	*b250	*421	566	360	*e130	611	48	111
6	e60	*e400	589	b350	b270	448	601	356	118	348	31	e250
7	166	e300	657	b480	b280	451	713	*365	188	300	*55	359
8	309	635	e80	b450	b280	427	604	e300	264	*250	21	690
9	306	941	e350	*b420	e40	355	562	232	228	174	e18	538
10	185	675	471	b500	b250	e350	564	84	282	188	e15	371
11	300	e150	548	761	b300	354	610	e80	222	201	182	336
12	101	267	533	304	b350	331	569	e70	219	197	212	544
13	e50	271	512	b400	b300	282	442	91	248	65	e160	266
14	103	284	422	523	b350	271	529	216	198	117	104	270
15	103	580	71	e350	b450	155	432	270	e25	191	e20	232
16	84	862	518	b310	490	86	228	162	138	256	43	177
17	*178	893	489	626	582	144	97	275	e120	319	23	132
18	304	915	472	746	659	310	242	284	e50	191	62	425
19	e300	992	536	293	630	192	81	282	e100	e170	e70	273
20	e60	1,080	864	520	496	167	e30	241	96	e150	e80	267
21	437	1,020	936	515	454	309	202	346	43	94	61	e90
22	411	938	920	327	299	e450	e130	244	e20	99	86	252
23	241	1,020	956	b450	e80	e450	208	136	40	104	97	244
24	531	982	848	586	b200	e450	e150	144	109	101	e30	242
25	626	547	372	735	b400	478	448	200	56	127	57	251
26	792	878	601	259	b500	e400	e450	e200	203	78	e60	364
27	400	850	886	510	581	e400	e450	e200	85	86	46	477
28	504	854	871	546	603	e400	478	176	124	103	118	e250
29	518	774	881	239	-	e400	606	218	144	88	101	249
30	260	342	858	482	-------	e450	393	134	148	e60	e200	230
31	517	-------	771	639	-------	e500	-------	160	-------	74	342	-------
Total	8,942	19,614	18,314	14,098	10,576	11,192	12,588	7,986	4,251	5,517	2,489	8,387
Mean	288	654	591	455	378	361	420	258	142	178	80.3	280
Cfsm	0.482	1.10	0.990	0.762	0.633	0.605	0.704	0.432	0.238	0.298	0.135	0.469
In.	0.56	1.23	1.14	0.88	0.66	0.70	0.79	0.50	0.27	0.34	0.16	0.52

Calendar year 1957: Max 1,900 Min 20 Mean 510 Cfsm 0.854 In. 11.60
Water year 1957-58: Max 1,080 Min 15 Mean 340 Cfsm 0.570 In. 7.75

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
e Stage-discharge relation indefinite; discharge estimated on basis of weather records and records of powerplant operation at Alverno Dam and at Cheboygan.

1325. Thunder Bay River near Hillman, Mich.

Location.--Lat 45°00'30", long 83°58'15", on line between secs.8 and 9, T.30 N., R.4 E., on left bank 25 ft upstream from bridge on State Highway 32, a quarter of a mile downstream from Miller Creek, and 5 miles southwest of Hillman.

Drainage area.--232 sq mi.

Records available.--June 1945 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 760 ft (by barometer).

Average discharge.--13 years, 205 cfs.

Extremes.--Maximum discharge during year, 318 cfs Nov. 19 (gage height, 6.02 ft); maximum gage height, 6.61 ft Mar. 3 (ice jam); minimum discharge, 108 cfs Aug. 6.
1945-58: Maximum discharge, 1,380 cfs Apr. 12, 1947 (gage height, 8.86 ft); minimum daily, 98 cfs Aug. 7, 1949.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Prior to May 12, 1950, diurnal fluctuation below about 500 cfs by powerplant at Atlanta. Occasional regulation by dam at Atlanta thereafter.

Revisions (water years).--WSP 1307: 1946(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 1-6, Sept. 22-30)

4.1	106
5.0	181
6.0	315

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*152	174	189	185	135	200	*258	186	153	*186	121	136
2	150	173	180	185	130	205	255	178	156	172	123	*130
3	155	177	*170	185	*130	*205	251	193	*148	161	117	128
4	155	*174	170	190	125	205	247	193	140	154	*112	190
5	154	174	170	200	125	205	241	*183	138	186	111	173
6	153	172	180	210	125	200	255	179	136	188	110	213
7	153	170	190	*200	125	200	287	157	137	169	111	220
8	152	181	183	190	125	190	283	160	139	157	115	193
9	153	227	180	190	125	185	257	169	144	148	113	170
10	155	209	176	190	120	180	241	184	149	203	121	157
11	157	196	170	190	120	175	231	212	150	199	120	145
12	159	202	160	190	120	173	227	214	144	174	120	139
13	157	196	170	185	120	172	222	193	140	160	120	134
14	156	217	180	185	120	172	220	178	137	145	118	132
15	155	300	200	180	120	171	220	168	134	141	116	128
16	158	285	210	180	125	159	220	158	132	164	116	127
17	178	258	210	170	125	167	208	153	129	148	115	126
18	172	243	200	165	130	170	207	150	128	142	113	140
19	167	300	190	160	130	176	202	148	131	144	112	128
20	163	296	230	155	135	183	198	145	132	138	129	125
21	159	264	254	155	140	188	192	144	134	132	136	126
22	156	240	237	155	145	207	196	143	136	130	132	136
23	171	218	230	160	150	210	272	144	139	128	128	129
24	264	213	221	165	160	222	287	142	158	125	127	126
25	269	202	200	165	170	224	308	148	160	124	128	130
26	234	196	210	165	175	227	282	146	173	123	125	128
27	209	192	198	165	185	233	248	145	155	121	127	126
28	194	197	200	160	195	248	225	140	147	122	126	125
29	194	197	190	150	-	258	220	140	140	119	127	125
30	184	196	190	140	-------	262	202	142	153	117	134	126
31	178	-------	185	135	-------	264	-------	142	-------	117	142	-------
Total	5,366	6,437	6,023	5,400	3,830	6,236	7,162	5,077	4,292	4,637	3,765	4,311
Mean	173	215	194	174	137	201	239	164	143	150	121	144
Cfsm	0.746	0.927	0.836	0.750	0.591	0.866	1.03	0.707	0.616	0.647	0.522	0.621
In.	0.86	1.03	0.96	0.86	0.62	1.00	1.15	0.82	0.69	0.75	0.60	0.69

Calendar year 1957: Max 1,080 Min 110 Mean 205 Cfsm 0.884 In. 11.98
Water year 1957-58: Max 308 Min 110 Mean 171 Cfsm 0.737 In. 10.03

Peak discharge (base, 600 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 2-6, 9, 11-19, Dec. 30 to Mar. 11 (no gage-height record Feb. 17 to Mar. 3; discharge estimated on basis of weather records and records for stations on nearby streams).

1335. Thunder Bay River near Bolton, Mich.

Location.--Lat 45°07'40", long 83°38'30", in NE¼ sec.36, T.32 N., R.6 E., on left bank half a mile upstream from Orchard Hill Bridge, 4 miles upstream from North Branch Thunder Bay River, 5 miles southwest of Bolton, and 11 miles northwest of Alpena.

Drainage area.--588 sq mi.

Records available.--March 1945 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 671.96 ft above mean sea level, unadjusted. Prior to Aug. 12, 1945, staff gage at site 500 ft downstream at different datum.

Average discharge.--13 years, 429 cfs.

Extremes.--Maximum discharge during year, 671 cfs Mar. 29 (gage height, 4.74 ft); maximum gage height, 5.95 ft Jan. 13 (ice jam); minimum discharge, 121 cfs June 19, Aug. 8.
1945-58: Maximum discharge, 3,410 cfs Apr. 12, 1947 (gage height, 9.00 ft); maximum gage height, 9.08 ft Mar. 21, 1948 (backwater from ice); minimum discharge, 92 cfs Sept. 28, 29, 1955.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diurnal fluctuation caused by powerplant at Hillman and regulation by Fletcher Pond on the Upper South Branch Thunder Bay River (usable capacity, 40,170 acre-ft).

Revisions (water years).--WSP 1437: 1946.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 11		Mar. 12 to Sept. 30	
3.3	243	2.8	133
4.0	415	3.5	260
5.0	805	4.0	405
		5.0	780

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*292	340	363	400	290	430	*575	354	220	224	163	244
2	285	334	340	400	280	430	533	321	232	*240	170	*236
3	285	332	*320	390	*280	*430	498	324	*230	232	171	228
4	290	*332	320	390	280	420	470	339	222	222	*163	244
5	290	327	330	390	280	410	446	*345	213	234	158	306
6	290	325	360	390	270	400	446	336	207	262	156	324
7	290	325	380	*390	270	400	488	270	202	260	153	360
8	290	332	360	390	270	390	512	268	202	240	147	366
9	287	354	350	390	260	380	526	260	204	228	160	321
10	287	382	330	390	260	380	452	280	213	306	170	300
11	287	365	251	390	260	380	429	342	222	348	168	275
12	290	352	280	390	260	375	402	366	216	312	164	256
13	292	354	330	390	260	372	381	357	211	272	170	248
14	290	371	370	390	260	375	366	312	206	246	206	244
15	287	446	400	390	260	429	360	291	200	224	222	240
16	292	532	390	380	260	435	351	270	197	254	218	236
17	306	513	390	370	260	429	345	254	193	223	215	234
18	322	478	380	350	260	438	306	244	191	217	211	a250
19	318	520	474	340	270	456	303	234	171	206	209	a230
20	308	592	510	330	280	474	294	226	207	215	220	a230
21	303	572	502	330	290	505	285	220	193	204	238	a230
22	301	478	496	330	300	568	278	216	193	197	244	a250
23	310	432	485	330	310	619	336	215	197	189	234	a240
24	363	422	532	340	330	572	460	215	206	189	234	a230
25	460	388	502	350	350	591	554	216	236	188	230	a230
26	464	380	499	350	380	558	540	218	244	182	228	a230
27	429	375	464	350	400	568	494	215	252	179	224	a230
28	385	379	492	330	420	619	442	207	232	179	228	a230
29	363	379	457	320	-	643	414	204	220	177	228	a230
30	360	377	430	310	-------	639	387	209	213	171	230	a230
31	350	-------	420	300	-------	619	-------	213	-------	152	240	-------
Total	9,964	12,088	12,507	11,280	8,150	14,734	12,673	8,341	6,345	6,972	6,172	7,702
Mean	321	403	403	364	291	475	422	269	212	225	199	257
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957 : Max 2,180 Min 250 Mean 459 Cfsm - In. -
Water year 1957-58 : Max 643 Min 147 Mean 320 Cfsm - In. -

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.
Note.--Stage-discharge relation affected by ice Nov. 26, 27, Dec. 2-10, 12-18, Dec. 30 to Mar. 11.

1340. North Branch Thunder Bay River near Bolton, Mich.

Location.--Lat 45°08'55", long 83°36'35", in sec.29, T.32 N., R.7 E., on left bank 1½ miles upstream from mouth, 2½ miles south of Bolton, and 9 miles northwest of Alpena.

Drainage area.--184 sq mi.

Records available.--March 1945 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 675.52 ft above mean sea level, unadjusted. Prior to Aug. 16, 1945, staff gage at site half a mile upstream at different datum.

Average discharge.--13 years, 100 cfs.

Extremes.--Maximum discharge during year, 402 cfs Mar. 31 (gage height, 4.46 ft); maximum gage height, 5.23 ft Jan. 2 (ice jam); minimum discharge, 2.8 cfs Aug. 19, 20.
1945-58: Maximum discharge, 2,330 cfs Apr. 13, 1947 (gage height, 7.00 ft); maximum gage height, 7.98 ft Mar. 31, 1950 (ice jam); minimum discharge, 0.4 cfs Oct. 14, 1955.

Remarks.--Records good except those for periods of ice effect, which are poor.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.5	2.8	3.3	60
2.6	4.4	3.8	160
2.7	7.0	4.4	375
2.9	16	5.0	685
3.0	24		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*31	59	83	70	50	43	*375	125	26	15	10	16
2	31	60	80	65	50	44	352	108	21	*18	9.2	*18
3	31	57	*80	65	50	*45	318	106	*20	20	7.8	22
4	26	*52	75	62	*50	47	286	100	20	17	*7.2	34
5	24	49	60	60	48	48	262	*92	20	18	7.0	25
6	22	52	56	60	48	50	258	85	18	18	7.0	42
7	21	52	55	58	47	52	258	76	14	19	6.4	60
8	19	49	55	*58	46	54	252	70	13	17	6.1	80
9	16	49	55	58	45	56	248	65	13	18	5.8	81
10	14	53	52	58	45	58	248	63	14	42	6.1	78
11	14	66	52	58	43	60	230	65	18	39	6.1	70
12	14	80	54	58	42	64	208	53	22	36	5.6	60
13	12	76	57	58	41	68	196	52	27	35	4.8	52
14	9.6	78	60	60	41	72	172	63	27	34	4.6	42
15	9.6	85	65	60	41	76	155	62	21	32	4.2	35
16	12	110	74	60	41	85	148	57	15	35	3.7	28
17	19	141	73	60	41	98	138	57	13	32	3.4	24
18	19	166	68	58	40	94	125	49	14	31	3.1	23
19	18	190	74	57	40	96	118	42	14	31	2.9	22
20	18	196	80	56	40	100	116	40	14	31	3.8	19
21	24	199	110	55	40	110	108	39	14	26	5.1	18
22	26	214	141	55	40	120	100	34	12	23	4.6	20
23	29	199	184	55	40	150	104	30	13	22	3.8	15
24	40	181	193	56	40	170	106	27	14	22	3.7	12
25	46	141	170	56	40	200	138	25	17	21	3.8	12
26	53	110	150	56	41	230	178	24	17	20	4.1	12
27	73	110	120	56	41	260	169	22	14	18	3.8	12
28	85	104	100	56	42	298	196	22	16	16	5.6	12
29	81	100	90	54	-	330	178	22	15	16	5.6	12
30	68	94	80	53	-------	375	150	22	14	14	17	12
31	59	-------	75	51	-------	398	-------	22	-------	13	15	-------
Total	964.2	3,172	2,721	1,802	1,213	3,951	5,890	1,719	510	749	186.9	968
Mean	31.1	106	87.8	58.1	43.3	127	196	55.5	17.0	24.2	6.03	32.3
Cfsm	0.169	0.576	0.477	0.316	0.235	0.690	1.07	0.302	0.092	0.132	0.033	0.176
In.	0.19	0.64	0.55	0.36	0.24	0.80	1.19	0.35	0.10	0.15	0.04	0.20

Calendar year 1957: Max 1,020 Min 5.1 Mean 113 Cfsm 0.614 In. 8.32
Water year 1957-58: Max 398 Min 2.9 Mean 65.3 Cfsm 0.355 In. 4.81

Peak discharge (base, 500 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 26, 27, Dec. 2-4, 7-15, Dec. 25 to Mar. 16, Mar. 20-27.

1355. Au Sable River at Grayling, Mich.

Location.--Lat 44°39'35", long 84°42'45", in SE¼ sec.7, T.26 N., R.3 W., on right bank 65 ft upstream from bridge on U. S. Highway 27 at Grayling and three-quarters of a mile upstream from East Branch.

Drainage area.--110 sq mi.

Records available.--October 1942 to September 1958. Prior to October 1954, published as Middle Branch Au Sable River at Grayling. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 1,123.49 ft above mean sea level, datum of 1929.

Average discharge.--16 years, 75.3 cfs.

Extremes.--Maximum discharge during year, 93 cfs Nov. 16 (gage height, 1.60 ft); minimum, 40 cfs Aug. 3.
1942-58: Maximum discharge, 274 cfs June 2, 1943 (gage height, 3.00 ft); minimum, 28 cfs Apr. 21, 1946.

Remarks.--Records good except those for periods of ice effect, which are fair. Prior to Dec. 31, 1952, diurnal fluctuation caused by powerplant 2.5 miles upstream. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.0	40
1.3	63
2.0	138

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	*59	65	b55	58	61	*74	*55	51	*48	*42	57
2	55	58	66	*b55	58	62	74	56	51	50	42	*54
3	*54	58	*64	b55	51	62	76	58	51	49	41	53
4	54	58	58	b55	*55	*60	77	58	*50	49	41	72
5	54	58	64	b55	b55	58	78	58	49	53	41	73
6	54	58	68	b55	b55	58	85	56	50	53	41	78
7	54	57	68	b55	b55	58	88	55	49	53	42	79
8	54	62	61	56	54	57	83	54	51	49	44	78
9	54	68	65	57	52	56	78	54	52	48	44	68
10	54	70	65	58	55	56	73	54	52	49	45	61
11	54	68	54	58	55	57	70	54	51	54	46	57
12	54	66	58	58	b53	56	69	54	50	53	45	54
13	54	67	62	57	b50	56	69	53	49	49	44	53
14	53	75	61	59	b52	56	68	52	48	48	44	51
15	53	88	62	59	55	56	68	51	48	48	43	52
16	58	91	62	57	b52	56	66	50	48	48	42	52
17	64	85	61	55	53	56	65	50	48	49	41	52
18	64	80	62	55	53	56	63	50	46	48	41	52
19	61	85	68	52	54	56	62	50	46	48	41	51
20	58	84	73	56	55	58	61	50	48	47	48	50
21	57	80	75	58	54	57	59	49	50	46	53	51
22	56	76	73	58	56	57	60	50	49	46	51	53
23	63	73	71	56	56	58	60	50	48	45	48	53
24	75	71	68	58	57	58	64	50	50	45	46	53
25	76	70	64	58	57	58	65	52	54	46	46	62
26	72	70	b62	58	58	58	64	51	57	48	46	62
27	68	69	63	59	59	60	61	50	55	45	45	58
28	65	70	b62	59	61	64	59	49	52	45	47	54
29	62	69	61	60	-	68	58	49	49	45	49	53
30	61	68	57	60	-------	71	58	49	48	44	53	55
31	60	-------	b56	59	-------	74	-------	50	-------	43	57	-------
Total	1,831	2,111	1,979	1,767	1,538	1,834	2,055	1,621	1,500	1,489	1,399	1,751
Mean	59.1	70.4	63.8	57.0	54.9	59.2	68.5	52.3	50.0	48.0	45.1	58.4
Cfsm	0.537	0.640	0.580	0.518	0.499	0.538	0.623	0.475	0.455	0.436	0.410	0.531
In.	0.62	0.71	0.67	0.60	0.52	0.62	0.70	0.55	0.51	0.50	0.47	0.59

Calendar year 1957: Max 112 Min 46 Mean 64.8 Cfsm 0.589 In. 8.00
Water year 1957-58: Max 91 Min 41 Mean 57.2 Cfsm 0.520 In. 7.06

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1365. Au Sable River at Mio, Mich.

Location.--Lat 44°39'35", long 84°07'30", on line between sec.7, T.26 N., R.3 E., and sec.12, T.26 N., R.2 E., on right bank 150 ft upstream from bridge on State Highway 33 at Mio, 10 miles downstream from Big Creek, and 80 miles upstream from mouth.

Drainage area.--1,100 sq mi, approximately.

Records available.--July 1952 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 929.60 ft above mean sea level, datum of 1929.

Average discharge.--6 years, 896 cfs.

Extremes.--Maximum discharge during year, 2,820 cfs Oct. 7 (gage height, 5.02 ft); minimum daily, 456 cfs Feb. 17.
1952-58: Maximum discharge, 2,980 cfs Aug. 5, 1952 (gage height, 5.16 ft); minimum daily, that of Feb. 17, 1958.

Remarks.--Records good. Flow regulated at all stages by powerplant 500 ft upstream. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 19		Mar. 20 to July 28		July 29 to Sept. 30	
2.1	425	2.3	570	2.2	485
3.0	890	3.0	975	3.0	920
4.0	1,700	4.0	1,750		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	708	845	854	708	666	632	942	804	674	700	526	575
2	820	782	732	709	674	783	1,030	766	778	658	576	570
3	706	764	623	669	716	733	974	820	682	683	558	696
4	747	847	738	514	617	698	1,010	886	709	614	550	733
5	701	816	736	728	716	749	1,140	800	664	758	526	734
6	652	916	842	791	702	694	1,070	778	680	765	577	891
7	876	821	652	783	698	715	1,240	786	624	700	563	798
8	682	745	800	685	502	685	1,170	738	632	700	570	742
9	716	792	787	614	532	666	1,020	780	640	650	562	737
10	628	839	757	864	672	713	1,060	686	714	600	578	658
11	734	753	714	714	564	662	1,080	734	716	750	664	690
12	738	*839	492	691	542	686	974	770	688	573	642	682
13	660	844	685	750	640	719	951	706	706	689	492	538
14	680	940	842	768	628	694	906	662	621	662	584	600
15	698	1,450	908	776	640	668	956	760	624	622	522	723
16	754	954	680	770	792	655	*947	705	674	740	529	647
17	848	1,290	724	604	456	652	916	674	*585	712	493	*576
18	820	1,030	834	686	621	738	922	666	661	642	540	593
19	768	1,190	818	631	685	676	954	734	856	610	*570	570
20	690	1,190	964	680	660	756	922	678	599	616	615	628
21	740	1,150	1,020	775	633	754	872	659	602	648	722	598
22	902	1,090	937	690	696	838	874	668	648	*632	616	678
23	778	946	*978	722	670	791	1,020	*665	695	722	500	600
24	1,070	1,000	866	726	786	*904	1,060	628	766	599	550	620
25	*1,210	954	903	681	726	864	940	758	722	612	634	676
26	742	884	902	741	*728	854	982	712	772	592	582	670
27	1,040	906	748	*752	770	776	898	660	737	584	578	640
28	786	776	762	730	742	968	828	660	666	791	576	604
29	850	913	822	732	-	988	874	680	692	546	567	664
30	852	888	697	692	-------	1,090	791	666	671	540	692	692
31	738	-------	734	796	-------	980	-------	718	-------	608	660	-------
Total	24,334	28,154	24,953	22,172	18,474	23,781	29,323	22,407	20,478	20,318	17,916	19,823
Mean	785	938	805	715	660	767	977	723	683	655	578	661
Cfsm	0.714	0.853	0.732	0.650	0.600	0.697	0.888	0.657	0.621	0.595	0.525	0.601
In.	0.82	0.95	0.84	0.75	0.62	0.80	0.99	0.76	0.69	0.69	0.61	0.67

Calendar year 1957 : Max 1,950 Min 492 Mean 867 Cfsm 0.788 In. 10.69
Water year 1957-58 : Max 1,450 Min 456 Mean 746 Cfsm 0.678 In. 9.19

* Discharge measurement made on this day.

1380. East Branch Au Gres River at McIvor, Mich.

Location.--Lat 44°14'20", long 83°41'50", on line between secs.3 and 10, T.21 N., R.6 E., on right bank 25 ft downstream from highway bridge at McIvor, 1.1 miles east of National City, and 9 miles southwest of Tawas City.

Drainage area.--84 sq mi, approximately.

Records available.--November 1950 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 646.58 ft above mean sea level, datum of 1929. Prior to Aug. 30, 1951, wire-weight gage at site 25 ft upstream at same datum.

Average discharge.--7 years (1951-58), 65.4 cfs.

Extremes.--Maximum discharge during year, 244 cfs Nov. 14 (gage height, 3.97 ft); minimum, 21 cfs Aug. 9.
1950-58: Maximum discharge, 865 cfs Apr. 14, 1952 (gage height, 7.67 ft); minimum, 16 cfs Dec. 4, 1952.

Remarks.--Records good except those for periods of ice effect, which are poor. Since 1953, periodic regulation by dam 2½ miles upstream. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.4	25
2.0	56
3.0	133
4.0	248

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	38	42	51	52	40	45	78	53	50	34	29	33
2	36	42	48	50	40	48	74	51	45	34	30	31
3	36	41	46	50	40	52	72	53	39	34	28	32
4	36	40	45	48	39	53	69	51	38	34	27	38
5	36	40	45	47	39	56	68	49	36	42	28	33
6	36	40	45	46	39	57	142	48	36	38	28	48
7	36	40	45	46	38	56	148	47	36	36	28	36
8	38	52	44	45	38	58	114	47	39	36	29	36
9	36	52	43	45	38	57	91	47	38	33	28	33
10	36	46	44	44	37	57	82	47	36	34	28	34
11	36	43	45	43	37	52	77	46	36	33	30	33
12	36	*44	44	42	37	52	74	45	36	32	29	32
13	36	44	44	42	36	54	69	44	35	31	28	32
14	36	120	43	41	36	54	67	43	35	31	28	30
15	36	153	43	41	36	58	*65	42	34	33	28	32
16	48	91	43	40	36	63	63	41	*34	38	28	*32
17	60	73	44	39	36	66	62	40	33	33	28	32
18	47	69	45	39	36	66	59	42	33	33	*28	37
19	42	116	88	39	36	78	58	40	33	34	29	33
20	40	98	86	39	36	95	58	40	40	32	30	32
21	40	77	93	*39	36	118	60	*39	40	*31	33	32
22	39	67	77	39	36	144	62	40	36	30	30	33
23	*57	61	*69	39	36	135	77	40	36	30	30	31
24	86	58	64	39	*36	*126	76	39	36	30	30	32
25	66	54	67	39	36	107	70	39	45	29	31	32
26	54	52	99	39	37	92	64	38	45	30	30	32
27	49	51	80	39	39	93	60	38	38	30	30	32
28	46	51	70	39	42	98	58	36	36	36	30	32
29	45	52	63	40	-	95	57	36	35	32	30	32
30	44	51	56	40	-------	88	54	37	34	30	38	32
31	42	-------	54	40	-------	82	-------	38	-------	30	36	-------
Total	1,349	1,860	1,773	1,310	1,048	2,355	2,228	1,336	1,123	1,023	917	999
Mean	43.5	62.0	57.2	42.3	37.4	76.0	74.3	43.1	37.4	33.0	29.6	33.3
Cfsm	0.518	0.738	0.681	0.504	0.445	0.905	0.885	0.513	0.445	0.393	0.352	0.396
In.	0.60	0.82	0.79	0.58	0.46	1.04	0.99	0.59	0.50	0.45	0.41	0.44

Calendar year 1957: Max 331 Min 30 Mean 61.2 Cfsm 0.729 In. 9.89
Water year 1957-58: Max 153 Min 27 Mean 47.5 Cfsm 0.565 In. 7.67

Peak discharge (base, 300 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 3-6, 11-19, Dec. 30 to Mar. 5.

1385. Au Gres River near National City, Mich.

Location.--Lat 44°10'45", long 83°44'15", in NW¼ sec.32, T.21 N., R.6 E., on left bank 20 ft downstream from highway bridge, 1½ miles upstream from Elm Creek, 4 miles southwest of National City, 12½ miles southwest of Tawas City, and 15½ miles upstream from mouth.

Drainage area.--169 sq mi.

Records available.--November 1950 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 710 ft (by barometer). Prior to Oct. 1, 1951, wire-weight gage at site 1.7 miles upstream at different datum.

Average discharge.--7 years (1951-58), 99.2 cfs.

Extremes.--Maximum discharge during year, 600 cfs Nov. 15 (gage height, 4.16 ft); minimum, 11 cfs Aug. 9, 10, 11, 12, 14-20.
1950-58: Maximum daily discharge, 1,600 cfs Apr. 14, 1952; maximum gage height, 10.5 ft Feb. 21, 1953 (ice jam); minimum discharge, 8.4 cfs Aug. 26, 1957.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-23)

0.6	9.0	1.5	110
.8	18	3.0	360
.9	24	4.0	575

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	40	98	85	48	80	146	86	46	19	13	16
2	26	40	95	82	48	80	138	82	42	19	13	14
3	26	40	85	80	48	92	131	83	28	18	12	14
4	25	40	80	76	48	100	126	83	24	18	12	17
5	25	40	80	75	48	105	122	77	22	30	12	18
6	26	40	89	72	48	110	329	68	21	30	12	23
7	26	40	90	70	48	110	410	58	20	22	12	23
8	25	60	85	68	48	110	295	58	23	20	12	19
9	26	100	85	66	47	105	214	58	23	19	12	17
10	25	90	84	62	46	105	172	56	22	19	12	16
11	27	65	83	60	45	100	149	56	20	20	12	15
12	27	70	82	58	45	100	137	53	19	19	12	15
13	27	*72	82	56	43	100	125	47	19	19	14	14
14	27	237	82	54	42	105	120	42	19	18	11	14
15	28	492	82	52	41	120	*119	41	18	18	11	14
16	41	257	82	52	40	140	114	38	*18	19	11	*14
17	80	196	85	51	40	170	104	35	16	18	11	14
18	58	176	90	50	40	200	104	40	16	18	*11	20
19	44	394	160	48	40	232	100	35	16	19	11	19
20	38	306	230	48	39	285	98	30	19	18	12	16
21	35	227	290	*48	39	319	100	*27	23	*16	18	16
22	35	180	220	48	39	338	100	26	19	15	15	16
23	*70	152	*180	48	39	302	158	27	19	16	14	16
24	110	137	148	48	*39	*286	155	26	20	15	13	15
25	100	116	134	48	39	238	150	27	27	15	14	16
26	75	118	130	48	40	203	130	24	46	16	14	16
27	60	107	120	48	43	197	113	24	26	15	13	16
28	50	112	110	48	50	196	106	23	21	16	12	15
29	45	107	100	48	-	182	100	22	19	18	14	15
30	45	102	95	48	-------	167	90	23	18	14	20	14
31	45	-------	90	48	-------	156	-------	23	-------	13	22	-------
Total	1,324	4,153	3,546	1,793	1,220	5,111	4,455	1,398	689	569	407	487
Mean	42.7	138	114	57.8	43.6	165	148	45.1	23.0	18.4	13.1	16.2
Cfsm	0.253	0.817	0.675	0.342	0.258	0.976	0.876	0.267	0.136	0.109	0.078	0.096
In.	0.29	0.91	0.78	0.39	0.27	1.13	0.98	0.31	0.15	0.13	0.09	0.11

Calendar year 1957: Max 712 Min 12 Mean 108 Cfsm 0.639 In. 8.68
Water year 1957-58: Max 492 Min 11 Mean 68.9 Cfsm 0.408 In. 5.54

Peak discharge (base, 600 cfs).--Nov. 15 (1 a.m.) 600 cfs (4.16 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 2-5, 8, 9, 11-18, Dec. 26 to Mar. 18. No gage-height record Oct. 24 to Nov. 13, Dec. 19-25, Jan. 2; discharge estimated on basis of weather records and records for stations on nearby streams.

1390. Houghton Creek near Lupton, Mich.

Location.--Lat 44°23'50", long 84°02'55", in SE¼ sec.10, T.23 N., R.3 E., on right bank half a mile upstream from mouth, 3 miles downstream from Wilkins Creek, and 8 miles southwest of Lupton.

Drainage area.--27 sq mi, approximately.

Records available.--July 1950 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 860 ft (by barometer).

Average discharge.--8 years, 51.5 cfs.

Extremes.--Maximum discharge during year, 190 cfs Nov. 15 (gage height, 4.07 ft); minimum, 31 cfs July 4.
1950-58: Maximum discharge, 575 cfs Apr. 4, 1956 (gage height, 6.31 ft); minimum, 28 cfs Feb. 1, 1953.

Remarks.--Records good except those for periods of ice effect, which are fair. Prior to June 25, 1955, some regulation at low flow from sawmill on Sandback Creek at Rose City. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 14, Sept. 7-30		Feb. 15 to Sept. 6	
2.2	33	2.1	30
3.0	94	3.0	100
4.0	184	3.9	175

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42	45	44	42	40	54	62	42	53	38	35	42
2	42	45	44	41	40	56	58	40	44	38	38	35
3	42	45	42	40	40	55	56	48	39	36	37	36
4	42	44	42	40	39	54	54	46	38	35	37	42
5	42	44	42	40	40	52	54	44	39	56	40	36
6	42	44	44	40	40	52	124	43	38	44	35	52
7	42	44	44	40	39	50	104	42	38	39	38	40
8	42	*57	42	40	39	50	88	42	42	38	38	38
9	42	55	*41	39	38	50	57	44	*41	38	38	*38
10	42	47	42	38	40	*49	54	43	41	39	38	37
11	42	46	40	38	40	47	53	42	40	38	*38	37
12	42	45	40	38	40	46	51	42	34	38	36	37
13	42	47	40	38	37	49	50	41	38	37	35	37
14	42	84	40	37	39	50	*50	41	37	*37	37	37
15	41	169	40	37	40	50	49	41	37	37	37	37
16	46	79	40	*37	40	50	48	40	37	38	37	37
17	50	59	40	38	40	50	46	40	37	37	37	38
18	45	65	42	37	40	52	44	41	37	38	37	40
19	44	149	134	36	40	62	42	40	37	38	38	40
20	44	87	115	38	40	77	46	39	38	38	45	40
21	44	61	118	39	40	86	46	39	38	38	42	40
22	44	53	67	40	42	97	47	*40	38	35	38	41
23	55	50	58	39	44	88	56	40	40	38	38	40
24	*67	50	50	40	*45	83	53	40	42	35	40	40
25	50	47	47	40	46	70	50	40	46	38	40	40
26	46	45	57	40	46	67	48	39	44	38	38	38
27	46	46	50	40	50	71	46	39	40	37	39	38
28	45	48	48	40	52	74	46	38	38	42	39	38
29	45	47	46	40	-	71	46	38	37	38	40	37
30	45	46	44	40	-------	70	44	39	38	38	46	40
31	45	-------	43	40	-------	68	-------	40	-------	40	42	-------
Total	1,390	1,793	1,626	1,212	1,156	1,900	1,652	1,273	1,186	1,194	1,194	1,168
Mean	44.8	59.8	52.5	39.1	41.3	61.3	55.1	41.1	39.5	38.5	38.5	38.9
Cfsm	1.66	2.21	1.94	1.45	1.53	2.27	2.04	1.52	1.46	1.43	1.43	1.44
In.	1.91	2.47	2.24	1.67	1.59	2.62	2.28	1.75	1.63	1.65	1.65	1.61

Calendar year 1957: Max 181 Min 38 Mean 51.0 Cfsm 1.89 In. 25.66
Water year 1957-58: Max 169 Min 34 Mean 45.9 Cfsm 1.70 In. 23.07

Peak discharge (base, 150 cfs).--Nov. 15 (10 a.m.) 190 cfs (4.07 ft); Nov. 19 (2 to 3 p.m.) 167 cfs (3.81 ft); Dec. 19 (3 p.m.) 160 cfs (3.73 ft); Apr. 6 (7 to 8 p.m.) 170 cfs (3.84 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 11-13, Jan. 1-20, Feb. 3, 4, 8-22.

1395. Rifle River at "The Ranch" near Lupton, Mich.

Location.--Lat 44°23'35", long 84°02'15", in SW¼ sec.11, T.34 N., R.3 E., on left bank a quarter of a mile downstream from Houghton Creek and 3 miles southwest of Lupton.

Drainage area.--54 sq mi, approximately.

Records available.--July 1950 to September 1958.

Gage.--Water-stage recorder and wooden control. Altitude of gage is 850 ft (by barometer).

Average discharge.--8 years, 90.7 cfs.

Extremes.--Maximum discharge during year, 282 cfs Nov. 15 (gage height, 8.77 ft); minimum, 55 cfs Aug. 19.
1950-58: Maximum discharge, 750 cfs Apr. 4, 1956 (gage height, 9.90 ft); minimum, 48 cfs Oct. 8, 1952.

Remarks.--Records good except those for periods of ice effect, which are fair. Prior to June 25, 1955, some regulation at low flow caused by sawmill on Sandback Creek at Rose City. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-26)

Oct. 1 to Nov. 15		Nov. 16 to Mar. 19, July 29 to Sept. 30		Mar. 20 to July 28	
6.6	61	6.2	54	6.3	62
7.0	82	6.8	79	7.0	98
8.0	179	7.5	132	8.0	191
9.0	320	9.0	320		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	63	80	86	87	78	89	117	78	83	69	61	69
2	62	79	84	b86	77	92	112	76	78	68	62	64
3	72	78	81	b85	b76	91	107	84	72	67	62	66
4	78	77	77	b84	b76	89	104	82	69	67	61	77
5	71	77	80	b84	75	87	100	78	69	97	64	69
6	68	76	83	83	76	87	180	76	67	81	60	94
7	67	75	83	84	75	84	180	74	67	73	63	77
8	66	*93	81	b82	b75	84	136	74	70	70	62	73
9	66	99	*80	b82	b75	83	118	76	*70	69	62	*69
10	66	87	80	82	*b75	*80	108	74	70	72	62	69
11	66	81	b78	78	b75	79	103	74	69	70	*63	67
12	65	80	b78	b78	b74	80	100	72	84	69	62	67
13	65	80	b77	b76	b70	81	96	72	87	68	61	66
14	63	126	77	76	b72	81	*93	71	66	*68	62	66
15	63	258	77	75	b72	83	92	70	66	68	62	66
16	70	159	78	*76	b72	83	90	69	67	69	62	67
17	80	128	78	76	b72	83	82	69	67	68	62	67
18	74	128	81	b75	b72	86	74	70	67	68	60	69
19	70	232	181	b76	b72	95	78	69	66	69	56	66
20	68	167	172	80	b72	120	82	68	68	68	63	65
21	68	128	196	75	b72	132	83	68	68	69	68	66
22	67	112	134	77	b72	145	86	*69	67	66	66	66
23	83	104	119	77	74	143	106	69	69	69	66	65
24	*105	101	108	77	72	141	104	69	74	66	66	65
25	92	95	100	81	74	128	100	69	81	69	67	68
26	83	94	112	81	77	123	92	69	78	68	64	65
27	80	90	104	80	83	125	87	68	72	68	65	65
28	80	94	100	81	86	131	85	67	69	77	65	65
29	80	92	94	80	-	129	84	67	68	64	66	64
30	80	90	89	79	-------	127	81	68	68	62	77	65
31	81	-------	88	78	-------	121	-------	69	-------	64	73	-------
Total	2,262	3,260	3,036	2,471	2,091	3,182	3,060	2,228	2,096	2,160	1,975	2,047
Mean	73.0	109	97.9	79.7	74.7	103	102	71.9	69.9	69.7	63.7	68.2
Cfsm	1.35	2.02	1.81	1.48	1.38	1.91	1.89	1.33	1.29	1.29	1.18	1.26
In.	1.56	2.25	2.09	1.71	1.44	2.20	2.11	1.53	1.44	1.49	1.36	1.41

Calendar year 1957: Max 288 Min 53 Mean 89.7 Cfsm 1.66 In. 22.58
Water year 1957-58: Max 258 Min 56 Mean 81.8 Cfsm 1.51 In. 20.59

Peak discharge (base, 250 cfs).--Nov. 15 (11 a.m. to 12 m.) 282 cfs (8.77 ft); Nov. 19 (3 p.m.) 251 cfs (8.54 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1400. Prior Creek near Selkirk, Mich.

Location.--Lat 44°20'10", long 84°04'00", in SE¼ sec.33, T.23 N., R.3 E., on right bank a quarter of a mile upstream from mouth, half a mile downstream from Ammond Creek, and 1½ miles north of Selkirk.

Drainage area.--19 sq mi, approximately.

Records available.--September 1950 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 840 ft (by barometer).

Average discharge.--8 years, 16.2 cfs.

Extremes.--Maximum discharge during year, 125 cfs Apr. 6 (gage height, 4.12 ft); minimum, 5.0 cfs Aug. 18.
1950-58: Maximum discharge, 186 cfs Mar. 22, 1955, Apr. 4, 1956, from rating curve extended above 110 cfs; maximum gage height, 5.23 ft Apr. 4, 1956 (backwater from logs); minimum discharge, 3.8 cfs Sept. 10, 1950.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 19-28)

1.0	5.0
1.2	7.5
1.6	16
2.0	30
4.0	122

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.4	9.0	12	14	10	17	25	11	13	7.6	5.7	7.5
2	7.2	9.0	11	14	10	17	23	10	11	7.5	5.5	7.2
3	7.0	9.0	11	13	10	17	21	12	9.4	7.4	5.5	7.2
4	7.0	9.0	11	13	10	17	20	12	8.7	8.0	5.5	8.0
5	7.0	9.0	13	13	10	17	18	10	8.4	14	5.5	7.2
6	7.2	9.0	12	13	10	16	71	9.6	8.0	11	5.3	12
7	7.2	9.0	13	13	10	16	89	9.4	7.8	8.6	5.4	9.4
8	7.2	a10	12	13	10	16	36	9.2	9.0	7.8	5.5	9.0
9	7.0	a12	11	13	10	15	25	9.2	8.6	7.4	5.3	8.1
10	7.0	a10	10	13	*10	15	*21	9.2	8.2	7.8	5.3	8.0
11	7.2	a10	11	12	10	14	19	9.0	8.1	7.5	5.2	7.5
12	7.2	*a10	11	12	10	15	19	8.7	7.6	7.0	5.2	7.4
13	7.2	12	11	12	9.5	17	17	8.6	7.6	6.9	5.2	7.4
14	7.2	a20	11	12	9.5	19	16	8.2	7.6	6.9	5.2	7.2
15	7.2	a60	11	11	10	19	15	8.2	7.5	7.0	5.3	7.5
16	8.4	a40	*11	11	10	21	15	8.0	*7.5	6.9	5.3	*7.5
17	11	a30	11	11	10	*20	14	7.8	7.2	6.6	5.2	7.6
18	9.2	a30	11	10	10	25	13	8.2	7.4	6.6	5.2	8.2
19	8.1	a50	30	9.0	10	35	12	7.8	7.2	6.9	*5.2	7.5
20	7.5	a40	80	9.0	11	45	12	7.5	8.1	6.4	6.6	7.5
21	7.5	32	81	*9.0	11	55	12	7.4	7.8	*6.3	6.2	7.6
22	7.5	22	44	9.0	12	60	14	7.6	7.6	6.3	5.6	7.8
23	12	17	*29	9.5	13	53	20	*7.9	7.8	6.2	5.6	7.4
24	*22	19	21	10	14	45	20	8.1	8.2	6.2	5.8	7.4
25	15	14	17	11	15	37	18	8.4	12	6.3	5.9	7.8
26	11	14	30	11	15	32	14	8.1	11	6.2	5.8	7.5
27	9.6	14	24	11	16	35	13	8.0	8.8	6.0	5.8	7.2
28	9.2	17	19	11	16	41	12	7.6	8.2	7.4	7.2	7.2
29	9.0	16	15	11	-	36	12	7.6	7.6	6.2	8.6	7.4
30	9.0	15	14	11	-------	33	11	7.6	7.5	5.9	9.6	8.0
31	9.0	-------	14	10	-------	29	-------	8.2	-------	5.8	8.4	-------
Total	272.2	577.0	622	354.5	312.0	849	647	270.1	254.4	224.6	182.6	234.2
Mean	8.78	19.2	20.1	11.4	11.1	27.4	21.6	8.71	8.48	7.25	5.89	7.81
Cfsm	0.462	1.01	1.06	0.600	0.584	1.44	1.14	0.458	0.446	0.382	0.310	0.411
In.	0.53	1.13	1.22	0.69	0.61	1.66	1.27	0.53	0.50	0.44	0.36	0.46

Calendar year 1957: Max 110 Min 5.9 Mean 16.1 Cfsm 0.847 In. 11.46
Water year 1957-58: Max 89 Min 5.2 Mean 13.1 Cfsm 0.689 In. 9.40

Peak discharge (base, 100 cfs).--Apr. 6 (10:30 p.m.) 125 cfs (4.12 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.
Note.--Stage-discharge relation affected by ice Dec. 1-4, 11-19, Dec. 29 to Mar. 13, Mar. 20-24.

1405. Rifle River at Selkirk, Mich.

Location.--Lat 44°18'50", long 84°04'00", in NE¼ sec.9, T.22 N., R.3 E., on left bank at upstream side of highway bridge at Selkirk, 1½ miles downstream from Prior Creek.

Drainage area.--110 sq mi.

Records available.--September 1950 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 828.47 ft above mean sea level, datum of 1929.

Average discharge.--8 years, 142 cfs.

Extremes.--Maximum discharge during year, 439 cfs Apr. 7 (gage height, 2.81 ft); maximum gage height, 3.62 ft Jan. 10 (backwater from ice); minimum discharge, 55 cfs Aug. 19. 1950-58: Maximum discharge, 1,680 cfs Apr. 4, 1956 (gage height, 4.94 ft); minimum, that of Aug. 19, 1958.

Remarks.--Records good except those for periods of ice effect, which are fair. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 26		Feb. 27 to Sept. 30	
1.7	91	1.4	48
2.5	310	1.8	128
3.0	500	2.2	234
		3.0	515

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	91	106	108	125	106	146	195	121	126	86	78	88
2	91	106	106	120	104	150	184	114	121	86	78	82
3	95	106	105	120	100	169	176	128	103	84	76	82
4	110	104	100	120	100	158	171	130	94	82	74	99
5	97	102	99	120	100	153	166	121	92	128	78	88
6	95	102	104	120	102	148	310	119	90	119	74	133
7	93	102	106	120	100	146	395	114	88	97	78	110
8	93	129	102	115	100	143	255	114	97	88	80	101
9	95	157	97	115	100	136	206	114	97	84	74	90
10	95	129	99	115	100	133	*187	114	92	90	74	90
11	95	119	100	110	100	130	174	114	94	86	73	86
12	95	*119	100	110	100	130	169	112	82	84	76	88
13	95	117	100	110	95	136	161	110	86	80	69	84
14	91	190	100	110	98	138	156	107	86	80	73	84
15	91	337	100	105	100	140	150	107	84	80	73	84
16	106	280	*102	110	100	146	146	105	*84	82	71	*88
17	131	184	97	110	*100	*146	140	103	86	78	71	88
18	119	173	104	105	100	156	123	105	84	78	*71	92
19	110	307	265	105	100	174	126	103	84	82	56	86
20	106	307	304	110	100	212	133	101	88	78	74	84
21	104	196	331	*115	100	237	133	99	88	*78	86	86
22	104	162	241	115	100	282	140	*101	86	78	80	88
23	141	141	196	115	100	270	182	99	86	78	78	84
24	*182	136	168	115	100	264	182	97	97	78	80	84
25	144	124	144	110	100	226	171	99	110	78	84	90
26	124	124	182	110	105	212	156	94	116	80	78	88
27	114	117	168	106	130	217	143	94	99	78	80	86
28	110	124	152	106	136	237	138	92	88	97	80	84
29	108	124	141	106	-	223	133	88	84	88	90	84
30	108	119	135	106	-------	220	128	90	84	82	101	88
31	108	-------	129	106	-------	209	-------	92	-------	82	101	-------
Total	3,341	4,643	4,385	3,485	2,876	5,595	5,229	3,301	2,795	2,649	2,409	2,689
Mean	108	155	141	112	103	180	174	106	93.2	85.5	77.7	89.6
Cfsm	0.982	1.41	1.28	1.02	0.936	1.64	1.58	0.964	0.847	0.777	0.706	0.815
In.	1.13	1.57	1.48	1.18	0.97	1.89	1.76	1.11	0.94	0.90	0.81	0.91

Calendar year 1957: Max 496 Min 72 Mean 136 Cfsm 1.24 In. 16.77
Water year 1957-58: Max 395 Min 56 Mean 119 Cfsm 1.08 In. 14.65

Peak discharge (base, 500 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 3, 4, 11-15, 30, Jan. 1-26, Feb. 3-5, 7-26.

1410. South Branch Shepards Creek near Selkirk, Mich.

Location.--Lat 44°18'25", long 84°05'10", in SE¼ sec.8, T.22 N., R.3 E., on right bank 200 ft upstream from mouth and 1 mile southwest of Selkirk.
Drainage area.--1.20 sq mi.
Records available.--October 1951 to September 1958.
Gage.--Water-stage recorder and V-notch sharp-crested weir. Altitude of gage is 845 ft (by barometer).
Extremes.--1955-56: Maximum discharge during water year, 181 cfs Apr. 3 (gage height, 4.43 ft), from rating curve extended above 40 cfs by logarithmic plotting; minimum, 0.02 cfs Oct. 3, 4, Aug. 3.
1956-57: Maximum discharge during water year, 14 cfs May 15 (gage height, 2.59 ft); no flow Aug. 4-8, 22, 23, 27.
1957-58: Maximum discharge during water year, 16 cfs Apr. 6 (gage height, 2.61 ft); no flow for many days in July and August.
1951-58: Maximum discharge, that of Apr. 3, 1956; no flow at times each year except 1956.
Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated.

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
1337	1952	Apr. 13, 1952	126	4.00
1337	1954	June 25, 1954	74	3.59
1387	1955	Oct. 3, 1954	110	3.88

Remarks.--Records fair except those below 1 cfs and those for periods of ice effect or no gage-height record, which are poor.
Revisions.--The figures of peak discharge for water year 1955 have been revised as shown below, superseding those published in WSP 1387.

Revised peak discharge.--1954-55: Oct. 3 (3 a.m.) 110 cfs (3.88 ft); Mar. 22 (7 a.m.) 73 cfs (3.58 ft).

Discharge, in cubic feet per second, water year October 1955 to September 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.04	0.14	0.11	0.09	0.06	0.07	b3.5	0.63	1.2	1.1	0.05	0.25
2	.04	.14	.11	.09	.07	b.15	b7.0	.43	.55	.98	.03	.15
3	.03	.25	.13	.10	.07	b.20	b13	.37	.33	.15	.03	.10
4	.02	.19	.53	.11	.06	b.20	23	.50	.55	.07	.11	.07
5	.05	.19	.28	a.11	.06	b.17	2.8	.37	.33	.36	.19	.07
6	.07	.25	.20	a.10	.07	b.30	1.9	1.2	.22	.19	*.14	.13
7	.10	.20	.18	a.10	.07	b1.5	7.0	.74	.16	.10	.07	.09
8	.08	.18	.16	a.09	.07	b.90	5.2	.37	.14	.13	.05	.07
9	.05	.16	.14	a.09	a.07	b.55	1.6	.35	.10	.13	.34	.06
10	*.05	.15	.11	a.10	.08	.39	*.90	.41	.07	.11	.83	.07
11	.05	.15	.11	.11	.08	.26	.58	2.7	.06	.07	.18	.08
12	.05	.15	*.12	*.11	.08	.22	.48	3.4	.07	.08	.11	.07
13	.05	.14	.12	.10	.08	.18	.41	3.2	.05	.17	.09	.06
14	.05	*a.13	.12	.08	.08	b.17	.48	1.4	.04	.11	.07	.05
15	.05	a.13	.10	.07	.08	b.17	.52	*.63	.03	.08	.05	.05
16	a.05	a.15	.10	.08	b.07	b.17	.39	.43	.04	*.14	.05	.16
17	a.06	a.13	.10	.07	b.07	b.19	.31	.93	.05	.15	.07	.15
18	.07	a.13	.09	b.06	.08	.15	.26	1.2	.04	.07	1.1	.10
19	.06	a.13	a.09	b.06	.08	.13	.23	.60	.03	.06	2.5	.12
20	.07	a.13	a.09	b.06	.08	.14	.22	.37	.13	.05	.33	.10
21	.14	a.13	a.09	b.06	.08	b.15	.20	.31	*.27	2.3	.15	*.09
22	.09	.12	a.09	b.06	.09	b.25	.19	.23	.10	.48	.20	.08
23	.08	.31	.09	b.05	*.09	b.35	.18	.16	.09	.19	.20	.08
24	.10	.19	.12	b.05	.09	b.25	*.16	.14	.07	.11	.15	.07
25	.08	.14	.13	a.05	.09	.50	.16	.13	.06	.07	.08	.07
26	.08	.14	.12	a.05	.08	1.6	.16	.13	.07	a.06	.06	.06
27	.07	.14	.10	.05	.07	b2.2	.18	.12	.16	a.05	*.07	.06
28	.07	.11	.09	.06	.06	b3.5	.39	.11	.10	a.04	.57	.05
29	.12	.08	.10	.07	.06	*1.7	.78	.11	.09	a.04	.83	.05
30	.13	.11	.09	.07	-------	1.4	1.3	14	.10	.04	.85	.12
31	.10	-------	.08	.07	-------	1.4	-------	6.7	-------	a.04	.48	-------
Total	2.15	4.69	4.09	2.42	2.17	19.51	73.48	42.37	5.30	7.72	10.03	2.73
Mean	0.069	0.156	0.132	0.078	0.075	0.629	2.45	1.37	0.177	0.249	0.324	0.091
Cfsm	0.058	0.130	0.110	0.065	0.062	0.524	2.04	1.14	0.148	0.208	0.270	0.076
In.	0.07	0.14	0.13	0.07	0.07	0.60	2.28	1.31	0.17	0.24	0.31	0.08

Calendar year 1955: Max 20 Min 0 Mean 0.389 Cfsm 0.324 In. 4.41
Water year 1955-56: Max 23 Min 0.02 Mean 0.483 Cfsm 0.402 In. 5.47

Peak discharge (base, 10 cfs).--Apr. 3 (11 p.m.) 181 cfs (4.42 ft); Apr. 7 (6:30 p.m.) 19 cfs (2.77 ft); May 30 (8 p.m.) 77 cfs (3.62 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.
b Stage-discharge relation affected by ice.

1410. South Branch Shepards Creek near Selkirk, Mich.--Continued

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.07	0.08	0.17	0.08	0.07	0.28	0.20	0.31	0.15	0.18	0.01	0.02
2	.07	.09	.18	.07	.08	.19	.39	.28	.12	.11	.01	.03
3	.07	.09	.20	.07	.08	.10	.26	.30	.12	.10	.01	.04
4	.07	.09	.22	.08	.08	.07	.22	.28	.11	.10	0	.08
5	.07	.09	.43	.08	.07	.05	3.4	.19	.10	.14	0	.03
6	.07	.10	.66	.08	.06	.05	4.8	.19	.10	.08	0	.02
7	.07	.11	.48	b.07	.07	.07	1.7	.13	.09	.06	0	.02
8	.07	.10	.30	b.07	.08	.08	.90	.15	.08	.46	0	.01
9	.07	.10	.20	b.08	b.10	.05	.80	.23	.07	.30	.12	.02
10	.07	.10	.15	b.07	b.20	.04	.52	.60	.07	.10	.06	.04
11	.07	.12	.16	.07	b.15	.74	.80	.48	.10	.10	.03	.04
12	.07	.14	.13	.07	.10	b5.0	.80	.43	.16	.14	.01	.11
13	.07	.13	.11	.06	.08	1.1	.50	.43	.15	.22	.01	.09
14	.07	.13	.11	*.05	.07	.93	.40	.55	.25	.11	.02	.05
15	.07	.34	.13	.05	.07	1.2	.30	6.7	.12	.07	.02	.05
16	.10	.41	.18	.04	.07	.46	.30	2.2	.10	.06	.01	*.05
17	.09	.23	.18	.04	.07	.31	.37	.98	*.10	*.05	.01	.05
18	.07	*.18	.14	.04	.07	.23	.39	.68	.10	.05	.01	*.04
19	.07	.18	.11	.05	.07	*.19	.50	.50	.07	.04	.01	.03
20	.07	.16	.12	.06	.05	.18	.63	.39	.06	.03	.01	.04
21	.07	.58	.15	.15	.05	1.8	.50	.30	.05	.05	.01	.05
22	.07	.74	.16	b4.0	.05	1.4	.39	.37	.09	.42	0	.04
23	.07	.30	.19	b1.0	.05	.84	.43	.33	.70	.20	0	.04
24	.07	.20	.33	b.40	.06	.55	1.7	.28	.40	.10	.01	.04
25	.07	.18	.25	b.20	b3.0	.33	3.5	.20	.22	.05	.01	.03
26	.07	.17	.19	b.12	b1.0	.23	2.3	.25	.53	.04	.01	.02
27	.07	.18	b.16	b.09	*.54	.20	1.2	.20	.66	.03	0	.02
28	.07	.18	b.13	.11	.31	.19	.90	.15	.71	.03	.01	.02
29	.07	.16	b.10	.10	-	.20	.60	.15	1.7	.02	.01	.02
30	.07	.16	.07	.09	-------	.19	.37	.18	.48	.02	.01	.02
31	*.08	-------	.09	.08	-------	.16	-------	.19	-------	.01	.02	-------
Total	2.23	5.80	6.18	7.82	6.75	17.39	29.47	18.58	7.76	3.47	0.44	1.16
Mean	0.072	0.193	0.199	0.246	0.241	0.561	0.982	0.599	0.259	0.112	0.014	0.039
Cfsm	0.060	0.161	0.166	0.205	0.201	0.468	0.818	0.499	0.216	0.093	0.012	0.032
In.	0.07	0.18	0.19	0.24	0.21	0.54	0.91	0.58	0.24	0.11	0.01	0.04

Calendar year 1956: Max 23 Min 0.03 Mean 0.492 Cfsm 0.410 In. 5.57
Water year 1956-57: Max 6.7 Min 0 Mean 0.293 Cfsm 0.244 In. 3.32

Peak discharge (base, 10 cfs).--May 15 (2 a.m.) 14 cfs (2.59 ft).

* Discharge measurement made on this day. b Stage-discharge relation affected by ice.
Note.--No gage-height record Oct. 2-24, Nov. 23-28, Nov. 29 to Dec. 3, Jan. 19-21, Apr. 11-16, June 23, 24, July 22-29; discharge estimated on basis of weather records and records for stations on nearby streams.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.03	0.12	0.14	b0.18	0.14	0.50	*0.78	0.12	0.24	0.02	0	0.01
2	.03	.12	.14	.17	.14	.80	.68	.12	.11	.01	0	.01
3	.03	.12	.12	.17	.14	1.2	.58	.14	.07	.01	0	.01
4	.03	.12	.10	.14	.14	1.1	.50	.14	.06	.02	0	.02
5	.03	.12	.12	.14	.12	.97	.42	.12	.05	.09	0	.02
6	.03	.10	.17	.14	.12	1.1	7.8	.12	.05	.05	0	.16
7	.03	.10	.17	.14	.12	1.0	*6.7	.11	.06	.03	0	.05
8	.04	a.15	.12	.12	.12	.97	1.1	.11	.07	.02	0	.06
9	.04	.38	.12	.10	.10	.97	.75	.10	.05	.01	0	.03
10	.04	.21	.12	.12	.10	*.75	.60	.10	.04	.02	0	.02
11	.04	.17	.08	.12	.10	.65	.50	.10	.03	.01	0	.01
12	.04	*a.15	.08	.10	.10	.70	.45	.09	.03	.01	0	a.01
13	.04	a.15	.08	.10	.08	a.75	.38	.09	.03	.01	0	a.01
14	.04	*a3.5	.10	.10	.08	a.80	*.31	.07	.02	0	0	a.01
15	.05	1.3	.12	.12	.08	a.80	.26	.06	.02	.01	0	a.02
16	.21	.65	*.12	*.12	.08	a1.0	.23	.08	*.02	*a.01	0	a.02
17	.21	.45	.12	.10	.08	*a1.2	.21	.05	.01	a0	0	.02
18	.12	.81	.18	.08	.08	1.4	.19	.06	.01	a0	0	.02
19	.10	2.7	3.9	.06	.08	2.4	.21	.05	.01	a.01	0	.01
20	.08	1.0	3.3	.08	.08	3.3	.17	.04	.03	a0	0	.01
21	.08	.70	2.7	.10	.08	4.3	*a.17	.04	.03	a0	0	.01
22	.08	.50	1.2	.10	.10	4.0	a.25	.04	.02	0	0	.01
23	.44	.36	.97	.12	.10	2.8	a.50	.04	.02	0	0	.01
24	*.79	.31	.66	.12	*.12	2.0	*a.50	.04	.02	0	0	.01
25	.36	a.25	.54	.14	.12	1.4	.31	.04	.11	0	0	.02
26	.21	a.21	1.5	.14	.14	1.3	.21	.04	.08	0	0	.01
27	.17	.21	.80	.14	.21	1.5	.19	.03	.04	0	0	.01
28	.14	.31	b.50	.14	.26	1.6	.17	*.03	.03	.11	0	.01
29	.12	.21	b.35	.14	-	1.3	.16	.03	.02	.01	0	.01
30	.12	.17	b.25	.14	-------	1.2	.13	.03	.02	.01	.28	.01
31	.12	-------	b.20	.14	-------	.91	-------	.04	-------	0	.03	-------
Total	3.89	15.63	19.07	3.82	3.21	44.67	25.41	2.25	1.38	0.47	0.31	0.64
Mean	0.125	0.521	0.615	0.123	0.115	1.44	0.847	0.073	0.048	0.015	0.010	0.021
Cfsm	0.104	0.434	0.512	0.102	0.096	1.20	0.706	0.061	0.038	0.012	0.008	0.018
In.	0.12	0.48	0.59	0.12	0.10	1.38	0.79	0.07	0.04	0.01	0.01	0.02

Calendar year 1957: Max 6.7 Min 0 Mean 0.360 Cfsm 0.300 In. 4.07
Water year 1957-58: Max 7.8 Min 0 Mean 0.331 Cfsm 0.276 In. 3.73

Peak discharge (base, 10 cfs).--Apr. 6 (9 a.m.) 16 cfs (2.61 ft).

* Discharge measurement made on this day. a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams. b Stage-discharge relation affected by ice.

1415. West Branch Rifle River near Selkirk, Mich.

Location.--Lat 44°15'40", long 84°06'30", in NE¼ sec.31, T.22 N., R.3 E., on left bank half a mile downstream from Campbell Creek, 3½ miles upstream from mouth, 4 miles southwest of Selkirk, and 6½ miles southeast of town of West Branch.

Drainage area.--52 sq mi, approximately.

Records available.--February 1952 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 796 ft (by barometer).

Average discharge.--6 years, 57.2 cfs.

Extremes.--Maximum discharge during year, 468 cfs Apr. 6 (gage height, 6.09 ft); minimum, 22 cfs Aug. 17, 19.
1952-58: Maximum discharge, 1,160 cfs Apr. 4, 1956 (gage height, 8.80 ft), from rating curve extended above 660 cfs by logarithmic plotting; minimum, 19 cfs Aug. 3, 1953.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Records of water temperatures for the water year 1958 are given in WSP 1571.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 6		Apr. 7 to Sept. 30	
2.7	31	2.5	21
3.0	52	3.0	56
4.0	149	4.0	149
6.0	450	5.0	285

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	39	48	65	42	50	78	41	52	31	28	37
2	33	40	48	62	42	55	72	40	52	29	27	32
3	33	39	45	58	42	56	67	44	42	29	26	30
4	33	38	45	56	42	57	65	48	36	30	25	31
5	33	39	45	54	42	57	62	42	32	42	26	31
6	32	38	42	52	43	56	305	41	32	50	25	42
7	32	37	44	50	43	55	249	39	31	36	25	44
8	34	53	43	49	44	54	125	37	34	33	24	36
9	32	73	42	48	44	56	88	37	32	30	25	36
10	32	52	41	47	45	59	76	38	32	29	24	34
11	35	48	43	46	45	62	71	45	31	29	24	34
12	35	*48	43	45	44	65	67	34	31	30	26	32
13	35	50	43	45	44	74	61	34	29	29	26	31
14	34	a150	44	44	43	73	58	34	29	28	25	29
15	33	a230	45	43	43	71	55	34	30	30	24	29
16	39	134	*45	42	43	75	*53	34	25	29	23	31
17	54	88	45	42	43	79	50	36	*25	28	22	*30
18	49	90	50	41	43	90	48	36	28	29	23	33
19	40	a250	a190	41	43	108	46	32	29	28	*23	32
20	38	157	a170	40	43	137	46	33	29	29	27	32
21	38	98	a175	*40	43	153	47	34	29	28	29	31
22	38	79	127	40	44	161	49	*32	30	*28	28	31
23	55	66	99	40	44	150	64	32	28	28	27	31
24	*91	59	79	40	44	*139	65	33	31	28	26	33
25	66	54	75	40	*45	108	60	35	39	28	26	32
26	50	53	90	40	45	97	52	31	43	26	28	32
27	46	52	85	41	46	100	52	32	37	26	28	31
28	44	54	74	41	48	109	46	34	34	29	29	30
29	42	52	70	41	-	104	46	31	34	33	34	30
30	40	51	70	42	-------	92	43	31	30	30	46	31
31	39	-------	68	42	-------	88	-------	32	-------	29	50	-------
Total	1,269	2,291	2,171	1,417	1,222	2,690	2,264	1,116	996	942	849	980
Mean	40.9	76.4	70.0	45.7	43.6	86.8	75.5	36.0	33.2	30.4	27.4	32.7
Cfsm	0.787	1.47	1.35	0.879	0.838	1.67	1.45	0.692	0.638	0.585	0.527	0.629
In.	0.91	1.64	1.56	1.01	0.87	1.92	1.62	0.80	0.71	0.67	0.61	0.70

Calendar year 1957: Max 330 Min 27 Mean 60.4 Cfsm 1.16 In. 15.77
Water year 1957-58: Max 305 Min 22 Mean 49.9 Cfsm 0.960 In. 13.02

Peak discharge (base, 300 cfs).--Nov. 15 (2 a.m.) 330 cfs (5.30 ft); Apr. 6 (5 p.m.) 468 cfs (6.09 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.
Note.--Stage-discharge relation affected by ice Nov. 11, 25, 29, Dec. 1, 3-5, 8, 11-18, 25, 26, Dec. 29 to Mar. 10.

1420. Rifle River at Michigan Highway 70, near Sterling, Mich.

Location.--Lat 44°04', long 84°02', in SW¼ sec.5, T.19 N., R.4 E., on left bank 30 ft downstream from bridge on State Highway 70, 3 miles north of Sterling, and 18 miles upstream from mouth.

Drainage area.--320 sq mi, approximately.

Records available.--October 1936 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Altitude of gage is 641 ft (by barometer). Jan. 13, 1937, to June 7, 1938, chain gage and June 8, 1938, to Jan. 10, 1939, wire-weight gage, at same site and datum.

Average discharge.--22 years, 306 cfs.

Extremes.--Maximum discharge during year, 1,330 cfs Apr. 7 (gage height, 5.77 ft); maximum gage height, 6.93 ft Dec. 19 (ice jam); minimum discharge, 112 cfs Aug. 20.
1936-58: Maximum discharge, 5,340 cfs Mar. 28, 1950 (gage height, 13.74 ft), from rating curve extended above 2,900 cfs; minimum, 87 cfs Dec. 2, 1946.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diurnal fluctuation during low flow caused by powerplant above station.

Revisions (water years).--WSP 1437: 1937(M), 1938, 1939-40(M).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 19		Dec. 20 to Sept. 30	
1.5	147	1.1	110
2.5	332	1.6	174
4.0	730	2.5	372
6.0	1,410	6.0	1,420

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	161	197	252	316	210	360	469	a250	232	147	134	160
2	160	197	252	300	210	390	433	a230	261	148	128	144
3	158	196	252	290	210	410	406	a250	211	143	128	138
4	168	192	235	280	210	410	388	261	185	143	126	141
5	168	190	230	270	210	400	367	241	171	181	124	148
6	164	189	233	270	205	370	860	228	164	226	128	174
7	161	186	233	260	205	360	1,210	222	160	179	124	196
8	158	223	223	250	205	350	845	215	171	155	128	166
9	158	321	225	240	205	330	603	211	172	148	124	154
10	155	272	223	240	200	320	500	211	166	148	124	148
11	158	235	158	240	200	320	447	217	166	148	124	143
12	160	229	220	235	200	320	425	207	155	144	126	140
13	161	*229	240	230	200	330	393	196	151	139	124	139
14	158	419	240	230	200	340	362	194	151	138	123	135
15	158	1,060	240	230	200	350	*342	192	150	138	123	134
16	181	816	240	230	205	377	330	187	*145	140	121	*136
17	242	541	240	220	205	380	311	185	143	135	121	140
18	225	455	300	220	205	406	285	190	143	135	*118	148
19	196	873	600	220	205	466	263	187	145	138	118	144
20	184	865	884	215	210	570	265	178	151	135	128	141
21	176	578	860	210	210	650	272	*172	158	*134	169	140
22	174	436	656	*210	210	728	296	172	151	134	140	141
23	*229	366	*533	210	215	710	a330	172	151	129	135	140
24	414	339	425	210	*220	*698	a370	172	158	132	134	141
25	359	301	382	210	230	626	a370	174	194	130	138	148
26	268	284	542	210	240	564	a330	171	217	131	134	147
27	238	272	469	210	250	558	a300	168	185	129	134	141
28	220	282	414	210	290	589	a280	169	164	145	134	139
29	214	282	360	210	-	578	a270	164	154	152	147	139
30	206	274	340	210	-------	547	a260	161	148	139	171	a140
31	205	-------	330	210	-------	508	-------	168	-------	132	187	-------
Total	6,137	11,299	11,031	7,296	5,965	14,315	12,582	6,113	5,073	4,495	4,117	4,385
Mean	198	377	356	235	213	462	419	197	169	145	133	146
Cfsm	0.619	1.18	1.11	0.734	0.666	1.44	1.31	0.616	0.528	0.453	0.416	0.456
In.	0.71	1.32	1.28	0.85	0.69	1.66	1.46	0.71	0.59	0.52	0.48	0.51

Calendar year 1957: Max 1,380 Min 139 Mean 312 Cfsm 0.975 In. 13.25
Water year 1957-58: Max 1,210 Min 118 Mean 254 Cfsm 0.794 In. 10.78

Peak discharge (base, 1,600 cfs).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.
Note.--Stage-discharge relation affected by ice Dec. 5, 12-19, 31, Jan. 2 to Mar. 15.

1435. North Branch Kawkawlin River near Kawkawlin, Mich.

Location.--Lat 43°40'05", long 83°58'15", in SE¼ sec.27, T.15 N., R.4 E., on left bank 50 ft upstream from bridge on Beaver Road, 1¾ miles northwest of Kawkawlin, and 2½ miles upstream from mouth.

Drainage area.--101 sq mi.

Records available.--March 1951 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 586.00 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Sept. 27, 1951, staff gage at same site and datum.

Average discharge.--7 years, 57.5 cfs.

Extremes.--Maximum discharge during year, 714 cfs Mar. 6 (gage height, 6.14 ft); no flow at times.
1951-58: Maximum discharge, 1,100 cfs Mar. 13, 1955; maximum gage height, 7.67 ft June 22, 1954; no flow at times each year.

Remarks.--Records good except those for periods of ice effect or no gage-height record and those below 10 cfs, which are poor.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 3 to May 5, May 29 to June 15)

0.5	0	2.0	27
.6	.1	2.5	56
.7	.4	3.0	95
.8	.9	4.0	210
.9	1.5	5.0	385
1.1	3.3	6.0	665
1.3	6.0	7.0	1,080
1.7	15		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.7	65	63	110	15	95	64	57	0.1		0	0.2
2	2.4	65	60	80	15	140	55	46	*.2		0	.1
3	2.0	46	54	65	*15	240	49	39	.2		0	0
4	1.6	33	46	55	15	400	42	34	.1		*0	0
5	1.3	*26	40	48	15	658	37	*28	0		0	0
6	1.1	20	35	45	15	707	90	24	0		0	0
7	1.0	16	30	*40	15	609	*100	22	0	(*)	0	0
8	*.8	18	30	34	15	480	164	20	0		0	*0
9	.7	22	*25	30	15	415	317	18	0		0	0
10	.6	18	21	28	15	366	277	17	.7		0	0
11	.4	17	17	25	14	339	207	16	.1		0	0
12	.3	20	17	23	14	281	157	16	.1		0	0
13	.3	31	14	22	14	262	123	14	0		0	0
14	.2	163	15	20	13	232	100	13	0		0	0
15	.2	210	17	18	12	249	90	11	0		0	0
16	.4	242	17	17	12	267	80	8.6	0		0	0
17	1.1	434	14	15	12	223	69	7.8	0		0	0
18	1.5	430	14	13	12	211	57	7.4	0		0	.1
19	1.3	400	37	11	12	210	46	5.6	0		0	0
20	1.0	325	78	11	12	197	39	4.1	0		0	0
21	.9	329	90	12	12	192	36	3.9	0		0	0
22	.8	327	125	12	13	199	30	3.3	0		0	0
23	3.2	272	220	13	14	192	30	2.4	0		0	0
24	134	218	230	14	15	*176	36	2.0	0		0	0
25	49	168	190	14	17	163	47	1.3	0		0	0
26	34	135	200	14	24	143	74	.4	.2		0	0
27	40	115	170	15	35	124	99	.2	.2		0	0
28	87	100	170	15	60	105	109	.1	.2		0	0
29	110	84	200	15	-	90	97	.1	.2		0	0
30	97	73	180	15	-------	80	72	0	.1		.1	0
31	76	-------	150	15	-------	72	-------	0	-------		.2	-------
Total	652.8	4,422	2,569	864	467	8,117	2,793	422.2	2.4	0	0.3	0.4
Mean	21.1	147	82.9	27.9	16.7	262	93.1	13.6	0.08	0	0.01	0.01
Cfsm	0.209	1.46	0.821	0.276	0.165	2.59	0.922	0.135	0.00079	0	0.00010	0.00010
In.	0.24	1.63	0.95	0.32	0.17	2.99	1.03	0.16	0.0008	0	0.0001	0.0001

Calendar year 1957: Max 434 Min 0 Mean 56.5 Cfsm 0.559 In. 7.61
Water year 1957-58: Max 707 Min 0 Mean 55.6 Cfsm 0.550 In. 7.49

* Discharge measurement or observation of no flow made on this day.

Note.--Stage-discharge relation affected by ice Dec. 2, 10, 11, Jan. 1 to Mar. 4. No gage-height record Dec. 3-9, Dec. 22 to Jan. 1, June 2, June 26 to July 2, Aug. 31 to Sept. 2; discharge estimated on basis of weather records and records for East Branch Cass River near Cass City, Salt River near North Bradley, and Chippewa River near Midland.

1440. Shiawassee River at Byron, Mich.

Location.--Lat 42°49'25", long 83°56'45", on line between secs.14 and 23, T.5 N., R.4 E., on upstream side of highway bridge at Byron, a quarter of a mile downstream from mill-dam which is just upstream from South Branch Shiawassee River.

Drainage area.--368 sq mi.

Records available.--October 1947 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Wire-weight gage and crest-stage indicator; gage read twice daily. Datum of gage is 811.54 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--11 years, 287 cfs.

Extremes.--Maximum discharge during year, 848 cfs Dec. 22 (gage height, 7.85 ft); minimum observed, 26 cfs Sept. 8 (gage height, 3.83 ft).
1947-58: Maximum discharge, 2,860 cfs May 13, 1948; maximum gage height, 12.58 ft May 15, 1956; minimum discharge observed, 25 cfs Sept. 4, 1956; minimum gage height, 3.83 ft Sept. 8, 1958.

Remarks.--Records fair. Low flow slightly regulated at times by mills above station.

Revisions.--WSP 1144: Drainage area.

Rating tables, water year 1957-58, except periods of ice effect and indefinite stage-discharge relation (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 21, Aug. 11 to Sept. 30)

Oct. 1 to Nov. 16		Nov. 17 to Sept. 30			
4.1	64	3.7	26	5.0	212
4.5	121	4.0	53	7.0	635
5.0	205	4.5	122	8.0	885
7.0	584				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	83	224	233	394	110	580	*168	155	55	83	60	35
2	86	181	204	268	110	565	223	146	60	86	57	32
3	80	147	204	230	110	555	254	153	60	143	56	28
4	83	126	202	200	110	545	256	153	60	200	55	40
5	82	111	186	200	110	*522	256	*136	60	300	54	38
6	82	132	182	200	110	525	258	141	65	350	52	39
7	71	134	186	200	100	540	322	146	65	400	55	35
8	71	140	193	200	100	508	386	132	70	450	65	28
9	70	157	206	190	100	414	330	119	75	420	75	28
10	72	176	186	190	95	354	208	116	85	360	80	35
11	79	193	137	180	95	338	179	117	100	310	69	40
12	79	196	179	170	90	330	201	82	125	270	68	44
13	74	215	208	160	90	326	202	75	134	240	66	42
14	76	251	182	150	90	318	182	70	153	200	65	36
15	87	345	188	150	85	258	199	70	175	160	68	29
16	94	419	177	140	85	242	186	70	179	120	68	38
17	113	430	*186	140	85	201	179	70	148	124	65	58
18	126	364	195	130	80	193	175	65	92	129	66	77
19	113	384	340	130	80	204	164	65	102	124	60	*70
20	111	422	565	140	80	197	171	65	*114	102	63	52
21	105	510	670	*140	85	189	161	65	130	81	72	47
22	119	408	795	130	90	191	166	65	119	74	77	35
23	227	286	740	130	100	175	189	65	100	70	77	40
24	347	182	600	130	150	171	195	65	87	68	73	65
25	364	130	580	120	250	180	240	60	94	66	64	58
26	338	184	575	120	400	175	235	60	100	65	57	52
27	323	182	630	120	550	168	216	60	108	64	59	46
28	281	182	625	120	580	171	179	60	98	*64	*61	35
29	*276	191	555	120	--	164	193	55	90	65	64	31
30	267	218	515	120	------	146	166	55	82	62	58	41
31	247	-------	478	120	-------	146	--------	55	-------	60	37	--------
Total	4,626	7,220	11,102	5,132	4,120	9,591	6,439	2,811	2,985	5,310	1,966	1,274
Mean	149	241	358	166	147	309	215	90.7	99.5	171	63.4	42.5
Cfsm	0.405	0.655	0.973	0.451	0.399	0.840	0.584	0.246	0.270	0.465	0.172	0.115
In.	0.47	0.73	1.12	0.52	0.42	0.97	0.65	0.28	0.30	0.54	0.20	0.13

Calendar year 1957: Max 1,390 Min 31 Mean 268 Cfsm 0.728 In. 9.90
Water year 1957-58: Max 795 Min 28 Mean 171 Cfsm 0.465 In. 6.33

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 3 to Feb. 28. Stage-discharge relation indefinite May 13 to June 11, July 4-15, July 22 to Aug. 10; discharge estimated on basis of 1 discharge measurement and records for stations at Owosso and near Fergus.

1445. Shiawassee River at Owosso, Mich.

Location.--Lat 43°00'54", long 84°10'52", in SW¼ sec.12, T.7 N., R.2 E., on right bank on grounds of sewage-treatment plant, 1½ miles north of Owosso.

Drainage area.--538 sq mi.

Records available.--March 1931 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Gage-height records for flood seasons collected in this vicinity 1910-28 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 707.25 ft above mean sea level, datum of 1929. Prior to Oct. 15, 1933, at site 1½ miles upstream at datum 5.46 ft higher.

Average discharge.--27 years, 327 cfs.

Extremes.--Maximum discharge during year, 1,030 cfs Dec. 21; maximum gage height, 4.64 ft July 7; minimum discharge, 59 cfs Aug. 6, 7, Sept. 5-7, 30; minimum gage height, 1.99 ft May 14, 15.
1931-58: Maximum discharge, 6,240 cfs Apr. 6, 1947 (gage height, 10.35 ft); minimum, 0.2 cfs July 27, 1934 (gage height, 1.12 ft); minimum daily, 2.0 cfs July 28, 1934.

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated below about 800 cfs by powerplant at Shiawasseetown prior to February 1953.

Revisions (water years).--WSP 1337: 1932, 1934, 1936-38, 1944. WSP 1307: 1949(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 30 to Sept. 30)

1.8	44	3.0	385
2.0	81	4.0	810
2.5	220	5.0	1,340

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	99	312	280	584	170	850	199	256	88	133	83	65
2	95	262	287	476	160	830	202	220	67	130	81	*63
3	92	90	274	250	160	795	250	196	71	154	79	61
4	90	189	271	260	160	785	294	190	86	182	*77	61
5	88	181	256	270	150	795	298	190	88	367	75	61
6	88	172	256	300	150	830	318	175	92	452	65	59
7	90	169	262	300	140	885	360	172	92	*568	63	61
8	86	193	271	290	140	775	432	175	95	592	83	67
9	81	265	277	280	140	665	468	172	*104	560	104	67
10	81	142	268	270	140	552	354	142	112	496	107	63
11	81	268	196	260	130	492	253	130	139	436	99	63
12	79	250	200	250	130	382	274	*125	169	411	88	65
13	77	253	210	240	130	440	290	102	274	324	81	67
14	75	353	220	230	130	428	294	81	223	290	81	65
15	75	564	270	210	130	416	285	83	290	264	79	67
16	81	552	270	200	120	360	259	88	350	247	79	69
17	97	548	*270	190	120	329	247	95	228	184	79	88
18	112	512	270	180	120	298	235	97	229	175	79	88
19	139	500	579	180	120	294	217	92	196	136	77	83
20	142	460	960	170	120	301	223	86	190	148	73	86
21	133	472	1,020	*170	120	298	220	81	172	139	169	83
22	120	536	935	170	120	287	217	95	148	114	109	77
23	172	504	910	170	130	271	229	83	145	97	99	71
24	250	456	855	170	200	259	290	81	130	90	99	67
25	350	402	688	170	300	250	*304	81	130	92	88	67
26	500	299	860	170	700	*250	304	79	130	90	77	71
27	400	114	765	170	800	247	284	69	139	86	71	73
28	*280	280	805	170	850	241	265	65	148	102	69	67
29	382	271	755	170	-	232	250	63	151	90	67	67
30	346	265	634	170	-------	190	247	61	148	83	69	63
31	336	-------	612	170	-------	211	-------	71	-------	83	67	-------
Total	5,117	9,814	15,016	7,260	5,980	14,238	8,342	3,696	4,622	7,315	2,616	2,075
Mean	165	327	484	234	214	459	278	119	154	236	84.4	69.2
Cfsm	0.307	0.608	0.900	0.435	0.398	0.853	0.517	0.221	0.286	0.439	0.157	0.129
In.	0.35	0.68	1.04	0.50	0.41	0.98	0.58	0.26	0.32	0.51	0.18	0.14

Calendar year 1957: Max 2,520 Min 75 Mean 394 Cfsm 0.732 In. 9.96
Water year 1957-58: Max 1,020 Min 59 Mean 236 Cfsm 0.439 In. 5.95

Peak discharge (base, 1,500 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 12-18, Jan. 4 to Mar. 1.

1450. Shiawassee River near Fergus, Mich.

Location.--Lat 43°15'17", long 84°06'20", in sec.22, T.10 N., R.3 E., on downstream handrail of highway bridge, 1.2 miles east of Fergus and 1¼ miles upstream from Bear Creek.

Drainage area.--637 sq mi.

Records available.--October 1933 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Wire-weight gage read twice daily. Datum of gage is 587.80 ft above mean sea level, datum of 1929.

Average discharge.--19 years, 439 cfs.

Extremes.--Maximum discharge during year, 1,380 cfs Dec. 21 (gage height, 9.2 ft, from graph based on gage readings); maximum gage height, 9.48 ft Mar. 2, affected by ice; minimum discharge, 61 cfs Aug. 9 (gage height, 3.47 ft).
1939-58: Maximum discharge, 7,500 cfs Apr. 6, 1947 (includes overflow bypassing gage); maximum gage height, 13.3 ft May 9 or 10, 1956, from graph based on gage readings; minimum discharge observed, 29 cfs Aug. 31, 1946 (gage height, 3.10 ft).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Some regulation at low stages by powerplant above Owosso prior to February 1953.

Revisions (water years).--WSP 1337: 1940(M), 1941-42, 1943(M), 1944, 1945(M), 1946, 1947(M), 1948, 1950.

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 6 to Dec. 22)

Oct. 1 to Mar. 2				Mar. 3 to Sept. 30			
3.9	79	6.0	368	3.4	57	6.0	410
4.0	87	8.0	890	4.0	98	8.0	1,030
5.0	187	9.0	1,320	5.0	211		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	112	311	288	700	190	1,000	*264	293	96	160	100	83
2	107	253	286	600	190	980	257	283	125	150	95	*73
3	103	193	267	350	190	950	262	264	113	180	95	73
4	102	119	260	310	190	950	259	240	110	250	90	73
5	103	178	251	310	180	950	268	*217	115	450	*84	70
6	100	172	253	340	180	950	348	211	123	500	82	67
7	98	170	258	350	170	920	496	198	119	*574	81	66
8	99	172	284	350	170	880	490	195	120	660	67	73
9	93	187	288	340	160	800	556	199	*118	718	62	80
10	90	195	282	330	160	750	502	190	130	652	92	78
11	89	237	212	310	160	650	422	180	160	610	100	75
12	87	256	151	300	150	620	395	160	200	574	96	70
13	86	303	162	280	150	580	380	145	300	508	94	69
14	82	436	253	*270	150	560	368	130	300	466	93	70
15	81	627	282	260	140	520	351	129	350	355	89	72
16	86	594	346	240	140	500	317	130	400	303	86	74
17	102	520	307	230	140	493	299	127	300	250	85	78
18	*105	550	344	220	140	450	287	122	260	199	82	101
19	112	534	477	210	140	400	283	121	230	178	77	96
20	148	508	1,010	200	*140	390	277	115	220	162	77	93
21	134	470	1,260	200	140	410	289	113	200	149	119	96
22	126	474	1,090	200	150	412	275	113	180	139	175	90
23	160	467	887	200	160	398	328	114	170	132	127	82
24	265	458	860	200	200	365	297	113	160	121	117	84
25	477	436	740	200	350	*342	311	111	150	111	107	80
26	580	388	842	200	800	346	365	108	150	102	95	80
27	388	*262	881	200	950	333	351	107	160	98	88	77
28	355	300	806	200	1,000	311	328	102	170	95	83	80
29	286	303	776	200	-	297	307	95	180	128	79	76
30	292	294	755	200	-------	283	303	96	170	100	85	75
31	327	-------	750	200	-------	270	-------	92	-------	93	84	-------
Total	5,375	10,367	15,908	8,700	6,980	18,060	10,235	4,813	5,579	9,167	2,886	2,354
Mean	173	346	513	281	249	583	341	155	186	296	93.1	78.5
Cfsm	0.272	0.543	0.805	0.441	0.391	0.915	0.535	0.243	0.292	0.465	0.146	0.123
In.	0.31	0.61	0.93	0.51	0.41	1.05	0.60	0.28	0.33	0.54	0.17	0.14

Calendar year 1957: Max 4,250 Min 81 Mean 493 Cfsm 0.774 In. 10.50
Water year 1957-58: Max 1,260 Min 62 Mean 275 Cfsm 0.432 In. 5.88

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 31 to Mar. 16. No gage-height record Nov. 28, Feb. 6-13, 15-17, 21-23, June 8, June 10 to July 6, July 8, Aug. 1-4, 6; discharge estimated on basis of records for stations at Owosso and at Byron.

1455. Bad River near Brant, Mich.

Location.--Lat 43°17'50", long 84°13'45", in NW¼ sec.3, T.10 N., R.2 E., on downstream side of highway bridge, 2½ miles north of Brant and 6 miles upstream from South Fork.

Drainage area.--89 sq mi, approximately.

Records available.--December 1948 to September 1958.

Gage.--Wire-weight gage read twice daily. Prior to Aug. 4, 1958, crest-stage indicator on right downstream abutment. Datum of gage is 591.21 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--9 years (1949-58), 64.4 cfs.

Extremes.--Maximum discharge during year, 730 cfs Nov. 16 (gage height, 12.25 ft); maximum gage height, 12.66 ft Mar. 1, 2, or 3, affected by ice; no flow at times.
1948-58: Maximum discharge, 2,900 cfs May 6, 1956 (gage height, 15.18 ft); no flow at times.

Remarks.--Records fair except those for periods of ice effect or no gage-height record and those below 5 cfs, which are poor.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.7	11	39	a45	9	300	24	22	23	4.5	0.7	4.2
2	.4	11	33	*40	9	350	22	18	31	3.4	.5	*3.7
3	.4	8.8	23	35	8	310	21	15	40	3.6	.3	3.0
4	.2	7.3	20	30	8	270	20	14	27	3.6	*.2	2.4
5	.1	6.4	18	30	8	250	19	12	18	2.5	.2	1.9
6	.1	5.3	18	25	7	220	28	9.7	13	125	.2	1.7
7	.1	4.7	17	25	7	200	41	8.9	10	*122	.2	1.6
8	0	5.3	17	20	7	170	38	8.4	12	58	1.0	1.8
9	0	5.3	16	20	6	150	33	8.2	*9.3	32	1.4	2.3
10	0	27	15	20	6	140	26	7.5	8.5	19	.8	1.7
11	0	20	14	20	6	130	24	6.5	7.1	13	.5	1.5
12	0	15	12	15	6	120	27	*6.1	5.7	10	.4	1.6
13	0	13	9.0	15	5	110	27	5.8	6.6	6.6	.3	1.6
14	0	22	7.3	15	5	100	25	5.8	6.5	5.2	.2	1.4
15	0	260	7.7	15	5	95	23	5.5	5.4	4.4	.1	1.3
16	.4	702	8.1	15	5	95	22	4.2	5.1	5.5	0	1.7
17	4.4	432	7.5	10	5	90	20	3.4	4.0	4.4	0	2.4
18	*5.5	225	6.9	10	5	85	19	3.6	3.1	3.4	0	4.7
19	5.7	244	a20	10	5	82	18	4.1	2.9	2.6	0	5.2
20	4.5	426	a100	10	*5	82	20	3.5	3.0	2.0	0	5.8
21	3.4	330	a400	10	5	82	30	2.9	3.0	1.5	8.9	5.1
22	2.6	166	a300	10	5	78	38	5.1	2.9	1.3	5.4	3.6
23	5.3	108	a250	10	5	63	41	4.9	3.1	1.2	4.4	2.4
24	24	86	a200	10	6	56	64	5.1	3.3	.9	4.4	2.1
25	70	71	a150	10	10	49	*99	4.1	4.8	.6	3.1	2.1
26	130	56	a120	9	30	*43	78	3.6	11	.5	2.1	1.9
27	38	*47	a100	9	100	40	58	3.4	18	.4	1.9	1.4
28	20	45	a80	9	200	37	43	3.1	18	.3	1.7	1.3
29	16	44	a70	9	-	34	35	2.5	10	.8	1.3	1.0
30	12	42	a60	9	-------	29	29	2.1	6.1	.9	4.8	1.0
31	12	-------	a50	9	-------	26	-------	1.7	-------	.8	8.2	-------
Total	355.8	3,446.1	2,188.5	529	488	3,886	1,012	210.7	321.4	439.9	53.2	73.4
Mean	11.5	115	70.6	17.1	17.4	125	33.7	6.80	10.7	14.2	1.72	2.45
Cfsm	0.129	1.29	0.793	0.192	0.196	1.40	0.379	0.076	0.120	0.160	0.019	0.028
In.	0.15	1.44	0.91	0.22	0.20	1.62	0.42	0.09	0.13	0.18	0.02	0.03

Calendar year 1957: Max 1,260 Min 0 Mean 61.1 Cfsm 0.687 In. 9.31
Water year 1957-58: Max 702 Min 0 Mean 35.6 Cfsm 0.400 In. 5.41

Peak discharge (base, 700 cfs).--Nov. 16 (8 to 10 a.m.) 730 cfs (12.25 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Maple River at Maple Rapids and Cedar River at East Lansing.
Note.--Stage-discharge relation affected by ice Jan. 2 to Mar. 17.

1460. Farmers Creek near Lapeer, Mich.

Location.--Lat 43°02', long 83°20', in sec.6, T.7 N., R.10 E., on left bank at sewage-treatment plant at Michigan Home and Training School, 2 miles west of Lapeer.

Drainage area.--57 sq mi, approximately.

Records available.--October 1932 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder and concrete control. Datum of gage is 805.79 ft above mean sea level, datum of 1929. Prior to May 25, 1954, staff gage at same site and datum.

Average discharge.--26 years, 30.2 cfs.

Extremes.--Maximum discharge during year, 106 cfs Dec. 22 (gage height, 16.20 ft); maximum gage height, 16.56 ft Feb. 27, affected by ice; minimum discharge, 3.0 cfs Aug. 20 (gage height, 15.04 ft).
1932-58: Maximum discharge, 1,280 cfs Apr. 6, 1947 (gage height, 19.87 ft, from floodmark), from rating curve extended above 660 cfs on basis of contracted-opening measurement of peak flow; minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Prior to 1941, occasional regulation by dam above station.

Revisions (water years).--WSP 924: 1940. WSP 1084: 1942(M), 1943. WSP 1337: 1934-38, 1940(M), 1944(M), 1945, 1946(M), 1948-52(M).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-26		Oct. 27 to Sept. 30			
15.1	3.8	15.0	2.3	15.5	24
15.2	6.8	15.1	4.5	15.7	41
15.4	16	15.2	7.6	16.0	75
15.6	30	15.3	11	16.2	106
16.0	74				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.6	25	27	40	14	100	30	17	6.8	5.9	5.0	10
2	4.6	23	24	40	13	100	28	16	9.7	5.3	4.8	9.3
3	4.6	22	21	35	13	90	28	15	10	5.0	4.5	*7.6
4	4.6	20	20	30	12	70	29	15	9.3	8.6	4.5	6.2
5	4.6	18	20	30	12	60	26	15	8.6	11	5.0	5.9
6	4.9	17	20	25	11	55	30	13	7.6	11	4.5	5.6
7	4.9	16	22	30	11	52	38	12	6.8	11	*4.5	5.6
8	4.9	16	23	35	10	50	35	12	6.5	*11	6.6	5.9
9	4.9	18	19	25	10	48	35	11	6.8	10	9.3	6.2
10	4.9	20	18	20	10	*45	38	10	*7.2	8.6	7.6	5.9
11	4.9	20	15	20	9	40	41	9.3	7.9	6.8	6.2	5.9
12	4.6	19	15	20	9	38	42	9.3	7.6	6.5	5.6	5.0
13	4.9	18	16	17	9	37	40	*8.6	22	6.2	4.8	4.5
14	4.9	22	17	17	9	36	*37	8.6	29	5.9	4.5	4.5
15	*4.9	*27	17	15	8	35	35	8.3	26	5.6	4.5	4.3
16	5.2	38	17	15	8	33	32	7.9	18	5.6	4.0	4.3
17	8.8	49	18	15	8	33	30	7.9	12	6.5	3.7	4.8
18	13	48	20	15	8	34	27	8.3	9.3	5.9	3.4	7.9
19	16	42	*35	15	8	34	24	8.6	9.0	5.9	3.2	11
20	18	36	67	16	8	34	24	6.8	7.9	5.3	3.2	9.3
21	17	35	98	15	8	34	24	6.2	8.6	5.0	5.3	8.3
22	14	31	103	15	9.0	35	24	8.6	9.0	4.5	9.0	7.6
23	14	30	83	14	9.7	35	24	12	8.3	4.5	9.0	6.8
24	20	26	63	14	14	35	29	10	7.6	4.5	7.2	5.9
25	24	24	60	14	20	35	27	9.0	7.6	4.5	6.2	5.9
26	36	23	70	14	35	34	25	8.3	9.3	4.5	5.9	5.9
27	44	22	66	14	90	33	23	7.6	9.7	4.5	5.3	5.9
28	39	23	62	14	100	32	25	6.8	8.6	4.0	4.8	5.9
29	33	24	58	*15	-	31	19	6.5	7.6	4.8	4.3	5.6
30	29	27	52	14	-------	31	18	6.2	6.2	6.8	6.2	5.3
31	26	-------	45	14	-------	30	-------	6.2	-------	5.9	10	-------
Total	428.7	779	1,211	632	484.7	1,389	887	307.0	310.5	201.1	172.6	192.8
Mean	13.8	26.0	39.1	20.4	17.3	44.8	29.6	9.90	10.4	6.49	5.57	6.43
Cfsm	0.242	0.456	0.686	0.358	0.304	0.786	0.519	0.174	0.182	0.114	0.098	0.113
In.	0.28	0.51	0.79	0.41	0.32	0.91	0.58	0.20	0.20	0.13	0.11	0.13

Calendar year 1957: Max 187 Min 3.2 Mean 30.7 Cfsm 0.539 In. 7.31
Water year 1957-58: Max 103 Min 3.2 Mean 19.2 Cfsm 0.337 In. 4.56

Peak discharge (base, 160 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 9-18, Jan. 28 to Feb. 21, Feb. 25 to Mar. 13. No gage-height record Dec. 25 to Jan. 12, Mar. 25 to Apr. 1, Apr. 6-10, Apr. 15 to May 9; discharge estimated on basis of recorded range in stage and records for Swartz Creek near Holly and Flint River near Flint.

1470. Holloway Reservoir near Otisville, Mich.

Location.--Lat 43°07'15", long 83°29'45", in NW¼ sec.11, T.8 N., R.8 E., in gatehouse on left side of Holloway Dam on Flint River, 3½ miles southeast of Otisville.

Drainage area.--543 sq mi.

Records available.--March 1954 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929 (levels by city of Flint).

Extremes.--Maximum contents during year, 779,000,000 cu ft July 7-10 (elevation, 755.1 ft); minimum, 335,000,000 cu ft Sept. 30 (elevation, 748.6 ft).
1954-58: Maximum contents, 996,000,000 cu ft Mar. 8, 1956 (elevation, 757.4 ft); reservoir empty at times during October, November 1954, January, February 1955.

Remarks.--Records fair. Reservoir is formed by an earth-fill dam with concrete spillway completed in 1953. Capacity of reservoir, 1,256,000,000 cu ft at elevation 760.00 ft. The spillway section includes two 90-foot drum gates with minimum crest elevation of 751 ft, maximum of 755 ft, three 20-foot radial gates with sill elevation of 745 ft, and two sluices (each 4 by 6 ft), one on each side with valve controls. Entrance elevation of sluiceways is 734 ft. Reservoir is used to regulate flow for water supply and sewage dilution for city of Flint.

Cooperation.--Reservoir elevations furnished by city of Flint.

Month-end elevation and contents, water year October 1957 to September 1958

Date	Elevation (feet)†	Contents (millions of cubic feet)	Change in contents during month	
			Millions of cubic feet	Equivalent in cfs
Sept.30	752.0	537	-	-
Oct. 31	751.5	503	-34	-12.7
Nov. 30	751.4	497	-6	-2.3
Dec. 31	751.8	523	+26	+9.7
Calendar year 1957	-	-	+74	+2.3
Jan. 31	751.3	491	-32	-11.9
Feb. 28	751.9	530	+39	+16.1
Mar. 31	751.4	497	-33	-12.3
Apr. 30	752.3	600	+103	+39.7
May 31	754.6	735	+135	+50.4
June 30	755.0	770	+35	+13.5
July 31	753.5	647	-123	-45.9
Aug. 31	750.7	455	-192	-71.7
Sept.30	748.6	335	-120	-46.3
Water year 1957-58	-	-	-202	-6.4

† Elevation at 12 p.m.

1475. Flint River near Otisville, Mich.

Location.--Lat 43°06'40", long 83°31'10", in SE¼ sec.9, T.8 N., R.8 E., on left bank 20 ft downstream from bridge on State Highway 15, 1½ miles downstream from Holloway Reservoir, 3½ miles upstream from Powers-Cullen drain, and 3¾ miles south of Otisville.

Drainage area.--547 sq mi.

Records available.--October 1952 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 721.39 ft above mean sea level, datum of 1929.

Average discharge.--6 years, 278 cfs (adjusted for storage since 1954).

Extremes.--Maximum discharge during year, 939 cfs Mar. 4, 5 (gage height, 6.93 ft); minimum, 28 cfs May 12, 13, 14, 16, 17 (gage height, 2.39 ft).
1952-58: Maximum discharge, 4,500 cfs May 13, 1956 (gage height, 13.78 ft); minimum, 7.6 cfs Apr. 14, 1955 (gage height, 2.03 ft).

Remarks.--Records good. Flow regulated by Holloway Reservoir 1½ miles above station (see preceding page).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.4	27	5.0	520
2.6	50	7.0	954
3.0	116		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	114	219	215	476	135	701	222	79	50	103	144	129
2	114	190	215	392	135	802	207	75	58	93	139	129
3	112	169	205	392	137	895	198	68	53	98	137	*127
4	112	154	184	318	135	932	205	68	50	109	137	126
5	111	144	181	272	133	928	198	68	50	100	137	127
6	111	135	181	248	137	899	192	64	59	75	137	127
7	107	133	184	222	137	855	211	56	75	96	*137	129
8	107	120	190	202	135	809	246	45	76	*102	135	131
9	105	122	190	184	124	749	290	42	81	98	135	131
10	84	144	186	177	118	*657	310	42	*78	93	135	131
11	60	143	162	167	118	598	300	42	81	105	135	131
12	60	144	143	160	111	530	306	35	91	90	135	131
13	62	144	150	152	105	476	323	*29	90	102	135	131
14	*60	167	152	144	100	430	*331	29	98	100	135	127
15	59	*224	152	141	100	402	329	58	109	112	135	127
16	60	280	152	139	100	377	292	50	88	114	135	127
17	62	329	158	139	98	352	213	28	67	114	135	127
18	62	369	*177	133	96	331	141	29	76	112	135	129
19	62	290	264	126	93	320	126	29	76	112	133	127
20	62	342	480	122	91	318	126	29	81	112	131	127
21	79	320	650	120	93	316	116	50	79	114	129	127
22	102	280	809	124	93	318	98	45	76	131	129	129
23	103	250	859	122	96	314	100	29	76	154	129	129
24	218	244	897	122	103	314	100	29	73	152	129	127
25	342	230	826	129	146	304	100	29	83	152	129	127
26	314	213	736	129	252	292	100	29	71	152	129	127
27	294	200	705	129	442	278	100	29	81	152	129	127
28	274	194	655	131	577	266	100	34	75	152	129	126
29	363	202	631	*133	-	256	100	50	65	150	127	126
30	367	209	698	135	---------	250	95	50	79	150	129	124
31	270	--------	552	137	--------	240	--------	50	--------	152	129	--------
Total	4,412	6,304	11,839	5,717	4,140	15,509	5,775	1,389	2,245	3,651	4,134	3,840
Mean	142	210	382	184	148	500	192	44.8	74.8	118	133	128
(†)	-12.7	-2.3	+9.7	-11.9	+16.1	-12.3	+39.7	+50.4	+13.5	-45.9	-71.7	-46.3
Adjusted for change in contents in Holloway Reservoir												
Mean	129	208	392	172	164	488	232	95.2	88.3	72.1	61.3	81.7
Cfsm	0.236	0.380	0.717	0.314	0.300	0.892	0.424	0.174	0.161	0.132	0.112	0.149
In.	0.27	0.42	0.83	0.36	0.31	1.03	0.47	0.20	0.18	0.15	0.13	0.17

	Observed			Adjusted	
Calendar year 1957:	Max 1,310	Min 59	Mean 307	Mean 309	Cfsm 0.565 In. 7.68
Water year 1957-58:	Max 932	Min 28	Mean 189	Mean 182	Cfsm 0.333 In. 4.52

* Discharge measurement made on this day.
† Change in contents, equivalent in cubic feet per second, in Holloway Reservoir, furnished by city of Flint.

1482. Swartz Creek near Holly, Mich.

Location.--Lat 42°49'40", long 83°37'40", in SW¼ sec.15, T.5 N., R.7 E., on right bank 25 ft downstream from bridge on Elliott Road and 2½ miles north of Holly.

Drainage area.--11.9 sq mi.

Records available.--January 1956 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 905 ft (from topographic map).

Extremes.--Maximum daily discharge during year, 30 cfs Feb. 28, Mar. 1; minimum discharge, 0.2 cfs Sept. 5 (gage height, 1.48 ft).
1956-58: Maximum discharge, 77 cfs May 13, 1956 (gage height, 3.40 ft); minimum, that of Sept. 5, 1958.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 9-15)

1.45	0.3	1.8	4.7
1.5	.6	2.0	9.0
1.6	1.8	2.5	30

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.2	6.1	6.1	10	3.7	30	7.4	4.5	2.3	1.7	1.1	0.5
2	1.3	5.6	5.7	9	3.5	28	7.2	4.2	2.8	1.5	1.0	.5
3	1.3	5.4	5.4	8	3.5	23	7.0	4.0	2.7	2.1	1.1	.5
4	1.3	4.8	5.0	7.5	3	20	6.8	3.9	2.3	4.2	1.1	.4
5	1.2	4.7	4.7	7.2	3	*17	6.5	3.7	2.1	5.2	1.0	.3
6	1.2	4.5	5.2	6.5	3	16	8.1	3.4	1.9	4.8	1.1	.3
7	1.3	4.2	6.1	6.1	3	16	11	3.3	1.7	4.8	1.2	.5
8	1.3	4.7	6.5	6	2.5	16	11	3.0	1.5	4.3	1.3	.7
9	1.2	5.6	5	5.9	2.5	14	9.9	*2.8	3.1	3.6	1.2	.8
10	1.3	5.6	4.5	5.4	2.5	12	9.3	2.8	4.5	3.0	1.1	1.1
11	1.3	5.0	4	4.7	2.5	11	9.3	2.8	4.8	2.7	1.3	1.0
12	1.3	4.8	4	5	2.5	11	11	2.8	4.0	2.5	1.3	1.0
13	1.3	4.8	4	4.5	2.5	11	11	2.8	5.7	2.3	1.2	.8
14	1.3	8.1	4.5	4.3	2	10	9.6	2.7	7.0	2.0	1.0	.8
15	*1.3	15	4.5	4	2	9.9	8.7	2.5	6.3	1.9	1.0	*.6
16	1.7	15	4.5	4	2	9.9	7.9	2.3	5.6	1.9	.7	.7
17	3.7	13	5	4	2	9.6	7.6	2.3	4.8	1.7	.6	1.0
18	4.8	12	*7.0	4	2	9.6	*7.0	2.4	4.2	1.5	.4	*1.5
19	5.0	12	19	4	2	9.6	6.3	2.1	3.6	1.5	.4	1.5
20	4.7	10	26	3.7	2	9.6	6.3	1.7	*3.1	1.4	.4	1.4
21	4.3	8.7	28	3.7	2.5	9.6	6.3	1.5	2.7	1.2	1.1	1.3
22	4.2	7.6	25	3.7	2.5	9.6	6.3	1.9	2.5	1.2	1.2	1.2
23	5.7	7.0	21	3.7	2.5	9.6	7.2	2.3	2.4	1.2	1.2	1.0
24	11	6.5	19	3.7	4	9.3	7.6	2.1	2.5	1.2	1.2	1.0
25	12	5.7	17	4	6	8.7	7.4	2.0	2.7	1.2	1.0	1.2
26	11	5.6	21	4.0	10	*8.4	6.5	1.9	3.1	1.2	.8	1.3
27	9.0	5.6	19	4.0	28	8.4	5.9	1.8	2.7	1.1	.8	1.1
28	7.6	5.7	17	*4.0	30	8.4	5.6	1.7	2.5	*1.1	*.7	1.1
29	6.8	6.5	15	3.7	-	8.4	5.6	1.7	1.7	1.4	.7	1.0
30	6.5	6.5	14	3.7	-------	8.1	5.0	1.5	1.7	1.3	.7	1.0
31	6.5	-------	12	3.7	-------	7.9	-------	1.8	-------	1.3	.7	-------
Total	123.6	216.3	344.7	155.7	137.2	389.6	232.3	80.2	98.5	68.0	29.6	27.1
Mean	3.99	7.21	11.1	5.02	4.90	12.6	7.74	2.59	3.28	2.19	0.955	0.903
Cfsm	0.334	0.606	0.933	0.422	0.412	1.06	0.650	0.218	0.276	0.184	0.080	0.076
In.	0.39	0.68	1.08	0.49	0.43	1.22	0.73	0.25	0.31	0.21	0.09	0.08

Calendar year 1957: Max 53 Min 1.2 Mean 9.05 Cfsm 0.761 In. 10.34
Water year 1957-58: Max 30 Min 0.3 Mean 5.21 Cfsm 0.438 In. 5.96

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 9-13, Jan. 1-4, 8, 12-18, 22-25, Feb. 1-12. No gage-height record Dec. 14-17, Feb. 13 to Mar. 7; discharge estimated on basis of records for Farmers Creek near Lapeer and Shiawassee River at Byron.

1485. Flint River near Flint, Mich.

Location.--Lat 43°02'20", long 83°46'10", in SW¼ sec.4, T.7 N., R.6 E., on left bank on grounds of sewage-treatment plant, 1 mile upstream from Pirnie Creek, 2 miles downstream from Flint, and 5 miles downstream from Swartz Creek.

Drainage area.--927 sq mi.

Records available.--September 1903 to March 1904 (gage heights only), August 1932 to September 1958. Gage-height records for flood seasons collected in this vicinity 1911-28 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 678.80 ft above mean sea level (levels by U. S. Weather Bureau and city of Flint).

Average discharge.--26 years, 560 cfs (adjusted for storage since 1954).

Extremes.--Maximum discharge during year, 1,820 cfs Dec. 20 (gage height, 6.10 ft); minimum, 50 cfs May 31 (gage height, 2.26 ft).
1932-58: Maximum discharge, 14,900 cfs Apr. 6, 1947 (gage height, 16.35 ft); minimum, 9.0 cfs Aug. 7, 1934.

Remarks.--Records good. Some regulation by reservoirs above station. City of Flint diverts water above station for municipal and industrial use, but sewage from city is included in flow at station.

Revisions (water years).--WSP 954: 1941. WSP 1337: 1933-34(M), 1935-37.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 23 to Sept. 10)

2.3	54	4.0	530
2.6	101	5.0	1,070
3.0	185	6.0	1,740
3.5	338		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	154	370	370	775	238	1,580	418	210	195	115	178	170
2	156	324	370	606	241	1,530	396	185	123	143	161	159
3	154	299	352	490	232	1,520	373	181	105	173	205	*154
4	152	276	327	454	227	1,480	356	176	95	295	185	159
5	152	263	313	470	232	1,470	352	170	91	289	170	152
6	152	269	338	498	227	1,490	446	141	83	208	*181	156
7	156	257	360	470	224	1,390	616	133	87	262	178	165
8	152	257	356	396	216	1,210	539	127	115	*167	176	188
9	150	227	345	367	210	1,170	522	125	127	152	165	156
10	150	221	342	363	213	*992	544	111	*141	143	170	163
11	127	235	286	374	200	908	570	103	129	145	183	159
12	105	238	257	349	200	848	588	*107	121	148	170	163
13	99	257	266	320	190	780	575	97	727	123	200	150
14	*105	476	292	299	183	726	548	89	221	145	167	154
15	101	*722	282	276	174	690	522	76	208	145	181	156
16	151	584	289	266	170	630	498	79	200	188	165	176
17	342	602	282	260	167	606	470	95	159	161	172	249
18	209	620	*349	247	170	584	*367	87	133	154	167	550
19	121	620	956	224	174	570	299	124	185	152	165	221
20	117	566	1,480	235	167	562	334	91	283	143	185	188
21	123	570	1,600	224	163	566	324	83	170	141	819	183
22	146	510	1,440	230	167	562	295	153	148	139	254	181
23	363	466	1,400	221	222	557	302	119	174	162	185	167
24	801	430	1,270	218	288	544	381	76	170	178	178	183
25	575	384	1,260	230	794	526	338	70	201	178	181	178
26	494	396	1,550	235	986	486	289	76	176	178	172	170
27	470	356	1,300	235	1,400	490	272	68	145	174	159	167
28	434	367	1,130	232	1,420	482	314	68	129	344	159	167
29	410	374	1,070	*232	-	488	208	65	115	238	150	163
30	506	381	962	258	---------	446	216	60	111	195	338	178
31	458	--------	786	244	--------	434	--------	88	--------	192	202	--------
Total	7,785	11,937	21,980	10,278	9,495	26,295	12,272	3,413	5,067	5,570	6,321	5,525
Mean	251	398	709	331	339	848	409	110	169	180	204	184
(†)	-12.7	-2.3	+9.7	-11.9	+16.1	-12.3	+39.7	+50.4	+13.5	-45.9	-71.7	-46.3

Adjusted for change in contents in Holloway Reservoir

Mean	238	396	719	319	355	836	449	160	182	134	132	138
Cfsm	0.257	0.427	0.776	0.344	0.383	0.902	0.484	0.173	0.196	0.145	0.142	0.149
In.	0.30	0.48	0.89	0.40	0.40	1.04	0.54	0.20	0.22	0.17	0.16	0.17

	Observed			Adjusted	
Calendar year 1957:	Max 3,710	Min 99	Mean 628	Mean 630	Cfsm 0.680 In. 9.24
Water year 1957-58:	Max 1,600	Min 80	Mean 345	Mean 339	Cfsm 0.366 In. 4.97

* Discharge measurement made on this day.
† Change in contents, equivalent in cubic feet per second, in Holloway Reservoir, furnished by city of Flint.

1490. Flint River near Fosters, Mich.

Location.--Lat 43°17'56", long 83°55'58", on west line of sec.6, T.10 N., R.5 E., on downstream side of bridge on Sheridan Road, 1 mile west of Fosters, 1½ miles upstream from Birch Run, and 4 miles downstream from Silver Creek.

Drainage area.--1,120 sq mi, approximately.

Records available.--October 1939 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Gage-height records for flood seasons collected in this vicinity 1910-20, 1922-27 are contained in reports of U. S. Weather Bureau.

Gage.--Wire-weight gage read twice daily. Datum of gage is 582.22 ft above mean sea level, unadjusted (levels by U. S. Weather Bureau). Prior to August 1943, chain gage at same site and datum.

Average discharge.--19 years, 736 cfs.

Extremes.--Maximum discharge during year, 2,520 cfs Dec. 21 (gage height, 11.9 ft); maximum gage height, 13.95 ft Mar. 2, affected by ice; minimum daily discharge, 110 cfs May 30.

1939-58: Maximum discharge, 19,000 cfs Apr. 7, 1947 (including flow bypassing gage); maximum gage height, 18.2 ft Mar. 7, 1956, from graph based on gage readings; minimum discharge observed, 27 cfs Aug. 6, 1941 (gage height, 3.67 ft).

Maximum stage known, about 18.4 ft (from U. S. Weather Bureau data) in March 1904.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Some regulation by reservoirs above Flint.

Revisions (water years).--WSP 954: 1941. WSP 1337: 1940, 1942, 1943-44(M), 1945, 1946-47(M), 1948-50.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 25 to Dec. 11)

3.8	102	6.0	490
4.0	130	9.0	1,340
5.0	294	12.0	2,570

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	197	527	436	890	290	2,000	*450	272	214	141	a200	183
2	199	400	420	828	290	2,000	448	262	303	144	a190	*183
3	195	362	404	700	290	1,900	442	244	176	152	a170	167
4	183	338	396	540	290	1,900	378	235	150	191	a200	164
5	176	303	364	570	290	1,840	402	*236	138	340	*197	167
6	191	305	364	600	280	1,830	430	219	134	326	176	164
7	189	323	386	560	280	1,800	800	186	129	222	176	162
8	192	321	414	500	270	1,480	655	176	131	*285	186	170
9	195	310	400	460	270	1,330	682	168	*147	194	167	191
10	192	280	368	460	260	1,180	624	167	155	170	166	167
11	a170	272	326	460	260	1,170	598	164	152	162	164	170
12	a150	290	310	450	250	970	680	158	145	161	172	164
13	145	281	320	410	240	901	666	150	a640	161	166	158
14	144	a500	340	*380	230	839	618	150	a250	150	164	158
15	150	a900	340	350	220	794	587	144	233	158	164	158
16	158	a720	340	330	210	761	553	137	222	176	161	164
17	269	a760	340	320	210	713	521	134	202	215	158	161
18	*370	a840	400	310	210	666	484	141	173	186	161	492
19	269	a900	1,540	290	210	655	390	145	148	178	158	380
20	199	850	1,800	290	*190	650	358	170	152	170	152	224
21	173	705	2,420	290	180	639	424	141	158	161	294	192
22	173	565	1,900	290	200	644	396	147	184	158	702	183
23	226	539	1,540	290	270	626	402	199	166	160	434	179
24	652	497	1,380	290	360	637	446	160	161	154	195	186
25	811	450	1,280	290	700	*590	587	133	199	175	184	191
26	592	468	1,670	290	1,300	560	434	133	191	172	178	170
27	521	*432	1,540	290	1,800	532	354	124	189	178	173	162
28	490	400	1,230	290	1,800	510	344	a120	161	170	161	158
29	454	428	1,200	290	-	503	346	a115	150	238	157	161
30	448	436	1,070	290	-------	494	272	a110	144	262	166	164
31	494	-------	964	290	-------	474	-------	a120	-------	a210	176	-------
Total	8,967	14,702	26,202	12,888	11,650	31,588	14,771	5,160	5,697	5,920	6,268	5,693
Mean	289	490	845	416	416	1,019	492	166	190	191	202	190
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 5,180 Min 144 Mean 770 Cfsm - In. -
Water year 1957-58: Max 2,420 Min 110 Mean 410 Cfsm - In. -

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for stations near Flint and near Otisville.
Note.--Stage-discharge relation affected by ice Dec. 12-18, Jan. 3 to Mar. 4.

1495. Flint River near Alicia, Mich.

Location.--Lat 43°18'40", long 84°02'00", in SE¼ sec.31, T.11 N., R.4 E., on left bank 100 ft downstream from The Prairie Farms Association flood-pumping station, 2¾ miles north of Alicia, and 4 miles upstream from mouth.

Records available.--November 1948 to September 1958 (gage heights only).

Gage.--Water-stage recorder. Datum of gage is 577.00 ft above mean sea level, datum of 1929.

Extremes.--Maximum gage height during year, 10.11 ft Mar. 2; minimum, slightly less than 1.5 ft for several short periods during August and September.
1948-58: Maximum gage height, 13.65 ft Apr. 6, 1950; minimum recorded, 1.48 ft Oct. 4, 1949, but may have been less during August and September 1958.

Remarks.--Records represent stages in the Shiawassee Flats area.

Mean gage height in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.33	2.78	2.87	4.84	2.86	9.91	2.73	2.53	2.18	1.83	1.88	2.08
2	2.49	2.69	2.81	4.58	2.83	10.09	2.58	2.74	3.64	1.82	1.88	1.72
3	2.53	2.60	2.89	4.27	2.86	10.08	2.57	2.33	2.76	2.17	1.95	1.54
4	2.60	2.37	2.90	3.86	2.79	9.78	2.64	2.89	2.67	2.20	2.20	1.59
5	2.55	2.49	2.63	3.45	2.71	9.32	2.68	2.69	2.18	2.13	1.72	1.81
6	2.47	2.24	2.49	3.74	2.69	8.81	3.16	2.53	2.25	3.53	1.68	1.53
7	2.53	2.17	2.91	3.99	2.75	f8.53	5.82	2.33	1.87	3.82	1.67	1.70
8	2.22	2.18	2.89	3.84	2.74	(a)	5.38	2.13	1.89	3.42	1.98	1.82
9	2.23	2.17	2.85	3.50	2.62	(a)	4.20	2.23	2.45	3.18	1.74	1.56
10	2.52	2.50	2.76	3.41	2.50	(a)	3.76	2.27	1.91	2.85	1.80	1.91
11	2.32	2.22	2.94	3.53	2.45	(a)	3.80	2.17	2.28	2.73	1.93	1.98
12	2.06	2.26	2.74	3.44	2.37	(a)	3.69	2.25	2.03	2.54	1.72	1.57
13	2.04	2.30	2.61	3.32	2.37	(a)	3.61	2.00	2.08	2.46	2.08	1.53
14	1.94	2.63	2.70	3.18	2.39	(a)	3.37	1.84	2.89	2.18	1.66	1.51
15	1.98	5.26	2.85	3.14	2.42	(a)	3.12	1.94	2.47	2.13	1.91	1.51
16	1.91	5.77	2.89	2.99	2.46	(a)	2.94	1.85	2.33	2.29	1.97	1.69
17	2.04	5.01	2.97	2.97	2.46	(a)	2.82	1.80	2.33	2.36	1.88	2.41
18	2.67	4.73	2.94	2.88	2.51	(a)	2.68	1.73	2.18	2.06	2.04	2.41
19	2.40	4.71	4.77	2.70	2.48	(a)	2.55	1.82	1.93	2.07	1.66	2.02
20	2.27	4.82	7.48	2.59	2.45	(a)	2.48	1.78	1.94	2.32	1.84	1.78
21	2.03	4.52	8.12	2.65	2.55	(a)	2.97	1.98	2.12	2.11	1.90	1.76
22	1.94	4.17	7.29	2.66	2.90	(a)	2.85	2.24	2.05	2.13	2.97	1.72
23	2.14	3.80	6.27	2.66	2.59	f3.57	3.07	2.15	2.43	1.94	2.72	1.62
24	4.10	3.63	5.71	2.67	2.61	3.56	3.46	1.84	2.00	1.86	2.22	1.57
25	4.53	3.52	5.20	2.70	2.72	3.48	4.02	1.87	1.85	1.72	2.06	1.61
26	4.09	3.31	5.68	2.70	5.52	3.41	3.85	2.02	1.74	1.87	1.88	1.78
27	3.55	2.95	6.58	2.75	8.71	3.26	3.39	1.74	2.02	1.77	1.67	1.67
28	3.01	2.74	5.53	2.77	9.63	3.15	3.12	2.10	2.05	1.63	1.58	1.78
29	2.73	3.04	5.03	2.78	-------	3.08	2.72	1.85	1.73	1.70	1.57	1.52
30	2.83	3.08	4.84	2.79	-------	2.85	2.53	1.72	1.84	1.82	1.57	1.49
31	2.87	-------	4.48	2.84	-------	2.73	-------	1.77	-------	2.06	1.77	-------

a No gage-height record.
f Fragmentary gage-height record.

1500. East Branch Cass River near Cass City, Mich.

Location.--Lat 43°34'10", long 83°06'30", in NW¼ sec.7, T.13 N., R.12 E., on left bank 1½ miles downstream from bridge on State Highway 53, 3 miles upstream from confluence with North Branch, and 4 miles southeast of Cass City.

Drainage area.--251 sq mi.

Records available.--October 1948 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Altitude of gage is 715 ft (from river-profile map). Prior to Nov. 8, 1952, wire-weight gage at site 1¾ miles upstream at different datum.

Average discharge.--10 years, 137 cfs.

Extremes.--Maximum daily discharge during year, 800 cfs Mar. 4; maximum gage height, 6.74 ft Mar. 2 (ice jam); minimum discharge, 0.2 cfs Aug. 19, 20 (gage height, 1.72 ft). 1948-58: Maximum discharge, 4,940 cfs Mar. 28, 1950 (gage height, 23.07 ft, from graph based on gage readings, site and datum then in use); minimum, 0.2 cfs Sept. 20-23, 1955, Aug. 19, 20, 1958.

Remarks.--Records good except those for periods of ice effect and those below 5 cfs, which are poor.

Revisions (water years).--WSP 1337: 1949-50.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used Oct. 1 to Nov. 15, June 2 to July 3, July 9 to Aug. 21)

1.6	0.2	2.5	61
1.7	1.6	3.0	131
1.9	7.5	3.5	229
2.0	12	4.0	360
2.1	18	6.0	1,040

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.2	8.0	30	50	23	180	54	29	10	3.0	1.3	2.5
2	2.2	7.5	30	45	23	300	51	25	12	3.3	1.5	3.3
3	2.2	7.2	28	40	*23	450	46	24	*12	13	1.3	3.9
4	1.9	6.9	24	37	22	800	44	26	9.3	32	*1.2	4.5
5	1.9	*6.9	22	36	22	600	39	25	7.2	26	.8	5.4
6	1.9	6.9	22	35	22	550	42	*22	6.3	24	.8	5.1
7	2.2	6.6	28	34	22	450	65	19	5.7	*23	.6	8.0
8	2.5	6.9	29	*33	21	400	*78	18	6.6	13	2.5	11
9	*2.8	7.2	25	33	21	300	69	18	8.0	8.8	3.0	*8.8
10	2.8	8.8	*21	32	21	257	54	17	12	6.3	2.2	6.9
11	2.5	8.8	23	31	20	182	51	17	9.3	5.1	1.6	5.4
12	2.8	8.0	25	31	20	140	77	16	7.2	4.5	1.5	4.5
13	3.0	8.4	24	30	19	125	104	14	6.6	3.6	1.3	3.9
14	3.3	14	25	30	19	121	81	13	6.6	3.0	1.6	3.3
15	3.0	67	25	29	19	118	63	14	6.3	3.0	1.5	2.5
16	3.3	65	30	29	19	110	53	13	6.0	3.0	1.3	2.5
17	6.3	47	34	28	19	109	47	13	4.8	3.3	1.0	3.3
18	8.0	37	37	28	19	109	40	16	4.2	5.4	.6	5.4
19	10	39	319	28	19	118	35	15	3.9	8.0	.2	5.7
20	8.0	47	568	28	19	125	40	12	3.9	6.9	.2	5.7
21	6.3	37	675	27	20	133	67	10	4.2	5.4	3.0	5.7
22	5.4	31	416	27	21	153	74	10	4.2	4.5	10	5.1
23	7.5	27	221	27	23	138	60	9.8	4.8	3.9	17	3.9
24	17	23	140	26	27	123	56	10	5.1	2.8	11	3.6
25	30	23	97	26	34	*100	61	9.3	5.1	2.2	8.4	3.0
26	20	20	296	25	50	89	54	8.8	4.8	1.9	6.3	3.0
27	13	19	351	25	75	85	44	7.5	4.8	1.5	4.8	3.0
28	10	22	192	25	120	78	39	7.2	5.1	1.0	3.9	2.5
29	8.9	25	121	25	-	72	36	6.6	4.5	1.2	2.8	2.5
30	8.4	30	96	24	-------	66	31	6.6	3.3	1.0	3.3	2.5
31	8.0	-------	70	24	-------	61	-------	6.6	-------	1.0	2.8	-------
Total	207.2	671.1	4,046	948	782	6,642	1,655	458.4	193.8	224.6	99.3	136.4
Mean	6.68	22.4	131	30.6	27.9	214	55.2	14.8	6.46	7.25	3.20	4.55
Cfsm	0.027	0.089	0.522	0.122	0.111	0.853	0.220	0.059	0.026	0.029	0.013	0.018
In.	0.03	0.10	0.60	0.14	0.12	0.98	0.25	0.07	0.03	0.03	0.02	0.02

Calendar year 1957 : Max 1,140 Min 0.9 Mean 89.2 Cfsm 0.355 In. 4.82
Water year 1957-58 : Max 800 Min 0.2 Mean 44.0 Cfsm 0.175 In. 2.39

Peak discharge (base, 800 cfs).--Mar. 2 or 4 (time and discharge unknown).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 25, Nov. 29 to Dec. 3, Dec. 9-11, Dec. 31 to Mar. 9.

1505. Cass River at Cass City, Mich.

Location.--Lat 43°35'10", long 83°10'35", in NE¼ sec.4, T.13 N., R.11 E., on left bank 500 ft downstream from highway bridge, half a mile downstream from confluence of North Branch and East Branch, and 1 mile south of Cass City.

Drainage area.--370 sq mi, approximately.

Records available.--October 1947 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 697.92 ft above mean sea level, datum of 1929. Prior to Nov. 14, 1952, wire-weight gage at site 500 ft upstream at same datum.

Average discharge.--11 years, 218 cfs.

Extremes.--Maximum discharge during year, 1,280 cfs Mar. 5 (gage height, 7.99 ft); maximum gage height, 9.02 ft Mar. 3 (ice jam); minimum discharge, 0.9 cfs Aug. 20 (gage height, 4.46 ft).

1947-58: Maximum discharge, 9,600 cfs Mar. 20, 1948 (gage height, 15.80 ft, from graph based on gage readings), from rating curve extended above 5,300 cfs by logarithmic plotting; minimum, 0.5 cfs Sept. 26, 1948.

Remarks.--Records good except those for periods of ice effect and those below 5 cfs, which are poor.

Revisions (water years).--WSP 1337: 1949-50.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 29 to Sept. 14)

4.4	0.7	5.2	83
4.5	4.0	5.5	150
4.6	9.0	6.0	290
4.7	16	7.0	700
5.0	48	8.0	1,290

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.5	35	85	132	61	400	116	59	22	8.0	2.6	2.6
2	8.5	33	85	120	60	550	105	51	*30	8.5	3.0	2.0
3	8.0	32	80	105	*58	700	97	50	32	13	4.5	3.5
4	7.5	31	70	100	58	900	87	45	28	31	*4.0	7.0
5	7.0	*29	65	95	57	1,250	81	*44	23	33	4.0	6.0
6	7.0	26	56	95	56	1,050	91	40	19	38	4.0	7.0
7	7.0	25	66	*90	55	896	*116	38	16	*34	3.5	7.5
8	*7.0	26	66	85	54	750	138	35	18	32	3.0	*13
9	7.0	28	*70	85	54	614	132	35	18	28	8.0	12
10	7.0	29	70	83	53	507	110	33	21	20	8.0	8.5
11	7.0	31	65	82	52	378	105	33	20	15	9.0	7.5
12	7.0	29	70	80	51	304	130	31	18	12	7.0	6.5
13	7.0	29	81	79	50	275	170	27	17	9.0	5.0	5.5
14	7.0	45	85	78	50	263	145	26	17	8.0	4.5	5.0
15	6.5	135	87	77	49	251	121	26	16	7.5	5.5	4.0
16	7.5	165	97	76	48	236	101	24	15	8.5	5.5	3.5
17	15	175	103	75	47	242	87	22	14	7.0	4.0	4.5
18	19	158	116	74	47	242	77	24	12	6.5	2.6	11
19	23	140	386	73	47	254	68	24	11	9.0	1.6	15
20	22	132	685	72	48	269	74	21	11	9.0	1.3	16
21	18	121	962	71	50	281	116	19	11	7.0	6.0	15
22	16	112	761	70	52	300	138	18	9.0	6.0	10	12
23	23	91	524	70	55	290	130	17	9.7	5.0	22	9.7
24	51	77	346	68	64	275	130	17	12	4.5	17	9.0
25	79	79	236	67	77	*239	132	17	12	4.0	12	8.5
26	77	68	402	66	100	209	121	15	12	4.0	8.0	7.0
27	72	56	503	65	180	185	101	14	12	4.0	5.5	7.0
28	58	62	403	65	300	168	87	13	12	3.5	5.5	6.5
29	44	77	322	64	--	155	77	12	11	3.5	3.0	6.0
30	40	87	248	64	-------	140	68	12	8.5	3.0	3.0	5.5
31	38	-------	185	62	-------	130	-------	12	-------	3.0	4.0	-------
Total	711.5	2,163	7,380	2,488	1,933	12,703	3,251	854	487.2	384.5	186.6	233.8
Mean	23.0	72.1	238	80.3	69.0	410	108	27.5	16.2	12.4	6.02	7.79
Cfsm	0.062	0.195	0.643	0.217	0.186	1.11	0.292	0.074	0.044	0.034	0.016	0.021
In.	0.07	0.22	0.74	0.25	0.19	1.28	0.33	0.09	0.05	0.04	0.02	0.02

Calendar year 1957: Max 1,590 Min 3.0 Mean 151 Cfsm 0.408 In. 5.54
Water year 1957-58: Max 1,250 Min 1.3 Mean 89.8 Cfsm 0.243 In. 3.30

Peak discharge (base, 1,000 cfs).--Mar. 5 (3 to 5 a.m.) 1,280 cfs (7.99 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 1-5, 9-12, Jan. 2 to Mar. 4.

1510. Cass River at Vassar, Mich.

Location.--Lat 43°22'10", long 83°34'55", in SW¼ sec.7, T.11 N., R.8 E., on downstream side of bridge on State Highway 15 in Vassar, 1¼ miles upstream from Goodings Creek.

Drainage area.--700 sq mi, approximately.

Records available.--October 1948 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Gage-height records for flood seasons collected in this vicinity 1910-28 are contained in reports of U. S. Weather Bureau.

Gage.--Wire-weight gage and crest-stage indicator above concrete dam; gage read twice daily. Datum of gage is 612.376 ft above mean sea level, datum of 1929 (levels by U. S. Weather Bureau).

Average discharge.--10 years, 421 cfs.

Extremes.--Maximum discharge observed during year, 1,940 cfs Mar. 6 (gage height, 7.43 ft); maximum gage height, 7.64 ft Mar. 5 (ice jam); minimum discharge, 22 cfs Aug. 17 (gage height, 3.04 ft).
1948-58: Maximum discharge, 11,300 cfs Mar. 28, 1950 (gage height, 16.60 ft); minimum observed, 15 cfs Oct. 10, 1955 (gage height, 3.14 ft).
A stage of 20.8 ft occurred on Mar. 20, 1948, from U. S. Weather Bureau records (discharge, 18,000 cfs, from rating curve extended above 12,000 cfs by logarithmic plotting).

Remarks.--Records good except those for periods of ice effect, which are fair. Some regulation by dam at Michigan Sugar Co. 10 miles above station.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 4				Mar. 5 to Sept. 30			
3.3	42	5.0	560	3.0	20	4.0	194
3.6	92	7.0	1,680	3.2	36	5.0	560
4.0	194			3.5	76	8.0	2,280
				3.8	138		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53	128	209	280	100	750	224	131	74	40	26	30
2	52	119	203	161	100	900	224	133	83	41	24	26
3	50	114	164	180	100	1,100	173	221	*81	67	25	26
4	49	107	176	190	*80	1,300	161	126	79	60	25	35
5	49	107	164	190	90	1,500	234	*114	76	99	*26	35
6	46	*103	182	190	90	1,800	185	*112	78	136	28	32
7	46	99	185	190	90	1,750	194	112	72	112	30	33
8	48	99	182	194	90	1,540	*234	108	86	*79	31	35
9	*46	110	176	*197	85	1,210	287	110	90	84	28	*40
10	46	110	*143	185	85	900	212	110	81	64	26	42
11	46	107	96	175	84	720	212	110	74	56	25	41
12	46	105	88	170	82	560	308	106	72	53	26	41
13	46	107	138	159	80	548	237	72	74	41	25	38
14	46	143	131	150	78	492	263	60	78	41	25	40
15	46	297	121	145	78	528	273	66	63	35	28	34
16	52	408	133	135	76	440	266	73	64	42	27	41
17	68	408	154	130	75	476	176	73	52	42	24	36
18	61	404	159	131	75	452	164	79	66	41	25	53
19	58	337	418	121	75	366	215	76	62	43	25	44
20	59	337	1,280	124	75	392	209	70	60	40	29	47
21	64	297	1,580	119	78	512	185	74	57	41	51	47
22	71	256	1,240	119	80	488	263	73	64	36	41	47
23	94	234	900	119	90	476	308	66	74	26	36	47
24	161	206	660	115	100	444	326	64	52	25	35	47
25	203	188	484	110	120	*440	370	66	37	26	31	47
26	206	167	536	110	170	358	385	64	31	27	31	41
27	179	167	870	110	300	358	234	56	35	26	28	41
28	136	170	750	110	500	351	170	61	34	27	33	36
29	99	200	605	110	-	333	188	62	44	28	32	33
30	133	215	464	110	-------	234	164	62	36	28	35	31
31	136	-------	392	105	-------	230	-------	61	-------	29	30	-------
Total	2,495	5,849	12,983	4,634	3,126	21,948	7,044	2,771	1,939	1,535	911	1,166
Mean	80.5	195	419	149	112	708	235	89.4	64.6	49.5	29.4	38.9
Cfsm	0.115	0.279	0.599	0.213	0.160	1.01	0.336	0.128	0.092	0.071	0.042	0.056
In.	0.13	0.31	0.69	0.25	0.17	1.16	0.37	0.15	0.10	0.08	0.05	0.06

Calendar year 1957: Max 2,420 Min 28 Mean 305 Cfsm 0.436 In. 5.89
Water year 1957-58: Max 1,800 Min 24 Mean 182 Cfsm 0.260 In. 3.52

Peak discharge (base, 3,000 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 3-7, 11, 14-17, Jan. 24 to Mar. 6.

1515. Cass River at Frankenmuth, Mich.

Location.--Lat 43°19'35", long 83°44'50", in sec.27, T.11 N., R.6 E., on right bank half a mile west of Frankenmuth, 3.4 miles upstream from Dead Creek, and 5.4 miles downstream from Perry Creek.

Drainage area.--848 sq mi.

Records available.--February 1908 to March 1909, July 1935 to September 1936, June 1939 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 583.96 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). February 1908 to March 1909 staff gage at site half a mile upstream at datum 1.81 ft lower. July 18 to Sept. 11, 1935, wire-weight gage and Sept. 12, 1935, to Sept. 30, 1936, and June 20, 1939, to Sept. 30, 1949, water-stage recorder, at site half a mile downstream at datum 0.04 ft higher than present datum.

Average discharge.--20 years (1935-36, 1939-58), 480 cfs.

Extremes.--Maximum discharge during year, 2,760 cfs Mar. 5, 6 (gage height, 12.11 ft); maximum gage height, 12.34 ft Mar. 1 (ice jam); minimum discharge, 32 cfs Aug. 17-19.
1908-9, 1935-36, 1939-58: Maximum discharge, 17,700 cfs Mar. 18, 1942 (gage height, 20.88 ft); maximum gage height, 22.44 ft Feb. 17, 1954 (ice jam); minimum daily discharge, about 1.5 cfs Aug. 6, 1944.

Remarks.--Records good except those for periods of ice effect, which are fair. Occasional diurnal fluctuation at low and medium flows caused by mill above station. Prior to 1950, regulation at low and medium flows by mill above station.

Revisions (water years).--WSP 1307: 1936(M), 1940(M).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 5-17)

Oct. 1 to Mar. 6				Mar. 7 to Sept. 30	
3.2	40	6.0	555	3.0	30
3.8	104	10.0	1,800	3.2	42
4.5	216	12.0	2,700	3.8	104

Note.--Same as preceding table above 3.8 ft.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	154	260	450	170	1,100	282	200	143	53	42	42
2	57	143	241	312	170	1,400	276	175	225	62	38	39
3	55	133	207	300	170	1,700	243	248	*152	202	36	38
4	52	126	202	290	*165	*1,900	225	182	123	116	36	41
5	50	123	211	280	160	2,200	278	146	116	148	*36	49
6	49	*119	198	280	155	2,600	260	*146	108	239	38	42
7	48	112	230	280	150	2,160	274	146	97	198	43	41
8	47	114	232	*280	145	1,770	*280	144	127	*154	49	42
9	*45	129	220	270	140	1,560	368	148	160	175	43	*44
10	43	133	*202	270	135	1,190	292	143	132	159	39	45
11	42	123	164	260	130	988	276	140	120	102	38	51
12	42	117	154	250	130	766	395	133	108	90	36	51
13	42	123	216	248	125	724	327	122	106	81	36	50
14	42	180	211	238	125	631	330	90	112	73	35	49
15	43	438	178	221	120	682	327	91	98	60	36	46
16	50	542	184	216	120	555	308	92	90	64	34	48
17	79	458	202	211	120	478	243	93	86	67	33	53
18	85	388	230	198	120	634	202	105	84	64	32	62
19	69	422	508	184	120	518	230	100	81	63	32	69
20	63	430	1,190	180	120	552	260	96	77	59	34	60
21	62	368	1,700	176	125	625	278	92	77	53	80	59
22	65	314	1,620	180	130	595	338	102	86	51	80	58
23	90	286	1,240	184	140	583	410	115	86	44	57	56
24	212	260	937	175	160	542	442	106	114	41	51	54
25	282	234	682	170	200	520	498	96	77	39	47	54
26	252	214	775	170	300	465	482	91	78	38	45	52
27	218	202	1,090	170	550	440	334	84	74	37	44	49
28	193	212	1,010	170	800	432	230	81	64	41	43	46
29	175	247	811	170	-	410	260	78	64	49	42	43
30	162	276	616	170	-------	296	248	77	68	51	47	42
31	160	-------	522	170	-------	308	-------	79	-------	46	50	-------
Total	2,933	7,120	16,443	7,123	5,195	29,324	9,196	3,741	3,133	2,719	1,332	1,495
Mean	94.6	237	530	230	186	946	307	121	104	87.7	43.0	49.8
Cfsm	0.112	0.279	0.625	0.271	0.219	1.12	0.362	0.143	0.123	0.103	0.051	0.059
In.	0.13	0.31	0.72	0.31	0.23	1.29	0.40	0.16	0.14	0.12	0.06	0.07

Calendar year 1957 : Max 3,290 Min 41 Mean 390 Cfsm 0.460 In. 6.23
Water year 1957-58 : Max 2,600 Min 32 Mean 246 Cfsm 0.290 In. 3.94

Peak discharge (base, 3,500 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 3-11, Jan. 24 to Mar. 5.

1525. Tobacco River at Beaverton, Mich.

Location.--Lat 43°52'45", long 84°28'25", in sec.7, T.17 N., R.1 W., on left bank 15 ft downstream from highway bridge, 1 mile downstream from powerplant at Beaverton, and 2 miles upstream from Venison Creek.

Drainage area.--487 sq mi.

Records available.--July 1948 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 683.27 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--10 years, 368 cfs.

Extremes.--Maximum discharge during year, 2,420 cfs Apr. 7 (gage height, 7.31 ft); minimum, 5.9 cfs July 17, 18, 21 (gage height, 0.73 ft); minimum daily, 55 cfs Sept. 9. 1948-58: Maximum discharge, 7,680 cfs July 9, 1957 (gage height, 12.95 ft); minimum, that of July 17, 18, 21, 1958; minimum daily, 25 cfs Aug. 12, 1951.

Remarks.--Records good except those for periods of ice effect, which are fair. Regulation at all stages by powerplant 1 mile upstream.

Revisions (water years).--WSP 1307: 1948(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.5	47	4.0	680
1.8	80	6.0	1,600
2.5	210	8.0	2,900
3.0	335		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	234	253	351	264	281	544	431	259	214	116	119	206
2	165	280	306	257	270	543	416	232	272	138	155	179
3	202	250	225	312	250	731	404	238	302	177	159	156
4	158	171	284	312	230	735	311	303	181	236	119	181
5	166	319	289	336	240	905	281	273	*218	268	115	166
6	243	226	306	310	*249	841	1,070	191	220	236	*120	207
7	227	231	348	356	255	743	2,270	198	185	299	190	250
8	255	*285	259	335	200	740	1,110	*195	192	184	112	288
9	168	283	258	267	205	744	814	198	224	139	156	55
10	*186	363	262	255	175	684	*697	191	271	*216	167	112
11	212	302	219	237	240	525	613	180	230	135	104	*498
12	210	248	*205	244	240	492	458	189	201	136	115	103
13	155	295	242	245	200	624	406	178	192	182	149	183
14	173	427	248	295	260	547	409	220	184	165	116	170
15	209	913	279	261	370	413	375	212	177	162	122	265
16	302	1,030	254	282	220	555	342	174	151	162	121	162
17	290	733	298	261	180	489	338	108	262	109	117	162
18	256	663	290	246	180	482	302	326	115	92	98	162
19	243	774	423	265	180	554	342	166	140	144	121	162
20	294	936	690	193	210	569	382	198	124	154	202	173
21	264	781	929	220	300	695	362	216	200	95	431	175
22	207	509	776	*276	500	730	396	202	201	122	73	158
23	259	519	640	280	450	725	*310	166	183	142	73	158
24	440	360	472	233	350	626	359	85	222	163	152	158
25	646	374	408	331	250	*695	336	323	326	130	195	271
26	456	368	578	350	300	438	259	177	311	121	196	160
27	441	405	512	243	494	462	291	214	223	130	141	170
28	247	366	517	264	504	191	349	174	189	225	156	170
29	236	330	387	299	-	489	260	167	101	230	154	160
30	231	392	313	286	--------	433	283	189	169	149	182	170
31	306	--------	285	278	--------	430	--------	182	--------	147	153	--------
Total	8,081	13,386	11,853	8,593	7,783	18,374	14,976	6,324	6,179	5,104	4,583	5,590
Mean	261	446	382	277	278	593	499	204	206	165	148	186
Cfsm	0.536	0.916	0.784	0.569	0.571	1.22	1.02	0.419	0.423	0.339	0.304	0.382
In.	0.62	1.02	0.90	0.66	0.59	1.41	1.14	0.48	0.47	0.39	0.35	0.43

Calendar year 1957: Max 6,860 Min 81 Mean 398 Cfsm 0.817 In. 11.11
Water year 1957-58: Max 2,270 Min 55 Mean 304 Cfsm 0.624 In. 8.46

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Feb. 3-5, 8-26.

1535. Salt River near North Bradley, Mich.

Location.--Lat 43°42'10", long 84°28'15", in SE¼ sec.7, T.15 N., R.1 W., on right bank 200 ft upstream from bridge on U. S. Highway 10, 0.5 mile upstream from Bluff Creek, and 1.1 miles southeast of North Bradley.

Drainage area.--138 sq mi.

Records available.--June 1934 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 618.01 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). June 4, 1934, to Mar. 26, 1942, staff gage at site 100 ft downstream and Mar. 27, 1942, to July 7, 1954, wire-weight gage at bridge 200 ft downstream at same datum.

Average discharge.--24 years, 76.1 cfs.

Extremes.--Maximum discharge during year not determined, occurred Mar. 4 during period of ice effect; maximum gage height, 7.92 ft Mar. 4 (ice jam); minimum discharge 4.4 cfs Aug. 18, 19, 20; minimum gage height, 0.25 ft Aug. 18, 19, 20.
1934-58: Maximum discharge, 8,200 cfs Mar. 20, 1948 (gage height, 14.95 ft, from graph based on gage readings), from rating curve extended above 4,400 cfs; minimum observed, 1.1 cfs Aug. 14, 1944 (gage height, 0.21 ft).

Remarks.--Records good except those for periods of ice effect, which are poor.

Revisions (water years).--WSP 1337: 1936-39, 1940(M), 1943(M), 1949-50.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-18)

Oct. 1 to Feb. 28				Mar. 1 to June 9, Sept. 27-30				June 10 to Sept. 26	
0.2	8.8	2.0	152	0.3	13	2.0	152	0.2	2.7
.4	13	4.0	435	.5	18	4.0	435	.3	6.1
.6	22	6.0	760	1.0	49	6.0	760	.6	23
1.0	49							1.0	49

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	28	49	64	33	60	47	26	21	9.9	7.2	15
2	11	26	48	58	32	110	43	25	20	10	6.6	12
3	10	25	46	56	32	250	41	26	16	14	6.1	9.9
4	10	24	45	54	32	450	39	28	*14	21	6.6	15
5	10	23	42	52	32	700	36	25	14	18	5.4	24
6	10	22	40	51	*32	550	243	24	14	18	*5.4	20
7	10	21	43	49	32	450	412	*22	14	15	7.2	15
8	10	*27	43	47	32	400	176	22	21	12	13	13
9	9.9	43	40	45	32	360	*109	22	30	*10	13	12
10	9.9	38	35	*43	32	320	83	22	21	9.9	8.8	*9.9
11	*10	30	32	42	31	300	70	21	15	9.3	7.2	9.9
12	10	28	*32	41	31	280	62	20	13	8.8	6.6	8.8
13	10	29	30	39	30	260	55	19	12	8.3	5.8	7.7
14	10	102	32	38	30	250	49	18	13	7.7	5.4	7.7
15	11	647	36	37	30	233	43	17	12	8.3	5.4	7.2
16	13	341	35	36	29	214	40	17	10	8.8	5.1	7.2
17	20	176	36	35	29	196	37	16	9.3	8.3	5.1	8.8
18	18	156	34	35	28	189	34	17	8.3	7.7	4.7	13
19	15	586	98	34	28	207	31	17	8.3	7.7	4.4	12
20	13	421	227	34	28	233	32	16	10	7.7	9.9	8.8
21	13	212	493	34	27	218	37	15	13	7.2	22	8.3
22	13	148	250	34	27	189	37	15	9.9	7.2	17	8.3
23	20	110	162	34	27	158	35	15	10	6.6	12	8.3
24	103	96	131	34	28	129	47	15	15	6.1	9.9	7.2
25	90	82	87	33	28	*105	59	17	22	6.1	9.3	13
26	60	69	216	33	29	89	43	15	31	7.2	9.9	15
27	44	63	150	33	31	81	36	14	26	6.6	8.8	14
28	36	68	110	33	40	73	34	14	17	8.3	8.3	14
29	32	69	90	33	-	64	33	14	13	10	7.7	13
30	31	62	80	33	-------	58	29	14	11	9.9	9.9	13
31	30	-------	70	33	-------	51	-------	15	-------	7.7	13	-------
Total	703.8	3,772	2,862	1,257	852	7,227	2,066	583	463.8	303.3	266.7	351.0
Mean	22.7	126	92.3	40.5	30.4	233	68.9	18.8	15.5	9.78	8.60	11.7
Cfsm	0.164	0.913	0.669	0.293	0.220	1.69	0.499	0.136	0.112	0.071	0.062	0.085
In.	0.19	1.02	0.77	0.34	0.23	1.95	0.56	0.16	0.12	0.08	0.07	0.09

Calendar year 1957: Max 4,320 Min 9.2 Mean 99.1 Cfsm 0.718 In. 9.75
Water year 1957-58: Max 700 Min 4.4 Mean 56.7 Cfsm 0.411 In. 5.58

Peak discharge (base, 800 cfs).--Mar. 4 (time and discharge unknown).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 4, 8-12, Dec. 27 to Mar. 14.

1540. Chippewa River near Mount Pleasant, Mich.

Location.--Lat 43°37'35", long 84°42'30", on line between secs. 7 and 8, T.14 N., R.3 W., on right bank 12 ft downstream from highway bridge and 4 miles northeast of Mount Pleasant.

Drainage area.--416 sq mi.

Records available.--October 1930 to September 1931, October 1932 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Gage-height records for flood seasons collected in this vicinity 1910-27, are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 710.38 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Oct. 21, 1938, chain and wire-weight gage at site 30 ft upstream at same datum.

Average discharge.--27 years, 287 cfs.

Extremes.--Maximum discharge during year, 813 cfs Nov. 15 (gage height, 5.27 ft); maximum gage height, 5.59 ft Jan. 9 (ice jam); minimum discharge, 42 cfs July 28 (gage height, 3.09 ft); minimum daily, 92 cfs July 28, Aug. 19; minimum gage height, 3.02 ft Aug. 8, 19.
1930-31, 1932-58: Maximum discharge, 4,960 cfs Mar. 8, 1946 (gage height, 12.78 ft); minimum, 12 cfs Aug. 18, 1945; minimum daily, 19 cfs Aug. 16, 1936; minimum gage height, 2.82 ft Dec. 21, 1944.

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation below 750 cfs caused by powerplant at Mount Pleasant.

Revisions (water years).--WSP 744: Drainage area. WSP 1337: 1931, 1933-40, 1945, 1948-49.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-4, Oct. 17 to Nov. 13, June 2 to Sept. 15)

2.9	76
4.5	572
6.0	1,050

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	175	240	315	240	190	470	364	212	184	144	129	200
2	172	234	299	250	190	476	355	225	206	154	135	166
3	172	225	278	260	190	488	343	225	203	209	122	163
4	169	216	265	260	*190	*504	312	219	*178	231	113	225
5	166	206	278	250	190	476	312	222	172	216	*116	225
6	169	*209	268	240	190	457	405	222	163	216	119	197
7	175	209	271	240	190	479	578	*200	172	231	113	191
8	163	222	271	250	190	464	581	209	191	203	110	203
9	172	243	262	270	190	457	*538	200	222	*172	101	188
10	*166	259	253	*280	200	414	460	206	231	163	110	*188
11	163	243	*220	280	210	398	417	200	178	144	104	169
12	166	253	230	280	220	389	367	206	166	150	98	169
13	166	240	240	270	220	426	336	194	163	144	110	144
14	163	343	240	250	230	423	302	194	175	132	95	150
15	160	746	240	230	230	414	284	191	169	138	107	144
16	172	712	230	210	230	402	278	178	163	147	113	135
17	191	659	230	205	230	392	256	169	154	144	95	157
18	222	594	230	210	230	386	250	178	147	150	95	175
19	216	733	260	240	220	423	250	178	157	138	92	166
20	197	659	408	230	220	457	246	169	175	144	95	157
21	191	575	584	210	210	460	250	163	194	132	135	163
22	175	516	501	200	200	501	231	169	184	113	188	154
23	216	470	442	190	200	473	231	147	194	113	119	157
24	374	432	395	190	210	448	256	147	184	110	116	150
25	414	389	364	190	230	436	274	150	222	113	122	200
26	367	370	386	190	268	420	271	147	234	113	110	222
27	318	364	383	190	383	411	259	150	209	107	110	212
28	256	352	361	190	460	408	250	150	197	92	110	191
29	253	340	333	190	-	402	240	150	166	126	110	181
30	246	324	305	190	-------	395	231	150	147	147	175	175
31	246	-------	299	190	-------	374	-------	157	-------	141	256	-------
Total	6,571	11,577	9,641	7,065	6,311	13,523	9,727	5,677	5,500	4,677	3,723	5,317
Mean	212	386	311	228	225	436	324	183	183	151	120	177
Cfsm	0.510	0.928	0.748	0.548	0.541	1.05	0.779	0.440	0.440	0.363	0.288	0.425
In.	0.59	1.04	0.86	0.63	0.56	1.21	0.87	0.51	0.49	0.42	0.33	0.47

Calendar year 1957: Max 2,280 Min 141 Mean 322 Cfsm 0.744 In. 10.52
Water year 1957-58: Max 746 Min 92 Mean 245 Cfsm 0.589 In. 7.98

Peak discharge (base, 850 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 11-19, Jan. 2 to Feb. 25.

1545. Chippewa River near Midland, Mich.

Location.--Lat 43°35'40", long 84°22'10", on line between sec.24, T.14 N., R.1 W., and sec.28, T.14 N., R.1 E., on upstream side of bridge on State Highway 30, 5 miles upstream from Pine River and 6 miles southwest of Midland.

Drainage area.--597 sq mi.

Records available.--October 1947 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Wire-weight gage read twice daily. Datum of gage is 612.35 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--11 years, 439 cfs.

Extremes.--Maximum discharge during year, 1,570 cfs Nov. 20 (gage height, 3.86 ft, from graph based on gage readings); maximum gage height, 4.88 ft Mar. 2 (ice jam); minimum discharge, 58 cfs Aug. 18 (gage height, 2.40 ft).
1947-58: Maximum discharge, 8,510 cfs Mar. 20, 1948 (from graph based on gage readings); maximum gage height observed, 12.43 ft Mar. 19, 1948 (ice jam); minimum daily discharge, 44 cfs Aug. 16, 1948.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diurnal fluctuation below 750 cfs caused by powerplant at Mount Pleasant.

Revisions (water years).--WSP 1337: 1950.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 8-10, June 2 to Sept. 17)

Oct. 1 to Mar. 12		Mar. 13 to Sept. 30	
2.4	162	2.1	40
2.6	286	2.4	190
3.0	630	2.7	400
4.0	1,720	4.0	1,700

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	201	345	424	430	310	1,000	510	285	190	157	208	260
2	201	330	400	370	300	1,100	520	250	214	168	184	220
3	196	308	384	350	300	1,200	480	264	232	214	174	184
4	196	266	360	260	300	1,300	480	278	*220	260	168	250
5	190	250	338	360	*290	*1,300	392	232	196	299	162	250
6	179	232	301	350	290	1,300	700	244	190	292	*157	230
7	184	*259	330	340	280	1,300	890	*232	200	285	174	210
8	212	272	338	340	280	1,250	880	208	220	271	162	210
9	168	316	320	350	280	1,200	*750	220	250	*226	146	210
10	*184	345	280	*360	290	1,150	670	202	270	208	130	*202
11	173	345	*270	360	300	1,100	580	202	250	226	135	208
12	173	301	290	350	310	1,000	540	202	210	196	120	202
13	173	316	300	340	330	970	480	202	200	214	130	232
14	173	408	300	330	340	890	420	174	220	220	110	190
15	180	580	300	320	350	820	384	174	210	232	110	190
16	190	1,300	300	320	350	800	352	184	200	220	120	174
17	218	1,170	300	320	350	780	328	184	190	220	105	179
18	232	1,000	320	330	350	750	306	179	180	232	72	184
19	252	1,250	400	340	350	830	313	184	190	226	80	196
20	245	1,470	650	350	350	840	320	179	210	210	85	232
21	196	1,130	850	350	340	850	336	174	230	210	130	196
22	201	917	1,030	340	330	820	336	168	220	190	214	214
23	207	785	763	330	320	820	306	152	240	174	202	214
24	424	680	650	320	330	780	360	168	220	115	152	220
25	796	570	530	310	360	710	440	174	270	135	125	264
26	650	521	680	310	500	680	392	162	320	174	125	293
27	512	512	720	310	750	660	336	157	313	174	125	336
28	424	512	630	310	900	630	336	152	264	184	120	293
29	345	503	610	310	-	600	320	146	244	174	125	264
30	345	458	580	310	-------	590	306	150	190	140	184	292
31	345	-------	500	310	-------	570	-------	157	-------	202	306	-------
Total	8,365	17,651	14,408	10,480	10,130	28,590	13,763	6,039	6,753	6,448	4,540	6,811
Mean	270	588	465	338	362	922	459	195	225	208	146	227
Cfsm	0.452	0.985	0.779	0.566	0.606	1.54	0.769	0.327	0.377	0.348	0.245	0.380
In.	0.52	1.10	0.90	0.65	0.63	1.78	0.86	0.38	0.42	0.40	0.28	0.42

Calendar year 1957: Max 4,280 Min 148 Mean 490 Cfsm 0.821 In. 11.14
Water year 1957-58: Max 1,470 Min 72 Mean 387 Cfsm 0.615 In. 8.34

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 4, 9-21, Dec. 31 to Mar. 12. No gage-height record Oct. 15, 16, Nov. 5, 16, Dec. 18, Jan. 1, 11, 13, 26, Mar. 15, 20, Apr. 6, May 30, June 1, 7-25, July 4, 20, 21, Aug. 12-15, 21, Sept. 1, 4-9; discharge estimated on basis of weather records and records for Chippewa River near Mount Pleasant and Pine River at Alma.

1550. Pine River at Alma, Mich.

Location.--Lat 43°23', long 84°39', in SE¼ sec.34, T.12 N., R.3 W., on right bank 270 ft downstream from Superior Street Bridge on grounds of Municipal Water Works at Alma.

Drainage area.--288 sq mi.

Records available.--October 1930 to September 1958. Gage-height records for flood seasons collected in this vicinity 1910-28 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 718.37 ft above mean sea level, datum of 1929. Prior to Dec. 10, 1930, tape gage at Superior Street Bridge at different datum. Dec. 10, 1930, to June 15, 1938, staff gage at site 70 ft downstream from bridge and June 16 to Oct. 25, 1938, wire-weight gage at Superior Street Bridge, at present datum.

Average discharge.--28 years, 196 cfs.

Extremes.--Maximum discharge during year, 723 cfs Nov. 19 (gage height, 4.84 ft); minimum, 50 cfs Aug. 14, 15 (gage height, 1.18 ft); minimum daily, 51 cfs Aug. 15.
1930-58: Maximum discharge, 4,400 cfs Mar. 19, 1948 (gage height, 10.81 ft); minimum daily, 2 cfs July 23, 1938.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Occasional regulation by dam half a mile above station.

Revisions (water years).--WSP 744: Drainage area. WSP 1337: 1931, 1932-34(M), 1936, 1939, 1945 1949.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used Oct. 1 to Nov. 18, Mar. 26 to Apr. 21, July 25 to Sept. 30)

0.9	48	2.0	175
1.2	71	4.0	539
1.5	102	5.0	795

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	92	206	272	115	150	a470	234	152	119	94	84	138
2	92	181	247	154	150	a500	211	142	144	90	59	152
3	92	169	225	186	150	a530	193	159	*162	96	61	116
4	91	162	177	180	*150	*a560	186	169	140	116	68	102
5	88	175	208	180	150	603	175	169	111	161	*64	94
6	89	*158	213	170	150	610	218	*154	102	162	54	118
7	91	135	222	170	145	605	291	146	101	150	58	123
8	92	154	232	170	140	594	*317	134	98	*128	62	110
9	*91	164	223	*180	140	a560	317	126	98	116	62	*106
10	89	198	203	190	140	a520	264	129	111	112	60	94
11	86	203	*110	190	140	a480	228	125	108	105	58	97
12	87	189	112	180	135	a450	215	119	105	98	61	89
13	90	193	125	180	130	a420	208	118	107	96	56	85
14	91	300	172	170	130	412	193	100	106	90	53	76
15	91	548	205	160	130	411	177	69	107	87	51	76
16	115	554	203	150	130	398	169	97	100	94	54	74
17	138	579	189	140	125	381	159	108	96	91	56	83
18	167	610	191	140	125	369	153	112	94	90	52	90
19	169	682	259	150	125	365	150	112	89	86	53	107
20	144	583	371	150	130	354	150	108	96	80	58	107
21	129	565	466	140	130	381	177	101	94	73	71	102
22	118	539	458	140	135	383	198	118	97	77	97	87
23	148	494	456	140	145	372	191	125	97	71	97	83
24	317	430	409	140	160	363	186	126	108	76	80	87
25	378	378	362	140	218	345	198	118	132	72	77	85
26	398	340	380	140	281	326	227	105	156	74	78	116
27	401	313	376	140	a350	304	222	107	177	78	79	128
28	354	297	374	145	a440	290	198	102	159	92	75	98
29	268	293	335	150	-	279	180	96	123	86	73	88
30	239	282	291	150	-------	263	154	91	108	94	106	85
31	220	-------	242	150	-------	245	-------	97	-------	88	92	-------
Total	5,055	10,074	8,308	4,880	4,624	13,143	6,139	3,734	3,445	3,025	2,109	2,996
Mean	163	336	268	157	165	424	205	120	115	97.6	68.0	100
Cfsm	0.566	1.17	0.931	0.545	0.573	1.47	0.712	0.417	0.399	0.339	0.236	0.347
In.	0.65	1.30	1.07	0.63	0.60	1.70	0.79	0.48	0.45	0.39	0.27	0.39

Calendar year 1957: Max 655 Min 40 Mean 216 Cfsm 0.750 In. 10.20
Water year 1957-58: Max 682 Min 51 Mean 185 Cfsm 0.642 In. 8.72

Peak discharge (base, 700 cfs).--Nov. 19 (4:30 a.m.) 723 cfs (4.84 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for Chippewa River near Mount Pleasant, Pine River near Midland, and Cass River at Vassar.
Note.--Stage-discharge relation affected by ice Dec. 11, Jan. 4 to Feb. 24.

1555. Pine River near Midland, Mich.

Location.--Lat 43°33'50", long 84°22'10", on line between sec.36, T.14 N., R.1 W., and sec.4, T.13 N., R.1 E., on left bank at downstream side of bridge on State Highway 30, 7 miles southwest of Midland and 8 miles upstream from mouth.

Drainage area.--390 sq mi, approximately.

Records available.--May 1934 to September 1938, February 1948 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 623.87 ft above mean sea level (Michigan State Highway Department bench mark). May 31, 1934, to Sept. 30, 1938, tape, staff, or wire-weight gage at same site at datum 5.48 ft lower. Feb. 3, 1948, to Dec. 13, 1951, wire-weight gage, water-stage recorder; or staff gage at present site and datum.

Average discharge.--14 years, 279 cfs.

Extremes.--Maximum discharge during year, 1,210 cfs Nov. 19 (gage height, 5.07 ft); maximum gage height, 6.15 ft Mar. 6 (ice jam); minimum discharge, 23 cfs Aug. 6 (gage height, 2.97 ft).
1934-38, 1948-58: Maximum discharge, 6,360 cfs Mar. 20, 1948 (gage height, 10.00 ft, from graph based on gage readings); minimum not determined.

Remarks.--Records fair except those for periods of ice effect or no gage-height record and those below 100 cfs, which are poor. Regulation at low and medium flow by dam at Alma, dam and powerplant at St. Louis.

Revisions (water years).--WSP 1337: 1935(M), 1936-38, 1948-49.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-25, May 4 to Sept. 30)

2.2	29	4.0	620
2.5	80	5.0	1,220
3.0	210		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	109	276	287	250	200	800	290	131	112	69	126	a160
2	104	266	259	230	200	860	280	149	149	89	109	a190
3	93	224	270	220	200	910	273	131	152	114	183	a160
4	104	245	290	220	200	940	262	147	*166	112	80	a130
5	102	149	183	220	*200	*960	256	155	149	169	38	a120
6	84	207	207	210	200	950	308	152	134	204	*42	a140
7	100	*201	224	210	200	920	448	*152	119	169	109	a160
8	82	195	228	205	195	840	423	139	126	158	80	a140
9	100	270	224	200	195	756	*407	126	129	*126	58	a130
10	*95	217	224	*200	190	595	379	114	114	124	63	*a125
11	98	245	*170	200	190	520	327	121	136	114	69	104
12	89	238	170	200	185	489	308	107	126	104	80	84
13	95	224	190	200	180	512	284	102	131	104	52	89
14	89	382	210	200	180	516	262	95	155	93	63	95
15	87	930	220	200	180	512	245	89	126	107	76	67
16	116	744	230	200	175	489	224	32	121	104	70	74
17	166	660	240	200	175	471	201	82	102	78	38	65
18	152	690	280	200	175	444	192	89	98	107	32	102
19	163	1,070	380	200	175	435	180	87	82	95	29	80
20	166	804	561	200	180	440	192	84	89	112	58	116
21	147	645	615	200	190	435	198	80	80	95	59	107
22	142	605	548	200	200	435	198	82	70	114	107	100
23	163	530	534	200	220	415	224	102	104	63	100	91
24	427	516	498	200	250	403	224	95	74	109	149	82
25	471	399	407	200	350	391	210	100	100	63	142	98
26	453	359	502	200	520	371	214	100	136	78	89	87
27	399	323	471	200	620	371	201	80	134	82	87	100
28	403	315	435	200	720	339	201	84	139	49	95	142
29	359	284	350	200	-	335	180	93	129	78	89	119
30	294	290	300	200	-------	315	172	93	102	166	a100	76
31	284	-------	270	200	-------	315	-------	87	-------	149	a120	-------
Total	5,736	12,503	9,977	6,365	6,845	17,484	7,763	3,280	3,584	3,398	2,592	3,333
Mean	185	417	322	205	244	564	259	106	119	110	83.6	111
Cfsm	0.474	1.07	0.826	0.526	0.626	1.45	0.664	0.272	0.305	0.282	0.214	0.285
In.	0.55	1.19	0.95	0.61	0.65	1.67	0.74	0.31	0.34	0.33	0.25	0.32

Calendar year 1957: Max 1,580 Min 15 Mean 287 Cfsm 0.736 In. 10.00
Water year 1957-58: Max 1,070 Min 29 Mean 227 Cfsm 0.582 In. 7.91

Peak discharge (base, 950 cfs).--Nov. 15 (8:30 a.m.) 1,010 cfs (4.76 ft); Nov. 19 (6 p.m.) 1,210 cfs (5.07 ft); Mar. 5 or 6 (time and discharge unknown).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Pine River near Alma, Cass River at Vassar, and Tobacco River near Beaverton.
Note.--Stage-discharge relation affected by ice Dec. 11-19, Dec. 29 to Mar. 8.

1560. Tittabawassee River at Midland, Mich.

Location.--Lat 43°36', long 84°15', in NE¼ sec.28, T.14 N., R.2 E., on right bank half a mile downstream from Dow Chemical Co. powerplant in Midland, 1 mile downstream from Chippewa River, and 1 mile upstream from Bullock Creek.
Drainage area.--2,400 sq mi, approximately.
Records available.--March 1936 to September 1958. Gage-height records for flood seasons collected in this vicinity 1910-26, 1928, and since 1946 are contained in reports of U. S. Weather Bureau.
Gage.--Water-stage recorder. Datum of gage is 580.28 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1955, at datum 10.00 ft higher.
Average discharge.--22 years, 1,541 cfs (adjusted for diversion).
Extremes.--Maximum discharge during year, 5,940 cfs Nov. 20 (gage height, 16.86 ft); minimum, 167 cfs Aug. 19 (gage height, 9.29 ft); minimum daily, 204 cfs Aug. 20.
1936-58: Maximum discharge, 34,000 cfs Mar. 21, 1948 (gage height, 19.50 ft, datum then in use); minimum, 39 cfs Oct. 12, 1942; minimum daily, 111 cfs Aug. 21, 1949; minimum gage height, -0.96 ft Aug. 19, 1954, datum then in use.
Remarks.--Records good except those below 400 cfs, which are fair. Water is diverted from river a short distance above station for industrial use; small part returned to river a quarter of a mile below station; remainder returned 1 mile below and below control. Extremes and daily discharge not adjusted for diversion. Discharge below 4,000 cfs regulated by powerplants above station.
Revisions (water years).--WSP 1054: 1945. WSP 1144: 1948.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 6		Apr. 7 to Sept. 30	
9.8	355	9.4	200
12.0	1,450	11.0	960
14.0	2,970	13.0	2,340
17.0	6,090	16.0	4,990

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	537	996	1,000	780	800	4,800	1,170	1,510	788	492	536	573
2	463	842	1,390	956	1,010	4,310	1,400	1,160	856	464	307	504
3	389	799	1,190	1,010	1,120	5,130	1,130	614	658	384	290	533
4	426	1,250	1,170	833	765	5,390	1,050	515	804	542	294	578
5	442	1,030	1,180	936	*1,110	*5,610	969	661	*728	660	254	672
6	451	812	1,100	1,480	1,070	5,440	1,860	701	586	692	240	436
7	486	*816	832	1,290	867	5,190	4,080	1,060	343	642	*280	470
8	520	1,040	887	1,120	857	5,120	3,910	*962	338	710	282	540
9	594	698	1,010	878	731	4,160	3,630	622	719	669	240	636
10	598	703	1,140	822	786	3,590	*3,140	613	695	*625	249	432
11	*667	1,060	706	705	658	3,850	3,150	938	632	498	256	*404
12	604	1,430	*696	703	732	2,840	3,040	804	492	358	250	360
13	407	1,430	686	959	659	3,140	2,240	871	447	372	300	422
14	388	1,950	690	910	478	3,980	1,860	608	580	388	345	362
15	422	5,190	618	743	568	3,020	1,340	488	356	404	303	520
16	530	5,450	990	897	630	2,800	1,330	348	510	390	245	417
17	746	4,380	1,140	716	989	2,520	1,070	306	617	346	241	468
18	784	3,920	1,140	702	740	2,610	1,010	389	470	307	216	632
19	787	5,120	1,650	500	567	2,720	1,330	603	276	274	224	601
20	708	5,520	3,440	600	622	2,840	1,380	758	334	262	204	373
21	612	4,400	4,450	670	556	2,860	1,110	402	280	304	343	381
22	686	3,810	4,190	562	548	2,770	1,040	370	262	280	546	474
23	814	3,410	3,610	*870	586	2,690	1,550	378	694	244	479	892
24	1,970	1,900	2,200	844	1,030	2,540	1,560	362	732	325	303	1,070
25	2,210	1,850	1,980	854	1,410	3,080	1,620	482	626	356	384	664
26	2,210	1,860	2,620	830	1,840	2,980	1,330	640	802	254	390	406
27	1,920	1,610	2,960	961	3,050	2,240	1,150	464	854	262	306	373
28	1,210	1,480	2,440	1,110	4,110	2,140	1,530	404	532	273	366	390
29	1,150	1,670	2,000	966	-	1,550	1,170	522	387	270	437	390
30	1,050	1,370	1,840	946	--------	1,590	1,180	408	600	320	490	460
31	998	--------	1,210	1,030	--------	1,360	--------	274	--------	409	479	--------
Total	25,779	67,796	52,155	27,183	28,889	104,860	53,129	19,237	17,198	12,776	10,078	15,433
Mean	832	2,260	1,682	877	1,032	3,383	1,771	621	573	412	325	514
(†)	84.9	76.8	81.0	79.4	76.9	72.6	74.0	71.9	77.2	79.0	76.1	71.9
Adjusted for diversion by Dow Chemical Co.												
Mean	917	2,337	1,763	956	1,109	3,456	1,845	693	650	491	401	586
Cfsm	0.382	0.974	0.735	0.398	0.462	1.44	0.769	0.289	0.271	0.205	0.167	0.244
In.	0.44	1.09	0.85	0.46	0.48	1.66	0.86	0.33	0.30	0.24	0.19	0.27

	Observed					Adjusted				
Calendar year 1957:	Max	19,300	Min	199	Mean	1,611	Mean	1,713	Cfsm	0.714	In.	9.71
Water year 1957-58:	Max	5,610	Min	204	Mean	1,190	Mean	1,267	Cfsm	0.528	In.	7.17

Peak discharge (base, 5,800 cfs).--Nov. 16 (3 a.m.) 5,880 cfs (16.81 ft); Nov. 20 (1 to 2 a.m.) 5,940 cfs (16.86 ft).

* Discharge measurement made on this day.
† Diversion, equivalent in cubic feet per second, for industrial use; furnished by Dow Chemical Co.

1585. Pigeon River near Owendale, Mich.

Location.--Lat 43°45'35", long 83°14'45", in SE¼ sec.36, T.16 N., R.10 E., on left bank 600 ft downstream from bridge on county road, 2 miles downstream from confluence of East and West Branches, and 2½ miles northeast of Owendale.

Drainage area.--55 sq mi, approximately.

Records available.--October 1952 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 645 ft (from topographic map). Prior to June 10, 1954, wire-weight gage at site 600 ft upstream at same datum.

Average discharge.--6 years, 32.1 cfs.

Extremes.--Maximum daily discharge during year, 320 cfs Mar. 6; maximum gage height, 6.34 ft Mar. 2 (ice jam); minimum discharge, 0.7 cfs Aug. 15 (gage height, 1.07 ft).
1952-58: Maximum discharge, 2,550 cfs Mar. 25, 1954 (gage height, 10.75 ft), from rating curve extended above 1,200 cfs; minimum observed, 0.5 cfs Oct. 11, 1952 (gage height, 1.00 ft).

Remarks.--Records good except those for periods of ice effect and those below 5 cfs, which are poor.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 21 to Sept. 8, Sept. 17-30)

Oct. 1 to Mar. 25				Mar. 26 to Sept. 30			
1.2	2.9	1.6	23	0.9	0.5	1.5	21
1.3	5.2	2.0	60	1.0	1.5	1.7	32
1.4	8.8	5.0	450	1.1	3.4	2.0	54
				1.2	6.2		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.0	18	22	28	12	80	23	12	11	5.4	1.9	2.6
2	5.2	16	17	24	12	120	22	11	*12	5.4	2.6	2.3
3	5.0	15	17	22	*12	170	20	12	7.6	6.2	2.4	2.1
4	5.0	14	17	20	12	200	20	12	6.7	6.2	*1.9	3.0
5	5.0	*13	16	19	11	260	19	*11	6.2	22	2.1	3.0
6	5.0	13	16	19	11	320	22	9.6	5.9	33	2.1	2.6
7	5.0	12	22	*18	11	300	*24	9.1	5.6	*18	2.8	2.6
8	*5.0	13	21	18	11	270	21	9.1	6.2	9.6	3.0	*2.6
9	5.0	18	*20	17	11	240	20	9.1	6.7	7.2	2.1	2.8
10	5.0	16	20	17	11	216	20	9.1	5.9	5.9	1.9	2.8
11	5.2	14	18	16	11	154	20	8.6	5.9	5.4	2.3	2.6
12	5.6	12	16	16	10	131	22	8.1	5.4	5.1	2.8	2.4
13	5.9	12	18	16	10	68	22	7.6	5.6	4.8	2.1	2.4
14	6.3	45	19	16	10	55	20	7.6	6.2	4.2	1.9	2.3
15	6.3	266	20	15	10	63	18	7.6	5.9	4.2	1.3	2.3
16	7.4	110	25	15	9.5	57	17	6.7	5.4	5.1	1.3	3.0
17	17	55	30	15	9.5	63	16	6.2	5.1	5.4	1.5	5.1
18	16	41	45	14	9.5	68	15	6.7	5.1	4.5	1.7	5.9
19	11	100	100	14	9.5	75	14	6.7	5.1	4.5	1.9	4.2
20	8.8	68	218	14	10	73	16	6.2	5.9	4.5	2.8	3.0
21	8.1	38	193	14	10	63	23	5.9	8.1	4.0	10	2.3
22	8.4	29	77	13	11	70	20	5.9	7.6	4.0	4.0	2.3
23	19	24	50	13	12	55	20	6.2	6.7	3.7	2.3	2.1
24	108	22	38	13	13	*45	22	5.9	8.1	3.4	2.3	2.1
25	90	20	33	13	17	36	22	5.9	7.6	2.8	2.3	2.6
26	39	18	132	12	21	33	18	5.9	8.6	3.0	2.1	2.6
27	30	17	91	12	33	30	15	5.6	6.7	2.8	1.9	2.4
28	26	20	48	12	50	28	14	5.9	5.9	2.6	1.7	2.3
29	23	28	43	12	-	27	14	5.9	5.6	2.6	1.7	2.1
30	21	28	40	12	------	26	12	5.9	5.4	2.6	2.8	2.3
31	20	------	34	12	------	24	------	5.9	------	2.3	4.5	------
Total	532.2	1,115	1,476	491	380.0	3,420	571	240.9	199.7	198.4	78.0	82.7
Mean	17.2	37.2	47.6	15.8	13.6	110	19.0	7.77	6.66	6.40	2.52	2.76
Cfsm	0.313	0.676	0.865	0.287	0.247	2.00	0.345	0.141	0.121	0.116	0.046	0.050
In.	0.36	0.75	1.00	0.33	0.26	2.31	0.38	0.16	0.14	0.13	0.05	0.06

Calendar year 1957: Max 379 Min 2.1 Mean 24.4 Cfsm 0.444 In. 6.01
Water year 1957-58: Max 320 Min 1.3 Mean 24.1 Cfsm 0.438 In. 5.93

Peak discharge (base, 500 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 25, 26, Dec. 1-3, 9-19, Dec. 30 to Mar. 9.

1595. Black River near Fargo, Mich.

Location.--Lat 43°06', long 82°37', in NW¼ sec.32, T.8 N., R.16 E., on left bank 20 ft downstream from bridge on Norman Road, 2½ miles southeast of Fargo, 4½ miles upstream from Mill Creek, and 12 miles northwest of Port Huron.

Drainage area.--475 sq mi.

Records available.--February 1944 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 613.75 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to July 9, 1954, wire-weight gage at same site and datum.

Average discharge.--14 years, 305 cfs.

Extremes.--Maximum discharge during year, 1,450 cfs Dec. 21 (gage height, 5.75 ft); maximum gage height, 8.21 ft Mar. 1 (ice jam); minimum discharge, 8.0 cfs Sept. 15 (gage height, 1.68 ft).
1944-58: Maximum discharge, 14,400 cfs Apr. 5, 1947 (gage height, 16.06 ft, from floodmark), from rating curve extended above 9,500 cfs; maximum gage height observed, 18.05 ft Feb. 20, 1951 (ice jam); minimum discharge observed, 1.8 cfs Sept. 18, 19, 1946.

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 1307: 1950(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.7	9.0	3.0	220
1.8	16	4.0	550
2.0	35	5.0	1,010
2.2	60	6.0	1,600
2.5	108		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	25	55	114	45	1,200	94	52	28	15	13	18
2	15	24	41	101	45	1,100	87	50	28	15	12	21
3	15	23	46	130	45	1,000	80	50	29	21	12	19
4	15	21	41	130	40	900	76	54	28	22	11	*21
5	14	20	36	110	40	800	70	54	26	39	10	22
6	15	19	33	100	40	700	76	55	22	33	13	26
7	10	18	37	95	40	574	209	52	20	33	15	29
8	9.0	20	39	90	40	494	150	54	54	32	*14	30
9	10	24	40	90	40	400	142	55	66	*29	15	29
10	10	24	34	80	40	271	110	52	*51	27	15	25
11	10	27	32	80	40	*280	99	52	41	25	16	21
12	9.0	23	30	70	35	200	176	51	34	23	14	18
13	9.7	22	30	70	35	161	235	47	77	20	12	15
14	9.7	*33	30	70	35	163	180	45	88	17	15	13
15	9.7	56	30	70	35	159	*131	42	45	16	19	11
16	*10	67	32	65	35	152	104	41	33	16	16	12
17	20	79	34	60	35	144	88	40	28	20	14	14
18	24	61	50	60	35	148	77	39	24	22	12	24
19	23	52	*359	60	35	155	67	34	21	30	11	21
20	24	50	1,010	60	35	178	66	31	19	27	9.7	20
21	21	54	1,330	60	35	192	68	29	21	25	17	20
22	19	50	700	55	35	212	87	34	19	20	33	18
23	23	47	334	55	40	232	88	32	17	17	60	17
24	43	37	220	50	50	212	79	29	18	15	45	15
25	64	40	168	50	120	188	77	30	22	14	30	15
26	60	31	394	50	450	159	79	28	23	13	24	15
27	50	30	598	50	800	142	67	26	20	12	19	15
28	40	34	361	45	1,000	138	60	25	19	12	17	13
29	32	39	224	45	-	127	57	24	19	13	15	14
30	29	46	152	*45	-------	116	55	22	16	13	21	21
31	26	-------	135	45	-------	103	-------	22	-------	12	20	-------
Total	684.1	1,096	6,655	2,255	3,300	11,000	3,034	1,251	956	648	569.7	572
Mean	22.1	36.5	215	72.7	118	355	101	40.4	31.9	20.9	18.4	19.1
Cfsm	0.047	0.077	0.453	0.153	0.248	0.747	0.213	0.085	0.067	0.044	0.039	0.040
In.	0.05	0.09	0.52	0.18	0.26	0.86	0.24	0.10	0.07	0.05	0.04	0.04

Calendar year 1957: Max 3,760 Min 9.0 Mean 197 Cfsm 0.415 In. 5.62
Water year 1957-58: Max 1,330 Min 9.0 Mean 87.7 Cfsm 0.185 In. 2.50

Peak discharge (base, 3,500 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 11-16, Jan. 3 to Mar. 6 (no gage-height record Jan. 23-29).

1600. Mill Creek near Abbottsford, Mich.

Location.--Lat 43°03', long 82°37', in NW¼ sec.17, T.7 N., R.16 E., on downstream side of highway bridge, 1 mile upstream from mouth and 2 miles northeast of Abbottsford.

Drainage area.--138 sq mi.

Records available.--May 1947 to September 1958.

Gage.--Wire-weight gage and crest-stage indicator; gage read twice daily. Datum of gage is 609.80 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Mar. 7, 1950, staff gage at same site and datum.

Average discharge.--11 years, 110 cfs.

Extremes.--Maximum discharge during year, 526 cfs Dec. 20 (gage height, 4.79 ft); maximum gage height, 5.39 ft Mar. 1 (ice jam); minimum discharge, 4.2 cfs Aug. 19 (gage height, 2.37 ft).
1947-58: Maximum discharge, 3,050 cfs Mar. 20, 1948 (gage height, 9.20 ft, from floodmark); maximum gage height oberved, 10.81 ft Jan. 3, 1951 (ice jam); minimum discharge, 2.7 cfs Sept. 22, 1955; minimum gage height, 2.28 ft Aug. 11, 1949.

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 1437: 1950.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.4	4.2	3.2	64
2.5	7.0	3.5	120
2.6	11	4.0	250
2.7	16	5.0	610
2.9	31		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.0	16	25	70	19	350	43	27	18	11	6.2	7.4
2	6.7	16	31	70	19	341	40	25	19	11	5.6	7.4
3	6.7	16	25	80	16	338	38	26	16	10	5.0	7.0
4	6.7	14	29	80	16	320	36	25	14	12	5.3	*9.8
5	6.7	14	25	60	15	310	35	23	12	13	5.3	9.0
6	6.7	14	22	50	15	293	42	22	14	15	5.0	12
7	7.4	14	23	45	15	274	265	21	14	8.6	12	
8	7.0	16	25	37	15	250	296	23	20	11	*7.0	12
9	6.7	17	22	35	15	221	204	23	34	*14	6.7	10
10	6.7	16	20	37	15	171	129	20	*24	13	6.2	9.0
11	6.7	17	20	38	15	*156	105	17	17	12	6.7	8.6
12	6.2	15	20	37	15	99	149	17	16	12	6.2	7.0
13	7.0	17	20	33	15	84	180	*19	58	11	6.4	6.7
14	7.0	*22	20	33	15	88	138	17	42	10	5.3	6.4
15	7.0	30	22	30	15	72	*101	17	27	10	5.3	6.4
16	*7.8	34	22	28	15	67	78	16	29	10	5.3	6.4
17	14	41	23	26	15	60	63	16	36	8.6	5.0	7.0
18	16	37	26	23	15	57	56	15	29	8.2	4.8	14
19	12	32	*227	22	15	56	46	16	24	8.2	4.5	12
20	12	31	383	20	15	57	44	12	21	7.4	4.5	9.0
21	13	31	400	20	15	62	44	13	20	7.0	6.7	8.2
22	12	31	287	20	15	62	41	16	16	7.0	7.4	7.4
23	16	26	199	20	15	62	40	22	14	7.8	8.6	7.0
24	35	25	142	20	20	60	38	17	14	7.0	6.7	7.8
25	28	22	107	20	90	56	36	22	16	6.7	6.2	8.2
26	40	23	95	20	200	53	36	20	17	6.7	5.6	8.6
27	29	19	82	20	250	51	34	17	15	7.0	5.0	7.4
28	22	25	166	20	300	50	30	16	13	6.4	4.5	6.7
29	20	25	107	20	-	50	29	16	12	6.4	4.8	6.2
30	20	25	84	*20	-------	49	26	14	12	6.7	6.2	6.4
31	18	-------	74	20	-------	46	-------	14	-------	6.7	7.8	-------
Total	417.0	681	2,773	1,074	1,215	4,265	2,442	584	633	295.8	184.4	253.0
Mean	13.5	22.7	89.5	34.6	43.4	138	81.4	18.8	21.1	9.54	5.95	8.43
Cfsm	0.098	0.164	0.649	0.251	0.314	1.00	0.590	0.136	0.153	0.069	0.043	0.061
In.	0.11	0.18	0.75	0.29	0.33	1.15	0.66	0.16	0.17	0.08	0.05	0.07

Calendar year 1957: Max 985 Min 4.8 Mean 94.7 Cfsm 0.686 In. 9.31
Water year 1957-58: Max 400 Min 4.5 Mean 40.6 Cfsm 0.294 In. 4.00

Peak discharge (base, 900 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 10-14, Jan. 3-7, 20-31, Feb. 5 to Mar. 1.

1610. Clinton River at Auburn Heights, Mich.

Location.--Lat 42°38'00", long 83°13'28", in NW¼ sec.26, T.3 N., R.10 E., on right bank 30 ft upstream from bridge on State Highway 59 at Auburn Heights and 2.8 miles upstream from Galloway Creek.

Drainage area.--123 sq mi.

Records available.--May 1935 to June 1939 and February to September 1940 (published as "at Pontiac"); October 1956 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 860 ft (from topographic map). Prior to October 1940, staff gage at site 3.3 miles upstream at datum 876.01 ft above mean sea level.

Average discharge.--5 years (1935-38, 1956-58), 72.3 cfs.

Extremes.--Maximum discharge during year, 425 cfs July 3 (gage height, 3.01 ft); minimum, 7.0 cfs Sept. 2; minimum gage height, 1.14 ft Oct. 7, May 26.
1935-40, 1956-58: Maximum discharge observed, 716 cfs Feb. 12, 1938 (gage height, 5.10 ft, site and datum then in use), from rating curve extended above 150 cfs; minimum observed, 4.8 cfs Sept. 4, 1936, site then in use.

Remarks.--Records good. Some regulation by many lakes above station. Flow includes waste from city of Pontiac water supply, most of which is pumped from ground-water sources.

Revisions.--WSP 1307: 1937(M). WSP 1507: Drainage area at former site.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 31 to Sept. 28)

Oct. 1 to Apr. 11				Apr. 12 to Sept. 30			
1.1	11	2.0	151	1.1	8.0	1.9	129
1.4	45	2.3	223	1.3	28	2.2	198
1.7	92			1.6	69		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	41	106	96	153	92	92	61	75	78	36	30	14
2	34	108	101	128	89	82	64	71	46	32	26	17
3	31	103	105	132	84	89	67	71	33	131	21	20
4	30	105	105	140	69	82	69	69	28	181	25	21
5	25	108	103	138	97	80	69	71	28	82	26	21
6	20	106	110	147	94	97	89	73	27	55	44	21
7	25	105	110	149	94	101	89	71	22	59	53	16
8	32	127	108	144	85	94	105	71	24	90	40	*26
9	30	114	110	133	68	92	110	63	80	96	26	31
10	31	97	114	143	82	96	110	56	46	96	29	32
11	33	97	97	136	78	97	120	53	38	94	32	25
12	29	*101	105	126	78	103	110	55	34	92	28	22
13	23	108	99	128	77	*101	98	56	*40	78	35	18
14	30	181	99	130	77	99	96	64	36	90	*32	16
15	*33	149	94	126	75	96	78	66	30	96	29	27
16	57	116	99	124	65	94	69	*64	34	88	24	49
17	106	105	99	118	65	96	*71	63	35	84	19	61
18	55	112	124	110	73	99	71	67	40	84	24	74
19	39	118	178	103	72	92	67	66	41	75	25	34
20	33	110	208	103	73	97	66	58	77	67	27	26
21	38	112	*149	108	72	101	67	38	75	69	57	20
22	53	112	126	108	72	96	83	38	69	43	33	26
23	131	108	128	105	85	89	92	29	69	*34	22	27
24	138	103	130	99	101	90	84	22	75	30	17	25
25	105	105	138	97	103	99	82	17	92	30	21	31
26	96	110	181	92	89	101	77	22	82	27	21	38
27	90	108	172	94	87	101	71	24	71	21	21	25
28	92	110	172	96	105	94	78	25	66	43	20	18
29	94	106	162	*101	-	70	77	25	61	39	21	25
30	99	105	158	99	-------	56	77	18	61	34	33	34
31	97	-------	158	96	-------	58	-------	30	-------	32	20	-------
Total	1,770	3,355	3,938	3,706	2,301	2,834	2,467	1,591	1,538	2,108	881	840
Mean	57.1	112	127	120	82.2	91.4	82.2	51.3	51.3	68.0	28.4	28.0
Cfsm	0.464	0.911	1.03	0.976	0.668	0.743	0.668	0.417	0.417	0.553	0.231	0.228
In.	0.54	1.01	1.19	1.12	0.70	0.86	0.75	0.48	0.47	0.64	0.27	0.25

Calendar year 1957: Max 430 Min 20 Mean 109 Cfsm 0.886 In. 12.06
Water year 1957-58: Max 208 Min 14 Mean 74.9 Cfsm 0.609 In. 8.28

Peak discharge (base, 300 cfs).--July 3 (11 p.m.) 425 cfs (3.01 ft).

* Discharge measurement made on this day.

1615. Paint Creek near Lake Orion, Mich.

Location.--Lat 42°46'03", long 83°13'12", in NE¼ sec.13, T.4 N., R.10 E., on left bank 100 ft upstream from railroad bridge, 1.6 miles southeast of Lake Orion, and 2.8 miles upstream from Trout Creek.

Drainage area.--38.9 sq mi (revised).

Records available.--September 1955 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 940 ft (from topographic map).

Extremes.--Maximum discharge during year, 61 cfs Dec. 25 (gage height, 2.26 ft); maximum gage height, 2.89 ft Feb. 17 (ice jam); minimum discharge, 2.0 cfs Aug. 11, 12 (gage height, 1.33 ft).
1955-58: Maximum discharge, 340 cfs Mar. 6, 1956 (gage height, 3.60 ft), from rating curve extended above 190 cfs by logarithmic plotting; minimum, that of Aug. 11, 12, 1958.

Remarks.--Records good except those for periods of ice effect, which are fair. Occasional regulation by Lake Orion.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 25 to Sept. 30)

Oct. 1 to Dec. 12		Dec. 13 to Sept. 30			
1.5	3.5	1.3	1.6	1.8	18
1.7	12	1.4	2.8	2.0	34
2.0	30	1.5	5.0	2.3	65
2.3	57	1.6	8.5		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.1	21	27	44	20	28	21	18	7.8	10	2.8	5.7
2	7.1	20	26	42	20	32	22	17	9.4	9.4	2.7	5.0
3	6.7	20	25	b39	20	38	21	18	14	12	2.6	4.6
4	6.7	20	24	b36	20	41	20	18	14	16	2.6	4.3
5	7.1	21	24	34	19	42	19	16	12	19	2.4	*5.4
6	7.5	18	24	32	19	42	23	16	9.8	18	2.4	16
7	7.1	14	25	30	19	41	24	15	4.3	14	2.4	16
8	7.1	18	25	b29	b19	40	24	15	7.4	13	2.7	22
9	7.1	16	24	27	b19	39	25	*10	14	11	3.5	33
10	6.7	15	22	26	b18	37	24	4.3	14	12	2.4	40
11	6.7	16	b21	25	b18	36	24	3.7	14	11	2.2	48
12	6.3	*16	b21	24	b17	33	26	3.5	16	10	2.3	43
13	6.3	16	b22	24	b17	*32	26	4.3	22	8.2	2.7	39
14	6.7	27	22	24	b16	30	25	3.7	22	7.1	3.2	34
15	*8.4	32	23	23	b15	29	24	3.7	16	7.4	*2.6	32
16	10	32	22	22	b15	27	23	7.8	12	6.8	2.6	31
17	19	32	20	22	b15	26	*23	10	9.0	5.4	4.3	31
18	21	37	25	22	b15	24	22	9.0	*8.5	5.0	3.2	31
19	19	49	30	21	b15	24	21	7.4	10	4.8	2.2	30
20	18	40	40	20	b14	24	22	7.4	14	4.1	2.4	26
21	20	36	*43	21	14	23	23	8.2	14	3.9	3.7	23
22	16	32	54	22	14	23	23	9.4	14	3.9	3.5	23
23	27	29	56	22	14	22	25	7.8	16	*4.1	3.5	23
24	36	27	55	22	16	22	25	7.4	14	4.3	5.4	23
25	34	26	55	23	17	22	24	6.8	16	4.6	6.8	23
26	34	25	56	23	18	22	22	6.4	14	4.6	9.0	24
27	32	24	51	22	20	22	21	7.4	13	5.6	7.6	25
28	28	26	49	*22	25	21	20	7.8	12	10	7.1	24
29	24	28	47	21	-	20	20	9.0	11	4.3	6.0	24
30	22	27	46	20	-------	20	19	6.4	12	3.5	7.2	26
31	21	-------	44	20	-------	22	-------	5.7	-------	3.2	8.2	-------
Total	485.6	760	1,049	804	488	904	681	290.1	386.2	256.2	122.4	735.0
Mean	15.7	25.3	33.8	25.9	17.4	29.2	22.7	9.36	12.9	8.26	3.95	24.5
Cfsm	0.404	0.650	0.869	0.666	0.447	0.751	0.584	0.241	0.332	0.212	0.102	0.630
In.	0.46	0.73	1.00	0.77	0.47	0.86	0.65	0.28	0.37	0.24	0.12	0.70

Calendar year 1957: Max 113 Min 3.9 Mean 26.0 Cfsm 0.668 In. 9.23
Water year 1957-58: Max 56 Min 2.2 Mean 19.1 Cfsm 0.491 In. 6.65

Peak discharge (base, 90 cfs).--No peak above base.

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1618. Stony Creek near Washington, Mich.

Location.--Lat 42°42'55", long 83°05'31", in SW¼ sec.31, T.4 N., R.12 E., on left bank 15 ft downstream from bridge on Mt. Vernon Road and 2.9 miles west of Washington.

Drainage area.--68.0 sq mi.

Records available.--July to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 775 ft (from topographic map).

Extremes.--Maximum discharge during period July to September 1958, 26 cfs Sept. 18 (gage height, 2.87 ft); minimum, 4.1 cfs Aug. 29 (gage height, 2.18 ft).

Remarks.--Records good except those for period of no gage-height record, which are fair. Occasional diurnal fluctuation caused by mills above station.

Discharge measurements, in cubic feet per second, made prior to 1958 water year are as follows:

Apr. 14, 1953	47.0	June 22, 1954	49.3
June 18	17.3	July 16	11.4
Aug. 21	10.1	Aug. 12	9.48
Sept.17	10.8	Sept.10	8.35
Oct. 9	16.5	Oct. 7	18.1
Nov. 5	15.5	Nov. 2	25.4
Dec. 17	11.9	Dec. 7	32.3
Jan. 15, 1954	14.4	Mar. 22, 1955	112
Feb. 19	126	Apr. 27	48.4
Apr. 12	51.8	May 12	21.8
May 5	45.4	June 10	23.4

Rating table, July 1 to Sept. 30, 1958 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 29, 30)

2.3	6.5
2.4	9.2
2.8	26

Discharge, in cubic feet per second, July to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1										a9	8.9	8.7
2										a8	8.4	8.1
3										a8	8.4	8.1
4										a14	9.2	8.4
5										a17	8.1	*8.4
6										a17	10	8.7
7										a17	12	8.1
8										a17	12	11
9										a15	9.6	10
10										*13	7.3	10
11										a11	7.8	8.4
12										a10	7.0	9.2
13										a10	7.8	8.7
14										10	7.0	7.0
15										10	*8.1	7.3
16										9.6	11	9.2
17										8.9	8.4	11
18										8.7	8.1	23
19										8.1	7.0	16
20										7.8	6.8	14
21										7.0	11	12
22										6.8	11	11
23										7.6	9.2	9.6
24										7.0	8.4	10
25										7.6	8.7	10
26										8.7	7.0	12
27										7.3	6.5	10
28										7.3	7.3	9.2
29										8.7	6.8	11
30										8.4	12	9.2
31										7.8	10	
Total										313.3	270.8	307.3
Mean										10.1	8.74	10.2
Cfsm										0.149	0.129	0.150
In.										0.17	0.15	0.17

Calendar year	: Max	Min	Mean	Cfsm	In.
Water year	: Max	Min	Mean	Cfsm	In.

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Farmers Creek near Lapeer and River Rouge at Birmingham.

1630. Big Beaver Creek at Warren, Mich.

Location.--Lat 42°31'57", long 83°01'45", in NW¼ sec.3, T.1 N., R.12 E., on downstream side of center pier of bridge on State Highway 53, 0.6 mile upstream from Red Run and 1.0 mile east of Warren.

Drainage area.--25.2 sq mi.

Records available.--January 1954 to September 1958 (discontinued).

Gage.--Staff gage and crest-stage indicator; gage read twice daily. Altitude of gage is 610 ft (from topographic map).

Extremes.--Maximum discharge during year, 430 cfs Dec. 20 (gage height, 11.0 ft); minimum not determined; minimum daily, 0.1 cfs Aug. 16.
1954-58: Maximum discharge, 1,060 cfs Apr. 29, 1956 (gage height, 13.9 ft); no flow at times.

Remarks.--Records poor.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

6.4	0	7.1	9.5
6.5	.2	7.4	22
6.6	.5	7.7	40
6.7	1.2	8.0	71
6.8	2.3	11.0	430
6.9	4.1		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.1	8.3	13	14	2.3	35	8.3	2.0	3.5	0.6	0.8	0.6
2	1.0	7.8	11	14	2.3	20	6.1	1.8	7.8	.6	.3	.5
3	.8	7.2	9.5	14	2.5	15	5.4	1.6	2.2	5.6	.3	.5
4	.6	6.6	6.4	14	2.5	13	4.6	2	1.5	44	.5	.6
5	.6	5.8	5.6	11	2.2	12	4.1	2.1	1.0	45	.5	.5
6	.6	5.1	9.5	11	2.0	13	5	2.0	.8	15	1.0	.6
7	.6	11	20	7.5	2.0	15	68	2.2	.7	6.9	3.4	.8
8	.5	8.6	27	4.8	1.5	12	24	1.4	.8	3.9	6.9	.6
9	.5	7.8	27	3.9	1.5	10	14	1.5	3	2.7	2	.6
10	.5	7.5	27	3.5	1.5	9.5	11	1.1	3	2.1	.7	.7
11	.8	6.6	17	3	1.5	8.3	26	1.1	2.5	*1.5	.2	*.5
12	1.1	6.6	17	3	1.5	*7.5	31	1.1	*2.2	.3	.2	.5
13	1.2	*13	17	3	1.5	8.3	22	.9	1.4	.5	*1.0	.5
14	1.1	112	17	2.5	1.5	8.3	13	1.1	1.0	1.1	.3	.4
15	1.2	166	18	2.5	1.5	8.0	9.8	*1.1	.8	.9	.3	.8
16	2.0	54	26	2.5	1.5	7.8	*8.0	1	1.0	.9	.1	1.5
17	*9.8	21	118	2	1.5	7.5	6.4	.8	.6	.8	.2	1.5
18	5.6	24	112	2	1.5	7.8	5.4	.7	2.1	.8	.2	2
19	1.2	60	49	2	1.5	7.8	3.9	*.6	1.6	.3	.2	1.5
20	.6	27	*333	2	1.5	8.3	3.6	.8	1.5	.2	1.6	1
21	1.1	22	190	2	2	9.2	4.8	.6	.4	.6	.5	.7
22	1.4	18	60	2.5	3	8.3	4.1	.9	.4	.5	.6	.7
23	2.1	17	36	2.5	6	8.3	7.2	1.9	1.0	.8	.4	.5
24	61	15	24	2.5	25	8.3	6.1	.9	.6	.9	.4	.5
25	32	14	24	2.5	30	8.3	5.1	.8	1.3	.8	.5	.7
26	17	17	172	2.5	15	7.8	3.0	1.6	3.2	.2	.4	.8
27	14	22	72	2.5	10	8.3	2.5	1.5	1.5	.5	.3	.7
28	12	21	39	2.5	30	8.3	2.7	2.7	.7	.9	.3	.6
29	9.5	16	26	2.8	-	8.3	2.8	2.2	.4	.8	.3	.5
30	9.5	13	22	*2.7	-------	8.3	2.3	1.5	.5	.7	.8	.5
31	8.9	-------	21	2.7	-------	8.3	-------	1.1	-------	.8	.8	-------
Total	199.9	740.9	1,566.0	149.9	156.3	325.8	320.2	42.6	49.0	141.2	26.0	22.4
Mean	6.45	24.7	50.5	4.84	5.58	10.5	10.7	1.37	1.63	4.55	0.84	0.75
Cfsm	0.256	0.980	2.00	0.192	0.221	0.417	0.425	0.054	0.065	0.181	0.033	0.030
In.	0.30	1.09	2.31	0.22	0.23	0.48	0.47	0.06	0.07	0.21	0.04	0.03

Calendar year 1957: Max 381 Min 0.2 Mean 24.4 Cfsm 0.968 In. 13.15
Water year 1957-58: Max 333 Min 0.1 Mean 10.2 Cfsm 0.405 In. 5.51

Peak discharge (base, 170 cfs).--Nov. 15 (1 to 3 a.m.) 190 cfs (9.0 ft); Dec. 17 (3 p.m.) 178 cfs (8.9 ft); Dec. 20 (3 to 5 p.m.) 430 cfs (11.0 ft); Dec. 26 (5 a.m.) 178 cfs (8.9 ft).

* Discharge measurement made on this day.
Note.--No gage-height record Jan. 10-28, Feb. 8 to Mar. 9, Apr. 6, 27, May 4, 11, 16-18, 25, 30, June 1, 4, 7-11, July 27, Aug. 3, 9, 10, 17, 24, Aug. 28 to Sept. 30; discharge estimated on basis of weather records and records for Plum Brook near Utica and River Rouge at Birmingham.

1635. Plum Brook near Utica, Mich.

Location.--Lat 42°35'01", long 83°01'49", in SW¼ sec.15, T.2 N., R.12 E., on right bank at downstream side of bridge on State Highway 53, 3.0 miles south of Utica and 3.4 miles upstream from mouth.

Drainage area.--22.9 sq mi (revised).

Records available.--January 1954 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 610 ft (from topographic map).

Extremes.--Maximum discharge during year, 301 cfs Dec. 20 (gage height, 6.92 ft); minimum, 0.2 cfs Aug. 5, 6, 19, 20 (gage height, 0.75 ft).
1954-58: Maximum discharge, 980 cfs Apr. 29, 1956 (gage height, 8.60 ft); no flow at times.

Remarks.--Records fair except those for periods of ice effect or no gage-height record and those below 3 cfs, which are poor.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 12, 13, Sept. 8-30)

Oct. 1 to Feb. 27				Feb. 28 to Sept. 30			
1.0	1.5	3.0	37	0.8	0.3	1.7	12
1.5	6.2	4.0	79	.9	.9	2.0	19
2.0	13	6.0	210	1.0	1.7	3.0	46
2.5	23	7.0	311	1.2	3.9	4.0	87
				1.5	8.4	5.0	140

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.1	8.9	16	32	5.5	64	9.4	3.4	7.4	0.6	0.8	1.0
2	2.1	8.2	13	20	5	31	8.7	3.4	11	1.5	.7	.8
3	2	8.0	13	15	5	29	7.9	3.4	4.2	23	.5	.8
4	2	7.3	13	11	4.5	26	7.3	3.7	2.6	66	.4	1.1
5	2	6.9	11	8.3	4.5	19	6.6	3.3	1.9	95	.3	1.0
6	2	6.4	12	9.0	4	25	26	2.9	1.5	39	1.0	1.1
7	2	6.4	21	8.7	4	27	54	2.6	1.2	21	10	1.6
8	2.5	11	21	7.1	3.5	19	27	2.5	1.3	13	3.8	1.1
9	2.5	18	16	6.3	3.2	15	19	2.3	5.8	8.1	2.1	*1.1
10	2.5	12	15	6.8	3.0	13	19	2.4	5.9	5.6	1.3	1.5
11	2.5	9.4	15	6.8	3	9.5	24	2.1	3.7	*4.0	1.1	1.1
12	2.5	8.7	9.4	5.8	3	*9.2	32	1.9	*2.4	3.5	.9	1.0
13	2.5	*9.8	6.2	5.9	3	10	23	1.5	2.4	2.7	.9	.8
14	2.5	98	6.9	6.1	3	10	17	1.5	2.5	2.3	*.8	.7
15	3	66	9.0	6.3	3	9.8	13	*1.4	1.5	2.3	.7	1.0
16	6	38	12	6.3	3	9.5	*11	1.3	1.2	1.9	.7	2.7
17	*12	24	15	6.1	3	9.2	8.9	1.4	1.0	1.5	.5	2.4
18	12	22	50	5.2	3	9.4	7.6	3.3	4.4	1.3	.5	4.2
19	8.0	38	199	4.4	3	9.5	6.5	5.9	6.2	1.2	.3	2.0
20	6.5	24	*237	4.5	3	11	6.6	2.1	3.7	1.1	.4	1.4
21	5.6	21	101	5	3.5	12	8.4	1.4	3.2	.9	.9	1.2
22	5.3	18	42	5.5	4	12	7.0	1.8	2.4	.8	1.1	1.3
23	19	16	30	5.5	10	11	8.6	2.4	1.6	.9	.8	.8
24	87	16	22	5.5	40	12	8.9	1.9	1.6	.8	.8	.8
25	42	13	30	5.5	60	12	6.8	1.5	2.6	.7	.8	1.4
26	21	13	151	5.5	25	11	5.2	1.3	4.7	.8	.7	1.6
27	15	13	48	5.5	21	12	4.7	1.5	2.7	.7	.6	1.5
28	13	17	34	5.5	57	13	4.9	1.5	1.8	.6	.6	1.0
29	12	25	24	*5.5	-	12	4.9	1.1	1.2	1.4	.5	.8
30	11	20	20	5.5	-------	12	3.7	.8	.8	1.0	1.6	.8
31	9.9	-------	20	5.5	-------	11	-------	.9	-------	.8	1.5	-------
Total	319.8	623.0	1,236.5	241.6	292.7	495.1	397.6	68.4	94.4	304.0	37.6	39.6
Mean	10.3	20.8	39.9	7.79	10.5	16.0	13.3	2.21	3.15	9.81	1.21	1.32
Cfsm	0.450	0.908	1.74	0.340	0.459	0.699	0.581	0.097	0.138	0.428	0.053	0.058
In.	0.52	1.01	2.01	0.39	0.48	0.80	0.65	0.11	0.15	0.49	0.06	0.06

Calendar year 1957: Max 391 Min 0.1 Mean 19.4 Cfsm 0.847 In. 11.66
Water year 1957-58: Max 237 Min 0.3 Mean 11.4 Cfsm 0.498 In. 6.73

Peak discharge (base, 150 cfs).--Nov. 14 (7 p.m.) 166 cfs (5.73 ft); Dec. 20 (4 p.m.) 301 cfs (6.92 ft); Dec. 26 (4 to 5 a.m.) 207 cfs (5.96 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 2, 3, Jan. 20 to Feb. 8, Feb. 11-25. No gage-height record Oct. 3-16, Feb. 18-26; discharge estimated on basis of records for River Rouge at Birmingham and Big Beaver Creek at Warren.

1640. Clinton River near Fraser, Mich.

Location.--Lat 42°34'40", long 82°57'00", in NW¼ sec.20, T.2 N., R.13 E., on left bank 800 ft downstream from bridge on Garfield Road, 2¾ miles north of Fraser, and 4 miles upstream from North Branch.

Drainage area.--445 sq mi (revised).

Records available.--May 1947 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 577.71 ft above mean sea level, datum of 1929. Prior to Nov. 17, 1949, wire-weight gage at site 800 ft upstream at same datum.

Average discharge.--11 years, 346 cfs.

Extremes.--Maximum discharge during year, 2,000 cfs Dec. 20 (gage height, 13.00 ft); minimum, 57 cfs Aug. 18 (gage height, 4.50 ft).

1947-58: Maximum discharge, 8,000 cfs May 11, 1948 (gage height, 19.5 ft, from graph based on gage readings), from rating curve extended above 4,000 cfs; minimum, 47 cfs Sept. 6, 1955; minimum gage height, 4.29 ft Sept. 7, 1954.

Flood of Apr. 5 or 6, 1947, reached a stage of 20 ft, from floodmarks (discharge, 9,000 cfs, from rating curve extended above 4,000 cfs).

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 18-22, Nov. 18 to Dec. 11)

4.5	57	8.0	581
5.0	102	11.0	1,280
6.0	225	13.0	2,000

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	118	238	260	685	208	739	201	181	272	98	71	71
2	106	236	244	464	200	452	194	172	269	85	70	62
3	98	224	232	393	190	415	201	157	133	243	67	64
4	91	214	225	370	180	428	198	160	106	781	67	92
5	90	218	217	350	170	377	188	162	95	564	65	99
6	84	214	242	320	160	408	325	159	99	338	173	67
7	80	206	352	300	150	479	575	153	86	206	429	91
8	91	292	386	280	150	384	393	152	75	177	136	76
9	92	377	309	260	140	331	317	154	367	180	97	*91
10	89	268	287	250	130	309	298	131	236	*157	71	142
11	89	228	249	240	130	307	354	115	*160	154	78	120
12	90	224	230	240	130	*293	447	114	125	146	75	121
13	82	*228	220	230	130	291	359	114	120	131	77	111
14	79	772	220	220	120	290	304	*110	139	131	*78	97
15	89	1,100	220	210	120	276	273	124	113	140	67	93
16	131	619	230	200	120	266	*242	116	94	137	69	410
17	397	426	300	200	120	255	217	114	95	119	67	251
18	*261	360	*400	200	120	262	207	141	119	118	60	380
19	151	516	1,000	190	120	264	195	190	152	112	61	174
20	110	420	1,700	190	120	260	189	139	120	105	68	115
21	101	356	1,610	190	130	268	210	123	163	102	110	99
22	110	324	933	190	150	266	201	122	128	98	108	110
23	429	295	691	200	200	252	260	124	114	130	78	99
24	1,090	276	585	200	300	255	244	99	122	80	67	97
25	869	262	522	200	650	254	225	84	209	80	65	100
26	437	261	1,300	210	707	264	201	77	231	76	65	122
27	320	261	960	210	570	260	181	90	143	73	67	109
28	280	287	709	214	562	266	180	125	123	74	68	94
29	267	377	612	*215	-	248	202	90	109	123	65	96
30	260	307	528	221	-------	221	193	78	100	85	88	98
31	252	-------	514	221	-------	207	-------	79	-------	78	91	-------
Total	6,833	10,386	16,487	8,063	6,177	9,847	7,774	3,949	4,417	5,121	2,818	3,751
Mean	220	346	532	260	221	318	259	127	147	165	90.9	125
Cfsm	0.494	0.778	1.20	0.584	0.497	0.715	0.582	0.285	0.330	0.371	0.204	0.281
In.	0.57	0.87	1.38	0.67	0.52	0.82	0.65	0.33	0.37	0.43	0.24	0.31

Calendar year 1957: Max 2,950 Min 79 Mean 397 Cfsm 0.892 In. 11.93
Water year 1957-58: Max 1,700 Min 60 Mean 235 Cfsm 0.528 In. 7.16

Peak discharge (base, 1,100 cfs).--Oct. 24 (8 p.m.) 1,390 cfs (11.44 ft); Nov. 15 (12:01 to 1 a.m.) 1,300 cfs (11.12 ft); Dec. 20 (6 to 9 p.m.) 2,000 cfs (13.00 ft); Dec. 26 (1 to 2 p.m.) 1,400 cfs (11.47 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 12-19, Jan. 4-27, Feb. 2-25.

1645. North Branch Clinton River near Mount Clemens, Mich.

Location.--Lat 42°37'45", long 82°53'25", in NW¼ sec.2, T.2 N., R.13 E., on left bank 30 ft upstream from bridge on State Highway 59, 2 miles north of Mount Clemens, and 3½ miles upstream from mouth.

Drainage area.--199 sq mi (revised).

Records available.--May 1947 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 576.38 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Nov. 15, 1949, wire-weight gage at same site and datum.

Average discharge.--11 years, 128 cfs.

Extremes.--Maximum discharge during year, about 1,600 cfs Dec. 20, from reconstructed gage-height graph; minimum, 1 cfs Oct. 4; minimum gage height, 3.23 ft Aug. 15, 16. 1947-58: Maximum daily discharge, 4,500 cfs Apr. 4, 1950; maximum gage height, 17.5 ft Apr. 4 or 5, 1950, from high-water mark in gage well (backwater from Clinton River); minimum discharge, 0.2 cfs Sept. 13, 14, 1954 (gage height, 3.12 ft). Flood of Apr. 5 or 6, 1947, reached a stage of 20.0 ft, from floodmark.

Remarks.--Records good except those for periods of ice effect or no gage-height record and those below 10 cfs, which are fair. Some regulation at times caused by mill above station.

Revisions (water years).--WSP 1437: 1948.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.4	58	94	172	36	400	87	47	13	16	4.9	8.2
2	4.6	54	80	130	35	450	85	43	25	10	3.4	8.8
3	3.4	50	71	110	32	350	81	40	32	8.8	2.8	4.0
4	1.3	49	55	90	30	300	77	40	27	12	2.6	4.0
5	7.6	46	50	75	27	247	76	40	19	47	1.9	3.6
6	2.6	45	56	70	25	197	92	37	15	61	2.6	2.8
7	2.4	43	64	60	23	247	316	35	14	62	4.3	2.0
8	2.8	44	87	55	21	189	343	32	13	38	3.6	3.6
9	3.2	63	90	48	20	142	189	30	14	26	2.6	*4.3
10	3.2	77	80	44	19	110	143	28	34	*19	2.6	7.6
11	3.0	69	70	40	19	*110	141	25	*33	6.1	2.6	6.4
12	3.0	62	65	35	19	103	220	24	26	8.2	1.9	5.5
13	3.2	57	60	35	19	97	223	25	19	6.7	2.0	4.3
14	3.0	*155	62	30	19	96	163	20	89	6.1	2.3	3.8
15	3.2	573	57	30	19	93	*137	*17	79	5.5	1.8	3.8
16	4.6	626	59	30	19	92	122	15	46	4.6	2.2	6.1
17	*19	335	63	25	19	90	107	12	32	4.0	3.8	6.1
18	40	160	*84	25	19	87	97	12	25	3.6	4.9	6.4
19	56	178	667	25	19	86	85	62	19	3.6	5.2	14
20	46	202	a1,500	25	19	87	76	43	19	2.8	4.0	14
21	36	156	a1,300	25	20	92	76	30	21	2.0	3.2	8.2
22	33	121	a900	25	20	93	74	24	30	1.9	3.6	5.8
23	37	105	a650	25	25	93	72	21	33	1.8	3.4	4.3
24	218	91	a500	25	50	93	72	18	25	1.7	5.8	3.8
25	448	82	a400	30	150	93	71	19	19	1.2	5.5	3.8
26	329	74	530	30	400	92	69	14	21	1.2	15	4.0
27	138	70	979	33	380	91	62	19	28	1.4	4.6	4.9
28	106	70	524	37	350	92	59	12	28	1.9	2.6	4.6
29	83	95	231	*37	-	92	54	12	19	2.8	1.7	3.6
30	69	113	154	36	-------	92	50	3.4	11	3.4	3.8	3.6
31	60	-------	129	37	-------	91	-------	6.4	-------	4.3	6.7	------
Total	1,775.5	3,923	9,711	1,494	1,853	4,587	3,519	803.6	828	374.6	117.9	165.9
Mean	57.3	131	313	48.2	66.2	148	117	25.9	27.6	12.1	3.80	5.53
Cfsm	0.288	0.658	1.57	0.242	0.333	0.744	0.588	0.130	0.139	0.061	0.019	0.028
In.	0.33	0.73	1.81	0.28	0.35	0.86	0.66	0.15	0.15	0.07	0.02	0.03

Calendar year 1957: Max 2,250 Min 1.3 Mean 147 Cfsm 0.739 In. 10.54
Water year 1957-58: Max 1,500 Min 1.2 Mean 79.9 Cfsm 0.402 In. 5.44

Peak discharge (base, 650 cfs).--Nov. 16 (5 to 6 a.m.) 666 cfs (9.09 ft); Dec. 20 (time unknown) about 1,600 cfs; Dec. 27 (8 to 9 a.m.) 1,080 cfs (11.14 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of reconstructed gage-height graph and records for Clinton River near Fraser and Mill Creek near Abbottsford.
Note.--Stage-discharge relation affected by ice Dec. 4, 5, 10-13, Jan. 2-26, Feb. 3 to Mar. 3.

1655. Clinton River at Mount Clemens, Mich.

Location.--Lat 42°35'45", long 82°54'35", on left bank 20 ft downstream from bridge on Moravian Drive, a quarter of a mile downstream from North Branch, and half a mile west of Mount Clemens.

Drainage area.--734 sq mi (revised).

Records available.--May 1934 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 570.43 ft above mean sea level, datum of 1929. May 10, 1934, to May 7, 1935, chain gage and May 8, 1935, to Jan. 11, 1939, wire-weight gage, at same site and datum. Auxiliary water-stage recorder on right bank 2 miles downstream from base gage, at same datum. Mar. 15, 1938, to Jan. 3, 1952, auxiliary wire-weight gage 1¾ miles downstream from base gage.

Average discharge.--24 years, 493 cfs.

Extremes.--Maximum discharge during year, 4,740 cfs Dec. 21 (gage height, 11.28 ft); minimum not determined, occurred during period of indefinite stage-discharge relation; minimum gage height, 3.60 ft Feb. 9.
1934-58: Maximum discharge, 21,200 cfs Apr. 6, 1947 (gage height, 23.55 ft, from floodmark); minimum not determined; minimum gage height, 2.90 ft Oct. 15, 1934.

Remarks.--Records good except those for periods of ice effect, indefinite stage-discharge relation, or no gage-height record, which are fair.

Revisions (water years).--WSP 1084: 1943, 1945-46. WSP 1437: 1935, 1936(M), 1937-39, 1949(M), 1950.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	130	327	469	1,000	235	1,400	320	230	220	130	90	90
2	120	314	398	800	224	1,200	310	220	237	106	85	80
3	120	296	366	600	220	1,030	310	210	180	203	80	80
4	110	268	334	520	220	883	310	210	150	938	80	110
5	110	269	327	480	210	776	300	210	130	855	80	120
6	100	252	352	450	210	753	500	210	130	581	150	80
7	100	255	481	410	200	999	1,000	200	120	372	541	100
8	100	320	673	380	190	868	850	200	100	226	203	90
9	100	536	559	350	180	700	600	180	365	253	130	*100
10	100	398	496	330	170	500	500	170	324	*212	90	160
11	100	324	400	320	170	450	550	160	*211	180	90	140
12	100	307	350	310	170	*401	750	150	178	170	90	140
13	100	*301	320	300	160	419	700	140	158	160	90	130
14	100	1,180	310	280	150	408	550	*140	247	160	*80	110
15	105	2,210	310	270	150	387	493	150	237	160	80	110
16	150	1,610	330	260	150	366	*402	140	170	160	80	364
17	400	1,030	400	250	150	345	359	140	150	150	80	300
18	*369	701	*500	250	150	348	310	170	160	140	70	401
19	241	910	2,000	250	150	345	288	258	210	130	70	200
20	182	842	3,830	240	150	354	251	183	152	120	80	150
21	154	682	4,260	240	170	362	288	170	192	120	130	130
22	147	593	2,580	240	190	377	274	170	170	120	130	130
23	603	522	1,590	250	250	362	311	160	159	150	90	120
24	1,660	480	1,080	250	450	356	314	130	159	100	80	120
25	1,760	437	887	260	1,000	360	284	110	193	90	80	120
26	1,000	407	2,430	270	1,300	353	255	100	305	90	90	140
27	606	406	2,430	280	1,100	357	219	120	189	85	80	130
28	495	404	1,690	290	1,100	365	220	150	167	90	80	110
29	431	632	1,140	*290	-	367	250	110	148	140	80	110
30	388	592	896	296	-------	320	240	90	123	100	100	110
31	356	-------	837	258	-------	320	-------	100	-------	95	110	-------
Total	10,537	17,805	33,025	10,974	9,169	16,831	12,308	5,081	5,634	6,586	3,389	4,275
Mean	340	594	1,065	354	327	543	410	164	188	212	109	142
Cfsm	0.463	0.809	1.45	0.482	0.446	0.740	0.559	0.223	0.256	0.289	0.149	0.193
In.	0.53	0.90	1.67	0.56	0.46	0.85	0.62	0.26	0.29	0.33	0.17	0.22

Calendar year 1957: Max 5,500 Min 100 Mean 637 Cfsm 0.868 In. 11.79
Water year 1957-58: Max 4,260 Min 70 Mean 372 Cfsm 0.507 In. 6.86

Peak discharge (base, 3,000 cfs).--Dec. 21 (2 to 4 a.m.) 4,740 cfs (11.28 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 11-19, Jan. 1-29, Feb. 3 to Mar. 2. No gage-height record Jan. 9-28, Mar. 9-11, Mar. 31 to Apr. 14, Apr. 28 to May 13, July 28, 30; discharge estimated on basis of sum of records for Clinton River near Fraser and North Branch Clinton River near Mount Clemens. Stage-discharge relation indefinite Oct. 1-16, May 14-18, 21-31, June 3-8, 16-18, July 11 to Aug. 6, Aug. 9 to Sept. 15, Sept. 17, 19-30; discharge computed on basis of 3 discharge measurements and sum of records for Clinton River near Fraser and North Branch Clinton River near Mount Clemens.

1660. River Rouge at Birmingham, Mich.

Location.--Lat 42°32'45", long 83°13'25", in NW¼ sec.36, T.2 N., R.10 E., on left bank in Birmingham, 25 ft downstream from mouth of Quarton Lake Outlet and 100 ft upstream from bridge on West Maple Road.

Drainage area.--36.9 sq mi (revised).

Records available.--June 1950 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 720 ft (by barometer).

Average discharge.--8 years, 16.9 cfs.

Extremes.--Maximum discharge during year, 193 cfs Dec. 20 (gage height, 3.37 ft); minimum, 1.6 cfs Sept. 15 (gage height, 1.39 ft).
1950-58: Maximum discharge, 700 cfs Apr. 29, 1956 (gage height, 5.38 ft), from rating curve extended above 340 cfs by logarithmic plotting; minimum, 0.4 cfs Sept. 1, 3, 4, 6-8, 1954; minimum gage height, 1.27 ft Sept. 16, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair. Occasional regulation by Quarton Lake above station.

Revisions (water years).--WSP 1387: 1951-52(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 27 to Aug. 1)

1.4	1.7	2.0	25
1.5	3.2	2.2	40
1.6	5.4	2.5	70
1.7	8.9	3.0	135
1.8	13	3.2	165

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.4	11	15	36	9.7	47	14	7.3	25	4.0	2.6	2.7
2	5.4	10	14	28	8.9	29	12	6.6	16	5.9	2.2	2.7
3	5.4	11	12	22	8.5	26	12	7.0	8.1	29	2.1	3.0
4	5.4	10	12	20	8.1	24	11	7.3	6.0	42	2.1	3.0
5	5.4	9.7	11	16	7.7	23	11	7.0	5.4	45	2.1	2.7
6	5.7	9.3	13	15	7	28	24	6.6	4.9	23	9.6	3.0
7	5.7	8.9	22	14	6.5	30	30	6.0	4.4	12	14	2.7
8	6.3	19	21	13	6	24	22	6.9	8.2	7.7	5.5	2.6
9	5.7	21	17	13	5.5	21	16	6.6	18	6.3	3.4	3.8
10	5.1	14	16	13	5	18	13	5.7	9.7	5.7	2.9	*3.5
11	5.7	12	13	12	5	18	18	5.7	7.0	*5.4	2.6	2.9
12	5.4	*11	12	11	5	17	21	5.1	*5.4	5.4	2.7	2.4
13	5.7	15	11	11	5	*17	17	4.7	5.9	4.7	*2.4	2.2
14	7.0	76	11	10	5	17	16	4.9	5.7	4.2	2.4	2.0
15	7.7	64	12	11	5	16	14	*4.7	4.9	4.7	2.4	8.0
16	12	36	14	11	5	16	*12	4.2	4.9	4.4	2.6	7.5
17	*28	27	15	10	5	16	11	4.4	4.2	3.8	2.4	12
18	15	26	44	8.5	5	16	10	6.5	4.8	3.8	2.1	9.5
19	8.5	31	114	7.3	5	16	9.7	6.3	4.4	3.6	2.9	4.9
20	6.3	23	*152	7.5	5	16	11	4.4	4.0	3.2	3.2	3.8
21	5.7	21	93	8.9	5.5	17	12	4.2	3.8	3.4	4.8	2.8
22	5.7	19	56	12	6	16	13	8.6	3.6	3.6	3.6	3.2
23	36	17	44	11	14	15	17	6.0	3.8	3.6	2.9	3.4
24	81	16	34	9.7	38	15	15	5.4	4.0	3.6	2.7	3.2
25	37	14	44	11	44	16	12	5.1	9.2	3.4	3.0	4.0
26	23	14	106	10	28	14	11	4.7	6.0	3.3	3.2	3.8
27	16	14	59	10	24	14	8.9	6.8	5.6	3.4	3.0	3.8
28	14	18	47	10	47	14	8.9	5.8	3.2	3.4	2.9	3.2
29	12	22	38	9.7	-	15	9.3	4.4	3.0	3.2	2.9	3.0
30	12	18	33	*11	-------	15	7.7	4.4	3.6	2.9	3.2	3.6
31	12	-------	34	10	-------	14	-------	7.2	-------	2.6	3.6	-------
Total	411.2	617.9	1,139	402.4	329.4	600	419.5	180.5	202.7	260.2	108.0	116.9
Mean	13.3	20.6	36.7	13.0	11.8	19.4	14.0	5.82	6.76	8.39	3.48	3.90
Cfsm	0.360	0.558	0.995	0.352	0.320	0.526	0.379	0.158	0.183	0.227	0.094	0.106
In.	0.41	0.62	1.15	0.41	0.33	0.60	0.42	0.18	0.20	0.26	0.11	0.12

Calendar year 1957: Max 297 Min 3.0 Mean 20.9 Cfsm 0.566 In. 8.32
Water year 1957-58: Max 152 Min 2.0 Mean 13.1 Cfsm 0.355 In. 4.81

Peak discharge (base, 110 cfs).--Oct. 24 (10 a.m.) 144 cfs (3.08 ft); Nov. 14 (1:30 p.m.) 117 cfs (2.87 ft); Dec. 20 (1:30 p.m.) 193 cfs (3.37 ft); Dec. 26 (8 a.m.) 131 cfs (2.97 ft); July 3 (7 p.m.) 110 cfs (2.82 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 6, 7, Feb. 6-22.

1661. River Rouge at Southfield, Mich.

Location.--Lat 42°26'52", long 83°17'52", in SW¼ sec.32, T.1 N., R.10 E., on downstream side of bridge on Beech Road at Southfield, 4.2 miles east of Farmington.

Drainage area.--88.0 sq mi.

Records available.--April to September 1958.

Gage.--Wire-weight gage read twice daily. Altitude of gage is 615 ft (from topographic map).

Extremes.--Maximum discharge during period April to September, 285 cfs July 5 (gage height, 5.5 ft, from graph based on gage readings); minimum daily, 8 cfs Aug. 30; minimum gage height observed, 1.36 ft May 30.

Remarks.--Records good except those for periods of no gage-height record, which are fair.

Rating table, Apr. 1 to Sept. 30, 1958 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 13 to July 2)

1.3	8.5	2.5	51
1.5	12	3.0	80
2.0	28	4.0	148

Discharge, in cubic feet per second, April to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							*40	25	57	13	12	10
2							43	24	54	12	11	10
3							37	24	24	70	11	10
4							36	27	19	164	10	10
5							35	25	17	208	9.7	13
6							57	23	15	82	16	16
7							104	21	14	41	47	12
8							64	20	14	30	21	11
9							50	26	108	24	17	13
10							44	22	38	20	15	*19
11							58	20	24	20	19	15
12							78	19	17	19	14	12
13							58	18	16	19	*15	10
14							50	17	17	18	14	10
15							45	17	17	19	14	11
16							40	*17	16	*17	13	75
17							37	16	15	15	12	22
18							34	21	16	14	11	99
19							32	20	*22	14	12	19
20							31	17	23	13	35	17
21							37	15	21	13	30	16
22							33	16	16	12	22	20
23							61	21	15	20	15	15
24							48	17	16	13	13	15
25							40	17	20	13	12	17
26							34	14	26	13	11	21
27							26	14	20	12	10	20
28							30	34	16	11	9	18
29							30	17	13	18	9	18
30					-------		27	10	14	12	8	21
31		-------			-------		-------	14	-------	12	10	-------
Total							1,339	608	720	981	477.7	595
Mean							44.6	19.6	24.0	31.6	15.4	19.8
Cfsm							0.507	0.223	0.273	0.359	0.175	0.225
In.							0.57	0.26	0.30	0.41	0.20	0.25

Calendar year	: Max	Min	Mean	Cfsm	In.	
Water year	: Max	Min	Mean	Cfsm	In.	

* Discharge measurement made on this day.
Note.--No gage-height record Aug. 17 to Sept. 9, Sept. 11-14, 20, 21, 26-30; discharge estimated on basis of records for stations at Birmingham and at Detroit.

1663. Upper River Rouge at Farmington, Mich.

Location.--Lat 42°27'52", long 83°22'11", in NW¼ sec.27, T.1 N., R.9 E., on left bank 800 ft downstream from bridge on Shiawassee Road in Farmington.

Drainage area.--17.5 sq mi.

Records available.--March to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 695 ft (from topographic map).

Extremes.--Maximum discharge during period March to September, 79 cfs July 3, 4 or 5 (gage height, 3.67 ft, from recorded range in stage); minimum, 1.4 cfs Aug. 31, Sept. 1 (gage height, 2.55 ft).

Remarks.--Records good except those for periods of no gage-height record, which are fair.

Rating table, Mar. 26 to Sept. 30, 1958 (gage height, in feet, and discharge, in cubic feet per second)

2.5	0.7	2.8	9.4
2.6	2.3	3.0	20
2.7	5.3	3.2	35

Discharge, in cubic feet per second, March to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						-	*9.4	5.3	14	4	2.5	1.7
2						-	8.4	4.6	7.6	4	2	1.7
3						-	8.0	5.6	4.0	14	2	1.9
4						-	8.0	6.0	3.7	30	2	2.1
5						-	8.0	5.6	3.1	35	2	2.1
6						-	13	4.9	3.1	20	3	2.1
7						-	14	4.9	2.8	9	10	2.3
8						-	13	4.6	3.7	6	4	2.3
9						-	11	5.3	16	5	3.5	2.4
10						-	10	4.9	8.4	4	3	*2.8
11						-	14	5.3	5.6	4	4	2.5
12						-	15	4.3	4.3	4	3	2.1
13						-	13	3.7	3.7	4	3	2.1
14						-	11	3.4	3.4	3.5	3	2.3
15						-	9.9	3.7	3.1	3.5	3	3.5
16						-	8.0	*3.4	2.8	*3.4	2.5	9.9
17						-	8.4	3.4	2.8	3.1	2.5	6.3
18						-	7.2	3.4	6.1	2.8	2.5	8.6
19						-	6.4	3.4	*6.0	2.8	2.5	3.1
20						-	7.2	3.4	6.8	2.5	*3.5	2.3
21						-	7.6	3.4	5.6	2.5	4.9	2.5
22						-	8.9	3.7	4.3	2.5	2.8	3.1
23						-	14	4.0	4.3	4	2.3	2.3
24						-	12	3.4	4.6	2.5	2.3	2.3
25						-	9.9	2.8	11	2.5	2.2	2.8
26						10	7.6	2.8	8.0	2.5	2.1	3
27						9.9	7.2	3.4	6	2.5	2.1	3
28						10	6.8	4.3	5	2.5	1.9	3
29						10	6.4	3.4	4	3.5	1.7	3
30					-------	10	6.0	3.7	4	2.5	1.7	3
31		-------			-------	10	-------	4.6	-------	2.5	1.5	-------
Total						-	289.3	128.6	167.8	194.6	89.0	92.1
Mean						-	9.64	4.15	5.59	6.28	2.87	3.07
Cfsm						-	0.551	0.237	0.319	0.359	0.164	0.175
In.						-	0.61	0.27	0.36	0.41	0.19	0.20

Calendar year	: Max	Min	Mean	Cfsm	In.
Water year	: Max	Min	Mean	Cfsm	In.

* Discharge measurement made on this day.

Note.--No gage-height record June 27 to July 15, July 20 to Aug. 19, Aug. 24, 25, Sept. 8, 9, 26-30; discharge estimated on basis of recorded range in stage and records for River Rouge at Southfield and River Rouge at Detroit.

1665. River Rouge at Detroit, Mich.

Location.--Lat 42°22'20", long 83°15'20", in SW¼ sec.27, T.1 S., R.10 E., on right bank 500 ft upstream from bridge on Plymouth Road in Detroit and 4 miles upstream from Middle River Rouge.

Drainage area.--185 sq mi (revised).

Records available.--October 1930 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 584.00 ft above mean sea level, datum of 1929. Prior to Aug. 10, 1943, chain gage and Aug. 11, 1943, to Oct. 15, 1948, wire-weight gage, at site 1 mile downstream at datum 4.6 ft lower.

Average discharge.--28 years, 110 cfs.

Extremes.--Maximum discharge during year, 1,380 cfs Dec. 20 (gage height, 11.20 ft); minimum, 9.4 cfs Aug. 30 (gage height, 3.18 ft).
1930-58: Maximum discharge, 13,000 cfs Apr. 5, 1947; maximum gage height, 23.0 ft Apr. 6, 1947, from floodmark, site and datum then in use; minimum discharge observed, 2.7 cfs Aug. 11, 1934 (gage height, 3.50 ft, site and datum then in use).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Revisions (water years).--WSP 1034: 1933(M). WSP 1054: 1939, 1943, 1945(M). WSP 1437: 1931-32, 1934, 1936(M), 1937-38, 1944(M), 1945.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-25, June 3 to Sept. 30)

Oct. 1 to Apr. 7				Apr. 8 to Sept. 30			
3.1	21	8.0	667	3.0	10	4.0	81
4.0	83	10.0	1,080	3.1	13	5.0	185
5.0	185			3.3	24	7.0	486
				3.5	38		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	75	101	246	60	a350	77	40	101	19	14	12
2	26	71	89	165	55	a250	77	42	120	20	12	12
3	26	70	88	150	50	a170	71	41	50	118	12	12
4	29	66	74	130	50	159	66	46	29	277	11	12
5	25	64	73	110	50	140	64	46	23	231	10	16
6	23	62	70	100	50	148	121	37	20	131	352	22
7	25	59	153	90	45	222	241	34	18	69	309	15
8	25	94	194	85	45	139	143	33	24	49	58	13
9	28	166	131	80	40	113	100	37	152	37	31	15
10	31	105	109	80	35	96	80	33	98	31	27	22
11	29	83	90	75	35	91	98	29	51	34	48	*18
12	29	75	80	75	35	*85	156	28	34	33	27	14
13	30	77	70	70	30	86	121	25	27	25	18	12
14	33	381	70	65	30	86	93	22	26	28	16	12
15	36	696	70	65	30	84	79	22	23	*37	15	16
16	54	278	75	65	30	85	67	22	22	30	14	169
17	173	180	*110	65	30	86	61	20	20	24	14	119
18	150	146	150	60	30	85	57	28	23	20	13	204
19	68	202	908	50	30	81	53	28	*39	19	13	48
20	54	158	1,060	50	30	81	52	25	62	18	*69	24
21	47	*126	928	60	35	85	58	20	63	16	62	20
22	43	116	400	70	40	84	64	34	27	16	38	23
23	216	104	279	70	80	81	117	36	21	51	20	19
24	743	98	223	60	200	81	102	25	22	22	16	19
25	506	90	219	60	300	81	*87	22	68	16	13	26
26	179	85	817	60	a200	80	66	20	100	15	13	34
27	122	85	458	60	a150	79	51	18	38	14	12	25
28	*98	101	290	60	a350	81	52	*36	27	40	11	22
29	92	165	241	60	-	81	52	36	23	34	11	22
30	82	126	194	*70	-------	81	47	22	21	19	10	28
31	80	-------	189	65	-------	81	-------	16	-------	14	12	-------
Total	3,128	4,204	8,003	2,571	2,145	3,532	2,573	923	1,372	1,507	1,301	1,025
Mean	101	140	258	82.9	76.6	114	85.8	29.8	45.7	48.6	42.0	34.2
Cfsm	0.546	0.757	1.39	0.448	0.414	0.616	0.464	0.161	0.247	0.263	0.227	0.185
In.	0.63	0.85	1.61	0.52	0.43	0.71	0.52	0.19	0.28	0.30	0.26	0.21

Calendar year 1957: Max 3,220 Min 12 Mean 165 Cfsm 0.892 In. 11.77
Water year 1957-58: Max 1,060 Min 10 Mean 88.4 Cfsm 0.478 In. 6.51

Peak discharge (base, 800 cfs).--Oct. 24 (11 p.m.) 881 cfs (9.17 ft); Nov. 15 (4 a.m.) 907 cfs (9.20 ft); Dec. 20 (11 to 12 p.m.) 1,380 cfs (11.20 ft); Dec. 26 (2 p.m.) 997 cfs (9.64 ft); Aug. 6 (7 p.m.) 1,120 cfs (10.34 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for River Rouge at Birmingham and Middle River Rouge at Garden City.
Note.--Stage-discharge relation affected by ice Dec. 11-18, Jan. 3 to Feb. 25.

1670. Middle River Rouge near Garden City, Mich.

Location.--Lat 42°20'55", long 83°18'45", in W½ sec.6, T.2 S., R.10 E., on right bank 200 ft downstream from bridge on Inkster Road, 1¾ miles northeast of Garden City, and 6¼ miles upstream from mouth.

Drainage area.--104 sq mi (revised).

Records available.--June 1947 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 600.95 ft above mean sea level, datum of 1929. Prior to Oct. 18, 1948, wire-weight gage at site 200 ft upstream at same datum.

Average discharge.--11 years, 77.6 cfs.

Extremes.--Maximum discharge during year, 814 cfs Dec. 20 (gage height, 8.26 ft); minimum, 3.8 cfs Sept. 2, 3 (gage height, 1.29 ft).
1947-58: Maximum discharge, 2,150 cfs May 10, 1948 (gage height, 10.50 ft, from floodmark); minimum, 0.9 cfs Aug. 16, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Occasional regulation by reservoirs above station since 1956.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-24, Nov. 18 to Dec. 14)

Oct. 1 to Mar. 18				Mar. 19 to Sept. 30			
1.4	6.5	4.0	176	1.3	4.0	2.0	31
1.6	11	6.0	394	1.5	8.6	3.0	101
1.9	21	7.0	530	1.7	16	4.0	187
2.4	50	8.0	730				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	50	57	137	40	151	48	31	22	9	8.9	5.5
2	21	46	51	102	40	117	32	30	30	10	7.4	4.2
3	22	44	46	90	35	87	30	31	22	55	6.1	4.4
4	22	44	44	80	30	85	29	36	18	130	5.3	9.1
5	19	42	41	70	30	80	17	34	16	110	4.8	11
6	18	40	49	60	30	110	36	30	12	60	134	11
7	19	38	98	55	30	120	88	28	6.4	35	117	9.9
8	17	67	110	55	25	100	79	28	17	25	41	6.8
9	9.7	68	89	50	20	75	60	30	37	20	22	6.1
10	9.0	46	75	50	20	63	52	27	32	15	16	10
11	8.8	42	61	50	20	56	60	26	24	17	14	*7.4
12	8.3	42	52	45	20	*54	70	24	18	16	13	6.4
13	8.3	46	43	45	20	51	63	22	15	13	11	5.7
14	8.6	182	41	42	20	52	55	22	15	15	8.9	5.3
15	8.6	289	42	41	20	51	47	23	13	*18	8.9	5.4
16	15	207	46	41	20	49	42	24	11	14	8.4	64
17	49	133	*49	40	20	49	41	20	9.2	9.9	7.1	68
18	17	105	122	35	20	51	38	21	11	8.4	6.4	60
19	12	108	390	30	20	52	36	21	*15	7.8	5.5	26
20	22	94	644	30	20	54	36	15	30	6.1	*30	17
21	20	*76	616	36	20	54	38	11	30	5.3	38	13
22	19	67	309	45	25	57	50	22	15	5.0	22	13
23	136	59	191	41	60	61	58	18	10	6.1	13	11
24	368	48	150	39	90	61	68	16	11	6.6	9.6	9.2
25	232	49	158	43	140	91	*56	15	35	6.1	8.9	11
26	127	48	389	40	123	119	44	13	45	6.4	7.1	20
27	92	46	287	40	96	65	39	11	20	5.9	6.6	12
28	*82	58	191	40	118	59	37	*12	13	13	6.1	9.9
29	76	75	154	40	-	55	37	13	11	16	6.6	8.1
30	72	71	127	40	-------	54	32	13	10	12	6.6	9.2
31	61	-------	123	*40	-------	54	-------	12	-------	9.9	6.4	-------
Total	1,620.3	2,330	4,847	1,592	1,172	2,237	1,418	679	575.6	686.5	608.6	459.6
Mean	52.3	77.7	156	51.4	41.9	72.2	47.3	21.9	19.2	22.1	19.6	15.3
Cfsm	0.503	0.747	1.50	0.494	0.403	0.694	0.455	0.211	0.185	0.212	0.188	0.147
In.	0.58	0.83	1.73	0.57	0.42	0.80	0.51	0.24	0.21	0.25	0.22	0.16

Calendar year 1957: Max 1,040 Min 8.5 Mean 91.1 Cfsm 0.876 In. 12.93
Water year 1957-58: Max 644 Min 4.2 Mean 49.9 Cfsm 0.480 In. 6.52

Peak discharge (base, 500 cfs).--Oct. 24 (11 a.m.) 512 cfs (6.98 ft); Dec. 20 (12 p.m.) 814 cfs (8.26 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 3-13, 17-20, Jan. 26 to Feb. 25. No gage-height record Mar. 4-8, June 18 to July 14; discharge estimated on basis of records for River Rouge at Birmingham and Lower River Rouge at Inkster.

1680. Lower River Rouge at Inkster, Mich.

Location.--Lat 42°18'00", long 83°18'00", in S½ sec.19, T.2 S., R.10 E., on right bank 10 ft downstream from bridge on John Daly Road, 0.6 mile northeast of Inkster, and 4⅝ miles upstream from mouth.

Drainage area.--82.9 sq mi (revised).

Records available.--June 1947 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 593.14 ft above mean sea level, datum of 1929. Prior to Oct. 20, 1948, wire-weight gage at same site and datum.

Average discharge.--11 years, 53.8 cfs.

Extremes.--Maximum discharge during year, 949 cfs Dec. 21 (gage height, 9.13 ft); minimum, 0.4 cfs Sept. 28, 29, 30.
1947-58: Maximum discharge, 3,120 cfs Apr. 4, 1950 (gage height, 12.42 ft); minimum, 0.2 cfs Sept. 13, 1955.

Remarks.--Records good except those for periods of ice effect and those below 5 cfs, which are fair.

Revisions (water years).--WSP 1174: 1948(M). WSP 1437: 1949.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.8	0	3.9	52
2.9	1.9	5.0	150
3.0	4.0	6.0	285
3.2	10	8.0	665
3.4	19	9.0	915

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.7	22	31	92	12	107	18	8.0	11	2.1	3.0	1.9
2	2.1	19	28	58	10	53	16	7.4	6.5	2.1	2.5	2.1
3	3.0	18	21	40	9	40	14	10	2.7	35	2.3	2.5
4	3.4	16	20	35	8	67	13	10	2.5	56	1.9	4.2
5	3.0	14	16	30	7.7	54	12	9.3	2.3	40	1.9	1.7
6	2.5	13	19	25	7.4	58	34	7.7	1.5	16	42	3.6
7	2.7	12	61	23	7.7	86	60	6.4	1.5	9.0	73	4.0
8	2.7	31	104	18	6.2	48	43	7.8	2.8	6.7	59	1.7
9	2.7	36	66	12	4.5	35	28	7.0	15	5.1	20	2.0
10	3.4	29	46	12	4.0	27	21	4.8	7.7	5.9	10	3.4
11	3.4	20	40	12	4	26	32	3.6	6.2	10	10	*1.9
12	3.4	18	35	12	4	*23	46	3.2	4.0	6.7	11	1.7
13	2.5	20	29	10	4	22	35	3.0	4.3	3.8	6.2	1.1
14	2.7	182	23	10	4	22	26	2.7	3.0	6.4	4.3	1.0
15	3.6	379	23	12	4	22	21	2.5	1.9	*13	3.4	2.8
16	15	120	23	12	4	22	18	2.3	1.5	5.4	3.6	32
17	39	75	*26	11	4	21	14	2.3	1.5	4.0	2.3	40
18	21	58	86	9.7	4	21	14	3.6	2.4	3.4	1.7	22
19	10	66	568	8.0	4	21	12	1.7	*1.8	3.4	2.3	8.0
20	6.2	54	710	7.7	4	23	12	1.5	3.7	2.3	5.3	3.6
21	4.5	*38	637	9.7	4	24	12	1.5	5.9	2.1	*8.0	1.7
22	4.0	33	168	11	5	23	20	12	1.9	2.1	4.3	1.5
23	83	29	110	11	8	21	26	3.4	1.9	2.1	3.2	1.0
24	381	27	82	11	25	20	32	3.2	4.0	2.5	3.6	1.5
25	328	24	106	12	90	21	*27	2.3	25	3.0	1.9	2.6
26	94	22	532	13	60	21	16	1.3	11	2.7	1.9	4.4
27	58	21	203	13	50	20	12	1.7	8.0	2.3	1.7	1.0
28	*41	30	119	13	57	21	11	*2.1	4.5	6.5	1.7	1.0
29	33	47	94	13	-	21	11	1.9	2.7	6.4	1.9	.8
30	29	44	74	13	-------	20	9.3	1.9	2.3	3.0	1.9	1.9
31	26	-------	74	*13	-------	20	-------	2.5	-------	3.0	1.9	-------
Total	1,216.5	1,517	4,174	582.1	415.5	1,030	665.3	138.6	151.0	272.0	297.7	158.6
Mean	39.2	50.6	135	18.8	14.8	33.2	22.2	4.47	5.03	8.77	9.60	5.29
Cfsm	0.473	0.610	1.63	0.227	0.179	0.400	0.268	0.054	0.061	0.106	0.116	0.064
In.	0.55	0.68	1.87	0.26	0.19	0.46	0.30	0.06	0.07	0.12	0.13	0.07

Calendar year 1957: Max 828 Min 1.3 Mean 62.7 Cfsm 0.756 In. 9.71
Water year 1957-58: Max 710 Min 0.8 Mean 29.1 Cfsm 0.351 In. 4.76

Peak discharge (base, 600 cfs).--Dec. 21 (7 a.m.) 949 cfs (9.13 ft); Dec. 26 (5 p.m.) 645 cfs (7.92 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 11, 12, Jan. 3-5, 22, 23, 25-30, Feb. 1-4, 11-27.

1695. Huron River at Commerce, Mich.

Location.--Lat 42°35'25", long 83°29'05", on line between NE¼ and SE¼ sec.10, T.2 N., R.8 E., on downstream left abutment of bridge on Commerce Road, 10 ft upstream from Hayes Creek and 0.2 mile east of Commerce. Records include flow of Hayes Creek.

Drainage area.--51 sq mi, approximately, includes that of Hayes Creek.

Records available.--March 1946 to September 1958.

Gage.--Staff gage read twice daily. Datum of gage is 910.00 ft above mean sea level, datum of 1929.

Average discharge.--12 years, 43.2 cfs.

Extremes.--Maximum discharge during year, 64 cfs Nov. 8, 9 (gage height, 1.68 ft); minimum, 7.1 cfs Sept. 2, 3, 13-16 (gage height, 0.70 ft).
1946-58: Maximum discharge, 266 cfs Apr. 7, 1947 (gage height, 2.98 ft, from graph based on gage readings); maximum gage height, 3.10 ft May 12, 1948, from graph based on gage readings (backwater from debris); minimum discharge, that of Sept. 2, 3, 13-16, 1958; minimum gage height, 0.66 ft Sept. 10, 1953.

Remarks.--Records good except those for periods of ice effect, which are fair. Some regulation caused by dams operated for lake level control at outlets of Pontiac, Oxbow, and Union Lakes.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.7	7.1	1.2	27
.8	8.8	1.4	40
.9	12	1.7	66

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	53	44	52	31	36	36	28	19	8.8	8.0	7.4
2	21	54	42	50	31	37	36	28	17	9.1	7.8	7.3
3	21	57	41	48	b30	39	36	27	15	14	7.8	7.3
4	21	58	38	45	b30	39	34	26	13	20	7.8	7.4
5	21	58	38	43	29	39	34	24	11	21	7.8	7.4
6	22	60	39	43	29	40	35	22	11	26	8.6	7.6
7	21	62	39	42	29	40	38	20	11	26	11	7.4
8	21	63	39	42	29	39	37	20	15	26	11	*7.4
9	21	64	39	42	28	39	37	20	15	24	11	7.6
10	21	59	38	43	27	39	37	19	15	20	11	8.1
11	21	54	37	43	b26	39	38	18	14	20	11	7.8
12	21	52	37	42	b25	39	39	17	13	18	10	7.6
13	20	54	37	42	b25	37	38	16	14	18	9.7	7.3
14	21	58	38	42	b25	*37	37	15	15	18	9.1	7.1
15	21	58	38	42	b24	39	37	14	14	20	8.8	7.1
16	22	56	35	42	b23	39	36	13	14	*22	8.5	7.1
17	34	54	32	40	b22	40	*36	14	12	22	8.3	8.0
18	32	54	34	40	b22	40	34	15	*13	20	*8.1	9.1
19	31	52	40	39	b22	40	33	15	13	18	8.1	8.5
20	30	51	52	37	b22	39	34	15	13	16	8.1	8.5
21	28	54	*52	37	b22	39	33	14	13	15	11	8.3
22	30	55	50	37	b22	39	32	15	13	14	9.7	8.3
23	42	53	50	36	b25	39	32	14	12	13	8.8	8.1
24	46	53	48	36	29	39	33	14	13	12	8.8	8.1
25	46	54	50	36	31	37	32	14	14	11	8.6	8.5
26	46	53	55	34	32	37	32	14	15	9.7	8.5	9.7
27	45	*49	53	*33	32	37	32	*13	14	9.1	8.5	11
28	46	48	52	33	34	37	31	12	13	8.5	8.6	11
29	*47	48	52	32	-	37	30	11	12	8.3	8.1	9.7
30	49	47	50	32	-------	37	29	11	9.7	8.1	8.0	8.8
31	52	-------	50	32	-------	37	-------	14	-------	8.1	7.6	-------
Total	941	1,645	1,339	1,237	756	1,191	1,038	532	405.7	503.7	277.7	244.5
Mean	30.4	54.8	43.2	39.9	27.0	38.4	34.6	17.2	13.5	16.2	8.96	8.15
Cfsm	0.596	1.07	0.847	0.782	0.529	0.753	0.678	0.337	0.265	0.318	0.176	0.160
In.	0.69	1.20	0.98	0.90	0.55	0.87	0.76	0.39	0.30	0.37	0.20	0.18

Calendar year 1957: Max 101 Min 15 Mean 44.4 Cfsm 0.871 In. 11.82
Water year 1957-58: Max 64 Min 7.1 Mean 27.7 Cfsm 0.543 In. 7.39

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1700. Huron River at Milford, Mich.

Location.--Lat 42°34'45", long 83°37'35", in SE¼ sec. 9, T.2 N., R.7 E., on right bank 200 ft upstream from bridge on General Motors Road, half a mile downstream from Sherwood Creek, and half a mile west of Milford.

Drainage area.--125 sq mi.

Records available.--September 1948 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 880.00 ft above mean sea level, datum of of 1929.

Average discharge.--10 years, 108 cfs.

Extremes.--Maximum discharge during year, 217 cfs Dec. 21 (gage height, 6.18 ft); minimum, 6.8 cfs May 13 (gage height, 4.07 ft); minimum daily, 9.2 cfs May 13.
1948-58: Maximum discharge, 645 cfs Apr. 5, 1950 (gage height, 8.25 ft); minimum daily, 8.3 cfs Sept. 17, 1949.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow below about 300 cfs regulated by powerplant 1½ miles above station prior to May 20, 1957; occasional regulation for lake level control since.

Revisions (water years).--WSP 1337: 1952(m).

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a55	98	112	156	85	116	91	76	51	50	30	26
2	a60	97	108	150	84	110	90	75	56	48	29	28
3	a60	99	106	133	82	109	88	73	52	69	28	26
4	a60	100	102	128	79	109	87	74	48	90	28	28
5	a55	100	105	126	77	109	85	73	46	99	28	30
6	a50	100	108	121	78	114	102	72	44	99	34	31
7	a50	101	119	117	75	119	113	71	41	92	50	38
8	a55	109	119	106	73	114	107	71	39	84	47	*50
9	a60	118	112	111	66	109	102	71	54	77	44	48
10	a55	117	107	106	b65	*105	98	70	60	69	43	48
11	48	116	102	102	b65	104	99	70	59	67	44	45
12	56	112	100	100	b60	101	106	46	57	66	41	42
13	57	110	98	99	b60	101	102	9.2	56	62	40	39
14	62	135	98	97	b60	99	98	36	55	62	37	36
15	54	164	99	97	b60	99	96	47	53	63	36	33
16	60	172	106	98	b60	98	92	47	51	*60	36	40
17	104	167	108	95	b60	97	*89	48	48	58	34	45
18	101	160	114	94	b60	98	87	52	*48	56	*33	53
19	88	154	164	91	b60	99	83	50	49	53	32	46
20	82	147	202	88	b60	100	84	48	50	51	30	36
21	77	142	*215	90	b60	100	88	46	52	49	51	34
22	76	136	207	87	b60	100	87	48	54	44	48	34
23	110	131	188	90	63	100	100	48	56	44	42	33
24	153	131	176	90	73	101	99	47	57	42	37	30
25	153	130	172	90	96	99	96	46	62	40	36	30
26	139	124	190	89	105	98	91	46	64	38	34	31
27	130	*120	194	*88	109	97	85	*45	62	36	32	30
28	121	119	184	88	107	94	83	41	61	35	31	28
29	*113	122	176	87	-	95	80	40	55	36	31	27
30	107	117	165	86	-------	96	78	39	52	32	30	28
31	105	-------	160	86	-------	94	-------	41	-------	31	28	-------
Total	2,556	3,748	4,516	3,186	2,042	3,184	2,786	1,666.2	1,592	1,802	1,124	1,073
Mean	82.5	125	139	103	72.9	103	92.9	53.7	53.1	58.1	36.3	35.8
Cfsm	0.660	1.00	1.11	0.824	0.583	0.824	0.743	0.430	0.425	0.465	0.290	0.286
In.	0.76	1.12	1.28	0.95	0.61	0.95	0.83	0.50	0.47	0.54	0.33	0.32

Calendar year 1957: Max 423 Min 35 Mean 113 Cfsm 0.904 In. 12.23
Water year 1957-58: Max 215 Min 9.2 Mean 79.7 Cfsm 0.638 In. 8.66

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for stations near New Hudson and at Commerce.
b Stage-discharge relation affected by ice.

1705. Huron River near New Hudson, Mich.

Location.--Lat 42°30'45", long 83°40'35", in NE¼ sec.1, T.1 N., R.6 E., on right bank 150 ft downstream from Kent Lake Dam, 2 miles upstream from Woodruff Creek, and 3 miles west of New Hudson.

Drainage area.--143 sq mi.

Records available.--August 1948 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 868.00 ft above mean sea level, datum of 1929.

Average discharge.--10 years, 122 cfs.

Extremes.--Maximum discharge during year, 389 cfs Nov. 4 (gage height, 3.32 ft); minimum, 10 cfs May 9; minimum gage height, 0.64 ft Apr. 24.
1948-58: Maximum discharge, 1,080 cfs Dec. 29, 1950 (gage height, 5.05 ft), from rating curve extended above 600 cfs by logarithmic plotting; minimum, 3.4 cfs July 18, 1952; minimum gage height, 0.63 ft Mar. 16, 17, 1953.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Occasional regulation by Kent Lake.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Dec. 22 to Jan. 3, Aug. 27 to Sept. 30)

Oct. 1 to Apr. 2		Apr. 3 to Sept. 30	
1.2	47	0.8	18
1.5	86	1.0	32
2.0	161	1.7	119
3.0	328		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	67	158	127	175	96	126	94	74	55	45	42	30
2	68	134	215	172	94	127	53	50	63	45	41	26
3	71	124	225	166	90	127	41	31	41	66	39	26
4	68	266	166	a155	89	126	63	50	22	91	40	28
5	64	257	134	a150	89	124	75	57	29	101	35	29
6	60	180	127	138	87	127	90	60	34	98	49	29
7	59	147	139	130	86	130	109	60	35	95	69	34
8	66	127	134	121	85	128	89	61	39	88	65	36
9	72	134	126	120	82	127	48	46	57	81	54	37
10	72	139	120	116	79	*120	73	20	58	74	50	45
11	60	190	112	110	79	116	87	32	60	73	51	43
12	57	258	108	108	78	114	99	44	57	73	48	40
13	60	190	103	104	78	114	104	35	57	68	45	39
14	64	177	102	103	78	112	106	29	57	63	41	38
15	66	198	99	100	78	110	63	33	52	65	40	37
16	75	195	100	100	78	110	36	38	48	*63	39	51
17	118	195	103	a100	78	109	*57	41	45	58	36	61
18	124	191	110	a100	75	109	74	34	45	53	*33	*66
19	112	163	139	a100	75	109	78	26	43	51	30	57
20	103	174	185	a100	73	109	87	30	48	50	34	52
21	93	169	209	a100	75	109	90	23	52	48	57	48
22	89	158	220	a100	75	110	91	19	50	46	58	48
23	124	147	211	a100	75	109	99	26	*50	45	49	42
24	169	148	204	a100	79	110	78	30	51	45	44	40
25	172	189	195	a100	93	109	34	34	55	43	40	40
26	166	190	203	a100	106	109	55	35	54	44	38	45
27	155	158	203	*97	116	106	68	*35	57	44	35	41
28	142	148	199	97	120	103	69	37	53	41	34	37
29	*216	142	193	97	-	102	73	35	50	43	33	32
30	276	136	187	97	-------	102	72	34	49	43	33	32
31	198	-------	*180	96	-------	99	-------	40	-------	43	29	-------
Total	3,306	5,182	4,878	3,552	2,386	3,542	2,235	1,199	1,466	1,886	1,331	1,207
Mean	107	173	157	115	85.2	114	74.5	38.7	48.9	60.8	42.9	40.2
Cfsm	0.748	1.21	1.10	0.804	0.596	0.797	0.521	0.271	0.342	0.425	0.300	0.281
In.	0.86	1.35	1.27	0.92	0.62	0.92	0.58	0.31	0.38	0.49	0.35	0.31

Calendar year 1957: Max 475 Min 30 Mean 128 Cfsm 0.895 In. 12.18
Water year 1957-58: Max 276 Min 19 Mean 88.1 Cfsm 0.616 In. 8.36

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage and records for stations near Hamburg and at Milford.

1715. Ore Creek near Brighton, Mich.

Location.--Lat 42°29'40", long 83°48'05", in NW¼ sec.12, T.1 N., R.5 E., on left bank at downstream side of bridge on Hamburg Road, half a mile upstream from Ore Lake and 2½ miles southwest of Brighton.

Drainage area.--31 sq mi, approximately.

Records available.--March 1951 to September 1958.

Gage.--Staff gage read twice daily. Datum of gage is 850.56 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--7 years, 24.7 cfs.

Extremes.--Maximum discharge observed during year, 57 cfs Dec. 26 (gage height, 15.04 ft); maximum gage height observed, 15.16 ft Jan. 3 (ice affected); minimum discharge observed, 4.5 cfs Sept. 8, 13, 14, 15; minimum gage height observed, 14.07 ft May 30.
1951-58: Maximum discharge observed, 193 cfs May 13, 1956 (gage height, 16.50 ft); minimum, 1.5 cfs July 16, 1952; minimum gage height, 13.82 ft Oct. 4, 1955.

Remarks.--Records fair. Occasional regulation by lakes above station.

Revisions (water years).--WSP 1437: 1951(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 4 to Sept. 12)

14.0	4.0	14.5	25
14.1	6.5	15.0	55
14.3	14	15.2	65

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	23	22	42	14	29	22	15	a15	a6	7.5	a6
2	10	22	24	40	a15	a30	18	14	12	a7	7.2	5.5
3	10	21	24	b35	b15	32	17	a14	11	8.2	a7	a5.2
4	9.8	20	23	b30	b15	32	17	a13	11	13	a7	a5.2
5	9.8	19	23	b27	a15	32	16	13	11	a15	a10	5.2
6	11	19	25	24	15	35	19	12	a11	a18	47	5.2
7	12	18	29	23	15	35	23	11	a11	20	36	a5
8	11	22	27	b22	b15	35	28	11	a13	a20	a32	4.5
9	11	21	26	b21	b15	32	22	11	a13	21	29	a5
10	12	20	26	21	14	*32	21	11	a13	21	26	5.5
11	*12	19	b25	20	14	30	23	9.8	13	21	27	5.5
12	7.2	19	b24	19	13	30	24	9.5	13	22	25	a5
13	a9	19	22	18	12	27	22	7.5	13	a20	21	4.5
14	a10	30	21	17	12	27	23	7.8	12	a20	a15	a4.5
15	a10	a35	21	18	b11	27	22	6.5	13	21	12	a4.5
16	a15	34	21	a18	b11	a25	22	6.2	12	19	10	a5
17	a20	32	20	19	b11	a25	a20	6.0	12	a17	a10	*7.8
18	a20	32	23	a18	b11	a25	*19	6.5	*12	*14	9.5	9.1
19	a20	41	33	a17	b11	a25	18	7.2	12	14	9.1	a8
20	a20	41	44	16	b11	a25	a18	7.2	11	13	8.8	8.5
21	a20	41	43	16	11	24	19	6.5	9.8	12	a12	8.8
22	a20	36	41	17	a12	24	18	7.2	9.5	11	13	9.5
23	a25	33	45	17	a13	24	24	7.2	8.5	9.8	a11	9.1
24	a25	31	51	a17	15	22	23	7.2	8.5	9.5	a10	a8
25	a25	29	a55	a17	21	21	23	7.2	9.1	a9	a10	a8
26	a25	27	57	17	26	21	21	*6.5	8.5	a9	9.8	a10
27	a25	*21	53	*17	30	25	20	6.5	8.2	a9	17	a10
28	a25	18	51	17	33	27	18	6.2	7.5	a9	*12	a9
29	*24	17	47	17	-	24	17	6.0	6.8	9.5	a9	a8
30	24	17	44	15	------	21	16	5.8	6.5	9.1	a8	7.2
31	23	---	*44	14	------	23	-------	a9	-------	7.5	7.2	------
Total	511.8	777	1,034	646	426	846	613	274.5	326.9	434.8	475.1	202.3
Mean	16.5	25.9	33.4	20.8	15.2	27.3	20.4	8.85	10.9	14.0	15.3	6.74
Cfsm	0.532	0.835	1.08	0.671	0.490	0.881	0.658	0.285	0.352	0.452	0.494	0.217
In.	0.61	0.93	1.24	0.77	0.51	1.01	0.74	0.33	0.39	0.52	0.57	0.24

Calendar year 1957: Max 88 Min 7.2 Mean 28.4 Cfsm 0.916 In. 12.43
Water year 1957-58: Max 57 Min 4.5 Mean 18.0 Cfsm 0.581 In. 7.86

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for Huron River at Commerce and Huron River near Hamburg.
b Stage-discharge relation affected by ice.

1720. Huron River near Hamburg, Mich.

Location.--Lat 42°27'55", long 83°48'00", in sec.24, T.1 N., R.5 E., on right bank at downstream side of bridge on Hamburg Road, 1.1 miles north of Hamburg and 3 miles upstream from Strawberry Lake.

Drainage area.--299 sq mi.

Records available.--October 1951 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 850.00 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Aug. 12, 1953, staff gage at same site and datum.

Average discharge.--7 years, 221 cfs.

Extremes.--Maximum discharge during year, 478 cfs Dec. 26 (gage height, 5.48 ft); minimum, 53 cfs Sept. 2, 3; minimum gage height, 3.31 ft May 22, 23.
1951-58: Maximum discharge, 1,560 cfs May 15, 1956 (gage height, 8.35 ft); minimum, 50 cfs Sept. 14, 1955; minimum gage height, that of May 22, 23, 1958.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Occasional regulation by Kent Lake 11 miles above station.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	122	292	237	406	194	234	196	153	86	77	66	55
2	120	262	232	361	194	243	189	147	103	73	65	54
3	119	226	252	339	192	250	145	122	107	85	63	53
4	119	201	292	b320	b180	248	132	118	90	128	63	55
5	120	223	279	310	b180	244	134	120	78	162	58	57
6	119	273	252	300	174	253	155	120	75	176	65	59
7	116	264	250	290	169	262	192	119	73	174	112	61
8	113	232	252	270	b160	268	214	118	73	169	126	63
9	114	214	246	260	b160	273	180	120	90	157	120	64
10	118	199	239	250	b150	266	171	100	108	144	112	70
11	*119	192	b220	240	150	*255	181	90	116	132	107	75
12	113	201	b210	230	150	248	203	91	114	128	101	76
13	108	250	b200	230	140	241	214	91	114	124	93	76
14	107	283	b200	230	140	235	219	87	113	116	85	73
15	108	304	b200	220	140	230	212	81	110	114	78	72
16	113	311	199	210	130	225	165	80	103	114	73	77
17	145	317	196	210	130	221	148	81	96	110	69	*87
18	178	315	203	200	130	217	*152	85	*90	*103	63	104
19	189	315	250	200	130	216	153	81	86	98	58	110
20	181	311	307	190	130	212	158	76	86	90	59	107
21	165	304	358	190	130	208	171	73	90	85	75	103
22	155	296	399	190	130	203	178	69	90	80	*90	98
23	178	283	444	180	130	199	*198	70	87	77	91	93
24	230	270	468	180	b140	194	212	71	87	75	87	90
25	257	255	468	178	b150	190	172	72	93	73	81	87
26	266	261	475	181	181	190	157	*71	97	71	75	89
27	282	*271	468	192	199	194	158	71	96	69	72	89
28	255	266	465	190	217	198	162	71	93	69	70	82
29	234	257	458	190	-	199	164	71	87	70	67	77
30	239	248	441	194	-------	198	157	70	81	69	65	73
31	281	-------	*422	*194	-------	196	-------	72	-------	66	60	-------
Total	5,063	7,896	9,582	7,325	4,400	7,010	5,242	2,861	2,812	3,278	2,469	2,329
Mean	163	263	309	236	157	226	175	92.3	93.7	106	79.6	77.6
Cfsm	0.545	0.880	1.03	0.789	0.525	0.756	0.585	0.309	0.313	0.355	0.266	0.260
In.	0.63	0.98	1.19	0.91	0.55	0.87	0.65	0.36	0.35	0.41	0.31	0.29

Calendar year 1957: Max 878 Min 107 Mean 250 Cfsm 0.836 In. 11.35
Water year 1957-58: Max 475 Min 53 Mean 165 Cfsm 0.552 In. 7.50

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Jan. 5-24, Feb. 11-23 (stage-discharge relation affected by ice most or periods); discharge estimated on basis of records for stations near Dexter and near New Hudson.

1725. Portage Creek near Pinckney, Mich.

Location.--Lat 42°25'40", long 83°57'35", in SW¼ sec.34, T.1 N., R.4 E., on right upstream abutment of bridge on Tiplady Road, 2 miles upstream from Little Portage Lake and 2¼ miles southwest of Pinckney.

Drainage area.--79 sq mi, approximately.

Records available.--November 1944 to September 1958.

Gage.--Staff gage read once daily. Datum of gage is 860.38 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--14 years, 54.0 cfs.

Extremes.--Maximum discharge during year, 98 cfs Dec. 26-30 (gage height, 3.28 ft); minimum observed, 2.0 cfs Sept. 5; minimum gage height observed, 0.70 ft Sept. 3, 4, 5.
1944-58: Maximum discharge, 529 cfs Apr. 9, 10, 1947 (gage height, 5.72 ft); minimum, 0.6 cfs Oct. 5, 1946 (gage height, 0.56 ft).

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Regulation by Hiland Lake 2½ miles above station.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 5-30)

Oct. 1 to Jan. 5				Jan. 6 to Sept. 30			
1.2	7.5	2.5	45	0.6	2.0	2.0	31
1.4	12	3.0	75	.8	4.2	2.5	49
2.0	27	3.3	100	1.0	7.2	3.0	80
				1.5	17	3.1	89

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.9	33	a55	a90	33	47	47	39	a4.5	6.6	4.6	a3.5
2	9.5	32	53	85	a30	a50	47	36	4.5	6.2	4.6	2.9
3	9.1	a30	50	80	30	58	43	36	4.3	8.3	a5	2.2
4	8.7	34	48	70	30	63	41	a35	4.3	a10	5.8	2.1
5	8.7	33	45	a60	30	66	39	32	4.5	12	4.5	2.0
6	a8	32	47	55	30	72	a45	31	4.6	a10	4.2	a2.5
7	7.9	32	46	50	30	75	49	29	4.9	8.8	5.6	a3
8	8.3	62	a50	50	30	77	49	27	a6	8.8	5.9	a3
9	8.3	59	51	50	a30	a80	49	26	6.6	9.4	5.0	a3
10	7.9	a50	50	50	30	82	a45	24	7.0	a10	a5	a3.5
11	*7.5	a45	45	50	30	*80	a45	a23	7.2	10	5.6	a3.5
12	7.5	43	45	a45	30	78	a50	22	7.7	10	5.0	a3.5
13	a7.5	41	45	45	30	78	a55	20	8.1	a9	5.0	a3.5
14	7.5	a45	41	45	30	75	57	19	8.6	8.3	4.5	a3.5
15	7.9	a50	a40	45	30	75	57	18	a10	8.3	4.5	a3
16	9.1	a60	43	45	a25	a75	57	17	11	7.9	5.0	a3
17	15	a65	48	45	25	72	57	13	10	7.6	a4.5	*3.0
18	14	a65	54	45	25	69	*55	a13	*10	*7.2	4.0	a3
19	a15	a65	64	a40	25	68	54	13	7.4	7.2	3.2	a3.5
20	a20	a65	64	a40	25	66	a50	12	7.4	a7	6.2	a4
21	a20	a65	68	a40	25	65	53	12	7.0	5.5	8.8	a4.5
22	a20	a65	a80	a40	a25	64	51	12	a7	5.5	6.7	4.5
23	a25	a60	81	a40	a25	a60	*56	11	7.2	5.5	6.4	4.3
24	a30	a60	79	a35	25	60	54	7.2	7.2	4.9	a7	4.2
25	a35	60	a90	a35	25	58	53	a6	7.6	4.6	7.4	5.6
26	a35	59	98	a35	28	57	50	*5.0	7.9	4.3	6.4	6.7
27	a35	*57	98	35	34	54	a48	5.0	7.6	a4.3	6.1	6.9
28	a35	a57	*98	35	40	53	45	5.0	7.0	4.3	*6.1	a7
29	a35	57	a98	33	-	52	43	4.9	a7	6.1	5.8	6.7
30	a35	57	98	33	-------	a50	41	a4.5	6.7	4.9	5.6	6.6
31	a35	-------	96	*33	-------	48	-------	3.1	-------	4.6	a5	-------
Total	537.3	1,538	1,968	1,479	805	2,027	1,485	560.7	210.8	227.1	169.0	118.2
Mean	17.3	51.3	63.5	47.7	28.8	65.4	49.5	18.1	7.03	7.33	5.45	3.94
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 98 Min 4.2 Mean 43.3 Cfsm - In. -
Water year 1957-58: Max 98 Min 2.0 Mean 30.5 Cfsm - In. -

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Huron River near Hamburg and Ore Creek near Brighton.
Note.--Stage-discharge relation affected by ice Dec. 11-13, Jan. 2-18, Feb. 3-25.

1730. Huron River near Dexter, Mich.

Location.--Lat 42°23'10", long 83°54'40", in S½ sec.13, T.1 S., R.4 E., on right bank 20 ft downstream from highway bridge on North Territorial Road, half a mile east of Hudson Mills, 2 miles downstream from Portage Lake Outlet, and 4 miles north of Dexter.

Drainage area.--506 sq mi.

Records available.--August to December 1904 (gage heights only), March 1946 to September 1958. Published as "at Dover" 1904.

Gage.--Water-stage recorder. Datum of gage is 837.11 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). August to December 1904 chain gage at site 1 mile upstream at different datum. Mar. 5, 1946, to July 30, 1953, wire-weight gage at present site and datum.

Average discharge.--12 years, 408 cfs.

Extremes.--Maximum discharge during year, 704 cfs Dec. 28 (gage height, 4.64 ft); minimum, 88 cfs May 31, Sept. 9; minimum gage height, 2.96 ft Sept. 9.
1946-48: Maximum discharge, 3,120 cfs Apr. 9, 1947 (gage height, 8.17 ft, from graph based on gage readings); minimum observed, 56 cfs Sept. 6, 9, 10, 1946; minimum gage height, 2.92 ft Sept. 12, 13, 1954.

Remarks.--Records good except those for periods of ice effect, which are fair. Occasional regulation by lake level control operations above station.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 27		Dec. 28 to Sept. 30	
3.2	118	2.9	79
3.5	197	3.3	155
4.0	396	4.0	400
5.0	896	4.7	735

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	161	438	410	653	271	356	320	250	106	128	102	97
2	156	498	401	619	271	380	316	240	111	124	99	92
3	153	451	383	575	271	400	310	232	119	140	97	91
4	148	414	383	514	260	414	288	229	135	148	101	90
5	145	383	387	476	257	418	268	186	138	158	99	91
6	143	365	396	458	257	427	274	138	130	173	108	90
7	143	370	414	454	257	436	296	148	124	182	127	91
8	140	387	410	432	250	436	310	*152	124	191	140	91
9	140	401	405	400	b232	436	320	155	135	194	142	90
10	140	387	296	384	b222	436	316	155	138	194	145	91
11	*140	370	378	368	212	*436	320	155	148	197	148	91
12	140	356	352	356	b206	432	328	145	150	188	142	91
13	140	352	331	348	206	422	332	128	158	173	138	92
14	138	396	318	240	203	409	336	128	158	164	132	96
15	138	461	318	332	b200	400	336	128	155	164	126	99
16	145	498	314	324	b197	388	332	126	150	161	120	108
17	163	508	306	320	b194	380	313	126	145	*155	113	*115
18	178	517	310	310	b191	372	*288	130	*142	150	106	120
19	197	517	352	296	191	368	271	124	138	142	101	122
20	214	522	428	288	b191	364	264	120	135	135	99	128
21	225	517	498	288	191	364	260	117	130	128	108	132
22	228	508	550	292	194	360	271	115	128	124	109	132
23	266	489	594	285	197	356	296	111	128	120	111	126
24	310	480	633	282	206	348	313	108	128	117	113	128
25	344	461	663	282	236	344	316	104	130	115	113	126
26	361	447	699	278	268	336	302	102	132	108	113	130
27	374	*433	699	274	302	328	288	101	132	101	111	126
28	383	433	*704	274	332	324	278	99	128	102	*109	124
29	378	433	693	271	---	324	271	94	128	109	108	120
30	374	428	683	271	-------	324	254	92	128	106	106	117
31	378	-------	668	*271	-------	324	-------	92	-------	104	104	-------
Total	6,683	13,220	14,476	11,515	6,465	11,842	8,987	4,330	4,031	4,495	3,590	3,237
Mean	216	441	467	365	231	382	300	140	134	145	116	108
Cfsm	0.427	0.872	0.923	0.721	0.457	0.755	0.593	0.277	0.265	0.287	0.229	0.213
In.	0.49	0.97	1.06	0.83	0.48	0.87	0.66	0.32	0.30	0.33	0.26	0.24

Calendar year 1957: Max 874 Min 138 Mean 366 Cfsm 0.723 In. 9.80
Water year 1957-58: Max 704 Min 90 Mean 254 Cfsm 0.502 In. 6.81

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1735. Mill Creek near Dexter, Mich.

Location.--Lat 42°18'00", long 83°53'55", on line between sec.13, T.2 S., R.4 E., and sec.18, T.2 S., R.5 E., on downstream side of highway bridge, 2½ miles south of Dexter and 4 miles upstream from mouth.

Drainage area.--134 sq mi.

Records available.--February 1952 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 850 ft (from topographic map). Prior to May 23, 1958, wire-weight gage at same site and datum.

Average discharge.--6 years, 68.2 cfs.

Extremes.--Maximum discharge during year, 528 cfs Dec. 19 (gage height, 8.9 ft); minimum, 11 cfs Sept. 15 (gage height, 5.07 ft).
1952-58: Maximum discharge, 1,300 cfs Apr. 29, 1956 (gage height, 12.2 ft, from graph based on gage readings), from rating curve extended above 870 cfs by logarithmic plotting; minimum, that of Sept. 15, 1958; minimum gage height, 5.07 ft Jan. 30, 1956, Sept. 15, 1958.

Remarks.--Records good except those for Nov. 18 to Feb. 24, which are poor.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Dec. 16, 17)

Oct. 1 to Dec. 19				Dec. 20 to Sept. 30			
5.2	14	6.0	85	5.0	11	6.0	88
5.3	18	8.0	375	5.2	19	8.0	370
5.6	39	9.0	546	5.5	38	8.7	494

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	44	a60	a200	35	194	57	40	25	15	16	13
2	19	41	a80	a160	35	141	55	40	29	15	15	13
3	19	38	164	a130	35	119	53	42	22	22	15	13
4	18	36	231	a110	35	118	51	53	20	61	20	14
5	18	a35	310	a100	35	129	51	51	20	61	17	15
6	17	33	a200	a90	30	132	114	44	19	56	19	14
7	17	47	a150	a80	25	129	163	40	18	47	21	14
8	18	70	a100	a70	25	119	129	*38	19	34	20	14
9	18	62	a80	a60	25	99	95	36	34	28	17	14
10	*18	53	a60	a50	25	85	65	33	32	25	15	15
11	18	52	a50	40	25	*84	82	33	26	25	15	13
12	18	58	a45	42	25	77	112	32	22	26	15	13
13	18	65	a45	44	25	77	95	28	22	24	14	13
14	18	141	45	36	25	79	79	26	23	22	14	12
15	18	237	40	36	25	72	75	26	20	24	14	12
16	20	204	37	37	25	60	70	25	20	22	13	*20
17	22	178	*151	35	25	68	*63	24	18	*19	13	22
18	21	118	260	35	25	67	55	26	18	19	12	26
19	20	141	449	35	25	67	52	25	*18	18	12	22
20	20	200	421	33	25	69	51	22	18	17	14	18
21	19	306	a350	33	25	69	51	22	18	17	41	17
22	22	204	317	36	25	67	52	25	17	17	*31	16
23	32	202	a250	32	30	63	149	24	17	17	20	16
24	42	66	a200	36	40	65	129	24	17	16	18	15
25	62	a60	a150	36	247	64	95	22	20	16	18	15
26	65	a55	124	36	211	63	73	21	24	16	17	17
27	62	*48	a150	36	204	62	63	20	20	15	16	17
28	a60	a50	a200	38	142	63	57	20	18	15	15	15
29	a55	a50	468	37	-	65	49	20	17	15	15	15
30	a50	a50	492	40	------	63	45	19	15	15	15	14
31	46	------	266	*38	------	60	------	20	------	15	14	------
Total	890	2,944	5,945	1,821	1,479	2,690	2,330	921	626	754	531	467
Mean	28.7	98.1	192	58.7	52.8	86.8	77.7	29.7	20.9	24.3	17.1	15.6
Cfsm	0.214	0.732	1.43	0.438	0.394	0.648	0.580	0.222	0.156	0.181	0.128	0.116
In.	0.25	0.82	1.65	0.51	0.41	0.75	0.65	0.26	0.17	0.21	0.15	0.13

Calendar year 1957: Max 492 Min 12 Mean 69.1 Cfsm 0.516 In. 7.00
Water year 1957-58: Max 492 Min 12 Mean 58.6 Cfsm 0.437 In. 5.96

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Grand River at Jackson, Deer Creek near Dansville, and River Raisin near Tecumseh.
Note.--Stage-discharge relation affected by ice Dec. 14, 15, Jan. 18, 19, Feb. 2-24.

1745. Huron River at Ann Arbor, Mich.

Location.--Lat 42°17'10", long 83°44'00", in NW¼ sec.28, T.2 S., R.6 E., on left bank 100 ft upstream from bridge on Wall Street in Ann Arbor, three-quarters of a mile downstream from Argo Dam, and 4 miles upstream from Geddes Dam.

Drainage area.--711 sq mi.

Records available.--February 1904 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Published as "at Geddes" February 1904 to December 1914 and as "at Barton" January 1914 to September 1940.

Gage.--Water-stage recorder. Datum of gage is 744.81 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). February 1904 to December 1914 at Geddes Dam, 4 miles downstream, and January 1914 to September 1947, at Barton Dam, 3 miles upstream; flow computed from records of operation of powerplants and records of depth of flow over dam and/or flow through undersluices.

Average discharge.--54 years, 445 cfs (adjusted for diversion since 1955).

Extremes.--Maximum discharge during year, 1,140 cfs Dec. 21; maximum gage height, 14.19 ft Aug. 6; minimum discharge, 14 cfs Sept. 11 (gage height, 11.44 ft); minimum daily, 84 cfs Sept. 14.
1914-58: Maximum daily discharge, 5,840 cfs Mar. 14, 1918; minimum daily, 4 cfs Aug. 2, Sept. 11, 1931 (plant leakage), but may be doubtful due to change in leakage.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Diversion above station for Ann Arbor municipal supply had negligible effect on natural flow prior to 1955; figures of runoff adjusted since. Flow regulated by powerplants and by occasional lake level control operations above station.

Revisions (water years).--WSP 874: 1938.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	200	405	473	825	320	604	364	331	192	114	110	142
2	206	534	460	790	320	562	380	322	130	120	95	92
3	213	528	460	656	320	610	400	326	127	266	169	108
4	175	445	406	590	310	572	332	326	148	206	130	106
5	188	420	460	572	300	622	326	326	152	212	163	104
6	194	356	426	570	*330	613	364	204	142	205	153	92
7	168	396	569	529	227	610	511	254	140	209	218	102
8	201	427	552	422	300	630	455	198	146	225	144	90
9	194	448	470	489	220	617	430	218	244	227	169	113
10	*200	465	540	453	262	542	420	248	172	223	179	114
11	*162	407	453	470	308	*545	454	228	154	252	186	92
12	157	417	382	386	250	556	410	214	188	222	176	92
13	169	396	363	442	230	536	462	194	184	218	153	104
14	164	608	462	414	300	522	450	174	172	233	173	84
15	169	686	361	382	250	460	420	180	140	353	182	117
16	220	694	408	386	220	496	420	158	189	100	131	*120
17	254	668	*406	349	210	465	*410	154	162	*164	132	*143
18	230	660	440	358	250	455	374	168	206	204	113	120
19	220	656	667	318	210	460	349	160	*164	132	113	138
20	234	626	894	478	210	510	368	139	160	138	182	144
21	238	640	1,090	320	220	428	368	147	142	163	150	141
22	256	628	908	350	230	418	382	154	128	108	176	131
23	407	570	811	360	250	420	*470	152	149	144	157	148
24	496	574	846	350	300	430	551	136	178	121	138	142
25	405	505	892	370	337	400	485	127	178	115	163	162
26	445	570	1,020	350	612	380	435	120	191	118	130	154
27	376	*554	988	360	537	385	425	*121	112	113	*152	141
28	415	512	972	350	550	400	372	136	126	121	*128	130
29	415	480	916	350	-	400	362	110	134	130	130	148
30	430	594	825	350	--------	400	354	118	154	138	135	126
31	405	--------	797	350	--------	400	--------	111	--------	141	120	--------
Total	8,206	15,869	19,717	13,739	8,383	15,448	12,303	5,954	4,804	5,435	4,640	3,640
Mean	265	529	636	443	299	498	410	192	160	175	150	121
(†)	9.5	9.8	7.7	8.8	9.2	8.9	9.9	12.1	10.7	8.6	8.6	8.9

Adjusted for diversion

Mean	274	539	644	452	308	507	420	204	171	184	159	130
Cfsm	0.385	0.758	0.906	0.636	0.433	0.713	0.591	0.287	0.241	0.259	0.224	0.183
In.	0.44	0.85	1.04	0.73	0.45	0.82	0.66	0.33	0.27	0.30	0.26	0.20

	Observed			Adjusted		
Calendar year 1957:	Max 1,090	Min 146	Mean 449	Mean 457	Cfsm 0.643	In. 8.72
Water year 1957-58:	Max 1,090	Min 84	Mean 324	Mean 333	Cfsm 0.468	In. 6.35

* Discharge measurement made on this day.
† Diversion, equivalent in cubic feet per second, for municipal supply; furnished by city of Ann Arbor.
Note.--No gage-height record Jan. 21 to Feb. 6, Feb. 12-24; discharge estimated on basis of recorded range in stage, powerplant records, and records for station near Dexter.

1757. River Raisin near Tecumseh, Mich.

Location.--Lat 41°56'35", long 83°56'45", in NE¼ sec.21, T.6 S., R.4 E., on right bank 12 ft downstream from bridge on North Raisin Center Highway, 3.4 miles upstream from South Branch River Raisin and 4.5 miles south of Tecumseh.
Drainage area.--266 sq mi.
Records available.--September 1956 to September 1958.
Gage.--Water-stage recorder. Datum of gage is 707.0 ft above mean sea level, datum of 1929.
Extremes.--1956-57: Maximum discharge during water year, 949 cfs Apr. 27 (gage height, 9.58 ft); minimum, 18 cfs Oct. 8; minimum gage height, 2.87 ft Aug. 22, 23.
1957-58: Maximum discharge during water year, 781 cfs Dec. 21 (gage height, 9.02 ft); minimum, 19 cfs Aug. 19 (gage height, 2.87 ft).
Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diurnal fluctuation caused by powerplant 5.5 miles above gage.

Rating table, Sept. 1, 1956, to Sept. 30, 1958, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-10, 1956, June 14-25, 1957)

2.9	20	5.0	170
3.0	23	7.0	347
3.5	41	8.0	500
4.0	76	9.0	775

Discharge, in cubic feet per second, 1956

Day	Discharge	Day	Discharge	Day	Discharge	Day	Discharge
Sept. 1.....	a70	Sept. 9.....	40	Sept. 17.....	44	Sept. 25.....	28
2.....	a65	10.....	35	18.....	68	26.....	42
3.....	a50	11.....	66	19.....	77	27.....	53
4.....	a60	12.....	*88	20.....	65	28.....	60
5.....	a55	13.....	67	21.....	55	29.....	39
6.....	a75	14.....	66	22.....	58	30.....	50
7.....	a100	15.....	58	23.....	54		
8.....	22	16.....	46	24.....	42		
Total.....							1,698
Mean.....							56.6
Cubic feet per second per square mile.....							0.213
Runoff in inches.....							0.24

Peak discharge (base, 500 cfs).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for River Raisin near Adrian and Grand River near Eaton Rapids.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	68	60	140	100	273	134	276	84	77	46	108
2	57	64	156	125	95	268	148	257	102	115	52	120
3	51	84	83	193	90	260	134	242	83	161	52	102
4	*44	66	133	142	90	241	164	202	94	120	68	111
5	58	63	137	135	90	228	240	169	76	72	79	98
6	60	81	162	62	90	214	464	138	76	106	76	116
7	38	90	144	60	95	180	528	158	63	82	82	89
8	38	82	145	80	100	150	367	148	64	120	90	94
9	43	132	182	80	155	158	345	116	65	182	50	148
10	48	78	108	80	241	126	*314	98	48	57	56	95
11	72	48	136	80	259	129	242	90	68	*129	60	*46
12	53	44	118	80	242	142	275	78	79	112	48	64
13	73	63	160	75	201	195	261	86	54	131	52	90
14	48	105	141	70	194	209	248	122	104	90	*52	81
15	52	80	146	65	202	215	233	100	63	52	55	72
16	34	57	137	60	167	220	226	96	64	100	54	70
17	60	84	80	55	172	213	223	84	79	104	54	87
18	46	64	164	50	137	210	222	91	98	62	52	72
19	62	59	138	55	*170	208	222	99	*82	58	54	72
20	80	92	*150	70	160	213	220	161	70	52	52	105
21	114	141	110	80	138	223	229	270	58	62	44	73
22	70	133	151	150	148	224	237	*262	57	59	34	103
23	42	122	111	200	126	218	226	236	48	62	51	88
24	42	*162	140	*200	124	209	220	237	41	73	52	78
25	57	148	162	180	137	187	238	225	57	60	54	76
26	26	152	163	160	212	174	301	198	73	66	54	76
27	55	61	169	140	395	154	621	162	60	66	57	70
28	26	68	123	130	470	*158	583	163	70	46	56	72
29	54	136	26	120	-	160	313	136	96	39	60	69
30	76	243	120	110	-------	152	320	105	86	63	60	61
31	60	-------	80	100	-------	138	-------	90	-------	55	94	-------
Total	1,699	2,870	4,035	3,327	4,800	6,049	8,498	4,895	2,162	2,633	1,800	2,606
Mean	54.8	95.7	130	107	171	195	283	158	72.1	84.9	58.1	86.9
Cfsm	0.206	0.360	0.489	0.402	0.643	0.733	1.06	0.594	0.271	0.319	0.218	0.327
In.	0.24	0.40	0.56	0.47	0.67	0.85	1.19	0.68	0.30	0.37	0.25	0.36

Calendar year 1956: Max - Min - Mean - Cfsm - In. -
Water year 1956-57: Max 621 Min 26 Mean 124 Cfsm 0.466 In. 6.34

Peak discharge (base, 500 cfs).--Feb. 28 (4 to 6 a.m.) 544 cfs (8.19 ft); Apr. 7 (4 to 5 a.m.) 609 cfs (8.44 ft); Apr. 27 (7 p.m.) 949 cfs (9.58 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 8 to Feb. 8.

1757. River Raisin near Tecumseh, Mich.--Continued

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	137	178	280	111	319	182	163	60	54	56	62
2	72	132	218	b260	107	302	167	157	84	52	40	71
3	68	127	170	b250	109	256	159	133	74	126	38	68
4	62	121	116	b230	121	228	152	219	58	183	60	62
5	68	119	104	b220	92	212	128	211	64	168	58	66
6	40	115	124	b210	98	259	158	199	76	146	58	61
7	50	110	150	b200	*119	287	210	168	54	155	56	73
8	58	117	222	190	b110	278	247	164	51	90	58	48
9	*42	124	219	180	b100	268	229	143	52	78	48	44
10	52	143	223	170	b100	242	248	143	53	66	36	39
11	80	139	210	160	b95	243	233	126	55	86	54	38
12	74	141	183	160	90	237	229	116	58	75	42	38
13	62	149	100	150	85	*233	227	138	76	78	37	35
14	54	228	90	140	85	231	206	116	77	80	48	29
15	56	326	94	140	85	228	154	78	56	*126	51	*35
16	66	344	84	130	85	226	*210	132	62	127	54	62
17	93	598	87	130	85	222	181	92	60	104	40	59
18	105	260	151	120	85	193	180	131	45	79	33	73
19	112	253	356	120	85	165	173	110	67	78	36	76
20	98	*256	554	120	85	144	170	80	*60	66	36	75
21	83	251	727	120	85	160	137	104	54	62	60	72
22	107	226	525	120	90	210	178	74	54	62	*66	67
23	148	122	401	120	90	182	185	104	60	58	68	68
24	276	190	372	120	110	174	216	71	44	54	100	58
25	257	219	325	120	300	204	259	80	68	76	78	71
26	233	219	440	120	330	188	227	69	70	56	78	78
27	188	184	*494	120	326	178	211	65	60	62	78	74
28	180	102	388	99	297	160	207	89	59	132	78	73
29	188	178	332	131	-	189	202	*60	72	25	57	70
30	88	181	309	103	-------	176	194	68	60	41	72	66
31	86	-------	287	111	-------	179	-------	80	-------	42	72	-------
Total	3,223	5,811	8,233	4,844	3,562	6,773	5,859	3,683	1,843	2,687	1,746	1,811
Mean	104	194	266	156	127	218	195	119	61.4	86.7	56.3	60.4
Cfsm	0.391	0.729	1.00	0.586	0.477	0.820	0.733	0.447	0.231	0.326	0.212	0.227
In.	0.45	0.81	1.15	0.68	0.50	0.95	0.82	0.51	0.26	0.38	0.24	0.25

Calendar year 1957 : Max 727 Min 34 Mean 148 Cfsm 0.556 In. 7.55
Water year 1957-58 : Max 727 Min 25 Mean 137 Cfsm 0.515 In. 7.00

Peak discharge (base, 500 cfs).--Dec. 21 (5 a.m.) 781 cfs (9.02 ft); Dec. 27 (2 a.m.) 587 cfs (8.36 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Jan. 8-27, Feb. 12-25 (stage-discharge relation affected by ice during most of periods); discharge estimated on basis of records for River Raisin near Adrian and Grand River near Eaton Rapids.

1760. River Raisin near Adrian, Mich.

Location.--Lat 41°54'15", long 83°58'50", in NW¼ sec.5, T.7 S., R.4 E., on right bank 10 ft downstream from bridge on Academy Road, 1.7 miles east of Adrian, and 2.6 miles downstream from South Branch River Raisin.

Drainage area.--455 sq mi.

Records available.--October 1953 to September 1958. Records for October 1930 to August 1931, October 1932 to April 1938, published as "Raisin River" in WSP 714, 744, 759, 784, 804, 824, and 854, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 693.2 ft above mean sea level, datum of 1929.

Average discharge.--5 years, 279 cfs.

Extremes.--Maximum discharge during year, about 1,900 cfs Dec. 21 or 22, from reconstructed gage-height graph; minimum, 38 cfs Sept. 14, 15 (gage height, 1.98 ft); minimum daily, 48 cfs Sept. 15.

1953-58: Maximum discharge, 5,580 cfs Apr. 30, 1956 (gage height, 14.87 ft), from rating curve extended above 2,700 cfs by logarithmic plotting; minimum, 24 cfs Sept. 19, 1955 (gage height, 1.71 ft); minimum daily, 28 cfs Sept. 19, 1955.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diurnal fluctuation caused by powerplant at Tecumseh 11 miles above station.

Revisions.--WSP 1337: Drainage area at former site. See also Records available.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 5 to Sept. 5)

2.1	45	6.0	537
2.5	71	8.0	955
3.0	114	11.0	1,910

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	85	194	233	506	196	781	264	228	112	82	112	110
2	100	193	287	461	194	771	245	214	100	70	102	102
3	123	180	249	417	186	607	235	207	106	188	94	104
4	106	176	194	400	191	493	225	479	96	441	109	116
5	75	173	158	370	197	443	203	679	80	616	109	84
6	65	167	182	350	186	484	229	643	76	721	110	90
7	74	159	239	330	*187	535	319	438	74	520	132	85
8	65	179	376	310	179	510	376	336	68	332	121	82
9	*52	189	418	300	170	456	357	287	74	242	108	66
10	63	214	375	280	160	397	338	278	80	192	86	67
11	72	214	315	270	150	380	352	234	84	264	154	59
12	89	201	308	260	150	364	354	184	90	287	238	54
13	70	207	254	250	140	*352	372	194	92	232	190	54
14	65	372	170	240	140	347	355	190	101	*228	139	50
15	66	691	163	230	140	341	250	128	90	316	125	*48
16	83	810	163	220	140	333	*299	178	80	404	120	250
17	138	655	125	220	140	324	275	170	72	398	118	279
18	130	478	237	210	140	302	250	228	68	260	93	327
19	137	425	730	200	140	271	247	210	70	202	88	296
20	127	*418	a1,200	200	140	246	236	180	*84	168	104	220
21	96	387	a1,800	200	140	256	208	146	78	160	150	180
22	113	347	a1,700	200	150	289	261	141	70	137	*140	160
23	232	254	a1,300	200	160	301	302	126	69	142	122	161
24	555	268	858	210	200	254	334	127	68	117	152	108
25	621	294	691	218	600	294	396	98	110	130	156	104
26	452	308	965	208	1,120	281	344	112	152	116	126	128
27	348	264	*1,220	210	1,080	273	301	111	114	114	139	110
28	270	186	1,120	174	799	270	284	*106	90	182	124	100
29	281	246	765	235	-	249	271	110	73	92	100	100
30	189	263	609	198	--------	280	261	92	76	100	112	100
31	136	--------	546	200	--------	257	--------	92	--------	102	88	--------
Total	5,078	9,112	17,950	8,277	7,515	11,741	8,743	6,946	2,597	7,555	3,861	3,794
Mean	164	304	579	267	268	379	291	224	86.6	244	125	126
Cfsm	0.360	0.668	1.27	0.587	0.589	0.833	0.640	0.492	0.190	0.536	0.275	0.277
In.	0.42	0.74	1.47	0.68	0.61	0.96	0.71	0.57	0.21	0.62	0.32	0.31

Calendar year 1957: Max 2,130 Min 52 Mean 288 Cfsm 0.633 In. 8.60
Water year 1957-58: Max 1,800 Min 48 Mean 255 Cfsm 0.560 In. 7.62

Peak discharge (base, 1,000 cfs).--Dec. 21 or 22 (time unknown) about 1,900 cfs; Dec. 27 (8 to 10 pm.) 1,290 cfs (9.21 ft); Feb. 25 (9 p.m.) 1,230 cfs (9.0 ft).

* Diacharge meaasurement made on thia day.
a No gage-height record; discharge estimated on basis of reconstructed gage-height graph and records for stations near Monroe and near Tecumseh.
Note.--Stage-discharge relation affected by ice Jan. 4-23, Feb. 9-25.

1765. River Raisin near Monroe, Mich.

Location.--Lat 41°57'40", long 83°31'55", on left bank 0.8 mile downstream from bridge on Ida Maybee Road, 5.0 miles downstream from Saline River, and 7.5 miles west of Monroe, Monroe County.

Drainage area.--1,034 sq mi.

Records available.--September 1937 to September 1958. Published as "Raisin River at Monroe" 1937-52 and as "River Raisin at Monroe" 1952-53.

Gage.--Water-stage recorder. Datum of gage is 616.26 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1953, at site 9 miles downstream at datum 46.26 ft lower.

Average discharge.--21 years, 711 cfs.

Extremes.--Maximum discharge during year, 4,400 cfs Dec. 21 (gage height, 7.15 ft); minimum, 29 cfs June 24; minimum gage height, 1.86 ft Sept. 13 or 14; minimum daily discharge, 64 cfs June 21, 24.
1937-58: Maximum discharge, 12,900 cfs May 19, 1945, Mar. 29, 1950; maximum gage height, 10.7 ft Feb. 1, 1949 (ice jam), site and datum then in use; minimum discharge, about 2 cfs Sept. 4, 1938, Sept. 19, 20, 1941, site then in use.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Prior to Feb. 14, 1954, diurnal fluctuation caused by powerplant at Dundee 11 miles above station. Occasional slight diurnal fluctuation by powerplants further upstream.

Revisions (water years).--WSP 954: 1938-40(m), 1941. WSP 1337: Drainage area. WSP 1437: 1939, 1948.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 7 to Aug. 2; stage-discharge relation indefinite Oct. 24-29, Nov. 14-20, Dec. 8-10, 19-24)

1.9	52	3.5	640
2.2	110	4.0	1,040
2.5	187	6.0	3,160
3.0	365	7.0	4,600

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	147	614	476	1,430	347	2,460	445	392	182	117	129	160
2	134	510	460	1,200	320	2,250	420	352	152	86	127	150
3	124	498	425	1,100	300	1,840	401	352	129	150	182	150
4	137	466	430	950	280	1,550	383	801	150	282	179	150
5	139	425	392	870	260	1,230	356	1,110	144	710	155	150
6	139	401	356	785	250	1,090	378	1,350	132	924	147	160
7	124	365	425	720	230	1,180	430	1,210	101	1,050	163	150
8	110	383	900	650	220	1,250	588	874	168	959	199	140
9	95	445	1,200	600	210	1,130	703	640	132	682	235	140
10	99	510	1,250	550	210	942	661	527	99	504	213	140
11	*90	482	1,000	500	210	793	614	450	97	440	200	160
12	78	455	730	460	210	689	689	415	122	515	200	120
13	92	440	600	420	210	*640	755	352	122	601	600	100
14	122	700	500	388	210	634	748	309	129	582	800	100
15	108	2,100	460	378	210	627	675	305	139	*533	600	110
16	147	2,100	420	360	210	614	563	293	144	1,020	350	*144
17	137	2,050	401	340	210	594	*476	247	132	1,620	300	200
18	168	1,800	410	320	210	557	466	272	124	1,770	250	600
19	275	1,400	1,400	310	210	545	425	324	77	1,380	220	1,000
20	278	1,200	3,200	305	210	527	396	316	*103	809	200	1,200
21	216	1,080	4,300	286	210	510	392	312	64	482	200	1,100
22	222	899	3,800	300	220	488	378	278	86	329	220	800
23	348	762	3,700	310	230	493	420	250	122	258	350	500
24	1,450	661	3,300	334	300	515	533	216	64	225	400	400
25	3,350	533	2,850	334	800	504	647	213	115	210	300	350
26	2,900	515	*3,020	334	1,310	498	620	213	171	163	280	300
27	2,600	515	2,850	334	1,780	533	575	182	254	174	*261	250
28	2,000	504	2,720	329	1,980	533	504	*160	232	163	193	240
29	1,250	488	2,570	338	-	504	445	168	165	152	190	230
30	977	455	2,190	320	-------	471	420	142	157	190	180	240
31	801	-------	1,690	*374	-------	471	-------	127	-------	171	170	-------
Total	18,857	23,756	48,425	16,229	11,557	26,662	15,506	13,152	4,008	17,251	8,193	9,634
Mean	608	792	1,562	524	413	860	517	424	134	556	264	321
Cfsm	0.588	0.766	1.51	0.507	0.399	0.832	0.500	0.410	0.130	0.538	0.255	0.310
In.	0.68	0.85	1.74	0.58	0.42	0.96	0.56	0.47	0.14	0.62	0.29	0.35

Calendar year 1957: Max 4,300 Min 78 Mean 660 Cfsm 0.638 In. 8.67
Water year 1957-58: Max 4,300 Min 64 Mean 584 Cfsm 0.565 In. 7.66

Peak discharge (base, 2,200 cfs).--Oct. 25 (11 a.m. to 12 m.) 3,600 cfs (6.64 ft); Nov. 15 (2 to 4 p.m.) 2,300 cfs (5.44 ft); Dec. 21 (8 a.m.) 4,400 cfs (7.15 ft); Mar. 1 (2 p.m.) 2,900 cfs (5.79 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 11-16, Jan. 2-5, 7-13, 16-19, 22, 23, Feb. 2-25. No gage-height record Aug. 11-26, Aug. 29 to Sept. 15, Sept. 17-30; discharge estimated on basis of recorded range in stage, records for unpublished station at Monroe, and station near Adrian.

1780. St. Joseph River near Newville, Ind.

Location.--Lat 41°23'10", long 84°48'05", in Ohio, in SW¼ sec.18, T.5 N., R.1 E., on left bank 20 ft downstream from bridge on Ohio State Highway 249 and 3½ miles northeast of Newville.

Drainage area.--614 sq mi.

Records available.--October 1946 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 795.40 ft above mean sea level, datum of 1929. Prior to Oct. 22, 1947, wire-weight gage at same site and datum.

Average discharge.--12 years, 541 cfs.

Extremes.--Maximum discharge during year, 2,960 cfs Dec. 23 (gage height, 11.91 ft); minimum, 36 cfs Oct. 5-8, 11-14; minimum gage height, 1.74 ft Oct. 7, 12, 13.
1946-58: Maximum discharge, 9,710 cfs Apr. 6, 1950 (gage height, 17.05 ft); minimum, 16 cfs Sept. 30, 1953 (gage height, 1.45 ft).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 14).

1.7	33	6.0	714
2.0	54	8.0	1,190
2.5	99	10.0	1,880
3.0	159	12.0	3,020
4.0	308		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	44	228	244	990	a195	2,580	244	193	79	94	758	99
2	*41	214	214	802	a190	2,700	228	179	79	*84	990	89
3	40	186	200	692	a185	2,400	*228	172	79	74	915	84
4	39	172	186	540	a190	2,520	214	186	79	74	604	*84
5	38	152	*172	500	*193	*1,600	214	244	*74	116	380	84
6	36	140	179	480	186	1,400	525	342	66	134	276	79
7	36	134	432	460	186	1,340	940	*308	70	128	228	74
8	39	159	1,040	400	179	1,310	1,140	260	70	110	276	74
9	39	276	1,040	400	166	1,190	1,120	228	79	94	292	104
10	38	308	846	380	166	965	890	200	134	89	338	110
11	37	308	582	361	172	758	758	179	214	79	758	104
12	36	244	380	325	159	648	780	159	214	550	361	99
13	36	214	b330	308	146	582	780	146	193	520	276	84
14	37	*531	b300	260	140	540	670	140	276	361	214	74
15	38	1,280	b270	244	140	500	560	128	292	560	292	70
16	44	1,430	260	260	b140	460	480	122	214	802	260	343
17	74	1,430	228	244	b140	420	420	116	152	1,020	228	1,220
18	110	1,370	285	244	b140	400	361	110	122	1,220	244	1,790
19	122	1,220	1,150	228	140	380	342	116	104	1,400	200	2,340
20	116	915	1,920	214	140	361	308	122	94	1,340	159	2,640
21	89	736	2,520	200	140	342	380	104	89	780	568	2,520
22	74	582	2,760	260	140	342	400	89	84	440	802	1,840
23	196	460	2,960	276	190	325	380	89	79	325	560	965
24	990	400	2,900	260	604	308	342	89	79	260	440	582
25	1,310	342	2,520	244	1,250	308	308	84	84	214	500	460
26	1,090	308	2,340	228	1,490	308	276	79	124	186	420	380
27	802	276	2,170	228	1,700	308	244	79	292	159	276	325
28	520	260	2,020	228	2,060	308	228	79	244	140	200	276
29	380	244	1,920	214	-	292	214	94	159	128	159	244
30	308	244	1,870	214	-------	276	214	104	116	*166	134	*214
31	276	-------	1,280	a210	-------	260	-------	84	-------	346	116	-------
Total	7,075	14,763	35,318	10,894	10,867	26,431	14,188	4,624	4,034	11,993	12,222	17,451
Mean	228	492	1,139	351	388	853	473	149	134	387	394	582
Cfsm	0.371	0.801	1.86	0.572	0.632	1.39	0.770	0.243	0.218	0.630	0.642	0.948
In.	0.43	0.89	2.14	0.66	0.66	1.60	0.86	0.28	0.24	0.73	0.74	1.06

Calendar year 1957: Max 2,960 Min 31 Mean 476 Cfsm 0.775 In. 10.53
Water year 1957-58: Max 2,960 Min 36 Mean 465 Cfsm 0.757 In. 10.29

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby or downstream stations.
b Stage-discharge relation affected by ice.

1790. St. Joseph River at Cedarville, Ind.

Location.--Lat 41°12', long 85°01', in SE¼ sec.28, T.32 N., R.13 E., on left bank 500 ft upstream from highway bridge, 2,700 ft downstream from Cedarville Dam, 0.4 mile south of Cedarville, and 0.5 mile upstream from mouth of Cedar Creek.

Drainage area.--783 sq mi.

Records available.--January 1931 to May 1932, October 1955 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 757.94 ft above mean sea level, datum of 1929. Jan. 1, 1931, to May 31, 1932, tape gage on downstream side of highway bridge 500 ft downstream from present site at datum approximately 20 ft lower.

Extremes.--Maximum daily discharge during year, 3,220 cfs Dec. 26; maximum gage height, 11.32 ft Dec. 20; minimum daily discharge, 1.6 cfs May 22, 27.
1931-32, 1955-58: Maximum discharge, 10,100 cfs May 1, 1956 (gage height, 18.07 ft, from floodmarks); minimum daily, that of May 22, 27, 1958.

Remarks.--Records good except those for periods of indefinite stage-discharge relation, which are fair. Flow regulated by reservoir above station.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*62	*245	302	1,600	232	2,730	*368	245	198	*122	552	159
2	62	332	288	778	232	2,660	395	232	568	119	1,000	151
3	64	245	*245	e670	232	2,690	234	220	*77	96	1,160	*73
4	62	232	245	e660	*194	2,260	188	232	*2.9	102	906	107
5	62	219	232	e540	162	*1,950	317	273	3.6	100	e520	117
6	62	162	219	e590	232	1,690	760	*317	3.7	146	428	119
7	61	162	e640	*e670	219	1,750	992	395	3.6	159	412	119
8	59	273	1,120	428	194	1,520	1,240	348	9.5	146	332	115
9	59	302	1,280	379	206	1,160	1,270	302	17	105	220	177
10	61	379	1,110	428	183	1,260	1,210	259	e401	156	395	493
11	61	395	e740	428	172	913	823	232	497	824	1,390	438
12	61	363	e550	428	172	e550	795	209	e530	2,080	932	198
13	39	317	461	395	162	999	942	188	480	1,070	461	168
14	29	e500	379	363	151	e540	e850	178	690	1,500	317	124
15	29	1,540	412	348	142	e620	e810	168	e620	1,630	412	115
16	93	1,640	412	317	142	e590	e590	157	428	1,030	461	e140
17	172	1,620	379	302	151	e480	308	151	302	1,100	379	960
18	101	1,600	e500	259	151	e480	478	157	259	1,200	428	1,740
19	117	1,260	1,640	245	142	e480	e750	232	188	1,430	412	2,050
20	126	1,310	2,750	245	132	461	983	168	188	1,660	209	2,440
21	132	724	3,210	259	132	461	428	115	153	1,280	821	2,610
22	128	897	2,950	317	132	412	e490	1.6	95	e700	1,170	2,570
23	317	430	2,900	332	179	395	e500	3.2	90	e520	988	1,600
24	1,180	e510	3,030	332	e600	395	e470	2.4	108	288	e750	787
25	1,660	e475	2,980	332	900	395	428	2.0	185	317	e860	e740
26	1,100	348	3,220	302	1,470	395	379	1.7	302	245	800	e540
27	1,210	363	2,960	302	1,750	395	332	1.6	232	168	e560	317
28	e770	348	2,490	302	2,460	395	302	27	273	209	259	317
29	e510	317	2,310	288	-	379	273	38	259	198	232	288
30	428	302	2,150	273	------	363	259	38	168	220	220	288
31	363	------	1,650	259	------	194	------	218	------	*510	159	------
Total	9,240	17,810	43,754	13,371	11,226	29,962	18,144	5,109.5	7,331.3	19,432	18,145	20,080
Mean	298	594	1,411	431	401	967	605	165	244	627	585	669
Cfsm	0.381	0.759	1.80	0.550	0.512	1.23	0.773	0.211	0.312	0.801	0.747	0.854
In.	0.44	0.85	2.08	0.63	0.53	1.42	0.86	0.24	0.35	0.92	0.86	0.95

Calendar year 1957: Max 3,660 Min 29 Mean 579 Cfsm 0.739 In. 10.06
Water year 1957-58: Max 3,220 Min 1.6 Mean 585 Cfsm 0.747 In. 10.13

* Discharge measurement made on this day.
e Stage-discharge relation indefinite; discharge estimated on basis of weather records, fieldman's notes, and records for stations at Cedar Creek at Cedarville, St. Marys River at Fort Wayne, and Maumee River at New Haven.
Note.--Discharge of Cedar Creek used as a factor Oct. 24-27, Nov. 15-22, Dec. 8-10, Dec. 19 to Jan. 2, Feb. 25 to Mar. 11, Mar. 13, Apr. 6-13, 20, June 11, 14, July 11-21, Aug. 1-4, 11, 12, 21-23, 26, Sept. 10, 17-24.

1795. Cedar Creek at Auburn, Ind.

Location.--Lat 41°21', long 85°03', in SW¼ sec.29, T.34 N., R.13 E., near center of span on upstream side of Ninth Street Bridge in Auburn, 2 miles upstream from Peckhart ditch.

Drainage area.--93 sq mi, approximately.

Records available.--July 1943 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 847.14 ft above mean sea level (city of Auburn bench mark). Prior to Aug. 28, 1946, staff gage and Aug. 28, 1946, to Sept. 30, 1953, wire-weight gage, at same site and datum.

Average discharge.--15 years, 71.8 cfs.

Extremes.--Maximum discharge during year, 540 cfs Dec. 20 (gage height, 6.01 ft); minimum, 2.9 cfs Oct. 9; minimum gage height, 0.85 ft June 7, 8.
1943-58: Maximum discharge, 1,520 cfs Apr. 5, 1950 (gage height, 9.90 ft); minimum, 0.5 cfs Nov. 12, 1953; minimum gage height, 0.81 ft Feb. 9, 1954.

Remarks.--Records good except those for period of ice effect, which are fair.

Revisions (water years).--WSP 1337: 1944-45(M), 1947-49, 1950(M).

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-23)

Oct. 1 to Nov. 14				Nov. 15 to Sept. 30			
0.8	2.2	1.7	47	0.8	6.0	2.5	130
.9	4.8	2.3	96	.9	9.0	3.0	182
1.2	16	3.0	165	1.2	22	4.0	300
				1.6	50	6.0	540

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.8	14	21	116	22	240	31	22	11	13	108	18
2	*4.2	12	21	98	22	171	30	20	11	*11	72	17
3	4.0	11	20	85	21	126	*28	21	9.7	12	44	17
4	4.2	9.5	*19	72	22	103	27	28	*9.4	12	32	*16
5	3.7	9.1	18	62	*20	*98	29	29	9.0	12	24	16
6	3.7	9.5	20	58	20	130	140	26	8.1	11	21	14
7	4.0	9.1	113	*54	18	116	182	*22	7.8	10	20	13
8	4.5	18	171	44	17	94	130	21	9.0	9.7	20	12
9	3.7	34	116	42	20	80	94	20	26	9.0	17	23
10	3.7	25	85	39	18	67	72	19	98	14	16	43
11	4.5	20	67	36	b17	62	76	18	67	40	32	34
12	4.0	16	48	33	b17	56	76	17	42	108	27	24
13	3.7	16	41	32	b17	55	72	16	74	80	21	19
14	4.5	*104	35	32	b17	52	62	15	90	86	17	16
15	4.8	276	31	30	b16	48	54	15	56	140	19	17
16	9.8	182	31	30	b16	46	48	15	38	98	19	361
17	16	121	29	28	b16	44	43	13	28	67	17	504
18	9.8	98	73	26	b16	42	40	13	24	46	38	444
19	6.2	90	348	25	b16	41	36	13	21	35	27	312
20	4.5	72	504	24	b16	41	36	12	19	28	23	228
21	4.5	58	444	28	b16	42	45	11	17	25	180	171
22	4.5	48	276	38	b16	42	45	11	15	21	182	140
23	53	41	204	38	45	40	42	12	14	19	112	112
24	92	36	150	32	193	38	38	11	14	17	108	90
25	62	32	162	30	300	38	33	11	20	17	98	80
26	37	30	384	28	193	41	28	10	52	19	67	67
27	25	28	264	28	182	40	27	10	36	17	47	55
28	20	27	193	26	216	38	27	12	25	16	38	47
29	16	26	160	25	-	36	26	12	19	17	30	*42
30	14	24	126	25	------	35	22	10	16	20	26	38
31	14	---- --	112	24	------	33	------	10	------	*64	20	------
Total	450.3	1,496.2	4,286	1,286	1,525	2,135	1,639	495	886.0	1,093.7	1,522	2,990
Mean	14.5	49.9	138	41.5	54.5	68.9	54.6	16.0	29.5	35.3	49.1	99.7
Cfsm	0.156	0.537	1.48	0.446	0.586	0.741	0.587	0.172	0.317	0.380	0.528	1.07
In.	0.18	0.60	1.71	0.51	0.61	0.85	0.65	0.20	0.35	0.44	0.61	1.19

Calendar year 1957 : Max 623 Min 3.4 Mean 65.3 Cfsm 0.702 In. 9.54
Water year 1957-58 : Max 504 Min 3.7 Mean 54.3 Cfsm 0.584 In. 7.90

Peak discharge (base, 700 cfs).--No peak above base.

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1800. Cedar Creek near Cedarville, Ind.

Location.--Lat 41°13', long 85°05', in NW¼ sec.19, T.32 N., R.13 E., on left bank at downstream side of bridge on State Highway 427, 2¾ miles northwest of Cedarville and 4 miles upstream from mouth.

Drainage area.--279 sq mi.

Records available.--October 1946 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 780.09 ft above mean sea level, datum of 1929. Prior to Nov. 4, 1947, wire-weight gage at same site and datum.

Average discharge.--12 years, 256 cfs.

Extremes.--Maximum discharge during year, 2,120 cfs Dec. 20 (gage height, 7.01 ft); minimum, 28 cfs Oct. 1 (gage height, 1.39 ft).
1946-58: Maximum discharge, 4,870 cfs Apr. 5, 1950 (gage height, 11.67 ft); minimum, 12 cfs Oct. 3, 1949; minimum gage height, 1.30 ft Sept. 3, Oct. 1, 1953.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.3	21	3.0	469
1.5	44	5.0	1,260
2.0	138	7.0	2,120

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*30	*71	78	469	b72	800	110	82	38	*60	488	74
2	29	65	76	362	b70	600	108	80	38	55	296	71
3	29	62	*76	296	b66	500	106	83	*39	55	187	*69
4	29	57	74	b214	*b62	315	102	104	39	65	134	69
5	29	57	74	b210	56	*280	98	114	39	55	106	65
6	29	54	76	200	56	362	280	*87	36	54	91	64
7	29	52	341	*187	56	378	414	83	35	55	94	58
8	29	86	700	b170	56	296	329	83	34	50	108	55
9	30	167	414	b153	56	246	246	82	54	44	89	80
10	30	120	296	134	56	200	197	83	585	79	88	676
11	30	96	b180	125	56	177	217	83	543	363	246	469
12	30	85	b154	114	56	161	223	80	312	980	174	246
13	30	83	b140	110	56	156	200	78	405	543	116	156
14	31	409	127	110	56	151	177	74	660	654	94	116
15	34	980	114	106	56	143	156	73	362	860	106	98
16	43	620	125	104	56	138	141	71	230	543	116	586
17	83	378	151	100	56	131	129	69	159	362	91	1,340
18	71	280	484	96	56	127	123	69	143	263	85	1,380
19	54	263	1,580	92	56	125	127	65	125	197	85	940
20	46	214	1,890	89	56	127	118	64	127	151	76	620
21	43	171	1,800	98	56	129	148	58	108	127	441	450
22	43	143	1,020	174	56	127	146	55	89	114	580	346
23	164	125	700	141	250	120	134	55	80	102	346	280
24	543	116	506	120	500	116	123	54	78	92	378	230
25	346	106	620	112	920	120	110	49	83	85	378	197
26	200	98	1,420	102	600	129	98	44	143	80	230	171
27	136	91	940	b97	570	127	94	43	129	74	164	148
28	108	91	700	b92	660	127	92	41	94	71	127	129
29	94	87	543	b87	-	123	92	41	76	73	108	120
30	85	83	432	b82	-------	118	85	40	65	118	94	114
31	78	-------	414	b77	-------	*114	-------	39	-------	*257	83	-------
Total	2,585	5,310	16,245	4,623	4,778	6,763	4,723	2,126	4,948	6,681	5,799	9,417
Mean	83.4	177	524	149	171	218	157	68.6	165	216	187	314
Cfsm	0.299	0.634	1.88	0.534	0.613	0.781	0.563	0.246	0.591	0.774	0.670	1.13
In.	0.34	0.71	2.17	0.62	0.64	0.90	0.63	0.28	0.66	0.89	0.77	1.26

Calendar year 1957: Max 2,430 Min 25 Mean 227 Cfsm 0.814 In. 11.06
Water year 1957-58: Max 1,890 Min 29 Mean 203 Cfsm 0.728 In. 9.87

Peak discharge (base, 2,000 cfs).--Dec. 20 (11:30 p.m.) 2,120 cfs (7.01 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Feb. 5 to Mar. 5; discharge estimated on basis of weather records and records for Cedar Creek at Auburn and other nearby streams.

1815. St. Marys River at Decatur, Ind.

Location.--Lat 40°51', long 84°56', in SW¼ sec.27, T.28 N., R.14 E., on right bank 10 ft downstream from bridge on U. S. Highway 27, half a mile north of city limits of Decatur, and half a mile upstream from Holthouse ditch.

Drainage area.--615 sq mi.

Records available.--October 1946 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Gage-height records collected at site half a mile upstream January 1932 to November 1954 and at present site thereafter are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 760.44 ft above mean sea level, datum of 1929. Prior to July 27, 1948, wire-weight gage at same site and datum.

Average discharge.--12 years, 546 cfs.

Extremes.--Maximum discharge during year, 6,170 cfs June 14 (gage height, 20.49 ft); minimum, 37 cfs Sept. 9 (gage height, 2.34 ft).
1946-58: Maximum discharge, 12,500 cfs Feb. 15, 1950 (gage height, 23.60 ft); minimum, 3.6 cfs Aug. 5, 6, 1955; minimum gage height, 1.73 ft Sept. 12, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by Grand Lake Reservoir. Slight diversion from or into Wabash River and into Miami and Erie Canal.

Revisions (water years).--WSP 1114: 1948. WSP 1337: 1947.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.3	35	8.0	880
2.5	47	16.0	3,050
3.0	81	19.0	4,550
4.0	175	21.0	6,900
5.0	311		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	94	155	112	980	145	1,330	*237	211	47	735	*635	47
2	86	135	251	635	135	1,080	187	175	*81	555	499	*44
3	* 81	126	265	481	*112	1,050	165	155	66	375	1,230	44
4	81	112	*187	343	126	*880	145	786	53	265	1,100	50
5	81	104	145	343	135	675	135	*1,300	50	237	755	50
6	77	94	145	*b340	112	615	502	930	50	256	535	41
7	77	86	2,120	311	104	595	655	1,060	47	409	343	41
8	77	130	3,450	237	90	499	635	1,080	74	391	265	40
9	73	463	2,930	265	b84	481	655	930	1,100	409	375	42
10	73	295	2,280	251	b78	409	635	655	3,540	499	445	155
11	73	295	2,000	211	b74	327	695	409	4,340	1,600	2,270	145
12	73	343	1,480	199	70	265	635	251	3,850	1,660	2,660	117
13	73	295	1,060	199	66	237	575	175	4,550	1,560	2,300	117
14	73	635	715	187	.62	223	555	145	6,030	1,660	2,280	94
15	73	1,200	409	175	b60	211	517	126	5,510	2,280	2,630	70
16	86	715	295	175	b59	199	391	112	4,270	3,570	2,720	59
17	99	555	279	175	b58	187	279	94	3,450	3,330	1,830	150
18	155	555	1,600	165	b58	175	223	90	2,690	2,450	955	330
19	165	615	3,330	155	b58	165	187	104	1,830	1,930	695	500
20	175	463	3,750	155	b58	155	165	86	1,930	1,580	481	500
21	155	311	3,900	338	59	155	443	70	2,030	1,030	279	635
22	126	265	3,700	1,130	62	175	463	81	1,830	795	175	555
23	511	223	3,290	635	207	165	615	344	1,800	575	135	343
24	1,830	187	2,480	517	880	155	655	175	1,580	409	112	211
25	1,460	155	1,680	555	815	256	555	126	1,230	775	108	155
26	775	126	2,390	575	675	535	391	99	1,330	1,030	90	126
27	575	112	2,200	517	930	481	251	81	835	755	86	99
28	499	104	1,530	359	1,680	481	199	73	575	835	90	77
29	359	99	1,360	265	-	445	211	59	595	905	77	66
30	237	90	1,260	223	-------	359	223	50	*735	835	66	*59
31	*187	-------	1,080	187	-------	295	-------	47	-------	795	56	-------
Total	8,559	9,043	51,673	11,283	7,052	13,240	12,179	10,079	56,098	34,420	26,277	4,962
Mean	276	301	1,667	364	252	427	406	325	1,870	1,110	848	165
Cfsm	0.449	0.489	2.71	0.592	0.410	0.694	0.660	0.528	3.04	1.80	1.38	0.268
In.	0.52	0.55	3.12	0.68	0.43	0.80	0.74	0.61	3.39	2.08	1.59	0.30

Calendar year 1957: Max 7,540 Min 12 Mean 820 Cfsm 1.33 In. 18.11
Water year 1957-58: Max 6,030 Min 40 Mean 671 Cfsm 1.09 In. 14.81

Peak discharge (base, 2,900 cfs).--Dec. 8 (12 m.) 3,530 cfs (17.16 ft); Dec. 21 (5 a.m.) 3,900 cfs (18.02 ft); June 14 (4 p.m.) 6,170 cfs (20.49 ft); July 16 (5 p.m.) 3,650 cfs (17.48 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1820. St. Marys River near Fort Wayne, Ind.

Location.--Lat 41°00', long 85°07', in NE¼ sec.12, T.29 N., R.12 E., on left bank 130 ft downstream from highway bridge, 4 miles south of Fort Wayne, and 12 miles upstream from mouth.

Drainage area.--753 sq mi.

Records available.--October 1930 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 748.61 ft above mean sea level, unadjusted. Prior to Apr. 13, 1939, chain gage on highway bridge at same datum.

Average discharge.--28 years, 561 cfs.

Extremes.--Maximum discharge during year, 6,980 cfs June 14 (gage height, 15.06 ft); minimum, 43 cfs Sept. 9 (gage height, 0.96 ft).
1930-58: Maximum discharge, 13,400 cfs May 19, 1943 (gage height, 18.79 ft); minimum observed, 3.4 cfs Oct. 19, 1934 (gage height, 0.28 ft).

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by Grand Lake Reservoir. Slight diversion from or into Wabash River basin and into Miami and Erie Canal.

Revisions (water years).--WSP 824: Drainage area. WSP 974: 1942. WSP 1337: 1933, 1947.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.9	38	5.0	955
1.4	90	8.0	2,220
2.0	172	12.0	4,470
3.0	365	15.0	6,870

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*96	196	114	b1,100	250	1,770	*297	241	53	*785	885	61
2	96	164	174	850	214	1,260	250	223	57	665	575	54
3	90	141	*297	785	180	1,180	214	188	*90	465	955	*52
4	84	127	259	b750	*b180	*1,060	188	430	74	340	1,260	52
5	84	120	205	695	b180	815	181	*1,500	59	278	885	60
6	84	108	164	695	b170	785	1,010	1,100	57	250	665	59
7	84	102	2,440	695	156	755	955	1,060	56	415	725	53
8	84	139	4,110	440	148	605	755	1,140	160	415	415	47
9	78	415	3,990	340	134	545	725	1,060	1,060	415	390	45
10	78	465	3,160	390	b125	490	725	815	3,950	490	490	112
11	78	318	2,470	340	b118	415	815	545	5,080	1,990	2,490	196
12	78	365	1,900	318	b110	318	785	340	4,870	2,420	3,630	141
13	78	365	1,340	297	b104	297	695	232	5,530	1,680	3,100	127
14	78	746	955	297	b103	278	635	180	6,870	1,770	2,780	114
15	78	1,640	605	297	b100	259	605	148	6,670	2,520	3,330	96
16	90	1,100	415	297	b98	250	490	134	5,930	3,630	3,450	78
17	127	725	340	278	b96	241	365	120	4,730	3,990	2,720	78
18	156	635	1,470	278	b94	223	297	108	3,990	3,390	1,340	327
19	196	725	4,230	241	b94	205	241	108	2,720	2,420	850	490
20	188	665	4,870	241	b94	196	205	114	2,320	1,860	635	490
21	188	440	4,730	427	b100	188	330	96	2,370	1,380	415	635
22	164	340	4,470	1,420	120	196	605	84	2,130	990	259	665
23	661	297	4,410	1,220	211	205	545	200	2,000	695	188	465
24	2,270	259	3,450	785	885	188	695	297	1,820	490	148	278
25	2,080	214	2,370	725	1,260	232	635	172	1,770	643	127	214
26	1,180	172	2,940	785	1,100	575	490	127	1,860	1,300	114	164
27	725	148	2,940	785	1,380	635	340	108	1,260	885	102	120
28	605	134	2,040	605	2,130	545	259	90	725	650	102	102
29	490	127	1,590	440	-	545	232	78	635	920	96	84
30	340	120	1,420	365	-------	465	250	67	725	920	84	75
31	*250	-------	1,300	297	-------	365	-------	57	-------	*920	74	-------
Total	10,958	11,512	65,168	17,478	9,934	16,086	14,814	11,162	69,821	40,181	33,279	5,534
Mean	353	384	2,102	564	355	519	494	360	2,321	1,296	1,074	184
Cfsm	0.469	0.510	2.79	0.749	0.471	0.689	0.656	0.478	3.08	1.72	1.43	0.244
In.	0.54	0.57	3.22	0.86	0.49	0.79	0.73	0.55	3.44	1.98	1.65	0.27

Calendar year 1957 : Max 8,830 Min 11 Mean 996 Cfsm 1.32 In. 17.96
Water year 1957-58 : Max 6,870 Min 45 Mean 838 Cfsm 1.11 In. 15.09

Peak discharge (base, 4,000 cfs).--Dec. 8 (10 p.m.) 4,170 cfs (11.52 ft); Dec. 20 (2:30 p.m.) 4,940 cfs (12.71 ft); June 14 (11 a.m.) 6,980 cfs (15.06 ft); July 17 (7:30 a.m.) 4,050 cfs (11.32 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1830. Maumee River at New Haven, Ind.

Location.--Lat 41°05', long 85°01', in SW¼ sec.1, T.30 N., R.13 E., in center of span on downstream side of county road bridge, a quarter of a mile upstream from Wabash Railroad bridge, half a mile north of New Haven, and 6 miles downstream from confluence of St. Marys and St. Joseph Rivers.

Drainage area.--1,940 sq mi.

Records available.--December 1946 to September 1956 (high-water records only), October 1956 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 724.51 ft above mean sea level, datum of 1929. Prior to Sept. 7, 1956, wire-weight gage at same site and datum.

Extremes.--Maximum discharge during year, 10,800 cfs Dec. 21 (gage height, 16.28 ft); minimum daily, 110 cfs June 7.
1946-58: Maximum discharge, 19,100 cfs Feb. 16, 1950 (gage height, 21.4 ft). Minimum daily since Sept. 7, 1956, 95 cfs Oct. 7, 10-12, 14, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated at low stage by powerplant above station. Flow slightly regulated by upstream reservoirs.

Revisions.--WSP 1337: Drainage area.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 15, 17, 18, 21-23, 25-31, June 4-8)

2.2	90	9.0	4,060
2.5	165	14.0	8,430
3.1	345	17.0	11,700
4.0	720		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	180	*620	510	3,920	570	5,620	670	620	470	1,060	*2,590	345
2	*210	530	510	2,870	530	4,300	885	620	492	1,000	2,170	315
3	210	530	620	a1,950	510	4,500	*720	570	620	720	2,240	*362
4	171	470	*620	a1,550	432	*3,990	530	670	*203	570	2,660	270
5	180	450	570	a1,200	*432	3,430	598	1,770	145	530	1,890	285
6	189	415	510	1,180	490	3,220	2,600	*1,760	122	490	1,500	300
7	168	362	3,640	1,360	490	3,080	3,010	1,620	110	620	1,620	285
8	158	530	6,660	*1,120	380	2,800	2,800	1,690	175	670	1,300	270
9	177	775	6,390	775	b360	2,380	2,590	1,690	1,100	570	830	277
10	183	1,000	5,380	885	b340	2,240	2,520	1,430	4,540	850	940	1,690
11	145	885	3,920	885	a320	1,820	2,380	1,060	7,330	3,270	3,360	1,300
12	180	830	2,870	775	a305	1,430	2,170	775	6,570	6,750	5,940	670
13	155	830	2,170	775	a295	1,300	2,100	620	7,030	4,200	4,580	530
14	140	1,390	1,760	720	a285	1,180	1,890	450	9,230	4,200	3,920	470
15	142	3,920	1,300	720	a280	1,120	1,760	300	8,930	6,300	4,580	362
16	262	4,130	1,060	670	a280	1,060	1,430	432	7,830	5,620	4,580	*418
17	415	3,080	940	620	a280	1,000	1,180	345	6,300	5,940	3,990	2,170
18	345	2,800	2,150	620	a280	885	720	330	5,300	5,540	2,380	3,500
19	330	2,520	7,630	530	a280	885	1,060	398	5,920	4,420	1,620	3,570
20	315	2,450	10,100	530	a280	830	1,500	415	3,290	3,920	1,180	3,430
21	345	1,820	10,600	745	a295	830	1,060	315	3,080	3,220	1,300	3,570
22	330	1,450	9,830	1,430	a320	830	1,240	300	2,730	2,100	2,240	3,570
23	1,230	1,240	8,630	1,690	432	775	1,240	168	2,380	1,560	1,760	2,800
24	3,780	775	7,630	1,180	1,390	775	1,430	362	2,310	1,120	1,120	1,760
25	4,420	940	6,570	1,060	3,150	830	1,300	285	2,520	1,300	1,300	1,240
26	3,220	720	8,230	1,060	3,290	1,120	1,120	225	3,220	1,890	1,180	940
27	2,310	620	8,130	1,060	3,570	1,300	885	183	2,170	1,430	940	775
28	1,690	620	6,120	1,000	5,620	1,180	775	158	1,360	1,180	620	620
29	1,240	570	4,980	830	-	1,180	670	140	1,120	1,360	470	709
30	940	550	4,340	720	-------	1,060	620	171	*1,060	1,430	470	*490
31	1,020	-------	3,850	670	-------	940	-------	195	-------	1,620	415	-------
Total	24,780	37,782	138,420	35,100	25,486	58,490	43,453	20,067	95,657	75,450	65,685	37,293
Mean	799	1,259	4,465	1,132	910	1,887	1,448	647	3,189	2,434	2,119	1,243
Cfsm	0.412	0.649	2.30	0.584	0.469	0.973	0.746	0.334	1.64	1.25	1.09	0.641
In.	0.48	0.72	2.65	0.67	0.49	1.12	0.83	0.39	1.83	1.44	1.26	0.72

Calendar year 1957: Max 14,500 Min 98 Mean 2,011 Cfsm 1.04 In. 14.06
Water year 1957-58: Max 10,600 Min 110 Mean 1,802 Cfsm 0.929 In. 12.60

Peak discharge (base, 9,500 cfs).--Dec. 21 (5 a.m.) 10,800 cfs (16.28 ft); June 14 (8 to 10 p.m.) 9,530 cfs (15.08 ft).

* Discharge measurement made on this day.
a No gage-height record, discharge estimated on basis of weather records and records for St. Joseph River at Cedarville, St. Marys River near Fort Wayne, and Maumee River at Antwerp, Ohio.
b Stage-discharge relation affected by ice.

1835. Maumee River at Antwerp, Ohio

Location.--Lat 41°11'56", long 84°44'40", in sec.22, T.3 N., R.1 E., on left bank 425 ft downstream from bridge on State Highway 49, 1 mile north of Antwerp, Paulding County, 7 miles downstream from Indiana State line, and 10 miles upstream from Marie DeLarme Creek.

Drainage area.--2,049 sq mi.

Records available.--September 1921 to December 1935, April 1939 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 695.49 ft above mean sea level, adjustment of 1912. Prior to Sept. 13, 1925, chain gage at site 400 ft upstream at same datum.

Average discharge.--33 years, 1,690 cfs.

Extremes.--Maximum discharge during year, 12,000 cfs Dec. 21 (gage height, 14.48 ft); minimum, 121 cfs June 7, 8 (gage height, 0.96 ft).
1921-35, 1939-58: Maximum discharge, 26,200 cfs May 20, 1943 (gage height, 20.29 ft); minimum, 24 cfs Oct. 17, 1930, June 21, 22, 1933 (gage height, 0.32 ft).
Flood of Mar. 27, 1913, was estimated as 40,000 cfs.

Remarks.--Records good except those for periods of ice effect, which are fair. Low flow slightly regulated by powerplant at Fort Wayne, Ind.

Revisions (water years).--WSP 759: Drainage area. WSP 1174: 1927, 1933, 1940. WSP 1387: 1922-23, 1925-27, 1934.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to June 14				June 15 to Sept. 30			
0.9	108	3.0	780	1.5	267	5.0	1,980
1.1	152	6.0	2,520	2.0	432	9.0	5,210
1.5	250	10.0	6,060	3.0	847	13.0	9,550
2.0	384	15.0	12,800				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	202	925	521	3,970	603	5,620	825	603	198	1,070	2,460	425
2	190	603	502	3,400	561	5,110	712	603	384	1,040	2,320	346
3	198	541	502	2,120	502	4,330	825	561	465	945	1,980	327
4	195	521	624	b1,700	b500	4,060	690	561	430	799	2,460	366
5	176	465	603	b1,400	465	3,320	521	850	210	644	2,250	286
6	181	430	541	b1,200	414	3,100	2,070	1,750	152	603	1,600	301
7	183	*384	1,690	b1,200	b410	2,940	3,170	1,510	129	524	1,600	298
8	166	356	6,500	b1,100	b400	2,870	2,730	1,510	125	709	1,720	286
9	166	603	6,850	b1,000	384	2,380	2,520	1,570	303	687	1,140	270
10	174	850	5,840	950	b400	1,990	2,320	1,460	2,420	644	847	867
11	176	950	4,420	950	*b380	1,930	2,380	1,150	6,280	2,370	1,620	1,720
12	157	825	3,020	900	b350	1,630	2,250	875	6,850	7,470	5,480	1,040
13	176	802	2,380	825	b310	1,150	2,060	668	6,280	6,110	5,210	687
14	150	950	1,870	758	b300	1,400	1,990	541	8,850	4,040	4,130	563
15	150	2,780	1,510	712	b300	1,080	1,750	384	9,280	6,710	3,960	486
16	154	4,330	1,180	690	b300	1,080	1,570	334	8,290	5,930	4,580	*394
17	273	3,170	1,000	646	b300	1,020	1,290	399	6,920	*5,840	4,310	781
18	414	2,660	1,150	624	b300	925	1,000	351	5,570	5,840	3,220	2,900
19	351	2,520	6,480	b600	b300	875	802	370	4,670	4,940	1,920	3,460
20	326	2,250	10,500	603	b300	875	1,080	414	3,540	4,040	1,450	3,300
21	334	2,120	12,000	521	b310	850	1,400	399	3,220	3,540	1,200	3,380
22	*340	1,460	11,400	1,000	b330	825	1,020	324	2,900	2,680	1,780	3,460
23	384	1,400	9,810	1,570	b360	780	1,240	313	2,460	1,780	2,110	3,140
24	2,340	975	8,330	1,400	b800	758	1,210	218	2,320	1,420	1,420	2,180
25	4,240	825	7,090	1,100	b2,500	802	1,290	348	2,250	1,070	1,140	1,420
26	3,720	850	8,460	1,020	3,020	975	1,150	273	3,380	1,600	1,260	1,120
27	2,380	646	8,850	1,050	3,100	*1,260	975	238	2,680	1,720	1,100	895
28	1,990	603	7,450	*1,020	4,710	1,260	802	200	1,780	1,260	871	731
29	1,460	603	5,410	900	-	1,180	712	*169	1,260	1,260	623	603
30	1,100	561	4,330	780	--------	1,120	624	152	1,100	1,450	505	709
31	875	--------	3,880	690	--------	1,020	--------	189	--------	1,600	468	--------
Total	23,321	36,958	144,693	36,399	27,909	58,515	42,978	19,267	94,696	80,335	66,734	36,741
Mean	752	1,232	4,668	1,174	818	1,888	1,433	622	3,157	2,591	2,153	1,225
Cfsm	0.367	0.601	2.28	0.573	0.399	0.921	0.699	0.304	1.54	1.26	1.05	0.598
In.	0.42	0.67	2.63	0.66	0.42	1.06	0.78	0.35	1.72	1.45	1.21	0.67

Calendar year 1957: Max 16,400 Min 98 Mean 2,116 Cfsm 1.03 In. 14.01
Water year 1957-58: Max 12,000 Min 125 Mean 1,818 Cfsm 0.887 In. 12.04

Peak discharge (base, 8,000 cfs).--Dec. 21 (11 a.m.) 12,000 cfs (14.48 ft); Dec. 26 (10 p.m.) 9,110 cfs (12.52 ft); June 15 (8 a.m.) 9,410 cfs (12.89 ft); July 12 (4 p.m.) 8,530 cfs (12.19 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1845. Bean Creek at Powers, Ohio

Location.--Lat 41°40'40", long 84°13'50", in NE¼ sec.24, T.9 S., R.1 E., on right bank at downstream side of bridge on U. S. Highway 20, 1 mile east of Powers, Fulton County, and 2½ miles upstream from Iron Creek.

Drainage area.--238 sq mi.

Records available.--October 1940 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 722.6 ft above mean sea level, adjustment of 1912. Prior to Jan. 18, 1941, wire-weight gage at same site and datum.

Average discharge.--18 years, 165 cfs.

Extremes.--Maximum discharge during year, 1,900 cfs July 15 (gage height, 10.27 ft); minimum, 14 cfs Oct. 13, 14; minimum gage height, 0.31 ft Sept. 14, 15.
1940-58: Maximum discharge, 4,250cfs Apr. 29, 1956 (gage height, 13.82 ft); minimum, 5.9 cfs Sept. 1-3, 1953.

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 1307: 1948(M).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 20				Dec. 21 to Sept. 30			
0.3	11	2.0	160	0.3	15	3.0	299
.6	34	4.0	450	.6	39	7.0	1,010
1.0	66	8.0	1,220	1.0	77	9.0	1,480

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	66	80	273	81	573	95	75	33	27	121	24
2	18	61	77	225	79	573	92	69	36	24	86	23
3	*17	57	69	200	70	408	90	65	34	98	67	23
4	16	55	64	160	60	340	87	334	32	519	55	23
5	16	52	62	140	55	319	84	392	28	304	49	22
6	16	50	64	130	55	347	110	304	26	237	45	21
7	16	48	136	110	55	340	191	231	24	164	116	21
8	16	54	268	95	55	286	231	186	25	124	100	21
9	16	72	194	*85	50	237	180	152	31	90	75	21
10	16	74	154	80	45	196	152	132	39	75	63	23
11	15	67	129	75	40	180	158	109	40	189	126	21
12	16	62	104	70	*40	169	196	94	35	174	106	19
13	14	60	101	70	40	*174	186	88	36	127	80	18
14	15	214	82	65	40	158	169	82	39	109	62	16
15	15	591	70	65	40	147	137	75	36	1,450	53	17
16	20	476	74	65	40	137	122	67	31	1,070	51	505
17	38	359	72	65	40	132	117	57	26	467	46	*555
18	46	*254	102	65	40	127	110	62	24	292	41	627
19	44	226	756	60	40	127	102	59	22	225	36	304
20	36	207	1,130	60	40	122	94	56	22	180	39	213
21	32	171	1,220	60	45	122	101	51	21	142	82	169
22	29	139	851	95	50	114	102	52	20	120	72	132
23	92	118	627	110	70	108	132	44	22	103	54	107
24	524	106	433	94	240	108	119	42	22	89	50	89
25	359	96	347	89	650	113	118	46	36	79	53	77
26	194	88	851	88	573	*119	114	38	117	71	47	69
27	139	81	737	86	681	116	97	*36	74	64	39	62
28	107	80	537	86	555	109	89	38	51	56	34	54
29	90	84	424	84	-	109	89	34	39	52	33	49
30	81	86	319	83	-------	99	80	32	32	54	30	45
31	73	-------	286	85	-------	93	-------	30	-------	70	27	-------
Total	2,144	4,145	10,420	3,118	3,869	6,302	3,744	3,132	1,053	6,845	1,938	3,370
Mean	69.2	138	336	101	138	203	125	101	35.1	221	62.5	112
Cfsm	0.291	0.580	1.41	0.424	0.580	0.853	0.525	0.424	0.147	0.929	0.263	0.471
In.	0.34	0.65	1.63	0.49	0.60	0.98	0.59	0.49	0.16	1.07	0.30	0.53

Calendar year 1957: Max 1,220 Min 8.6 Mean 130 Cfsm 0.546 In. 7.45
Water year 1957-58: Max 1,450 Min 14 Mean 137 Cfsm 0.576 In. 7.83

Peak discharge (base, 1,200 cfs).--Dec. 21 (3 a.m.) 1,420 cfs (8.84 ft); July 15 (10 a.m.) 1,900 cfs (10.27 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 15, Jan. 3-21, Feb. 4-25.

1850. Tiffin River at Stryker, Ohio

Location.--Lat 41°30'15", long 84°25'50", in SW¼ sec.5, T.6 N., R.4 E., on right bank at downstream side of bridge on State Highway 191 at west edge of Stryker, Williams County, 0.6 mile upstream from New York Central Railroad bridge and 1½ miles downstream from Leatherwood Creek.

Drainage area.--441 sq mi.

Records available.--September 1921 to September 1928 (published as "near Stryker"), October 1940 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 685.5 ft above mean sea level, adjustment of 1912. Prior to Sept. 30, 1928, chain gage at site 3½ miles downstream at different datum. Oct. 13, 1940, to Jan. 17, 1941, staff gage and Jan. 18, 1941, to Sept. 30, 1953, water stage recorder, at site half a mile downstream at same datum.

Average discharge.--25 years, 319 cfs.

Extremes.--Maximum discharge during year, 2,630 cfs July 18 (gage height, 13.04 ft); minimum, 18 cfs Oct. 7, 10, 11; minimum gage height, 1.31 ft Oct. 7.
1921-28, 1940-58: Maximum discharge, 6,640 cfs Apr. 25, 1950; maximum gage height, 16.16 ft May 1, 1956; minimum discharge, 3.6 cfs Aug. 30, 31, 1953.
Flood in March 1913 reached a stage of 16.0 ft, from floodmarks (discharge, 7,600 cfs). Flood in 1937 reached a stage of 15.0 ft, from information by local resident (discharge, 6,000 cfs).

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 564: Drainage area. WSP 1144: 1922-28. WSP 1387: 1925.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 20-22, Sept. 22-30)

Oct. 1 to Dec. 22				Dec. 23 to Sept. 30			
1.2	13	8.0	686	1.4	28	8.0	900
1.4	28	10.0	1,100	1.7	56	11.0	1,570
1.7	56	11.0	1,440	2.0	86	12.0	1,990
2.0	84	13.0	2,630	4.0	308	13.0	2,630
5.0	348						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	198	162	676	169	1,630	158	130	53	42	630	41
2	23	172	154	555	158	1,480	152	123	58	35	600	36
3	22	158	142	482	147	1,340	152	112	55	40	334	37
4	20	146	130	400	118	1,140	146	152	50	342	196	39
5	20	138	122	350	119	836	139	468	45	585	132	37
6	19	130	122	300	120	756	213	555	42	540	119	37
7	19	122	336	250	130	804	360	454	38	386	202	37
8	19	126	700	*210	95	740	468	334	35	236	296	35
9	19	208	715	190	85	600	326	260	47	152	196	35
10	19	230	548	180	75	454	328	213	89	118	129	38
11	19	198	358	160	75	373	334	180	120	328	147	40
12	20	172	284	150	*70	334	440	147	97	692	208	36
13	19	154	248	150	70	321	468	123	92	468	169	33
14	20	330	230	140	70	328	399	114	152	314	121	30
15	22	760	194	140	70	302	321	108	126	946	103	30
16	25	900	176	140	65	284	266	99	90	*1,450	102	124
17	52	975	158	140	65	280	224	85	69	2,220	86	*660
18	88	*860	185	140	65	242	208	78	55	2,560	71	990
19	80	608	779	136	70	236	186	93	49	2,100	60	1,140
20	63	470	1,370	133	70	236	169	84	45	1,540	53	1,220
21	48	388	2,010	164	75	230	174	74	43	885	127	1,010
22	*41	311	2,340	218	85	224	202	69	38	386	260	496
23	138	257	2,100	272	130	202	600	77	34	242	186	266
24	670	226	1,750	266	628	191	482	67	36	186	126	180
25	975	198	1,450	218	1,030	191	321	63	42	158	138	143
26	1,130	180	1,480	208	1,160	*213	248	62	79	136	120	117
27	1,190	167	1,450	196	1,570	224	213	*53	138	111	90	99
28	766	158	1,540	191	1,710	218	180	64	94	95	69	82
29	388	162	1,510	180	-	196	164	79	69	86	59	67
30	266	167	1,260	174	--------	191	147	68	52	117	51	59
31	230	--------	936	169	--------	169	--------	54	--------	254	45	--------
Total	6,454	9,269	24,939	7,278	8,292	14,945	8,286	4,642	2,032	17,750	5,225	7,194
Mean	208	309	804	235	296	482	276	150	67.7	573	169	240
Cfsm	0.472	0.701	1.82	0.533	0.671	1.09	0.626	0.340	0.154	1.30	0.383	0.544
In.	0.54	0.78	2.10	0.61	0.70	1.26	0.70	0.39	0.17	1.50	0.44	0.61

Calendar year 1957 : Max 2,340 Min 12 Mean 275 Cfsm 0.624 In. 8.47
Water year 1957-58 : Max 2,560 Min 19 Mean 319 Cfsm 0.723 In. 9.80

Peak discharge (base, 1,800 cfs).--Dec. 22 (11 a.m.) 2,410 cfs (12.66 ft); July 18 (6 a.m.) 2,630 cfs (13.04 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 4-18, Feb. 6-23.

1865. Auglaize River near Fort Jennings, Ohio

Location.--Lat 40°56'55", long 84°15'58", in SE¼ sec.15, T.1 S., R.5 E., on left bank 200 ft upstream from bridge on U. S. Highway 224, 3½ miles northeast of Fort Jennings, Putnam County, and 6 miles upstream from Ottawa River.

Drainage area.--333 sq mi.

Records available.--August 1921 to December 1935, October 1940 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 713.9 ft above mean sea level, adjustment of 1912. Prior to Oct. 6, 1930, chain gage at same site and datum.

Average discharge.--32 years, 393 cfs.

Extremes.--Maximum discharge during year, 3,590 cfs June 12 (gage height, 13.05 ft); minimum, 26 cfs Oct. 10 (gage height, 1.70 ft).
1921-35, 1940-58: Maximum discharge, 9,550 cfs Feb. 15, 1950 (gage height, 17.8 ft, from high-water mark); minimum, 4.5 cfs Oct. 7, 1956; minimum gage height, 0.75 ft Aug. 28, 1932.

Remarks.--Records good except those for periods of ice effect, which are fair. Some diversion from Grand Lake by Miami & Erie Canal into Jennings Creek, tributary to Auglaize River, above station.

Revisions (water years).--WSP 744: 1932. WSP 974: 1930(M). WSP 1307: 1922-24(M), 1926-27(M), 1929(M).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 10-16, 21, 22, 27, July 11-14, 16-18)

Oct. 1 to Dec. 8				Dec. 9 to Sept. 30			
1.7	26	2.5	101	1.8	34	6.0	804
1.9	40	3.0	163	2.1	62	9.0	1,780
2.2	68	4.0	331	2.5	109	11.0	2,640
				3.0	174	13.0	3,820
				4.0	331		

Note.--Same as following table above 4.0 ft.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46	127	293	277	95	1,210	153	145	59	180	1,340	38
2	42	108	176	224	104	598	132	113	97	144	888	38
3	39	90	135	b180	84	392	*117	108	70	119	888	39
4	37	82	111	b160	71	294	107	490	59	108	635	44
5	35	75	103	b140	83	238	98	1,580	50	95	294	50
6	33	66	99	b130	85	286	466	972	47	136	209	45
7	32	62	1,100	*b120	69	538	860	445	41	478	485	49
8	32	109	3,030	126	54	413	538	303	137	1,090	804	45
9	31	420	2,910	108	b50	286	322	231	514	778	382	40
10	28	502	1,060	101	b45	216	238	180	1,740	371	231	45
11	32	247	502	93	*b45	165	441	153	*3,260	1,140	185	53
12	32	163	371	84	b40	142	778	127	3,450	2,550	823	107
13	31	135	331	75	b40	144	514	107	2,930	3,140	424	64
14	30	250	294	78	b40	147	341	90	3,080	1,770	*231	47
15	30	778	195	81	b40	139	261	81	2,980	1,440	175	40
16	34	648	166	86	b40	125	209	102	1,220	1,900	161	47
17	83	331	175	81	b40	113	171	80	502	2,460	195	158
18	90	221	893	70	b40	102	148	78	526	1,100	161	767
19	75	*205	2,640	60	41	97	130	85	916	526	128	944
20	55	221	3,320	61	43	92	118	65	1,000	361	148	361
21	*45	190	3,030	93	43	91	180	55	1,940	246	109	216
22	40	147	1,630	603	48	33	382	55	1,030	202	90	216
23	98	115	661	916	84	108	361	83	456	169	73	303
24	526	103	445	378	698	108	269	93	303	208	98	188
25	622	92	332	224	1,660	125	188	81	246	635	110	131
26	331	83	1,260	209	1,180	362	139	62	694	1,090	96	103
27	190	76	1,860	180	648	467	113	51	1,620	512	78	81
28	138	71	916	142	1,230	322	108	48	798	269	66	70
29	115	73	502	130	-	254	187	44	361	195	56	60
30	106	363	341	116	-------	216	209	37	246	147	56	56
31	123	-------	269	104	-------	187	-------	36	-------	340	43	-------
Total	3,178	6,153	29,210	5,428	6,740	8,064	6,278	6,180	30,372	23,899	9,662	4,445
Mean	103	205	942	175	241	260	276	199	1,012	771	312	148
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 6,380 Min 19 Mean 475 Cfsm - In. -
Water year 1957-58: Max 3,450 Min 28 Mean 388 Cfsm - In. -

Peak discharge (base, 2,700 cfs).--Dec. 8 (10 p.m.) 3,320 cfs (12.32 ft); Dec. 20 (8 p.m.) 3,520 cfs (12.60 ft); June 12 (6 a.m.) 3,590 cfs (13.05 ft); July 13 (2 p.m.) 3,200 cfs (12.53 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1875. Ottawa River at Allentown, Ohio

Location.--Lat 40°45'18", long 84°11'41", in NW¼ sec.29, T.3 S., R.6 E., on left bank at upstream side of bridge on State Highway 81 at Allentown, Allen County, 0.3 mile downstream from Kessler Run.

Drainage area.--168 sq mi.

Records available.--October 1923 to December 1935, August 1943 to September 1958.

Gage.--Water-stage recorder and concrete control. Datum of gage is 789.67 ft above mean sea level, adjustment of 1912. Prior to Oct. 1, 1925, chain gage and Oct. 1, 1925, to Dec. 30, 1935, water-stage recorder, at site 35 ft downstream at same datum.

Average discharge.--27 years, 125 cfs.

Extremes.--Maximum discharge during year, 1,840 cfs July 16 (gage height, 6.46 ft); minimum, 11 cfs Oct. 9, 10 (gage height, 2.37 ft).
1923-35, 1943-58: Maximum discharge, 5,300 cfs June 29, 1957 (gage height, 9.45 ft); minimum, 1.4 cfs June 28, 29, 1933.
Flood of Mar. 15, 1939, reached a stage of 10.1 ft and flood in May 1943 a stage of 10 ft (discharge not determined).

Remarks.--Records good. Diurnal fluctuation and some regulation caused by operation of water-supply and sewage-treatment plants of city of Lima above station.

Revisions (water years).--WSP 1004: 1924. WSP 1144: 1944(M). WSP 1207: 1927. WSP 1387: 1924(M), 1927-28(M), 1929, 1930(M), 1935(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.4	12	3.3	101
2.5	15	3.6	200
2.6	19	4.0	410
2.9	38	5.0	1,040
3.1	62	6.0	1,560

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	26	29	106	42	338	76	57	66	44	218	28
2	20	26	28	79	45	218	67	51	59	38	229	28
3	26	20	28	67	40	180	*58	75	29	34	252	37
4	24	19	34	61	38	151	46	864	25	40	102	34
5	22	25	32	53	40	128	48	726	23	28	82	38
6	20	22	52	51	38	209	237	288	22	80	116	29
7	*18	22	1,150	*57	36	280	203	196	20	83	234	30
8	20	87	1,090	48	32	169	95	138	47	169	157	29
9	13	66	387	45	28	125	45	120	131	152	120	27
10	13	29	200	41	29	101	109	92	*1,260	97	76	49
11	14	26	135	40	28	83	384	74	660	949	309	28
12	16	24	77	37	27	77	244	65	224	1,200	436	27
13	15	25	83	36	27	76	188	54	579	952	*158	25
14	14	97	76	53	26	76	138	50	658	524	93	22
15	17	64	65	53	26	70	114	51	231	412	136	24
16	42	37	72	51	25	65	94	58	130	1,560	214	140
17	60	28	95	41	25	65	77	57	93	496	154	385
18	25	26	415	36	25	61	65	45	192	203	200	654
19	20	36	1,300	32	*25	61	58	40	183	144	101	167
20	20	*30	1,200	32	25	65	55	38	361	106	58	120
21	23	29	793	192	28	76	123	35	248	79	46	100
22	32	25	318	415	40	90	138	98	135	57	49	122
23	123	23	188	132	196	83	123	67	89	122	58	67
24	89	22	158	51	580	74	126	51	62	306	105	55
25	36	25	165	74	751	141	94	40	67	226	126	44
26	28	26	952	79	258	222	69	34	390	92	84	39
27	24	24	496	76	233	101	61	34	319	67	50	36
28	22	32	236	65	573	135	62	27	150	57	38	36
29	22	92	165	55	-	117	77	23	97	40	32	34
30	24	51	123	51	-------	104	67	23	74	44	30	32
31	39	-------	109	51	-------	90	-------	20	-------	295	32	-------
Total	901	1,084	10,251	2,260	3,287	3,831	3,341	3,591	6,624	8,696	4,075	2,486
Mean	29.1	36.1	331	72.9	117	124	111	116	221	281	131	82.9
Cfsm	0.173	0.215	1.97	0.434	0.696	0.738	0.661	0.690	1.32	1.67	0.780	0.493
In.	0.20	0.24	2.27	0.50	0.72	0.85	0.74	0.80	1.47	1.92	0.90	0.55

Calendar year 1957: Max 3,660 Min 13 Mean 194 Cfsm 1.15 In. 15.67
Water year 1957-58: Max 1,560 Min 13 Mean 138 Cfsm 0.821 In. 11.16

Peak discharge (base, 1,600 cfs).--Dec. 7 (7 p.m.) 1,670 cfs (6.25 ft); Dec. 19 (1 p.m.) 1,720 cfs (6.30 ft); June 10 (2 p.m.) 1,780 cfs (6.37 ft); July 16 (1 p.m.) 1,840 cfs (6.46 ft).

* Discharge measurement made on this day.

1890. Blanchard River near Findlay, Ohio

Location.--Lat 41°03'21", long 83°41'17", on east line of sec.10, T.1 N., R.10 E., on left bank at upstream side of county highway bridge, 2 miles west of Findlay, Hancock County, and 3 miles downstream from Eagle Creek.

Drainage area.--343 sq mi.

Records available.--October 1923 to December 1935, October 1940 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 754.55 ft above mean sea level. Prior to July 24, 1930, chain gage at same site and datum.

Average discharge.--30 years, 237 cfs.

Extremes.--Maximum discharge during year, 2,470 cfs Dec. 7 (gage height, 7.76 ft); minimum, 4.8 cfs Oct. 22 (gage height, 0.63 ft).
1923-35, 1940-58: Maximum discharge, 11,800 cfs Dec. 1, 1927 (gage height, 15.4 ft, from graph based on gage readings); minimum, 0.4 cfs Aug. 26, 27, Sept. 3, 1934.
Flood in March 1913 reached a stage of 18.5 ft (discharge, 22,000 cfs, from rating curve extended above 11,000 cfs).

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 974: 1942. WSP 1054: 1927-30, 1933(M), 1945. WSP 1387: 1926, 1928(M), 1930(M), 1952.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 24-30)

0.6	4.0	1.5	150
.7	10	2.0	290
.9	34	5.0	1,300
1.2	82	8.0	2,570

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	45	217	161	77	980	115	102	58	84	770	66
2	19	38	127	111	78	490	100	88	132	90	551	69
3	18	38	88	88	68	354	*90	113	82	84	338	75
4	14	38	69	71	65	298	62	782	59	88	186	77
5	12	41	53	84	62	254	58	1,300	56	69	104	178
6	13	37	55	100	61	352	129	692	54	73	78	221
7	12	34	1,300	98	56	525	290	332	48	288	252	268
8	12	101	1,980	92	38	363	335	231	62	388	371	161
9	11	184	1,420	71	b35	262	209	156	160	388	326	122
10	10	226	585	68	b35	198	161	109	389	256	276	98
11	9.2	117	*290	66	b30	153	592	102	718	866	595	84
12	9.2	69	178	54	b30	129	700	102	*496	1,700	*595	77
13	9.2	50	150	54	b30	132	409	84	628	1,540	451	66
14	10	140	147	80	29	140	284	75	910	1,050	265	62
15	9.2	312	111	127	28	124	234	68	534	324	206	71
16	17	284	109	113	28	113	184	66	270	577	186	78
17	21	145	109	90	28	102	147	62	178	478	150	107
18	14	94	479	68	b30	98	120	68	161	282	120	343
19	11	104	1,780	51	*30	96	102	56	192	184	80	315
20	12	158	*2,140	54	28	98	98	48	211	129	77	212
21	*16	140	1,860	164	28	98	194	42	298	106	77	147
22	14	77	1,080	875	33	98	329	59	234	96	92	86
23	83	82	424	578	197	96	284	73	161	84	82	59
24	267	80	307	277	1,340	88	245	82	124	84	88	44
25	296	51	274	181	1,900	102	170	49	113	191	100	35
26	200	41	1,010	140	1,190	181	117	31	483	124	100	35
27	115	33	1,190	*167	525	259	98	34	805	88	100	26
28	78	35	616	132	1,020	223	111	50	748	71	90	45
29	61	149	349	104	-	184	150	44	278	87	80	47
30	54	304	245	94	-------	170	124	41	134	92	77	42
31	50	-------	175	84	-------	142	-------	40	-------	258	71	-------
Total	1,497.8	3,247	18,917	4,497	7,099	6,902	6,241	5,181	8,776	10,219	6,934	3,316
Mean	48.3	108	610	145	254	223	208	167	293	330	224	111
Cfsm	0.141	0.315	1.78	0.423	0.741	0.650	0.606	0.487	0.854	0.962	0.653	0.324
In.	0.16	0.35	2.05	0.49	0.77	0.75	0.68	0.56	0.95	1.11	0.75	0.36

Calendar year 1957: Max 6,040 Min 7.2 Mean 347 Cfsm 1.01 In. 13.71
Water year 1957-58: Max 2,140 Min 9.2 Mean 227 Cfsm 0.662 In. 8.98

Peak discharge (base, 2,400 cfs).--Dec. 7 (12 p.m.) 2,470 cfs (7.76 ft); Dec. 20 (6 p.m.) 2,420 cfs (7.70 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1915. Auglaize River near Defiance, Ohio

Location.--Lat 41°14'15", long 84°24'02", in NE¼ sec.9, T.3 N., R.4 E., on right bank 125 ft downstream from dam and powerplant of Toledo Edison Co., a quarter of a mile upstream from Jackson ditch, and 3 miles south of Defiance, Defiance County.

Drainage area.--2,329 sq mi.

Records available.--May to August 1903 (gage heights only), April 1915 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 660.00 ft above mean sea level, adjustment of 1912. May 20 to Aug. 8, 1903, staff gage at site 1¾ miles downstream at different datum. Apr. 13, 1915, to Dec. 6, 1933, staff gage near right bank on upstream side of dam at datum 6.00 ft higher. Auxiliary tailwater staff gage near right bank on downstream side of dam at present datum.

Average discharge.--43 years, 1,684 cfs.

Extremes.--Maximum discharge during year, 18,100 cfs Dec. 20 (gage height, 15.91 ft); minimum daily, 28 cfs Feb. 16.

1915-58: Maximum discharge, 52,500 cfs Feb. 16, 1950 (gage height, 26.4 ft, from graph based on hourly powerplant tailwater-gage readings); minimum daily, 0.5 cfs Oct. 13, 14, 1952 (during repairs to powerplant dam).

Flood in March 1913 reached a stage of 38.8 ft from reading on powerplant tailwater gage at present datum (discharge, 120,000 cfs, from rating curve extended above 51,000 cfs).

Remarks.--Records good. Flow regulated by powerplant above station (reservoir capacity, 9,800 acre-ft). Some diversion by Miami & Erie Canal from Grand Lake into Jennings Creek, tributary to Auglaize River above station. (See miscellaneous discharge measurements on p.

Revisions (water years).--WSP 759: Drainage area. WSP 954: 1941. WSP 1307: 1916-40(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 6				May 7 to Sept. 30			
4.7	22	6.5	860	4.8	24	5.1	88
4.8	30	7.0	1,360	4.9	38	5.5	240
4.9	42	9.0	3,950	Note.--Same as preceding table above 5.5 ft.			
5.1	90	13.0	11,000				
5.5	240	16.0	18,400				
6.0	487						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	38	502	790	3,230	424	7,260	823	866	44	664	2,460	38
2	38	328	732	1,980	482	5,200	880	856	217	532	2,520	40
3	40	427	688	990	269	4,100	1,130	660	988	302	2,100	372
4	38	326	344	652	304	3,300	1,800	1,300	378	315	2,550	48
5	38	323	342	652	422	3,300	518	3,300	264	590	2,100	48
6	38	207	445	652	266	2,590	1,650	5,200	44	35	1,280	268
7	91	108	1,720	*652	227	3,230	2,740	4,250	218	1,120	994	38
8	*40	*581	11,400	652	370	3,090	3,090	3,230	46	2,510	2,090	325
9	41	1,380	13,700	652	60	3,160	1,730	1,970	2,420	2,940	3,090	374
10	42	1,380	10,600	434	292	1,860	268	1,020	7,220	1,760	2,420	323
11	42	1,380	6,050	460	206	1,160	2,020	596	*10,400	3,460	3,230	160
12	44	979	3,950	438	172	1,030	3,230	744	13,300	11,400	3,090	320
13	44	948	2,550	480	164	1,090	3,580	35	12,300	11,800	3,160	370
14	44	2,680	1,580	506	29	1,040	3,230	987	14,500	10,200	2,810	36
15	46	3,090	1,050	46	296	1,040	2,890	252	16,100	6,900	2,040	*176
16	298	3,090	725	438	28	659	1,100	33	12,300	7,620	2,040	209
17	41	2,090	847	460	202	1,000	1,230	618	5,050	9,600	1,740	718
18	307	1,240	1,840	560	*36	794	840	29	3,160	7,800	1,690	793
19	229	906	7,260	383	241	552	1,060	620	2,940	3,800	1,180	2,210
20	148	964	15,800	52	34	751	75	30	3,120	3,300	83	1,230
21	231	744	17,100	474	33	630	2,550	29	3,090	1,200	1,030	906
22	1,370	433	13,300	1,260	288	740	1,860	486	3,650	784	100	873
23	1,740	682	7,980	3,050	362	620	2,810	558	3,300	475	802	1,620
24	2,880	302	4,400	3,010	2,040	666	2,140	46	1,490	484	42	642
25	2,810	444	3,230	1,670	4,400	674	1,310	272	1,450	1,170	284	246
26	1,860	424	5,200	661	6,730	1,430	1,010	471	3,230	1,730	781	40
27	972	332	9,060	842	7,080	*2,290	600	44	3,370	594	318	40
28	358	302	7,620	630	7,080	1,980	844	*116	3,370	878	280	40
29	578	460	5,540	645	-	1,800	364	786	2,880	556	255	40
30	420	235	3,160	645	-------	1,050	942	40	1,620	459	400	40
31	478	-------	2,620	413	-------	1,210	-------	42	-------	2,140	38	-------
Total	15,382	27,287	161,633	27,669	32,537	59,296	48,314	29,486	132,369	97,118	46,977	12,583
Mean	496	910	5,214	893	1,162	1,913	1,610	951	4,412	3,133	1,515	419
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 31,900 Min 21 Mean 2,421 Cfsm - In. -
Water year 1957-58: Max 17,100 Min 28 Mean 1,892 Cfsm - In. -

Peak discharge (base, 13,000 cfs).--Dec. 9 (8 a.m.) 14,500 cfs (14.53 ft); Dec. 20 (4:30 p.m.) 18,100 cfs (15.91 ft); June 15 (9 a.m.) 16,600 cfs (15.30 ft).

* Discharge measurement made on this day.

1920. Miami & Erie Canal near Defiance, Ohio

Location.--Lat 41°17'30", long 84°16'50", in NW¼ sec.22, T.4 N., R.5 E., on right bank adjacent to Independence Dam, 275 ft downstream from point of diversion from Maumee River and 4½ miles east of Defiance, Defiance County.

Records available.--October 1924 to July 1929, May to December 1935, October 1952 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Published as "near Florida" May to December 1935.

Gage.--Water-stage recorder. Datum of gage is 656.12 ft above mean sea level. Prior to July 23, 1929, water-stage recorder at same site at datum 2.69 ft higher. May to December 1935, staff gage at site 5½ miles downstream at different datum. Oct. 1, 1952, to Mar. 25, 1953, staff gage at present site and datum.

Extremes.--1924-29, 1935, 1952-58: Maximum daily discharge, 301 cfs Dec. 9, 1927; no flow at times.

Remarks.--Records good except those for period of ice effect, which are poor. Flow is diverted from Maumee River into canal at headgates 275 ft upstream and returned to river above station at Waterville.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	92	6.9	3.4	6.9		9.3	5.3	19	89	102	126	71
2	92	6.7	3.8			5.9	18	21	92	99	114	70
3	92	6.7	4.6			4.4	20	19	99	99	106	73
4	92	6.2	4.1	4.0		3.4	21	21	99	99	102	70
5	92	5.9	4.1			2.9	19	22	96	99	102	69
6	92	5.4	3.9			5.4	21	24	92	96	102	72
7	92	5.6	29	(*)		5.1	23	22	92	99	94	69
8	*92	5.6	23			3.6	21	20	89	110	102	73
9	92	3.9	13			3.6	22	19	99	113	106	74
10	92	4.6	9.3			1.4	22	19	129	113	114	74
11	92	5.4	8.4		1.6	.9	26	19	149	129	150	78
12	92	5.4	6.9			.8	24	19	157	166	126	86
13	92	5.6	6.4			1.1	23	18	161	158	122	83
14	92	15	5.9			.7	21	17	169	154	118	76
15	92	13	5.6			.6	21	17	173	150	114	75
16	96	7.8	5.4			.5	19	22	169	146	114	75
17	99	6.9	5.4			.5	19	32	149	*146	110	*78
18	99	7.8	11		(*)	.6	18	31	141	146	110	88
19	102	*4.1	29	2.0		.6	18	30	133	134	102	106
20	102	4.6	31			.6	17	25	133	130	102	110
21	99	4.1	15			.6	21	24	129	118	126	106
22	106	4.1	11			.6	22	26	129	110	106	106
23	121	4.6	7.8			.6	24	26	129	102	98	106
24	137	4.1	6.7		9	.8	20	25	117	94	94	102
25	85	4.6	10			1.5	20	24	117	94	88	91
26	14	4.6	27		11	1.5	23	25	125	94	88	85
27	8.7	4.4	13		14	1.4	22	24	129	94	85	81
28	7.5	4.4	9.6		15	*.9	20	*42	121	91	83	78
29	6.9	3.9	7.5		-	.8	18	96	117	90	80	76
30	6.7	3.2	6.9		-------	.9	19	92	110	90	78	74
31	7.2	-------	6.9		-------	.9	-------	89	-------	114	74	-------
Total	2,477.0	175.1	334.4	76.9	102.2	62.4	607.3	929	3,733	3,579	3,236	2,475
Mean	79.9	5.84	10.8	2.48	3.65	2.01	20.2	30.0	124	115	104	82.5
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957 : Max 137 Min 1.8 Mean 35.1 Cfsm - In. -
Water year 1957-58 : Max 173 Min 0.5 Mean 48.7 Cfsm - In. -

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 2 to Feb. 25.

1925. Maumee River near Defiance, Ohio

Location.--Lat 41°17'30", long 84°16'50", in NW¼ sec.22, T.4 N., R.5 E., on left bank 40 ft upstream from Independence Dam, 275 ft downstream from point of diversion to Miami & Erie Canal, 4 miles downstream from Auglaize River, and 4½ miles east of Defiance, Defiance County.

Drainage area.--5,530 sq mi.

Records available.--October 1924 to December 1935, March 1939 to September 1958.

Gage.--Water-stage recorder above concrete dam. Datum of gage is 659.12 ft above mean sea level. Prior to Nov. 13, 1924, staff gage at same site and datum.

Average discharge.--30 years, 4,039 cfs (not including flow in Miami & Erie Canal).

Extremes.--Maximum discharge during year, 36,100 cfs Dec. 21 (gage height, 7.15 ft); minimum, 108 cfs Oct. 14 (gage height, 1.51 ft).
1924-35, 1939-58: Maximum discharge, 87,100 cfs Feb. 16, 1950 (gage height, 13.70 ft); minimum, 2 cfs Sept. 3, 1925 (gage height, 1.14 ft).

Remarks.--Records good. Flow affected by regulation of Auglaize River at hydroelectric plant of Toledo Edison Co., 3 miles south of Defiance. Water diverted into Miami & Erie Canal, 275 ft upstream, bypasses station. These records do not include flow in canal; record of diversion published as Miami & Erie Canal near Defiance (see preceding page).

Revisions (water years).--WSP 974: 1926-27, 1930. WSP 1387: 1925-28, 1946.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.5	115	3.0	4,400
1.6	235	4.0	9,600
1.8	565	6.0	25,100
2.1	1,260	8.0	43,200
2.5	2,440		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	295	1,690	1,440	9,600	1,260	18,400	2,060	1,710	195	1,720	7,520	478
2	195	1,580	1,550	7,520	1,470	14,800	1,840	1,620	342	1,520	6,470	425
3	181	1,260	1,390	5,100	1,030	12,300	1,900	1,600	1,230	1,260	5,460	626
4	181	1,050	1,150	2,870	885	10,200	2,870	1,770	890	1,150	5,060	374
5	168	1,030	1,130	2,440	1,000	9,300	1,640	4,030	708	1,470	4,970	358
6	168	816	1,200	2,440	1,080	8,100	2,720	7,240	326	1,130	3,700	495
7	181	668	4,150	2,300	862	8,700	7,240	7,240	346	1,840	2,950	310
8	*157	989	18,600	*2,040	908	7,800	7,520	5,650	222	3,100	4,150	579
9	147	2,200	24,200	1,980	548	7,520	5,880	4,400	1,830	3,780	5,240	658
10	136	2,470	20,800	1,800	565	5,510	3,500	3,420	7,180	2,870	3,980	592
11	136	2,720	13,000	1,580	668	4,110	5,010	2,400	15,200	4,440	8,700	1,150
12	126	2,370	8,700	1,890	*626	3,700	6,980	2,170	21,200	19,200	9,600	1,860
13	136	1,800	5,880	1,580	606	3,260	6,980	1,200	20,400	22,400	9,900	1,280
14	126	4,790	4,530	1,740	460	2,800	6,370	1,920	22,400	17,200	8,400	729
15	126	7,240	3,300	1,150	688	3,060	5,880	1,150	25,100	16,800	6,980	793
16	286	9,600	2,690	1,360	478	2,340	3,540	668	22,000	18,400	7,240	688
17	325	8,100	2,300	1,440	565	2,580	3,300	1,090	13,400	18,000	6,720	*1,140
18	473	6,080	3,210	1,580	460	2,200	2,510	708	9,300	*16,800	6,520	2,720
19	708	*5,100	15,000	1,230	606	1,860	2,200	1,210	8,100	12,000	4,580	6,470
20	548	5,010	30,500	839	460	1,890	1,390	729	6,980	9,900	2,470	5,880
21	530	4,070	35,100	1,050	425	1,920	4,150	647	6,170	7,520	6,520	5,460
22	1,260	3,100	30,500	1,860	668	1,860	3,780	1,060	6,520	5,280	3,940	5,190
23	2,510	2,650	22,800	4,360	690	1,830	5,560	1,060	5,930	3,660	3,660	5,650
24	5,100	2,270	16,800	5,370	3,620	1,720	5,190	460	3,820	2,370	2,440	4,240
25	9,300	1,580	13,700	3,620	8,700	1,770	3,740	582	3,660	2,370	1,830	2,400
26	8,700	1,690	17,200	2,270	12,600	2,360	3,140	792	6,120	2,750	2,140	1,580
27	6,120	1,360	22,800	2,200	14,800	3,900	2,270	442	6,980	2,800	1,690	1,200
28	4,030	1,260	20,400	2,040	15,600	*3,820	2,100	*425	5,840	2,510	1,390	977
29	3,700	1,280	14,800	2,010	-	3,620	1,490	891	4,750	1,860	1,100	793
30	2,690	1,080	10,600	1,890	-------	2,720	1,860	280	2,910	1,890	908	668
31	2,010	-------	9,000	1,600	-------	2,690	-------	195	-------	4,160	668	-------
Total	50,749	86,903	378,420	80,749	72,328	158,640	114,610	58,759	230,049	212,150	146,896	55,763
Mean	1,637	2,897	12,210	2,605	2,583	5,117	3,820	1,895	7,668	6,844	4,739	1,859
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 53,200 Min 108 Mean 5,333 Cfsm - In. -
Water year 1957-58: Max 35,100 Min 126 Mean 4,510 Cfsm - In. -

Peak discharge (base, 25,000 cfs).--Dec. 9 (10 a.m.) 25,100 cfs (5.98 ft); Dec. 21 (4:30 p.m.) 36,100 cfs (7.15 ft); June 15 (11:30 a.m.) 26,000 cfs (6.08 ft).

* Discharge measurement made on this day.

1935. Maumee River at Waterville, Ohio

Location.--Lat 41°30'00", long 83°42'46", on downstream side of second pier from left end of bridge on State Highway 64 at Waterville, Lucas County, 3 miles downstream from Tontogany Creek.

Drainage area.--6,314 sq mi.

Records available.--November 1898 to December 1901, August 1921 to December 1935, March 1939 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 596.33 ft above mean sea level, adjustment of 1912. Nov. 19, 1898, to Dec. 31, 1901, wire-weight gage, Aug. 26, 1921, to July 31, 1930, chain gage, Aug. 1, 1930, to Dec. 31, 1935, water-stage recorder, and Mar. 14, 1939, to Mar. 12, 1940, chain gage, all at same site and datum.

Average discharge.--33 years (1921-35, 1939-58), 4,761 cfs (includes flow in Miami & Erie Canal at Waterville 1922-29; canal was abandoned in 1929 and was filled in prior to March 1939).

Extremes.--Maximum discharge during year, 41,100 cfs Dec. 21 (gage height, 9.90 ft); minimum, 190 cfs Oct. 4 (gage height, 1.70 ft).
1921-35, 1939-58: Maximum discharge, 94,000 cfs Feb. 16, 1950 (gage height, 14.52 ft); practically no flow at times prior to June 30, 1929, when entire river flow was being diverted by canal; minimum since canal was abandoned, 32 cfs Sept. 29, 1941.

Remarks.--Records good except those for periods of ice effect, which are fair. Low flow slightly regulated by powerplants above station. Records include flow of Miami & Erie Canal near Defiance (see p. 239), which returns to river above this station. Small diversion above gage into Portage River basin (see Portage River at Woodville). Records of suspended sediment loads and water temperatures for the water year 1958 are given in WSP 1571.

Revisions (water years).--WSP 759: Drainage area. WSP 894: 1930(M). WSP 1084: 1946. WSP 1387: 1900(M), 1922-23, 1933.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.7	221	4.0	5,550
2.0	516	6.0	13,900
2.5	1,270	10.0	41,900
3.0	2,420		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	541	2,120	1,110	10,200	1,630	19,900	2,600	1,950	372	2,790	12,900	567
2	352	2,000	1,460	9,150	1,670	16,800	2,180	1,540	333	1,900	9,550	529
3	*246	1,590	1,350	7,010	1,420	*13,900	1,800	2,100	599	1,720	7,960	541
4	246	1,400	1,540	4,000	962	11,200	2,760	1,590	1,420	1,440	5,910	766
5	254	1,180	1,130	3,100	946	10,200	2,680	3,320	1,130	1,420	5,730	470
6	270	1,110	1,310	2,900	1,040	9,950	2,230	6,090	739	1,670	5,550	618
7	287	885	4,110	2,800	962	10,200	6,150	8,550	425	1,420	5,380	670
8	287	1,220	19,900	2,700	753	9,350	8,550	6,820	493	2,760	5,730	402
9	278	2,620	29,000	*2,600	767	8,350	7,390	5,550	494	3,900	5,910	657
10	246	3,020	24,800	2,300	619	7,010	4,700	3,930	5,860	4,120	5,550	725
11	229	3,110	16,200	2,000	650	4,860	5,550	3,140	16,200	5,030	10,400	670
12	237	2,820	10,800	1,900	750	4,370	8,550	2,230	21,300	21,800	12,400	1,640
13	246	2,450	7,580	2,120	700	3,710	8,550	2,060	22,700	29,700	12,200	1,760
14	254	4,330	5,380	1,810	650	3,650	7,770	1,250	24,100	22,700	10,400	1,310
15	246	*9,950	3,990	1,600	550	3,410	*6,820	1,800	28,300	25,500	*8,350	*870
16	278	10,800	3,320	1,400	700	3,020	5,030	962	26,200	25,500	8,150	915
17	618	9,750	2,420	1,600	550	2,480	3,870	670	18,600	21,300	7,770	915
18	470	7,580	2,820	1,800	600	2,560	3,410	1,290	11,400	20,600	7,010	1,830
19	605	6,270	13,300	1,500	500	2,310	2,840	780	9,350	14,400	5,910	5,690
20	795	5,910	33,200	1,300	650	2,020	2,480	1,330	8,750	11,200	3,870	7,200
21	643	5,030	40,300	962	500	2,260	3,410	684	7,010	9,550	7,040	6,270
22	643	4,210	35,500	1,620	480	2,020	5,030	630	7,390	6,270	7,010	5,730
23	2,450	3,230	26,200	3,110	800	2,020	5,730	1,030	7,010	5,200	4,180	6,090
24	7,390	2,730	19,200	5,200	4,500	1,810	6,640	1,050	*5,730	3,230	4,180	5,730
25	12,400	1,900	15,000	4,860	9,000	1,980	4,530	630	4,180	2,500	2,730	3,260
26	11,000	1,740	18,600	3,260	12,200	2,000	3,650	580	7,390	2,640	2,150	2,120
27	8,550	1,630	24,800	2,230	16,200	3,740	3,230	913	8,750	3,590	2,370	1,420
28	5,550	1,400	22,700	2,260	17,400	4,370	2,390	505	7,390	2,620	1,740	1,070
29	4,530	1,360	16,800	2,080	-	4,150	2,500	541	6,090	2,500	1,400	930
30	3,710	1,480	12,600	2,050	-------	3,470	1,460	974	4,210	2,620	1,180	825
31	2,480	-------	9,550	2,120	-------	2,760	-------	413	-------	4,550	1,110	-------
Total	66,331	104,825	425,970	93,542	78,149	179,830	134,480	64,902	263,915	266,140	191,720	62,190
Mean	2,140	3,494	13,740	3,017	2,791	5,801	4,483	2,094	8,797	8,585	6,185	2,073
Cfsm	0.339	0.553	2.18	0.478	0.442	0.919	0.710	0.332	1.39	1.36	0.980	0.328
In.	0.39	0.62	2.51	0.55	0.46	1.06	0.79	0.38	1.55	1.57	1.13	0.37

Calendar year 1957: Max 62,400 Min 136 Mean 6,085 Cfsm 0.964 In. 13.07
Water year 1957-58: Max 40,300 Min 229 Mean 5,293 Cfsm 0.838 In. 11.38

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 4-12, 15-20, Feb. 11-25.

1955. Portage River at Woodville, Ohio

Location.--Lat 41°26'55", long 83°21'41", in sec.28, T.6 N., R.13 E., on left bank at upstream side of bridge on U. S. Highway 20 in Woodville, Sandusky County.
Drainage area.--433 sq mi.
Records available.--July 1928 to December 1935, October 1939 to September 1958.
Gage.--Water-stage recorder. Datum of gage is 615.14 ft above mean sea level, adjustment of 1912. Prior to Mar. 24, 1933, chain gage, Apr. 7 to Oct. 8, 1933, staff gage, Oct. 9, 1933, to Dec. 31, 1935, water-stage recorder, and Oct. 17 to Nov. 29, 1939, wire-weight gage, all at same site and datum.
Average discharge.--26 years, 307 cfs (adjusted for diversion).
Extremes.--Maximum discharge during year, 4,930 cfs Dec. 9, Feb. 25, July 13; maximum gage height, 9.85 ft July 13; minimum discharge, 5.2 cfs Oct. 10 (gage height, 1.99 ft). 1928-35, 1939-58: Maximum discharge, 11,500 cfs Feb. 15, 1950 (gage height, 14.51 ft); minimum, 0.3 cfs Aug. 28, 1931; minimum gage height, 1.60 ft July 25, 26, 1934.
Flood in March 1913 reached a stage of 17 ft, from information by local residents (discharge, 17,000 cfs, from rating curve extended above 11,500 cfs).
Remarks.--Records good except those for periods of ice effect or no gage-height record, and those below 10 cfs, which are fair. Flow supplemented by water diverted from Maumee River basin for municipal supply of Bowling Green 16 miles upstream. Diversion began Sept. 1, 1951.
Revisions (water years).--WSP 894: 1929-30. WSP 1207: 1933. WSP 1387: 1931, 1933.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-24)

1.8	2.9	3.0	159
1.9	5.8	3.5	279
2.0	11	4.0	435
2.1	18	5.0	920
2.3	38	8.0	3,070
2.6	80	10.0	5,170

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.2	68	187	302	b30	1,460	120	222	20	82	2,740	29
2	8.2	64	126	233	b90	980	103	177	37	59	2,050	23
3	7.7	57	97	b200	b80	775	92	159	110	48	950	22
4	8.2	52	68	b160	76	675	87	187	77	43	424	22
5	7.7	47	70	b130	b75	583	83	612	50	54	239	24
6	7.7	41	83	b120	64	750	99	443	34	148	152	26
7	8.7	41	837	b120	61	1,220	219	272	26	276	139	36
8	7.2	47	3,830	b120	b50	800	451	198	24	200	242	37
9	*6.3	506	3,930	112	b40	517	319	161	101	141	215	26
10	5.5	530	1,560	87	b35	361	239	139	1,160	94	129	24
11	6.3	244	*700	74	26	254	1,140	106	1,070	1,430	697	21
12	8.2	155	352	74	26	224	1,630	87	535	4,470	1,130	19
13	8.7	120	300	55	25	224	1,040	72	319	4,690	920	19
14	8.7	177	254	54	b25	244	650	64	1,020	3,250	500	17
15	8.2	1,630	178	*62	b25	219	447	57	888	2,900	405	16
16	8.7	900	164	90	b25	184	*330	55	348	2,420	817	16
17	13	413	217	90	b25	161	262	54	200	1,840	405	25
18	23	259	311	64	b25	135	222	51	135	920	229	42
19	27	232	2,040	54	b25	122	200	48	a120	504	141	52
20	22	284	2,980	43	b25	112	189	54	a180	316	108	47
21	16	224	2,740	46	b25	122	259	48	a240	212	*161	35
22	*13	157	1,350	251	b30	118	342	43	a180	155	345	31
23	21	116	675	698	b50	108	336	42	a130	122	198	27
24	556	97	451	284	b300	98	311	44	97	97	131	24
25	1,490	94	345	187	b2,600	85	249	37	*172	77	20	22
26	762	77	1,650	194	2,120	120	184	32	1,100	65	94	22
27	336	70	2,190	166	1,250	234	155	29	995	54	71	39
28	191	64	1,010	141	*1,490	224	148	25	388	43	57	39
29	122	65	628	141	-	189	177	22	205	39	47	28
30	90	144	395	112	---------	161	259	21	122	113	41	21
31	74	--------	305	b100	--------	139	--------	20	--------	592	35	--------
Total	3,881.2	6,975	30,920	4,564	8,778	11,592	10,342	3,581	10,083	25,454	14,232	831
Mean	125	232	968	147	314	374	345	116	336	821	459	27.7
(†)	1.90	1.54	1.32	1.57	1.70	1.68	1.47	1.72	1.54	1.70	2.15	2.94

Adjusted for diversion for city of Bowling Green

Mean	123	230	967	145	312	372	344	114	334	819	457	24.8
Cfsm	0.284	0.531	2.23	0.335	0.721	0.859	0.794	0.263	0.771	1.89	1.06	0.057
In.	0.33	0.59	2.57	0.39	0.75	0.99	0.89	0.30	0.86	2.18	1.22	0.06

		Observed					Adjusted				
Calendar year 1957:	Max	7,760	Min	5.2	Mean	411	Mean	409	Cfsm	0.945	In.	12.82
Water year 1957-58:	Max	4,690	Min	5.5	Mean	357	Mean	355	Cfsm	0.820	In.	11.13

Peak discharge (base, 3,500 cfs).--Dec. 9 (1:30 a.m.) 4,930 cfs (9.78 ft). Feb. 25 (11:30 a.m.) 4,930 cfs (9.80 ft); July 13 (7:30 a.m.) 4,930 cfs (9.85 ft).

* Discharge measurement made on this day.
† Diversion from Maumee River basin for municipal supply of city of Bowling Green, equivalent in cubic feet per second.
a No gage-height record; discharge estimated on basis of weather records and records for Blanchard River near Findlay.
b Stage-discharge relation affected by ice.

1965. Sandusky River near Upper Sandusky, Ohio

Location.--Lat 40°51'02", long 83°15'23", in sec.31, T.2 S., R.14 E., on left bank at downstream side of highway bridge, three-quarters of a mile upstream from Rock Run and 2 miles northeast of Upper Sandusky, Wyandot County.

Drainage area.--299 sq mi.

Records available.--October 1921 to December 1935, January 1938 to September 1958. Gage-height records (fragmentary) collected at site 3 miles upstream since 1912 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 792.8 ft above mean sea level, adjustment of 1912. Prior to Sept. 14, 1924, chain gage at same site and datum.

Average discharge.--34 years, 240 cfs.

Extremes.--Maximum discharge during year, 2,680 cfs Aug. 8 (gage height, 6.19 ft); minimum, 10 cfs Oct. 15 (gage height, 1.08 ft).
1921-35, 1938-58: Maximum discharge, 8,900 cfs Dec. 15, 1927 (gage height, 10.5 ft); minimum, 0.6 cfs Sept. 13, 14, 1955; minimum gage height, 0.67 ft Sept. 6, 7, 1934.
Flood in June 1937 reached a stage of 14.3 ft, from high-water marks in gage well.

Remarks.--Records good except those for periods of ice effect, which are poor.

Revisions (water years).--WSP 874: 1927-30, 1933. WSP 1387: 1922(M), 1923-29, 1944.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 18-21, 23, Oct. 29 to Nov. 8, May 31 to June 3)

1.0	8.5	2.1	220
1.1	15	2.5	360
1.2	24	3.0	595
1.5	72	6.0	2,540
1.8	136		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43	34	326	242	b110	930	162	246	43	87	2,260	38
2	35	31	217	199	108	505	131	170	44	67	1,600	40
3	26	29	159	b160	91	372	117	149	43	52	585	35
4	22	26	131	b140	b90	315	104	659	40	48	372	44
5	20	24	108	b130	b90	255	97	1,840	38	41	233	48
6	20	26	102	b120	87	337	199	810	35	48	176	58
7	20	24	683	b120	76	555	520	450	33	92	652	54
8	17	*46	2,260	b110	63	380	535	341	35	176	2,400	44
9	17	257	1,420	b110	b50	268	345	259	58	315	1,770	30
10	17	360	565	b100	b40	205	259	208	197	170	755	24
11	16	187	368	b95	b35	157	775	176	400	636	1,140	23
12	16	124	b230	b85	b35	*134	990	139	293	1,050	960	21
13	15	102	b190	b75	b35	126	620	112	259	495	475	18
14	13	183	b170	b90	b35	129	414	93	560	286	286	19
15	12	667	154	226	b50	129	297	87	380	*700	211	19
16	19	500	144	249	b30	129	226	*89	199	870	255	*24
17	21	279	134	b140	b30	131	182	78	129	530	300	42
18	34	202	522	b110	b30	126	152	72	106	286	199	85
19	29	208	1,910	b95	b30	124	131	65	97	179	139	106
20	26	564	*1,600	b85	b30	124	119	59	114	126	106	83
21	27	352	1,560	136	b35	119	278	49	184	95	87	63
22	20	214	728	621	b40	117	645	63	149	80	80	108
23	34	159	436	630	b120	110	445	83	106	78	70	144
24	83	136	345	279	b1,000	102	356	119	82	78	68	87
25	199	119	337	202	1,490	119	236	97	138	65	85	59
26	165	99	1,260	480	672	252	165	74	700	58	89	49
27	99	87	1,910	*510	465	333	134	59	700	61	82	43
28	68	87	782	315	960	252	131	52	300	48	61	40
29	52	292	470	196	-	217	193	51	170	46	51	34
30	441	560	330	149	-------	226	333	46	114	62	46	35
31	38	-------	262	131	-------	199	-------	40	-------	1,150	41	-------
Total	1,264	5,978	19,813	6,330	5,907	7,475	9,291	6,835	5,746	8,075	15,634	1,517
Mean	40.8	199	639	204	211	241	310	220	192	260	504	50.6
Cfsm	0.136	0.666	2.14	0.682	0.706	0.806	1.04	0.736	0.642	0.870	1.69	0.169
In.	0.16	0.74	2.47	0.79	0.74	0.93	1.16	0.85	0.72	1.00	1.95	0.19

Calendar year 1957: Max 5,720 Min 5.7 Mean 335 Cfsm 1.12 In. 15.22
Water year 1957-58: Max 2,400 Min 12 Mean 257 Cfsm 0.860 In. 11.70

Peak discharge (base, 2,500 cfs).--Aug. 8 (10 p.m.) 2,680 cfs (6.19 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1970. Sandusky River near Mexico, Ohio

Location.--Lat 41°02'39", long 83°11'42", in sec.13, T.1 N., R.14 E., on right bank at downstream side of highway bridge, 3 miles upstream from Honey Creek and 4½ miles north of Mexico, Seneca County.

Drainage area.--776 sq mi.

Records available.--November 1898 to November 1900 (gage heights and discharge measurements only), March 1923 to December 1935, July 1938 to September 1958. Discharge records for November 1898 to November 1900 published in 22nd Annual Report, Part 4, have been found unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 733.1 ft above mean sea level, adjustment of 1912. Prior to Aug. 15, 1929, chain gage at same site and datum.

Average discharge.--32 years, 560 cfs.

Extremes.--Maximum discharge during year, 5,130 cfs July 12 (gage height, 11.70 ft); minimum, 27 cfs Oct. 16 (gage height, 1.88 ft).

1923-35, 1938-58: Maximum discharge, 15,200 cfs Mar. 22, 1927 (gage height, 19.9 ft, from graph based on gage readings); minimum, 1.8 cfs Oct. 31, 1942 (during repairs to small dam above station).

Flood in June 1937 reached a stage of 22.5 ft, from information by local residents (discharge, 19,000 cfs, from rating curve extended above 13,000 cfs).

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 714: 1929-30. WSP 874: 1927(M). WSP 1387: 1925, 1928-29, 1930(M), 1931. See also Records available.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 4-22)

1.8	29	4.0	526
2.0	54	5.0	895
2.5	142	8.0	2,450
3.0	252	12.0	5,370

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	89	94	940	542	b270	2,570	381	480	79	270	3,730	80
2	75	82	574	480	b260	1,820	318	354	85	194	3,170	72
3	62	77	394	341	b240	1,100	274	302	89	152	1,720	69
4	50	71	310	b300	b220	830	240	821	85	122	895	75
5	44	68	257	b270	b210	660	223	2,570	77	105	558	292
6	40	60	226	b250	201	770	287	2,390	71	105	368	354
7	40	59	948	*b260	179	1,260	1,160	1,160	69	428	1,090	526
8	40	71	3,660	b250	b140	1,120	1,770	810	66	1,050	3,520	325
9	39	232	3,800	b240	b120	750	1,210	608	85	750	3,730	194
10	34	574	2,390	b230	b100	542	695	465	232	574	2,210	142
11	33	591	1,080	b210	b85	408	1,580	381	784	2,200	1,990	103
12	31	354	542	b190	b80	*341	2,450	325	1,080	4,730	3,030	82
13	29	254	b440	b170	*b75	307	2,040	267	918	3,590	1,880	75
14	29	257	b390	201	b75	302	1,210	223	1,310	1,660	962	63
15	29	807	b350	381	b75	300	810	190	1,360	1,210	608	*59
16	29	1,160	323	458	b70	290	591	*177	810	1,880	574	72
17	35	790	284	408	b70	284	465	175	436	1,610	625	98
18	44	495	601	b280	b70	277	381	162	307	918	495	247
19	52	394	*2,690	b210	b70	267	320	148	252	558	354	320
20	57	504	3,800	b160	b70	262	280	126	228	381	272	394
21	48	830	3,940	246	b75	262	490	116	354	*292	214	270
22	*49	542	2,960	1,450	b90	257	940	112	465	230	183	205
23	63	368	1,560	1,770	b250	250	985	162	328	203	160	250
24	156	292	918	1,410	b2,200	238	750	194	233	183	152	282
25	290	254	695	750	b3,400	240	526	183	190	172	160	192
26	381	226	1,950	608	2,960	381	381	152	1,620	172	158	144
27	307	194	3,310	1,080	1,660	642	294	122	2,270	140	154	118
28	205	177	2,960	940	2,100	660	262	109	1,560	128	146	101
29	148	356	1,560	625	-	526	274	101	695	122	120	85
30	116	918	895	422	-------	465	381	87	394	126	99	85
31	101	-------	642	b300	-------	458	-------	80	-------	1,320	87	-------
Total	2,745	11,151	45,389	15,432	15,415	18,839	21,968	13,550	16,532	25,575	33,414	5,374
Mean	88.5	372	1,464	498	551	608	732	437	551	825	1,078	179
Cfsm	0.114	0.479	1.89	0.642	0.710	0.784	0.943	0.563	0.710	1.06	1.39	0.231
In.	0.13	0.53	2.18	0.74	0.74	0.90	1.05	0.65	0.79	1.22	1.60	0.26

Calendar year 1957: Max 11,200 Min 18 Mean 761 Cfsm 0.981 In. 13.32
Water year 1957-58: Max 4,730 Min 29 Mean 617 Cfsm 0.795 In. 10.79

Peak discharge (base, 4,200 cfs).--July 12 (2 p.m.) 5,130 cfs (11.70 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

1980. Sandusky River near Fremont, Ohio

Location.--Lat 41°18'28", long 83°09'32", in sec.17, T.4 N., R.15 E., on left bank at downstream side of highway bridge, 2.3 miles upstream from Ballville power dam, 2½ miles downstream from Wolf Creek, and 3½ miles southwest of Fremont, Sandusky County.

Drainage area.--1,248 sq mi.

Records available.--November 1898 to March 1901 (gage heights and discharge measurements only, published as "at Fremont"), October 1923 to December 1935, July 1938 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage 626.3 ft above mean sea level, adjustment of 1912. Nov. 18, 1898, to Mar. 10, 1901, staff gage at site 4 miles downstream at different datum. Nov. 8, 1923, to Sept. 5, 1930, chain gage at same site and datum.

Average discharge.--32 years (1923-35, 1938-58), 915 cfs.

Extremes.--Maximum discharge during year, 7,980 cfs Dec. 8; maximum gage height, 10.15 ft Feb. 24 (ice jam); minimum discharge, 61 cfs Oct. 13, 14 (gage height, 1.05 ft).
1923-35, 1938-58: Maximum discharge, 27,300 cfs Jan. 15, 1930 (gage height, 11.1 ft); maximum gage height, 12.12 ft Dec. 30, 1951 (ice jam); minimum discharge, 5.0 cfs Sept. 27, 28, 1941 (gage height, 0.80 ft).

Remarks.--Records good except those for periods of ice effect, which are poor.

Revisions (water years).--WSP 744: 1931-32. WSP 759: Drainage area. WSP 874: 1938. WSP 1144: 1924-30. WSP 1387: 1925, 1928-29, 1931-35.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.0	34	2.0	660
1.1	64	2.5	1,310
1.4	196	3.0	2,320
1.7	390	5.0	7,420

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	156	161	1,340	890	430	3,750	570	704	124	406	5,940	151
2	*128	142	955	770	410	2,890	470	660	146	298	5,150	146
3	115	133	640	600	380	1,820	406	560	146	224	3,380	146
4	102	124	479	500	360	1,300	*354	1,020	137	181	1,750	151
5	94	115	398	450	340	1,060	325	3,880	128	156	1,080	181
6	87	115	354	410	310	1,050	354	3,880	120	166	726	811
7	83	106	1,630	410	280	1,750	1,070	2,230	106	193	974	770
8	79	128	7,420	400	230	1,690	2,680	1,340	115	821	4,120	650
9	79	366	5,940	390	190	1,190	2,060	1,030	146	1,120	5,280	383
10	79	570	*4,250	370	160	854	1,250	806	254	942	4,250	260
11	75	806	2,080	340	130	650	2,340	630	788	1,530	2,890	186
12	72	580	1,150	310	130	533	3,880	524	1,240	6,070	3,750	142
13	68	398	700	280	120	470	3,500	430	1,240	5,540	2,890	120
14	61	456	650	320	120	454	2,230	354	1,950	3,130	1,650	102
15	68	1,090	650	*400	120	438	1,410	305	2,010	1,970	981	94
16	64	1,460	542	750	110	422	1,020	272	1,430	2,190	942	102
17	75	1,220	488	650	*110	398	782	253	806	2,430	1,030	124
18	79	794	825	500	110	383	620	253	*506	1,540	955	196
19	79	630	3,880	350	110	368	515	236	390	955	693	390
20	87	630	5,940	270	120	361	454	202	332	640	470	506
21	94	916	6,200	400	130	354	568	176	312	470	*368	454
22	91	842	4,500	2,000	160	354	1,200	176	497	354	298	325
23	102	560	2,700	2,900	400	347	1,540	181	479	298	247	292
24	311	430	1,560	2,300	3,500	325	1,310	230	347	260	230	368
25	*640	361	1,160	1,300	5,500	332	968	247	272	230	230	332
26	542	318	2,860	1,000	5,000	470	682	236	784	219	219	230
27	497	286	4,760	1,700	3,250	830	524	196	2,720	207	219	176
28	361	253	4,250	1,500	3,010	1,010	446	171	2,210	171	213	156
29	260	415	2,590	1,100	-	818	488	146	1,220	166	191	128
30	202	1,060	1,500	650	-------	682	560	137	630	213	181	111
31	181	-------	1,090	480	-------	630	-------	124	-------	646	166	-------
Total	5,011	15,465	73,481	24,690	25,220	27,983	34,576	21,589	21,585	33,736	51,463	8,183
Mean	162	516	2,370	796	901	903	1,153	696	720	1,088	1,660	273
Cfsm	0.130	0.413	1.90	0.638	0.722	0.724	0.924	0.558	0.577	0.872	1.33	0.219
In.	0.15	0.46	2.19	0.74	0.75	0.83	1.03	0.64	0.64	1.01	1.53	0.24

Calendar year 1957: Max 15,800 Min 26 Mean 1,197 Cfsm 0.959 In. 13.01
Water year 1957-58: Max 7,420 Min 61 Mean 940 Cfsm 0.753 In. 10.21

Peak discharge (base, 7,000 cfs).--Dec. 8 (2 p.m.) 7,980 cfs (5.21 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 13-15, Jan. 3 to Feb. 26.

1990. Huron River at Milan, Ohio

Location.--Lat 41°18'00", long 82°36'30", in SE¼ sec.4, T.5 N., R.22 W., on right bank 500 ft downstream from bridge on U. S. Highway 250, a quarter of a mile northwest of Milan, Erie County, and 2 miles downstream from confluence of East and West Branches.

Drainage area.--363 sq mi.

Records available.--March 1950 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 573.43 ft above mean sea level, adjustment of 1912. Prior to July 29, 1953, wire-weight gage at site of former highway bridge 45 ft upstream at same datum.

Average discharge.--8 years, 277 cfs.

Extremes.--Maximum discharge during year, 4,390 cfs Aug. 1 (gage height, 14.43 ft); minimum, 13 cfs Oct. 7, 12 (gage height, 5.51 ft).
1950-58: Maximum discharge, 18,200 cfs May 12, 1956 (gage height, 21.10 ft); minimum, 2.2 cfs Sept. 10, 15, 19, 20, 21, 1955 (gage height, 5.26 ft).

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 7				Dec. 8 to Sept. 30			
5.5	12	7.0	267	5.5	16	8.0	550
5.6	19	8.0	540	5.7	34	11.0	2,020
5.7	28	10.0	1,420	6.0	74	14.0	4,030
6.0	68	11.0	1,960	7.0	275		
6.5	158						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	40	201	190	90	772	164	178	35	36	3,870	36
2	18	35	134	160	80	382	138	132	43	29	1,300	32
3	17	33	103	120	70	310	122	134	35	25	370	31
4	16	32	91	90	*65	268	109	566	33	22	227	*38
5	15	32	66	70	60	238	100	1,120	32	21	152	316
6	14	31	92	65	60	333	175	382	29	19	118	193
7	14	29	1,500	60	60	450	1,030	280	26	109	576	102
8	15	50	2,310	60	55	298	771	*225	36	253	3,040	82
9	15	141	635	55	55	214	358	197	50	178	1,920	55
10	14	178	358	55	*50	172	264	193	86	*93	465	42
11	14	105	235	50	45	146	1,940	150	100	601	275	37
12	14	73	150	50	35	140	1,590	120	70	2,020	200	33
13	15	79	140	45	25	142	795	95	71	715	150	30
14	15	81	140	65	25	142	435	79	224	277	117	27
15	15	189	120	95	25	136	298	71	170	257	224	27
16	16	191	130	150	25	134	233	65	93	286	1,040	34
17	25	119	148	110	25	*126	189	59	60	238	715	48
18	24	96	849	80	25	118	170	54	71	142	253	128
19	25	119	1,590	70	25	117	138	48	64	100	154	134
20	24	249	1,340	65	25	113	126	43	58	74	111	86
21	*21	178	1,140	100	30	128	414	38	48	56	93	81
22	20	119	480	550	35	132	480	44	42	50	77	158
23	49	92	*310	400	110	118	568	55	36	50	65	126
24	117	84	244	*160	900	113	310	60	32	47	62	82
25	170	74	218	220	1,340	154	204	48	34	42	85	60
26	123	64	1,270	435	532	435	150	42	200	37	66	54
27	84	30	1,040	358	485	370	128	36	251	32	58	47
28	60	56	420	253	1,540	277	130	40	115	31	51	46
29	49	275	310	170	---	242	210	35	68	30	44	41
30	42	378	236	130	---	253	257	32	48	44	40	37
31	46	---	206	110	---	202	---	30	---	487	40	---
Total	1,125	3,252	16,188	4,591	5,877	7,175	11,996	4,652	2,260	6,401	15,938	2,243
Mean	36.3	108	522	148	210	231	400	150	75.3	206	514	74.8
Cfsm	0.100	0.298	1.44	0.408	0.579	0.636	1.10	0.413	0.207	0.567	1.42	0.206
In.	0.12	0.33	1.66	0.47	0.60	0.73	1.23	0.48	0.23	0.65	1.64	0.23

Calendar year 1957: Max 6,670 Min 9.9 Mean 346 Cfsm 0.953 In. 12.96
Water year 1957-58: Max 3,870 Min 14 Mean 224 Cfsm 0.617 In. 8.37

Peak discharge (base, 3,000 cfs).--Dec. 8 (12:30 a.m.) 3,710 cfs (13.64 ft); Aug. 1 (10 a.m.) 4,390 cfs (14.43 ft); Aug. 8 (3 a.m.) 3,320 cfs (13.12 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 12-16, Jan. 1-25, Jan. 29 to Feb. 24.

1995. Vermilion River near Vermilion, Ohio

Location.--Lat 41°22'55", long 82°19'00", in T.6 N., R.19 W., on right bank 40 ft downstream from bridge on North Ridge Road in Lorain County, 3½ miles southeast of Vermilion, Erie County, and 4½ miles upstream from mouth.

Drainage area.--260 sq mi.

Records available.--March 1950 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 592.58 ft above mean sea level (Lorain County bench mark). Prior to Aug. 3, 1953, wire-weight gage at site 40 ft upstream at same datum.

Average discharge.--8 years, 230 cfs.

Extremes.--Maximum discharge during year, 2,170 cfs Aug. 1 (gage height, 7.0 ft); maximum gage height, 10.99 ft Feb. 25 (ice jam); minimum discharge, 2.1 cfs Oct. 13-15; minimum gage height, 2.80 ft Oct. 12-15.
1950-58: Maximum discharge, 9,820 cfs Jan. 26, 1952, May 12, 1956; maximum gage height, 11.5 ft Jan. 26, 1952, from graph based on gage readings; no flow at times in most years.

Remarks.--Records good except those for period of ice effect, which are poor.

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 24				Feb. 25 to Sept. 30			
2.75	1.7	3.7	77	2.9	4.4	4.5	253
2.8	2.7	4.0	126	3.0	8.0	5.0	400
2.9	5.5	4.5	246	3.2	20	5.5	650
3.1	14	5.0	400	3.4	39	6.0	1,010
3.4	39			3.7	83	7.0	2,170
Note.--Same as following table above 5.0 ft.				4.0	142		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.2	17	142	128	85	1,020	157	254	18	20	1,720	16
2	7.0	16	92	105	75	457	121	157	25	14	1,350	13
3	6.3	15	66	80	60	338	96	140	25	11	377	12
4	5.5	14	53	60	55	283	78	259	19	8.6	210	*12
5	4.9	14	48	50	45	235	68	1,130	20	7.2	127	33
6	4.5	14	48	*45	45	242	85	504	18	5.9	96	39
7	4.2	12	629	40	40	323	377	344	15	6.3	257	34
8	3.9	20	1,480	40	40	260	579	*344	15	11	1,260	31
9	*4.2	32	684	40	40	188	325	230	18	*61	1,780	24
10	3.2	44	296	40	35	142	228	212	23	64	528	18
11	2.9	57	172	35	30	*113	1,110	177	23	131	278	14
12	2.5	42	92	30	25	99	1,390	123	20	793	182	11
13	2.1	31	95	30	18	92	791	92	24	471	123	10
14	2.1	42	103	45	*17	90	422	70	26	217	88	8.6
15	2.3	51	84	60	17	88	270	56	80	444	66	7.6
16	2.9	54	92	90	17	90	197	48	70	175	299	9.6
17	3.2	63	121	80	17	90	151	42	38	149	548	18
18	3.9	52	*562	60	17	85	117	36	42	94	267	*56
19	3.7	63	1,320	50	17	81	94	32	48	55	142	65
20	3.7	83	1,010	45	18	78	87	28	32	36	88	65
21	*2.9	105	1,480	60	19	76	162	23	26	27	64	145
22	2.7	78	845	250	25	78	501	23	19	22	55	190
23	17	54	350	430	70	81	382	26	16	19	41	175
24	48	42	232	210	650	81	263	37	16	16	36	96
25	39	34	180	350	900	114	175	42	18	15	35	58
26	37	29	521	550	450	442	117	34	136	14	35	46
27	33	26	1,150	500	330	458	88	26	211	11	44	33
28	30	26	452	300	1,300	294	92	26	96	8.6	34	27
29	25	134	278	180	-	230	215	23	53	9.1	27	23
30	21	164	190	140	-------	266	393	20	32	9.6	22	21
31	19	-------	146	110	-------	206	-------	17	-------	60	20	-------
Total	355.8	1,428	13,013	4,233	4,457	6,720	9,131	4,575	1,222	2,985.3	10,199	1,308.8
Mean	11.5	47.6	420	137	159	217	304	148	40.7	96.3	329	43.6
Cfsm	0.044	0.183	1.62	0.527	0.612	0.835	1.17	0.569	0.157	0.370	1.27	0.168
In.	0.05	0.20	1.87	0.61	0.64	0.96	1.30	0.66	0.18	0.43	1.46	0.19

Calendar year 1957: Max 5,220 Min 1.7 Mean 281 Cfsm 1.08 In. 14.67
Water year 1957-58: Max 1,780 Min 2.1 Mean 163 Cfsm 0.627 In. 8.55

Peak discharge (base, 3,200 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 4 to Feb. 28.

2005. Black River at Elyria, Ohio

Location.--Lat 41°22'50", long 82°06'15", in T.6 N., R.17 W., on left bank in Cascade Park at Elyria, Lorain County, three-quarters of a mile downstream from confluence of East and West Branches.

Drainage area.--392 sq mi.

Records available.--October 1944 to September 1958. Records for May 1903 to July 1906 (published as "near Elyria") published in WSP 97, 129, and 205 have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 621.6 ft above mean sea level (city of Elyria bench mark).

Average discharge.--14 years, 316 cfs.

Extremes.--Maximum discharge during year, 3,450 cfs Aug. 1 (gage height, 8.60 ft); minimum, 4.6 cfs Oct. 20 (gage height, 0.76 ft).
1944-58: Maximum discharge, 14,900 cfs May 13, 1956 (gage height, 18.02 ft); no flow for part of Oct. 10, 1956 (result of temporary storage at dam upstream).

Remarks.--Records good except those for periods of ice effect and those below 20 cfs, which are fair. Some regulation at low flow for industrial use.

Revisions.--See Records available.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.7	5.2	2.5	235
.8	8.9	3.0	353
1.0	20	4.0	675
1.3	50	5.0	1,100
1.6	87	7.0	2,280
2.0	145	8.0	2,980

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	25	140	155	140	1,650	145	510	40	25	2,260	24
2	13	22	128	127	110	715	121	235	54	19	2,980	23
3	13	17	91	95	95	503	100	173	55	*19	787	*21
4	12	19	70	80	85	396	86	284	34	12	235	39
5	9.4	23	57	70	75	304	75	1,270	39	13	142	27
6	8.5	22	55	60	65	299	88	775	29	12	264	383
7	10	20	1,080	55	60	396	259	*1,020	23	19	1,170	161
8	11	43	2,000	55	55	314	605	839	39	29	2,490	98
9	*11	40	1,070	53	55	219	381	396	35	256	2,350	70
10	11	34	425	50	*50	161	260	269	45	150	746	50
11	9.9	28	219	46	45	134	1,260	211	36	228	252	37
12	8.5	29	116	41	35	127	1,940	151	33	1,120	192	29
13	7.0	31	114	38	30	114	1,080	114	44	728	134	23
14	8.7	64	107	*55	25	109	536	90	35	326	111	19
15	8.9	86	91	91	25	108	301	73	33	1,150	84	21
16	10	72	275	98	25	109	207	62	63	393	119	30
17	14	70	*353	95	25	*111	155	53	49	285	721	60
18	12	79	1,250	67	25	108	126	48	66	192	362	55
19	13	112	2,000	55	25	102	102	44	47	104	158	189
20	5.6	159	1,460	45	25	97	100	37	66	64	97	197
21	*7.4	176	2,770	68	25	100	411	32	55	48	69	200
22	9.3	139	1,370	399	25	111	755	42	38	38	57	573
23	66	80	487	553	50	116	425	40	30	34	43	356
24	64	57	290	294	500	115	396	91	30	28	43	161
25	37	47	225	472	1,400	170	235	97	78	26	44	98
26	27	43	460	735	1,200	752	148	66	235	23	194	77
27	20	35	1,200	640	948	715	111	48	198	19	108	52
28	26	41	621	425	2,070	425	121	63	114	23	70	40
29	26	151	331	283	-	276	513	38	62	22	53	37
30	26	168	251	209	-------	206	1,150	28	38	22	38	42
31	26	-------	175	180	-------	173	-------	23	-------	102	32	-------
Total	545.2	1,932	19,261	5,689	7,293	9,235	12,192	7,222	1,743	5,529	16,405	3,182
Mean	17.6	64.4	621	184	260	298	406	233	58.1	178	529	106
Cfsm	0.045	0.164	1.58	0.469	0.663	0.760	1.04	0.594	0.148	0.454	1.35	0.270
In.	0.05	0.18	1.82	0.54	0.69	0.88	1.16	0.68	0.17	0.52	1.56	0.30

Calendar year 1957: Max 8,190 Min 5.6 Mean 423 Cfsm 1.08 In. 14.65
Water year 1957-58: Max 2,980 Min 5.6 Mean 247 Cfsm 0.630 In. 8.55

Peak discharge (base, 3,200 cfs).--Aug. 1 (12 p.m.) 3,450 cfs (8.60 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 4-7, 19, Feb. 1-25.

2015. Rocky River near Berea, Ohio

Location.--Lat 41°24'22", long 81°53'13", in T.6 N., R.15 W., on right bank at downstream side of highway bridge just downstream from confluence of East and West Branches, 3 miles northwest of Berea, Cuyahoga County.

Drainage area.--269 sq mi.

Records available.--October 1923 to September 1935, September 1943 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 649.9 ft above mean sea level, datum of 1929 (Cuyahoga County bench mark). Prior to Aug. 31, 1929, chain gage and Aug. 31, 1929, to Sept. 30, 1935, staff gage, at same site and datum.

Average discharge.--27 years, 254 cfs.

Extremes.--Maximum discharge during year, 6,610 cfs Aug. 8 (gage height, 6.61 ft); minimum, 5.3 cfs Oct. 11, 12, 13; minimum gage height, 1.13 ft July 6.
1923-35, 1943-58: Maximum discharge, 16,600 cfs Jan. 19, 1929 (gage height, 11.0 ft, from graph based on gage readings); maximum gage height, 18.6 ft June 29, 1924 (backwater caused by tornado); minimum discharge, 0.2 cfs Sept. 2, 1932, Aug. 18, 19, 22, 27, 28, 30, 31, 1933.
Maximum stage known, 20.9 ft in March 1913.

Remarks.--Records good except those for periods of ice effect, which are poor. Some regulation at low flow caused by small reservoirs on East Branch.

Revisions (water years).--WSP 1437: 1924, 1925(M), 1926, 1927(M), 1928-29, 1930-35(M), 1945.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 23 to Nov. 14)

1.1	6.1	2.0	218
1.2	13	2.5	475
1.3	22	3.0	850
1.4	37	4.0	2,030
1.6	82	6.0	5,470

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.8	39	146	150	150	981	102	330	38	18	2,680	25
2	*9.4	36	99	124	110	508	88	190	77	15	515	30
3	9.4	28	75	95	95	404	75	164	75	*14	198	*28
4	8.8	28	62	80	80	329	67	540	34	12	114	28
5	8.1	24	56	70	70	271	62	781	29	11	70	131
6	8.1	24	96	60	65	290	82	434	30	9.4	91	132
7	9.4	27	2,290	55	60	334	262	*1,370	28	13	1,550	91
8	9.4	53	1,920	55	55	231	410	511	53	82	4,860	105
9	8.8	80	540	50	50	171	221	334	49	102	763	88
10	8.1	91	304	50	45	133	163	244	81	49	264	52
11	6.8	62	206	45	40	*117	1,280	168	85	765	154	37
12	6.1	39	130	40	35	111	1,070	127	61	742	108	30
13	6.1	31	120	40	30	102	589	96	43	256	360	25
14	8.1	72	110	60	25	96	309	72	37	201	174	22
15	7.4	179	100	90	25	96	206	60	37	2,210	96	22
16	6.8	143	556	110	25	96	154	52	30	1,150	105	41
17	11	82	*575	90	25	94	121	43	22	485	165	63
18	12	60	1,740	70	25	88	99	39	79	172	88	275
19	16	149	1,560	55	25	85	82	37	70	99	58	266
20	17	154	1,000	45	25	82	92	28	98	65	47	137
21	15	96	1,180	100	25	88	*498	22	234	43	39	557
22	16	62	488	470	30	117	353	35	82	33	36	558
23	50	47	290	350	45	124	190	65	41	30	30	218
24	*94	39	231	*240	500	117	143	70	36	28	37	117
25	105	33	231	878	1,800	200	102	41	98	25	327	82
26	60	33	723	850	1,380	678	72	28	370	25	193	67
27	52	31	858	662	1,120	410	65	22	160	20	85	58
28	60	36	393	415	2,100	253	274	29	70	19	54	56
29	82	268	262	295	-	178	1,220	21	36	19	39	54
30	82	244	190	236	-------	143	839	18	24	21	31	45
31	58	-------	160	200	-------	121	-------	18	-------	263	27	-------
Total	859.6	2,290	16,691	6,130	8,060	7,048	9,290	5,989	2,207	6,996.4	13,358	3,440
Mean	27.7	76.3	538	198	288	227	310	193	73.6	226	431	115
Cfsm	0.103	0.284	2.00	0.736	1.07	0.844	1.15	0.717	0.274	0.840	1.60	0.428
In.	0.12	0.32	2.31	0.85	1.11	0.97	1.28	0.83	0.31	0.97	1.84	0.48

Calendar year 1957: Max 4,480 Min 5.0 Mean 307 Cfsm 1.14 In. 15.52
Water year 1957-58: Max 4,860 Min 6.1 Mean 226 Cfsm 0.840 In. 11.39

Peak discharge (base, 4,000 cfs).--Aug. 8 (5 a.m.) 6,610 cfs (6.61 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 12-15, Jan. 3-22, Jan. 31 to Feb. 25.

2020. Cuyahoga River at Hiram Rapids, Ohio

Location.--Lat 41°20'27", long 81°10'01", in T.5 N., R.7 W., on left bank at downstream side of highway bridge at Hiram Rapids, Portage County, 0.6 mile downstream from Black Brook.

Drainage area.--147 sq mi.

Records available.--August 1927 to December 1935, October 1944 to September 1958. Published as "near Hiram" 1927-35.

Gage.--Water-stage recorder. Datum of gage is 1,087.46 ft above mean sea level, unadjusted. Prior to Aug. 26, 1927, staff gage and Aug. 26, 1927, to Dec. 31, 1935, water-stage recorder, at site 2¾ miles downstream at different datum. Oct. 20, 1944, to Oct. 22, 1946, wire-weight gage at present site and datum.

Average discharge.--22 years, 193 cfs (unadjusted).

Extremes.--Maximum discharge during year, 1,320 cfs Mar. 1 (gage height, 4.70 ft); minimum, 16 cfs Oct. 17 (gage height, 1.32 ft).
1927-35, 1944-58: Maximum discharge, 2,760 cfs Mar. 23, 1948 (gage height, 7.00 ft); minimum, 5.1 cfs Sept. 2, 1933.

Remarks.--Records good except those for periods of ice effect or shifting control, which are fair. Flow regulated by East Branch Reservoir (usable capacity, 4,140 acre-ft) since 1939.

Revisions (water years).--WSP 1054: 1945. WSP 1437: 1931.

Rating table, water year 1957-58, except periods of ice effect or shifting control (gage height, in feet, and discharge, in cubic feet per second)

0.8	15	2.0	117
.9	17	2.5	251
1.2	29	3.0	437
1.4	42	5.0	1,500
1.7	70		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	91	108	310	225	g1,290	143	373	42	30	136	189
2	19	86	*112	232	181	g1,290	119	396	47	26	117	140
3	18	70	106	b180	150	g1,120	99	353	50	24	106	119
4	18	50	79	b140	b120	g898	86	338	50	22	85	119
5	17	38	59	b120	b110	*690	76	342	42	23	58	677
6	18	34	54	108	103	555	74	*376	*41	28	41	1,090
7	19	34	168	97	99	458	86	479	41	38	63	1,040
8	19	35	324	b90	b95	392	99	466	43	75	181	870
9	20	44	497	b85	b90	342	108	450	51	82	207	715
10	19	46	569	b80	b85	292	112	396	69	69	306	593
11	19	44	505	79	b80	245	145	320	88	206	433	505
12	19	44	373	b75	b75	204	192	251	91	265	501	404
13	19	42	b280	b65	b70	167	232	192	89	268	537	331
14	19	54	213	68	63	143	248	143	85	306	588	248
15	19	96	170	82	62	128	229	108	75	642	593	186
16	*17	113	178	94	b60	117	186	82	70	642	551	145
17	16	130	229	103	b60	112	143	67	61	815	471	121
18	17	132	323	b100	b60	112	106	58	57	870	384	128
19	20	113	510	b95	57	113	82	54	57	715	310	155
20	24	91	666	*b90	b60	121	67	51	55	560	261	198
21	31	73	765	88	b60	125	73	48	52	425	204	265
22	34	53	765	115	64	132	86	47	48	*327	160	*320
23	35	44	690	143	69	134	91	55	41	251	125	346
24	64	36	588	170	88	136	83	55	38	181	128	361
25	88	33	456	238	246	140	74	50	38	128	207	353
26	96	32	475	313	369	167	63	45	60	86	271	327
27	96	29	519	373	650	198	57	44	73	57	338	296
28	94	29	588	396	g1,010	219	108	43	67	41	373	261
29	94	54	598	384	-	219	220	44	48	41	353	229
30	94	89	505	338	------	201	302	46	39	49	331	204
31	*96	------	396	282	------	173	------	41	------	71	265	------
Total	1,197	1,859	11,878	5,133	4,461	10,633	3,789	5,813	1,708	7,363	8,685	10,935
Mean	38.6	62.0	383	166	159	343	126	188	56.9	238	280	364
(†)	-3.5	+17.0	+38.8	+0.1	+4.6	-4.6	+9.1	-3.0	-4.8	+0.1	-1.2	-0.2
Adjusted for change in contents in East Branch Reservoir												
Mean	35.1	79.0	422	166	164	338	135	185	52.1	238	279	364
Cfsm	0.239	0.537	2.87	1.13	1.12	2.30	0.918	1.26	0.354	1.62	1.90	2.48
In.	0.28	0.60	3.31	1.30	1.17	2.65	1.02	1.45	0.40	1.87	2.19	2.77

	Observed				Adjusted			
Calendar year 1957:	Max 2,040	Min 16	Mean 242		Mean 242	Cfsm 1.65	In. 22.37	
Water year 1957-58:	Max 1,290	Min 16	Mean 201		Mean 205	Cfsm 1.39	In. 19.01	

* Discharge measurement made on this day.
† Change in contents, equivalent in cubic feet per second, in East Branch Reservoir.
b Stage-discharge relation affected by ice.
g Computed from once-daily electric tape-gage readings.
Note.--Shifting-control method used Oct. 1 to Dec. 8, Apr. 28 to May 19, May 31 to July 14, July 20 to Aug. 13.

2040. Little Cuyahoga River at Mogadore, Ohio

Location.--Lat 41°03'45", long 81°23'40", in T.1 N., R.10 W., on left bank at upstream side of bridge on State Highway 532, 500 ft downstream from Mogadore Reservoir, three-quarters of a mile upstream from Fritch Lake Outlet, and 0.8 mile north of Mogadore, Summit County.

Drainage area.--12.3 sq mi.

Records available.--February 1946 to September 1958.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,058.74 ft above mean sea level, unadjusted.

Average discharge.--12 years, 13.3 cfs.

Extremes.--Maximum discharge during year, 62 cfs July 31 (gage height, 3.62 ft); minimum, 3.2 cfs Oct. 16; minimum gage height, 0.59 ft Oct. 22, 23.
1946-58: Maximum discharge, 155 cfs Nov. 16, 1955 (gage height, 3.46 ft); maximum, gage height, that of July 31, 1958 (backwater from aquatic growth); minimum discharge, 0.2 cfs Nov. 20, 1954; minimum gage height, 0.24 ft Nov. 18, 19, 1954.

Remarks.--Records fair except those above 35 cfs, which are poor. Flow regulated by Mogadore Reservoir (usable capacity, 6,540 acre-ft).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 11, 12, July 31 to Aug. 21, Aug. 24, 25)

0.5	2.2	1.2	26
.6	3.5	1.3	35
.7	5.2	1.5	67
1.0	13		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.2	4.0	6.5	17	17	17	7.5	*19	7.7	8.0	55	11
2	6.8	3.8	6.3	16	16	17	6.1	18	7.5	7.5	55	10
3	6.3	3.7	6.5	16	15	16	5.2	18	6.3	7.0	53	9.7
4	5.7	3.8	6.3	14	14	15	4.2	24	6.1	6.5	*49	10
5	5.2	3.7	5.7	14	13	*14	3.8	23	6.5	6.3	57	11
6	5.1	3.8	6.5	13	13	14	3.8	23	7.0	6.3	57	10
7	5.2	3.7	22	12	13	13	3.8	24	6.3	8.5	*59	10
8	4.9	4.3	21	12	12	12	3.8	21	6.1	*12	55	10
9	4.7	4.7	17	11	12	10	3.8	19	6.8	11	53	9.5
10	4.5	4.7	16	11	11	9.0	10	18	8.2	10	53	8.7
11	4.3	4.9	14	10	11	7.7	24	17	8.5	25	48	8.5
12	3.8	4.9	14	10	10	6.8	24	15	8.2	14	26	8.5
13	3.7	5.1	13	9.5	9.7	6.3	23	13	8.7	13	21	8.0
14	3.7	7.2	13	11	9.5	5.7	21	12	8.7	12	17	7.5
15	3.5	6.5	12	12	9.2	5.5	20	12	8.7	13	17	7.2
16	3.4	6.3	*12	12	9.0	5.5	19	12	8.0	g13	39	8.5
17	3.8	5.9	12	12	9.0	5.5	16	11	7.5	g12	25	9.7
18	4.3	6.8	17	12	8.7	5.5	15	11	9.0	g10	19	9.0
19	4.2	6.5	19	11	8.7	5.2	14	9.7	8.5	g10	16	9.0
20	3.8	5.7	23	11	8.7	5.2	13	9.2	8.5	g9.2	17	8.7
21	3.7	5.7	23	*11	8.7	8.3	14	8.5	8.5	g8.7	15	11
22	*3.5	5.5	23	13	8.5	25	13	9.8	7.7	g8.5	13	11
23	4.0	5.2	21	13	8.5	24	12	11	7.2	g8.5	12	10
24	5.2	4.9	21	14	8.7	22	11	13	7.2	g9.2	16	9.2
25	4.7	4.9	21	21	10	23	10	12	8.2	11	17	*9.0
26	4.7	4.9	30	21	11	22	10	11	11	11	14	8.7
27	4.7	4.9	28	22	13	20	10	10	10	9.7	12	9.0
28	4.7	4.9	26	21	16	17	14	9.2	10	9.5	12	8.2
29	4.3	7.0	23	20	-	14	32	8.7	9.5	9.7	13	8.0
30	4.3	7.0	22	20	-------	12	21	8.0	8.7	10	12	7.5
31	4.3	-------	20	19	-------	11	-------	7.5	-------	58	11	-------
Total	142.2	154.9	520.8	441.5	313.9	394.2	388.0	437.6	240.8	368.1	938	276.1
Mean	4.59	5.16	16.8	14.2	11.2	12.7	12.9	14.1	8.03	11.9	30.3	9.20
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 69 Min 1.6 Mean 14.1 Cfsm - In. -
Water year 1957-58: Max 59 Min 3.4 Mean 12.6 Cfsm - In. -

* Discharge measurement made on this day.
g Computed from once-daily inside gage readings.

2045. Little Cuyahoga River at Massillon Road, Akron, Ohio

Location.--Lat 41°03'35", long 81°27'45", in T.1 N., R.10 W., on left bank 50 ft downstream from bridge on Massillon Road in Akron, Summit County, and 250 ft upstream from Springfield Lake Outlet.

Drainage area.--31.0 sq mi.

Records available.--February 1946 to September 1958.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,005.20 ft above mean sea level (city of Akron bench mark).

Average discharge.--12 years, 30.2 cfs.

Extremes.--Maximum discharge during year, 808 cfs July 31 (gage height, 3.74 ft, from high water mark); minimum, 9.3 cfs Oct. 23 (gage height, 0.47 ft).
1946-58: Maximum discharge, that of July 31, 1958; minimum, 2.9 cfs May 10, 1955 (gage height, 0.22 ft).

Remarks.--Records good except those for periods of doubtful gage-height record, which are poor. Flow regulated by Mogadore Reservoir (usable capacity, 6,540 acre-ft) and Fritch Lake.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to July 31				Aug. 1 to Sept. 30			
0.4	7.2	1.4	102	0.7	20	1.3	81
.5	10	1.8	216	.9	32	1.6	155
.7	19	2.2	332	1.1	50	1.9	246
.9	31	2.6	448				
1.1	50						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	11	15	30	31	43	21	42	28	19	d246	28
2	14	11	14	29	30	38	18	37	27	17	d120	27
3	13	10	13	43	46	37	17	48	19	16	d89	26
4	13	10	14	39	45	*34	16	94	17	16	*d80	30
5	12	10	12	23	45	31	15	d70	27	15	89	36
6	12	11	19	23	39	34	18	*72	28	22	83	28
7	12	10	100	22	26	31	18	77	19	39	107	37
8	12	15	62	22	23	28	16	57	19	*62	110	32
9	11	13	36	20	21	24	15	50	23	32	98	28
10	11	11	30	20	20	29	25	47	34	26	91	25
11	11	11	26	19	19	28	60	43	23	109	85	24
12	11	11	23	18	18	27	54	41	22	58	94	24
13	10	11	22	18	17	27	45	37	23	41	90	22
14	10	25	22	29	17	24	39	32	23	41	57	22
15	10	24	21	27	17	18	37	28	20	53	61	21
16	10	16	*24	23	16	17	33	26	20	55	103	29
17	11	14	24	22	16	17	31	23	18	36	91	32
18	14	14	56	21	16	18	29	23	34	30	57	30
19	16	17	54	20	16	17	27	22	23	24	50	28
20	21	14	60	21	16	18	26	21	23	22	47	25
21	10	13	54	*27	16	19	31	19	23	21	44	47
22	*9.8	12	39	45	18	34	28	44	19	23	41	34
23	19	12	35	31	28	36	26	41	19	23	32	28
24	24	18	38	31	37	35	23	28	19	21	65	27
25	16	12	35	67	49	42	21	27	25	23	54	*25
26	13	12	81	47	35	43	21	24	54	24	38	25
27	14	11	53	45	45	37	23	22	28	22	36	28
28	14	11	44	40	58	33	58	22	23	31	32	27
29	12	31	37	36	-	29	139	20	21	40	34	26
30	11	18	35	35	-------	27	55	19	21	32	31	27
31	11	-------	32	33	-------	26	-------	18	-------	d429	28	-------
Total	402.8	419	1,130	926	780	901	985	1,174	722	1,422	2,283	848
Mean	13.0	14.0	36.5	29.9	27.9	29.1	32.8	37.9	24.1	45.9	73.6	28.3
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 335 Min 9.6 Mean 30.9 Cfsm - In. -
Water year 1957-58: Max 429 Min 9.8 Mean 32.9 Cfsm - In. -

* Discharge measurement made on this day.
d Computed from doubtful gage-height record.

2050. Springfield Lake Outlet at Akron, Ohio

Location.--Lat 41°03'20", long 81°27'50", in T.1 N., R.10 W., on right bank in Akron, Summit County, 0.3 mile upstream from mouth and 3 miles downstream from Springfield Lake.

Drainage area.--8.40 sq mi.

Records available.--May 1946 to September 1958.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,015.34 ft above mean sea level (city of Akron bench mark).

Average discharge.--12 years, 6.95 cfs.

Extremes.--Maximum discharge during year, 268 cfs July 31 (gage height, 2.83 ft); minimum, 0.8 cfs Oct. 9, 10, 11, 13; minimum gage height, 0.45 ft Oct. 10.
1946-58: Maximum discharge, that of July 31, 1958; no flow at times 1953-54.

Remarks.--Records fair except those for periods of ice effect, which are poor. Flow regulated by Springfield Lake.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 6-13, 23, 28, 29)

Oct. 1 to Dec. 7				Dec. 8 to Sept. 30			
0.5	0.4	1.3	5.8	0.7	1.0	1.7	24
.7	1.0	1.5	11	.9	1.9	1.8	31
.9	1.9	1.6	14	1.0	2.4	2.0	58
1.0	2.4	1.8	28	1.2	4.2	2.3	117
1.1	3.2	1.9	40	1.3	5.9	2.6	192
				1.5	13		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.3	3.6	2.7	4.8	6.7	12	2.6	8.0	3.9	1.7	99	5.5
2	2.2	3.5	2.1	4.5	5.9	10	2.4	6.5	2.6	1.6	42	5.1
3	2.1	3.4	1.9	8.3	5.9	8	2.2	9.8	1.7	1.4	27	4.9
4	2.2	3.5	1.8	5.8	6.6	*6.5	2.2	24	2.1	1.3	22	7.2
5	1.1	4.7	1.6	3.5	5.8	5.7	1.9	18	3.9	1.1	19	10
6	.5	4.9	4.1	3.5	5.3	6.5	3.0	*18	3.3	8.2	18	7.0
7	.6	3.4	32	3.5	5.3	5.7	3.3	20	3.3	*12	*27	9.4
8	.5	4.6	20	3.5	4.7	5.5	2.5	14	3.6	19	31	6.5
9	.5	3.3	9.0	2.7	4.5	5.1	2.1	12	3.6	11	21	5.3
10	.4	3.0	5.3	2.6	4.5	4.9	6.6	10	6.3	7.3	17	4.8
11	.4	2.9	3.6	3.0	4.0	5.1	9.8	9.4	3.8	46	15	4.5
12	.4	2.9	3.2	3.5	4.0	4.9	8.0	8.3	3.9	26	43	4.2
13	.8	3.0	2.5	4.0	4.0	4.9	4.9	7.0	4.5	18	45	4.1
14	2.8	7.2	2.4	8	4.0	5.1	4.0	5.5	3.8	18	26	4.0
15	2.7	6.1	2.4	6.5	3.5	4.9	3.4	5.5	2.9	19	22	3.7
16	2.7	4.1	*3.0	5.3	3.5	4.9	2.9	5.0	1.9	19	24	9.0
17	3.4	2.3	3.0	5.3	3.5	4.9	2.6	2.6	1.6	15	24	9.0
18	3.6	2.1	13	4.7	3.5	4.9	2.4	2.4	7.3	13	18	9.0
19	3.1	3.0	11	5.1	3.5	4.8	2.2	2.2	2.6	12	16	7.0
20	2.9	2.1	14	5.1	3.5	4.9	2.2	2.0	3.0	10	14	5.5
21	2.8	1.8	11	*8.6	4.0	5.1	3.3	1.9	2.7	9.0	12	14
22	*2.8	1.5	6.5	13	4.5	4.9	2.4	13	1.9	10	11	8.7
23	6.2	1.4	5.1	8.3	6	4.8	2.1	6.1	1.8	9.0	9.0	6.7
24	6.2	1.3	5.9	8.3	10	5.1	2.0	4.0	2.8	8.7	20	5.3
25	4.1	1.2	5.1	21	14	7.3	1.8	3.4	7.3	7.6	18	*4.9
26	3.7	1.3	21	13	13	8.0	1.7	2.6	14	4.8	13	4.8
27	4.6	1.2	13	12	13	6.7	2.8	2.2	5.3	3.9	10	5.6
28	4.7	1.6	9.0	9.4	16	5.2	13	2.0	3.9	8.6	8.7	4.9
29	4.6	8.6	6.7	8.0	-	3.4	27	1.9	3.0	13	7.6	4.7
30	4.3	4.2	5.7	7.3	-------	3.1	14	1.7	2.2	14	6.7	4.9
31	4.1	-------	5.3	7.0	-------	2.9	-------	1.6	-------	175	5.7	-------
Total	83.3	97.9	232.9	209.1	172.7	175.7	141.3	230.6	114.5	524.2	691.7	190.2
Mean	2.69	3.26	7.51	6.75	6.17	5.67	4.71	7.44	3.82	16.9	22.3	6.34
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 86 Min 0.3 Mean 6.74 Cfsm - In. -
Water year 1957-58: Max 175 Min 0.4 Mean 7.85 Cfsm - In. -

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 5-14, Feb. 9-24 (no gage-height record Feb. 16-24).

2060. Cuyahoga River at Old Portage, Ohio

Location.--Lat 41°08'04", long 81°32'49", on right bank 230 ft upstream from highway bridge at Old Portage, Summit County, 1¼ miles downstream from Little Cuyahoga River, and 4 miles northwest of Akron.

Drainage area.--405 sq mi.

Records available.--September 1921 to December 1935, March 1939 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 740.11 ft above mean sea level, unadjusted. Prior to Dec. 21, 1923, chain gage at same site and datum.

Average discharge.--33 years, 415 cfs.

Extremes.--Maximum discharge during year, 3,000 cfs July 31 (gage height, 8.48 ft); minimum, 56 cfs Oct. 14 (gage height, 0.72 ft).
1921-35, 1939-58: Maximum discharge, 4,540 cfs Jan. 26, 1952, Nov. 16, 1955; maximum gage height, 10.8 ft June 28, 1924; minimum discharge, 14 cfs Aug. 27, 1944; minimum gage height, 0.33 ft Nov. 19-24, Dec. 11-13, 1954.

Remarks.--Records good. Diurnal fluctuation caused by powerplants above station. Flow regulated by reservoirs and lakes above station. At Lake Rockwell, about 16 miles above gage, an average of 62 cfs was diverted for municipal supply of city of Akron. Sewage from city enters river below station.

Revisions (water years).--WSP 1307: 1924(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-20, 22, 26, Oct. 29 to Nov. 1, Nov. 7, 26-28)

0.6	59	4.0	938
1.0	129	6.0	1,670
2.0	352		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	89	103	205	578	435	1,200	302	*711	247	158	1,490	320
2	90	116	213	463	393	1,300	270	666	203	142	1,200	282
3	87	135	194	366	366	1,370	245	741	162	135	1,100	252
4	85	140	190	307	294	*1,200	224	938	154	121	938	337
5	84	138	160	264	280	1,030	211	816	223	138	696	421
6	87	116	182	252	264	907	237	786	176	290	564	578
7	84	110	564	248	243	816	226	938	137	382	607	938
8	85	164	726	213	230	666	215	876	148	366	607	1,030
9	82	150	636	205	172	592	198	771	241	338	592	907
10	82	140	666	196	190	534	268	711	252	341	534	756
11	80	116	711	182	194	463	435	636	215	876	564	651
12	80	121	607	188	178	407	491	534	196	938	838	564
13	75	118	421	184	174	366	491	421	243	711	907	477
14	73	198	407	220	158	322	491	352	201	*622	726	393
15	75	226	366	248	156	287	491	292	184	1,160	741	338
16	69	201	*349	213	164	270	449	268	209	1,450	816	307
17	106	194	379	215	148	261	407	211	162	1,160	741	328
18	112	213	578	222	152	250	188	205	331	938	636	302
19	89	224	756	220	148	243	170	184	264	938	534	287
20	89	201	907	220	142	259	160	168	215	816	449	287
21	135	178	1,000	*248	142	266	172	148	186	711	379	421
22	*89	166	1,000	315	154	280	170	309	180	636	320	449
23	158	144	938	338	182	289	168	294	196	607	266	463
24	184	133	907	344	268	289	154	228	164	463	551	449
25	154	156	786	666	549	336	137	224	228	366	477	*449
26	103	110	938	666	681	379	129	196	366	292	421	463
27	135	106	938	681	816	393	152	174	282	239	421	449
28	127	103	816	666	1,030	393	378	162	217	275	435	379
29	108	261	816	636	-	393	846	144	211	252	435	336
30	97	201	786	592	-------	379	816	135	201	242	407	320
31	110	-------	696	520	-------	352	-------	148	-------	1,620	366	-------
Total	3,101	4,682	18,838	10,876	8,303	16,492	9,291	13,387	6,394	17,723	19,758	13,933
Mean	100	156	608	351	297	532	310	432	213	572	637	464
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 2,590 Min 69 Mean 450 Cfsm - In. -
Water year 1957-58: Max 1,620 Min 69 Mean 391 Cfsm - In. -

* Discharge measurement made on this day.

2075. Ohio Canal at Independence, Ohio

Location.--Lat 41°23'25", long 81°37'35", in T.6 N., R.12 W., on right bank at upstream side of dam, 0.4 mile upstream from Rockside Road and 1 mile northeast of Independence, Cuyahoga County.

Records available.--September 1921 to May 1923, August 1927 to December 1935, October 1940 to September 1958.

Gage.--Water-stage recorder above dam. Datum of gage is 605.31 ft above mean sea level. Prior to Dec. 9, 1946, staff or chain gage, or water-stage recorder, at site 0.4 mile downstream at various datums. Dec. 10, 1946, to Nov. 3, 1950, staff gage at present site and datum.

Extremes.--1921-23, 1927-35, 1940-58: Maximum daily discharge, 146 cfs Nov. 26, 1952; no flow June 4, 1947, July 2-7, 1950.

Remarks.--Records good except those for periods of indefinite stage-discharge relation, which are fair. Water is diverted from Cuyahoga River into canal at headgates at Brecksville, 6 miles upstream. Some diurnal fluctuation caused by small mill above station.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	72	72	70	59	66	55	63	54	52	64	59
2	74	74	71	68	59	63	55	59	55	55	68	59
3	74	74	71	66	58	63	54	61	53	55	64	e60
4	74	74	71	64	58	60	54	60	*52	55	63	e60
5	74	75	71	64	58	58	54	59	53	55	61	e65
6	75	74	72	63	58	56	54	60	54	55	63	61
7	74	74	70	64	66	54	58	53	53	58	61	55
8	74	76	59	63	66	51	*56	55	55	58	*48	57
9	74	75	63	63	64	49	55	54	55	55	58	59
10	*73	75	62	63	63	53	56	49	58	54	51	55
11	74	73	62	63	*64	58	52	46	55	61	49	55
12	76	74	61	63	63	58	58	54	54	65	55	48
13	73	75	59	62	62	56	54	64	54	56	43	52
14	74	76	59	64	63	56	52	59	54	58	50	55
15	74	77	59	65	62	55	51	55	53	e70	60	67
16	75	77	66	64	62	55	50	55	52	64	63	69
17	75	76	70	*64	59	55	52	54	53	57	60	70
18	75	76	72	64	58	55	59	53	55	53	56	64
19	76	76	66	63	60	55	57	48	55	52	53	63
20	74	e75	75	63	62	55	56	48	54	52	52	60
21	74	e75	72	67	62	57	56	51	52	51	52	64
22	80	e75	70	76	61	58	59	58	52	52	51	64
23	93	72	69	72	64	56	59	57	52	52	51	59
24	98	72	69	72	69	57	58	51	52	50	55	54
25	86	72	69	69	52	57	58	52	55	49	50	50
26	70	72	72	79	58	59	58	52	59	50	59	51
27	82	*72	71	75	61	58	59	51	54	52	57	56
28	80	71	66	63	70	57	64	52	52	*53	57	55
29	72	75	65	62	-	56	52	52	52	55	58	55
30	72	72	71	61	------	55	52	52	52	55	58	55
31	71	------	76	61	------	55	------	52	------	63	59	------
Total	2,365	2,226	2,101	2,040	1,721	1,756	1,667	1,589	1,613	1,722	1,749	1,756
Mean	76.3	74.2	67.8	65.8	61.5	56.6	55.6	54.5	53.8	55.5	56.4	58.5
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 98 Min 45 Mean 66.9 Cfsm - In. -
Water year 1957-58: Max 98 Min 43 Mean 61.4 Cfsm - In. -

* Discharge measurement made on this day.
e Stage-discharge relation indefinite; discharge computed on basis of normal flow in canal and records for Cuyahoga River at Independence.

2080. Cuyahoga River at Independence, Ohio

Location.--Lat 41°23'44", long 81°37'54", in T.6 N., R.12 W., on right bank 140 ft downstream from highway bridge on Rockside Road, 1 mile northeast of Independence, Cuyahoga County, and 3 miles downstream from Tinkers Creek.

Drainage area.--709 sq mi.

Records available.--September 1903 to December 1905 fragmentary, January to July 1906 (gage heights and discharge measurements only), September 1921 to May 1923, September 1927 to December 1935, March 1940 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 584.14 ft above mean sea level (levels by city of Cleveland). Sept. 21, 1903, to July 21, 1906, chain gage at bridge 140 ft upstream at same datum. Sept. 28, 1921, to May 30, 1923, chain gage at bridge 140 ft upstream at datum 2.42 ft higher. Sept. 5 to Oct. 8, 1927, staff gage at present site and datum.

Average discharge.--27 years (1921-22, 1927-35, 1940-58), 741 cfs (not including flow in Ohio Canal).

Extremes.--Maximum discharge during year, 6,680 cfs Aug. 8 (gage height, 15.48 ft); minimum, 92 cfs Oct. 14, 23 (gage height, 2.38 ft).
1921-23, 1927-35, 1940-58: Maximum discharge, 14,200 cfs Oct. 16, 1954 (gage height, 20.04 ft); minimum, 14 cfs Nov. 30, 1930; minimum combined daily discharge of river and canal, 55 cfs Aug. 28, 1933.

Remarks.--Records good except those for periods of ice effect or shifting control, which are fair. Diurnal fluctuations caused by powerplants above station. Flow slightly regulated by reservoirs and lakes above station. Some diversion from Tuscarawas River into this basin at Portage Lakes. Water diverted into Ohio Canal at Brecksville, 6 miles above station, bypasses station. These records do not include flow in canal; record of diversion published as Ohio Canal at Independence (see preceding page). Records of water temperatures and suspended sediment loads for the water year 1958 are given in WSP 1571.

Revisions (water years).--WSP 1307: 1922-23(M), 1928-30(M), 1933(M), 1940(M), 1947(M), 1950(M).

Rating tables, water year 1957-58, except periods of ice effect or shifting control (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Aug. 7				Aug. 8 to Sept. 30			
2.5	110	7.0	1,820	3.6	355	7.0	1,820
2.7	151	12.0	4,810	4.0	500	12.0	4,810
3.0	237						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	147	212	370	970	812	2,490	559	1,430	254	208	3,740	488
2	133	183	338	774	715	2,220	478	1,150	460	183	1,920	422
3	135	206	335	637	637	2,220	445	1,230	277	160	1,590	386
4	132	197	314	540	578	2,020	384	2,020	*234	145	1,350	554
5	131	206	284	452	520	1,680	345	1,860	234	126	1,070	1,620
6	122	209	294	449	501	1,510	402	1,720	384	164	1,070	860
7	120	177	2,620	438	471	1,350	559	2,780	244	656	2,630	1,390
8	128	254	2,060	402	395	1,150	*578	1,860	234	890	*4,250	1,480
9	130	304	1,350	359	331	970	460	1,550	359	598	1,390	1,260
10	*121	218	1,110	342	304	852	431	1,310	540	501	1,050	1,080
11	125	186	1,070	345	*b310	774	1,430	1,150	464	2,840	880	900
12	124	200	950	301	b300	696	1,310	950	328	1,920	1,680	780
13	122	189	754	294	b290	637	1,070	754	345	1,550	2,160	680
14	116	297	676	402	b280	578	910	637	342	1,280	1,340	560
15	138	501	637	520	257	540	832	559	277	4,510	1,030	488
16	136	366	1,010	438	254	501	774	501	260	2,840	1,120	453
17	146	321	871	*405	206	471	656	395	240	2,120	1,100	560
18	200	280	2,240	391	b250	464	520	362	456	1,550	880	1,300
19	166	345	2,060	338	b250	438	328	338	464	1,350	* 780	840
20	156	324	2,020	348	b250	449	277	301	373	1,190	660	600
21	140	284	2,320	373	b250	482	482	270	434	1,030	580	1,720
22	150	247	1,820	890	263	520	420	321	294	950	500	1,140
23	168	222	1,550	734	324	501	345	793	254	950	432	900
24	520	203	1,470	676	973	482	307	475	244	812	945	780
25	324	194	1,310	1,760	2,780	696	294	384	345	637	1,260	740
26	234	231	2,460	1,550	2,060	990	244	356	871	520	880	700
27	240	*180	2,060	1,470	2,270	852	231	284	540	391	720	680
28	307	174	1,640	1,310	3,140	774	1,250	284	362	*338	640	600
29	318	516	1,390	1,150	-	696	2,740	250	304	540	620	520
30	231	452	1,270	1,010	-------	656	1,960	231	263	445	560	476
31	250	-------	1,110	930	-------	618	-------	183	-------	1,800	520	-------
Total	5,610	7,878	39,763	20,998	19,971	29,277	21,021	26,688	10,680	33,194	39,347	24,957
Mean	181	263	1,283	677	713	944	701	861	356	1,071	1,269	832
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 6,500 Min 96 Mean 921 Cfsm - In. -
Water year 1957-58: Max 4,510 Min 116 Mean 765 Cfsm - In. -

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--Shifting-control method used May 17 to Aug. 21, Aug. 24-29, Sept. 4-14, 18-28.

2090. Chagrin River at Willoughby, Ohio

Location.--Lat 41°37'51", long 81°24'13", on left bank at city waterworks, 150 ft downstream from waterworks dam, 800 ft downstream from East Branch, 1 mile southwest of Willoughby, Lake County, and 5 miles upstream from mouth.
Drainage area.--251 sq mi.
Records available.--July 1925 to November 1935, October 1939 to September 1958 (July 1925 to September 1932 monthly runoff in inches, adjusted for diversion, published in WSP 1307; previously published runoff was unadjusted and should not be used).
Gage.--Water-stage recorder. Datum of gage is 594.24 ft above mean sea level, datum of 1929. Prior to Dec. 20, 1939, staff gage on left concrete abutment on upstream side of waterworks dam, 150 ft upstream at datum 7 ft higher.
Average discharge.--29 years, 313 cfs (adjusted for diversion).
Extremes.--Maximum discharge during year, 6,900 cfs Aug. 6 (gage height, 10.03 ft); minimum daily, 28 cfs Oct. 5, 8.
1925-35, 1939-58: Maximum discharge, 28,000 cfs Mar. 22, 1948 (gage height, 17.95 ft, from high-water mark in well), from rating curve extended above 14,000 cfs on basis of contracted-opening measurement of peak flow; minimum daily, 3.0 cfs July 25, 26, 1934.
Remarks.--Records good except those for periods of ice effect, which are poor. Water diverted at dam just above station for municipal supply of city of Willoughby.
Revisions (water years).--WSP 1084: 1929(M), 1931(M). WSP 1307: 1926-28(M), 1930(M), 1932-35(M), 1942(M). See also Records available.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 7				Dec. 8 to July 15				July 16 to Sept. 30			
1.8	22	3.0	371	1.8	33	4.0	880	1.9	39	4.0	880
1.9	34	4.0	880	2.0	69	6.0	2,530	2.0	61	6.0	2,530
2.0	50	6.0	2,530	2.5	198	7.0	3,530	2.5	187	7.0	3,530
2.2	98	7.0	3,530	3.0	378			3.0	372		
2.5	180										

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	106	214	198	178	1,150	138	409	78	44	592	110
2	30	86	157	148	165	660	122	272	114	38	212	94
3	29	76	129	140	143	572	117	344	87	68	118	75
4	29	73	*114	130	140	462	107	1,040	73	44	84	116
5	28	66	103	130	130	387	102	710	65	46	66	2,380
6	29	83	140	120	130	500	120	608	*85	92	1,490	572
7	29	86	3,190	120	130	431	294	1,220	69	71	3,120	346
8	28	96	1,770	*110	120	324	336	548	123	104	2,920	270
9	29	160	620	110	120	251	213	349	162	122	589	*190
10	29	129	370	100	110	198	173	261	198	83	282	136
11	29	101	251	100	*110	184	517	210	219	1,160	1,090	108
12	29	98	159	95	100	167	567	178	143	719	1,290	96
13	30	111	160	95	95	151	370	154	122	251	962	86
14	34	290	160	90	85	148	248	138	107	162	368	77
15	*40	344	170	268	80	146	192	130	85	3,190	228	102
16	31	211	650	244	75	148	162	125	67	930	187	187
17	32	157	775	201	75	148	138	120	55	394	151	209
18	50	121	1,560	165	70	*151	127	120	70	218	118	880
19	71	143	1,580	150	70	156	117	122	94	167	96	585
20	64	148	1,010	143	70	159	112	112	80	128	84	289
21	55	114	1,120	138	75	173	*354	100	87	96	79	1,240
22	45	93	581	450	80	219	275	100	80	77	77	678
23	72	80	382	430	100	210	198	117	63	77	72	321
24	318	78	309	300	250	176	165	112	59	70	199	209
25	189	73	265	1,100	1,900	219	135	94	76	*61	500	159
26	108	73	1,340	910	1,590	476	117	83	249	59	212	141
27	93	73	974	650	1,590	396	112	69	151	50	128	128
28	119	83	500	436	2,080	272	636	78	94	43	94	126
29	180	532	344	320	-	207	1,600	80	74	68	79	116
30	151	344	254	248	--------	176	840	67	59	156	72	106
31	135	--------	210	216	--------	162	--------	63	--------	194	94	--------
Total	2,165	4,228	19,561	8,055	9,861	9,181	8,704	8,133	3,088	8,982	15,653	10,132
Mean	69.8	141	631	260	352	296	290	262	103	290	505	338
(†)	3.5	3.4	3.2	3.0	3.0	2.8	2.8	3.1	3.1	3.1	2.9	3.0
Adjusted for diversion for city of Willoughby												
Mean	73.3	144	634	263	355	299	293	265	106	293	508	341
Cfsm	0.292	0.574	2.53	1.05	1.41	1.19	1.17	1.06	0.422	1.17	2.02	1.36
In.	0.34	0.64	2.92	1.21	1.47	1.37	1.30	1.22	0.47	1.35	2.33	1.52

	Observed			Adjusted		
Calendar year 1957:	Max 7,440	Min 22	Mean 391	Mean 394	Cfsm 1.57	In. 21.31
Water year 1957-58:	Max 3,190	Min 28	Mean 295	Mean 298	Cfsm 1.19	In. 16.14

Peak discharge (base, 4,000 cfs).--Dec. 7 (3:30 p.m.) 4,800 cfs (8.15 ft); July 15 (6 a.m.) 5,920 cfs (9.22 ft); Aug. 6 (5:30 p.m.) 6,900 cfs (10.03 ft); Aug. 7 (11:30 p.m.) 6,520 cfs (9.66 ft); Aug. 12 (4:30 a.m.) 4,140 cfs (7.63 ft).

* Discharge measurement made on this day.
† Diversion for municipal supply of city of Willoughby, equivalent in cubic feet per second.
Note.--Stage-discharge relation affected by ice Dec. 13-16, Jan. 3-14, 19, 22-25, Feb. 4-25.

2100. Phelps Creek near Windsor, Ohio

Location.--Lat 41°30'55", long 80°56'05", in T.8 N., R.5 W., on left bank at upstream side of bridge on State Highway 534, 1.4 miles south of Windsor, Ashtabula County, and ½ miles upstream from mouth.

Drainage area.--26.4 sq mi.

Records available.--March 1942 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 803.70 ft above mean sea level, datum of 1929. Prior to June 11, 1942, wire-weight gage at same site and datum.

Average discharge.--16 years, 35.6 cfs.

Extremes.--Maximum discharge during year, 2,680 cfs July 15 (gage height, 9.48 ft, backwater from debris), on basis of contracted-opening measurement at gage height 9.34 ft; minimum, 0.2 cfs Oct. 24; minimum gage height, 0.14 ft Aug. 6.

1942-58: Maximum discharge, 3,840 cfs (revised) Mar. 22, 1948 (gage height, 8.97 ft), from rating curve extended above 1,600 cfs on basis of contracted-opening measurement at gage height 9.34 ft; maximum gage height, that of July 15, 1958; no flow Aug. 20, 21, 1943, Oct. 24, 25, 1946.

Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated.

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
1307	1944	Feb. 23, 1944	2,220	7.88
1307	1945	Feb. 22, 1945	2,680	8.27
1387	1948	Mar. 22, 1948	3,840	8.97
1307	1950	Jan. 15, 1950	2,220	7.92
1237	1952	Jan. 17, 1952	1,860	7.50
1387	1955	Oct. 15, 1954	2,680	8.29
1437	1956	Feb. 25, 1956	2,220	7.88
1507	1957	Jan. 22, 1957	2,320	8.01

Remarks.--Records fair except those below 5 cfs and those for periods of ice effect, which are poor.

Revisions (water years).--WSP 1307: 1943(M), 1947(M). Revised figures of discharge, in cubic feet per second, for high-water periods in the water years 1944, 1948, and 1952 (revised peak discharges only), superseding those published in WSP 1004, 1114, 1237, are given herewith:

Feb. 23, 1944..... 1,230
Mar. 22, 1948..... 1,300

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
February 1944.....	3,042.8	1,230	3.5	105	3.98	4.29
Water year 1943-44.....	10,731.3	1,230	.4	29.3	1.11	15.12
Calendar year 1944.....	10,478.9	1,230	.4	28.6	1.08	14.77
March 1948.....	3,398.0	1,300	4.0	110	4.17	4.81
Water year 1947-48.....	10,754.9	1,300	.6	29.4	1.11	15.18
Calendar year 1948.....	11,618.7	1,300	.8	31.7	1.20	16.39

Revised peak discharge.--1951-52: Jan 17 (11 p.m.) 1,860 cfs (7.50 ft); Jan. 26 (11:30 p.m.) 1,710 cfs (7.33 ft).

2100. Phelps Creek near Windsor, Ohio--Continued

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-31, Dec. 7, 8, 16-21, 26, 27, Jan. 26, Feb. 25-27, Mar. 1, 2, Apr. 11, 29, 30, May 4-7, July 11, 12, 15, 16, Aug. 7-9, 11-13, 24, 25, Sept. 5, 21)

Oct. 1 to July 14				July 15 to Sept. 30			
0.1	0.4	1.1	40	0.15	1.6	1.5	77
.2	1.4	1.5	75	.2	2.7	2.0	136
.3	3.1	2.0	136	.4	8.7	3.0	274
.4	5.5	3.0	274	.6	16	5.0	655
.6	12	5.0	655	.9	31	6.0	1,010
.9	27			1.2	50	7.0	1,510

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	3.3	23	15	21	270	11	28	2.2	1.9	6.2	16
2	.5	3.1	*14	11	18	113	9.0	15	1.7	1.3	6.4	14
3	.5	2.6	9.2	12	13	104	7.4	20	1.6	1.2	3.2	9.0
4	.4	2.2	7.8	11	13	69	6.1	143	1.4	1.3	2.0	7.7
5	.4	1.9	6.2	9.7	*12	68	5.5	80	1.4	1.7	1.8	136
6	.4	1.7	15	*10	12	94	8.8	58	1.2	2.4	2.4	25
7	.4	2.2	*528	10	11	73	25	166	.8	3.5	131	20
8	.6	3.8	223	9.3	9	50	25	49	2.2	4.3	330	22
9	.5	9.2	64	8.0	8	31	16	21	4.4	3.8	53	13
10	.5	9.3	31	7.4	6	18	13	13	7.6	4.5	15	9.0
11	.4	7.0	18	8.0	6	16	117	9.0	10	373	325	7.1
12	.4	7.0	11	6.1	5	14	84	6.1	5.3	79	229	5.5
13	.4	9.3	13	4.6	4.5	13	39	4.5	3.6	20	168	4.3
14	.4	56	13	5.3	4.5	12	21	3.1	4.1	13	33	3.7
15	.4	76	13	21	4.0	12	14	2.6	2.8	1,050	15	3.7
16	*.4	28	160	31	4.0	13	10	2.2	2.2	131	13	4.3
17	.4	15	149	28	3.5	14	7.7	1.9	1.7	36	10	6.1
18	.4	10	281	20	3.5	24	6.1	1.6	1.9	17	12	81
19	.5	11	229	15	3.5	*28	5.0	1.6	1.9	11	10	49
20	.5	13	209	11	3.5	28	4.5	1.4	2.8	7.7	8.4	20
21	.4	9.0	162	11	4.0	32	17	1.3	2.6	5.5	7.7	127
22	.4	6.4	60	60	4.0	41	20	1.4	2.4	4.6	7.1	70
23	.4	4.8	31	85	5	28	*13	1.2	1.7	*4.0	6.5	*23
24	.6	4.3	26	50	10	20	8.3	1.2	1.9	3.7	311	14
25	1.3	3.6	23	73	250	34	5.5	1.2	3.2	3.0	212	10
26	2.1	3.6	334	111	450	53	4.1	1.2	*8.4	2.0	38	8.4
27	2.4	3.6	111	86	380	87	3.6	1.0	7.0	1.8	20	8.1
28	2.8	4.4	48	58	480	39	48	1.0	3.6	2.8	12	8.4
29	2.5	70	31	42	-	23	204	.9	2.4	2.3	8.7	7.4
30	2.8	48	21	31	-------	17	80	.8	2.2	1.8	6.8	6.5
31	*3.8	-------	16	25	-------	15	-------	.8	-------	2.5	6.5	-------
Total	28.3	429.3	2,880.2	885.6	1,748.0	1,453	838.6	639.0	96.2	1,797.6	2,010.7	739.2
Mean	0.91	14.3	92.9	28.6	62.4	46.9	28.0	20.6	3.21	58.0	64.9	24.6
Cfsm	0.034	0.542	3.52	1.08	2.36	1.78	1.06	0.780	0.122	2.20	2.46	0.932
In.	0.04	0.60	4.06	1.24	2.46	2.05	1.18	0.90	0.14	2.54	2.84	1.04

Calendar year 1957: Max 1,200 Min 0.4 Mean 40.9 Cfsm 1.55 In. 20.98
Water year 1957-58: Max 1,050 Min 0.4 Mean 37.1 Cfsm 1.41 In. 19.09

Peak discharge (base, 900 cfs).--July 15 (5:30 a.m.) 2,680 cfs (9.48 ft).

* Discharge measurement made on this day.
Note.---Stage-discharge relation affected by ice Dec. 16, Jan. 22, Feb. 8-25, 28.

2110. Rock Creek near Rock Creek, Ohio

Location.--Lat 41°39'05", long 80°50'10", in T.10 N., R.4 W., on left bank at downstream side of highway bridge, 0.4 mile downstream from Plum Creek, 1.4 miles southeast of village of Rock Creek, Ashtabula County, 1½ miles downstream from Sugar Creek, and 3 miles upstream from mouth.

Drainage area.--56.6 sq mi.

Records available.--March 1942 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 810 ft (from topographic map). Prior to June 10, 1942, chain gage at same site and datum.

Average discharge.--16 years, 82.0 cfs.

Extremes.--Maximum discharge during year, 1,400 cfs Aug. 24 (gage height, 5.53 ft); no flow for many days.
1942-58: Maximum discharge, 5,730 cfs Mar. 22, 1948 (gage height, 8.82 ft), from rating curve extended above 2,300 cfs on basis of velocity-area studies; no flow at times.

Remarks.--Records good except those below 1 cfs and those for periods of ice effect, which are poor.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 26				Dec. 27 to Sept. 30			
0.20	0	0.8	15	0.3	0.2	1.5	62
.30	.2	1.1	34	.4	1.2	2.0	114
.40	1.2	1.5	65	.5	3.3	2.5	185
.5	3.1	2.0	114	.6	6.8	3.0	305
.6	5.6			.9	21	5.0	1,170
				1.2	39		

Note.--Same as following table above 2.0 ft.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	*1.1	11	32	60	652	24	127	1.4	1.6	5.0	3.9
2	0	1.1	7.0	25	45	254	20	63	2.8	1.1	15	3.3
3	0	.8	*5.3	20	35	189	16	46	2.3	1.1	8.9	3.1
4	0	.9	4.5	20	30	138	13	192	2.1	.9	4.9	3.8
5	0	.9	3.6	18	25	118	11	246	1.4	.4	2.8	20
6	0	.8	4.1	17	20	138	14	123	1.2	.3	29	41
7	0	.8	211	16	18	124	52	311	.6	.3	189	26
8	0	1.2	*311	*16	15	85	62	168	1.2	.8	421	17
9	0	1.9	108	13	13	55	38	76	5.7	.5	128	13
10	0	2.5	54	12	11	38	30	44	8.4	.3	37	8.1
11	0	2.5	31	12	9	31	121	29	16	140	23	6.0
12	0	2.9	20	10	8	27	135	20	10	111	27	4.9
13	0	3.1	18	8.5	*8	24	86	15	11	40	71	3.9
14	0	5.6	14	11	7	23	48	11	23	18	37	3.6
15	0	6.3	14	59	7	23	32	8.5	8.9	842	22	3.3
16	*0	11	84	84	7	28	23	6.8	3.6	878	16	3.9
17	0	6.3	118	70	7	34	18	5.7	1.9	540	11	8.4
18	0	4.0	203	45	6	40	14	4.6	2.3	172	15	66
19	0	3.5	382	35	6	*47	11	3.9	2.1	74	9.8	48
20	0	2.7	329	25	6	55	9.8	3.1	2.3	40	7.2	23
21	0	2.7	368	22	7	84	14	2.6	2.1	23	5.7	172
22	0	2.5	136	170	8	117	24	2.6	1.6	16	5.3	162
23	0	2.1	69	200	10	70	*22	2.3	1.2	*12	4.6	*65
24	.2	1.9	48	110	30	44	17	1.9	1.4	9.8	473	30
25	.1	1.7	40	200	550	60	12	2.1	2.2	7.6	430	18
26	2.3	1.6	594	310	675	251	8.9	1.6	*14	5.7	102	13
27	4.8	1.7	458	240	765	152	6.8	1.2	19	4.3	36	11
28	2.3	1.9	139	180	1,040	83	39	1.4	10	3.6	18	11
29	1.4	9.4	79	123	-	51	421	1.2	4.6	2.8	10	10
30	1.1	12	49	94	-------	37	360	1.1	2.6	2.6	6.8	8.9
31	1.6	-------	36	76	-------	31	-------	1.1	-------	3.9	5.3	-------
Total	13.8	97.5	3,948.5	2,273.5	3,428	3,103	1,702.5	1,522.7	166.9	2,953.6	2,176.3	811.1
Mean	0.45	3.25	127	73.3	122	100	56.8	49.1	5.56	95.3	70.2	27.0
Cfsm	0.0080	0.057	2.24	1.30	2.16	1.77	1.00	0.867	0.098	1.68	1.24	0.477
In.	0.009	0.06	2.58	1.50	2.25	2.04	1.12	1.00	0.11	1.94	1.43	0.53

Calendar year 1957: Max 1,420 Min 0 Mean 72.1 Cfsm 1.27 In. 17.27
Water year 1957-58: Max 1,040 Min 0 Mean 60.8 Cfsm 1.07 In. 14.57

Peak discharge (base, 1,200 cfs).--Feb. 28 (12 m.) 1,260 cfs (5.16 ft); July 15 (3:30 p.m.) 1,260 cfs (5.19 ft); Aug. 24 (6:30 p.m.) 1,400 cfs (5.53 ft).

* Discharge measurement or observation of no flow made on this day.
Note.--Stage-discharge relation affected by ice Dec. 12, 13, Jan. 2-4, 18, 19, 22-27, Feb. 1-25.

2115. Mill Creek near Jefferson, Ohio

Location.--Lat 41°45'10", long 80°48'00", in T.11 N., R.3 W., on right bank at downstream side of bridge on State Highway 307, 1⅝ miles northwest of Jefferson, Ashtabula County, and 3½ miles downstream from Griggs Creek.

Drainage area.--78.3 sq mi.

Records available.--March 1942 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 822.59 ft above mean sea level (Ashtabula County bench mark). Prior to June 10, 1942, wire-weight gage at same site and datum.

Average discharge.--16 years, 110 cfs (unadjusted).

Extremes.--Maximum discharge during year, 2,180 cfs Feb. 28 (gage height, 8.01 ft); no flow for many days.
1942-58: Maximum discharge, 7,010 cfs Mar. 22, 1948 (gage height, 9.95 ft); maximum gage height, 10.28 ft Dec. 4, 1950 (backwater from ice); no flow at times.

Remarks.--Records fair except those below 25 cfs or those for periods of ice effect, which are poor. Water diverted above station for municipal supply for city of Jefferson.

Revisions (water years).--WSP 1507: 1956, adjusted discharge and runoff.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 29, Dec. 7-10, 16-20, Apr. 29 to May 12, June 8-21, June 25 to July 3, July 5-22, Aug. 6-20, 24-28, Aug. 31 to Sept. 1, Sept. 4-9, 18-24)

0.75	0	1.7	34
.8	.2	2.0	58
.9	.9	2.5	112
1.0	2.2	3.0	178
1.1	4.5	4.0	400
1.2	7.8	6.0	1,080
1.4	18	8.0	2,180

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	*0	25	38	89	1,540	27	128	2.3	5.8	2.1	69
2	0	0	18	33	81	603	21	55	2.9	4.8	1.9	41
3	0	0	*13	30	62	400	16	49	1.0	5.0	1.2	26
4	0	0	9.2	24	54	288	12	264	.1	4.5	.7	54
5	0	0	6.5	19	*47	195	8.8	230	2.1	5.0	.2	1,050
6	0	0	6.2	16	35	246	11	122	.8	5.2	99	379
7	0	0	215	*16	20	272	56	335	1.3	7.5	1,380	144
8	0	0	*506	15	15	167	137	186	8.1	6.5	878	119
9	0	0	190	12	12	111	89	77	122	5.8	327	76
10	0	0	87	10	9	68	60	53	160	5.2	106	48
11	0	0	51	9.7	8	53	152	30	156	90	58	33
12	0	0	30	7.8	7	42	237	20	71	203	61	23
13	0	0	25	5.2	7	35	147	16	166	136	280	17
14	0	1.1	24	6.9	6	33	77	14	279	60	140	12
15	*0	1.2	24	29	6	32	46	13	113	34	79	8.3
16	0	.2	216	63	6	35	36	11	42	77	125	10
17	0	.1	414	78	5	43	32	8.8	22	90	77	22
18	.1	.2	240	62	5	*50	14	8.3	15	42	74	418
19	.1	1.0	522	41	5	54	8.3	7.1	8.3	27	54	414
20	0	2.0	429	30	5	61	6.2	5.5	6.5	17	37	161
21	0	1.7	506	24	6	90	20	4.3	5.8	9.5	27	418
22	0	1.5	204	121	6	165	*22	4.5	5.5	5.2	28	705
23	.3	1.1	92	261	7	118	20	4.5	4.3	4.0	32	218
24	.8	.2	61	163	19	72	17	3.8	3.8	2.9	727	*92
25	.2	0	53	202	260	60	11	3.4	4.0	*2.5	1,370	57
26	.1	0	594	327	750	214	8.4	2.7	6.2	2.2	369	38
27	.1	0	790	345	1,100	201	20	1.9	*32	1.6	116	30
28	.1	0	214	235	2,030	106	26	2.0	36	1.6	60	28
29	0	2.5	112	160	-	62	413	1.3	18	1.5	36	27
30	0	21	69	124	--------	43	476	.9	9.2	1.3	24	25
31	0	--------	48	105	--------	34	--------	.7	--------	2.2	27	--------
Total	1.8	33.8	5,793.9	2,612.6	4,662	5,493	2,226.7	1,662.7	1,304.2	865.8	6,597.1	4,762.3
Mean	0.06	1.13	187	84.3	166	177	74.2	53.6	43.5	27.9	213	159
(†)	0.43	0.39	0.41	0.39	0.39	0.40	0.41	0.37	0.36	0.36	0.38	0.35

Adjusted for diversion for city of Jefferson

Mean	0.49	1.52	187	84.7	166	177	74.6	54.0	43.9	28.3	213	159
Cfsm	0.0063	0.019	2.39	1.08	2.12	2.26	0.953	0.690	0.561	0.361	2.72	2.03
In.	0.007	0.02	2.76	1.24	2.21	2.61	1.06	0.80	0.63	0.42	3.14	2.26

	Observed			Adjusted			
Calendar year 1957:	Max 2,470	Min 0	Mean 109	Mean 109	Cfsm 1.39	In. 18.99	
Water year 1957-58:	Max 2,030	Min 0	Mean 98.7	Mean 99.1	Cfsm 1.27	In. 17.16	

Peak discharge (base, 1,500 cfs).--Feb. 28 (12 p.m.) 2,180 cfs (8.01 ft); Aug. 7 (6 a.m.) 1,770 cfs (7.73 ft); Aug. 24 (9 p.m.) 1,960 cfs (7.99 ft); Sept. 5 (12 m.) 1,540 cfs (7.22 ft).

* Discharge measurement or observation of no flow made on this day.
† Diversion, equivalent in cubic feet per second, for municipal supply of city of Jefferson.
Note.--Stage-discharge relation affected by ice Dec. 13, Feb. 6-27.

2120. Grand River near Madison, Ohio

Location.--Lat 41°44'26", long 81°02'48", on downstream end of center pier of bridge on State Highway 528, half a mile upstream from Griswold Creek and 2 miles south of Madison, Lake County.

Drainage area.--587 sq mi.

Records available.--July 1922 to December 1935, February 1938 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 674.47 ft above mean sea level, adjustment of 1912. Prior to Jan. 20, 1939, chain gage at same site and datum.

Average discharge.--33 years, 657 cfs.

Extremes.--Maximum discharge during year, 7,710 cfs Feb. 28 (gage height, 9.09 ft); maximum gage height, 10.82 ft Feb. 25 (ice jam); minimum discharge, 4.8 cfs Oct. 13, 14 (gage height, 0.90 ft).
1922-35, 1938-58: Maximum discharge, 16,600 cfs Mar. 22, 1948 (gage height, 12.48 ft); no flow July 31 to Aug. 2, 1934.

Remarks.--Records good except those for periods of ice effect, which are poor.

Revisions (water years).--WSP 1437: 1923-24(M), 1925-30, 1932(M), 1933, 1934(M), 1935, 1938(M), 1946, 1948(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-26, Oct. 30 to Nov. 13)

0.7	4.5	2.5	322
.9	11	3.0	509
1.0	15	4.0	1,080
1.2	28	5.0	1,750
1.3	36	6.0	2,630
1.6	81	7.0	3,930
2.0	174	9.0	7,520

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	33	316	554	760	7,330	374	1,750	36	63	63	392
2	11	29	239	381	602	4,950	284	1,580	44	47	83	266
3	9.3	27	169	260	448	3,030	224	1,470	43	58	233	161
4	8.2	26	*122	210	350	2,280	185	1,640	42	43	342	164
5	8.2	24	92	190	280	1,720	153	1,820	*42	33	339	1,030
6	7.9	24	79	160	230	1,500	161	1,500	57	60	663	1,540
7	7.2	22	802	140	190	1,500	330	2,200	44	60	2,990	1,860
8	6.6	22	2,740	*130	160	1,240	652	2,020	76	62	3,930	2,480
9	6.3	24	2,020	110	140	945	536	1,400	342	56	2,820	2,280
10	6.0	28	1,270	100	120	678	414	1,080	539	65	1,310	1,640
11	6.0	29	820	95	100	518	740	732	945	483	1,080	1,010
12	5.7	33	527	90	95	414	1,340	459	424	1,610	704	482
13	5.1	35	336	80	85	336	1,200	300	458	1,340	1,870	263
14	4.8	103	269	130	80	296	820	202	732	790	1,680	158
15	*5.7	308	242	300	75	275	583	151	474	1,020	1,400	109
16	5.4	336	514	450	70	278	428	117	230	3,160	978	115
17	5.1	254	1,500	600	65	306	322	94	124	3,490	545	150
18	13	166	1,440	450	65	*342	239	79	77	2,800	349	1,110
19	12	120	2,380	350	60	381	180	70	60	2,100	266	1,500
20	8.2	96	2,630	280	60	432	148	58	54	1,610	180	850
21	8.6	85	2,910	230	60	536	199	51	51	978	136	1,320
22	15	76	2,240	500	60	850	*306	47	48	439	106	2,150
23	20	63	1,540	1,700	70	732	290	44	43	222	85	1,400
24	33	56	1,140	1,300	350	536	251	43	38	129	983	*732
25	37	48	760	1,000	1,900	451	205	42	40	*96	5,310	471
26	40	47	1,650	1,900	2,900	901	158	42	57	102	2,940	322
27	50	43	3,490	1,940	4,010	1,400	129	40	104	106	1,340	224
28	48	43	2,100	1,720	6,390	1,140	310	41	143	83	678	171
29	43	116	1,470	1,440	-	880	1,460	35	138	62	360	141
30	37	284	1,240	1,240	------	652	2,530	33	94	51	210	124
31	35	------	880	1,010	------	488	------	32	--- ---	54	177	--- -
Total	521.3	2,598	37,927	19,040	19,775	37,317	15,151	19,172	5,599	21,272	34,150	24,615
Mean	16.8	86.6	1,223	614	706	1,204	505	618	187	686	1,102	820
Cfsm	0.029	0.148	2.08	1.05	1.20	2.05	0.860	1.05	0.319	1.17	1.88	1.40
In.	0.03	0.17	2.40	1.21	1.25	2.36	0.96	1.21	0.36	1.35	2.17	1.56

Calendar year 1957: Max 11,300 Min 4.5 Mean 736 Cfsm 1.25 In. 17.00
Water year 1957-58: Max 7,330 Min 4.8 Mean 650 Cfsm 1.11 In. 15.03

Peak discharge (base, 5,500 cfs).--Feb. 28 (9 p.m.) 7,710 cfs (9.09 ft); Aug. 25 (10:30 a.m.) 5,850 cfs (8.12 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 3-25, Feb. 4-26.

2125. Ashtabula River near Ashtabula, Ohio

Location.--Lat 41°51'19", long 80°45'43", on left bank at downstream side of highway bridge, 1 mile upstream from Hubbard Run, 1¼ miles southeast of Ashtabula, Ashtabula County, and 5½ miles upstream from mouth.

Drainage area.--118 sq mi.

Records available.--July 1924 to December 1935, March 1939 to November 1947, March 1950 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 605 ft (from topographic map). Prior to Aug. 27, 1924, staff gage at same site and datum.

Average discharge.--27 years, 149 cfs.

Extremes.--Maximum discharge during year, 2,800 cfs Sept. 5 (gage height, 4.60 ft); maximum gage height, 5.56 ft Feb. 27 (ice jam); no flow for many days in October.
1924-35, 1939-47, 1950-58: Maximum discharge, 10,800 cfs May 16, 1942 (gage height, 9.67 ft); no flow at times during most years.

Remarks.--Records good except those for periods of ice effect, which are poor.

Revisions (water years).--WSP 954: 1929(M). WSP 974: 1942. WSP 1437: 1926, 1932, 1934.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 6-11, 17-21, 23-26)

-0.1	0	0.7	34
0.0	.5	1.0	85
.1	1.1	1.3	158
.2	2.4	1.6	265
.3	5.0	2.0	490
.4	9.2	3.0	1,260
.5	15	4.0	2,200

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	2.6	70	64	141	1,900	46	173	8.3	12	70	93
2	.1	2.2	34	50	120	732	37	89	11	8.3	48	76
3	.1	1.8	*25	40	95	503	30	86	14	12	29	45
4	.1	1.4	19	35	75	359	26	686	*17	7.8	18	80
5	.1	1.3	18	35	65	245	22	404	14	6.9	12	1,810
6	.2	1.6	17	35	55	285	28	168	14	6.2	62	574
7	.1	1.4	296	*35	50	315	106	497	12	6.2	1,220	424
8	.1	1.9	*800	35	50	214	257	256	12	8.7	968	285
9	0	3.1	288	35	45	150	141	120	122	7.4	304	187
10	0	3.1	147	35	40	102	100	74	241	13	103	102
11	0	2.6	91	30	40	85	208	52	249	151	474	64
12	0	4.2	45	30	*35	70	305	37	118	241	236	42
13	0	5.4	40	30	35	64	197	29	82	132	234	31
14	0	6.2	35	30	30	58	108	22	237	61	110	23
15	0	7.8	35	45	30	54	70	18	116	37	58	20
16	*0	30	220	75	25	56	52	14	54	26	70	25
17	0	26	536	80	25	66	40	24	31	24	45	60
18	.2	14	253	60	25	79	43	23	21	29	40	623
19	.8	9.2	600	50	25	*83	34	17	14	21	49	502
20	1.4	6.5	503	45	25	85	25	12	12	14	35	209
21	1.1	5.0	562	40	25	108	52	8.3	8.3	9.2	31	679
22	1.1	5.0	248	150	25	194	*66	7.8	7.8	6.9	24	849
23	2.0	5.1	130	430	30	141	63	6.5	8.3	6.5	23	*295
24	4.8	3.8	91	265	45	100	48	5.8	7.8	4.8	881	144
25	5.0	3.1	77	255	400	85	33	5.8	10	*5.0	1,380	85
26	2.9	3.3	702	522	1,000	214	28	5.8	17	5.4	275	68
27	2.4	3.1	944	430	1,300	225	21	5.8	88	3.3	102	52
28	4.0	2.9	270	280	2,200	136	36	8.7	61	4.1	51	42
29	5.4	15	152	214	--	89	648	6.9	31	12	31	48
30	3.6	67	102	168	-------	68	594	5.8	18	72	23	40
31	3.3	-------	79	150	-------	54	-------	6.9	-------	91	35	-------
Total	39.0	245.6	7,429	3,778	6,056	6,919	3,466	2,875.1	1,656.5	1,044.7	7,041	7,577
Mean	1.26	8.19	240	122	216	223	116	92.7	55.2	33.7	227	253
Cfsm	0.011	0.069	2.03	1.03	1.83	1.89	0.983	0.786	0.468	0.286	1.92	2.14
In.	0.01	0.08	2.34	1.19	1.91	2.18	1.10	0.91	0.52	0.33	2.21	2.39

Calendar year 1957: Max 3,910 Min 0 Mean 151 Cfsm 1.28 In. 17.40
Water year 1957-58: Max 2,200 Min 0 Mean 132 Cfsm 1.12 In. 15.17

Peak discharge (base, 2,600 cfs).--Mar. 1 (1 a.m.) 2,600 cfs (4.40 ft); Sept. 5 (12:30 p.m.) 2,800 cfs (4.60 ft).

* Discharge measurement or observation of no flow made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5, 6, 12-16, Jan. 2-22, Feb. 2-28. Discharge computed from twice-daily wire-weight-gage readings Oct. 1-16.

2130. Conneaut Creek at Amboy, Ohio

Location.--Lat 41°55'34", long 80°36'18", on right bank at downstream side of highway bridge, half a mile east of Amboy, Ashtabula County, 3 miles southwest of Conneaut, and 6½ miles upstream from mouth.

Drainage area.--178 sq mi.

Records available.--July 1922 to December 1935, March 1950 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 605 ft (from topographic map). Prior to Aug. 17, 1924, chain gage at same site and datum.

Average discharge.--21 years, 241 cfs.

Extremes.--Maximum discharge during year, 8,410 cfs Sept. 5 (gage height, 8.77 ft); minimum, 3.7 cfs Oct. 11 (gage height, 1.15 ft).
1922-35, 1950-58: Maximum discharge, 12,900 cfs Oct. 16, 1954; maximum gage height, 12.94 ft Mar. 4, 1934 (ice jam); minimum discharge, 0.2 cfs July 31, Aug. 1, 1933, Aug. 1, 2, 1934.

Remarks.--Records good except those for periods of ice effect, which are poor.

Revisions (water years).--WSP 714: 1926. WSP 784: 1933. WSP 1437: 1923-25(M), 1926-30, 1931-32(M), 1933, 1935(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 10, 14, July 11, 31, Aug. 25)

1.1	2.9	2.5	166
1.2	7.1	3.0	314
1.3	12	3.5	535
1.6	34	4.0	880
1.9	65	5.0	1,880
2.2	105	7.0	4,960

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.2	12	121	125	190	4,600	119	454	35	38	202	140
2	5.3	12	77	112	160	2,400	104	215	45	31	140	162
3	5.3	11	*54	76	140	1,100	90	194	100	42	72	99
4	4.9	11	45	75	140	832	80	797	69	31	45	84
5	4.9	11	35	75	130	500	72	1,010	*46	27	31	4,070
6	4.9	12	35	80	120	473	77	388	46	25	64	3,930
7	4.9	12	165	*85	110	595	167	647	45	29	1,140	976
8	5.3	13	1,140	80	110	487	388	630	56	40	2,130	551
9	4.5	15	702	75	100	380	307	286	279	33	723	372
10	4.5	16	241	75	100	269	207	181	458	58	196	218
11	4.1	16	154	70	100	207	259	133	318	220	206	135
12	4.5	17	59	65	*100	171	468	105	194	686	279	99
13	5.3	18	60	60	95	154	388	86	119	294	388	78
14	5.3	20	60	60	80	137	247	73	291	150	266	53
15	5.3	23	60	75	70	135	166	64	286	116	123	56
16	*4.9	39	180	160	65	131	125	58	132	139	98	60
17	5.3	48	700	170	65	137	100	53	82	244	112	89
18	8.6	31	454	130	65	148	89	48	60	132	93	512
19	10	25	826	110	60	*161	77	45	49	72	66	1,000
20	8.6	20	912	95	60	181	71	38	46	52	81	371
21	8.6	19	960	90	65	204	102	35	38	40	65	684
22	11	20	531	220	70	273	*137	34	34	34	48	1,760
23	13	20	238	450	75	318	148	36	30	30	43	*610
24	22	18	159	350	90	273	112	33	30	*28	669	221
25	20	16	143	300	550	230	92	36	39	27	350	133
26	30	16	497	368	1,500	343	76	31	72	25	403	100
27	27	16	2,200	487	1,900	487	63	27	397	22	159	87
28	21	16	706	401	2,880	333	84	31	160	23	90	89
29	16	32	296	307	-	232	632	28	84	69	62	89
30	14	72	210	250	-------	174	1,370	28	54	356	46	77
31	13	-------	150	224	-------	139	-------	28	-------	298	77	-------
Total	308.2	627	12,170	5,300	9,190	16,204	6,417	5,852	3,694	3,411	8,467	16,905
Mean	9.94	20.9	393	171	328	523	214	189	123	110	275	564
Cfsm	0.056	0.117	2.21	0.961	1.84	2.94	1.20	1.06	0.691	0.618	1.53	3.17
In.	0.06	0.13	2.55	1.11	1.92	3.39	1.34	1.22	0.77	0.71	1.76	3.54

Calendar year 1957: Max 6,810 Min 4.1 Mean 254 Cfsm 1.43 In. 19.36
Water year 1957-58: Max 4,600 Min 4.1 Mean 243 Cfsm 1.37 In. 18.50

Peak discharge (base, 2,900 cfs).--Mar. 1 (6 p.m.) 5,140 cfs (7.14 ft); Sept. 5 (10:30 p.m.) 8,410 cfs (8.77 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 4-6, 13-17, Jan. 4-13, 16-25, Feb. 1-27, Mar. 5.

2135. Cattaraugus Creek at Gowanda, N. Y.

Location.--Lat 42°27'50", long 78°56'10", on right bank at Gowanda, Erie County, 380 ft downstream from highway bridge and 4.2 miles downstream from South Branch.

Drainage area.--428 sq mi.

Records available.--November 1939 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 738.74 ft above mean sea level (village of Gowanda bench mark).

Average discharge.--18 years (1940-58), 724 cfs.

Extremes.--Maximum discharge during year, 11,200 cfs June 13 (gage height, 8.46 ft); minimum, 51 cfs Oct. 15, 22; minimum gage height, 1.80 ft Aug. 20; minimum daily discharge, 94 cfs Oct. 15.
1939-58: Maximum discharge, 35,900 cfs Mar. 17, 1942, from rating curve extended above 6,500 cfs by logarithmic plotting; maximum gage height, 14.14 ft Mar. 7, 1956; minimum discharge, about 6 cfs Aug. 21, 1941; minimum gage height, 0.90 ft Oct. 26, 1951; minimum daily discharge, 52 cfs Sept. 13, 1945, Aug. 1, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation at low and medium flow caused by several industrial plants above station.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 20		Dec. 21 to Sept. 30			
2.0	83	2.0	135	4.0	1,590
2.5	285	2.5	330	5.0	2,990
3.0	550	3.0	640	7.0	7,200
4.0	1,390	3.5	1,050		
5.0	2,800				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	118	98	408	422	340	2,800	3,910	1,090	512	312	244	162
2	121	98	326	350	370	1,880	3,380	822	1,970	290	216	147
3	118	101	285	310	350	1,590	3,350	*1,140	689	378	200	135
4	109	102	235	280	280	1,300	3,210	1,800	458	314	185	381
5	112	123	165	310	290	1,150	3,310	1,020	370	371	181	316
6	107	140	237	310	392	*1,020	6,660	914	370	337	177	251
7	107	127	1,410	300	386	924	7,120	2,040	321	385	208	2,440
8	105	130	1,640	280	340	840	2,870	2,360	312	389	300	2,720
9	110	195	710	250	300	780	1,870	1,200	463	421	262	1,100
10	*105	192	490	260	250	734	1,710	879	2,070	315	201	661
11	103	165	*370	250	260	696	2,160	750	1,120	1,120	212	521
12	105	162	230	230	250	633	2,400	654	*612	3,600	201	*360
13	102	163	300	185	230	584	1,770	570	4,120	1,200	177	291
14	106	*250	320	200	210	577	1,650	507	2,160	703	*176	268
15	94	404	308	280	220	563	1,610	476	951	739	181	235
16	102	296	980	320	210	535	*1,350	464	647	868	182	296
17	102	221	879	300	200	535	1,170	416	507	605	163	436
18	124	182	532	250	180	556	1,000	416	422	458	158	1,140
19	115	216	770	220	175	563	888	446	386	500	146	605
20	112	257	1,270	240	170	577	774	398	345	398	144	434
21	103	196	3,030	250	170	598	960	360	500	326	145	531
22	99	175	1,270	430	175	647	1,720	355	398	298	153	677
23	98	158	782	528	190	846	1,370	416	330	350	146	457
24	165	158	668	422	240	1,000	897	355	335	303	183	350
25	171	162	542	380	380	1,220	726	330	410	264	267	309
26	127	160	1,110	422	580	1,300	633	316	2,960	251	195	715
27	115	140	1,120	446	900	1,590	570	288	964	236	159	610
28	109	218	718	392	1,700	2,280	853	400	556	238	147	605
29	107	819	626	*386	-	2,720	3,390	446	416	315	138	416
30	99	638	507	380	-------	3,150	1,960	335	340	334	138	340
31	99	-------	452	375	-------	3,770	-------	298	-------	285	141	-------
Total	3,469	6,446	22,690	9,958	9,738	37,958	65,241	22,061	26,014	16,903	5,726	17,909
Mean	112	215	732	321	348	1,224	2,175	712	867	545	185	597
Cfsm	0.262	0.502	1.71	0.750	0.813	2.86	5.08	1.66	2.03	1.27	0.432	1.39
In.	0.30	0.56	1.97	0.87	0.85	3.30	5.67	1.92	2.26	1.47	0.50	1.56

Calendar year 1957: Max 13,900 Min 94 Mean 681 Cfsm 1.59 In. 21.59
Water year 1957-58: Max 7,120 Min 94 Mean 669 Cfsm 1.56 In. 21.23

Peak discharge (base, 15,000 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 4, 5, 11-14, 16, Jan. 2-22, 25, Feb. 1-5, Feb. 8 to Mar. 1, Mar. 8, 9.

2145. Buffalo Creek at Gardenville, N. Y.

Location.--Lat 42°51'15", long 78°45'30", on left bank in Gardenville, Erie County, 700 ft downstream from bridge on Union Road and 2 miles upstream from Cayuga Creek.

Drainage area.--145 sq mi.

Records available.--October 1938 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 604.04 ft above mean sea level, unadjusted.

Average discharge.--20 years, 192 cfs.

Extremes.--Maximum discharge during year, 4,110 cfs June 13 (gage height, 5.52 ft); maximum gage height, 7.65 ft Feb. 27 (ice jam); minimum discharge, 11 cfs Nov. 11 (gage height, 1.18 ft, backwater from aquatic vegetation).
1938-58: Maximum discharge, 13,000 cfs Mar. 1, 1955, Mar. 7, 1956, from rating curve extended above 3,200 cfs on basis of slope-area measurement at gage height 7.07 ft; maximum gage height, 11.90 ft Mar. 9, 1942 (ice jam); minimum discharge, 0.7 cfs Aug. 22, 24, 25, 1941; minimum gage height observed, 0.695 ft Aug. 28, 31, Sept. 3, 1939 (backwater from leaves and debris).

Remarks.--Records good except those for periods of ice effect or backwater from aquatic vegetation or debris, which are fair. Diurnal fluctuation at low flow caused by mill 3.2 miles above station.

Revisions (water years).--WSP 1337: 1939-52.

Rating tables, water year 1957-58, except periods of ice effect or backwater from aquatic vegetation or debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 27				Feb. 28 to June 13				June 14 to Sept. 30			
1.1	6.0	2.2	330	1.4	45	2.5	580	1.2	12	2.1	295
1.2	14	2.5	500	1.6	100	3.0	960	1.3	24	2.5	540
1.4	42	3.0	870	1.9	220	3.5	1,400	1.5	62	3.0	920
1.6	84	4.0	1,870	2.2	385			1.8	157	3.5	1,380
1.9	185										

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	21	175	74	72	1,220	856	216	139	43	56	20
2	16	21	143	60	78	713	635	143	410	41	45	23
3	14	21	106	54	72	594	*546	*135	206	49	39	22
4	13	21	98	54	60	478	486	270	97	43	34	20
5	12	22	84	64	62	452	421	188	73	41	29	26
6	12	24	112	64	78	471	697	143	65	86	27	29
7	12	24	1,060	60	74	373	1,100	334	62	72	27	219
8	12	29	852	56	70	320	584	579	52	*60	37	222
9	13	29	255	50	66	260	314	220	698	72	99	121
10	12	44	145	54	58	240	314	151	1,090	54	43	129
11	12	31	122	50	62	265	563	128	513	62	38	*120
12	12	34	80	46	56	*202	799	114	216	944	41	58
13	12	36	106	42	*50	180	333	100	1,280	337	*31	41
14	12	54	118	40	46	193	240	94	634	135	26	32
15	*12	72	112	*56	48	202	202	94	208	112	23	31
16	13	64	580	64	48	175	167	97	124	249	45	36
17	14	40	386	58	46	206	147	94	*88	132	31	113
18	19	*36	166	50	42	250	128	85	72	72	24	722
19	20	46	265	46	39	265	114	82	65	72	22	220
20	21	60	322	50	37	308	100	73	58	72	20	104
21	20	50	880	54	37	325	128	62	59	56	22	90
22	19	39	283	78	40	386	523	65	75	47	23	276
23	20	78	150	106	46	512	329	85	56	73	22	115
24	32	104	112	84	62	554	171	85	52	72	23	72
25	39	106	86	74	100	573	121	132	81	52	107	58
26	36	90	184	90	170	552	100	167	510	41	56	683
27	28	82	288	90	350	723	91	151	198	38	32	c250
28	25	410	129	84	1,140	938	110	155	85	34	24	c240
29	24	1,630	119	80	-	955	1,010	202	60	574	20	c116
30	22	470	98	80	-------	937	542	188	47	167	19	c80
31	21	-------	82	78	-------	938	-------	147	-------	78	20	-------
Total	565	3,786	7,698	1,990	3,109	14,760	11,871	4,779	7,373	3,980	1,105	4,288
Mean	18.2	126	248	64.2	111	476	396	154	246	128	35.6	143
Cfsm	0.126	0.869	1.71	0.443	0.766	3.28	2.73	1.06	1.70	0.883	0.246	0.986
In.	0.14	0.97	1.97	0.51	0.80	3.79	3.04	1.23	1.89	1.02	0.28	1.10

Calendar year 1957: Max 5,600 Min 7.6 Mean 198 Cfsm 1.37 In. 18.53
Water year 1957-58: Max 1,630 Min 12 Mean 179 Cfsm 1.23 In. 15.74

Peak discharge (base, 6,000 cfs).--No peak above base.

* Discharge measurement made on this day.
c Backwater from debris.
Note.--Stage-discharge relation affected by ice Nov. 23-28, Dec. 1, 3-7, 10-16, 25, Jan. 1 to Feb. 28, Mar. 8-10. Backwater from aquatic vegetation Oct. 1 to Nov. 22 (no gage-height record Nov. 13-15).

2150. Cayuga Creek near Lancaster, N. Y.

Location.--Lat 42°53'20", long 78°38'40", on right bank just upstream from low flat-crested dam in Como Lake Park, 700 ft downstream from bridge on Bowen Road, 800 ft downstream from Little Buffalo Creek, and 2 miles southeast of Lancaster, Erie County.

Drainage area.--93.3 sq mi.

Records available.--September 1938 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 672.80 ft above mean sea level, unadjusted.

Average discharge.--20 years, 128 cfs.

Extremes.--Maximum discharge during year, 2,400 cfs Nov. 29 (gage height, 6.60 ft); maximum gage height, 7.13 ft Feb. 28 (ice jam); minimum discharge, 2.3 cfs Oct. 16, 17 (gage height, 2.93 ft).
1938-58: Maximum discharge, 8,700 cfs Mar. 7, 1956; maximum gage height, 12.36 ft Mar. 9, 1942 (ice jam); practically no flow part of Aug. 8, 9, 1939, when permanent stoplogs were installed in dam.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Revisions (water years).--WSP 1437: 1955.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	4.1	168	58	85	b1,250	575	126	15	16	20	8.0
2	2.8	3.9	117	26	83	648	430	*83	89	13	15	8.7
3	2.9	4.1	b74	b36	80	470	*359	80	49	53	11	5.9
4	2.8	4.1	b68	b35	65	371	307	194	25	37	8.5	5.7
5	2.6	4.1	44	33	b78	371	259	118	20	25	7.3	14
6	2.8	4.1	64	33	b94	403	438	83	23	28	6.1	14
7	2.8	4.1	1,010	39	85	312	766	247	17	*28	6.6	52
8	2.4	5.3	681	b30	67	287	373	359	15	24	8.2	83
9	2.6	11	190	b22	b48	226	206	130	813	36	41	42
10	2.4	11	b116	26	b39	205	205	83	683	23	14	58
11	2.4	9.1	b68	b25	b42	213	432	66	284	36	11	48
12	3.1	10	b50	b21	b34	*157	525	54	102	237	7.9	*20
13	2.6	11	b98	b17	*b28	141	211	41	550	121	*6.4	13
14	*2.8	18	102	20	b24	145	157	36	396	63	5.2	9.9
15	2.8	24	102	*b24	26	149	131	35	118	88	5.5	7.6
16	2.6	19	386	30	b24	124	110	35	66	189	13	14
17	2.4	13	260	33	b22	145	94	30	*45	80	12	63
18	3.2	11	124	29	b20	209	83	26	35	a42	8.7	381
19	4.3	*16	208	b25	b19	258	76	26	31	a41	8.5	124
20	3.9	21	237	b24	b18	306	69	25	26	a41	7.3	51
21	4.1	22	689	28	b18	312	96	20	23	a26	7.4	40
22	3.9	20	209	49	b29	381	310	23	21	a18	4.8	113
23	4.3	27	121	98	b30	486	180	37	18	a43	5.7	49
24	12	57	91	94	b40	489	102	28	20	a41	7.6	28
25	10	67	76	94	b86	461	73	21	24	a25	44	21
26	7.9	54	138	124	b170	419	65	19	185	a17	18	290
27	7.1	b46	185	124	b350	527	57	17	88	a14	10	112
28	5.6	301	96	107	b980	756	73	18	40	a11	6.4	90
29	4.8	1,760	91	94	-	751	763	22	25	225	5.2	52
30	4.6	497	76	88	--------	726	323	18	19	73	5.0	37
31	4.3	--------	67	85	--------	730	--------	15	--------	32	4.8	--------
Total	125.9	3,058.9	6,006	1,571	2,684	12,428	7,858	2,115	3,966	1,744	342.1	1,854.8
Mean	4.06	102	194	50.7	95.9	401	262	68.2	132	56.3	11.0	61.8
Cfsm	0.044	1.09	2.08	0.543	1.03	4.30	2.81	0.731	1.41	0.603	0.118	0.662
In.	0.05	1.22	2.39	0.63	1.07	4.96	3.13	0.84	1.58	0.70	0.14	0.74

Calendar year 1957: Max 4,800 Min 1.1 Mean 135 Cfsm 1.45 In. 19.67
Water year 1957-58: Max 1,760 Min 2.4 Mean 120 Cfsm 1.29 In. 17.45

Peak discharge (base, 3,300 cfs).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of engineer's notes, recorded range in stage, weather records, and records for nearby stations.
b Stage-discharge relation affected by ice.

2155. Cazenovia Creek at Ebenezer, N. Y.

Location.--Lat 42°49'45", long 78°46'40", on right bank 30 ft upstream from highway bridge on Ridge Road in Ebenezer, Erie County, 4.4 miles upstream from mouth, and 5 miles southeast of Buffalo.

Drainage area.--136 sq mi.

Records available.--June 1940 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 604.86 ft above mean sea level, unadjusted. Prior to Apr. 4, 1955, at datum 2 ft higher than present datum. Apr. 4 to Oct. 12, 1955, wire-weight gage at temporary site 1.3 miles downstream at different datum, during period of construction of highway bridge.

Average discharge.--18 years, 221 cfs.

Extremes.--Maximum discharge during year, 4,610 cfs June 13 (gage height, 8.72 ft); minimum, 7.4 cfs Oct. 15 (gage height, 2.09 ft, backwater from aquatic vegetation).
1940-58: Maximum discharge, 13,500 cfs Mar. 1, 1955 (gage height, 13.82 ft, datum then in use), from rating curve extended above 7,700 cfs by logarithmic plotting; minimum, 2.6 cfs Nov. 7, 1953; minimum gage height, 0.42 ft Aug. 25, 1941, Aug. 17, 1950 (datum then in use).

Remarks.--Records good except those for periods of ice effect, backwater from aquatic vegetation, or no gage-height record, which are fair.

Rating tables, water year 1957-58, except periods of ice effect or backwater from aquatic vegetation (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Nov. 29				Nov. 29 to Sept. 30			
2.0	5.0	3.5	457	2.2	21	3.2	260
2.1	11	4.0	760	2.4	47	4.0	670
2.2	21	6.0	2,260	2.7	107	6.0	2,080
2.5	72	7.0	3,180				
2.9	182						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	15	230	82	76	1,500	1,010	219	47	49	47	32
2	14	15	165	66	82	766	851	155	294	43	40	32
3	12	15	120	56	76	616	*752	*185	145	43	32	27
4	11	16	106	58	66	440	694	365	82	39	27	26
5	11	16	94	70	68	400	676	208	61	43	25	41
6	12	17	122	70	86	400	1,040	222	59	65	23	40
7	11	18	1,900	64	78	322	1,360	345	54	62	25	597
8	11	22	1,040	60	74	303	604	656	46	*59	54	776
9	11	32	276	54	70	250	332	235	502	74	102	188
10	10	45	175	58	62	235	318	167	1,420	52	47	200
11	9.8	42	140	52	66	242	702	141	548	61	236	*132
12	9.2	32	*96	49	60	*192	802	120	208	691	81	80
13	9.8	35	120	44	54	183	380	105	1,860	277	47	61
14	9.8	90	125	44	49	195	309	96	638	128	*39	49
15	*10	145	120	60	52	195	288	93	212	86	36	41
16	9.8	92	680	70	52	176	225	93	*139	112	68	72
17	10	60	436	62	49	204	186	86	105	91	41	272
18	15	*47	205	54	44	228	158	80	91	62	33	1,060
19	18	58	475	49	41	222	141	86	80	a62	33	228
20	18	120	472	54	39	236	130	78	70	a62	27	130
21	16	64	1,440	58	39	250	160	68	80	a50	26	173
22	15	56	340	88	43	308	393	68	91	a42	32	286
23	16	110	192	125	52	425	279	98	68	a68	27	130
24	31	135	150	94	70	454	167	72	64	a66	36	84
25	47	140	120	80	110	484	130	57	79	a47	200	74
26	34	108	306	94	220	494	110	52	717	39	78	1,030
27	25	98	308	94	450	634	100	47	195	34	50	266
28	20	1,060	161	68	1,450	1,010	123	52	105	31	39	218
29	18	2,860	147	82	-	992	1,330	61	74	176	31	133
30	20	557	123	82	--------	1,070	530	49	59	96	23	102
31	16	--------	100	80	--------	1,030	--------	44	--------	57	28	--------
Total	495.4	6,120	10,484	2,141	3,678	14,456	14,280	4,403	8,193	2,867	1,633	6,580
Mean	16.0	204	338	69.1	131	466	476	142	273	92.5	52.7	219
Cfsm	0.118	1.50	2.49	0.508	0.963	3.43	3.50	1.04	2.01	0.680	0.388	1.61
In.	0.14	1.67	2.87	0.59	1.01	3.95	3.91	1.20	2.24	0.78	0.45	1.80

Calendar year 1957: Max 7,000 Min 7.2 Mean 243 Cfsm 1.79 In. 24.29
Water year 1957-58: Max 2,860 Min 9.2 Mean 206 Cfsm 1.51 In. 20.61

Peak discharge (base, 5,300 cfs).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record; discharge computed on basis of recorded range in stage and records for nearby stations.

Note.--Stage-discharge relation affected by ice Dec. 1-6, 10-16, Dec. 31 to Feb. 28. Backwater from aquatic vegetation Oct. 1 to Nov. 20 (no gage-height record Nov. 13-15). Backwater from aquatic vegetation and/or ice Nov. 21-28.

2160. Niagara River at Buffalo, N. Y.

Location.--Lat 42°52'40", long 78°53'25", at head of Niagara River at Buffalo.

Drainage area.--260,400 sq mi.

Records available.--January 1905 to September 1958 in reports of Geological Survey (prior to October 1935, monthly discharge only). January 1860 to December 1904 in files of U. S. Lake Survey.

Gage.--Flow computed by means of several U. S. Lake Survey gages on river.

Average discharge.--99 years (January 1860 to September 1958), 203,000 cfs.

Extremes.--Maximum daily discharge during year, 224,000 cfs Jan. 1; minimum daily, 158,000 cfs Feb. 27.
1935-58: Maximum daily discharge, 274,000 cfs Nov. 17, 1955; minimum daily, 100,000 cfs Feb. 6, 7, 1936.
1860-1958: Maximum monthly discharge, 254,000 cfs July 1862; minimum monthly, 117,000 cfs February 1936.

Remarks.--Records do not include water diverted from Lake Michigan by Illinois and Michigan Canal during period of its operation prior to 1910 and by Chicago Sanitary and Ship Canal, operation of which began in 1900, and from Lake Erie by Welland and Black Rock Canals. They include water diverted into Lake Superior from Hudson Bay drainage by the Long Lake project, operation of which began in July 1939, and by the Ogoki project, operation of which began in July 1943. The diversions into Lake Superior have averaged about 5,000 cfs since July 1943.

Cooperation.--Records of daily discharge furnished by Corps of Engineers.

Discharge, in thousands of cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	197	176	208	224	170	182	177	183	180	185	180	186
2	193	175	200	207	175	179	177	171	178	189	181	176
3	181	182	178	200	179	184	175	179	175	185	182	176
4	178	186	162	189	190	182	167	180	176	182	181	182
5	176	186	180	198	177	180	169	170	181	180	182	178
6	178	192	192	203	175	180	172	168	177	187	185	180
7	178	194	181	196	174	179	182	175	178	184	187	186
8	185	201	179	187	183	179	187	184	182	187	188	184
9	190	205	181	183	187	176	181	186	178	184	188	187
10	186	199	194	199	175	177	172	182	179	185	192	194
11	184	185	200	193	179	179	171	183	182	185	184	177
12	184	183	190	179	175	179	180	181	173	185	184	177
13	186	177	197	182	172	173	183	181	192	184	185	180
14	184	178	197	174	167	173	183	184	184	184	184	177
15	182	198	184	173	164	182	179	182	184	190	188	179
16	182	183	193	183	166	184	179	182	190	191	182	177
17	185	190	179	191	176	179	178	180	185	184	191	172
18	187	172	174	194	171	175	178	183	179	184	183	180
19	182	205	189	181	169	176	176	187	178	194	186	178
20	182	218	186	180	168	178	178	187	180	182	187	178
21	184	209	210	175	167	180	178	184	179	179	191	178
22	185	204	193	187	171	182	178	184	180	181	183	182
23	182	197	194	183	172	180	181	178	179	181	181	178
24	193	205	200	162	166	177	185	178	178	182	182	179
25	185	181	184	166	177	168	189	182	182	181	190	184
26	178	180	199	185	164	165	175	178	196	183	183	180
27	181	177	202	184	158	171	168	177	191	180	182	178
28	195	182	196	189	169	174	174	181	184	183	181	176
29	201	189	208	189	-	175	184	184	184	188	181	178
30	196	191	192	176	--------	175	184	184	186	189	182	190
31	184	--------	188	178	--------	176	--------	179	--------	181	189	--------
Total	5,745	5,700	5,910	5,790	4,836	5,499	5,340	5,597	5,440	5,719	5,725	5,409
Mean	185	190	191	187	173	177	178	181	181	184	185	180
Cfsm	0.710	0.730	0.733	0.718	0.664	0.680	0.684	0.695	0.695	0.707	0.710	0.691
In.	0.82	0.81	0.84	0.83	0.69	0.79	0.76	0.80	0.78	0.82	0.82	0.77

Calendar year 1957: Max 242 Min 162 Mean 195 Cfsm 0.749 In. 10.18
Water year 1957-58: Max 224 Min 158 Mean 183 Cfsm 0.703 In. 9.53

Note.--All figures of discharge are expressed in thousands of cubic feet per second.

2162. Scajaquada Creek at Buffalo, N. Y.

Location.--Lat 42°54'40", long 78°47'45", on right bank 58 ft upstream from point where stream goes underground in concrete-lined tunnel, 86 ft upstream from Pine Ridge Road, and 0.16 mile east of boundary line of city of Buffalo, Erie County.

Drainage area.--15.7 sq mi.

Records available.--February 1957 to September 1958.

Gage.--Water-stage recorder.

Extremes.--Maximum discharge during year, 418 cfs Dec. 20 (gage height, 4.27 ft); minimum, 5.3 cfs Sept. 15 (gage height, 1.50 ft).
1957-58: Maximum discharge, 746 cfs May 20, 1957 (gage height, 5.98 ft); minimum, that of Sept. 15, 1958; minimum gage height, 1.49 ft Sept. 2, 1957 (may have been lower during periods of partly obstructed intake).

Remarks.--Records good except those for periods of backwater from debris or partly obstructed intake, which are fair. Discharge includes about 1.58 cfs diverted into the basin above the station as sewage.

Rating tables, water year 1957-58, except periods of backwater from debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-22		Oct. 22 to June 25				June 26 to Sept. 30	
1.5	6.0	1.5	6.2	2.0	32	1.5	5.3
1.7	11	1.6	8.6	2.4	80	1.6	7.3
		1.7	12	3.0	184	1.8	15
		1.8	15	4.0	369	2.0	32
						2.3	66

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.8	10	32	18	18	137	13	*27	9.5	8.9	7.6	13
2	8.6	10	22	13	16	105	*12	16	12	9.2	7.6	8.9
3	8.4	8.9	16	12	15	97	*12	25	11	9.2	7.0	8.6
4	8.6	9.8	14	11	14	79	11	30	10	8.3	8.6	9.5
5	8.8	9.8	13	9.8	14	97	11	21	11	8.0	8.6	11
6	8.2	10	13	11	14	100	28	20	9.8	7.3	*8.9	8.6
7	8.6	9.5	149	11	14	90	85	24	9.8	8.9	11	9.2
8	8.8	18	130	11	14	88	67	19	10	*9.2	10	9.2
9	8.8	16	42	10	12	63	30	16	42	8.9	8.3	8.9
10	8.6	15	28	11	12	58	21	14	23	8.9	12	21
11	8.4	13	18	10	12	61	51	12	14	12	12	*8.9
12	8.4	13	*14	9.5	12	42	82	12	12	18	9.8	8.0
13	8.2	12	12	10	12	37	35	12	27	9.2	9.8	7.8
14	8.0	32	14	11	11	*44	22	12	15	c15	9.8	7.3
15	*8.2	32	14	11	11	53	17	12	12	c12	9.5	8.0
16	8.2	17	34	10	11	42	15	12	*12	c11	9.2	35
17	8.2	12	28	9.8	10	50	14	11	11	c8.6	c7.8	29
18	8.2	12	29	9.8	11	62	13	10	10	c8.6	c9.2	54
19	7.8	*28	43	9.2	11	63	12	12	10	c9.0	c9.6	18
20	7.8	30	127	10	11	65	11	11	11	c7.4	c9.8	12
21	8.2	69	225	11	11	63	28	11	9.8	c8.2	c11	22
22	8.4	46	56	20	12	70	43	25	8.6	c8.2	c9.2	13
23	20	34	30	14	12	60	31	12	9.8	c9.2	c8.0	11
24	32	97	20	12	24	44	20	11	11	c9.0	c20	10
25	11	69	15	18	90	32	14	9.8	22	c8.8	20	9.8
26	10	40	77	22	112	28	12	11	24	c8.0	8.9	44
27	10	28	51	21	184	24	12	10	9.8	c7.6	8.9	15
28	10	41	28	24	234	20	13	17	8.6	c8.0	8.6	13
29	10	191	19	22	-	17	102	11	7.6	c8.2	8.6	11
30	10	70	19	*20		14	66	9.5	8.6	c7.6	12	16
31	10		17	19		14		9.5		7.8	31	
Total	307.2	1,003.0	1,349	421.1	934	1,819	903	464.8	401.9	288.2	332.3	460.7
Mean	9.91	33.4	43.5	13.6	33.4	58.7	30.1	15.0	13.4	9.30	10.7	15.4
Cfsm	0.631	2.13	2.77	0.866	2.13	3.74	1.92	0.955	0.854	0.592	0.682	0.981
In.	0.73	2.38	3.20	1.00	2.21	4.31	2.14	1.10	0.95	0.68	0.79	1.09

Calendar year 1957: Max - Min - Mean - Cfsm - In. -
Water year 1957-58: Max 234 Min 7.0 Mean 23.8 Cfsm 1.52 In. 20.58

* Discharge measurement made on this day.
c Backwater from debris.
Note.--Partly obstructed intake Oct. 1-22; discharge computed on basis of discharge measurements, weather records, engineer's notes, and records for nearby stations.

2165. Little Tonawanda Creek at Linden, N. Y.

Location.--Lat 42°52'35", long 78°09'45", on right bank at upstream side of highway bridge in Linden, Genesee County, and 7 miles upstream from mouth.

Drainage area.--22.0 sq mi.

Records available.--July 1912 to September 1958.

Gage.--Water-stage recorder. Concrete control since Oct. 15, 1930. Datum of gage is 1,081.62 ft above mean sea level, datum of 1929. Prior to Aug. 26, 1943, staff gage at same site and datum.

Average discharge.--45 years (1912-19, 1920-58), 27.5 cfs.

Extremes.--Maximum discharge during year, 732 cfs Apr. 7 (gage height, 6.56 ft); minimum, 0.6 cfs Oct. 17 (gage height, 0.285 ft).
1912-58: Maximum discharge, 2,700 cfs Mar. 7, 1956 (gage height, 16.04 ft, from high-water mark); minimum, 0.08 cfs Aug. 3, 4, 1955 (gage height, 0.145 ft, backwater from aquatic vegetation and debris).

Remarks.--Records excellent except those for discharges below 2 cfs, which are good, and those for periods of ice effect or no gage-height record, which are fair.

Revisions (water years).--WSP 564: 1919(M). WSP 729: 1931. WSP 1307: 1919(M).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 2				Mar. 3 to Sept. 30			
0.3	0.7	1.0	15	0.35	1.1	1.5	34
.4	1.6	1.5	37	.4	1.6	2.0	64
.5	2.8	2.0	64	.5	2.8	2.5	105
.7	6.3			.6	4.4	3.5	234
				.8	8.4	5.0	456
				1.0	14		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.8	0.8	a7.5	9.2	8.2	61	267	30	6.6	5.4	5.3	1.4
2	.8	.8	6.2	7.2	8.4	63	244	*23	15	4.9	4.3	1.4
3	.9	.9	4.8	8.2	7.6	53	245	25	8.9	6.2	3.8	1.4
4	.8	1.1	4.4	8.4	8.0	46	*230	41	6.4	5.6	3.4	1.6
5	.8	1.0	3.4	7.6	10	43	234	29	6.0	6.4	*3.1	1.6
6	.9	1.0	4.0	7.5	11	41	389	25	6.6	7.5	2.7	1.6
7	1.0	.9	18	8.0	11	39	430	53	5.4	*6.6	2.8	3.9
8	1.0	.8	35	7.2	10	35	129	55	5.1	6.0	3.0	8.6
9	1.0	.9	14	6.8	9.6	33	89	32	103	6.9	3.0	5.1
10	.9	.9	10	6.8	8.4	31	82	25	147	5.6	2.8	*6.0
11	.8	1.1	9.0	7.2	8.2	30	171	21	99	5.8	2.7	5.4
12	.8	1.1	6.0	6.6	7.8	27	150	18	32	53	2.7	3.6
13	.8	1.1	5.2	6.0	7.6	26	110	15	131	29	2.4	2.9
14	*.7	1.1	6.4	5.8	7.8	25	116	14	76	13	2.2	2.5
15	.7	1.1	6.2	6.1	8.2	25	102	13	30	9.8	2.1	2.3
16	.7	1.1	15	6.3	7.6	24	78	13	20	41	1.9	2.5
17	.7	1.0	16	6.4	7.0	23	65	11	14	18	1.7	4.3
18	.8	.9	11	6.0	6.4	*24	58	11	*12	11	1.8	22
19	.9	.9	14	5.8	6.0	25	46	13	11	9.8	1.8	15
20	.9	*1.1	15	5.9	6.6	30	38	10	10	8.4	1.6	8.6
21	.9	1.3	24	6.1	7.4	30	46	9.1	8.9	6.6	1.7	7.3
22	.8	1.6	20	8.7	7.8	30	108	9.4	8.2	5.8	1.8	15
23	.8	1.4	14	11	8.4	38	60	10	7.1	6.0	1.6	8.9
24	.9	1.4	11	8.8	9.4	47	38	8.9	7.1	5.6	2.2	6.0
25	1.0	1.5	9.3	8.2	12	56	28	8.2	7.1	5.1	3.3	4.9
26	.8	1.5	14	9.6	*18	55	23	7.5	25	4.7	2.7	12
27	.8	a1.3	*21	9.9	28	78	21	6.9	12	4.3	2.2	11
28	.8	a5.0	13	9.6	47	136	29	7.3	8.9	3.6	1.9	11
29	.8	a30	13	9.0	-	180	73	8.0	7.5	12	1.8	8.2
30	.8	a17	11	9.0	-------	209	50	6.6	6.0	9.1	1.6	6.2
31	.8	-------	10	8.6	-------	266	----	6.0	-------	5.6	1.4	-------
Total	25.9	81.6	370.4	237.5	303.2	1,829	3,749	564.9	842.8	328.3	77.3	192.2
Mean	0.84	2.72	11.9	7.66	10.8	59.0	125	18.2	28.1	10.6	2.49	6.41
Cfsm	0.038	0.124	0.541	0.348	0.491	2.68	5.68	0.827	1.28	0.482	0.113	0.291
In.	0.04	0.14	0.63	0.40	0.51	3.09	6.34	0.95	1.42	0.55	0.13	0.32

Calendar year 1957: Max 740 Min 0.6 Mean 25.8 Cfsm 1.17 In. 15.93
Water year 1957-58: Max 430 Min 0.7 Mean 23.6 Cfsm 1.07 In. 14.52

Peak discharge (base, 530 cfs).--Apr. 7 (5 a.m.) 732 cfs (6.56 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, observer's notes, and records for nearby stations.
Note.-Stage-discharge relation affected by ice Dec. 3-5, 12-14, Jan. 1-5, 8-13, 17-19, 24, 25, Jan. 31 to Feb. 5, Feb. 9-26, Mar. 6, 8-10 (no gage-height record Feb. 22, 23).

2170. Tonawanda Creek at Batavia, N. Y.

Location.--Lat 42°59'55", long 78°11'20", on right bank 150 ft downstream from municipal dam, 500 ft upstream from Walnut Street Bridge in Batavia, Genesee County, and 3½ miles downstream from Little Tonawanda Creek.

Drainage area.--172 sq mi.

Records available.--July 1944 to September 1958.

Gage.--Water-stage recorder and concrete control. Datum of gage is 876.01 ft above mean sea level (city of Batavia bench mark).

Average discharge.--14 years, 202 cfs.

Extremes.--Maximum discharge during year, 2,960 cfs Apr. 7 (gage height, 7.22 ft); minimum, 11 cfs Oct. 17 (gage height, 1.33 ft).
1944-58: Maximum discharge, 8,420 cfs Mar. 7, 1956 (gage height, 12.07 ft), from rating curve extended above 3,000 cfs on basis of contracted-opening measurement of peak flow; maximum gage height, 13.85 ft Apr. 6, 1947; minimum discharge, 0.4 cfs Aug. 5, 6, 7, 1955; minimum gage height, 0.59 ft July 26, 27, 1948.
Maximum stage known, 14.5 ft in March 1942, from records of city of Batavia.

Remarks.--Records good except those for periods of ice effect, which are fair. Slight regulation at low flow by plants above station.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 18)

Oct. 1 to Sept. 18				Sept. 18-30	
1.3	9.5	2.4	236	1.7	42
1.4	16	3.0	545	2.0	100
1.5	24	5.0	1,740	2.4	220
1.7	48	7.0	2,840		
2.0	107				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	18	139	82	76	485	1,530	344	53	47	58	21
2	16	18	98	b45	80	515	1,400	*228	146	44	48	22
3	16	19	70	b56	78	551	1,270	188	131	58	39	18
4	15	21	b64	b60	61	527	*1,220	295	72	59	34	18
5	14	22	b38	b60	61	491	1,130	257	54	58	31	24
6	14	22	54	b60	76	468	1,300	198	56	66	30	26
7	14	21	191	62	80	417	2,580	365	50	*76	30	97
8	15	22	581	b60	b74	359	1,790	462	45	59	45	143
9	16	22	230	b45	b64	319	764	287	313	70	106	81
10	15	26	134	b45	b52	278	605	206	650	54	48	*76
11	13	26	100	b48	b52	274	605	171	820	58	38	95
12	13	21	b47	b44	b50	*240	1,180	152	351	301	*35	48
13	13	21	b54	b40	b48	221	898	134	284	578	30	36
14	13	23	74	b39	*b48	209	664	118	761	210	26	31
15	13	34	70	44	b50	206	644	107	344	152	25	26
16	*12	39	118	47	b47	184	515	112	181	283	67	30
17	12	31	310	51	b44	188	439	105	129	200	33	68
18	13	24	143	b48	b40	191	364	96	*102	110	27	302
19	15	26	144	b45	b38	213	319	96	89	93	24	179
20	16	*30	198	b44	b42	257	257	91	78	91	22	89
21	16	33	289	47	b47	270	261	76	68	66	21	65
22	14	34	246	54	b48	274	468	74	80	56	22	125
23	15	33	143	76	51	359	616	86	64	56	22	99
24	17	35	107	93	54	456	319	78	61	62	27	57
25	24	36	b88	78	66	539	240	64	65	50	54	44
26	26	35	*b88	64	112	503	188	62	245	45	44	178
27	21	26	240	80	242	605	161	58	217	43	30	194
28	20	45	131	84	406	878	179	56	96	39	24	133
29	19	350	112	80	-	1,040	500	70	70	163	21	96
30	19	381	102	80	-------	1,170	794	59	56	168	19	68
31	19	-------	89	80	-------	1,270	-------	50	-------	84	20	-------
Total	494	1,494	4,492	1,841	2,187	13,957	23,200	4,745	5,731	3,499	1,100	2,489
Mean	15.9	49.8	145	59.4	78.1	450	773	153	191	113	35.5	83.0
Cfsm	0.092	0.290	0.843	0.345	0.454	2.62	4.49	0.890	1.11	0.657	0.206	0.483
In.	0.11	0.32	0.97	0.40	0.47	3.02	5.02	1.03	1.24	0.76	0.24	0.54

Calendar year 1957: Max 6,690 Min 9.2 Mean 198 Cfsm 1.15 In. 15.66
Water year 1957-58: Max 2,580 Min 12 Mean 179 Cfsm 1.04 In. 14.12

Peak discharge (base, 1,800 cfs).--Apr. 7 (6 p.m.) 2,960 cfs (7.22 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

2175. Tonawanda Creek near Alabama, N. Y.

Location.--Lat 43°05'25", long 78°27'15", near center of span on upstream side of highway bridge on Meadville Road, 0.4 mile downstream from canal feeder connecting Tonawanda and Oak Orchard Creeks, 1.1 miles upstream from small tributary, and 3.2 miles west of Alabama, Genesee County.

Drainage area.--230 sq mi.

Records available.--October 1955 to September 1958.

Gage.--Wire-weight gage read twice daily. Crest-stage indicator since Sept. 5, 1956.

Extremes.--Maximum discharge during year, 3,560 cfs Apr. 7 (gage height, 12.33 ft); minimum daily, 18 cfs Oct. 14-17.
1955-58: Maximum discharge, 6,860 cfs Mar. 8, 1956 (gage height, 13.92 ft, from graph based on gage readings); minimum daily, 10 cfs Oct. 4, 5, 1955.

Remarks.--Records good except those for periods of ice effect, backwater from debris, or no gage-height record, which are fair.

Rating table, water year 1957-58, except periods of ice effect or backwater from debris (gage height, in feet, and discharge, in cubic feet per second)

5.1	18	8.0	750
5.3	38	9.0	1,250
5.6	74	10.0	1,750
6.0	140	11.0	2,320
7.0	377	12.0	3,160

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	24	286	118	96	520	1,650	657	70	65	80	27
2	22	24	154	76	98	600	1,640	*352	96	55	61	25
3	21	24	118	84	96	660	1,400	266	240	57	51	26
4	21	25	106	88	86	700	*1,300	304	122	69	45	25
5	20	27	88	84	78	660	1,240	386	84	a77	41	23
6	20	29	77	82	86	620	1,310	278	71	70	40	23
7	20	28	117	80	92	580	2,480	276	64	78	38	34
8	20	29	555	80	96	540	2,850	505	62	a91	36	194
9	19	35	398	70	92	500	1,280	444	86	*71	38	129
10	20	33	229	64	86	450	900	296	663	78	82	*88
11	21	30	156	64	76	410	852	229	975	69	54	92
12	20	31	114	60	68	390	1,520	209	568	118	47	91
13	19	29	106	58	64	355	1,200	176	a577	622	*41	55
14	18	33	125	58	*64	333	880	156	591	385	39	41
15	18	47	126	56	64	325	800	140	a668	206	35	35
16	*18	46	127	*54	64	304	660	135	298	182	29	41
17	18	46	354	56	62	281	568	127	182	271	42	44
18	19	36	269	68	58	286	454	113	*133	172	44	129
19	19	*36	187	62	54	*317	400	108	106	120	37	329
20	19	42	257	60	52	392	327	106	91	104	32	152
21	19	45	294	58	54	447	294	94	84	99	35	96
22	20	49	418	60	58	a505	457	91	80	71	30	85
23	20	46	250	68	62	632	890	96	81	a66	26	170
24	23	54	178	82	66	650	535	106	70	61	26	93
25	29	56	140	104	74	975	330	94	68	66	33	69
26	30	52	135	100	96	910	264	81	112	59	61	a65
27	32	46	232	94	190	1,030	220	77	447	49	57	233
28	39	49	250	100	400	1,360	215	77	175	a47	34	160
29	27	170	168	100	-	1,420	398	78	94	47	27	a136
30	26	584	156	100	-------	1,525	992	74	74	238	26	101
31	25	-------	129	98	-------	1,530	-------	71	-------	140	27	-------
Total	676	1,805	6,299	2,388	2,532	20,407	28,306	6,202	6,832	3,903	1,294	2,811
Mean	21.8	60.2	203	77.0	90.4	658	944	200	228	126	41.7	93.7
Cfsm	0.095	0.262	0.883	0.335	0.393	2.86	4.10	0.870	0.991	0.548	0.181	0.407
In.	0.11	0.29	1.02	0.39	0.41	3.30	4.58	1.00	1.10	0.63	0.21	0.45

Calendar year 1957: Max 5,350 Min 14 Mean 267 Cfsm 1.16 In. 15.76
Water year 1957-58: Max 2,850 Min 18 Mean 229 Cfsm 1.00 In. 13.49

Peak discharge (base, 2,100 cfs).--Apr. 7 (11:30 p.m.) 3,560 cfs (12.33 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note.--Stage-discharge relation affected by ice Dec. 3-5, 12-14, Jan. 1 to Mar. 12 (no gage-height record Jan. 1, 23, Feb. 3, 4, 10-12, 15-23). Backwater from debris Oct. 11 to Nov. 29.

2180. Tonawanda Creek at Rapids, N. Y.

Location.--Lat 43°05'35", long 78°38'05", on right bank at downstream side of highway bridge at Rapids, Niagara County, 4¼ miles downstream from Beeman Creek, 4.7 miles east of Pendleton, and 5¾ miles upstream from Mud Creek.

Drainage area.--358 sq mi.

Records available.--August 1955 to September 1958.

Gage.--Water-stage recorder.

Extremes.--Maximum discharge during year, 2,960 cfs Apr. 9 (gage height, 9.89 ft); minimum, 21 cfs Oct. 12 (gage height, 1.22 ft, backwater from aquatic vegetation).
1955-58: Maximum discharge, 5,210 cfs Jan. 25, 1957 (gage height, 15.46 ft); minimum, 16 cfs Oct. 5, 1955; minimum gage height, that of Oct. 12, 1957.

Remarks.--Records good except those for periods of ice effect or backwater from aquatic vegetation or debris, which are fair.

Rating tables, water year 1957-58, except periods of ice effect or backwater from aquatic vegetation or debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 5				Mar. 6 to Sept. 30			
1.2	22	2.0	201	1.2	22	3.0	574
1.3	36	3.0	513	1.3	36	6.0	1,600
1.6	94	5.0	1,190	1.6	96	10.0	3,000
				2.0	215		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	30	530	201	118	500	2,080	*1,140	122	86	185	41
2	27	30	432	160	118	700	*2,060	927	101	70	104	39
3	27	30	279	130	116	820	2,060	532	119	70	82	38
4	26	30	186	106	102	920	1,890	414	208	76	70	34
5	26	30	118	113	94	1,000	1,730	432	142	78	60	34
6	26	30	128	106	99	980	1,620	451	104	82	56	33
7	26	32	126	106	101	940	1,750	378	80	76	54	33
8	24	33	282	106	114	900	2,340	436	75	86	52	41
9	23	38	549	94	124	860	2,930	604	75	*96	50	135
10	23	43	556	85	120	820	2,210	532	136	82	66	150
11	23	46	365	85	116	760	1,430	396	555	84	98	*112
12	22	39	215	81	100	720	1,170	314	777	86	72	112
13	22	39	170	72	90	700	1,410	263	703	145	*60	102
14	22	39	139	72	*84	640	1,550	229	418	470	56	72
15	22	44	152	*70	84	620	1,210	205	623	400	54	58
16	*22	60	150	68	84	600	972	188	597	245	50	54
17	22	60	164	68	84	566	810	178	342	240	44	56
18	22	62	297	74	80	559	646	172	*222	300	48	70
19	23	*58	331	84	74	*680	536	162	156	195	54	175
20	23	56	313	79	68	803	466	153	125	135	50	290
21	24	58	562	76	66	938	407	153	106	130	44	175
22	24	64	549	76	70	1,100	418	147	91	106	44	122
23	24	72	523	81	74	1,250	589	150	87	90	44	106
24	32	72	387	90	78	1,370	842	153	89	82	43	160
25	34	88	288	113	86	1,540	654	172	82	76	39	108
26	36	96	276	126	98	1,630	440	153	82	80	43	80
27	34	90	328	121	160	1,610	342	144	144	76	66	82
28	38	82	341	116	300	1,660	286	139	318	66	66	250
29	36	116	322	121	-	1,870	325	136	188	64	52	185
30	33	293	258	123	-------	2,050	736	133	119	68	46	150
31	32	-------	228	121	----	2,110	-------	133	-------	205	41	-------
Total	828	1,860	9,544	3,124	2,902	32,216	35,909	9,719	6,986	4,145	1,873	3,097
Mean	26.7	62.0	308	101	104	1,039	1,197	314	233	134	60.4	103
Cfsm	0.075	0.173	0.86	0.282	0.291	2.90	3.34	0.877	0.651	0.374	0.169	0.288
In.	0.09	0.19	0.99	0.32	0.30	3.35	3.73	1.01	0.73	0.43	0.19	0.32

Calendar year 1957: Max 4,980 Min 19 Mean 388 Cfsm 1.08 In. 14.72
Water year 1957-58: Max 2,930 Min 22 Mean 307 Cfsm 0.858 In. 11.65

Peak discharge (base, 2,400 cfs).--Apr. 9 (12 m.) 2,960 cfs (9.89 ft).

* Discharge measurement made on this day.
Note.-Stage-discharge relation affected by ice Dec. 5, 12, 13, Jan. 2, 3, 9, 18, 19, Feb. 3-5, Feb. 8 to Mar. 16 (no gage-height record Feb. 15-25). Backwater from debris Oct. 1 to Nov. 29. Backwater from aquatic vegetation July 1 to Sept. 30.

STREAMS TRIBUTARY TO NIAGARA RIVER

2185. Ellicott Creek at Williamsville, N. Y.

Location.--Lat 42°57'10", long 78°44'15", over right span on upstream side of bridge on Wehrle Drive, 0.4 mile upstream from small tributary and 0.8 mile south of Williamsville, Erie County.

Drainage area.--76.3 sq mi.

Records available.--October 1955 to September 1958.

Gage.--Wire-weight gage read twice daily. Crest-stage indicator since Sept. 6, 1956.

Extremes.--Maximum discharge observed during year, 496 cfs Mar. 25 (gage height, 4.16 ft); no flow Aug. 18-23, Aug. 31, Sept. 2-8, 1958.
1955-58: Maximum discharge, 2,510 cfs Mar. 7, 1956 (gage height, 10.44 ft, from graph based on gage readings); minimum daily, that of Aug. 14, 18-23, Aug. 28 to Sept. 9, 1958.

Remarks.--Records fair.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 21				Dec. 22 to June 9				June 10 to Sept. 30			
0.90	0.5	1.3	8.0	1.2	4.6	2.5	139	0.77	0	1.3	6.7
1.0	1.4	1.4	13	1.3	8.0	3.2	260	.80	.1	1.5	16
1.1	2.4	1.7	36	1.5	20	4.0	449	.90	.4	1.9	48
1.2	4.6			1.9	56	5.0	798	1.0	1.0	2.3	94
								1.1	2.0	2.6	137
								1.2	3.8		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.0	3.6	130	23	26	348	259	*150	10	7.1	1.1	0.5
2	1.0	2.8	94	11	26	328	*239	100	9.0	5.8	.9	0
3	.9	1.6	58	15	25	339	245	90	36	14	.7	0
4	.7	1.2	54	14	20	321	239	86	27	3.8	.6	0
5	.4	1.1	35	13	24	312	250	120	15	5.5	.4	0
6	.4	1.1	52	13	29	325	268	100	12	20	*.3	0
7	.3	1.1	280	16	27	301	314	90	10	16	.4	0
8	.1	6.0	270	12	21	297	400	160	9.0	*12	7.4	0
9	.1	13	150	8.8	15	295	392	120	90	13	3.7	.6
10	.1	13	92	11	12	270	249	81	106	10	1.1	8.6
11	.1	10	54	10	13	268	211	65	126	13	.7	*11
12	.2	9.0	*40	8.4	11	266	249	56	74	31	.3	12
13	.1	10	78	7.0	9.0	264	212	44	67	25	.1	13
14	.1	19	84	8.0	7.4	*168	193	35	106	16	.1	10
15	*.1	26	84	9.6	8.2	149	174	32	95	20	.2	8.3
16	.1	20	210	12	7.4	152	133	31	*42	19	1.2	5.5
17	.1	11	200	13	6.8	150	92	30	21	16	.1	7.9
18	.2	9.0	100	12	6.2	152	89	27	14	8.8	0	22
19	.2	*17	160	10	5.8	158	78	23	11	6.4	0	18
20	.2	23	190	9.4	5.6	168	60	20	9.2	5.0	0	29
21	.2	25	300	11	5.6	249	62	22	7.1	3.6	0	20
22	20	23	160	19	9.0	320	76	30	5.8	2.9	0	16
23	20	32	90	40	9.8	470	140	33	5.0	2.7	0	14
24	17	60	60	37	14	470	130	34	5.2	2.4	7.7	18
25	14	70	45	37	29	469	80	33	5.0	2.0	8.3	22
26	12	50	90	50	57	332	70	26	17	1.6	7.1	31
27	10	40	100	50	175	344	60	18	30	1.3	2.4	43
28	8.0	120	45	37	310	403	60	18	30	1.1	.2	39
29	7.3	450	40	30	-	293	67	16	11	40	.1	26
30	5.6	400	30	*28	-------	274	160	14	7.9	10	.1	14
31	4.6	-------	27	26	-------	265	-------	11	-------	5.5	0	-------
Total	126.1	1,468.5	3,402	601.2	914.8	8,918	5,249	1,715	1,013.2	340.5	45.2	389.4
Mean	4.07	49.0	110	19.4	32.7	288	175	55.3	33.8	11.0	1.46	13.0
Cfsm	0.053	0.642	1.44	0.254	0.429	3.77	2.29	0.725	0.443	0.144	0.019	0.170
In.	0.06	0.72	1.66	0.29	0.45	4.35	2.56	0.84	0.49	0.17	0.02	0.19

Calendar year 1957: Max 2,330 Min 0.1 Mean 89.6 Cfsm 1.17 In. 15.95
Water year 1957-58: Max 470 Min 0 Mean 66.3 Cfsm 0.869 In. 11.80

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-14, 16-21, Nov. 5-18, Nov. 20 to Feb. 24, Mar. 22-24, Apr. 21-26, May 2-9, July 26, 27; discharge estimated on basis of records for nearby stations and discharge measurements.

2190. Erie (Barge) Canal at lock 30, Macedon, N. Y.

Location.--Lat 43°04'20", long 77°17'45", on left bank at lock 30, in Macedon, Wayne County, 500 ft downstream from headgate in old Erie Canal.

Records available.--November 1919 to December 1920 (navigation seasons only), October 1950 to September 1958. Prior to October 1956, published as Barge Canal at lock 30, Macedon.

Gage.--Water-stage recorder. Datum of gage is 448.80 ft above mean sea level, New York State Erie (Barge) Canal bench mark. Nov. 1, 1919, to Dec. 28, 1920, staff gage at same site at different datum.

Extremes.--1919-20, 1950-58: Maximum daily discharge, 762 cfs Dec. 9, 1954; minimum daily, 1.1 cfs Mar. 20, 21, 1953.

Remarks.--Records excellent above and good below 50 cfs. This record represents net diversion from Niagara River basin into Oswego River basin through Erie (Barge) Canal. During period of no navigation, Dec. 15 to Apr. 24, discharge consists chiefly of leakage through guard gates and runoff from small areas tributary to canal above station.

Cooperation.--Records of gate openings, lockages, and elevations of water surface in Erie (Barge) Canal above and below lock 30 furnished by New York State Department of Public Works.

Revisions (water years).--WSP 1237: 1951.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	384	*374	366	6.9	5.4	8.9	20	98	107	391	389	365
2	384	370	363	2.6	5.4	7.0	19	100	108	380	389	365
3	375	373	356	2.6	6.0	7.9	15	106	105	387	395	365
4	378	373	360	3.8	6.9	7.8	12	103	109	404	380	368
5	375	367	370	5.0	6.0	9.9	8.4	98	248	395	383	377
6	372	361	368	4.1	5.2	14	9.7	98	355	395	386	365
7	390	373	365	3.8	5.2	22	33	102	362	385	383	377
8	378	373	361	5.2	6.9	33	40	93	364	384	385	371
9	381	367	357	3.8	6.0	27	29	104	358	378	376	371
10	385	364	451	3.2	6.0	21	15	107	371	369	392	359
11	394	361	340	3.8	5.2	20	10	92	366	382	392	359
12	375	373	158	1.6	*4.5	17	14	107	378	379	380	368
13	377	379	172	2.6	4.6	16	15	101	*365	381	376	374
14	365	376	77	3.2	3.8	16	12	*96	374	385	379	386
15	380	*367	a40	4.5	2.6	16	7.8	105	371	389	*388	367
16	381	357	35	4.5	2.6	16	7.8	105	375	387	379	373
17	375	363	21	5.2	3.8	13	*6.0	99	368	393	379	*371
18	381	367	8.8	5.2	3.8	11	6.9	102	369	390	376	374
19	369	377	11	3.8	5.2	14	6.9	99	367	391	375	368
20	368	377	*8.8	3.8	5.2	20	6.9	110	376	404	385	364
21	368	374	11	3.8	3.8	20	6.9	99	373	384	376	361
22	383	371	6.9	6.0	2.6	21	12	93	385	391	379	358
23	384	364	3.8	5.4	2.6	24	16	101	376	382	379	373
24	378	370	6.0	3.9	3.8	34	30	103	378	395	375	367
25	379	374	2.6	5.4	6.9	38	37	117	371	386	372	358
26	378	379	8.8	6.9	5.2	37	78	108	369	380	375	373
27	372	361	7.8	6.9	5.2	42	96	114	375	406	369	355
28	375	367	2.6	6.9	11	42	97	108	366	392	375	358
29	381	361	3.8	6.0	-	35	112	108	375	392	381	367
30	375	376	5.2	5.4	------	29	101	120	369	*383	380	376
31	375	------	6.0	6.2	------	23	------	108	------	383	370	------
Total	11,715	11,089	4,653.1	142.0	141.4	662.5	880.3	3,204	9,933	12,023	11,798	11,033
Mean	378	370	150	4.58	5.05	21.4	29.3	103	331	388	381	368
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 451 Min 1.3 Mean 221 Cfsm - In. -
Water year 1957-58: Max 451 Min 1.6 Mean 212 Cfsm - In. -

* Discharge measurement made on this day.
a No record of head on needle sill; discharge estimated on basis of records of lock operation, weather records, and observer's notes.

2202.5. West Creek near Hilton, N. Y.

Location.--Lat 43°18'10", long 77°48'50", on right bank just downstream from bridge on Collamer Road, 0.5 mile north of Collamer and 1.5 miles northwest of Hilton, Monroe County.

Drainage area.--31.0 sq mi.

Records available.--May 1957 to September 1958.

Gage.--Water-stage recorder. Prior to Oct. 1, 1957, wire-weight gage at same site and datum.

Extremes.--Maximum discharge during year, 308 cfs Mar. 23 (gage height, 6.50 ft); maximum gage height, 7.70 ft Mar. 5 (backwater from ice); minimum daily discharge, 0.6 cfs July 2.
1957-58: Maximum discharge, that of Mar. 23, 1958; maximum gage height, that of Mar. 5, 1958; minimum daily discharge, that of July 2, 1958.

Remarks.--Records good except those for periods of ice effect, backwater from aquatic vegetation, or no gage-height record, which are fair.

Revisions.--Revised figures of discharge, in cubic feet per second, for high stages during period May to September 1957, superseding those published in WSP 1507, are given herewith:

May 20, 1957	145
May 21, 1957	225

Rating tables, water year 1957-58, except periods of ice effect or backwater from aquatic vegetation (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 22

2.6	0.8	3.5	18
2.7	1.5	4.0	42
2.8	2.3	5.0	104
3.0	4.5	6.0	220
3.2	8.4		

Mar. 23 to Sept. 30

2.5	0.5	3.5	18
2.6	1.0	4.0	42
2.7	1.6	5.0	104
2.9	3.4	6.0	220
3.1	6.3	7.0	418
3.3	11		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.5	*4.8	3.4	2.5	5.7	b80	32	21	1.9	0.7	3.5	2.7
2	3.1	5.0	2.4	2.1	5.5	b120	25	11	2.0	.6	3.3	2.7
3	3.0	5.4	1.7	2.1	b4.7	b140	20	8.7	2.0	1.4	3.4	2.6
4	3.0	5.6	1.4	1.7	b3.2	b135	16	14	1.8	3.0	4.4	3.1
5	3.3	5.4	1.2	1.5	b3.4	b140	12	14	1.8	4.5	5.8	3.4
6	3.0	3.5	1.3	1.4	b3.8	b150	14	10	3.1	4.1	5.9	3.3
7	3.2	2.0	1.8	1.7	b3.8	b145	72	7.8	3.3	3.4	17	3.3
8	3.3	1.4	3.0	a1.8	b3.6	b135	122	8.2	2.3	3.3	15	3.5
9	3.1	1.4	4.1	a1.2	b3.4	b120	42	8.2	2.1	3.4	7.6	3.4
10	5.6	1.7	2.9	a.9	b3.1	b110	24	6.0	2.9	3.2	3.4	4.1
11	6.8	1.6	2.1	a1.0	b2.8	b110	18	4.8	4.8	3.1	3.2	4.6
12	6.6	1.4	1.8	a1.1	b2.5	b100	22	4.0	*3.7	3.4	2.9	3.8
13	6.6	1.2	1.7	a1.0	b2.3	b90	17	3.4	2.7	3.0	2.7	3.6
14	7.0	1.4	1.5	*1.0	b2.2	b84	12	2.8	2.4	3.1	2.4	3.4
15	6.8	2.1	2.0	1.0	b2.0	b78	8.9	*2.7	2.4	2.7	*2.4	*3.4
16	6.4	2.4	2.4	1.0	b1.8	b74	7.1	2.6	2.2	2.5	2.4	5.7
17	6.4	2.2	2.3	1.0	b1.7	b80	6.5	2.5	1.6	2.3	2.4	9.1
18	7.6	1.7	2.5	1.0	b1.6	*96	5.3	2.5	1.4	2.1	2.4	20
19	7.8	*1.4	2.8	1.1	b1.5	141	4.5	3.3	1.4	2.5	2.2	27
20	7.6	1.0	3.2	1.2	b1.4	188	4.0	2.8	1.4	2.8	2.1	11
21	7.4	1.1	4.1	1.3	b1.5	147	4.8	2.4	1.4	2.3	2.1	7.6
22	7.0	1.3	4.8	1.4	b1.6	165	23	2.2	1.4	2.1	2.4	11
23	6.8	1.3	3.4	1.9	b2.0	240	65	2.4	1.2	2.2	2.8	10
24	6.4	1.3	2.5	2.3	b3.5	190	27	2.3	1.2	2.2	2.2	7.1
25	6.6	1.2	1.9	2.6	b5.0	143	15	2.2	1.2	2.5	3.3	6.3
26	5.8	1.0	2.3	3.0	b8.0	97	8.4	2.1	1.4	2.4	4.5	6.3
27	5.6	.9	5.6	3.9	b15	108	6.1	1.8	1.3	1.7	3.3	6.7
28	5.4	.9	5.9	5.4	b40	93	5.4	2.0	1.2	*1.3	2.9	6.5
29	5.0	1.9	3.9	5.5	-	66	17	2.1	1.1	4.8	2.7	6.0
30	4.7	3.1	3.3	5.9	-------	50	49	2.0	.9	6.3	2.6	4.8
31	4.7	-------	2.8	*6.0	-------	36	-------	1.9	-------	3.9	2.7	-------
Total	168.9	66.6	86.0	66.5	136.6	3,651	705.0	163.7	59.5	86.8	125.9	196.0
Mean	5.45	2.22	2.77	2.15	4.88	118	23.5	5.28	1.98	2.80	4.06	6.53
Cfsm	0.176	0.072	0.089	0.069	0.157	3.81	0.758	0.170	0.064	0.090	0.131	0.211
In.	0.20	0.08	0.10	0.08	0.16	4.38	0.85	0.20	0.07	0.10	0.15	0.24

Calendar year 1957: Max - Min - Mean - Cfsm - In. -
Water year 1957-58: Max 240 Min 0.6 Mean 15.1 Cfsm 0.487 In. 6.61

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, engineers' notes, and records for nearby stations.
b Stage-discharge relation affected by ice.
Note.--Backwater from aquatic vegetation Oct. 1 to Dec. 9, May 10 to June 12.

2205. Dyke Creek at Wellsville, N. Y.

Location.--Lat 42°07'14", long 77°56'13", near center of span on upstream side of Miller Street Bridge at Wellsville, Allegany County, 0.6 mile upstream from Genesee River and 1.2 miles downstream from Trapping Brook. Prior to Oct. 1, 1957, at site 0.2 mile downstream.

Drainage area.--71.4 sq mi.

Records available.--August 1955 to September 1958.

Gage.--Wire-weight gage read twice daily. Crest-stage indicator since June 19, 1956. Datum of gage is 1,492.18 ft above mean sea level, datum of 1929. Prior to Apr. 17, 1957, at datum 7.18 ft lower and Apr. 17 to Sept. 30, 1957, at datum 11.23 ft lower than present datum; both at site 0.2 mile downstream.

Extremes.--Maximum discharge during year, 2,080 cfs Apr. 6 (gage height, 13.98 ft, from graph based on gage readings); minimum, 3.0 cfs Oct. 11-16 (gage height, 9.99 ft).
1955-58: Maximum discharge, 5,110 cfs Mar. 8, 1956 (gage height, 11.06 ft, site and datum then in use); minimum observed, 1.0 cfs Sept. 9, 1957 (occurred during period of channel improvement).

Remarks.--Records fair.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

9.9	1.2	11.3	240
10.0	3.2	11.7	400
10.1	6.3	12.1	600
10.3	17	12.5	840
10.6	48	13.0	1,180
10.9	109	13.5	1,590

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	3.8	7.2	25	18	340	*418	112	18	18	50	23
2	3.1	3.8	7.2	20	19	235	427	92	70	17	33	17
3	3.2	4.1	7.2	16	18	205	480	182	33	16	28	16
4	3.2	3.8	6.4	12	20	140	550	299	25	16	*25	16
5	3.2	4.4	5.4	13	21	*118	698	167	21	16	21	14
6	3.2	3.8	6.8	13	21	104	1,490	*148	50	20	18	15
7	*3.2	*3.8	9.4	13	20	96	1,330	558	27	17	18	50
8	3.2	3.8	18	11	19	109	562	396	24	58	35	119
9	3.2	5.1	16	10	18	104	382	247	*29	45	22	56
10	3.2	4.4	13	11	17	78	*315	191	233	27	17	44
11	3.0	4.8	11	11	18	89	409	148	288	26	62	35
12	3.0	4.4	9.0	9.8	*18	72	368	124	154	42	30	29
13	3.0	4.8	11	*9.0	17	61	335	96	663	39	27	25
14	3.0	5.1	10	9.4	15	58	436	80	454	27	81	21
15	3.0	5.7	9.0	35	16	54	490	68	212	31	44	19
16	3.0	5.1	10	31	16	51	470	74	138	*86	30	*25
17	3.2	5.1	12	26	15	48	373	58	96	45	24	353
18	4.4	5.1	11	23	14	48	323	51	76	31	22	366
19	4.4	6.0	22	22	15	50	258	48	64	33	20	170
20	3.5	6.0	61	20	15	56	194	40	51	27	17	115
21	3.2	5.7	208	23	15	56	260	35	61	22	16	231
22	3.8	6.3	61	25	16	53	1,100	31	43	20	17	188
23	3.5	5.1	43	26	18	53	402	31	35	20	14	109
24	5.7	6.3	38	22	21	70	250	26	33	18	24	84
25	5.1	7.2	26	23	27	99	188	25	56	17	61	86
26	3.8	7.2	43	24	41	112	144	24	43	16	30	62
27	4.4	6.3	59	24	56	118	115	21	33	14	24	56
28	3.8	6.0	38	23	120	164	150	22	27	16	20	109
29	3.8	8.1	33	22	-	222	170	28	23	223	18	*74
30	3.8	7.6	26	21	-------	261	151	21	18	48	16	61
31	3.8	-------	23	21	-------	418	-------	18	-------	51	18	-------
Total	110.0	158.7	860.6	594.2	664	3,742	13,238	3,461	3,098	1,102	880	2,588
Mean	3.55	5.29	27.8	19.2	23.7	121	441	112	103	35.5	28.4	86.3
Cfsm	0.050	0.074	0.389	0.269	0.332	1.69	6.18	1.57	1.44	0.497	0.398	1.21
In.	0.06	0.08	0.45	0.31	0.35	1.95	6.90	1.80	1.61	0.57	0.46	1.35

Calendar year 1957: Max 1,210 Min 1.0 Mean 75.1 Cfsm 1.05 In. 14.28
Water year 1957-58: Max 1,490 Min 3.0 Mean 83.6 Cfsm 1.17 In. 15.89

Peak discharge (base, 1,200 cfs).--Apr. 6 (7 p.m.) 2,080 cfs (13.98 ft); Apr. 22 (10 a.m.) 2,040 cfs (13.95 ft); June 13 (3:30 p.m.) 1,500 cfs (13.40 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 2-7, 10-19, Jan. 2 to Mar. 4.

2210. Genesee River at Wellsville, N. Y.

Location.--Lat 42°07'20", long 77°57'00", near center of span on upstream side of West Pearl Street Bridge at Wellsville, Allegany County, a quarter of a mile downstream from Dyke Creek.

Drainage area.--288 sq mi.

Records available.--August 1955 to September 1958.

Gage.--Wire-weight gage read twice daily. Crest-stage indicator since June 19, 1956. Datum of gage is 1,473.00 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1957, at datum 5.00 ft higher.

Extremes.--Maximum discharge during year, 7,200 cfs Apr. 7 (gage height, 10.76 ft, from graph based on gage readings); minimum daily, 22 cfs Oct. 5-8, 12-16.
1955-58: Maximum discharge, 15,800 cfs Mar. 8, 1956 (gage height, 17.65 ft, present datum, from graph based on gage readings); minimum daily, 18 cfs Sept. 9, 1957.

Remarks.--Records good except those for periods of ice effect, backwater from debris, or no gage-height record, which are fair.

Rating table, water year 1957-58, except periods of ice effect or backwater from debris (gage height, in feet, and discharge, in cubic feet per second)

2.2	54	5.5	365
2.5	72	6.0	620
3.0	102	7.0	1,380
3.5	132	8.0	2,350
4.0	165	9.0	3,700
4.5	208	11.0	7,800
5.0	266		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	27	46	175	b74	892	*1,300	580	116	106	206	88
2	24	28	45	120	b80	701	1,410	520	245	98	134	67
3	24	29	42	104	b78	656	1,710	600	152	97	113	59
4	23	28	41	88	b72	584	1,930	1,080	116	99	102	60
5	22	32	36	96	b74	*506	2,330	740	110	139	*90	60
6	22	30	44	90	82	440	4,740	*940	169	268	79	55
7	22	*30	80	94	82	400	6,220	2,650	118	249	78	112
8	*22	31	215	86	b76	372	3,290	2,100	108	1,680	161	193
9	23	37	110	76	b74	b350	2,040	1,350	*130	948	105	128
10	23	39	88	80	b72	b330	*1,640	1,040	484	475	85	109
11	23	36	82	78	b74	355	1,830	840	771	580	143	96
12	22	33	60	66	*b72	318	1,650	720	480	578	91	79
13	22	33	74	*82	b68	279	1,490	560	1,340	445	93	70
14	22	34	66	b66	b68	270	1,880	470	1,580	360	170	64
15	22	42	60	133	b68	250	2,290	420	740	588	156	60
16	22	45	66	122	b66	232	2,210	390	540	*674	109	*81
17	23	43	80	104	b62	215	2,030	320	390	400	91	851
18	25	41	76	96	b60	202	1,780	300	330	333	85	1,250
19	29	46	150	91	b60	194	1,560	270	300	338	79	560
20	29	50	400	86	b60	226	1,210	235	245	246	70	368
21	26	45	1,100	86	b62	218	1,290	200	260	195	66	809
22	24	41	480	94	b62	213	*3,680	180	210	172	80	628
23	24	39	340	99	b66	206	*2,020	175	175	183	66	365
24	30	38	270	84	72	234	1,350	155	160	156	104	318
25	36	39	210	84	102	331	1,020	145	360	136	248	279
26	31	39	340	89	173	372	780	130	225	124	106	233
27	28	36	390	89	227	410	660	118	180	107	83	450
28	27	36	270	88	458	542	860	130	145	175	73	383
29	28	44	250	86	-	701	820	165	130	339	67	*253
30	26	49	200	85	------	940	760	120	118	180	62	210
31	27	--- --	160	85	------	1,270	-------	104	--- ----	201	89	-- -
Total	775	1,120	5,871	2,882	2,644	13,213	57,760	17,747	10,427	10,649	3,264	8,338
Mean	25.0	37.3	189	93.0	94.4	426	1,925	572	348	344	105	278
Cfsm	0.087	0.130	0.656	0.323	0.328	1.48	6.68	1.99	1.21	1.19	0.365	0.965
In.	0.10	0.14	0.76	0.37	0.34	1.71	7.46	2.29	1.35	1.38	0.42	1.08

Calendar year 1957: Max 4,050 Min 18 Mean 310 Cfsm 1.08 In. 14.60
Water year 1957-58: Max 6,220 Min 22 Mean 369 Cfsm 1.28 In. 17.40

Peak discharge (base, 3,600 cfs).--Apr. 7 (12 m.) 7,200 cfs (10.76 ft); Apr. 22 (10 a.m.) 5,960 cfs (10.23 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--Backwater from debris Apr. 24 to June 2, June 15 to July 1. No gage-height record Oct. 1 to Jan. 13; discharge estimated on basis of records for nearby stations.

2215. Genesee River at Scio, N. Y.

Location.--Lat 42°09'50", long 77°58'50", on left bank 0.4 mile upstream from Vandermark Creek and three-quarters of a mile upstream from Scio, Allegany County.

Drainage area.--309 sq mi.

Records available.--June 1916 to September 1958.

Gage.--Water-stage recorder. Prior to Aug. 11, 1938, staff gage and Aug. 11 to Oct. 11, 1938, water-stage recorder, at same site at datum 1.0 ft higher.

Average discharge.--42 years, 390 cfs.

Extremes.--Maximum discharge during year, 7,950 cfs Apr. 7 (gage height, 9.03 ft); minimum, 23 cfs Oct. 15 (gage height, 0.86 ft, backwater from aquatic vegetation).
1916-58: Maximum discharge, 16,900 cfs Mar. 8, 1956; maximum gage height, 11.22 ft Nov. 25, 1950; minimum discharge, 5.8 cfs Sept. 4, 1939; minimum gage height, 0.18 ft Aug. 28, 1949, Aug. 16, 18, 1950.

Remarks.--Records excellent except those for periods of ice effect, backwater from aquatic vegetation, or shifting control, which are fair.

Revisions (water years).--WSP 759: Drainage area. WSP 1307: 1916.

Rating tables, water year 1957-58, except periods of ice effect, shifting control, or backwater from aquatic vegetation (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 6				Apr. 7 to Sept. 30			
0.6	20	2.0	285	0.9	52	4.0	1,290
.7	27	3.0	616	1.1	80	5.0	1,990
.9	45	4.0	1,060	1.5	160	7.0	3,790
1.1	69	6.0	2,550	2.0	300	9.0	7,800
1.3	102	8.0	5,500	3.0	720		
1.5	146						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	29	49	182	78	1,020	*1,420	625	110	112	224	92
2	26	30	48	130	91	814	1,480	544	246	105	151	78
3	26	31	45	110	86	771	1,790	641	174	101	122	68
4	25	30	44	96	78	677	2,000	1,170	131	108	110	68
5	24	33	39	102	80	598	2,430	805	133	151	*101	66
6	24	32	46	98	84	518	5,260	1,030	179	306	94	64
7	24	*32	82	102	84	467	6,860	2,990	126	237	88	118
8	24	33	221	94	82	461	3,550	2,300	108	1,800	163	215
9	25	39	121	82	80	430	2,180	1,470	*124	1,030	120	150
10	25	41	95	88	78	380	*1,670	1,120	582	517	94	114
11	25	39	89	84	82	419	1,880	900	864	566	135	106
12	24	36	64	72	82	352	1,730	780	583	611	104	88
13	24	36	78	66	76	315	1,550	612	1,450	490	100	80
14	24	37	70	72	74	309	1,910	508	1,750	361	170	74
15	24	43	66	175	74	285	2,310	450	795	616	180	70
16	24	49	69	154	72	264	2,240	426	576	*710	118	*86
17	*25	46	84	123	70	249	2,100	342	442	442	98	800
18	27	44	81	112	68	*238	1,800	318	361	339	92	1,350
19	31	47	156	108	66	229	1,530	297	332	335	86	600
20	31	52	408	*106	66	255	1,200	247	259	268	80	390
21	28	48	1,190	95	68	258	1,180	216	271	216	76	700
22	26	44	522	100	70	246	*3,560	192	224	189	86	676
23	26	42	368	102	72	240	*2,100	189	187	194	76	391
24	32	41	297	92	76	285	1,420	167	170	170	102	314
25	38	42	226	92	106	374	1,090	155	398	146	240	271
26	33	42	353	95	187	438	850	144	238	129	114	238
27	30	39	456	95	252	481	715	131	192	116	92	367
28	29	39	294	93	*464	635	948	131	155	227	80	391
29	30	45	270	91	-	797	870	179	137	416	72	259
30	28	50	218	89	-------	1,020	*805	129	124	189	70	218
31	29	-------	175	89	-------	1,390	-------	112	-------	205	72	-------
Total	837	1,191	6,324	3,189	2,846	15,215	60,428	19,320	11,421	11,402	3,510	8,502
Mean	27.0	39.7	204	103	102	491	2,014	623	381	368	113	283
Cfsm	0.087	0.128	0.660	0.333	0.330	1.59	6.52	2.02	1.23	1.19	0.366	0.916
In.	0.10	0.14	0.76	0.38	0.34	1.83	7.27	2.33	1.37	1.37	0.42	1.02

Calendar year 1957: Max 5,240 Min 20 Mean 341 Cfsm 1.10 In. 15.00
Water year 1957-58: Max 6,860 Min 24 Mean 395 Cfsm 1.28 In. 17.33

Peak discharge (base, 3,800 cfs).--Apr. 7 (12:15 p.m.) 7,950 cfs (9.03 ft); Apr. 22 (12 m.) 5,860 cfs (8.39 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 12, 13, 31, Jan. 2-6, 8-10, 12-14, 19, 20, 24, 25, Feb. 1, 3-5, 8-24, Mar. 9, 10. Backwater from aquatic vegetation Oct. 1 to Dec. 7, Aug. 9 to Sept. 21. Shifting-control method used Jan. 21-23, 26-31, Feb. 2, 6, 7, Feb. 26 to Mar. 8, Mar. 11 to Apr. 6.

2220. Caneadea Creek at Caneadea, N. Y.

Location.--Lat 42°23'10", long 78°09'45", on left bank at Caneadea, Allegany County, 200 ft upstream from small tributary and 0.6 mile upstream from mouth.

Drainage area.--61.5 sq mi.

Records available.--July 1949 to September 1958.

Gage.--Water-stage recorder.

Average discharge.--9 years, 88.4 cfs (adjusted for storage).

Extremes.--Maximum discharge during year, 971 cfs Sept. 15 (gage height, 4.94 ft); minimum, 1.9 cfs May 2 (gage height, 2.07 ft).
1949-58: Maximum discharge, 1,700 cfs Oct. 15, 1955 (gage height, 5.87 ft); minimum, 0.7 cfs Nov. 11, 13, 1954; minimum daily, 0.9 cfs Nov. 13, 14, 1954; minimum gage height, 1.63 ft Oct. 21, 1949.

Remarks.--Records good except those for periods of ice effect, backwater from debris, or no gage-height record, which are fair. Considerable regulation by Rushford Lake (capacity, 1,106,000,000 cu ft) about 2 miles above station.

Rating tables, water year 1957-58, except periods of ice effect or backwater from debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 3				Jan. 4 to Sept. 8		Sept. 9-30			
2.1	2.2	3.0	109	2.08	2.1	2.1	2.5	3.0	92
2.2	5.6	3.5	252	2.1	2.5	2.2	5.6	3.5	222
2.4	19	4.0	457	2.2	5.6	2.4	16	4.0	422
2.7	53	5.0	1,000			2.7	43	4.5	695

Note.--Same as preceding table above 2.2 ft.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	5.2	3.7	53	299	28	5.6	2.5	24	35	c11	12
2	8.8	5.2	3.7	45	292	21	5.6	2.3	53	29	c10	8.3
3	6.6	4.8	b3.4	b270	b190	19	5.6	2.7	59	27	c9.6	7.7
4	5.6	4.8	3.4	452	b3.8	16	5.6	2.5	50	25	c8.8	12
5	5.6	4.4	b3.4	443	b3.8	13	11	2.5	42	24	*c7.8	17
6	5.6	4.4	4.8	439	b3.5	9.6	18	6.0	35	23	c7.6	19
7	5.6	*4.0	5.2	429	b3.5	6.6	186	269	30	20	c8.4	124
8	7.1	4.4	4.4	429	b3.5	b4.1	505	515	29	26	c14	523
9	6.6	4.4	4.0	434	b3.5	b3.8	500	393	30	37	c14	502
10	7.1	4.4	b4.0	429	b3.5	b3.8	495	240	34	34	c14	456
11	6.6	b4.4	b3.4	425	b3.2	b3.5	495	4.8	37	31	c17	451
12	6.0	4.4	b3.4	429	b3.2	3.5	486	4.1	*36	34	c15	446
13	6.0	4.4	b3.4	434	b3.2	3.2	486	3.8	253	35	c14	442
14	6.0	4.4	b3.7	439	b3.2	3.2	416	4.8	650	34	c12	437
15	5.6	4.4	b3.7	439	b3.2	2.7	*330	7.1	452	31	c14	497
16	6.0	4.4	b4.0	434	b3.0	b2.7	a330	12	157	32	c12	*528
17	*6.0	4.4	4.0	429	b3.0	2.7	a195	16	4.8	30	c12	518
18	8.9	4.4	3.7	425	b2.9	*2.7	a4.8	21	4.4	27	c10	352
19	10	4.4	3.7	416	b2.9	2.7	a4.4	25	4.1	c28	c7.8	276
20	9.6	4.0	4.0	*420	b2.7	3.0	a4.1	25	3.8	c24	c7.2	456
21	6.6	3.7	4.4	416	b2.7	3.0	a3.8	24	3.8	c21	c7.6	451
22	7.7	3.4	3.7	411	b2.9	2.7	a3.8	23	3.5	c18	c7.0	466
23	7.7	b3.4	3.7	402	b3.0	b3.2	a3.5	23	3.2	c18	c5.6	205
24	13	3.4	4.8	355	b3.2	b3.2	a3.5	22	3.2	c17	c7.6	4.4
25	187	3.4	b4.4	326	*b3.5	3.5	a3.2	22	3.8	c17	c14	4.1
26	346	3.4	24	318	b4.1	3.5	a3.2	19	45	c15	c12	4.4
27	346	b3.4	77	315	b5.6	3.5	a3.0	18	73	c14	11	4.8
28	342	3.4	82	311	b25	3.8	a3.0	21	59	c13	10	4.1
29	338	4.0	77	303	-	4.1	a2.7	25	49	c14	9.6	3.8
30	338	3.7	66	299	--------	4.8	*2.7	24	40	c13	9.6	4.1
31	156	--------	56	299	--------	5.6	--------	21	--------	c12	11	--------
Total	2,227.3	124.8	480.0	11,468	886.6	195.7	4,521.1	1,801.1	2,271.6	758	331.2	7,235.7
Mean	71.8	4.16	15.5	370	31.7	6.31	151	58.1	75.7	24.5	10.7	241

Adjusted for change in contents in Rushford Lake

Mean	10.6	17.6	68.3	38.3	48.0	99.3	360	76.9	76.7	20.8	10.7	76.8
Cfsm	0.172	0.286	1.11	0.623	0.780	1.61	5.85	1.25	1.25	0.338	0.174	1.25
In.	0.20	0.32	1.28	0.72	0.81	1.86	6.53	1.44	1.39	0.39	0.20	1.39

	Observed			Adjusted			
Calendar year 1957:	Max 853	Min 2.2	Mean 74.5	Mean 77.4	Cfsm 1.26	In. 17.09	
Water year 1957-58:	Max 650	Min 2.3	Mean 88.5	Mean 74.9	Cfsm 1.22	In. 16.53	

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage and record of operation of Caneadea Reservoir.
b Stage-discharge relation affected by ice.
c Backwater from debris.

2230. Genesee River at Portageville, N. Y.

Location.--Lat 42°34'10", long 78°02'45", on left bank at Portageville, Wyoming County, 300 ft downstream from small tributary, 350 ft downstream from Pennsylvania Railroad bridge, and 0.7 mile upstream from Upper Falls.

Drainage area.--982 sq mi.

Records available.--August 1908 to September 1958. Prior to December 1945 published "at St. Helena." Records published for both sites December 1945 to September 1950.

Gage.--Water-stage recorder at present site and datum since Dec. 16, 1945. Datum of gage is 1,082.60 ft above mean sea level (levels by Corps of Engineers). Prior to Aug. 24, 1911, chain gage and Aug. 24, 1911, to Sept. 30, 1950, water-stage recorder, at site 8 miles downstream at different datum.

Average discharge.--50 years, 1,228 cfs (unadjusted).

Extremes.--Maximum discharge during year, 19,300 cfs Apr. 6 (gage height, 13.42 ft); minimum, 60 cfs Oct. 17 (gage height, 2.36 ft).
1908-58: Maximum discharge, 44,400 cfs May 17, 1916 (gage height, 12.81 ft, site and datum then in use); maximum gage height, 21.70 ft Mar. 7, 1956; minimum discharge, 18 cfs Oct. 5, 17, 1913 (gage height, 1.70 ft, site and datum then in use).

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation at low flow caused by powerplants. Some seasonal regulation by Rushford Lake (capacity, 1,106,000,000 cu ft).

Revisions (water years).--WSP 264: 1908. WSP 564: 1916(M). WSP 759: Drainage area.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.3	54	4.5	910
2.6	86	5.0	1,370
3.0	155	6.0	2,560
3.5	310	8.0	6,150
4.0	560	13.0	18,200

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96	139	198	516	600	2,700	5,960	1,670	360	360	368	153
2	93	106	175	430	580	2,560	5,470	1,310	1,590	302	360	188
3	90	103	153	330	580	2,160	5,960	1,360	1,090	306	278	170
4	87	99	149	780	280	1,900	6,440	2,600	652	298	235	185
5	86	99	118	820	260	1,720	6,700	2,190	494	310	208	211
6	85	98	130	840	330	1,500	13,300	1,650	466	344	195	185
7	90	100	277	800	324	1,350	17,600	6,520	494	440	182	500
8	87	100	741	740	280	1,260	10,300	6,960	386	816	208	1,460
9	85	106	614	720	190	1,240	5,450	3,740	543	1,820	274	*1,510
10	84	116	405	700	180	1,120	4,380	2,630	830	974	242	958
11	84	116	310	748	195	*1,080	*5,110	1,880	2,140	727	229	854
12	78	118	205	700	190	999	5,960	1,570	1,450	958	242	762
13	81	114	195	700	180	862	4,660	1,300	5,610	1,090	220	699
14	86	120	220	760	160	822	4,780	1,100	8,650	755	192	659
15	79	153	200	762	155	778	5,210	958	2,960	633	232	646
16	79	147	257	870	155	734	4,720	926	1,850	999	298	706
17	*62	130	355	860	145	706	4,220	830	1,180	982	223	762
18	63	130	294	800	140	699	3,340	734	926	685	192	2,190
19	65	138	373	660	135	699	2,910	734	*785	602	170	1,580
20	82	*151	662	780	135	755	2,330	666	685	554	162	1,280
21	87	144	2,430	*820	135	815	2,150	584	569	461	151	1,140
22	89	136	1,690	830	140	808	5,300	532	633	386	149	2,020
23	87	121	990	820	160	854	5,010	505	532	373	142	1,320
24	99	120	770	800	205	999	2,910	483	461	364	155	713
25	113	118	652	620	350	1,320	2,190	435	483	319	268	590
26	363	116	665	734	560	1,500	1,720	391	1,360	282	*420	578
27	415	113	1,470	706	900	1,520	1,430	364	982	256	260	626
28	415	116	1,010	692	1,300	2,320	1,760	364	626	232	205	862
29	410	158	815	666	-	2,980	2,300	435	488	492	178	720
30	400	229	685	652	-------	3,840	*2,570	420	410	510	160	554
31	391	-------	572	640	-------	5,290	-------	346	-------	378	151	-------
Total	4,511	3,754	17,780	22,296	8,944	47,890	152,140	46,187	39,775	18,008	6,949	24,781
Mean	146	125	574	719	319	1,545	5,071	1,490	1,326	581	224	826
Adjusted for change in contents in Rushford Lake												
Mean	84.2	139	626	388	336	1,638	5,280	1,509	1,327	577	224	662
Cfsm	0.086	0.142	0.637	0.395	0.342	1.67	5.38	1.54	1.35	0.588	0.228	0.674
In.	0.10	0.16	0.74	0.46	0.36	1.92	6.00	1.77	1.51	0.68	0.26	0.75

	Observed			Adjusted				
Calendar year 1957:	Max 16,700	Min 62	Mean 1,072	Mean 1,075	Cfsm 1.09	In. 14.86		
Water year 1957-58:	Max 17,600	Min 62	Mean 1,077	Mean 1,063	Cfsm 1.08	In. 14.71		

Peak discharge (base, 15,000 cfs).--Apr. 6 (11:45 p.m.) 19,300 cfs (13.42 ft); June 13 (12 p.m.) 16,900 cfs (12.48 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 5, 6, 12, 13, 15, Jan. 2-10, 12-14, 17-21, 23-25, Feb. 1-6, Feb. 8 to Mar. 1. Records of change in contents in Rushford Lake furnished by Rochester Gas and Electric Corp.

2240. Mount Morris Reservoir near Mount Morris, N. Y.

Location.--Lat 42°44'00", long 77°54'40", at Mount Morris Dam on Genesee River, 2½ miles northwest of Mount Morris, Livingston County, 5 miles upstream from Canaseraga Creek, and 40 miles upstream from mouth.

Drainage area.--1,077 sq mi (measured by Corps of Engineers).

Records available.--January 1952 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (levels by Corps of Engineers). Prior to Apr. 8, 1952, reference point at same site and datum.

Extremes.--Maximum elevation during year, 652.8 ft Apr. 9; minimum, 585.3 ft Nov. 6. 1952-58: Maximum elevation, 706.9 ft Mar. 10, 1956; minimum, 585.2 ft Sept. 14, 1952.

Remarks.--Reservoir is formed by a concrete gravity-type dam with overflow spillway, completed by Corps of Engineers in 1951 for flood control; first used for flood regulation on Nov. 24, 1951. Usable capacity, 337,000 acre-ft between elevations 585.0 ft (sill of conduits) and 760.0 ft (crest of spillway). Dead storage, 609 acre-ft. Floods are controlled by the operation of nine gates. Water is stored during high flows and released when downstream conditions warrant.

Cooperation.--Capacity table furnished by Corps of Engineers.

Revisions (water years).--WSP 1437: 1955.

Capacity table, water year 1957-58 (elevation, in feet, and contents, in acre-feet)

585.0	609	610.0	11,600
586.0	782	620.0	19,800
588.0	1,210	630.0	30,500
590.0	1,730	640.0	43,700
595.0	3,410	650.0	59,800
600.0	5,610	660.0	78,200

Elevation, in feet, at 12 p.m., water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	597.6	596.8	586.3	587.3	587.1	593.1	598.9	590.4	589.9	597.9	600.0	597.4
2	597.4	594.2	586.2	587.1	587.1	591.8	597.0	589.6	599.2	597.8	599.5	597.9
3	597.3	590.9	586.1	586.9	587.1	591.3	599.2	590.3	601.4	597.8	599.3	598.4
4	597.1	a587.9	586.0	587.4	586.9	591.0	600.9	593.1	600.4	597.8	598.3	598.5
5	596.9	a585.8	585.9	587.7	586.7	590.6	602.1	591.5	598.4	597.9	597.7	598.9
6	596.7	a585.3	585.9	587.9	586.7	590.1	621.7	590.7	598.1	597.8	597.4	599.0
7	596.6	585.6	586.3	587.7	586.7	589.7	644.4	602.7	598.3	597.7	597.2	599.5
8	596.5	586.2	587.7	587.2	586.6	589.4	652.7	604.2	598.2	598.2	597.6	601.7
9	596.3	586.2	587.1	587.1	586.5	589.2	650.0	594.0	598.8	598.2	598.3	606.8
10	596.1	586.1	586.5	587.4	586.3	588.9	645.3	592.5	600.0	598.1	599.1	608.7
11	596.0	585.9	586.3	587.5	586.3	588.9	641.7	591.0	602.8	597.6	599.4	609.3
12	595.9	585.8	586.2	587.1	586.3	588.5	640.7	590.3	601.8	597.8	599.4	602.5
13	595.7	585.8	586.1	587.1	586.3	588.3	635.9	589.6	612.9	597.7	599.5	598.4
14	595.6	586.3	586.0	587.4	586.3	588.2	629.2	589.3	621.3	597.7	599.2	598.4
15	595.5	586.1	586.4	587.4	586.2	588.0	621.1	589.0	609.0	597.8	599.1	598.3
16	595.5	586.0	586.4	587.7	586.2	587.9	608.9	589.1	598.6	599.0	599.6	598.7
17	595.3	585.9	586.4	587.7	586.1	587.9	594.3	588.8	598.0	597.4	599.6	598.6
18	595.1	585.8	586.3	587.4	586.0	587.9	593.4	588.5	597.7	597.3	599.4	598.7
19	594.9	586.2	592.1	587.1	585.9	587.9	592.5	588.4	597.9	598.0	599.1	598.2
20	594.8	586.1	587.8	587.4	585.9	588.2	591.5	588.5	597.8	598.3	598.6	598.2
21	595.0	586.0	592.7	587.7	586.0	588.3	591.4	588.3	598.3	597.8	598.1	598.3
22	595.3	585.9	589.3	587.6	586.0	588.3	602.0	588.2	598.0	597.3	597.5	598.5
23	595.6	585.8	588.3	587.6	586.1	588.6	596.0	588.3	597.5	597.3	597.2	597.9
24	596.0	586.1	587.8	587.6	586.6	589.2	592.6	588.3	597.8	597.3	597.5	598.5
25	596.3	585.9	587.5	587.1	587.1	589.9	591.2	588.2	598.0	597.1	598.1	598.9
26	596.9	585.8	587.4	587.3	587.0	590.4	590.4	588.1	598.3	597.3	599.2	598.3
27	597.3	585.8	589.5	587.3	586.0	590.7	589.9	588.4	597.8	597.7	598.9	597.9
28	597.6	586.3	588.2	587.2	589.0	592.3	592.1	589.8	597.9	598.0	598.1	598.9
29	597.8	586.2	587.9	587.2	-	593.4	592.7	590.5	597.7	598.6	597.6	598.6
30	597.9	586.3	587.5	587.2	-------	594.1	592.0	590.5	597.8	600.2	597.3	597.5
31	598.0	------	587.4	587.1	-------	597.0	-------	590.0	-------	600.2	597.2	------
(†)	4,660	847	1,083	1,019	1,470	4,230	2,340	1,730	4,574	5,712	4,316	4,445
(‡)	+86	-3,813	+236	-64	+451	+2,760	-1,890	-610	+2,844	+1,138	-1,396	+129

Calendar year 1957..... ‡ -543
Water year 1957-58..... ‡ -129

† Contents, in acre-feet, at end of month.
‡ Change in contents, in acre-feet.
a No gage-height record; elevation at 12 p.m. estimated from reconstructed gage-height graph based on record for adjacent days.

2350. Canaseraga Creek near Dansville, N. Y.

Location.--Lat 42°33'40", long 77°42'55", on left bank just downstream from Ossian Street Bridge, half a mile downstream from Mill Creek and 1 mile west of Dansville, Livingston County.

Drainage area.--153 sq mi.

Records available.--July 1910 to December 1912, July 1915 to June 1917, October 1917 to September 1919 (published as "at Cumminsville"), March 1919 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 640.00 ft above mean sea level (levels by New York State Conservation Commission). Prior to Oct. 19, 1920, staff gage at or within 1 mile of present site at various datums. Oct. 19, 1920, to Sept. 30, 1938, water-stage recorder at present site and datum. Oct. 1, 1938, to Oct. 8, 1940, at site 0.9 mile downstream at datum 15.70 ft lower.

Average discharge.--43 years (1910-1912, 1915-16, 1917-19, 1920-58), 153 cfs.

Extremes.--Maximum discharge during year, 2,910 cfs Apr. 6 (gage height, 9.68 ft); minimum daily, 18 cfs Feb. 19, 20; minimum gage height, 6.07 ft Aug. 31.
1910-12, 1915-58: Maximum discharge at present site, 8,830 cfs July 23, 1940 (gage height, 13.1 ft, from floodmark), from rating curve extended above 900 cfs on basis of contracted-opening measurement of peak flow; maximum gage height at present site, 13.68 ft Mar. 7, 1956; maximum discharge at former site, 9,110 cfs July 23, 1940 (gage height, 9.93 ft), from rating curve extended above 2,100 cfs on basis of slope-area determination of peak flow; minimum daily, 3 cfs (corrected) Apr. 28, 1912.

Remarks.--Records good except those for periods of ice effect, backwater from debris, or shifting control, which are fair.

Revisions (water years).--WSP 604: 1923-24. WSP 759: Drainage area. WSP 894: 1935. WSP 1389: 1919.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	25	30	37	32	310	833	192	76	63	43	34
2	27	27	29	35	34	209	794	170	400	58	38	29
3	26	38	27	33	32	187	*845	197	184	68	36	28
4	26	*32	24	31	30	187	903	245	121	65	34	41
5	26	29	21	32	32	182	1,050	206	104	65	36	36
6	26	29	32	30	31	165	2,080	192	107	71	33	33
7	26	27	36	31	29	156	1,830	502	85	68	33	70
8	25	29	52	28	26	135	940	490	73	100	56	62
9	25	32	46	*26	24	124	595	310	240	90	43	50
10	25	31	36	24	22	116	490	235	174	65	38	38
11	25	28	35	22	22	106	*728	188	*153	65	36	34
12	25	28	32	21	22	105	747	*153	110	188	34	33
13	25	28	35	20	21	94	644	136	860	157	*34	31
14	26	29	39	23	21	94	692	121	609	100	33	29
15	26	32	36	37	20	90	831	114	310	90	33	28
16	25	29	34	33	20	83	518	110	220	110	33	31
17	26	27	33	32	19	83	424	96	170	79	29	36
18	29	27	32	32	19	83	354	90	149	65	31	*38
19	29	30	33	33	18	90	310	93	121	87	28	38
20	28	*30	44	34	18	*98	270	85	100	68	28	36
21	27	28	65	34	19	102	285	76	128	58	28	40
22	26	27	60	35	20	105	558	71	104	54	31	50
23	26	26	46	36	21	109	359	73	90	61	26	41
24	31	25	44	35	22	124	290	68	87	54	36	38
25	29	25	41	35	31	165	250	63	100	*47	56	36
26	28	25	44	36	60	182	210	61	275	47	36	45
27	28	24	60	37	130	192	188	56	157	43	31	50
28	27	27	50	37	230	296	255	65	107	43	29	62
29	26	32	46	*37	-	404	255	71	87	56	28	47
30	25	35	41	35	-------	516	245	61	71	43	28	40
31	25	-------	37	35	-------	874	-------	54	-------	43	29	-------
Total	821	861	1,220	986	1,025	5,766	18,573	4,644	5,572	2,271	1,067	1,204
Mean	26.5	28.7	39.4	31.8	36.6	186	619	150	186	73.3	34.4	40.1
Cfsm	0.173	0.188	0.258	0.208	0.239	1.22	4.05	0.980	1.22	0.479	0.225	0.262
In.	0.20	0.21	0.30	0.24	0.25	1.40	4.51	1.13	1.35	0.55	0.26	0.29

Calendar year 1957: Max 1,600 Min 21 Mean 144 Cfsm 0.941 In. 12.78
Water year 1957-58: Max 2,080 Min 18 Mean 121 Cfsm 0.791 In. 10.69

Peak discharge (base, 2,000 cfs).--Apr. 6 (12 m.) 2,910 cfs (9.68 ft); June 13 (1:30 p.m.) 2,400 cfs (9.25 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice and/or shifting control Dec. 5, 11-14, Jan. 2 to Mar. 1, Mar. 8-11. Backwater from debris Oct. 3 to Dec. 1, Sept. 7-30 (no gage-height record Oct. 28 to Nov. 1, Nov. 24 to Dec. 1). Shifting-control method used Dec. 2-4, 6-10, Dec. 15 to Jan. 1, May 8, 9, May 11 to June 12, June 15 to Aug. 11, Aug. 24, 25, Aug. 27 to Sept. 5.

2255. Canaseraga Creek at Groveland, N. Y.

Location.--Lat 42°39'45", long 77°46'10", on left bank at downstream side of highway bridge at Groveland, Livingston County, 0.2 mile downstream from small tributary.

Drainage area.--181 sq mi.

Records available.--August 1915 to September 1916 (gage heights and discharge measurements only) and February 1917 to March 1920 (no winter records in 1917, 1918, 1920), published as "at Groveland Station," October 1955 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 565.42 ft above mean sea level (levels by Corps of Engineers). Prior to Mar. 30, 1916, inclined staff gage at site 400 ft upstream at datum about 5.42 ft lower. Mar. 30, 1916, to Mar. 31, 1920, chain gage on downstream side of bridge at practically same datum as inclined staff gage.

Extremes.--Maximum discharge during year, 2,880 cfs Apr. 6 (gage height, 12.49 ft); minimum daily, 21 cfs Feb. 19, 20; minimum gage height, 1.97 ft Dec. 5.
1917-20, 1955-58: Maximum discharge observed, 4,380 cfs May 22, 1919; maximum gage height, 13.71 ft Mar. 7, 1956; minimum discharge, 18 cfs Oct. 2, 5, 1955 (gage height, 1.96 ft).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 28		Mar. 1 to Sept. 30			
2.1	28	2.2	32	4.5	352
2.5	55	2.5	50	5.0	465
3.0	106	3.0	96	6.0	698
		3.5	162	8.0	1,210
		4.0	250	11.0	2,240

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	30	39	46	37	350	945	230	81	79	52	42
2	28	31	38	40	40	288	875	194	490	72	48	36
3	28	43	36	37	39	242	938	208	217	80	45	34
4	28	*39	34	34	37	230	975	280	150	79	43	44
5	28	35	28	37	38	234	1,080	238	121	81	42	45
6	28	35	35	35	36	208	2,110	216	129	81	40	40
7	29	33	41	36	35	192	2,180	537	102	89	40	72
8	28	32	64	33	32	165	1,120	585	88	104	61	64
9	29	39	56	28	30	155	715	363	274	110	49	63
10	29	36	45	*26	27	140	608	282	207	82	45	49
11	29	36	42	25	*25	125	*756	234	*181	78	43	45
12	29	35	39	24	25	124	858	*198	137	218	40	42
13	29	34	43	22	24	113	698	172	983	178	40	39
14	29	34	47	30	24	109	739	153	789	114	*39	37
15	29	36	44	46	23	107	715	140	387	92	40	36
16	28	35	42	39	23	97	601	137	278	118	38	37
17	29	34	39	38	22	98	513	120	219	89	36	45
18	32	33	38	38	22	100	424	110	188	77	37	*49
19	35	*37	41	39	21	108	361	113	156	92	36	49
20	32	39	50	40	21	*125	300	103	124	79	34	46
21	30	35	77	40	22	132	308	94	152	69	33	50
22	30	33	76	41	23	137	621	88	126	61	36	a58
23	30	32	58	42	24	144	460	90	107	65	34	a54
24	34	32	52	41	25	168	339	85	100	63	40	45
25	35	32	47	41	42	226	280	79	114	56	65	43
26	33	32	51	42	80	274	238	76	316	56	42	55
27	32	31	75	42	155	284	210	72	184	53	39	58
28	32	33	62	41	300	374	278	75	129	52	36	72
29	31	39	59	41	-	479	284	89	106	64	36	57
30	30	43	52	40	-------	574	304	75	89	*52	34	49
31	30	-------	46	39	-------	885	-------	69	-------	51	33	-------
Total	931	1,048	1,496	1,143	1,252	6,987	20,833	5,505	6,724	2,634	1,276	1,455
Mean	30.0	34.9	48.3	36.9	44.7	225	694	178	224	85.0	41.2	48.5
Cfsm	0.166	0.193	0.267	0.204	0.247	1.24	3.83	0.983	1.24	0.470	0.228	0.268
In.	0.19	0.22	0.31	0.23	0.26	1.44	4.28	1.13	1.38	0.54	0.26	0.30

Calendar year 1957: Max 2,100 Min 23 Mean 179 Cfsm 0.989 In. 13.47
Water year 1957-58: Max 2,180 Min 21 Mean 141 Cfsm 0.779 In. 10.54

Peak discharge (base, 2,200 cfs).--Apr. 6 (10:30 p.m.) 2,880 cfs (12.49 ft); June 13 (5 p.m.) 2,340 cfs (11.26 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and records for nearby stations.
Note.--Stage-discharge relation affected by ice Dec. 5, 6, 12, Jan. 2 to Mar. 2, Mar. 8-12.

2275. Genesee River at Jones Bridge, near Mount Morris, N. Y.

Location.--Lat 42°45'55", long 77°50'25", on right bank at Jones Bridge, 1½ miles downstream from Canaseraga Creek and 3½ miles northeast of Mount Morris, Livingston County.

Drainage area.--1,419 sq mi.

Records available.--May 1903 to April 1906, August 1908 to April 1914, July 1915 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 540.00 ft above mean sea level (levels by New York State Conservation Commission). Prior to Sept. 11, 1915, chain gage on bridge at datum 2.73 ft lower.

Average discharge.--48 years (1908-13, 1915-58), 1,604 cfs (unadjusted).

Extremes.--Maximum discharge during year, 10,700 cfs Apr. 15 (gage height, 16.14 ft); minimum, 56 cfs Oct. 9 (gage height, 0.61 ft, partly obstructed intake); minimum daily, 104 cfs Oct. 21.

1903-6, 1908-14, 1915-58: Maximum discharge, 55,100 cfs May 17, 1916 (gage height, 25.44 ft); minimum, 12 cfs July 23, 1955 (gage height, 0.22 ft, partly obstructed intake); minimum daily, 30 cfs Aug. 8, 1909.

Remarks.--Records good except those for periods of ice effect or partly obstructed intake, which are fair. Diurnal fluctuation at low flow caused by powerplants. Flow regulated to some extent by Rushford Lake (capacity, 1,106,000,000 cu ft) since July 1928 and, at high flows, since November 1951 by Mount Morris Reservoir (see p. 283).

Revisions (water years).--WSP 759: Drainage area. WSP 1277: 1952. WSP 1307: 1913. WSP 1437: 1955.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	149	443	291	637	640	2,500	7,380	2,630	518	522	504	249
2	147	427	284	540	620	3,800	7,300	2,010	1,690	504	490	224
3	147	406	246	440	600	3,300	7,360	1,780	1,430	469	480	221
4	147	357	221	780	500	3,000	7,740	2,910	1,280	469	470	242
5	138	*170	155	880	330	2,700	7,940	3,230	1,170	469	400	298
6	136	155	170	920	360	2,500	8,860	2,360	863	460	330	291
7	144	155	252	880	400	2,300	7,350	4,710	683	620	300	396
8	145	150	604	840	380	1,970	5,780	7,830	647	559	300	804
9	140	154	845	660	320	1,840	8,990	6,760	1,230	2,060	290	793
10	150	154	588	*880	280	1,640	*9,770	3,920	1,550	1,430	270	*588
11	145	189	443	800	225	1,530	*10,000	2,830	*2,240	1,040	280	664
12	140	176	310	820	250	1,470	8,680	2,200	2,220	1,200	320	2,140
13	129	169	280	760	250	1,260	9,380	*1,900	3,380	1,530	320	1,690
14	122	174	280	780	240	1,160	10,300	1,600	6,840	1,130	320	726
15	145	*184	290	800	220	1,130	10,600	1,400	8,170	828	320	710
16	125	221	310	860	210	1,070	10,300	1,290	5,740	965	320	710
17	135	210	406	900	210	1,020	8,290	1,200	1,990	1,450	320	804
18	140	208	418	900	205	1,020	5,500	1,040	1,540	953	320	1,820
19	143	198	322	840	200	*1,040	4,180	998	1,200	678	320	1,950
20	134	212	645	800	195	1,120	3,480	947	1,060	673	310	1,470
21	104	218	1,770	860	195	1,240	3,080	833	905	663	310	1,250
22	110	221	2,520	860	200	1,290	4,170	737	917	573	300	1,920
23	120	193	1,360	860	210	1,380	7,220	742	822	500	280	1,750
24	122	174	965	840	250	1,530	4,900	642	658	490	250	820
25	122	171	828	780	350	1,930	3,330	627	863	477	250	600
26	187	174	710	760	520	2,320	2,600	554	1,760	418	*340	740
27	414	174	1,350	780	860	2,500	2,150	531	1,800	344	402	780
28	443	166	1,400	760	1,500	3,200	2,160	495	978	337	402	800
29	435	174	1,020	*740	-	4,000	3,090	559	776	427	356	880
30	427	261	861	680	---------	4,950	3,640	583	617	508	291	800
31	422	--------	751	660	---------	6,020	--------	545	---------	504	261	--------
Total	5,707	6,438	20,895	24,297	10,720	67,730	195,520	60,393	55,337	23,250	10,426	27,130
Mean	184	215	674	784	383	2,185	6,517	1,948	1,845	750	336	904

Adjusted for change in contents in Rushford Lake and Mount Morris Reservoir

Mean	124	164	731	451	407	2,323	6,695	1,957	1,893	765	314	742
Cfsm	0.087	0.116	0.515	0.318	0.287	1.64	4.72	1.38	1.33	0.539	0.221	0.523
In.	0.10	0.13	0.59	0.37	0.30	1.89	5.26	1.59	1.49	0.62	0.25	0.58

	Observed			Adjusted		
Calendar year 1957:	Max 11,500	Min 96	Mean 1,489	Mean 1,491	Cfsm 1.05	In. 14.27
Water year 1957-58:	Max 10,600	Min 104	Mean 1,391	Mean 1,378	Cfsm 0.971	In. 13.17

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 5, 6, 12-16, Jan. 2 to Mar. 7. Intake partly obstructed Oct. 8-11, 14-18, 21-25, Nov. 5-8, Mar. 19, Aug. 3-26, Sept. 23-30; discharge computed on basis of gage-height record and records for other stations in the Genesee River basin. Records of change in contents in Rushford Lake furnished by Rochester Gas and Electric Corp.

2285. Genesee River at Avon, N. Y.

Location.--Lat 42°55'05", long 77°45'30", on left bank at downstream side of bridge on U. S. Highway 20 (State Highway 5), 0.3 mile west of Avon, Livingston County, and 0.8 mile downstream from Conesus Creek.

Drainage area.--1,666 sq mi.

Records available.--August 1955 to September 1958.

Gage.--Water-stage recorder; wire-weight gage read twice daily used for stages below 23.7 ft gage height. Datum of gage is 500.00 ft above mean sea level (levels by Corps of Engineers).

Extremes.--Maximum discharge during year, 10,800 cfs Apr. 16 (gage height, 32.81 ft); minimum, 96 cfs Oct. 23 (gage height, 14.00 ft, from graph based on gage readings).
1955-58: Maximum discharge, 15,600 cfs Mar. 7, 1956 (gage height, 37.20 ft, from graph based on gage readings); minimum, 56 cfs Oct. 5, 1955 (gage height, 13.73 ft, from graph based on gage readings).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diurnal fluctuation at low flow caused by powerplants. Flow regulated to some extent by Rushford Lake (capacity, 1,106,000,000 cu ft) and, at high flows, by Mount Morris Reservoir (see p. 283).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to June 15				June 16 to Sept. 30			
14.1	113	24.0	4,290	14.4	205	24.0	4,290
14.5	200	30.0	8,230	15.0	364	29.0	7,530
15.0	343	33.0	11,000	18.0	1,420		
18.0	1,420						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a155	428	303	684	680	2,200	7,660	3,340	605	729	515	259
2	155	425	309	564	660	3,500	8,160	2,430	996	688	508	246
3	153	406	306	520	640	4,000	7,990	2,080	1,620	655	499	222
4	153	355	276	540	580	3,600	8,170	2,490	1,360	572	489	219
5	a150	*334	200	829	430	3,400	8,430	3,340	1,240	560	455	244
6	a150	186	188	1,060	360	3,300	8,830	2,870	1,130	524	394	288
7	149	171	198	1,020	380	3,000	9,680	2,990	927	612	355	324
8	145	158	240	1,020	410	2,700	7,830	7,080	826	739	327	528
9	145	a165	732	840	370	2,400	8,110	7,720	851	973	321	949
10	a150	155	737	692	310	2,100	*10,100	5,470	1,660	1,870	304	674
11	153	167	622	833	270	1,900	10,500	3,500	2,070	1,230	285	605
12	a160	181	360	891	240	1,800	9,850	2,550	*2,370	1,160	296	1,220
13	151	188	330	786	260	1,600	9,590	*2,180	2,470	1,660	329	2,320
14	145	186	300	*833	260	1,420	10,100	1,850	5,130	1,500	*327	1,050
15	134	*183	300	873	250	1,310	10,600	1,600	7,710	1,140	332	725
16	132	210	331	912	230	1,250	10,700	1,430	7,410	1,010	335	718
17	136	245	355	916	220	1,170	9,830	1,350	3,470	1,280	332	*729
18	136	223	428	940	215	1,130	7,020	1,220	1,920	1,390	329	971
19	140	223	428	880	210	*1,170	4,630	1,110	1,490	920	324	2,290
20	a150	218	374	840	210	1,320	3,880	1,080	1,200	749	321	1,630
21	145	229	880	880	205	1,450	3,280	985	1,070	732	318	1,290
22	128	242	a2,350	940	210	1,530	3,480	880	1,080	708	315	1,300
23	122	237	a1,800	940	220	1,660	6,500	815	1,070	615	310	2,070
24	130	213	a1,160	880	260	1,900	6,420	786	870	560	285	1,420
25	130	186	a940	860	*320	2,290	4,020	730	763	540	257	729
26	a135	178	a820	820	500	2,800	2,950	681	1,110	505	277	688
27	230	178	a860	780	815	3,220	2,520	615	2,090	415	355	825
28	406	178	a1,600	800	1,400	3,680	2,220	605	1,490	394	406	822
29	428	181	a1,240	780	-	4,570	2,820	588	1,050	*370	403	902
30	435	193	a980	740	---------	5,360	3,520	660	884	489	341	946
31	432	--------	a820	700	--------	6,210	--------	646	--------	515	299	--------
Total	5,663	6,822	20,767	25,593	11,115	78,940	209,390	65,651	57,932	25,804	10,943	27,203
Mean	183	227	670	826	397	2,546	6,980	2,118	1,931	832	353	907

Adjusted for change in contents in Rushford Lake and Mount Morris Reservoir

Mean	123	177	727	493	421	2,684	7,157	2,127	1,980	847	330	744
Cfsm	0.074	0.106	0.436	0.296	0.253	1.61	4.30	1.28	1.19	0.508	0.198	0.447
In.	0.08	0.12	0.50	0.34	0.26	1.86	4.79	1.47	1.33	0.59	0.23	0.50

	Observed			Adjusted		
Calendar year 1957:	Max 12,000	Min 115	Mean 1,635	Mean 1,637	Cfsm 0.983	In. 13.34
Water year 1957-58:	Max 10,700	Min 122	Mean 1,495	Mean 1,482	Cfsm 0.890	In. 12.07

* Discharge measurement made on this day.
a No gage-height record; discharge estimated from graph based on twice-daily water-level observations at station near Fowlerville and records for station at Jones Bridge, near Mount Morris.
Note.--Stage-discharge relation affected by ice Dec. 12, 13, 15, Jan. 3, 4; 7, 8, Jan. 18 to Feb. 26, Feb. 28 to Mar. 13 (gage height record Feb. 9-11). Records of change in contents in Rushford Lake furnished by Rochester Gas & Electric Corp.

2290. Canadice Lake Outlet near Hemlock, N. Y.

Location.--Lat 42°44'25", long 77°34'15", upstream from weir at outlet of Canadice Lake, Ontario County, 4 miles southeast of Hemlock, Livingston County.

Drainage area.--12.6 sq mi.

Records available.--April 1903 to September 1958.

Gage.--Hook gage. Datum of gage is 1,093.00 ft above mean sea level (furnished by city of Rochester). Gage readings have been reduced to elevations above mean sea level.

Average discharge.--55 years, 11.8 cfs (unadjusted).

Cooperation.--Records furnished by Department of Public Works, city of Rochester.

Monthly discharge, water year October 1957 to September 1958

Month	Mean elevation of lake (feet)	Observed discharge, in cubic feet per second	Adjusted†		
			Discharge, in cubic feet per second		Runoff in inches
			Mean	Per square mile	
October	1,092.85	13.6	-2.88	-0.229	-0.26
November	1,092.20	1.99	-1.01	-.080	-.09
December	1,092.16	.001	1.71	.136	.16
Calendar year 1957	1,095.57	10.7	8.86	.703	9.55
January	1,092.39	.001	3.63	.288	.33
February	1,092.81	.001	7.89	.626	.65
March	1,094.23	.001	28.9	2.29	2.65
April	1,098.42	26.3	63.6	5.05	5.64
May	1,098.57	20.4	9.48	.752	.87
June	1,098.22	34.1	28.2	2.24	2.49
July	1,096.41	24.2	6.75	.536	.62
August	1,095.88	.589	-1.73	-.137	-.16
September	1,095.94	0	3.86	.306	.34
Water year 1957-58	1,095.01	10.1	12.3	.976	13.24

† Adjusted for change in contents in Canadice Lake. Negative figures indicate that natural losses from Canadice Lake exceeded inflow.

Note.--Elevations of Canadice Lake: 1,093.88 ft at 12 p.m. Sept. 30, 1957, and 1,096.10 ft at 12 p.m. Sept. 30, 1958; 1,094.20 ft at 12 p.m. Dec. 31, 1956, and 1,092.27 ft at 12 p.m. Dec. 31, 1957.

2295. Honeoye Creek at Honeoye Falls, N. Y.

Location.--Lat 42°57'25", long 77°35'20", on right bank 25 ft downstream from highway bridge at Honeoye Falls, Monroe County, and 13 miles upstream from mouth.

Drainage area.--197 sq mi.

Records available.--October 1945 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 609.98 ft above mean sea level (levels by Corps of Engineers).

Average discharge.--13 years, 173 cfs (adjusted for storage and diversion).

Extremes.--Maximum discharge during year, 1,090 cfs Apr. 8 (gage height, 3.82 ft); minimum, 0.8 cfs Jan. 2 (gage height, 0.58 ft, backwater from ice).
1945-58: Maximum discharge, 4,630 cfs Mar. 28, 1950 (gage height, 6.42 ft), from rating curve extended above 2,100 cfs by logarithmic plotting; minimum, 0.06 cfs Aug. 28, 1949; minimum gage height, 0.35 ft Aug. 28, 1949, Sept. 14, 15, 1952.

Remarks.--Records good except those for periods of ice effect, backwater from aquatic vegetation or debris, or fragmentary or no gage-height record, which are fair. Some diversion from and regulation by Hemlock and Canadice Lakes for water supply of city of Rochester. Diurnal fluctuation at low flow caused by mills above station.

Rating table, water year 1957-58, except periods of ice effect or backwater from aquatic vegetation or debris (gage height, in feet, and discharge, in cubic feet per second)

0.5	0.7	1.6	63
.6	1.7	2.0	131
.7	3.4	2.5	264
.8	5.7	3.0	484
.9	8.8	3.5	815
1.1	18	4.0	1,250
1.3	31		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.0	1.4	7.5	7.8	7.4	98	677	238	41	55	43	2.8
2	2.0	1.7	7.2	4.2	7.4	145	616	195	82	50	36	2.3
3	1.8	2.1	5.2	3.8	6.6	180	566	175	195	49	31	2.0
4	1.7	2.3	4.4	3.6	6.8	175	535	175	145	46	28	2.3
5	1.7	3.0	4.4	3.8	7.2	f203	495	170	102	43	26	2.3
6	1.8	*2.4	5.4	4.0	7.4	f212	541	150	86	43	24	1.8
7	1.7	2.3	6.6	4.0	7.2	f209	963	160	72	81	23	3.8
8	1.7	2.8	6.8	3.6	6.2	f209	938	240	76	97	22	4.9
9	1.7	3.6	9.4	3.2	5.0	f198	597	235	150	77	21	9.2
10	1.7	4.0	8.8	3.4	5.2	f175	474	175	293	66	22	13
11	1.7	4.0	6.2	2.0	5.0	f170	*442	150	353	59	22	11
12	1.7	3.6	4.7	1.2	4.4	f142	541	135	223	134	22	8.8
13	1.8	4.0	4.4	1.4	4.0	*f123	453	120	*170	258	19	6.6
14	1.8	4.9	6.0	1.7	4.2	117	389	*110	223	163	*18	5.2
15	1.8	5.2	6.8	*1.4	3.8	115	384	104	185	104	16	3.8
16	1.8	5.2	8.4	1.3	3.6	107	366	108	140	197	17	4.4
17	2.1	4.9	8.1	1.2	3.4	107	349	98	117	160	14	*5.2
18	2.1	*5.6	9.0	1.1	3.6	107	324	90	104	113	9.6	7.2
19	2.3	7.2	9.2	1.1	3.8	115	300	94	95	88	6.3	13
20	2.4	5.6	9.6	1.3	3.8	125	275	88	87	79	5.2	18
21	2.4	5.8	10	1.7	4.2	125	261	80	82	67	4.4	16
22	2.1	6.2	10	2.8	4.4	135	396	72	76	57	4.0	17
23	1.4	6.2	10	2.8	5.2	165	547	68	69	51	2.8	22
24	2.3	6.0	9.2	3.0	7.8	212	353	64	62	49	4.1	16
25	2.6	6.0	8.4	4.0	18	278	275	60	62	46	4.7	12
26	2.4	5.8	9.2	4.9	27	312	238	56	80	42	4.4	13
27	2.1	5.4	8.1	6.0	43	442	212	50	115	39	5.7	31
28	2.0	5.8	8.8	6.8	72	584	215	50	98	37	5.2	30
29	1.7	7.2	9.6	7.4	-	610	264	52	73	*38	4.0	27
30	1.4	7.5	10	7.8	-------	610	282	52	61	49	3.0	20
31	1.4	-------	10	*7.8	-------	578	-------	43	-------	49	2.6	-------
Total	59.1	137.7	241.4	110.1	287.6	7,083	13,268	3,657	3,697	2,486	470.0	331.6
Mean	1.91	4.59	7.79	3.55	10.3	228	442	118	123	80.2	15.2	11.1
Adjusted†												
Mean	-4.83	3.04	14.3	17.8	30.8	349	719	179	244	117	12.0	26.9
Cfsm	-0.025	0.015	0.073	0.090	0.156	1.77	3.65	0.909	1.24	0.594	0.061	0.137
In.	-0.03	0.02	0.08	0.10	0.16	2.04	4.07	1.05	1.38	0.68	0.07	0.15

	Observed			Adjusted			
Calendar year 1957:	Max 1,390	Min 1.0	Mean 87.7	Mean 128	Cfsm 0.650	In. 8.79
Water year 1957-58:	Max 963	Min 1.1	Mean 87.2	Mean 142	Cfsm 0.721	In. 9.77

* Discharge measurement made on this day.
† Adjusted for diversions from and change in contents in Hemlock and Canadice Lakes; outlet of Honeoye Lake is not controlled (records of diversion and change in contents furnished by Department of Public works, city of Rochester). Negative figures indicate that losses from Hemlock, Canadice, and Honeoye Lakes exceeded inflow.
f Fragmentary gage-height record; discharge computed on basis of partly estimated gage heights.
Note.--Stage-discharge relation affected by ice Dec. 2-6, 10-17, Jan. 1 to Mar. 4 (fragmentary gage-height record Mar. 3, 4). Backwater from debris Oct. 16 to Nov. 29. Backwater from aquatic vegetation May 2 to June 9, Sept. 4-30 (no gage-height record May 7-10).

2305. Oatka Creek at Garbutt, N. Y.

Location.--Lat 43°00'30", long 77°47'25", on right bank 40 ft downstream from highway bridge at Garbutt, Genesee County, 2 miles southwest of Scottsville, and 3½ miles upstream from mouth.

Drainage area.--208 sq mi.

Records available.--October 1945 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 560.89 ft above mean sea level (levels by Corps of Engineers).

Average discharge.--13 years, 205 cfs.

Extremes.--Maximum discharge during year, 2,320 cfs Apr. 8 (gage height, 5.71 ft); minimum, 3.3 cfs Sept. 11, 12 (gage height, 1.89 ft).
1945-58: Maximum discharge, 6,080 cfs Mar. 29, 1950 (gage height, 8.52 ft); minimum, that of Sept. 11, 12, 1958.

Remarks.--Records good except those for periods of ice effect or backwater from aquatic vegetation and/or debris, which are fair.

Rating table, water year 1957-58, except periods of ice effect or backwater from aquatic vegetation or debris (gage height, in feet, and discharge, in cubic feet per second)

2.1	13	3.2	290
2.2	21	3.6	490
2.3	33	4.0	725
2.4	50	5.0	1,530
2.6	90	6.0	2,670
2.9	180		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31	*28	63	52	36	176	1,090	365	90	61	58	32
2	29	28	45	38	38	240	1,170	270	100	58	50	31
3	29	28	33	26	32	270	1,100	230	118	56	47	31
4	29	28	31	33	33	266	1,040	250	110	54	45	31
5	29	28	31	38	35	286	975	300	86	56	45	32
6	28	28	29	36	35	317	968	250	76	54	52	32
7	28	27	32	36	33	312	1,580	270	68	58	43	33
8	28	28	43	32	29	299	2,120	415	64	63	40	32
9	28	29	110	26	25	286	1,180	405	76	58	36	50
10	32	28	80	31	26	266	744	280	310	54	42	50
11	31	28	61	23	25	258	*654	225	400	58	45	32
12	29	27	36	18	23	240	839	200	*340	108	38	33
13	28	28	28	*21	21	222	895	185	201	274	35	36
14	28	29	35	23	22	212	712	165	322	243	*33	32
15	28	29	32	22	20	208	612	*155	355	130	32	31
16	28	29	33	21	19	201	572	150	208	195	31	*31
17	28	28	38	19	18	194	506	150	139	308	31	33
18	31	*27	79	16	19	*194	440	140	115	176	31	38
19	31	28	77	17	20	232	390	140	100	115	31	97
20	29	27	60	20	20	274	340	135	90	95	31	86
21	28	29	75	25	21	299	308	130	82	84	31	67
22	28	32	84	26	22	299	375	124	80	69	31	56
23	28	28	90	25	25	330	540	122	82	63	31	73
24	32	28	67	27	29	425	490	120	75	58	35	71
25	29	28	56	36	38	534	330	118	75	58	35	52
26	28	28	56	38	50	562	266	108	102	54	32	47
27	29	28	52	32	84	642	236	106	169	48	32	59
28	28	28	75	31	136	839	232	104	130	47	32	90
29	28	33	69	36	-	960	294	102	88	*45	32	71
30	28	32	58	*38	-------	1,010	415	104	69	54	32	63
31	28	-------	54	38	-------	1,020	-------	100	-------	75	32	-------
Total	896	854	1,712	900	934	11,873	21,413	5,918	4,320	2,929	1,151	1,452
Mean	28.9	28.5	55.2	29.0	33.4	383	714	191	144	94.5	37.1	48.4
Cfsm	0.139	0.137	0.265	0.139	0.161	1.84	3.43	0.918	0.692	0.454	0.178	0.233
In.	0.16	0.15	0.31	0.16	0.17	2.12	3.83	1.06	0.77	0.52	0.21	0.26

Calendar year 1957: Max 2,930 Min 25 Mean 188 Cfsm 0.904 In. 12.28
Water year 1957-58: Max 2,120 Min 16 Mean 149 Cfsm 0.716 In. 9.72

Peak discharge (base, 1,500 cfs).--Apr. 8 (7:15 a.m.) 2,320 cfs (5.71 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 12-14, Jan. 2-4, Jan. 8 to Feb. 26. Backwater from aquatic vegetation and/or debris May 3-7, May 10 to June 12.

2310. Black Creek at Churchville, N. Y.

Location.--Lat 43°06'00", long 77°53'00", on right bank at east end of Carrol Street in Churchville, Monroe County, 60 ft downstream from main line tracks of New York Central Railroad and 1 mile upstream from small tributary.

Drainage area.--133 sq mi.

Records available.--October 1945 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 552.45 ft above mean sea level (levels by Corps of Engineers).

Average discharge.--13 years, 106 cfs.

Extremes.--Maximum discharge during year, 835 cfs Apr. 8 (gage height, 4.50 ft); minimum, 1.6 cfs Aug. 17, 18, 20 (gage height, 1.04 ft).
1945-58: Maximum discharge, 4,750 cfs Mar. 28, 1950 (gage height, 8.83 ft); minimum, 0.7 cfs Sept. 29, Oct. 1-3, 6, 7, 1950; minimum gage height, 0.98 ft Sept. 29, 1950.

Remarks.--Records good except those for periods of ice effect, no gage-height record, or backwater from aquatic vegetation or debris, which are fair. Prior to May 1952, small diversion by New York Central Railroad Co. and slight regulation by pumping operations above station.

Rating tables, water year 1957-58, except periods of ice effect or backwater from aquatic vegetation or debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 8				Mar. 9 to Sept. 30			
1.0	0.9	2.0	81	1.0	0.8	2.0	76
1.1	3.2	2.5	175	1.1	3.1	2.5	164
1.2	7.1	3.0	300	1.2	6.3	3.0	295
1.3	12	4.0	635	1.4	16	4.0	635
1.6	36			1.6	30	5.0	1,070

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.1	*7.2	43	32	20	70	470	280	25	11	4.3	4.0
2	5.8	5.6	34	17	21	88	418	160	30	9.2	4.0	4.3
3	4.2	10	21	16	18	130	352	116	34	10	3.4	4.0
4	3.0	11	21	12	15	190	286	140	29	14	3.7	4.6
5	4.5	7.6	16	13	15	284	240	160	24	16	3.1	4.0
6	8.5	9.6	18	14	15	360	229	125	22	16	2.8	4.9
7	7.6	7.2	31	14	19	380	413	118	20	14	5.6	6.0
8	6.6	11	58	12	17	400	759	140	18	15	6.7	4.6
9	8.0	14	62	10	13	384	594	145	21	14	6.7	4.3
10	7.6	12	47	11	13	314	339	112	37	13	6.7	8.4
11	8.5	12	31	7.6	12	289	268	90	68	14	6.3	6.3
12	9.0	12	18	5.8	11	245	259	80	*64	19	6.3	6.0
13	10	13	20	*7.0	10	224	280	70	42	19	4.6	5.3
14	9.5	23	17	7.6	10	204	232	64	37	23	*3.4	4.9
15	6.6	32	19	7.2	9.0	197	176	*62	38	22	2.6	5.3
16	9.0	27	25	6.6	8.6	185	139	62	30	22	2.3	*7.5
17	10	19	32	6.2	8.0	162	121	56	22	15	2.8	11
18	12	15	32	5.4	8.4	*171	104	52	19	13	2.3	20
19	11	*17	37	5.8	8.6	206	90	43	19	14	2.1	23
20	12	15	45	6.6	8.6	274	82	37	18	a12	2.1	15
21	12	19	57	9.0	9.0	339	85	33	17	a11	4.9	14
22	9.6	23	55	10	9.4	384	142	32	15	a10	7.1	15
23	9.6	22	44	9.6	11	481	204	36	14	a9.7	4.9	12
24	17	22	36	11	14	607	215	34	14	a9.2	7.6	9.7
25	12	24	29	16	17	679	137	33	15	a8.8	13	9.2
26	13	25	35	18	22	651	94	28	25	a7.9	11	8.3
27	11	18	43	19	33	659	76	25	31	a7.1	7.5	8.8
28	10	21	39	21	56	715	82	24	22	a6.0	6.0	9.2
29	7.6	34	38	22	-	703	192	28	16	*5.6	5.3	7.9
30	7.6	53	35	*22	-------	635	295	25	13	5.3	4.6	8.3
31	6.6	-------	32	21	-------	551	-------	22	-------	4.3	5.3	-------
Total	276.5	541.2	1,070	395.4	431.6	11,161	7,373	2,432	799	390.1	159.0	255.8
Mean	8.92	18.0	34.5	12.8	15.4	360	246	78.5	26.6	12.6	5.13	8.53
Cfsm	0.073	0.146	0.280	0.104	0.125	2.93	2.00	0.638	0.216	0.102	0.042	0.069
In.	0.08	0.16	0.32	0.12	0.13	3.37	2.23	0.74	0.24	0.12	0.05	0.08

Calendar year 1957: Max 1,690 Min 3.0 Mean 101 Cfsm 0.821 In. 11.12
Water year 1957-58: Max 759 Min 2.1 Mean 69.3 Cfsm 0.563 In. 7.64

Peak discharge (base, 1,000 cfs).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage and records for nearby stations.
Note.--Stage-discharge relation affected by ice Dec. 4, 11-13, Jan. 2 to Feb. 5, Feb. 8 to Mar. 4, Mar. 6-8. Backwater from aquatic vegetation or debris Oct. 22 to Nov. 29, May 2 to June 10.

2320. Genesee River at Driving Park Avenue, Rochester, N. Y.

Location.--Lat 43°10'50", long 77°37'40", on right bank at Rochester, Monroe County, 40 ft downstream from plant 5 of Rochester Gas & Electric Corp. and 100 ft upstream from Driving Park Avenue Bridge.

Drainage area.--2,467 sq mi.

Records available.--December 1919 to September 1958.

Gage.--Water-stage recorder. Prior to June 20, 1956, water-stage recorder at datum 3.00 ft higher.

Average discharge.--38 years (1920-58), 2,767 cfs.

Extremes.--Maximum discharge during year, 14,900 cfs Apr. 7; maximum gage height, 11.66 ft Apr. 12; minimum discharge, 143 cfs Aug. 18, 19 (gage height, 0.60 ft); minimum daily, 316 cfs Sept. 3.

1919-58: Maximum discharge, 34,400 cfs Mar. 19, 1942; maximum gage height, 17.08 ft Apr. 2, 1940 (present datum); minimum discharge, less than 10 cfs, occurred during low-water periods in some years when powerplant was shut down; minimum daily, 219 cfs Aug. 14, 1927.

Maximum discharge known, about 54,000 cfs Mar. 18, 1865.

Remarks.--Records good. Extensive diurnal fluctuation caused by powerplants above station. New York State Erie (Barge) Canal crosses river 5.4 miles above station. Water diverted by the canal from Lake Erie is discharged into river from the west, the canal again diverting a smaller amount of water from river to the east. Additional regulation is provided by Rushford Lake and Mount Morris Reservoir. Records of water temperatures for the water year 1958 are given in WSP 1571.

Revisions.--WSP 759: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 7				Apr. 8 to Sept. 30			
1.4	450	7.0	4,980	1.5	310	7.0	4,790
2.0	600	9.0	8,610	2.0	490	9.0	8,210
3.0	1,110	11	13,400	3.0	1,080	11	13,000
5.0	2,600			5.0	2,620		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	542	750	700	555	718	2,140	10,300	4,900	1,480	1,260	872	692
2	521	830	934	1,500	766	3,460	11,300	4,080	1,730	1,160	884	402
3	504	867	726	1,480	752	4,370	11,000	3,580	2,730	1,210	830	316
4	550	842	602	826	716	4,190	10,900	3,620	2,480	932	932	556
5	512	712	566	410	667	4,060	11,000	4,260	2,310	1,130	776	525
6	488	*662	594	443	520	4,190	11,300	4,300	1,990	1,010	812	540
7	469	570	770	834	522	4,070	13,300	3,940	1,490	1,200	800	562
8	578	619	658	1,460	498	3,670	12,600	8,020	1,420	1,430	908	584
9	643	644	1,400	458	492	3,560	11,200	10,300	1,490	1,520	568	1,320
10	634	646	1,180	589	487	3,480	*12,500	9,170	2,680	2,550	433	1,320
11	616	554	1,070	467	443	3,060	12,600	4,620	3,360	1,830	612	974
12	608	593	932	614	448	2,780	12,700	3,990	3,670	1,800	551	1,280
13	617	586	508	836	441	2,620	12,000	3,520	3,310	2,330	639	2,440
14	622	*568	420	620	439	2,400	12,300	3,110	5,030	2,670	639	1,630
15	586	663	413	672	427	1,830	12,600	*2,650	8,620	1,990	*622	1,150
16	535	657	496	768	436	2,210	12,700	2,650	8,820	1,740	568	*1,260
17	583	638	*1,570	756	446	*2,880	12,000	2,480	4,720	2,010	740	1,140
18	553	598	1,160	851	427	1,860	8,620	2,480	2,840	2,210	674	1,510
19	547	602	804	798	443	2,080	5,010	2,150	2,240	1,760	628	2,470
20	522	710	693	732	441	2,620	4,460	2,120	1,920	1,220	540	2,210
21	560	712	1,020	691	429	2,770	4,170	1,950	1,610	1,350	710	1,940
22	542	689	1,770	814	430	2,740	4,060	1,920	1,620	1,130	490	1,710
23	542	574	2,580	981	439	3,410	5,880	1,860	1,620	1,090	584	2,310
24	554	626	1,710	862	481	3,830	7,960	1,800	1,490	1,130	734	2,130
25	556	630	602	976	1,450	4,110	5,180	1,700	1,590	1,040	734	1,410
26	558	528	1,470	905	1,360	4,560	4,020	1,600	1,810	896	476	1,130
27	572	572	1,020	848	1,430	5,310	3,510	1,370	2,940	824	556	1,230
28	699	573	1,100	878	2,080	6,500	3,820	1,580	2,400	*770	734	1,210
29	851	718	1,540	858	-	7,480	4,030	1,560	1,650	740	848	1,300
30	811	610	1,340	*826	--------	8,170	4,710	1,510	1,540	692	520	1,400
31	757	--------	1,380	797	--------	8,830	--------	1,510	--------	1,020	650	--------
Total	18,432	19,543	31,728	25,107	18,628	119,240	267,730	104,100	82,600	43,644	21,064	38,651
Mean	595	651	1,023	810	665	3,846	8,924	3,358	2,753	1,408	679	1,288
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 15,400 Min 413 Mean 2,396 Cfsm 0.971 In. 13.17
Water year 1957-58: Max 13,300 Min 316 Mean 2,166 Cfsm 0.878 In. 11.91

* Discharge measurement made on this day.

2321. Sterling Creek at Sterling, N. Y.

Location.--Lat 43°19'30", long 76°38'50", on right bank at Sterling, Cayuga County, 25 ft downstream from bridge on State Highway 104A, 1.8 miles southwest of Sterling Valley, and 1.9 miles upstream from Sterling Valley Creek.

Drainage area.--44.4 sq mi.

Records available.--April 1957 to September 1958.

Gage.--Water-stage recorder.

Extremes.--Maximum discharge during year, 625 cfs Mar. 28 (gage height, 3.89 ft); minimum, 0.7 cfs Oct. 1 (gage height, 1.66 ft, backwater from aquatic vegetation).
1957-58: Maximum discharge, that of Mar. 28, 1958; minimum, 0.6 cfs Sept. 26, 1957; minimum gage height, 1.64 ft Sept. 20, 1957.

Remarks.--Records good except those for periods of ice effect or backwater from aquatic vegetation and/or debris, which are fair.

Rating tables, water year 1957-58, except periods of ice effect or backwater from aquatic vegetation or debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to July 14				July 14 to Sept. 30			
1.5	0.5	2.0	24	1.6	1.4	2.0	18
1.6	1.6	2.2	52	1.7	3.2	2.2	39
1.7	3.8	2.5	107	1.8	6.2	2.5	92
1.8	8.2	3.0	245	1.9	11	2.8	170
1.9	15	4.0	680				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.8	2.3	8.8	19	86	190	526	90	29	16	13	4.0
2	.8	2.1	8.2	15	86	205	440	75	68	13	9.8	4.2
3	.8	2.3	8.2	14	78	210	371	77	49	11	8.3	4.0
4	.8	4.1	6.7	13	66	215	308	105	42	9.4	6.6	7.9
5	.9	6.2	6.2	12	50	*220	245	94	33	11	5.8	50
6	.9	7.2	6.7	13	54	230	252	78	44	11	5.8	28
7	.9	6.2	10	13	54	220	315	60	58	11	9.3	18
8	1.0	5.2	15	13	50	220	319	54	64	15	7.4	44
9	1.1	5.2	13	18	46	200	248	46	49	15	6.2	32
10	1.1	6.2	12	17	43	180	192	42	124	15	5.1	*64
11	1.4	4.8	10	14	39	160	150	37	150	17	4.8	47
12	1.3	*4.4	8.2	13	37	130	125	33	123	38	4.2	32
13	1.3	5.2	8.2	12	*35	120	83	30	109	68	4.2	25
14	1.3	5.2	8.2	12	34	118	86	28	88	90	3.7	18
15	1.5	7.8	8.2	13	33	130	81	37	62	84	3.4	15
16	1.6	7.8	10	14	32	120	*70	44	*43	52	3.2	15
17	1.8	6.8	15	15	29	116	62	40	30	41	3.2	19
18	*2.1	5.8	15	13	26	114	58	34	12	28	3.2	144
19	2.1	6.7	*22	11	23	140	52	36	16	26	3.0	85
20	1.9	8.8	27	11	21	170	48	*37	16	20	*2.7	84
21	1.3	8.2	40	10	22	150	54	33	13	16	3.2	101
22	1.0	6.7	37	10	23	148	139	29	12	13	3.4	119
23	1.0	6.2	30	13	25	160	163	28	11	15	3.0	60
24	1.9	5.7	24	15	29	200	130	23	11	14	5.3	60
25	2.5	5.2	19	20	40	280	99	19	9.4	11	21	49
26	2.1	4.8	19	43	58	320	72	16	20	9.3	15	41
27	1.9	5.2	34	72	80	450	60	13	34	8.3	9.8	39
28	2.1	5.7	29	94	110	600	58	13	33	9.5	7.0	39
29	2.1	8.2	24	75	-	600	90	15	27	15	5.1	34
30	1.9	11	21	61	-------	570	116	12	21	14	2.1	28
31	1.9	-------	19	84	-------	565	-------	9.4	-------	16	4.0	-------
Total	45.1	177.2	522.6	792	1,309	7,451	5,012	1,287.4	1,400.4	732.5	191.8	1,310.1
Mean	1.45	5.91	16.9	25.5	43.6	240	167	41.5	46.7	23.6	6.19	43.7
Cfsm	0.033	0.133	0.381	0.574	0.982	5.41	3.76	0.935	1.05	0.532	0.139	0.984
In.	0.04	0.15	0.44	0.66	1.10	6.24	4.20	1.08	1.17	0.61	0.16	1.10

Calendar year 1957: Max - Min - Mean - Cfsm - In. -
Water year 1957-58: Max 600 Min 0.8 Mean 55.4 Cfsm 1.25 In. 16.95

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 3, 4, 8-14, 18-28, Feb. 3-5, Feb. 8 to Mar. 27 (no gage-height record Mar. 3, 4). Backwater from aquatic vegetation and/or debris Oct. 1 to Nov. 18, May 6 to June 10 (no gage-height record Oct. 15-19).

2324. Seneca Lake at Watkins Glen, N. Y.

Location.--Lat 42°23'00", long 76°52'05", on east bank about 300 ft from lake on shorter of two boat slips at Watkins Glen, Schuyler County.

Drainage area.--714 sq mi.

Records available.--October 1956 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 440.00 ft above mean sea level, Barge Canal datum.

Extremes.--Maximum gage height during year, 8.05 ft Apr. 8, 11; minimum, 4.75 ft Feb. 24. 1956-58: Maximum gage height, that of Apr. 8, 11, 1958; minimum, that of Feb. 24, 1958.

Remarks.--Capacity of lake not determined; area of water surface, 66.7 sq mi. Figures of change in contents computed from surface area and change in stage.

Mean gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.87	5.60	5.32	5.13	4.98	5.07	6.93	7.49	7.50	a7.29	7.20	6.70
2	5.91	5.59	5.31	5.12	4.97	5.14	7.06	7.45	7.71	7.21	7.17	6.69
3	5.90	5.59	5.28	5.11	4.95	5.21	7.21	7.38	7.74	7.24	7.12	6.56
4	5.86	5.58	5.30	5.09	4.97	5.28	7.34	7.38	7.72	7.26	7.15	6.54
5	5.84	5.57	5.26	5.07	4.96	5.35	7.46	7.34	7.61	7.27	7.13	6.63
6	5.85	5.56	5.18	4.99	4.97	5.41	7.64	7.29	7.57	7.32	7.03	6.55
7	5.83	5.53	5.22	5.03	4.99	5.48	7.94	7.32	7.52	7.41	7.07	6.64
8	5.84	5.48	5.25	5.04	5.00	5.52	8.04	7.38	7.50	7.44	7.06	6.68
9	5.83	5.45	5.27	4.98	4.96	5.53	8.03	7.38	7.62	7.43	7.09	6.60
10	5.80	5.49	5.23	4.94	4.93	5.55	8.03	7.37	7.57	a7.30	7.05	6.54
11	5.82	5.48	5.21	4.97	4.92	5.55	8.03	7.42	7.55	a7.35	7.08	6.61
12	5.75	5.44	5.18	4.91	4.92	5.56	8.00	7.47	7.50	a7.29	6.99	6.47
13	5.72	5.39	5.12	4.89	4.90	5.56	7.98	7.48	7.45	a7.07	6.98	6.44
14	5.72	5.38	5.11	4.91	4.90	5.60	7.95	7.48	7.47	a7.05	7.00	6.44
15	5.68	5.43	5.10	4.98	4.89	5.64	7.92	7.47	7.37	a7.16	6.96	6.41
16	5.66	5.44	5.11	4.98	4.95	5.66	7.88	7.49	7.29	7.23	7.01	6.46
17	5.62	5.44	5.13	4.94	4.91	5.69	a7.81	7.51	7.25	7.23	6.94	6.45
18	5.69	5.42	5.07	4.93	4.87	5.70	a7.75	7.54	7.23	7.16	6.98	6.48
19	5.75	5.41	5.07	4.90	4.87	5.72	a7.73	7.56	7.22	7.19	6.90	6.52
20	5.73	5.39	5.09	4.85	4.87	5.77	a7.65	7.55	7.20	7.28	6.77	6.43
21	5.67	5.40	5.15	4.83	4.80	5.86	a7.57	7.54	7.26	7.18	6.78	6.45
22	5.64	5.41	5.16	4.84	4.84	5.87	a7.62	7.51	7.28	7.12	6.81	6.48
23	5.65	5.56	5.13	a4.85	4.82	5.89	7.79	7.52	7.28	7.16	6.77	6.44
24	5.65	5.35	5.16	a4.78	4.80	5.93	7.76	7.50	7.25	7.13	6.72	6.36
25	5.70	5.35	5.12	a4.84	4.82	6.00	7.74	7.51	7.23	7.10	6.80	6.37
26	5.70	5.37	5.14	a4.96	4.78	6.12	7.68	7.52	a7.28	7.12	6.80	6.44
27	5.64	5.50	5.19	4.95	4.82	6.23	7.59	7.48	a7.29	7.15	6.71	6.45
28	5.62	5.27	5.17	4.95	4.94	6.33	7.58	7.48	a7.31	7.12	6.70	6.46
29	5.61	5.31	5.18	4.95	-	6.45	7.55	7.49	a7.26	7.18	6.65	6.42
30	5.54	5.32	5.16	4.95	-------	6.57	7.55	7.48	a7.25	7.19	6.63	6.30
31	5.54	-------	5.13	4.96	-------	6.76	-------	7.49	-------	7.16	6.60	-------
Mean	5.73	5.44	5.18	4.96	4.90	5.74	7.69	7.46	7.41	7.22	6.92	6.50
(†)	-173.6	-165.0	-159.7	-104.1	+38.4	+1,277.4	+473.5	-20.8	-143.5	-76.4	-368.0	-229.6

Calendar year 1957: Max 7.62 Min 5.07 Mean 6.41 † -50.7
Water year 1957-58: Max 8.04 Min 4.78 Mean 6.27 † +29.5

† Change in contents in Seneca Lake, equivalent in cubic feet per second.
a No gage-height record; gage heights estimated on basis of recorded range in stage.

2330. Cayuga Inlet near Ithaca, N. Y.

Location.--Lat 42°23'35", long 76°32'40", on left bank half a mile upstream from Butternut Creek and 5 miles south of Ithaca, Tompkins County.

Drainage area.--36.7 sq mi.

Records available.--March 1937 to September 1958.

Gage.--Water-stage recorder and concrete control. Datum of gage is 437.16 ft above mean sea level (levels by Corps of Engineers).

Average discharge.--21 years, 38.9 cfs.

Extremes.--Maximum discharge during year, 1,200 cfs Apr. 7 (gage height, 4.12 ft, backwater from debris); minimum, 5.1 cfs Aug. 24 (gage height, 0.57 ft).
1937-58: Maximum discharge, 4,110 cfs Aug. 13, 1942 (gage height, 7.58 ft), from rating curve extended above 650 cfs on basis of slope-area measurements at gage heights 5.5 and 7.58 ft; minimum, 1.7 cfs July 22, 1955; minimum gage height, 0.42 ft Aug. 30, 31, Sept. 1, 2, 1939, July 22, 1955.

Remarks.--Records good except those for periods of ice effect, backwater from debris, or no gage-height record, which are fair.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.7	5.8	7.0	21	19	230	e300	88	31	10	15	6.3
2	4.3	6.2	7.0	13	20	158	e350	72	50	8.8	11	6.3
3	4.3	6.2	6.6	11	16	144	e370	87	29	11	10	6.3
4	4.3	6.2	6.2	8.2	14	133	e370	98	23	11	8.8	5.9
5	4.3	6.2	5.0	9.6	15	109	*c400	76	*23	11	7.8	5.9
6	4.7	6.2	5.4	10	16	98	*c680	86	29	19	7.3	5.9
7	5.0	6.2	7.0	12	17	89	c760	286	20	49	7.8	11
8	7.6	6.6	7.4	11	16	79	355	*253	20	*168	14	13
9	6.6	7.8	7.8	8.8	11	70	216	149	*28	85	10	12
10	5.8	7.0	7.0	9.2	12	64	179	119	31	46	8.8	10
11	5.4	6.2	7.0	9.8	13	60	247	100	37	54	11	8.3
12	5.0	6.2	4.0	7.4	13	53	206	83	24	74	8.3	7.3
13	5.0	5.8	6.2	7.4	12	54	224	71	66	54	7.3	6.8
14	5.0	6.2	6.6	9.2	12	59	289	63	55	38	20	6.3
15	5.0	7.8	6.6	14	11	59	281	63	36	33	17	6.3
16	4.7	7.0	7.4	17	10	54	262	64	28	28	11	6.8
17	5.0	6.2	7.8	14	9.2	49	222	51	23	24	8.3	11
18	8.0	*6.6	7.4	11	9.6	48	181	50	21	22	7.3	20
19	8.2	9.2	12	10	9.6	50	132	51	20	23	6.3	19
20	6.6	8.2	28	11	9.8	54	94	43	19	18	6.3	13
21	*6.2	7.8	62	13	10	52	109	37	19	15	5.9	16
22	5.8	7.0	27	24	11	50	328	34	18	16	*6.3	22
23	5.8	7.0	20	42	12	*56	156	33	16	17	5.9	12
24	7.4	6.6	16	32	*15	64	116	31	15	*17	7.8	9.4
25	7.8	6.6	14	28	27	94	88	32	17	13	16	*7.8
26	7.0	6.6	93	24	32	100	71	29	17	11	10	*7.8
27	6.2	5.8	59	26	36	104	63	26	15	11	7.8	19
28	6.2	6.6	34	25	180	128	110	26	12	11	7.3	19
29	6.2	7.0	28	23	-	166	*158	26	11	14	6.3	12
30	6.2	7.4	23	22	-------	233	118	23	11	12	6.3	10
31	5.8	-------	*20	21	-------	*300	-------	21	-------	19	5.9	-------
Total	180.1	202.2	555.4	504.6	588.2	3,061	7,435	2,271	764	942.8	288.8	322.4
Mean	5.81	6.74	17.9	16.3	21.0	98.7	248	73.3	25.5	30.4	9.32	10.7
Cfsm	0.158	0.184	0.488	0.444	0.572	2.69	6.76	2.00	0.695	0.828	0.254	0.292
In.	0.18	0.20	0.56	0.51	0.60	3.10	7.53	2.30	0.77	0.96	0.29	0.33

Calendar year 1957: Max 363 Min 3.0 Mean 29.5 Cfsm 0.804 In. 10.91
Water year 1957-58: Max 760 Min 4.0 Mean 46.9 Cfsm 1.28 In. 17.33

Peak discharge (base, 1,100 cfs).--Apr. 7 (11:15 a.m.) 1,200 cfs (4.12 ft).

* Discharge measurement made on this day.
c Backwater from debris.
Note.--Stage-discharge relation affected by ice Nov. 27, Dec. 5, 6, 12, 13, 15, 20, Jan. 2 to Mar. 1, Mar. 11, 23, 24 (no gage-height record Jan. 26 to Feb. 1).

2335. Cayuga Lake at Ithaca, N. Y.

Location.--Lat 42°26'45", long 76°30'45", on left bank of Cayuga Inlet 1 mile from mouth, at Ithaca, Tompkins County.

Drainage area.--780 sq mi.

Records available.--August 1905 to December 1909, August 1956 to September 1958 in reports of Geological Survey. January 1910 to September 1925 in reports of State engineer and surveyor.

Gage.--Water-stage recorder. Datum of gage is 380.00 ft above mean sea level, Erie (Barge) Canal datum. Prior to September 1925, staff gage at several sites within 1 mile of present site at same datum.

Extremes.--Maximum gage height during year, 5.57 ft Apr. 16; minimum, -0.97 ft Feb. 24. 1905-25, 1956-58: Maximum gage height observed, 6.4 ft Apr. 4, 5, 1916; minimum, that of Feb. 24, 1958.

Remarks.--Lake regulated at outlet at Mud Lock by New York State Department of Public Works. Capacity of lake not determined; area of water surface, 66.4 sq mi. Figures of change in contents computed from surface area multiplied by change in stage.

Mean gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.93	1.67	1.67	1.78	0.74	-0.10	2.85	4.70	3.84	3.89	3.91	2.91
2	1.96	1.68	1.68	1.77	.70	.06	3.10	4.66	4.16	3.88	3.83	2.90
3	1.93	1.68	1.66	1.74	.62	.20	3.35	4.57	4.24	3.89	3.74	2.77
4	1.86	1.69	1.71	1.70	.59	.38	3.54	4.64	4.26	3.87	3.72	2.81
5	1.84	1.69	1.67	1.63	.47	.53	3.70	4.62	4.34	3.83	3.62	2.92
6	1.83	1.68	1.53	1.52	.41	.67	3.94	4.59	4.50	3.85	3.52	2.83
7	1.81	1.60	1.62	1.54	.38	.85	4.51	4.69	4.49	3.90	3.52	2.90
8	1.84	1.56	1.69	1.54	.34	.88	4.89	4.88	4.45	3.94	3.51	2.95
9	1.81	1.60	1.70	1.42	.23	.87	5.02	5.00	4.66	4.01	3.52	2.87
10	1.77	1.69	1.68	1.35	.11	.89	5.09	4.89	4.80	4.02	3.43	2.91
11	1.84	1.64	1.69	1.37	.03	.89	5.18	4.77	4.95	4.12	3.46	2.98
12	1.76	1.60	1.69	1.27	-.02	.93	5.32	4.67	5.04	4.27	3.34	2.88
13	1.73	1.55	1.58	1.19	-.08	.90	5.36	4.55	5.08	4.31	3.34	2.90
14	1.71	1.52	1.59	1.19	a-.10	.96	5.43	4.39	5.25	4.30	3.30	2.87
15	1.70	1.60	1.57	1.24	a-.13	1.02	5.48	4.26	5.19	4.34	3.27	2.87
16	1.65	1.59	1.58	1.23	a-.12	1.02	5.51	4.18	5.14	4.42	3.26	2.95
17	1.61	1.66	1.59	1.18	a-.20	1.03	5.52	4.05	5.04	4.42	3.14	2.97
18	1.72	1.59	1.45	1.16	a-.30	1.03	5.42	3.91	4.86	4.27	3.18	3.06
19	1.80	1.61	1.44	1.11	a-.41	1.03	5.30	3.86	4.72	4.29	3.08	3.17
20	1.77	1.61	1.53	1.00	a-.46	1.11	5.12	3.83	4.55	4.33	2.96	3.08
21	1.67	1.64	1.68	.96	-.60	1.22	5.03	3.86	4.44	4.17	2.94	3.08
22	1.64	1.67	1.73	.97	-.62	1.22	5.17	3.84	4.29	4.11	2.97	3.15
23	1.65	1.61	1.69	.99	-.70	1.20	5.24	3.86	4.14	4.13	2.91	3.14
24	1.66	1.65	1.77	.92	-.77	1.21	5.11	3.86	4.08	4.10	2.77	3.09
25	1.77	1.65	1.67	.97	-.75	1.32	5.08	3.82	4.01	4.07	2.86	3.13
26	1.74	1.66	1.70	1.04	-.81	1.50	4.95	3.86	4.03	4.05	2.86	3.22
27	1.70	1.55	1.88	1.03	-.75	1.69	4.76	3.82	4.01	4.01	2.80	3.23
28	1.70	1.57	1.84	.99	-.46	1.86	4.71	3.84	3.97	3.93	2.84	3.28
29	1.68	1.63	1.87	.93	-	2.06	4.70	3.83	3.89	3.97	2.86	3.22
30	1.60	1.67	1.83	.85	-------	2.26	4.76	3.85	3.87	3.96	2.84	3.10
31	1.63	-------	1.78	.79	-------	2.56	-------	3.85	-------	3.89	2.82	-------
Mean	1.75	1.63	1.67	1.24	-0.10	1.07	4.77	4.26	4.48	4.08	3.23	3.00
(†)	-186.6	+57.1	0.0	-677.3	-749.9	+2,031.9	+1,442.6	-601.3	+35.7	+6.9	-725.7	+264.2

Calendar year 1957: Max 4.80 Min -0.04 Mean 2.38 † -367.1
Water year 1957-58: Max 5.52 Min -0.81 Mean 2.60 † +774.8

† Change in contents, equivalent in cubic feet per second.
a No gage-height record; gage heights estimated on basis of reconstructed gage-height graph.

2340. Fall Creek near Ithaca, N. Y.

Location.--Lat 42°27'20", long 76°28'30", on left bank in Forest Home, half a mile upstream from Cornell University dam, 1½ miles northeast of Ithaca, Tompkins County, and 2 miles upstream from mouth.

Drainage area.--124 sq mi.

Records available.--July 1908 to June 1909 (gage heights only), February 1925 to September 1958.

Gage.--Water-stage recorder and concrete control. Datum of gage is 794.81 ft above mean sea level, adjustment of 1912 (levels by Corps of Engineers). July 1908 to June 1909 chain gage at bridge 1¼ miles downstream at different datum.

Average discharge.--33 years (1925-58), 186 cfs.

Extremes.--Maximum discharge during year, 3,020 cfs Apr. 6 (gage height, 4.46 ft); minimum, 6.4 cfs Oct. 4 (gage height, 0.21 ft).
1925-58: Maximum discharge, 15,500 cfs July 8, 1935 (gage height, 9.52 ft), from average of computed flow over each of four dams; minimum, about 3 cfs Aug. 25, 1927 (gage height, 0.18 ft).

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair. Cornell University diverted 64,945,931 cu ft during year from point about 1 mile above station for water supply, equivalent to a mean discharge at station of 2.06 cfs.

Revisions (water years).--WSP 759: Drainage area. WSP 874: 1935-38.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.4	17	2.0	428
.6	31	2.5	760
.9	58	3.0	1,210
1.2	99	4.0	2,340
1.5	189	5.0	3,930

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	29	94	182	130	824	*1,170	395	93	62	67	40
2	26	29	74	114	153	792	1,350	307	969	59	52	35
3	25	34	56	90	125	*692	1,450	364	384	57	43	31
4	21	39	54	66	106	664	1,410	643	189	58	40	34
5	23	57	28	76	108	595	1,410	373	*144	70	37	47
6	23	60	44	80	124	518	*2,100	302	189	157	32	36
7	22	51	82	104	135	428	2,510	794	132	198	39	98
8	23	42	205	90	129	363	1,420	1,480	113	*354	249	118
9	29	64	116	72	92	331	840	784	1,280	283	132	80
10	23	57	94	76	94	307	692	469	657	123	76	54
11	21	44	87	84	104	287	808	368	791	195	132	60
12	20	39	35	64	104	264	784	307	649	222	73	48
13	20	38	46	64	96	251	671	260	569	129	55	39
14	20	36	76	74	94	269	952	225	604	104	53	35
15	20	57	78	108	90	264	1,100	238	292	94	54	32
16	18	67	92	170	86	242	979	260	221	201	48	30
17	20	48	135	150	80	225	874	209	178	129	40	34
18	26	*43	92	116	84	209	730	193	164	87	36	199
19	57	68	206	88	84	205	622	363	144	87	35	167
20	52	144	500	90	84	229	493	229	126	90	32	96
21	*43	78	939	99	86	225	487	171	129	68	30	84
22	36	62	390	135	94	213	1,550	147	116	60	*32	a260
23	32	55	260	330	106	205	834	171	101	64	32	a104
24	36	52	209	260	135	238	493	144	94	*60	30	a74
25	78	52	167	229	189	307	368	132	106	53	60	*67
26	50	49	508	185	225	428	302	135	106	48	50	62
27	41	37	703	*195	269	543	260	116	96	46	38	88
28	36	49	311	185	460	643	480	106	79	44	33	171
29	35	54	260	167	-	745	638	121	73	141	30	94
30	33	119	201	160	-------	907	778	104	67	87	28	73
31	31	-------	165	153	-------	*1,260	-------	90	-------	66	28	-------
Total	968	1,653	6,307	4,056	3,666	13,673	28,555	10,000	8,855	3,496	1,716	2,390
Mean	31.2	55.1	203	131	131	441	952	323	295	113	55.4	79.7
Cfsm	0.252	0.444	1.64	1.06	1.06	3.56	7.68	2.60	2.38	0.911	0.447	0.643
In.	0.29	0.50	1.89	1.22	1.10	4.10	8.56	3.00	2.66	1.05	0.51	0.72

Calendar year 1957: Max 1,350 Min 16 Mean 141 Cfsm 1.14 In. 15.49
Water year 1957-58: Max 2,510 Min 18 Mean 234 Cfsm 1.89 In. 25.60

Peak discharge (base, 1,900 cfs).--Apr. 6 (11 p.m.) 3,020 cfs (4.46 ft); June 9 (2:45 p.m.) 2,260 cfs (3.94 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage and records for nearby stations.
Note.--Stage-discharge relation affected by ice Nov. 27, Dec. 3-6, 10, 12-14, 17, 18, 31, Jan. 2-6, 8-17, 19, 20, 22-24, 27, Feb. 1, 3-6, 9-24, 26, 28.

2345. Canandaigua Lake at Canandaigua, N. Y.

Location.--Lat 42°52'20", long 77°16'20", at south end of city pier at northern end of Canandaigua Lake, 1 mile southeast of Canandaigua, Ontario County.

Drainage area.--189 sq mi.

Records available.--November 1939 to September 1945 (gage heights only), October 1945 to September 1958. December 1927 to November 1939, records collected by city of Canandaigua at site on west side of E. T. Waldorf's boathouse.

Gage.--Water-stage recorder. Datum of gage is 680.76 ft above mean sea level (levels by Corps of Engineers). Prior to June 26, 1946, staff gage at E. T. Waldorf's boathouse at same datum.

Extremes.--Maximum daily gage height during year, 8.04 ft Apr. 15, 16 (contents, 51,327 acre-ft); minimum daily, 4.93 ft Jan. 14 (contents, 18,346 acre-ft).
1939-58: Maximum daily gage height, 9.13 ft Mar. 11, 1956 (contents, 62,886 acre-ft); minimum daily, 4.45 ft Jan. 30, 1942 (contents, 13,256 acre-ft).

Remarks.--Elevation of lake surface regulated by gates on east outlet and stoplogs on west outlet. West outlet, which usually carries most of lake outflow, is an artificial canal 1¼ miles long which discharges into Canandaigua Lake Outlet; spillway consists of permanent stoplog 9.8 ft long with top at elevation 3.2 ft, gage datum, extending across a masonry arch opening under roadway. East outlet is at head of natural outlet channel from lake; flow regulated above about 4.6 ft, gage datum, by two gates at highway bridge half a mile downstream. City of Canandaigua regulates storage in lake for Oswego River Watershed Corp., Fulton, by operation of gates and stoplogs on outlets. Water diverted for municipal supply by village of Newark since about December 1951. An additional small diversion is made by village of Palmyra for water-supply purposes. Capacity of lake between 3.2 ft and 9.3 ft, gage datum, 64,689 acre-ft, on basis of water-surface area of 16.57 sq mi. Total capacity of lake not determined.

Capacity table, water year 1957-58 (elevation, in feet, and contents, in acre-feet)

4.9	16,028	7.0	40,298
5.0	19,089	8.0	50,903
6.0	29,693	8.1	51,964

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.83	5.42	5.17	5.11	5.10	5.26	6.61	7.70	7.06	7.45	6.78	6.37
2	5.79	5.42	5.15	5.06	5.10	5.28	6.80	7.62	7.18	7.44	6.76	6.33
3	5.76	5.42	5.15	5.04	5.10	5.30	6.96	7.60	7.24	7.38	6.75	6.34
4	5.76	5.42	5.13	5.01	5.13	5.32	7.12	7.53	7.26	7.33	6.71	6.35
5	5.75	5.41	5.13	5.01	5.13	5.34	7.28	7.48	7.29	7.29	6.70	6.31
6	5.74	5.41	5.19	5.02	5.12	5.36	7.53	7.43	7.25	7.27	6.69	6.33
7	5.73	5.40	5.12	4.97	5.12	5.38	7.84	7.41	7.27	7.27	6.67	6.37
8	5.72	5.44	5.12	4.97	5.13	5.39	8.00	7.42	7.28	7.23	6.66	6.35
9	5.71	5.40	5.13	4.97	5.14	5.40	8.02	7.39	7.36	7.19	6.64	6.37
10	5.68	5.35	5.13	4.97	5.13	5.41	8.00	7.35	7.49	7.15	6.63	6.34
11	5.66	5.34	5.13	4.94	5.11	5.43	8.00	7.30	7.52	7.10	6.63	6.31
12	5.65	5.33	5.11	4.94	5.09	5.45	8.02	7.24	7.52	7.15	6.62	6.29
13	5.64	5.33	5.13	4.94	5.09	5.45	8.02	7.17	7.59	7.19	6.59	6.27
14	5.63	5.34	5.10	4.93	5.08	5.48	8.02	7.14	7.60	7.16	6.58	6.26
15	5.61	5.31	5.11	4.96	5.06	5.51	8.04	7.14	7.60	7.12	6.57	6.26
16	5.61	5.32	5.10	4.98	5.09	5.55	8.04	7.14	7.59	7.12	6.56	6.24
17	5.60	5.28	5.07	5.00	5.10	5.56	8.03	7.14	7.55	7.06	6.55	6.26
18	5.58	5.31	5.20	4.99	5.10	5.56	8.00	7.13	7.55	7.03	6.50	6.28
19	5.56	5.32	5.14	4.98	5.11	5.57	7.96	7.13	7.52	6.98	6.47	6.28
20	5.54	5.29	5.12	4.97	5.10	5.60	7.91	7.13	7.53	6.90	6.47	6.28
21	5.54	5.26	5.13	4.98	5.10	5.64	7.86	7.09	7.50	6.88	6.46	6.29
22	5.54	5.24	5.12	4.99	5.10	5.67	7.93	7.10	7.47	6.86	6.43	6.29
23	5.53	5.26	5.14	4.98	5.10	5.69	8.01	7.08	7.45	6.83	6.40	6.29
24	5.57	5.19	5.10	4.97	5.09	5.72	8.01	7.08	7.45	6.83	6.45	6.29
25	5.52	5.18	5.14	5.04	5.10	5.76	7.92	7.08	7.50	6.82	6.46	6.29
26	5.51	5.19	5.16	5.10	5.10	5.85	7.86	7.05	7.55	6.81	6.44	6.28
27	5.49	5.24	5.10	5.12	5.13	5.93	7.81	7.05	7.54	6.80	6.42	6.29
28	5.49	5.20	5.11	5.12	5.21	6.03	7.79	7.05	7.51	6.80	6.41	6.28
29	5.48	5.17	5.10	5.13	-	6.15	7.78	7.06	7.50	6.80	6.40	6.28
30	5.48	5.16	5.09	5.12	-------	6.28	7.75	7.04	7.47	6.81	6.40	6.31
31	5.44	-------	5.13	5.11	-------	6.43	-------	7.04	-------	6.80	6.41	-------
(†)	23,649	20,255	21,104	20,149	21,740	35,208	47,934	40,616	45,282	37,965	34,147	32,451
(‡)	-4,454	-3,394	+849	-955	+1,591	+13,468	+12,726	-7,318	+4,666	-7,317	-3,818	-1,696

Calendar year 1957..... ‡ -8,271
Water year 1957-58..... ‡ +4,348

† Contents, in acre-feet, at 12 p.m. on last day of month, above 3.2 ft, gage datum, elevation of lowest outlet.
‡ Change in contents, in acre-feet.

2350. Canandaigua Lake Outlet at Chapin, N. Y.

Location.--Lat 42°55'00", long 77°14'00", on left bank at Chapin, Ontario County, 500 ft upstream from highway bridge and 3 miles downstream from Canandaigua Lake.

Drainage area.--199 sq mi.

Records available.--November 1939 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 673.6 ft above mean sea level (levels by Corps of Engineers).

Average discharge.--18 years (1940-58), 149 cfs (unadjusted).

Extremes.--Maximum discharge during year, 640 cfs Apr. 16 (gage height, 3.86 ft, backwater from debris); minimum daily, 7.0 cfs Jan. 14; minimum gage height, 1.32 ft Dec. 30. 1939-58: Maximum discharge, 1,100 cfs Mar. 17, 1942 (gage height, 4.64 ft); minimum, 4.6 cfs Sept. 17, 1948; minimum gage height, 1.15 ft Feb. 3, 1950.

Remarks.--Records good except those for periods of ice effect or backwater from aquatic vegetation or debris, which are fair. Flow regulated by Canandaigua Lake (see preceding page), from which water is diverted for municipal supply by village of Newark. An additional small diversion is made by village of Palmyra for water-supply purposes.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	17	14	19	23	43	116	540	88	184	60	27
2	18	17	14	15	23	45	120	520	132	199	60	23
3	18	16	14	13	23	47	125	520	99	365	60	22
4	18	16	14	12	26	48	130	500	99	422	62	24
5	17	16	14	12	26	*50	145	480	103	428	58	26
6	17	14	16	13	25	46	185	470	99	455	58	41
7	17	14	16	10	25	45	310	470	97	458	56	56
8	17	14	16	10	27	45	580	470	97	422	52	52
9	18	14	16	10	28	41	600	460	130	409	46	41
10	21	13	16	10	27	41	600	450	201	399	46	45
11	26	12	16	8.0	26	44	*620	440	168	412	42	35
12	26	10	15	8.0	25	40	620	420	130	458	45	32
13	25	12	16	8.0	25	40	620	410	*150	455	41	31
14	24	15	16	7.0	23	44	620	*310	161	432	38	31
15	24	14	16	9.0	22	46	620	148	152	425	40	32
16	23	14	18	11	25	46	620	136	150	425	40	33
17	23	14	16	13	26	*45	620	134	143	415	38	*68
18	23	*14	18	13	26	50	620	136	143	403	34	68
19	23	15	19	12	27	60	620	136	141	370	31	49
20	22	14	*18	12	26	64	600	128	141	340	31	45
21	22	14	20	13	26	60	580	86	143	185	*32	46
22	21	14	18	14	26	60	600	80	134	104	40	41
23	20	13	19	13	26	72	620	79	134	62	33	36
24	22	14	18	12	24	80	620	80	132	60	33	35
25	21	13	18	18	26	80	600	82	119	56	37	34
26	20	14	21	24	26	96	580	82	174	54	31	41
27	20	14	18	24	29	116	560	82	191	54	24	40
28	20	14	18	24	38	104	560	90	184	68	23	37
29	20	14	18	24	-	104	560	88	184	60	24	35
30	19	14	18	24	-------	102	560	74	184	*60	25	36
31	*18	-------	18	24	-------	106	-------	75	-------	56	27	-------
Total	642	423	522	439.0	725	1,910	14,931	8,176	4,203	8,695	1,267	1,162
Mean	20.7	14.1	16.8	14.2	25.9	61.6	498	264	140	280	40.9	38.7
Adjusted for change in contents in Canandaigua Lake and diversions by village of Newark												
Mean	-46.4	-37.8	35.6	3.60	59.1	285	716	149	223	166	-16.6	14.9
Cfsm	-0.233	-0.190	0.179	0.018	0.297	1.43	3.60	0.749	1.12	0.834	-0.083	0.075
In.	-0.27	-0.21	0.21	0.02	0.31	1.65	4.01	0.86	1.25	0.96	-0.10	0.08

	Observed				Adjusted			
Calendar year 1957:	Max 520	Min 10	Mean 121		Mean 113	Cfsm 0.568	In. 7.72	
Water year 1957-58:	Max 620	Min 7.0	Mean 118		Mean 129	Cfsm 0.648	In. 8.77	

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice and/or debris Dec. 12 to Jan. 29, Feb. 3 to May 14 (no gage-height record Feb. 4 to Mar. 5). Backwater from aquatic vegetation and/or debris Oct. 1 to Dec. 11, July 19 to Sept. 30. Negative figures of adjusted discharge and runoff indicate that natural losses from Canandaigua Lake exceeded inflow. Records of diversion furnished by village of Newark.

2355. Owasco Lake Outlet near Auburn, N. Y.

Location.--Lat 42°56'45", long 76°36'05", on left bank 2½ miles downstream from center of Auburn, Cayuga County, and 4 miles downstream from State dam at outlet of Owasco Lake.

Drainage area.--208 sq mi.

Records available.--November 1912 to September 1958.

Gage.--Water-stage recorder and concrete control.

Average discharge.--45 years (1913-58), 284 cfs.

Extremes.--Maximum discharge during year, 1,900 cfs Apr. 8 (gage height, 4.42 ft); minimum, 19 cfs Oct. 13; minimum gage height, 1.42 ft Sept. 25; minimum daily discharge, 25 cfs Sept. 25.
1912-58: Maximum discharge, 2,090 cfs Mar. 19, 1936, Apr. 9, 1940, Apr. 4, 1950; maximum gage height, 4.88 ft Mar. 19, 1936, Apr. 9, 1940; minimum discharge, about 2 cfs Dec. 5, 1936; minimum gage height, 1.325 ft Dec. 3, 1953; minimum daily discharge, 5 cfs Nov. 11, 1934.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Diurnal fluctuation caused by mills in Auburn; seasonal regulation at State dam. Water supply for Auburn taken from Owasco Lake, part of which returns as sewage to outlet above gaging station.

Revisions (water years).--WSP 759: Drainage area. WSP 824: 1913-14, 1916, 1920(M), 1922(M), 1928(M), 1929, 1932(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 8				Apr. 9 to Sept. 30			
1.7	61	3.0	720	1.4	20	2.0	135
1.9	106	3.5	1,150	1.6	46	2.2	210
2.2	210	4.0	1,590	1.8	82		
2.6	435	4.5	1,960				

Note.--Same as preceding table above 2.2 ft.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	94	72	65	219	294	364	934	728	277	225	178	134
2	96	69	65	219	288	396	997	*704	352	233	124	114
3	85	72	65	219	288	426	1,140	688	364	156	136	128
4	92	74	65	215	288	480	1,250	680	383	106	135	110
5	91	72	63	215	283	*507	1,280	672	396	119	132	137
6	78	69	63	215	288	528	1,380	598	514	113	120	104
7	81	69	67	210	288	528	1,700	549	591	113	154	137
8	106	70	63	210	288	535	1,850	577	563	124	118	121
9	87	67	67	210	278	535	1,830	598	a549	111	130	124
10	81	67	67	210	278	535	1,760	605	a696	103	135	130
11	97	70	65	206	334	535	1,670	598	a808	122	125	116
12	79	*67	67	210	340	528	1,610	584	776	130	126	*115
13	83	69	65	210	340	521	1,510	570	760	122	130	113
14	84	69	65	206	334	549	1,460	563	720	120	134	118
15	*86	71	65	206	328	563	1,450	435	696	113	131	119
16	79	67	67	206	305	556	1,400	345	461	143	128	121
17	71	65	*65	206	305	542	1,350	328	272	196	131	120
18	85	67	69	206	322	528	1,280	316	*278	242	*126	59
19	80	73	65	206	322	521	1,200	322	272	238	127	78
20	76	67	74	210	328	521	1,140	316	272	228	122	45
21	76	67	87	210	328	521	1,100	310	261	233	128	42
22	76	65	74	224	288	514	1,180	310	261	224	127	86
23	76	65	76	238	283	500	1,200	305	251	224	138	32
24	84	63	76	238	288	514	1,170	294	238	224	148	81
25	76	65	74	267	294	535	1,090	288	242	364	117	25
26	74	63	89	278	294	577	1,020	288	272	402	131	78
27	72	67	167	288	305	605	952	283	242	322	127	105
28	74	65	224	294	364	640	800	288	242	296	123	67
29	83	72	219	299	-	664	728	283	238	247	127	111
30	63	65	219	299	-------	712	736	278	238	256	110	45
31	72	-------	219	294	-------	*832	-------	272	-------	251	118	-------
Total	2,537	2,043	2,841	7,143	8,563	16,812	38,167	13,975	12,485	6,100	4,036	2,915
Mean	81.8	68.1	91.6	230	306	542	1,272	451	416	197	130	97.2
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 768 Min 63 Mean 237 Cfsm 1.14 In. 15.51
Water year 1957-58: Max 1,850 Min 25 Mean 322 Cfsm 1.55 In. 21.03

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of reconstructed gage-height graph.
Note.--Decrease in contents in Owasco Lake during calendar year 1957, about 238,000,000 cu ft (equivalent mean discharge, 7.56 cfs; runoff, 0.49 in.); decrease in elevation, 0.83 ft. Increase in contents during water year 1957-58, about 118,000,000 cu ft (equivalent mean discharge, 3.73 cfs; runoff, 0.24 in.); increase in elevation, 0.41 ft. Records of elevations of Owasco Lake furnished by city of Auburn, N. Y.

2375. Seneca River at Baldwinsville, N. Y.

Location.--Lat 43°09'25", long 76°19'55", on left bank 200 ft downstream from highway bridge in Baldwinsville, Onondaga County, and 400 ft downstream from navigation dam of New York State Erie (Barge) Canal system.

Drainage area.--3,130 sq mi.

Records available.--November 1949 to September 1958 in reports of Geological Survey. November 1898 to December 1908 prior to construction of Erie (Barge) Canal not equivalent to later records at same site because of extensive development of Erie (Barge) Canal system. January 1909 to September 1925 (gage heights only) in reports of State engineer and surveyor.

Gage.--Water-stage recorder. Datum of gage is 362.60 ft above mean sea level, New York State Erie (Barge) Canal datum. November 1898 to Dec. 31, 1908, staff gages on dam at same site at different datum. Auxiliary water-stage recorder 1,500 ft downstream from base gage at same datum.

Average discharge.--8 years (1950-58), 3,341 cfs.

Extremes.--Maximum daily discharge during year, 10,700 cfs Apr. 24; maximum gage height, 5.92 ft Apr. 24; minimum daily discharge, 237 cfs Nov. 10; minimum gage height, 0.83 ft Nov. 10.
1949-58: Maximum daily discharge, 16,700 cfs Mar. 12, 1956; maximum gage height, 8.84 ft Mar. 12, 1956; minimum daily discharge, that of Nov. 10, 1957; minimum gage height, 0.81 ft Aug. 10, 1952.

Remarks.--Records good. This record represents total discharge at Baldwinsville and includes flow in Baldwin and Erie (Barge) Canals. A large amount of natural storage and some artificial regulation is afforded by many large lakes and the Erie (Barge) Canal system in river basin. Large diurnal fluctuations at low and medium flow by powerplants above station. Seneca River basin receives water from Erie (Barge) Canal through lock 32 near Pittsford. During part of year, entire flow from 45 sq mi of Mud Creek drainage area may be diverted from Chemung River basin into Keuka Lake in Oswego River basin. Records of chemical analyses and water temperatures for the water year 1958 are given in WSP 1571.

Cooperation.--Records of lockages at lock 24 furnished by New York State Department of Public Works.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	544	755	788	1,760	2,740	3,490	9,000	a8,840	1,710	2,390	2,510	1,050
2	677	302	640	1,740	2,680	3,900	8,840	a8,460	2,280	2,310	2,440	885
3	765	279	780	1,290	2,740	4,200	8,640	a8,090	2,830	2,170	2,290	915
4	838	1,260	414	1,350	2,650	4,620	8,380	a7,890	2,920	2,090	2,240	1,160
5	935	1,170	809	1,970	2,560	4,910	8,060	7,720	2,920	2,170	2,230	1,280
6	994	610	560	2,110	2,570	5,230	7,890	7,450	2,990	2,350	2,240	1,240
7	1,040	777	423	2,120	2,580	5,590	8,110	7,230	3,020	2,700	2,290	1,150
8	975	714	447	2,050	2,620	5,500	8,690	7,060	3,010	2,970	2,110	896
9	918	453	624	1,940	2,570	5,400	9,380	7,010	3,140	2,910	2,220	*864
10	1,480	237	1,520	1,870	2,580	5,260	9,680	6,960	4,860	2,680	2,160	1,100
11	1,620	994	1,100	1,870	2,460	5,280	9,560	6,890	6,450	2,500	2,150	1,100
12	1,240	1,030	1,040	1,810	2,460	4,960	9,300	6,790	6,960	2,640	2,140	1,130
13	927	650	1,160	1,760	2,480	4,720	9,050	6,620	6,820	3,340	2,140	1,090
14	431	*487	1,080	1,580	2,510	4,610	8,820	6,440	6,440	3,720	2,130	1,090
15	*518	650	929	1,670	2,470	4,740	8,560	6,250	6,300	3,730	2,140	1,070
16	716	869	910	1,730	2,480	4,860	8,540	6,030	6,220	3,560	2,140	1,040
17	772	460	559	1,840	2,490	4,780	8,560	5,270	6,030	3,470	2,090	1,090
18	1,060	647	*401	1,780	2,510	4,770	8,770	4,980	*5,800	3,300	2,140	1,460
19	1,110	611	761	1,690	2,480	4,750	9,100	5,000	5,680	3,320	*2,080	1,690
20	450	620	1,110	1,700	2,460	4,790	9,380	3,450	5,500	3,030	2,100	1,640
21	701	923	1,160	1,770	*2,410	5,020	9,610	*2,720	5,430	2,950	2,140	1,550
22	673	557	1,100	1,820	2,350	5,110	10,100	2,450	5,320	2,710	2,250	1,730
23	654	369	1,050	1,950	2,300	5,040	10,600	1,670	5,150	2,560	2,220	1,650
24	677	882	1,090	1,980	2,320	5,360	10,700	1,830	3,120	2,480	2,180	1,510
25	1,020	820	948	2,020	2,400	5,980	10,600	1,910	2,680	2,390	2,390	1,430
26	1,200	349	1,010	2,130	2,500	6,490	10,200	1,900	3,170	2,550	2,160	1,360
27	518	679	1,060	2,220	2,560	7,720	9,740	1,900	3,480	2,510	1,860	1,290
28	810	797	1,180	2,480	2,920	8,440	8,990	1,940	3,140	2,460	1,590	1,330
29	1,130	925	1,770	2,660	-	8,720	a9,250	1,980	2,760	2,520	1,390	1,390
30	573	387	1,750	2,720	-------	8,870	a9,090	1,880	2,480	2,540	1,320	1,390
31	676	-------	1,710	2,720	-------	*8,970	-------	1,900	-------	*2,540	1,240	-------
Total	28,642	20,263	29,883	60,100	70,850	172,080	275,190	156,510	128,610	85,560	64,720	37,570
Mean	859	675	964	1,939	2,530	5,551	9,173	5,049	4,287	2,760	2,088	1,252
Cfsm	0.274	0.216	0.308	0.619	0.808	1.77	2.93	1.61	1.37	0.882	0.667	0.400
In.	0.32	0.24	0.36	0.71	0.84	2.04	3.27	1.86	1.53	1.02	0.77	0.45

Calendar year 1957: Max 7,430 Min 237 Mean 2,536 Cfsm 0.810 In. 11.00
Water year 1957-58: Max 10,700 Min 237 Mean 3,090 Cfsm 0.987 In. 13.41

* Discharge measurement made on this day.
a No gage-height record at gage 2; discharge computed from reconstructed gage-height graph based on record for adjacent days, recorded range in stage, and record from gage 1.

2380. Onondaga Reservoir near Nedrow, N. Y.

Location.--Lat 42°55'55", long 76°10'25", at Onondaga Dam on Onondaga Creek, 3½ miles southwest of Nedrow, Onondaga County, 4 miles south of Syracuse, and 10½ miles upstream from Onondaga Lake.

Drainage area.--68.1 sq mi (measured by Corps of Engineers).

Records available.--June 1949 to September 1952 (monthly elevations and contents), October 1952 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (levels by Corps of Engineers).

Extremes.--Maximum elevation during year, 471.9 ft Apr. 8 (contents, 1,140 acre-ft); minimum, 458.0 ft Aug. 24.
1949-58: Maximum elevation, 484.5 ft Mar. 29, 1950 (contents, 5,310 acre-ft); minimum, 458.0 ft Aug. 23, 1949, Sept. 5, 1953, Sept. 21, 22, 1955, Aug. 24, 1958.

Remarks.--Reservoir is formed by a rolled earthfill dam, completed by Corps of Engineers in August 1949 for flood control; first used for flood regulation about a year prior to completion. Usable capacity, 18,200 acre-ft between elevations 457.0 ft (conduit invert at intake) and 504.5 ft (crest of spillway). No dead storage. The flood-control works consist of a pressure conduit and a side channel spillway and are not provided with gates. Water is stored during high flows and released gradually.

Cooperation.--Capacity curve furnished by Corps of Engineers.

Capacity table, water year 1957-58 (elevation, in feet, and contents, in acre-feet)

460.0	0	468.0	350
462.0	15	470.0	700
464.0	50	475.0	1,980
466.0	135		

Elevation, in feet, at 12 p.m., water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	458.3	458.3	a458.8	460.0	460.2	463.9	467.7	461.7	462.0	459.5	459.0	458.6
2	458.4	458.4	a458.7	460.0	460.0	463.0	468.0	461.4	469.2	459.4	458.9	458.6
3	458.3	458.5	a458.7	459.1	459.8	464.3	468.2	461.6	468.6	459.4	458.8	458.5
4	458.4	458.7	a458.4	459.2	459.7	463.7	468.1	461.6	461.6	460.0	458.8	458.6
5	458.4	458.7	a458.4	459.3	459.9	463.1	467.7	461.2	462.6	460.9	458.8	458.5
6	458.5	458.6	a458.6	459.4	459.9	462.8	469.6	461.2	466.3	460.6	458.7	458.7
7	458.3	458.5	a459.5	459.4	459.8	462.6	471.7	462.3	462.1	460.0	458.7	459.3
8	458.3	458.5	a459.4	459.0	459.3	462.1	470.6	465.3	462.2	460.5	459.2	459.2
9	458.2	458.6	a459.1	459.2	459.4	461.9	468.0	462.5	464.2	459.7	458.7	458.8
10	458.3	458.6	a458.9	459.3	459.8	461.9	464.8	461.9	463.5	459.4	458.8	459.3
11	458.3	458.7	a458.7	459.0	459.7	461.6	464.1	461.5	462.3	460.0	458.7	458.9
12	458.4	458.7	a458.6	459.1	459.6	461.3	463.5	461.2	461.8	460.3	458.7	458.7
13	458.3	458.6	a458.7	458.9	459.5	461.3	463.9	461.0	462.0	459.7	458.6	458.6
14	458.3	458.6	a458.7	459.0	459.5	461.6	464.2	461.0	461.5	459.5	459.1	458.5
15	459.0	a458.7	a458.8	459.2	459.5	461.5	464.0	461.5	461.1	462.6	458.7	458.5
16	458.5	a458.9	a459.4	459.1	459.4	461.2	463.8	461.1	460.8	460.9	458.6	458.6
17	458.3	a458.7	a459.3	459.1	459.4	461.0	463.1	460.8	460.7	459.8	458.6	461.0
18	458.7	a458.6	a459.3	458.9	459.4	461.0	462.8	462.7	460.5	459.5	458.6	459.9
19	459.0	a459.0	a460.1	458.9	459.4	461.7	462.2	462.2	460.3	459.9	458.6	459.4
20	458.5	a458.8	a461.2	459.1	459.4	461.7	462.0	461.3	460.2	459.4	458.6	459.1
21	458.3	a458.7	a461.3	459.2	459.4	461.4	462.8	460.9	460.2	459.3	458.6	460.1
22	458.2	a458.7	a460.2	461.3	459.4	461.4	467.0	460.9	460.1	459.3	458.6	459.3
23	459.0	a458.6	a459.9	460.1	459.5	462.3	464.4	460.8	460.0	459.4	458.6	459.0
24	458.9	a458.5	459.7	460.3	460.2	463.2	462.4	460.6	459.9	459.2	458.4	458.9
25	458.6	a458.5	459.5	460.9	461.2	463.6	461.9	460.6	460.0	459.1	458.8	458.8
26	458.4	a458.5	464.4	460.8	461.2	464.8	461.6	460.4	460.3	459.0	458.6	459.0
27	458.4	a458.4	461.3	460.5	461.7	465.1	461.4	460.3	460.0	458.9	458.6	459.6
28	458.3	a458.5	460.7	460.4	464.8	465.5	462.7	460.2	459.8	459.0	458.5	459.1
29	458.7	a459.0	460.3	460.2	-	466.0	464.4	460.2	459.6	459.0	458.5	458.9
30	458.4	a458.9	460.1	460.1	------	466.5	462.4	460.0	459.6	459.2	458.4	458.8
31	458.4	------	460.0	460.1	------	467.9	------	459.9	------	459.1	458.5	------
(†)	0	0	0	1	74	338	21	0	0	0	0	0
(‡)	0	0	0	+1	+73	+264	-317	-21	0	0	0	0

Calendar year 1957..... ‡ -2
Water year 1957-58..... ‡ 0

† Contents, in acre-feet at end of month.
‡ Change in contents in acre-feet.
a No gage-height record; elevation estimated.

2390. Onondaga Creek at Dorwin Avenue, Syracuse, N. Y.

Location.--Lat 42°59'00", long 76°09'05", on left bank 550 ft upstream from Dorwin Avenue bridge, at Syracuse, Onondaga County, and 4 miles downstream from Onondaga Reservoir.

Drainage area.--88.9 sq mi.

Records available.--May 1951 to September 1958.

Gage.--Water-stage recorder.

Average discharge.--7 years, 113 cfs (adjusted).

Extremes.--Maximum discharge during year, 1,350 cfs June 2 (gage height, 4.55 ft, backwater from debris); minimum, 16 cfs Oct. 15 (gage height, 1.57 ft, backwater from aquatic vegetation and/or debris); minimum gage height, 1.57 ft Oct. 15, 23.
1951-58: Maximum discharge, 1,440 cfs Mar. 8, 1956; maximum gage height, 4.64 ft Mar. 11, 1952; minimum discharge, 10 cfs Sept. 26, 1953; minimum gage height, 1.57 ft Aug. 18, 1956, Oct. 15, 23, 1958.

Remarks.--Records good except those for periods of ice effect or backwater from aquatic vegetation or debris, which are fair. High flow regulated by Onondaga Reservoir (see preceding page). See page 381 for discharge measurements made at downstream sites between this station and Onondaga Lake.

Rating tables, water year 1957-58, except periods of ice effect or backwater from aquatic vegetation or debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 7				Apr. 8 to Sept. 30			
1.6	23	2.7	229	1.6	18	3.0	320
1.8	49	3.0	337	1.8	38	3.5	600
2.0	80	3.5	610	2.0	63	4.0	990
2.2	115	4.0	990	2.4	135	4.5	1,480
2.4	154			2.7	213		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	23	52	106	104	485	756	232	253	64	53	35
2	24	23	48	82	100	359	756	*187	1,080	60	45	29
3	22	25	45	64	90	341	764	179	*720	59	43	25
4	23	35	42	72	96	406	756	201	480	66	40	25
5	24	*38	33	76	98	346	705	171	275	114	38	29
6	27	33	36	76	96	301	798	158	620	166	*35	25
7	25	27	55	78	90	275	910	223	462	116	32	71
8	23	24	80	72	84	255	884	432	223	104	43	*66
9	23	33	66	68	76	221	788	400	448	106	45	50
10	21	31	58	74	68	212	607	226	405	78	38	63
11	20	30	56	72	80	207	410	196	280	83	44	53
12	21	*31	42	60	76	191	370	171	207	103	35	39
13	23	33	49	64	76	184	340	153	207	101	30	32
14	20	31	48	70	78	196	360	144	210	76	28	28
15	18	33	56	78	80	207	365	196	161	73	37	25
16	*34	34	74	80	74	191	360	179	137	279	30	27
17	*23	34	*82	75	70	176	350	146	*127	124	28	36
18	23	33	64	68	68	169	304	180	118	85	*32	118
19	35	*42	80	66	66	178	270	485	110	103	30	80
20	49	60	117	76	*66	221	220	201	103	85	27	59
21	*29	42	244	78	64	212	230	156	104	68	26	54
22	*22	35	144	118	68	196	440	142	97	62	29	83
23	*23	33	110	170	72	205	705	146	88	64	25	56
24	56	30	101	112	86	270	400	129	85	63	26	44
25	52	30	88	124	155	340	260	120	93	56	42	38
26	38	*29	175	174	170	*450	210	118	129	53	32	40
27	30	24	310	152	185	533	180	108	110	50	30	55
28	25	30	158	136	339	578	300	106	86	48	23	66
29	*25	39	156	126	-	638	360	112	76	53	21	49
30	36	58	117	119	--------	680	420	104	69	60	21	39
31	28	--------	108	115	--------	766	--------	97	--------	56	21	--------
Total	866	1,003	2,874	2,901	2,775	9,989	14,578	5,798	7,563	2,678	1,029	1,439
Mean	27.9	33.4	92.7	93.6	99.1	322	486	187	252	86.4	33.2	48.0
Adjusted for change in contents in Onondaga Reservoir												
Mean	27.9	33.4	92.7	93.6	100	327	481	187	252	86.4	33.2	48.0
Cfsm	0.314	0.376	1.04	1.05	1.12	3.68	5.41	2.10	2.83	0.972	0.373	0.540
In.	0.36	0.42	1.20	1.21	1.18	4.23	6.03	2.42	3.16	1.12	0.43	0.60

	Observed			Adjusted			
Calendar year 1957:	Max 1,040	Min 18	Mean 105	Mean 105	Cfsm 1.18	In. 16.02	
Water year 1957-58:	Max 1,060	Min 18	Mean 147	Mean 147	Cfsm 1.65	In. 22.36	

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 10-15, Jan. 2-6, 8-15, 18-20, 23-25, Feb. 1-27. Backwater from debris Oct. 25 to Dec. 2, Mar. 23-26, Apr. 12-14, 16, 17, 19-22, 24-30, June 2-4, 6. Backwater from aquatic vegetation and/or debris Oct. 1-22.

2402. Ninemile Creek at Camillus, N. Y.

Location.--Lat 43°02'20", long 76°18'30", on right bank 150 ft downstream from highway bridge on Main Street in Camillus, Onondaga County, 7 miles upstream from Onondaga Lake.

Drainage area.--87.6 sq mi.

Records available.--July to September 1958.

Gage.--Water-stage recorder.

Extremes.--Maximum daily discharge during period July to September, 200 cfs July 16; minimum, 42 cfs Aug. 30, Sept. 6; minimum gage height, 2.17 ft Sept. 6.

Remarks.--Records good except those for periods of backwater from aquatic vegetation or no gage-height record, which are fair. Flow regulated by Otisco Lake.

Rating table, for the period July 1 to Sept. 30, 1958, except period of backwater from aquatic vegetation (gage height, in feet, and discharge, in cubic feet per second)

2.1	34
2.5	98
3.0	184
3.5	279

Discharge, in cubic feet per second, July to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1										66	58	52
2										64	52	48
3										62	52	44
4										67	50	45
5										93	50	45
6										118	*48	42
7										96	52	72
8										83	58	64
9										81	56	*50
10										71	56	69
11										78	56	58
12										96	52	48
13										95	52	48
14										83	50	45
15										78	52	45
16										a200	48	48
17										a84	47	53
18										72	*54	91
19										78	52	78
20										71	50	66
21										66	52	64
22										62	52	78
23										64	47	61
24										60	52	56
25										60	60	53
26										56	50	61
27										56	47	62
28										58	45	62
29										62	45	56
30					-------					68	42	53
31		-------			-------		-------		-------	60	44	-------
Total										2,408	1,581	1,717
Mean										77.7	51.0	57.2
Cfsm										0.887	0.582	0.653
In.										1.02	0.67	0.73

Calendar year	: Max		Min	Mean	Cfsm	In.
Water year	: Max		Min	Mean	Cfsm	In.

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.
Note.--Backwater from aquatic vegetation July 22 to Sept. 6.

2425. East Branch Fish Creek at Taberg, N. Y.

Location.--Lat 43°18'05", long 75°37'10", on left bank at downstream side of highway bridge at Taberg, Oneida County, just downstream from Furnace Creek, 2¾ miles upstream from confluence of East and West Branches near Blossvale.

Drainage area.--189 sq mi.

Records available.--April 1923 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 491.12 ft above mean sea level, datum of 1929. Prior to Oct. 6, 1923, staff gage at same site and datum.

Average discharge.--35 years, 543 cfs (unadjusted).

Extremes.--Maximum discharge during year, 10,500 cfs Dec. 21 (gage height, 8.94 ft); minimum, 54 cfs Oct. 17 (gage height, 0.47 ft).
1923-58: Maximum discharge, 13,600 cfs Oct. 2, 1945 (gage height, 10.90 ft); minimum, 4.9 cfs Aug. 15, 16, 1949.

Remarks.--Records good except those for periods of ice effect, no gage height record, or shifting control, which are fair. Diversion above station for water supply by city of Rome as shown in monthly table. Additional diversion from a reservoir (capacity, 28,600,000 cu ft; drainage area, 16.4 sq mi) on Florence Creek above station for water supply for city of Oneida amounted to 121,242,000 cu ft during the water year 1958, equivalent to a mean discharge of 3.8 cfs. Diurnal fluctuation at low flow caused by diversion and small power operations upstream.

Revisions (water years).--WSP 604: 1924. WSP 759: Drainage area. WSP 1034: 1944. WSP 1054: 1923-45.

Rating tables, water year 1957-58, except periods of ice effect or shifting control (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 21				Dec. 22 to Sept. 30			
0.4	44	2.0	850	0.8	77	2.5	1,000
.6	76	3.0	1,830	1.1	150	3.0	1,560
.9	160	5.0	4,330	1.5	290	5.0	4,300
1.3	346	8.0	9,000	2.0	565		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	83	113	a640	628	299	350	862	683	401	156	228	232
2	78	107	a450	500	290	340	1,050	464	*2,920	130	166	464
3	76	113	399	400	270	*322	1,250	490	*1,300	120	136	286
4	74	160	358	350	258	*286	*1,340	990	546	120	120	254
5	74	195	287	320	250	270	1,390	814	375	162	100	418
6	71	176	308	340	240	258	2,180	429	458	230	92	345
7	67	140	935	390	238	254	2,270	418	340	350	128	446
8	65	134	2,360	370	228	243	1,340	565	278	299	286	458
9	62	282	1,300	330	220	230	900	691	286	396	250	286
10	60	303	786	310	210	243	760	500	993	250	284	1,290
11	58	212	600	340	220	239	834	464	1,410	225	375	1,350
12	58	183	a400	320	220	228	778	402	654	740	218	596
13	60	176	a310	300	210	221	699	330	*412	989	258	365
14	60	191	a350	300	210	232	1,070	*322	552	398	*211	282
15	57	668	a350	340	200	232	1,400	964	396	304	153	236
16	55	533	a370	330	200	225	1,560	1,190	290	419	125	*401
17	57	393	405	310	200	218	1,600	733	246	396	108	778
18	201	341	358	300	190	214	1,380	506	232	239	103	2,190
19	370	706	610	290	190	243	1,170	843	214	418	98	1,410
20	263	*1,110	3,620	280	180	270	872	586	194	482	94	691
21	187	600	8,250	310	180	250	824	412	228	290	134	759
22	144	405	2,940	480	180	239	1,310	350	228	204	254	2,120
23	124	324	1,370	700	170	258	1,090	402	188	188	181	1,010
24	379	324	1,040	600	180	335	683	345	156	*175	218	546
25	762	303	760	560	200	402	494	290	147	150	2,200	418
26	393	253	2,150	700	220	446	407	326	1,040	139	962	500
27	258	a130	2,810	960	260	593	350	274	860	128	407	539
28	195	a230	1,370	565	286	742	509	243	360	144	266	539
29	*160	a500	950	402	-	834	901	282	236	596	198	402
30	137	a860	675	345	-------	890	1,230	258	188	643	162	312
31	124	-------	565	322	-------	920	-------	228	-------	340	142	-------
Total	4,812	10,165	38,076	12,992	6,200	11,027	32,503	15,594	16,128	9,820	8,637	19,923
Mean	155	339	1,228	419	221	356	1,083	503	538	317	279	664
(†)	18.4	17.7	17.6	18.5	19.0	19.0	18.4	18.1	19.4	20.8	22.0	20.2

	Observed			Adjusted for diversion				
Calendar year 1957:	Max 8,250	Min 29	Mean 501	Mean 521	Cfsm 2.76	In. 37.42
Water year 1957-58:	Max 8,250	Min 55	Mean 509	Mean 528	Cfsm 2.79	In. 37.94

Peak discharge (base, 4,900 cfs).--Dec. 21 (3:45 a.m.) 10,500 cfs (8.94 ft).

* Discharge measurement made on this day.
† Diversion, equivalent in cubic feet per second, by city of Rome for water supply. Diversion during calendar year 1957, 20.5 cfs; during water year 1957-58, 19.1 cfs (figures furnished by city of Rome, N. Y.). For diversion by city of Oneida, N. Y. See "Remarks."
a No gage-height record; discharge estimated on basis of recorded range in stage and records of Oneida Creek at Oneida and Chittenango Creek near Chittenango.
Note.--Stage-discharge relation affected by ice Jan. 3-27, Feb. 6, 9-27, Mar. 1, 2, 9. Shifting-control method used Oct. 25 to Nov. 26, Dec. 3-7.

2435. Oneida Creek at Oneida, N. Y.

Location.--Lat 43°05'50", long 75°38'20", on right bank 70 ft upstream from highway bridge at Oneida, Madison County, and 500 ft downstream from Seconondoa Creek.

Drainage area.--112 sq mi.

Records available.--October 1949 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 409.33 ft above mean sea level (Corps of Engineers bench mark).

Average discharge.--9 years, 154 cfs.

Extremes.--Maximum discharge during year, 2,020 cfs June 2 (gage height, 9.46 ft); minimum, 23 cfs Aug. 17 (gage height, 1.46 ft).
1949-58: Maximum discharge, 7,440 cfs Mar. 28, 1950 (gage height, 13.78 ft); minimum, 13 cfs Aug. 3, 6, Sept. 10, 1955; minimum gage height, 1.30 ft Aug. 3, 6, 1955.

Remarks.--Records good except those for periods of ice effect, backwater from weeds, or shifting control, which are fair. Slight diurnal fluctuation at low flow caused by small mills above station.

Rating table, water year 1957-58, except periods of ice effect, backwater from weeds, or shifting control (gage height, in feet, and discharge, in cubic feet per second)

1.4	19	3.0	269
1.7	44	5.0	796
2.2	113	7.0	1,400

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	34	82	162	180	440	*673	258	249	57	52	38
2	31	34	72	120	160	400	720	199	*1,210	53	44	38
3	28	37	64	110	140	390	838	239	*425	58	43	35
4	27	49	60	102	130	380	866	289	243	60	43	40
5	28	58	56	96	120	360	841	209	228	113	40	56
6	26	58	56	96	122	331	1,120	179	430	204	38	38
7	26	49	145	120	125	328	1,160	254	230	116	36	102
8	29	45	160	110	118	296	846	561	185	158	46	108
9	27	56	111	*98	110	249	564	404	406	149	45	68
10	26	52	90	106	104	249	456	267	293	90	42	85
11	26	46	86	100	116	245	443	224	251	98	43	105
12	26	43	66	90	120	220	454	199	197	105	37	71
13	25	43	72	92	116	222	451	172	*177	85	35	64
14	25	42	74	94	124	271	534	*175	185	68	38	46
15	25	50	78	106	130	254	578	505	146	66	44	*43
16	25	52	98	110	125	222	540	587	127	122	34	46
17	25	48	137	100	120	207	494	269	125	108	40	71
18	46	45	97	90	120	218	415	222	108	72	53	183
19	68	88	194	84	125	300	355	342	94	67	39	100
20	57	*139	271	88	125	352	289	226	92	75	34	75
21	45	*82	529	98	120	280	280	183	97	60	35	75
22	38	68	260	150	120	232	596	162	85	57	44	149
23	35	60	185	240	130	282	362	162	84	59	35	85
24	41	54	162	220	180	454	267	139	78	*57	34	63
25	48	54	135	210	180	518	211	139	91	53	138	56
26	43	50	464	260	210	678	185	161	90	61	60	66
27	39	44	661	320	280	642	168	132	81	119	44	89
28	*39	50	284	270	*350	653	312	123	68	60	39	111
29	37	61	247	230	-	662	372	132	64	59	36	78
30	34	90	185	210	-------	648	404	113	59	57	34	66
31	34	----	161	200	-------	740	-------	97	--------	51	34	----- --
Total	1,057	1,681	5,342	4,482	4,100	11,723	15,794	7,323	6,198	2,637	1,359	2,240
Mean	34.1	56.0	172	145	146	378	526	236	207	85.1	43.8	74.7
Cfsm	0.304	0.500	1.54	1.29	1.30	3.38	4.70	2.11	1.85	0.760	0.391	0.667
In.	0.35	0.56	1.77	1.49	1.36	3.89	5.24	2.43	2.06	0.88	0.45	0.74

Calendar year 1957: Max 3,190 Min 18 Mean 115 Cfsm 1.03 In. 13.99
Water year 1957-58: Max 1,210 Min 25 Mean 175 Cfsm 1.56 In. 21.22

Peak discharge (base, 1,900 cfs).--June 2 (4 a.m.) 2,020 cfs (9.46 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 1-6, 10-16, Jan. 2 to Mar. 5. Backwater from weeds Oct. 1 to Nov. 27 (no gage-height record Oct. 9-12). Shifting-control method used Mar. 23 to Apr. 6, June 1, 2.

2440. Chittenango Creek near Chittenango, N. Y.

Location.--Lat 43°01'25", long 75°51'30", on right bank at upstream side of highway bridge, 1.6 miles upstream from Chittenango, Madison County, 12 miles upstream from Butternut Creek, and 23 miles upstream from mouth.

Drainage area.--67.7 sq mi.

Records available.--August 1950 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 489.54 ft above mean sea level, datum of 1929.

Average discharge.--8 years, 114 cfs.

Extremes.--Maximum discharge during year, 2,110 cfs June 1 (gage height, 5.92 ft); minimum, 19 cfs Oct. 16, 17 (gage height, 1.52 ft).
1950-58: Maximum discharge, 2,630 cfs Apr. 4, 1956 (gage height, 7.18 ft); minimum, 9.8 cfs Oct. 11, 1953; minimum gage height, 1.265 ft Oct. 15, 1952.
Flood of Mar. 29, 1950, reached a stage of 6.8 ft (backwater from debris present), from floodmarks (discharge, 2,760 cfs, by slope-area method).

Remarks.--Records good. Flow regulated by storage in Cazenovia Lake and Erieville Reservoir.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to July 15				July 16 to Sept. 30	
1.5	17	3.0	387	1.7	26
1.7	33	4.0	850	2.0	64
2.0	73	5.0	1,400	2.5	190
2.5	205			3.0	373

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	21	56	137	92	212	*430	280	443	54	47	42
2	28	22	50	106	97	188	504	230	*705	50	42	37
3	27	25	57	97	92	198	600	236	342	52	38	28
4	26	44	57	92	86	202	667	247	254	54	37	32
5	25	50	45	88	90	185	743	178	339	97	36	36
6	25	43	57	88	92	172	1,050	166	556	216	34	30
7	24	37	89	97	92	166	1,100	236	312	132	34	66
8	22	33	101	82	88	157	744	395	265	154	44	77
9	22	40	73	*73	77	154	487	298	543	161	42	62
10	22	38	67	79	71	151	414	222	364	87	39	78
11	21	34	63	77	84	145	458	195	319	101	37	71
12	20	33	49	67	86	142	462	179	262	120	39	44
13	20	34	57	70	81	139	525	148	*258	92	40	38
14	20	35	60	71	86	139	764	*145	251	73	39	33
15	20	52	60	77	88	137	*832	339	188	106	44	*32
16	20	45	67	79	79	120	815	290	172	326	39	34
17	20	40	71	75	75	113	776	195	157	148	37	45
18	26	37	63	70	75	110	686	204	142	94	42	101
19	37	50	117	68	77	115	608	406	131	129	38	94
20	31	*71	208	70	77	128	500	244	120	94	36	85
21	28	50	353	75	75	126	495	192	128	74	36	93
22	24	44	172	110	75	115	769	166	97	66	39	138
23	23	42	134	128	79	113	479	163	86	68	36	75
24	25	42	126	106	92	126	372	139	81	*64	36	53
25	30	43	110	99	118	151	323	139	86	58	58	47
26	25	38	254	97	118	197	287	154	84	54	44	75
27	23	32	319	104	131	228	254	128	77	58	34	124
28	*23	41	182	97	*212	258	353	120	67	50	26	135
29	22	53	169	92	-	292	404	139	60	51	26	77
30	22	65	145	92	-------	342	414	110	57	53	32	58
31	21	-------	134	94	-------	434	-------	101	-------	51	34	-------
Total	750	1,234	3,565	2,757	2,585	5,455	17,315	6,384	6,946	2,987	1,185	1,940
Mean	24.2	41.1	115	88.9	92.3	176	577	206	232	96.4	38.2	64.7
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 1,100 Min 20 Mean 88.2 Cfsm 1.30 In. 17.68
Water year 1957-58: Max 1,100 Min 20 Mean 145 Cfsm 2.14 In. 29.17

Peak discharge (base, 1,000 cfs).--Apr. 6 (4 p.m.) 1,410 cfs (5.01 ft); June 1 (8:15 p.m.) 2,110 cfs (5.92 ft).

* Discharge measurement made on this day.

2448. Butternut Creek near Jamesville, N. Y.

Location.--Lat 42°56'05", long 76°03'45", on left bank 15 ft downstream from highway bridge on Walberger Road near Jamesville, Onondaga County, 125 ft downstream from unnamed tributary, and 2.2 miles upstream from Jamesville Reservoir.

Drainage area.--32.7 sq mi.

Records available.--July to September 1958.

Gage.--Water-stage recorder.

Extremes.--Maximum discharge during period July to September, 402 cfs July 16 (gage height, 4.55 ft); minimum, 7.6 cfs Aug. 30, 31 (gage height, 2.31 ft).

Remarks.--Records good.

Rating table, July 1 to Sept. 30, 1958 (gage height, in feet, and discharge, in cubic feet per second)

2.3	7.3	2.9	47
2.4	11	3.2	80
2.5	15	3.5	122
2.7	29	4.0	215

Discharge, in cubic feet per second, July to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1										18	19	12
2										17	16	11
3										17	14	9.6
4										16	14	10
5										25	14	11
6										29	*12	9.9
7										23	12	34
8										42	37	*28
9										39	24	18
10										22	18	27
11										25	16	20
12										35	13	14
13										31	12	12
14										20	12	10
15										41	21	9.6
16										173	13	11
17										60	12	23
18										39	*13	49
19										53	12	31
20										38	10	22
21										30	10	28
22										28	12	42
23										30	9.6	25
24										27	10	18
25										23	16	15
26										22	12	20
27										20	9.9	31
28										19	9.6	30
29										21	8.6	21
30					-------					26	8.3	17
31		-------			-------		-------		-------	22	9.0	-------
Total										1,031	429.0	619.1
Mean										33.3	13.8	20.6
Cfsm										1.02	0.422	0.630
In.										1.17	0.49	0.70

Calendar year	: Max	Min	Mean	Cfsm	In.
Water year	: Max	Min	Mean	Cfsm	In.

* Discharge measurement made on this day.

2450. Limestone Creek at Fayetteville, N. Y.

Location.--Lat 43°01'45", long 76°00'50", on left bank 100 ft downstream from Genesee Street Bridge at Fayetteville, Onondaga County, and 8 miles upstream from mouth.

Drainage area.--85.7 sq mi, not including 15.7 sq mi of Middle Branch Tioughnioga Creek basin, flow from which may be completely diverted into Limestone Creek basin through DeRuyter Reservoir.

Records available.--November 1939 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 427.62 ft above mean sea level (levels by Corps of Engineers).

Average discharge.--18 years (1940-58), 140 cfs.

Extremes.--Maximum discharge during year, 2,260 cfs June 1 (gage height, 5.95 ft); minimum, 27 cfs Oct. 1, 2, 3, 4; minimum gage height, 1.45 ft Oct. 1, 2, 3, 4, Aug. 20. 1939-58: Maximum discharge, 7,010 cfs Mar. 28, 1950 (gage height, 7.78 ft), from rating curve extended above 3,500 cfs by logarithmic plotting; minimum, 12 cfs Oct. 4, 1953; minimum gage height, 1.23 ft Aug. 20, 1949.

Remarks.--Records good except those for periods of ice effect, no gage-height record, or backwater from debris, which are fair. Canal diverts from Limestone Creek about 3 miles above station and returns water to creek about 400 ft above station.

Revisions (water years).--WSP 954: 1941.

Rating tables, water year 1957-58, except periods of ice effect or backwater from debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to June 1				June 2 to Sept. 30			
1.4	24	3.0	411	1.4	27	3.0	412
1.7	64	4.0	827	1.8	93	4.0	827
2.1	148	5.0	1,390	2.4	233	5.0	1,390
2.5	254						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	45	68	129	b108	401	725	260	580	78	56	40
2	29	49	57	92	b112	319	752	212	1,270	76	50	38
3	27	56	54	b74	b96	328	794	215	351	74	47	37
4	29	70	51	b80	b90	387	766	254	233	76	46	40
5	32	70	b42	b90	b100	335	725	199	361	135	43	43
6	33	62	b45	86	106	295	951	178	616	175	*40	38
7	32	56	80	88	106	274	1,180	a250	255	111	41	72
8	33	54	111	77	b94	254	777	a480	223	145	49	80
9	33	62	75	b68	b86	232	457	a420	494	152	58	*74
10	33	60	68	b76	b78	223	387	254	305	95	47	72
11	33	56	66	75	b86	218	387	223	268	103	47	71
12	33	56	b48	b62	b92	204	394	204	223	122	43	59
13	34	*56	a50	b66	b88	196	377	168	223	105	41	51
14	32	55	a58	b70	b90	215	453	160	225	84	40	46
15	33	63	64	82	b92	207	487	326	172	111	56	43
16	34	61	82	86	b86	194	457	274	153	480	46	44
17	*36	58	*100	82	b80	181	432	191	*137	190	41	51
18	38	54	73	b74	b78	173	364	201	133	118	44	124
19	46	72	120	b66	b80	189	310	490	122	145	*41	89
20	41	104	189	b82	*b80	243	263	230	113	108	38	74
21	37	73	439	b84	b78	215	271	175	120	88	38	72
22	36	a64	207	131	b76	196	710	*145	111	78	41	135
23	34	a62	150	186	77	191	415	150	103	84	38	74
24	76	61	136	b122	78	243	289	125	97	80	38	60
25	66	58	115	136	126	322	246	120	103	74	58	54
26	60	57	a240	136	156	*468	212	130	120	68	52	68
27	46	52	a490	136	170	549	194	102	101	66	43	86
28	42	49	a200	129	271	606	337	94	89	60	40	102
29	36	54	176	124	-	658	384	108	82	58	38	68
30	50	77	141	120	-------	707	435	86	80	62	38	60
31	44	-------	124	117	-------	856	-------	76	-------	60	37	---- --
Total	1,198	1,826	3,919	3,026	2,860	10,079	14,931	6,500	7,463	3,461	1,375	1,965
Mean	38.6	60.9	126	97.6	102	325	498	210	249	112	44.4	65.5
Cfsm	0.450	0.711	1.47	1.14	1.19	3.79	5.81	2.45	2.91	1.31	0.518	0.764
In.	0.52	0.79	1.70	1.31	1.24	4.37	6.48	2.82	3.24	1.50	0.60	0.85

Calendar year 1957: Max 1,650 Min 22 Mean 109 Cfsm 1.27 In. 17.31
Water year 1957-58: Max 1,270 Min 27 Mean 161 Cfsm 1.88 In. 25.42

Peak discharge (base, 2,000 cfs).--June 1 (10:45 a.m.) 2,260 cfs (5.95 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and records for nearby stations.
b Stage-discharge relation affected by ice (no gage-height record Jan. 19).
Note.--Backwater from debris Oct. 1 to Nov. 13, May 19 to June 1, July 16 to Sept. 7, Sept. 22-30 (no gage-height record Oct. 22-31; doubtful gage-height record Nov. 1-3).

2460. Oneida Lake at Brewerton, N. Y.

Location.--Lat 43°14'20", long 76°08'30", at west end of Oneida Lake, 100 ft west of bridge on U. S. Highway 11, at Brewerton, Onondaga County.

Drainage area.--1,353 sq mi.

Records available.--November 1951 to September 1958. April 1904 to September 1925 in reports of State engineer and surveyor, published as Oneida River at Brewerton.

Gage.--Water-stage recorder. Datum of gage is 362.00 ft above mean sea level, Erie (Barge) Canal datum.

Extremes.--Maximum gage height during year, 9.57 ft June 10; minimum, 6.31 ft Feb. 25. 1951-58: Maximum gage height, 10.41 ft Oct. 14, 1955; minimum, 5.93 ft Jan. 20, 1954.

Remarks.--Elevation of lake surface regulated by taintor-gate dam on Oneida River at Caughdenoy and gates on Oneida Canal and Erie (Barge) Canal. Capacity of lake not determined. Area of water surface is 79.8 sq mi. Figures of change in contents computed from surface area and change in stage.

Mean gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.37	8.40	8.16	8.14	6.96	6.58	8.07	8.66	8.51	8.50	8.71	8.56
2	8.36	8.41	8.04	8.46	6.95	6.69	8.14	8.66	8.73	8.51	8.69	8.64
3	8.35	8.39	8.08	a8.39	6.94	6.77	8.21	8.87	9.06	8.53	8.66	8.71
4	8.37	8.38	8.06	a8.18	6.93	6.87	8.29	8.69	9.24	8.60	8.59	8.71
5	8.36	8.42	7.92	a8.02	6.92	6.96	8.36	8.74	9.23	8.75	8.55	8.78
6	8.40	8.46	7.88	a7.81	6.89	7.02	8.63	8.76	9.21	8.68	8.53	8.83
7	8.40	8.48	7.80	a7.67	6.86	7.08	8.59	8.74	9.22	8.77	8.48	8.79
8	8.29	8.57	7.85	a7.58	6.83	7.15	8.68	8.76	9.20	8.83	8.41	8.83
9	8.29	8.37	7.92	a7.47	6.82	7.19	8.81	8.74	9.15	8.86	8.40	8.87
10	8.23	8.43	7.92	a7.39	6.87	7.20	8.91	8.87	9.30	8.95	8.38	8.79
11	8.26	8.52	7.73	7.33	6.84	a7.22	8.93	8.87	9.11	8.95	8.41	8.94
12	8.24	8.54	7.64	7.28	6.79	a7.24	8.80	8.82	9.06	9.02	8.44	9.04
13	8.20	8.57	7.63	7.21	6.74	a7.24	8.74	8.78	9.01	9.11	8.37	9.03
14	8.22	8.61	7.54	7.14	6.71	a7.24	8.69	8.84	8.71	9.21	8.38	9.03
15	8.23	8.55	7.45	7.10	6.67	a7.24	8.70	8.97	8.69	9.15	8.29	8.97
16	8.26	8.58	7.36	7.07	6.65	a7.26	8.67	8.95	8.39	9.12	8.32	8.93
17	a8.31	8.44	7.32	7.04	6.65	a7.26	8.67	9.04	8.47	9.15	8.24	9.01
18	a8.31	8.70	7.54	6.99	6.62	a7.27	8.63	9.05	8.46	9.18	8.18	8.90
19	a8.33	8.70	7.35	6.94	6.59	a7.29	8.59	9.04	8.37	8.91	8.18	8.93
20	a8.32	8.64	7.33	6.89	6.56	a7.29	8.56	9.05	8.36	9.04	8.21	8.93
21	a8.34	8.65	7.50	6.86	6.52	7.32	8.50	8.98	8.22	9.08	8.22	8.96
22	a8.35	8.66	7.88	6.83	6.48	7.35	8.56	9.00	8.15	9.05	8.19	8.84
23	a8.31	8.70	7.99	6.80	6.46	7.35	8.55	8.94	8.14	8.91	8.25	8.94
24	a8.33	8.52	7.83	6.80	6.43	7.40	8.54	8.96	8.16	8.84	8.43	8.89
25	a8.35	8.58	8.06	6.83	6.40	7.48	8.28	8.85	8.20	8.76	8.40	8.73
26	a8.30	8.54	7.94	6.87	6.43	7.55	8.43	8.79	8.26	8.73	8.52	8.60
27	a8.28	8.66	8.06	6.89	6.47	7.65	8.59	8.80	8.22	8.71	8.61	8.55
28	8.33	8.38	8.34	6.94	6.51	7.74	8.78	8.68	8.42	8.75	8.65	8.44
29	8.38	8.27	8.24	6.97	-	7.85	8.54	8.51	8.47	8.68	8.63	8.38
30	8.45	8.26	8.25	6.98	-------	7.93	8.61	8.55	8.49	8.69	8.66	8.31
31	8.43	-------	8.24	6.98	-------	8.02	-------	8.54	-------	8.73	8.65	-------
Mean	8.32	8.51	7.83	7.29	6.70	7.28	8.57	8.82	8.67	8.86	8.44	8.80
(†)	-8.31	-369.1	+191.0	+1,030.0	-386.2	+1,245.9	+557.9	-174.4	+17.2	+166.1	-41.5	-343.3

Calendar year 1957: Max 9.22 Min 6.39 Mean 8.10 † +47.5
Water year 1957-58: Max 9.30 Min 6.40 Mean 8.18 † -11.3

† Change in contents, equivalent in cubic feet per second, in Oneida Lake.
a No gage-height record; gage heights computed on basis of recorded range in stage and records for for gage 1, Oneida River at Caughdenoy.

2465. Oneida River at Caughdenoy, N. Y.

Location.--Lat 43°14'45", long 76°10'15", on left bank at point of diversion to New York State Erie (Barge) Canal, 1.6 miles downstream from Oneida Lake and 2.6 miles upstream from Caughdenoy, Oswego County.

Drainage area.--1,377 sq mi.

Records available.--September 1902 to December 1909 (published as "near Euclid"), January 1910 to December 1913, and October 1947 to September 1958 in reports of Geological Survey. September 1902 to December 1909 and January 1910 to September 1925 in reports of State engineer and surveyor.

Gage.--Water-stage recorder. Datum of gage is 362.00 ft above mean sea level, New York State Erie (Barge) Canal bench mark. Prior to June 5, 1907, headwater readings and June 5, 1907, to Dec. 31, 1909, staff-gage readings at Oak Orchard State Dam, at different datum. Jan. 1, 1910, to Dec. 31, 1913, staff gage at site 2.5 miles downstream at different datum. Oct. 9, 1947, to Nov. 7, 1951, water-stage recorder at site 2.5 miles downstream at different datum; since Nov. 7, 1951, used as auxiliary gage. Since Nov. 9, 1951, auxiliary water-stage recorder 2.6 miles downstream and 180 ft downstream from navigation dam of New York State Erie (Barge) Canal.

Average discharge.--21 years (1902-12, 1947-58), 2,577 cfs.

Extremes.--Maximum daily discharge during year, 5,640 cfs Apr. 11; minimum daily, 151 cfs June 30.

1947-58: Maximum daily discharge, 9,160 cfs Apr. 7, 1950; minimum daily, 62 cfs July 29, 1950.

Remarks.--Records excellent above and good below 1,800 cfs except those for periods of fragmentary gage-height record, which are fair. Discharge below 1,500 cfs computed by using gage-height record for auxiliary water-stage recorder 2.6 miles downstream. This record represents total discharge at Caughdenoy and includes flow in Oneida and Erie (Barge) Canals. A large amount of natural storage by Oneida Lake. Considerable seasonal regulation by operation of gates in Oneida Canal and at navigation dam. Occasional large diurnal fluctuations presumably caused by seiche in Oneida Lake. Water may be diverted into or received from Mohawk River basin through summit level of Erie (Barge) Canal between New London and Utica. Nearly all of flow from 16 sq mi of the Tioughnioga River basin may be diverted into DeRuyter Reservoir, in Oswego River basin. Records of chemical analyses and water temperatures for the water year 1958 are given in WSP 1571.

Cooperation.--Records of gate openings for navigation dam and gate openings, lockages, and elevations of water surface in Erie (Barge) Canal above and below lock 23 furnished by New York State Department of Public Works.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	343	634	3,260	3,980	2,610	2,100	4,120	2,820	2,850	182	1,780	527
2	367	649	3,140	3,980	2,580	2,250	4,240	2,840	2,940	210	1,850	315
3	523	645	3,150	3,950	2,570	2,340	4,360	2,900	2,960	226	1,920	306
4	533	648	3,130	3,820	2,560	2,430	4,490	2,800	3,090	249	1,940	303
5	542	661	3,070	3,710	2,560	2,530	4,600	2,900	3,510	269	1,530	815
6	556	643	3,070	3,590	2,520	2,640	5,010	2,840	3,720	303	1,220	972
7	509	656	3,040	3,480	2,450	2,690	4,960	2,890	3,730	408	1,220	946
8	518	658	3,040	3,370	2,400	2,770	5,120	2,870	3,690	488	1,220	912
9	501	654	3,020	3,270	2,380	2,840	5,370	2,880	3,670	530	1,220	896
10	507	648	3,020	3,180	2,450	2,870	5,580	2,950	4,860	499	1,200	906
11	507	664	3,330	3,050	2,420	2,910	5,640	2,920	5,240	631	1,140	1,370
12	506	665	3,490	3,000	2,350	2,880	5,370	2,980	5,180	832	1,120	*1,650
13	501	*670	3,500	2,910	2,290	2,910	5,280	2,900	5,150	844	1,090	1,660
14	516	675	3,310	2,820	*2,240	2,910	5,220	2,920	4,870	1,470	1,070	1,670
15	514	875	3,240	2,770	2,220	2,930	*5,160	3,000	4,820	1,740	1,050	f2,220
16	526	1,070	3,120	2,720	2,160	2,970	5,100	2,970	4,470	1,720	1,050	f2,970
17	514	1,060	3,070	*2,680	2,160	2,980	5,090	2,980	*4,460	1,710	1,030	f3,070
18	512	1,060	3,420	2,630	2,130	2,980	5,030	2,950	4,330	1,740	1,010	f3,080
19	525	1,060	3,170	2,560	2,100	2,980	4,970	3,030	3,340	1,680	635	f3,480
20	528	1,070	3,100	2,530	2,060	3,000	4,900	3,060	2,710	1,680	*187	f4,120
21	528	1,060	3,320	2,490	2,030	3,050	4,780	*3,080	2,730	2,500	175	f4,130
22	494	1,360	3,820	2,440	1,960	3,060	4,920	3,030	2,690	3,020	189	f4,080
23	514	1,680	4,000	2,420	1,950	3,080	4,880	3,050	1,650	2,940	184	f4,480
24	506	1,660	3,750	2,420	1,920	3,160	4,920	3,010	767	2,930	177	f4,940
25	501	2,110	4,090	2,440	1,860	3,260	4,440	3,060	417	2,130	197	f4,790
26	507	2,440	4,000	2,480	1,910	3,370	3,620	2,910	503	1,690	178	f4,530
27	514	2,950	4,120	2,500	1,980	3,480	2,780	2,950	383	1,770	288	f4,010
28	*549	3,220	4,560	2,570	2,010	3,620	2,920	2,900	210	1,760	361	3,720
29	649	3,200	4,360	2,610	-	3,780	2,800	2,780	174	1,750	361	f3,680
30	640	3,150	4,420	2,630	-------	3,900	2,790	2,820	151	1,740	365	3,660
31	635	-------	4,390	2,620	-------	4,030	-------	2,790	-------	*1,760	372	-------
Total	16,085	38,195	108,520	91,620	62,830	92,700	138,460	90,780	89,265	41,401	27,329	74,008
Mean	519	1,273	3,501	2,955	2,244	2,990	4,615	2,928	2,976	1,336	882	2,467
Cfsm	0.377	0.924	2.54	2.15	1.63	2.17	3.35	2.13	2.16	0.970	0.641	1.79
In.	0.43	1.03	2.93	2.47	1.70	2.50	3.74	2.45	2.41	1.12	0.74	2.00

Calendar year 1957: Max 4,560 Min 159 Mean 1,812 Cfsm 1.32 In. 17.86
Water year 1957-58: Max 5,640 Min 151 Mean 2,387 Cfsm 1.73 In. 23.52

* Discharge measurement made on this day.
f Fragmentary gage-height record at gage 2; discharge estimated on basis of partly-estimated gage heights.

2490. Oswego River at lock 7, Oswego, N. Y.

Location.--Lat 43°27'00", long 76°30'25", on right bank at lock 7 in Oswego, Oswego County, three-quarters of a mile upstream from mouth.

Drainage area.--5,121 sq mi.

Records available.--October 1900 to April 1906, October 1933 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Prior to January 1904, published as "above Minetto" or "near Minetto." January 1904 to April 1906, published as "at Battle Island." Records for April 1897 to September 1900, published in WSP 65 and for October 1927 to September 1928 published in WSP 664, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 246.00 ft above mean sea level, New York State Oswego (Barge) Canal datum. October 1900 to April 1906, staff gage at site about 6 miles upstream at different datum.

Average discharge.--25 years (1933-58), 6,378 cfs.

Extremes.--Maximum discharge during year, 19,100 cfs Apr. 23 (gage height, 9.08 ft), includes mean daily discharge of canals; minimum daily, 445 cfs Nov. 3; minimum gage height, 1.15 ft Nov. 13.
1933-58: Maximum discharge, 37,500 cfs Mar. 28, 1936, includes mean daily discharge of canals; maximum gage height, 13.46 ft Apr. 10, 1940; minimum discharge (river only), 30 cfs Nov. 6, 1944; minimum daily, 353 cfs Aug. 14, 1949; minimum gage height, 0.97 ft Aug. 24, 1934.

Remarks.--Records excellent. This record represents total discharge at Oswego and includes flow in Hydraulic and Oswego (Barge) Canals; prior to 1933 flow in Oswego (Barge) Canals not included. A large amount of natural storage and some artificial regulation is afforded by the many large lakes and the Erie (Barge) and Oswego (Barge) Canal systems in the river basin. Large diurnal fluctuations at low and medium flow by powerplants above station. Oswego River basin receives water from Erie (Barge) Canal through lock 32 near Pittsford. Water may be diverted into or received from Mohawk River basin through summit level of Erie (Barge) Canal between New London and Utica. During part of year entire flow from 45 sq mi of Mud Creek drainage area may be diverted from Chemung River basin into Lake Keuka in Oswego River basin. Nearly all of flow from 16 sq mi of the Tioughnioga River basin may be diverted into DeRuyter Reservoir, in Oswego River basin.

Cooperation.--Records of lockages at lock 7 furnished by New York State Department of Public Works, record of elevations of Lake Ontario by Corps of Engineers, daily discharge records for High Dam by Niagara Mohawk Power Corp., and those at Fulton by Oswego River Watershed Corp.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,350	1,540	3,980	6,720	6,390	7,520	17,100	14,000	5,270	2,140	*4,560	1,840
2	998	1,480	4,970	7,340	6,390	8,560	16,900	13,800	6,770	2,660	4,300	1,960
3	1,310	445	4,710	6,670	6,840	9,290	16,600	13,400	7,470	2,750	3,880	1,660
4	1,420	1,460	4,230	5,630	5,890	10,100	16,300	13,300	8,340	1,960	4,620	1,660
5	1,560	2,050	4,460	5,580	6,930	10,200	15,900	12,600	7,550	2,990	4,360	2,230
6	986	1,980	4,640	6,800	6,550	10,700	15,700	12,300	8,020	2,880	3,960	2,400
7	1,940	1,590	4,290	6,540	6,330	10,900	16,300	12,100	8,220	3,900	3,270	2,560
8	1,740	1,670	3,510	5,900	5,550	11,000	16,800	12,000	8,210	3,940	2,820	3,320
9	1,710	1,500	4,760	6,340	4,780	10,900	17,600	12,000	8,030	3,700	3,360	2,810
10	1,650	621	5,460	5,890	5,330	10,700	18,400	11,700	10,200	3,580	3,250	2,850
11	1,840	1,800	5,210	5,690	5,420	10,600	18,200	11,500	13,100	3,510	3,770	3,040
12	1,710	*1,850	5,400	5,020	5,560	10,000	17,700	11,400	13,400	4,820	3,520	3,330
13	1,350	1,730	4,620	5,880	*5,520	10,200	17,100	11,000	13,700	4,560	3,620	3,480
14	1,710	1,760	5,440	5,600	5,390	9,570	16,700	11,000	13,800	5,310	3,260	2,950
15	1,410	1,540	4,710	5,270	5,350	9,640	16,000	11,000	13,000	6,210	3,300	*4,060
16	1,400	1,370	5,610	*4,300	4,790	9,760	*15,600	10,900	*11,900	6,410	3,240	4,130
17	1,280	1,840	5,050	3,950	5,160	9,650	15,900	10,300	11,300	6,220	2,820	4,720
18	*1,360	2,300	4,680	4,820	5,490	9,680	15,900	8,830	11,300	6,080	3,820	6,070
19	1,740	2,100	4,850	4,320	5,270	9,530	15,800	9,180	10,900	5,860	3,490	6,760
20	777	2,060	5,350	5,180	5,000	9,710	15,900	9,000	9,220	5,220	*2,680	6,650
21	1,800	2,180	5,630	4,950	5,050	9,680	16,200	6,820	8,730	5,950	2,690	6,700
22	1,570	2,490	5,680	4,900	4,860	9,900	17,600	5,570	8,870	6,080	2,320	7,620
23	1,360	2,170	7,110	4,930	4,310	9,850	18,300	5,400	8,630	6,220	2,540	7,390
24	1,540	1,910	7,050	5,100	5,110	11,200	18,200	5,360	5,740	6,120	2,280	7,590
25	1,310	3,430	5,490	5,030	5,130	12,300	17,400	4,650	2,890	5,940	3,170	8,140
26	1,360	3,200	6,710	4,890	5,440	12,600	16,700	5,860	3,500	4,120	3,070	7,860
27	1,260	3,430	6,550	6,280	5,840	14,100	15,300	5,130	4,530	3,710	2,460	6,310
28	1,630	4,160	6,920	6,170	6,870	16,200	15,000	5,030	4,780	5,090	2,310	5,540
29	1,820	5,090	6,540	6,660	-	17,000	14,600	5,090	3,310	5,940	2,050	6,460
30	1,800	5,540	7,540	6,650	-------	16,800	14,300	4,380	3,250	5,460	1,760	5,400
31	1,670	-------	7,110	6,780	-------	16,900	-------	4,880	-------	4,960	1,920	-------
Total	46,361	66,286	168,260	175,780	156,540	344,720	496,000	289,480	253,930	144,290	98,470	137,490
Mean	1,496	2,210	5,428	5,670	5,591	11,120	16,533	9,338	8,464	4,655	3,176	4,583
Cfsm	0.292	0.432	1.06	1.11	1.09	2.17	3.23	1.82	1.65	0.909	0.620	0.895
In.	0.34	0.48	1.22	1.28	1.14	2.50	3.60	2.10	1.84	1.05	0.71	1.00

Calendar year 1957: Max 14,500 Min 445 Mean 5,028 Cfsm 0.982 In. 13.34
Water year 1957-58: Max 18,400 Min 445 Mean 6,514 Cfsm 1.27 In. 17.26

* Discharge measurement made on this day.

2507.5. Sandy Creek near Adams, N. Y.

Location.--Lat 43°48'48", long 76°04'30", on left bank 250 ft upstream from highway bridge, a quarter of a mile downstream from unnamed tributary, 2½ miles downstream from Adams, Jefferson County, and 10 miles upstream from mouth.
Drainage area.--128 sq mi.
Records available.--August 1957 to September 1958.
Gage.--Water-stage recorder. Datum of gage is 523.71 ft above mean sea level, datum of 1929.
Extremes.--1957: Maximum discharge during period August to September, 616 cfs Sept. 22 (gage height, 3.08 ft); minimum, 4.3 cfs Aug. 27 (gage height, 0.79 ft); minimum daily, 6.5 cfs Aug. 27.
1957-58: Maximum discharge during water year, 4,350 cfs Dec. 21 (gage height, 7.57 ft); minimum, 9.0 cfs Oct. 17 (gage height, 1.00 ft); minimum daily, 18 cfs Oct. 17, July 27.
Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diurnal fluctuation at low flow caused by mills above station.

Rating table, Aug. 22, 1957, to Sept. 30, 1958, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.9	6.5	1.8	87
1.0	9.0	2.2	175
1.1	13	2.5	285
1.2	18	3.0	560
1.5	45	6.0	2,940

Discharge, in cubic feet per second, 1957

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1	-	7.0	7	-	14	13	-	15	19	-	10	25	8.8	*148
2	-	8.8	8	-	13	14	-	11	20	-	27	26	13	100
3	-	23	9	-	15	15	-	11	21	-	181	27	6.5	71
4	-	24	10	-	9.4	16	-	15	22	12	415	28	7.2	57
5	-	24	11	-	*11	17	-	14	23	12	459	29	9.4	50
6	-	*19	12	-	*16	18	-	12	24	7.8	*273	30	6.8	44
												31	7.5	-
Total													-	2,097.2
Mean													-	69.9
Cubic feet per second per square mile													-	0.546
Runoff in inches													-	0.61

Peak discharge (base, 3,000 cfs).--No peak above base.

* Discharge measurement made on this day.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	39	37	581	a330	155	350	925	264	70	26	119	138
2	35	36	408	a270	150	310	1,000	191	606	22	85	222
3	33	42	355	210	135	294	*1,020	232	260	22	64	127
4	31	111	260	170	125	298	*918	355	139	19	53	195
5	30	164	220	160	116	285	782	237	114	24	44	592
6	29	117	248	210	108	273	978	178	204	21	38	222
7	27	84	951	190	100	260	888	175	127	19	154	185
8	26	74	1,250	180	94	244	502	*229	92	23	*365	178
9	25	225	547	155	88	218	375	244	79	40	250	139
10	24	162	391	135	84	207	330	181	132	30	175	713
11	22	117	316	140	90	204	350	159	*240	40	172	316
12	22	115	195	130	94	191	312	170	143	73	101	194
13	22	*148	215	120	92	178	281	146	98	68	221	148
14	22	159	237	118	92	181	316	138	168	44	127	127
15	21	264	222	*130	90	188	312	408	130	*86	71	107
16	21	185	244	125	90	175	294	365	89	105	55	1,160
17	18	233	281	120	90	167	256	244	70	79	44	560
18	30	170	222	116	88	162	214	194	61	47	47	1,330
19	71	264	684	112	86	191	181	222	53	95	40	962
20	65	392	1,430	110	84	240	156	170	46	91	37	554
21	50	256	2,850	120	84	226	200	132	44	53	482	424
22	41	252	1,040	175	84	207	565	115	40	37	316	588
23	36	233	588	250	82	218	463	143	36	32	162	*365
24	73	414	459	220	90	321	281	121	32	30	117	269
25	127	424	340	200	125	483	204	101	32	25	561	226
26	82	321	a470	250	*170	644	167	103	98	20	240	218
27	61	225	a1,500	350	190	850	146	85	98	18	151	214
28	52	449	a740	240	260	1,000	175	77	56	296	109	218
29	*47	2,100	a520	200	-------	1,060	404	82	38	1,080	87	170
30	44	1,200	a360	175	-------	1,030	484	77	30	391	71	148
31	39	-------	a300	165	-------	978	-------	65	-------	201	77	-------
Total	1,265	8,973	18,424	5,576	3,136	11,633	13,479	5,603	3,425	3,157	4,635	11,008
Mean	40.8	299	594	180	112	375	449	181	114	102	150	367
Cfsm	0.319	2.34	4.64	1.41	0.875	2.93	3.51	1.41	0.891	0.797	1.17	2.87
In.	0.37	2.61	5.35	1.62	0.91	3.38	3.92	1.63	1.00	0.92	1.35	3.20

Calendar year 1957: Max - Min - Mean - Cfsm - In. -
Water year 1957-58: Max 2,850 Min 18 Mean 247 Cfsm 1.93 In. 26.26

Peak discharge (base, 3,000 cfs).--Dec. 21 (5:15 a.m.) 4,350 cfs (7.57 ft); July 28 (11:15 p.m.) 3,480 cfs (6.60 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage and records for Deer River at Deer River and East Branch Fish Creek at Taberg.
Note.--Stage-discharge relation affected by ice Nov. 27, Dec. 4, 5, 12, 13, Jan. 3 to Mar. 2.

2520. Black River Canal (flowing south) near Boonville, N. Y.

Location.--Lat 43°27'20", long 75°19'25", on left bank at lock 69, 2 miles south of Boonville, Oneida County.

Records available.--September 1915 to September 1958 (canal seasons only prior to October 1942 and since October 1957).

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,105.56 ft above mean sea level, datum of 1929. Prior to June 7, 1929, station was operated as a slope station on summit level of canal. Auxiliary water-stage recorder with concrete control on right bank of Lansingkill spillway, 100 ft downstream from spillway headgates, 600 ft upstream from lock 70, and half a mile upstream from lock 69.

Extremes.--1915-58: Maximum daily discharge recorded, 323 cfs Nov. 30, 1915; practically no flow at times when no water is being diverted.

Remarks.--Records good except those for periods of no gage-height record at auxiliary gage, which are fair. This record shows combined flow in Black River Canal and Lansingkill spillway, and represents total diversion from Black River at Forestport, through Forestport feeder, into Mohawk River basin. Discharge during periods Oct. 1-16, Dec. 10 to May 6, Aug. 5 to Sept. 30, when no water was diverted, made up of leakage through headgates and runoff from area draining into canal above station.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.3	0.3	8.1				1.1	7.9	20	18	14	2.7
2	1.9	.3	6.2				*1.1	4.3	14	19	14	2.7
3	2.1	.3	5.0				1.1	3.6	2.2	14	13	2.7
4	2.1	.3	4.8				.9	5.6	1.7	1.4	5.9	2.7
5	1.8	.4	4.1				.9	4.3	1.8	1.2	2.0	2.7
6	1.2	.3	3.8				1.6	2.9	2.0	.9	2.2	2.8
7	.6	.3	15				2.2	*18	1.5	1.0	2.4	3.1
8	1.5	.5	28	(*)			1.5	30	1.3	1.2	2.2	3.1
9	1.9	.9	7.0				1.1	34	1.3	1.3	2.5	2.6
10	2.1	.7	.9				1.1	32	*1.7	1.1	3.0	6.3
11	2.1	.5	-				1.0	32	2.3	1.0	2.5	6.5
12	2.1	.5	-				.9	31	2.1	2.6	1.8	2.8
13	1.7	.4	-				.9	30	1.7	8.4	1.4	1.9
14	1.3	.5	-	(*)			.9	30	1.4	11	1.7	1.4
15	1.6	5.5	-				.9	*35	1.5	11	1.9	1.1
16	1.7	8.5	-				1.0	35	1.8	11	1.9	1.0
17	4.6	5.6	-				.9	29	1.9	*11	2.2	*1.2
18	2.0	4.5	-				.9	28	1.9	10	2.1	2.5
19	1.8	13	-				.9	27	9.4	10	*2.1	2.4
20	.5	14	-				.8	27	9.8	12	2.1	1.8
21	1.0	8.1	-				1.0	26	9.7	12	2.4	1.7
22	.4	5.3	-				1.6	25	17	11	2.5	2.8
23	*.5	3.8	-				1.3	25	16	6.0	2.6	2.4
24	2.0	4.8	-				.9	25	16	2.3	3.1	1.7
25	1.5	5.3	-				1.0	25	16	2.2	11	1.5
26	.6	4.0	-				1.9	25	17	2.3	5.3	1.3
27	.5	4.5	-				3.6	24	19	2.6	2.8	1.4
28	.4	3.3	-				6.3	22	20	2.4	2.3	1.4
29	.4	13	-				15	22	20	2.4	2.6	1.2
30	.3	12	-				15	22	17	12	2.7	1.2
31	.3		-					20		15	2.6	
Total	43.8	121.4	-	-	-	-	69.3	707.6	249.0	217.3	120.8	70.6
Mean	1.41	4.05	-	-	-	-	2.31	22.8	8.30	7.01	3.90	2.35
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year	: Max	Min	Mean	Cfsm	In.
Water year	: Max	Min	Mean	Cfsm	In.

* Discharge measurement made on this day at main gage.

Note.--No gage-height record at auxiliary gage Apr. 1, 5-22; discharge estimated on basis of record at main gage.

2525. Black River near Boonville, N. Y.

Location.--Lat 43°30'35", long 75°18'25", on left bank at downstream side of highway bridge, three-quarters of a mile upstream from Sugar River and 2 miles northeast of Boonville, Oneida County.

Drainage area.--295 sq mi.

Records available.--February 1911 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 935.50 ft above mean sea level, datum of 1929, supplementary adjustment of 1943. Prior to Sept, 27, 1933, chain and staff gages at same site and datum.

Average discharge.--47 years, 681 cfs.

Extremes.--Maximum discharge during year, 8,900 cfs Dec. 21 (gage height, 10.46 ft); minimum, 142 cfs Oct. 17 (gage height, 3.91 ft); minimum daily, 170 cfs Aug. 18.
1911-58: Maximum discharge, 12,400 cfs Mar. 28, 1913 (gage height, about 12.5 ft, from floodmarks); minimum observed, about 5 cfs Aug. 26, 1918 (gage height, 2.40 ft); minimum daily, 7 cfs Aug. 26, 1918.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow slightly regulated by several headwater reservoirs. Forestport feeder diverts water from State Pond at Forestport. That portion of diverted water which does not pass down Black River Canal (flowing south) returns to Black River below station through Mill Creek sluiceway.

Revisions (water years).--WSP 759: Drainage area. WSP 784: 1934. WSP 1084: 1912(M), 1913, 1917-19(M), 1922(M), 1924(M), 1926(M), 1928(M), 1930(M), 1933(M). WSP 1307: 1914(M).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 17, 18)

Oct. 1 to Nov. 9		Nov. 10 to Sept. 30			
4.0	162	4.0	151	7.0	1,910
4.5	300	4.5	276	8.0	3,020
5.0	480	5.0	465	10.0	7,120
6.0	1,060	6.0	1,020		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	190	266	783	800	430	460	861	1,360	a500	228	318	210
2	218	283	652	720	400	430	*898	950	a2,100	215	247	253
3	234	289	557	560	380	410	1,030	830	*3,110	212	215	286
4	229	284	440	400	360	440	1,190	957	1,790	212	200	270
5	212	294	380	390	340	430	1,310	898	985	239	179	273
6	218	300	390	450	340	380	1,690	*766	848	262	186	264
7	204	288	561	500	340	360	2,660	738	732	336	208	259
8	232	300	1,420	500	340	340	2,140	801	601	389	228	282
9	234	496	1,460	410	290	290	1,470	861	582	354	242	262
10	194	478	944	390	310	320	1,130	801	721	315	282	403
11	184	373	766	410	310	330	1,040	721	911	295	295	766
12	186	326	582	370	310	360	1,040	662	*732	468	247	732
13	184	298	480	370	290	360	999	567	567	783	236	572
14	191	*305	500	*400	300	370	1,110	519	552	557	220	501
15	194	557	480	420	290	370	1,370	710	552	406	193	354
16	186	567	490	400	290	370	1,490	854	461	418	184	305
17	172	483	470	400	290	366	1,620	873	402	*439	172	*354
18	269	444	420	400	300	351	1,640	710	397	366	*170	694
19	577	501	609	370	290	351	1,510	727	370	358	172	1,050
20	574	1,360	2,310	340	290	366	1,330	732	326	461	172	789
21	406	1,190	6,650	380	280	362	1,310	626	295	474	215	694
22	300	867	*5,210	480	280	354	2,330	a540	302	417	247	1,010
23	*252	710	2,540	620	280	351	2,830	a540	270	198	208	924
24	327	577	1,590	620	280	366	1,930	a500	247	200	228	616
25	510	534	1,150	580	300	444	1,220	a450	247	205	554	470
26	444	478	1,270	560	340	452	904	a460	362	234	596	431
27	395	350	2,420	580	340	543	738	a450	418	256	377	444
28	349	402	1,950	600	410	657	749	a400	336	234	273	515
29	291	538	1,400	540	-	766	971	a440	279	416	220	492
30	284	842	999	480	-------	842	1,610	a430	247	586	200	418
31	272	-------	848	460	-------	904	-------	a390	-------	461	193	-------
Total	8,712	14,940	40,721	14,900	9,000	13,495	42,120	21,263	20,242	10,994	7,677	14,893
Mean	281	498	1,314	481	321	435	1,404	686	675	355	248	496
Cfsm	0.953	1.69	4.45	1.63	1.09	1.47	4.76	2.33	2.29	1.20	0.841	1.68
In.	1.10	1.88	5.13	1.88	1.13	1.70	5.31	2.68	2.55	1.39	0.97	1.88

Calendar year 1957: Max 6,650 Min 114 Mean 657 Cfsm 2.23 In. 30.22
Water year 1957-58: Max 6,650 Min 170 Mean 600 Cfsm 2.03 In. 27.60

Peak discharge (base, 3,900 cfs).--Dec. 21 (7 p.m.) 8,900 cfs (10.46 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and correlation between gage-height record at Forestport feeder dam and discharge at gaging station.
Note.--Stage-discharge relation affected by ice Nov. 27, Dec. 4-6, 13-18, Jan. 1 to Mar. 16.

2535. Middle Branch Moose River at Old Forge, N. Y.

Location.--Lat 43°42'50", long 74°58'10", on left bank in Old Forge, Herkimer County, 400 ft downstream from State dam and 1½ miles upstream from North Branch Moose River.

Drainage area.--52 sq mi, approximately.

Records available.--October 1911 to September 1958. October 1911 monthly discharge only, published in WSP 1307.

Gage.--Staff gage read twice daily. Datum of gage is 1,690.63 ft above mean sea level, datum of 1929.

Average discharge.--47 years, 104 cfs.

Extremes.--Maximum daily discharge during year, 360 cfs June 12-15, Sept. 19, 20; maximum gage height observed, 3.5 ft on various days; minimum daily discharge, 4.1 cfs May 30, 31.
1911-58: Maximum discharge, 862 cfs Mar. 23, 1921; minimum daily, 0.1 cfs many times when gates in dam were closed.

Remarks.--Records good except those for periods of backwater from North Branch, which are fair. On days when gate openings are changed, discharge is computed from gage readings and record of gate operations. Flow regulated by Fulton Chain of Lakes since about 1880.

Revisions.--WSP 664: Drainage area.

Rating tables, water year 1957-58, except periods of backwater from North Branch (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 10				Jan. 11 to Sept. 30			
1.6	6.8	2.2	58	1.5	4.1	2.2	62
1.7	11	2.5	106	1.6	7.6	2.6	130
1.9	24	3.2	267	1.7	12	3.5	360
				1.9	27		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	216	132	6.8	8.3	45	274	92	11	4.4	11	198	65
2	218	128	6.8	8.3	126	258	92	11	7	12	52	44
3	221	122	6.8	8.3	144	253	38	12	26	12	22	91
4	226	122	6.8	8.3	166	253	11	12	63	12	22	112
5	237	122	6.8	8.3	166	253	11	12	63	12	22	114
6	246	122	6.8	8.7	166	235	12	12	60	12	22	110
7	238	122	6.8	9.2	166	240	12	12	58	12	23	110
8	231	142	6.8	9.2	168	243	12	12	58	12	37	110
9	226	169	6.8	9.2	166	237	12	12	63	12	87	110
10	221	169	6.8	56	166	245	12	12	192	12	86	112
11	216	123	6.8	124	217	227	12	12	331	12	86	114
12	214	12	6.8	122	243	219	12	12	360	14	69	118
13	209	14	6.8	122	237	217	12	12	360	19	39	118
14	204	14	6.8	122	237	209	12	12	360	100	21	118
15	199	*14	6.8	122	237	198	12	*12	360	134	14	118
16	192	14	6.8	*73	237	194	12	12	112	117	14	124
17	187	14	6.8	15	237	188	c12	12	12	66	14	154
18	187	14	6.8	55	232	181	c12	12	12	63	14	291
19	183	14	6.8	152	227	176	c12	12	*12	34	14	360
20	180	11	7.1	152	227	174	c12	12	12	26	*14	360
21	176	7.5	7.5	150	224	171	c11	12	12	49	14	259
22	167	7.1	7.5	148	222	162	c11	12	11	59	15	135
23	160	6.8	c7.6	148	222	145	c11	12	11	*59	15	*110
24	*156	6.8	c7.6	60	222	132	c11	9.8	11	59	16	99
25	151	6.8	c7.8	54	219	112	c11	4.7	11	59	98	69
26	149	6.8	c7.8	148	*217	105	11	4.7	11	31	82	70
27	145	6.8	7.9	148	229	103	10	4.7	11	17	49	70
28	143	7.1	7.9	148	274	99	10	4.7	11	17	14	70
29	139	7.1	8.3	148	-	97	11	4.4	11	100	14	70
30	136	6.8	8.3	145	-------	94	11	4.1	11	232	14	67
31	134	-------	8.3	58	-------	92	-------	4.1	-------	230	91	-------
Total	5,907	1,663.6	222.8	2,547.8	5,637	5,786	532	315.2	2,636.4	1,616	1,292	3,872
Mean	191	55.5	7.19	82.2	201	187	17.7	10.2	87.9	52.1	41.7	129
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 294 Min 6.8 Mean 97.6 Cfsm 1.88 In. 25.47
Water year 1957-58: Max 360 Min 4.1 Mean 87.7 Cfsm 1.69 In. 22.91

* Discharge measurement made on this day.
c Backwater from North Branch.

Note.--Decrease in combined storage in Old Forge and Sixth Lake Reservoirs during calendar year 1957, about 147,800,000 cu ft (equivalent mean discharge, 4.69 cfs; runoff, 1.22 in.); increase during water year 1957-58, about 388,400,000 cu ft (equivalent mean discharge, 12.3 cfs; runoff, 3.22 in.). Storage data furnished by Board of Black River Regulating District.

2540. Middle Branch Moose River near McKeever, N. Y.

Location.--Lat 43°37'45", long 75°04'55", on right bank half a mile upstream from confluence with South Branch and 1½ miles northeast of McKeever, Herkimer County.

Drainage area.--148 sq mi.

Records available.--October 1925 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,530.29 ft above mean sea level, datum of 1929.

Average discharge.--33 years, 325 cfs.

Extremes.--Maximum discharge during year, 892 cfs Sept. 21 (gage height, 4.86 ft); maximum gage height, 5.69 ft sometime in January (backwater from ice); minimum discharge, 82 cfs Aug. 30 (gage height, 2.37 ft).
1925-58: Maximum discharge, 2,100 cfs Apr. 27, 1926 (gage height, 6.6 ft); maximum gage height, 7.35 ft Jan. 25, 1955 (ice jam); minimum discharge, 27 cfs Aug. 18, 1946 (gage height, 1.73 ft).

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated to some extent by Fulton Chain of Lakes since about 1880.

Revisions.--WSP 664: Drainage area.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 20				Jan. 21 to Sept. 30			
2.7	133	4.0	499	2.4	86	4.0	467
3.3	261	5.0	995	3.0	182	5.0	975
				3.5	297		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	281	200	243	421	240	360	222	484	192	136	390	172
2	289	196	220	350	250	360	229	475	408	140	322	167
3	298	200	210	310	270	360	245	459	439	136	224	156
4	298	202	230	280	300	350	233	459	501	120	192	190
5	295	209	260	260	310	340	236	435	590	110	172	224
6	304	204	280	240	310	320	266	423	622	106	159	233
7	301	202	256	230	300	320	305	408	488	103	167	247
8	292	209	275	220	300	320	317	390	423	113	194	252
9	283	283	269	200	300	310	319	*370	376	118	215	249
10	275	304	250	190	300	310	294	350	373	112	213	284
11	269	313	220	240	330	290	292	340	531	114	198	322
12	261	229	220	300	360	280	289	325	641	149	194	356
13	256	160	250	310	370	280	289	303	646	178	171	370
14	248	147	260	300	360	270	311	289	627	178	147	353
15	245	*157	270	290	360	260	340	284	599	245	124	337
16	238	198	230	*250	340	250	387	274	495	261	112	376
17	230	207	195	210	330	245	435	217	204	229	103	394
18	245	204	200	210	320	235	496	224	194	192	99	544
19	256	228	207	260	310	230	576	211	*182	194	94	752
20	251	275	375	320	300	225	651	231	172	174	90	857
21	245	275	631	330	290	220	716	229	167	172	*89	880
22	233	269	576	330	290	222	808	220	158	186	92	*752
23	223	253	684	320	290	211	824	213	147	*186	91	586
24	*230	235	760	280	290	211	840	202	136	186	91	509
25	245	221	734	240	280	209	802	190	128	186	112	427
26	245	200	650	260	280	192	705	178	156	182	172	373
27	238	185	650	300	*300	192	594	167	167	152	152	340
28	223	175	576	320	350	198	518	163	167	148	119	325
29	216	202	559	310	-	211	501	171	154	194	94	287
30	209	233	512	300	-------	220	527	165	143	322	86	274
31	204	-------	455	240	-------	224	-------	156	-------	387	96	-------
Total	7,926	6,605	11,707	8,621	8,630	8,225	13,567	9,005	10,226	5,403	4,774	11,587
Mean	256	220	378	278	308	265	452	290	341	174	154	386
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 896 Min 54 Mean 289 Cfsm 1.95 In. 26.55
Water year 1957-58: Max 880 Min 86 Mean 291 Cfsm 1.97 In. 26.71

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 26, 27, Dec. 2-6, 10-18, Jan. 2 to Mar. 21 (no gage-height record Jan. 13-16).

2545. Moose River at McKeever, N. Y.

Location.--Lat 43°36'40", long 75°06'35", on left bank half a mile west of McKeever, Herkimer County, and 2 miles downstream from confluence of Middle and South Branches.

Drainage area.--365 sq mi.

Records available.--June 1900 to September 1958. Monthly discharge only for some periods, published in WSP 1307. Prior to October 1922 published as "at Moose River."

Gage.--Water-stage recorder at present site and datum since Nov. 3, 1922. Datum of gage is 1,479.92 ft above mean sea level, datum of 1929. June 5, 1900, to Dec. 31, 1922, staff gage at site 2½ miles downstream at various datums. May 28 to Nov. 2, 1922, staff gage at present site at datum 1 ft higher.

Average discharge.--53 years (1905-58), 827 cfs.

Extremes.--Maximum discharge during year, 9,150 cfs Dec. 21 (gage height, 11.98 ft); minimum, 152 cfs Aug. 20 (gage height, 1.89 ft).
1900-58: Maximum discharge, 18,700 cfs June 3, 1947 (gage height, 17.45 ft, from floodmark), result of failure of dam; minimum, about 42 cfs July 21, 23, 25-27, 1913.

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated to some extent by Fulton Chain of Lakes since about 1880.

Revisions (water years).--WSP 624: 1922(M). WSP 729: Drainage area. WSP 874: 1928.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	88	6.0	2,410
2.0	180	7.0	3,290
2.5	326	9.0	5,390
3.0	513	12.0	9,180
4.0	1,010		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	353	310	800	911	500	560	547	1,710	522	276	716	310
2	357	297	707	782	490	580	539	1,300	3,130	267	565	357
3	360	304	640	673	490	580	614	1,140	3,840	255	396	336
4	360	329	673	580	520	*560	712	1,320	1,920	229	326	346
5	353	396	940	520	540	540	856	1,290	1,370	218	288	371
6	360	411	1,040	480	540	520	1,150	1,090	1,230	210	264	407
7	357	385	1,120	460	520	500	1,570	983	1,010	210	273	452
8	346	371	1,620	440	520	490	1,400	1,040	845	227	313	513
9	343	651	1,840	420	490	480	1,120	1,180	741	252	333	513
10	333	884	1,470	410	490	470	*928	1,080	712	244	333	639
11	326	702	1,230	460	500	450	916	966	1,000	238	323	1,160
12	316	517	1,220	520	540	450	878	928	1,200	336	323	1,090
13	310	400	1,350	520	580	440	818	845	1,090	627	282	850
14	304	360	1,400	500	560	430	1,040	741	1,020	530	247	692
15	297	*577	1,400	*490	540	420	1,430	*712	988	472	218	591
16	294	966	1,350	460	520	400	2,160	712	878	464	196	614
17	285	756	1,300	450	500	390	3,000	673	476	414	180	692
18	316	622	1,350	450	480	390	3,440	632	437	343	170	1,070
19	374	654	1,510	500	470	380	3,680	632	*418	329	162	2,080
20	452	1,540	3,320	580	450	380	3,090	692	385	360	154	1,810
21	414	1,260	7,910	600	440	370	4,010	632	364	403	157	1,440
22	367	872	4,080	620	440	360	5,650	560	350	364	*170	1,320
23	333	683	2,180	620	430	350	4,680	530	323	*329	175	*1,210
24	*350	587	1,730	580	430	360	2,910	497	297	313	175	960
25	497	513	1,420	540	410	370	2,230	452	276	297	246	787
26	578	464	1,420	540	430	350	1,760	422	316	285	539	678
27	472	440	2,640	580	460	360	1,340	389	389	250	400	632
28	403	420	2,030	600	520	403	1,180	367	378	232	291	654
29	367	526	1,510	600	-	468	1,300	407	336	386	227	640
30	343	797	1,150	580	-------	530	2,040	464	297	1,050	196	560
31	323	-------	977	*520	-------	574	-------	418	-------	916	202	-------
Total	11,243	17,994	53,327	16,986	13,800	13,905	56,988	24,804	26,538	11,326	8,840	23,774
Mean	363	600	1,720	548	493	449	1,900	800	885	365	285	792
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 7,910 Min 92 Mean 743 Cfsm 2.04 In. 27.63
Water year 1957-58: Max 7,910 Min 154 Mean 766 Cfsm 2.10 In. 28.48

Peak discharge (base, 5,500 cfs).--Dec. 21 (1:45 p.m.) 9,150 cfs (11.98 ft); Apr. 22 (8 p.m.) 6,970 cfs (10.35 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 27, 28, Dec. 1, 5, 6, 12-18, Jan. 4 to Mar. 25.

2560. Independence River at Donnattsburg, N. Y.

Location.--Lat 43°44'50", long 75°20'05", on right bank at downstream side of highway bridge at Donnattsburg, Lewis County, 1¼ miles downstream from Chase Lake Outlet, 4¼ miles northeast of Glenfield, and 5 miles upstream from mouth.

Drainage area.--91.7 sq mi.

Records available.--July 1942 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 972.84 ft above mean sea level, datum of 1929. Prior to Sept. 16, 1949, wire-weight gage at same site and datum.

Average discharge.--16 years, 195 cfs.

Extremes.--Maximum discharge during year, 1,720 cfs Dec. 21 (gage height, 6.74 ft); minimum, 35 cfs Oct. 17.
1942-58: Maximum discharge, 3,410 cfs Oct. 2, 1945 (gage height, 8.8 ft, from graph based on gage readings); minimum observed, 18 cfs Sept. 17, 1948, Aug. 4, 5, 1949 (gage height, 2.85 ft).

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.9	28	4.5	382
3.1	44	5.0	605
3.5	91	6.0	1,200
3.8	149	7.0	1,930

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	54	53	320	223	105	102	267	419	110	91	101	102
2	52	49	240	190	99	102	*281	284	604	78	78	133
3	50	51	180	150	96	96	339	239	872	69	62	115
4	48	68	130	112	92	93	411	402	414	63	53	101
5	46	101	106	104	90	90	475	382	236	60	48	226
6	45	122	114	110	86	85	576	274	187	57	44	299
7	44	107	131	125	82	83	676	*226	159	61	50	217
8	42	97	260	118	80	78	529	246	126	91	54	217
9	40	165	310	108	76	76	390	339	113	142	64	170
10	39	246	250	98	74	80	313	310	124	113	67	313
11	39	172	190	104	78	78	310	267	246	96	74	543
12	38	131	130	96	78	76	302	250	*226	146	72	390
13	37	113	110	92	74	74	277	217	162	347	60	239
14	37	*107	124	*92	72	74	351	181	172	228	49	165
15	36	138	106	104	70	74	484	190	175	144	44	124
16	37	204	107	102	70	74	660	217	138	*122	40	378
17	36	175	102	96	70	74	803	233	115	105	50	*797
18	40	152	96	92	68	70	774	198	109	91	42	605
19	60	159	114	88	66	72	691	243	99	112	39	702
20	77	306	480	86	64	72	539	256	87	230	*37	475
21	72	310	1,480	92	64	70	462	201	87	187	51	317
22	63	220	1,090	110	64	70	552	159	88	120	70	295
23	55	167	547	140	62	70	645	140	80	94	70	250
24	57	140	362	130	64	70	436	124	72	80	61	184
25	93	124	263	125	68	84	310	111	67	72	113	149
26	109	109	312	140	*72	102	243	107	190	63	162	144
27	91	88	826	170	86	138	198	99	462	57	111	152
28	74	107	615	145	93	181	201	91	274	53	83	167
29	67	158	411	138	-	239	277	91	159	109	64	157
30	*61	370	288	120	-------	281	475	94	111	192	57	131
31	56	-------	236	113	-------	288	-------	88	-------	144	76	-------
Total	1,695	4,509	10,030	3,713	2,163	3,216	13,247	6,678	6,064	3,617	2,046	8,257
Mean	54.7	150	324	120	77.2	104	442	215	202	117	66.0	275
Cfsm	0.597	1.64	3.53	1.31	0.842	1.13	4.82	2.34	2.20	1.28	0.720	3.00
In.	0.69	1.83	4.07	1.51	0.88	1.30	5.37	2.71	2.46	1.47	0.83	3.35

Calendar year 1957: Max 1,480 Min 28 Mean 162 Cfsm 1.77 In. 24.01
Water year 1957-58: Max 1,480 Min 36 Mean 179 Cfsm 1.95 In. 26.47

Peak discharge (base, 1,200 cfs).--Dec. 21 (5:15 p.m.) 1,720 cfs (6.74 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 27, Dec. 1-6, 9, 10, 12-15, 18-20, Jan. 2-28, Feb. 3-27, Mar. 8-11 (no gage-height record Feb. 18-20).

2565. Stillwater Reservoir near Beaver River, N. Y.

Location.--Lat 43°53'50", long 75°03'05", in gatehouse at Stillwater Dam on Beaver River, 2¾ miles upstream from Moshier Creek and 7½ miles west of Beaver River Post Office, Herkimer County.

Drainage area.--172 sq mi.

Records available.--May 1908 to September 1958. Month-end contents only for some periods, published in WSP 1307.

Gage.--Float-tape gage read once daily and prior to reservoir gate changes. Datum of gage is at mean sea level, adjustment of 1912.

Extremes.--Maximum observed elevation during year, 1,677.83 ft Sept. 23 (contents, 4,296,000,000 cu ft); minimum observed, 1,649.95 ft Mar. 24 (contents, 80,000,000 cu ft). 1925-58: Maximum observed elevation, 1,679.73 ft June 3, 1947 (contents, 4,838,000,000 cu ft); minimum observed since first filling, 1,644.80 ft Mar. 25-27, 1940 (contents, 8,000,000 cu ft).

Remarks.--Records good. Reservoir originally formed about 1885; enlarged at various times and in 1924 enlarged to a usable capacity of 4,623,000,000 cu ft between elevations 1,650.3 and 1,679.3 ft. Elevation of gate sill of lowest outlet, 1,642.3 ft. Capacity below elevation 1,650.3 ft, 90,000,000 cu ft, is included in records presented herein, but is not ordinarily available for release. Prior to 1956, contents published as usable contents above elevation 1,650.3 ft. Reservoir is used to regulate flow of Beaver and Black Rivers for control of floods, for power development, and for general welfare of the public.

Cooperation.--Record of gate opening and reservoir elevations furnished by Board of Black River Regulating District.

Capacity table, water year 1957-58 (gage height, in feet, and capacity, in millions of cubic feet)

1,649.0	56	1,670.0	2,431
1,655.0	343	1,675.0	3,556
1,660.0	821	1,678.0	4,343
1,665.0	1,518		

Elevation, in feet, at 8 a.m., water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71.44	66.80	67.76	72.98	68.57	61.66	50.51	68.69	73.43	76.68	76.85	76.09
2	71.28	66.66	67.97	72.96	68.37	61.31	50.43	68.94	73.76	76.62	76.92	76.09
3	71.13	66.52	68.14	72.90	68.18	60.89	50.46	69.20	74.49	76.58	76.97	76.05
4	70.97	66.42	68.19	72.82	67.98	60.67	50.74	69.53	74.74	76.52	76.93	75.99
5	70.80	66.30	68.18	72.70	67.74	60.32	52.27	69.89	74.90	76.47	76.88	75.99
6	70.65	66.19	68.16	72.60	67.50	59.98	53.14	70.11	75.09	76.39	76.80	75.99
7	70.49	66.08	68.16	72.49	67.25	59.63	54.15	70.31	75.23	76.33	76.77	75.99
8	70.33	66.02	68.33	72.35	67.03	59.27	55.05	70.50	75.33	76.38	76.74	75.98
9	70.12	66.02	68.52	72.25	66.85	58.89	55.65	70.74	75.45	76.34	76.73	75.96
10	69.99	66.03	68.53	72.13	66.67	58.54	56.10	70.91	75.58	76.30	76.73	76.00
11	69.84	66.03	68.59	72.01	66.45	58.17	56.54	71.09	75.74	76.25	76.71	76.12
12	69.68	65.97	68.63	71.87	66.24	57.77	56.97	71.29	75.89	76.26	76.67	76.22
13	69.51	65.91	68.64	71.72	66.01	57.37	57.34	71.45	76.01	76.35	76.63	76.24
14	69.36	65.84	68.64	71.57	65.78	56.97	57.85	71.59	76.11	76.36	76.60	76.24
15	69.20	65.84	68.64	71.43	65.54	56.47	58.41	71.74	76.21	76.32	76.52	76.22
16	69.04	65.88	68.64	71.27	65.31	55.94	59.45	71.87	76.26	76.30	76.47	76.29
17	68.88	65.89	68.63	71.13	65.13	55.43	60.51	72.03	76.33	76.26	76.38	76.56
18	68.73	65.89	68.49	70.99	64.92	54.59	61.60	72.13	76.43	76.21	76.35	76.81
19	68.62	65.91	68.33	70.83	64.71	53.82	62.65	72.40	76.49	76.19	76.27	77.13
20	68.49	65.99	68.35	70.67	64.35	53.12	63.48	72.53	76.55	76.31	76.20	77.36
21	68.35	66.05	69.31	70.48	64.02	52.41	64.20	72.63	76.60	76.38	76.24	77.53
22	68.20	66.24	70.24	70.30	63.67	51.68	64.92	72.72	76.65	76.40	76.23	77.68
23	68.03	66.39	70.68	70.14	63.41	50.89	65.71	72.83	76.70	76.39	76.19	77.83
24	67.90	66.54	71.00	69.95	63.18	50.13	66.28	72.89	76.65	76.35	76.22	77.81
25	67.78	66.66	71.28	69.75	62.88	51.53	66.65	72.94	76.58	76.32	76.37	77.78
26	67.67	66.78	71.53	69.57	62.58	51.13	67.04	73.02	76.63	76.28	76.38	77.73
27	67.55	66.87	72.06	69.42	62.26	51.01	67.33	73.10	76.70	76.24	76.35	77.69
28	67.39	67.00	72.50	69.25	61.98	50.96	67.59	73.16	76.77	76.20	76.32	77.65
29	67.29	67.11	72.76	69.10	-	51.01	67.91	73.23	76.75	76.37	76.26	77.58
30	67.12	67.44	72.93	68.93	-------	50.54	68.32	73.30	76.71	76.62	76.20	77.49
31	66.95	-------	72.98	68.75	-------	50.56	-------	73.36	-------	76.75	76.14	-------
(†)	1,832	1,976	3,075	2,160	1,043	98	2,148	3,174	3,988	4,022	3,837	4,195
(‡)	-341	+55.6	+410	-342	-462	-353	+791	+383	+314	+12.7	-69.1	+138

Calendar year 1957..... ‡ +49.8
Water year 1957-58..... ‡ +45.9

† Contents, in millions of cubic feet, at 12 p.m. on last day of month, by interpolation.
‡ Change in contents, equivalent in cubic feet per second.
Note.--Add 1,600 ft to obtain elevations above mean sea level.

2570. Beaver River below Stillwater Dam, near Beaver River, N. Y.

Location.--Lat 43°53'50", long 75°03'05", in gatehouse at Stillwater Dam, 2½ miles upstream from Moshier Creek and 7½ miles west of Beaver River Post Office, Herkimer County.

Drainage area.--172 sq mi.

Records available.--May 1908 to September 1958.

Gage.--Float-tape gage read once daily and prior to reservoir gate changes. Datum of gage is at mean sea level, adjustment of 1912. Prior to June 1, 1924, staff gage at present site and datum. June 1, 1924, to Nov. 14, 1929, staff gage at site 1,000 ft downstream at same datum.

Average discharge.--50 years, 365 cfs (unadjusted).

Extremes.--Maximum daily discharge during year, 728 cfs Feb. 25; minimum daily, 9 cfs Apr. 5-8.
1908-58: Maximum discharge, about 3,700 cfs May 3, 1926; practically no flow at times when gates in dam are closed.

Remarks.--Records fair. Flow completely regulated by Stillwater Reservoir (see preceding page). Discharge determined from ratings for gates and spillway of Stillwater Dam.

Cooperation.--Records furnished by Board of Black River Regulating District.

Revisions.--WSP 714: Drainage area.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	487	444	14	662	662	708	318	14	16	304	16	304
2	485	442	205	662	660	700	316	14	16	304	212	304
3	485	442	300	662	684	690	318	14	16	302	309	304
4	483	440	300	660	704	682	129	14	16	302	308	304
5	481	440	300	660	702	672	9	14	16	302	308	304
6	480	399	300	658	698	694	9	15	16	302	308	304
7	478	331	300	658	678	671	9	15	16	302	308	304
8	477	330	502	656	641	648	9	15	16	305	308	304
9	475	330	401	654	638	640	10	15	16	305	308	443
10	474	330	300	654	636	630	10	15	16	305	308	391
11	473	330	300	654	634	622	11	15	16	305	306	304
12	470	328	300	652	630	610	11	15	16	305	308	305
13	468	328	300	652	627	641	12	15	16	305	308	305
14	468	328	300	648	626	662	12	15	16	305	308	305
15	466	328	300	648	621	650	12	15	16	305	308	365
16	465	328	300	646	619	634	12	15	16	305	308	384
17	463	328	486	642	655	666	12	15	16	305	306	16
18	462	328	600	640	696	667	13	15	16	305	306	16
19	460	330	600	638	692	636	13	15	16	305	306	16
20	460	330	258	659	686	607	14	15	16	305	*305	17
21	458	185	14	684	679	576	14	16	17	305	305	18
22	456	14	14	684	671	544	14	16	208	305	112	299
23	456	14	14	682	660	506	14	16	304	305	16	441
24	454	14	14	680	685	313	14	16	304	305	209	505
25	452	14	14	678	728	216	14	16	304	305	305	574
26	452	14	14	675	724	260	14	16	304	305	305	574
27	450	14	150	673	720	251	14	16	304	305	305	573
28	448	14	218	670	714	250	14	16	304	304	305	573
29	446	14	218	668	-	301	14	16	304	130	305	571
30	447	14	348	666	---	316	14	16	304	16	305	570
31	447	---	662	664	---	318	---	16	---	16	305	---
Total	14,430	7,525	9,346	20,489	18,770	16,981	1,399	471	2,977	8,684	8,541	9,997
Mean	465	251	269	661	670	548	46.6	15.2	99.2	280	276	333
Adjusted for change in contents in Stillwater Reservoir												
Mean	124	306	680	319	209	195	838	398	413	293	206	471
Cfsm	0.721	1.78	3.95	1.85	1.22	1.13	4.87	2.31	2.40	1.70	1.20	2.74
In.	0.83	1.99	4.55	2.14	1.26	1.31	5.43	2.67	2.68	1.96	1.38	3.06

	Observed			Adjusted			
Calendar year 1957:	Max 737	Min 11	Mean 302	Mean 352	Cfsm 2.05	In. 27.75	
Water year 1957-58:	Max 728	Min 9	Mean 325	Mean 371	Cfsm 2.16	In. 29.26	

* Discharge measurement made on this day.

2580. Beaver River at Croghan, N. Y.

Location.--Lat 43°53'50", long 75°24'15", on left bank 1,000 ft upstream from Black Creek and half a mile west of Croghan, Lewis County.

Drainage area.--294 sq mi.

Records available.--September 1930 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 806.20 ft above mean sea level, datum of 1929.

Average discharge.--28 years, 571 cfs.

Extremes.--Maximum discharge during year, 1,540 cfs July 29 (gage height, 4.15 ft); minimum, 42 cfs July 6 (gage height, 1.04 ft); minimum daily, 47 cfs July 6.
1930-58: Maximum discharge, 4,310 cfs May 13, 1943 (gage height, 6.47 ft); minimum, 12 cfs July 24, 1955; minimum daily, 28 cfs July 8, 1956.

Remarks.--Records excellent except those for periods of ice effect, which are fair. Flow almost completely regulated by Stillwater Reservoir (see p. 320). Between Stillwater Dam and this station flow is further regulated by nine powerplant ponds. Diurnal fluctuation at low and medium flow.

Revisions.--WSP 759: Drainage area.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 8, 9, 13, 14, June 2)

1.0	38	2.5	429
1.3	79	3.0	681
1.6	139	4.0	1,400
2.0	247		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	654	724	248	768	650	754	710	310	56	317	730	110
2	671	445	544	686	734	611	781	353	469	349	320	514
3	648	163	471	717	646	573	781	293	413	400	84	614
4	659	366	445	679	707	761	781	132	317	81	368	538
5	494	669	493	668	672	788	768	310	306	59	*435	616
6	146	693	488	679	b700	827	520	310	320	47	478	422
7	551	683	273	689	738	788	722	*433	286	266	515	500
8	630	699	254	691	816	755	973	455	83	597	594	545
9	662	354	503	666	b780	677	905	438	241	625	379	562
10	612	114	755	724	b760	518	764	303	303	335	97	729
11	668	361	725	712	b800	736	492	92	317	405	421	917
12	290	382	650	655	b760	768	441	289	*299	205	495	889
13	100	*697	793	702	b820	788	*147	447	293	94	588	776
14	387	463	746	705	b780	821	359	413	289	410	630	249
15	558	730	427	*605	784	827	420	392	84	464	634	520
16	522	330	462	712	753	526	389	388	260	*418	363	904
17	722	120	664	635	b700	479	509	293	286	466	102	1,020
18	613	338	688	696	b740	755	716	90	289	464	524	*1,040
19	314	509	774	b700	b680	748	702	276	289	337	500	841
20	112	726	877	b700	684	788	744	306	306	90	538	794
21	392	638	1,160	684	699	834	658	303	269	396	727	433
22	496	680	927	688	612	814	774	303	79	785	592	517
23	445	386	934	753	676	275	706	303	241	518	333	755
24	428	138	853	880	534	539	711	286	310	505	89	736
25	437	341	229	673	746	848	687	86	286	344	425	730
26	295	311	698	699	672	821	337	244	388	288	577	794
27	104	341	1,140	824	748	612	111	289	433	116	623	848
28	481	156	1,020	945	714	652	299	296	303	640	605	166
29	742	356	938	931	-	436	324	289	128	1,050	584	470
30	*652	176	880	752	-------	189	331	86	286	944	361	742
31	648	-------	682	794	-------	414	-------	65	-------	624	90	-------
Total	15,133	13,069	20,741	22,412	20,105	20,722	17,562	8,873	8,229	12,639	13,801	19,291
Mean	488	436	669	723	718	668	585	286	274	408	445	643
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 1,210 Min 58 Mean 473 Cfsm 1.61 In. 21.85
Water year 1957-58: Max 1,160 Min 47 Mean 528 Cfsm 1.80 In. 24.36

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

2587. Deer River at Deer River, N. Y.

Location.--Lat 43°55'49", long 75°35'31", on left bank 350 ft upstream from bridge on State Highway 26 at Deer River, Lewis County, and 2 miles upstream from mouth.

Drainage area.--98.1 sq mi.

Records available.--October 1956 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 762.36 ft above mean sea level, datum of 1929.

Extremes.--1956-57: Maximum discharge during water year, 7,170 cfs Jan. 23 (gage height, 5.98 ft); maximum gage height, 9.20 ft Jan. 23 (ice jam); minimum discharge, about 8.6 cfs Sept. 1, 2.
1957-58: Maximum discharge during water year, 7,460 cfs Dec. 21 (gage height, 6.10 ft); minimum, 17 cfs Oct. 12-18.
1956-58: Maximum discharge, that of Dec. 21, 1957; maximum gage height, that of Jan. 23, 1957; minimum discharge, that of Sept. 1, 2, 1957.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Rating tables, Oct. 1, 1956, to Sept. 30, 1958, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 6, 1956				Dec. 7, 1956, to Mar. 15, 1957				Mar. 16, 1957, to Sept. 30, 1958			
0.7	22	1.9	378	1.0	75	2.5	870	0.4	6.7	1.8	335
.9	44	2.4	770	1.2	122	3.0	1,500	.5	12	2.3	680
1.2	100	3.0	1,500	1.6	260	4.0	3,050	.6	18	3.0	1,500
1.5	190			2.0	470			.8	38	4.0	3,050
								1.1	86	5.0	4,970
								1.4	164		

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31	50	155	116	175	579	364	97	61	258	108	a8.6
2	36	*54	150	114	155	399	850	84	251	118	64	a9.6
3	61	58	140	110	150	260	635	75	204	69	43	26
4	67	54	*135	110	150	200	425	75	108	764	34	32
5	53	48	140	106	140	*165	459	71	*77	811	38	29
6	44	43	494	106	130	155	1,250	64	61	460	32	22
7	145	39	2,710	106	130	145	681	59	77	203	26	17
8	403	38	1,030	*100	122	147	518	51	84	106	24	15
9	217	40	579	96	124	150	398	44	66	79	21	12
10	*144	40	416	92	150	147	315	53	53	68	28	12
11	100	38	346	92	150	135	254	137	42	61	26	14
12	74	47	422	92	125	275	257	171	*39	53	22	17
13	59	80	336	90	*110	572	231	178	46	44	21	17
14	53	82	223	88	104	*752	244	129	42	38	18	18
15	48	70	231	86	100	1,570	*205	237	39	35	17	20
16	46	*106	548	84	96	1,150	299	244	38	33	18	23
17	*39	233	494	82	92	664	648	146	31	29	16	35
18	37	150	350	80	96	1,460	632	101	26	25	14	32
19	34	91	205	80	100	315	585	88	170	*21	15	22
20	33	74	231	84	96	270	752	866	244	19	12	37
21	32	397	231	90	94	244	947	*745	99	20	*17	106
22	32	899	442	520	92	240	725	*348	56	21	18	196
23	*32	320	725	3,000	96	515	455	231	40	35	14	386
24	38	300	707	1,040	94	358	352	207	35	32	11	*253
25	54	e90	624	780	110	284	330	155	50	23	a9.6	124
26	50	260	336	600	400	284	266	126	124	19	a10	79
27	44	233	274	450	1,730	*299	196	140	*82	17	a9.6	56
28	54	*210	*227	370	780	392	158	116	51	16	a9.0	46
29	54	180	215	280	-	411	131	106	129	1,030	a9.0	42
30	48	150	118	225	------	381	113	82	497	779	a9.0	43
31	46	------	120	205	------	330	------	69	------	*245	a9.0	------
Total	2,208	4,674	13,354	9,474	5,891	13,048	13,675	5,295	2,922	5,531	722.2	1,747.2
Mean	71.2	156	431	306	210	421	456	171	97.4	178	23.3	58.2
Cfsm	0.726	1.59	4.39	3.12	2.14	4.29	4.65	1.74	0.993	1.81	0.238	0.593
In.	0.84	1.77	5.06	3.59	2.23	4.95	5.18	2.01	1.11	2.10	0.27	0.66

Calendar year 1956: Max - Min - Mean - Cfsm - In. -
Water year 1956-57: Max 3,000 Min 8.6 Mean 215 Cfsm 2.19 In. 29.77

Peak discharge (base, 2,500 cfs).--Dec. 7 (10:15 a.m.) 4,380 cfs (4.71 ft); Jan. 23 (5:15 a.m.) 7,170 cfs (5.98 ft); Feb. 27 (3:45 a.m.) 3,610 cfs (4.31 ft); Mar. 15 (3 p.m.) 2,960 cfs (3.95 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of observer's inspections.
Note.--Stage-discharge relation affected by ice Nov. 23-26, Nov. 30 to Dec. 5, Dec. 18, 19, Dec. 30 to Feb. 26, Mar. 3-7, 11.

2587. Deer River at Deer River, N. Y.--Continued

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	42	402	280	125	230	585	284	73	39	88	96
2	28	39	286	180	120	210	*776	178	566	32	59	197
3	28	44	235	140	112	200	1,080	238	369	30	47	108
4	26	96	175	120	104	195	1,110	417	164	29	40	154
5	25	146	135	110	98	190	1,080	252	116	32	34	1,020
6	24	116	161	140	92	170	980	168	155	35	*29	373
7	23	84	776	135	88	155	1,010	168	111	54	158	346
8	21	73	921	130	84	140	600	*355	80	234	566	275
9	21	240	462	118	80	130	*436	352	73	320	264	178
10	19	183	304	106	78	124	451	244	218	129	152	1,100
11	19	116	207	110	82	118	562	227	*381	95	211	708
12	18	104	125	104	86	110	469	203	192	237	118	325
13	17	124	140	98	82	106	496	143	113	335	840	182
14	17	*164	150	96	80	104	725	130	256	143	192	137
15	17	362	140	110	76	97	810	572	152	242	93	108
16	17	252	150	106	76	97	810	532	95	*211	68	1,210
17	17	219	155	102	74	93	770	325	75	113	54	823
18	23	164	135	98	72	90	680	203	68	75	48	1,140
19	62	326	500	94	70	97	570	257	61	298	44	*903
20	90	476	2,000	92	68	111	436	174	51	211	38	504
21	68	304	3,660	104	68	108	436	124	46	108	412	341
22	51	231	853	130	68	101	671	101	50	71	296	725
23	43	207	525	180	66	99	570	121	43	59	137	411
24	66	219	424	165	68	124	352	108	35	51	97	227
25	182	215	248	150	*76	188	223	93	32	44	1,010	178
26	134	165	764	190	110	257	168	97	272	38	412	223
27	88	108	742	250	130	352	143	82	346	38	174	244
28	66	258	490	200	180	451	199	69	129	162	106	262
29	59	1,340	392	160	-	532	413	77	73	469	79	171
30	*53	810	289	140	-------	585	511	77	50	358	64	129
31	47	-------	248	135	-------	600	-------	64	-------	164	71	-------
Total	1,422	7,227	16,194	4,273	2,513	6,184	18,122	6,435	4,445	4,454	6,001	12,798
Mean	45.9	241	522	138	89.8	199	604	208	148	144	194	427
Cfsm	0.468	2.46	5.32	1.41	0.915	2.03	6.16	2.12	1.51	1.47	1.98	4.35
In.	0.54	2.74	6.14	1.62	0.95	2.34	6.87	2.44	1.69	1.69	2.27	4.85

Calendar year 1957: Max 3,660 Min 8.6 Mean 228 Cfsm 2.32 In. 31.52
Water year 1957-58: Max 3,660 Min 17 Mean 247 Cfsm 2.52 In. 34.14

Peak discharge (base, 2,500 cfs).--Dec. 21 (1:45 a.m.) 7,460 cfs (6.10 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 11, 12, 26, 27, Dec. 4, 5, 12-20, Jan. 1 to Mar. 12, Mar. 18 (no gage-height record Jan. 4-14).

2605. Black River at Watertown, N. Y.

Location.--Lat 43°59'05", long 75°55'30", on downstream side of right abutment of Vanduzee Street Bridge at Watertown, Jefferson County, 3½ miles upstream from Philomel Creek.

Drainage area.--1,876 sq mi.

Records available.--July 1920 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 374.88 ft above mean sea level, datum of 1929, supplementary adjustment of 1943. Prior to Sept. 3, 1921, staff gage at same site and datum.

Average discharge.--38 years, 3,898 cfs.

Extremes.--Maximum discharge during year, 22,300 cfs Dec. 23 (gage height, 9.14 ft); minimum, 90 cfs Oct. 20 (gage height, 0.12 ft); minimum daily, 940 cfs July 5.
1920-58: Maximum discharge, 33,900 cfs Apr. 9, 1928 (gage height, 10.6 ft); minimum, 10 cfs Sept. 2, 1934 (gage height, -0.19 ft); minimum daily, 137 cfs Sept. 4, 1939.
Maximum discharge known, about 39,700 cfs in April 1869 (from New York State Museum Bulletin 85).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Appreciable regulation by Stillwater Reservoir, Fulton Chain of Lakes, and other reservoirs. Extensive diurnal fluctuation at low and medium flow caused by mills and powerplants in and above Watertown. During canal season, water is diverted out of basin through Forestport feeder and Black River Canal (flowing south).

Revisions.--WSP 759: Drainage area.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 22				Dec. 23 to Sept. 30			
1.3	893	5.0	8,250	1.3	883	5.0	7,930
2.0	1,750	7.0	15,000	2.0	1,690	7.0	14,000
3.0	3,510	9.0	23,600	3.0	3,360	9.0	21,700
4.0	5,600			4.0	5,510		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,670	1,830	4,720	6,270	2,900	2,580	5,880	5,510	1,650	1,470	3,420	a1,120
2	1,640	1,720	a4,200	5,460	2,670	2,700	6,150	5,530	3,040	1,350	2,660	a1,600
3	1,640	1,460	a3,900	4,550	2,410	2,730	*6,490	5,400	6,180	1,590	1,840	a2,350
4	1,630	1,380	a3,000	3,100	2,350	2,810	6,820	4,880	6,920	1,340	1,470	a2,300
5	1,620	1,670	a2,400	2,800	2,250	3,130	7,040	4,770	7,770	940	1,510	a3,000
6	1,450	2,170	a2,500	2,720	2,200	3,130	7,520	4,660	7,220	970	*1,410	a3,500
7	1,120	2,130	a2,600	2,750	2,250	3,110	8,270	4,210	5,900	981	1,510	a2,700
8	1,560	2,120	a5,000	2,920	2,300	3,000	8,580	4,110	4,550	1,460	2,030	a2,900
9	1,600	2,110	a5,580	2,700	2,150	2,790	8,770	4,710	3,220	2,140	2,500	2,720
10	1,560	2,210	5,440	2,450	2,100	2,400	8,220	4,770	2,740	1,900	1,870	3,170
11	1,610	2,550	5,380	2,470	2,050	2,420	7,220	4,300	*3,640	1,850	1,700	4,950
12	1,530	2,700	4,670	2,350	2,050	2,600	6,200	3,960	4,250	1,790	2,000	5,190
13	1,160	*2,400	3,540	2,290	2,000	2,570	5,350	3,790	4,020	2,370	2,320	4,800
14	956	2,370	3,230	2,250	1,800	2,690	5,170	3,480	3,500	3,250	2,290	3,940
15	1,230	2,230	3,090	2,210	2,150	2,840	5,650	3,560	3,120	*3,060	1,810	2,950
16	1,430	3,170	2,590	2,130	2,000	2,650	6,040	4,640	2,860	2,730	1,560	3,290
17	1,380	3,130	2,870	2,260	1,950	2,310	6,460	4,860	2,570	2,500	1,220	5,060
18	1,740	2,840	3,030	2,200	1,800	2,370	7,070	4,250	2,120	2,320	1,030	5,880
19	1,780	2,830	2,790	2,100	1,900	2,590	7,640	3,600	1,890	2,110	1,310	7,040
20	976	3,840	5,880	2,050	1,850	2,720	8,030	3,810	1,760	2,140	1,310	7,070
21	2,000	5,190	12,900	2,020	1,900	2,830	8,110	3,490	1,700	1,930	1,640	6,700
22	1,990	5,330	20,100	2,070	1,850	2,750	8,220	3,160	1,570	2,220	1,960	6,560
23	1,800	4,590	*20,800	2,300	1,850	2,470	8,690	2,600	1,380	2,230	1,770	6,490
24	1,610	3,450	*15,500	2,700	1,740	2,280	9,880	2,450	1,430	1,830	1,420	*5,970
25	1,650	3,010	11,300	2,900	*1,780	3,500	10,100	2,210	1,490	1,580	2,160	5,040
26	2,250	2,660	9,020	2,920	2,080	4,340	8,860	2,010	1,450	1,390	3,800	4,190
27	2,150	2,340	9,650	3,010	2,110	4,860	6,970	2,100	2,900	1,210	3,230	3,760
28	1,800	1,920	9,850	3,340	2,450	5,330	5,510	1,980	3,000	1,150	2,570	3,470
29	*2,040	3,180	9,850	3,460	-	5,740	4,880	1,840	2,290	2,830	2,060	2,930
30	2,050	5,620	9,100	3,300	-------	5,790	5,190	1,630	1,510	3,870	1,760	3,120
31	1,850	-------	7,620	3,050	-------	5,790	-------	1,530	-------	3,930	1,290	-------
Total	50,472	84,150	212,100	89,100	58,890	99,820	214,980	113,800	97,640	62,431	60,430	123,760
Mean	1,628	2,805	6,842	2,874	2,103	3,220	7,166	3,671	3,255	2,014	1,949	4,125
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 20,800 Min 554 Mean 3,436 Cfsm 1.83 In. 24.86
Water year 1957-58: Max 20,800 Min 940 Mean 3,473 Cfsm 1.85 In. 25.12

Peak discharge (base, 17,000 cfs).--Dec. 23 (12:15 a.m.) 22,300 cfs (9.14 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of powerplant records at Black River.
Note.--Stage-discharge relation affected by ice Jan. 4, 5, 9, 10, 12, 14, 18-20, 23-25, Feb. 4-23, Mar. 2.

2610. East Branch Oswegatchie River at Cranberry Lake, N. Y.

Location.--Lat 44°13'15", long 74°51'00", on right bank 900 ft downstream from dam at outlet of Cranberry Lake, at village of Cranberry Lake, St. Lawrence County.

Drainage area.--144 sq mi.

Records available.--May 1923 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,458.23 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1938, staff gage at site 80 ft upstream at same datum.

Average discharge.--35 years, 288 cfs (unadjusted).

Extremes.--Maximum discharge during year, 730 cfs Oct. 1 (gage height, 5.98 ft); minimum daily, 22 cfs May 27-29.
1923-58: Maximum discharge, 1,940 cfs May 13, 1943 (gage height, 7.70 ft); minimum daily, about 3 cfs Apr. 9-16, 1931.

Remarks.--Records good. Since 1867, flow almost completely regulated by Cranberry Lake (total capacity, 2,530,000,000 cu ft).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 18				Jan. 18 to Sept. 30			
3.7	58	5.0	325	3.1	20	4.5	197
4.1	111	6.0	740	3.5	47	5.0	329
4.5	191			4.0	106	6.0	730

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July[3]	Aug.	Sept.
1	603	136	77	99	309	335	422	36	120	250	286	98
2	527	136	78	99	309	335	419	36	*338	250	230	171
3	480	116	79	125	326	*332	312	36	490	248	176	238
4	251	114	79	215	365	332	180	36	500	248	176	238
5	160	112	79	215	365	329	109	36	500	206	176	238
6	114	120	78	215	362	326	72	36	512	186	176	238
7	130	128	78	228	359	326	73	35	434	186	176	235
8	141	130	80	267	359	323	74	34	391	186	176	235
9	139	97	80	267	359	323	75	33	297	186	176	235
10	136	73	79	267	359	320	77	31	267	186	176	235
11	*125	74	79	304	359	320	89	29	320	186	176	235
12	123	75	80	413	359	317	118	29	320	186	176	235
13	123	75	80	354	359	338	108	28	320	186	176	235
14	164	77	80	254	356	388	82	28	323	*186	176	235
15	182	74	80	328	353	388	83	27	381	186	176	235
16	183	67	80	328	353	385	59	26	419	186	176	238
17	159	67	79	328	353	381	46	26	391	186	128	238
18	216	*68	79	378	350	378	47	26	344	186	130	238
19	295	*68	80	437	347	372	54	24	283	186	168	240
20	287	69	82	*434	344	372	58	24	253	186	168	240
21	278	71	86	430	344	369	*50	23	250	186	168	240
22	218	71	88	426	344	365	48	23	250	186	*168	240
23	136	71	90	426	344	362	47	23	228	*186	168	240
24	136	72	91	422	341	359	45	23	186	186	168	240
25	136	72	91	419	341	408	45	23	186	186	121	242
26	134	72	93	416	338	441	41	23	242	186	103	242
27	134	72	94	416	338	437	39	22	372	186	102	242
28	132	73	96	416	338	434	38	22	372	186	100	242
29	132	74	96	385	-	430	38	22	372	250	99	*256
30	134	75	97	309	---------	430	38	80	317	286	98	292
31	134	--------	97	309	--------	426	--------	103	--------	286	98	--------
Total	6,242	2,599	2,605	9,929	9,733	11,381	2,986	1,003	9,978	6,302	4,967	7,006
Mean	201	86.6	84.0	320	348	367	99.5	32.4	333	203	160	234
Adjusted for change in contents in Cranberry Lake												
Mean	130	190	469	208	188	176	860	297	298	203	118	288
Cfsm	0.903	1.32	3.26	1.44	1.31	1.22	4.58	2.06	2.07	1.41	0.819	2.00
In.	1.04	1.47	3.76	1.67	1.36	1.41	5.11	2.38	2.31	1.63	0.95	2.23

	Observed			Adjusted			
Calendar year 1957:	Max 845	Min 33	Mean 243	Mean 255	Cfsm 1.77	In. 24.03	
Water year 1957-58:	Max 603	Min 22	Mean 205	Mean 268	Cfsm 1.86	In. 25.32	

* Discharge measurement made on this day.
Note.--Elevation at surface of Cranberry Lake 1,477.75 ft at 12 p.m. Sept. 30, 1957; 1,486.35 ft at 12 p.m. Sept. 30, 1958; 1,481.35 ft at 12 p.m. Dec. 31, 1956; 1,482.95 ft at 12 p.m. Dec. 31, 1957 (furnished by Oswegatchie River-Cranberry Reservoir Commission).

2620. East Branch Oswegatchie River near Oswegatchie, N. Y.

Location.--Lat 44°13'25", long 75°04'35", on left bank 300 ft downstream from Flat Rock hydroelectric plant of Niagara Mohawk Power Corp. and 2¾ miles north of Oswegatchie, St. Lawrence County.

Drainage area.--263 sq mi.

Records available.--October 1924 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,016.52 ft above mean sea level, datum of 1929.

Average discharge.--34 years, 522 cfs.

Extremes.--Maximum discharge during year, 2,200 cfs Dec. 21 (gage height, 5.51 ft); minimum, 2.6 cfs Aug. 4, 17, 24 (gage height, 0.67 ft); minimum daily, 2.9 cfs July 6, Aug. 30.

1924-58: Maximum discharge, 4,090 cfs Apr. 12, 1947; maximum gage height, 7.1 ft Apr. 6, 1928; minimum discharge, probably less than 1 cfs during complete shutdown of powerplant; minimum daily, 1 cfs July 25, 1926.

Remarks.--Records excellent. Extensive diurnal fluctuation at low and medium flow caused by powerplant; since 1867, seasonal flow regulated to some extent by Cranberry Lake (total capacity, 2,530,000,000 cu ft).

Revisions.--WSP 759: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

0.6	1.5	2.0	120
.7	3.0	2.5	231
.8	5.7	3.0	391
1.0	13	4.0	905
1.2	24	5.1	1,780
1.5	49		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	815	193	351	323	204	262	742	385	221	618	507	195
2	636	36	455	495	246	255	816	269	554	449	231	372
3	538	127	372	599	554	616	988	87	*607	330	124	486
4	447	345	505	360	618	*617	925	344	687	146	205	422
5	4.9	177	432	337	566	576	863	551	517	3.8	296	440
6	3.8	282	433	422	523	642	1,020	470	781	2.9	145	225
7	367	259	260	337	468	579	1,170	328	698	451	169	215
8	254	119	362	502	230	170	966	558	687	331	196	368
9	*357	126	542	450	250	253	1,140	561	559	384	263	469
10	335	98	422	451	487	552	572	323	603	355	108	676
11	342	195	456	431	672	560	776	320	741	304	355	517
12	7	280	495	176	599	566	508	624	610	126	345	426
13	3.8	164	446	484	674	563	414	616	551	138	318	358
14	414	113	233	525	620	600	649	448	467	380	308	147
15	218	212	215	608	188	282	542	558	429	482	276	317
16	277	242	222	466	218	218	674	334	416	357	70	581
17	316	161	365	506	554	544	851	242	706	373	181	621
18	197	218	383	307	615	615	713	332	767	432	341	695
19	38	362	226	197	674	574	489	328	339	199	371	780
20	63	312	898	498	486	500	264	434	544	386	397	628
21	367	264	1,780	*522	546	540	552	333	256	588	366	604
22	307	259	1,380	570	217	221	655	301	184	604	180	476
23	342	98	1,110	562	278	265	764	271	356	356	7.2	562
24	334	334	813	556	508	447	617	244	297	436	62	534
25	253	329	292	210	641	609	532	180	387	440	416	548
26	111	380	861	304	634	709	477	244	548	193	336	643
27	72	290	1,050	590	605	542	120	207	670	213	*338	388
28	368	158	847	642	644	729	367	201	700	252	*427	335
29	164	804	473	596	-	836	352	163	173	351	105	474
30	238	803	774	610	-------	500	402	120	460	632	2.9	*584
31	287	-------	552	556	-------	732	-------	146	-------	554	49	-------
Total	8,476.5	7,740	18,005	14,192	13,519	15,674	19,918	10,522	15,495	10,866.7	7,495.1	14,064
Mean	273	258	581	458	483	506	644	339	516	351	242	469
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 1,780 Min 3.6 Mean 459 Cfsm 1.75 In. 23.70
Water year 1957-58: Max 1,780 Min 2.9 Mean 427 Cfsm 1.62 In. 22.08

* Discharge measurement made on this day.

2625. West Branch Oswegatchie River near Harrisville, N. Y.

Location.--Lat 44°11'10", long 75°19'55", on right bank just downstream from highway bridge, half a mile northeast of Geers Corners, 1½ miles downstream from Jenny Creek, and 4 miles downstream from Harrisville, Lewis County.

Drainage area.--258 sq mi.

Records available.--July 1916 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 738.51 ft above mean sea level, datum of 1929. Prior to Nov. 30, 1933, staff gage at same site and datum.

Average discharge.--42 years, 510 cfs.

Extremes.--Maximum discharge during year, 4,260 cfs Dec. 22 (gage height, 7.19 ft); minimum, 67 cfs Oct. 12, 13 (gage height, 1.29 ft).
1916-58: Maximum discharge, 6,920 cfs Jan. 9, 1930 (gage height, 9.6 ft); minimum, 25 cfs Sept. 1, 1934 (gage height, 0.86 ft).

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation, principally during low flow, caused by pulpmill at Harrisville.

Revisions (water years).--WSP 759: Drainage area. WSP 784: 1934.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 7				Apr. 8 to Sept. 30			
1.3	68	3.5	779	1.6	107	3.5	742
1.5	93	4.0	1,170	2.0	174	4.0	1,080
2.0	174	5.0	2,020	2.5	301	5.0	1,980
2.5	301	7.0	4,050	3.0	484		
3.0	490						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	129	146	1,870	801	333	364	1,130	896	257	314	467	178
2	111	155	1,550	662	317	378	1,190	864	492	249	385	226
3	112	139	b1,250	b540	298	371	1,260	724	*909	206	320	257
4	90	170	b1,020	b500	280	*371	1,340	799	1,000	191	243	238
5	93	263	b900	416	265	360	1,400	909	812	164	184	230
6	89	327	822	371	257	350	1,490	824	786	135	163	271
7	97	333	555	364	246	336	1,820	689	805	140	164	336
8	80	311	829	340	238	323	1,900	701	683	146	376	350
9	*83	304	1,060	304	226	304	1,530	850	529	191	563	357
10	72	295	1,150	289	218	286	1,220	909	442	211	520	350
11	69	295	b1,000	280	218	277	998	838	446	204	480	407
12	68	271	b800	263	216	271	902	857	455	238	415	476
13	68	257	b620	257	211	254	850	909	407	304	353	455
14	101	254	*b490	249	202	263	824	818	572	301	317	392
15	89	280	445	246	195	265	890	689	818	*280	280	343
16	81	323	416	243	191	260	1,010	618	672	360	230	378
17	75	340	382	243	176	257	1,230	567	476	396	191	628
18	76	353	336	243	191	246	1,460	502	389	311	153	890
19	92	*347	367	238	189	254	1,520	498	340	286	120	1,140
20	129	441	703	226	184	249	1,430	502	298	488	120	1,220
21	152	544	2,030	*223	184	254	*1,250	476	257	724	*136	1,100
22	148	566	3,980	226	178	249	*1,260	419	230	672	202	902
23	143	539	2,910	249	176	240	1,340	381	206	493	230	792
24	143	514	1,990	254	178	246	1,260	350	189	371	211	661
25	182	500	1,390	257	218	307	1,060	317	174	298	257	529
26	238	433	1,080	280	254	408	831	292	200	233	333	476
27	240	b340	1,390	333	289	550	661	268	524	204	333	484
28	226	378	1,890	367	330	725	572	251	644	202	280	506
29	200	606	1,620	371	-	913	582	257	539	343	230	493
30	178	1,400	1,310	360	-------	1,070	736	274	392	563	195	*430
31	153	-------	1,010	350	-------	1,140	-------	263	-------	592	174	-------
Total	3,807	11,404	37,165	10,345	6,458	12,141	34,946	18,511	14,943	9,810	8,625	15,495
Mean	123	380	1,199	334	231	392	1,165	597	498	316	278	516
Cfsm	0.477	1.47	4.65	1.29	0.895	1.52	4.52	2.31	1.93	1.22	1.08	2.00
In.	0.55	1.64	5.36	1.49	0.93	1.75	5.04	2.67	2.15	1.41	1.24	2.23

Calendar year 1957: Max 3,980 Min 54 Mean 476 Cfsm 1.84 In. 25.06
Water year 1957-58: Max 3,980 Min 68 Mean 503 Cfsm 1.95 In. 26.46

Peak discharge (base, 3,300 cfs).--Dec. 22 (6:15 a.m.) 4,260 cfs (7.19 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

2630. Oswegatchie River near Heuvelton, N. Y.

Location.--Lat 44°36'00", long 75°22'45", on right bank 1½ miles downstream from Beaver Creek and 2½ miles upstream from Heuvelton, St. Lawrence County.

Drainage area.--973 sq mi.

Records available.--June 1916 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 288.85 ft above mean sea level, datum of 1929. Prior to Sept. 16, 1916, staff gage at same site and datum.

Average discharge.--42 years, 1,681 cfs.

Extremes.--Maximum discharge during year, 6,320 cfs Mar. 28 (gage height, 5.46 ft); minimum, 202 cfs Oct. 15 (gage height, 0.77 ft).
1916-58: Maximum discharge, 15,800 cfs Apr. 9, 1947 (gage height, 9.26 ft); maximum gage height, 9.33 ft Apr. 9, 1947 (ice jam); minimum discharge, 130 cfs Aug. 17, 1949 (gage height, 0.47 ft).

Remarks.--Records excellent except those for periods of ice effect, which are fair. Since 1867, seasonal flow slightly regulated by Cranberry Lake (total capacity, 8,530,000,000 cu ft); slight diurnal fluctuation at low and medium flow caused by powerplants. During high stages on Grass River, part of flow of that stream may pass through Upper Lake, Indian Creek, and Lower Lake and enter Oswegatchie River at Rensselaer Falls, 4½ miles above station.

Revisions.--WSP 759: Drainage area.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.8	215	3.0	2,240
1.0	320	4.0	3,720
1.5	670	6.0	7,420
2.0	1,100		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,060	426	2,500	2,940	1,300	1,580	5,320	1,640	646	965	1,240	419
2	1,000	445	3,020	2,480	1,230	1,750	5,000	1,850	718	956	1,170	292
3	992	494	2,550	1,850	1,010	1,590	4,590	1,730	1,260	1,020	1,070	356
4	826	393	1,880	1,600	818	1,490	4,320	1,530	*1,970	878	784	568
5	784	374	1,500	1,450	1,000	1,800	4,150	1,580	2,150	622	622	758
6	581	508	1,480	1,250	1,110	1,980	3,960	1,810	2,030	480	501	718
7	300	582	1,510	1,160	1,080	2,010	4,420	1,960	1,880	314	412	767
8	235	582	1,760	1,250	992	2,030	4,960	1,840	1,930	309	494	646
9	354	726	1,960	1,020	1,010	1,920	4,860	1,940	1,810	445	742	630
10	*426	686	2,240	992	750	1,500	4,410	2,240	1,610	582	886	860
11	393	508	2,200	1,060	638	1,310	3,660	2,250	1,460	614	903	974
12	432	530	1,900	1,000	792	1,490	2,970	3,140	1,400	638	818	1,030
13	480	622	1,550	860	1,000	1,590	2,710	3,690	1,420	638	912	1,060
14	309	638	1,350	810	1,000	1,660	2,300	3,290	1,360	552	860	965
15	240	630	1,280	758	974	1,660	1,970	2,730	1,390	582	826	844
16	406	568	1,150	974	938	1,590	2,150	2,340	1,420	*702	776	742
17	412	582	1,040	1,010	686	1,410	2,180	2,180	1,520	801	646	776
18	380	598	1,000	920	552	1,350	2,320	1,800	1,410	878	466	1,220
19	426	*734	1,130	860	606	1,620	2,590	1,520	1,280	912	400	1,810
20	459	810	1,410	760	912	1,920	2,640	1,440	1,230	886	487	2,290
21	287	992	2,480	638	983	2,020	2,430	1,420	1,020	718	598	2,410
22	235	1,110	4,410	694	965	1,930	*2,160	1,410	920	1,060	622	2,340
23	430	1,170	5,520	*956	852	1,870	2,480	1,290	678	1,370	630	2,210
24	560	1,090	5,590	1,020	686	1,900	2,660	1,220	576	1,310	622	1,940
25	538	1,020	4,860	956	662	2,500	2,570	1,140	726	1,100	445	1,750
26	530	1,320	3,910	1,000	938	3,670	2,280	920	767	860	393	1,550
27	582	1,180	4,050	852	1,220	4,710	1,910	929	694	750	662	1,400
28	473	1,060	4,510	835	1,380	5,840	1,550	801	938	606	835	1,280
29	406	1,000	4,540	1,220	-	6,070	1,360	767	1,320	622	*776	1,160
30	530	1,330	4,100	1,360	-------	5,880	1,610	758	1,320	726	758	1,080
31	545	-------	3,340	1,320	-------	5,650	-------	638	-------	860	646	-------
Total	15,611	22,708	81,720	35,855	26,084	75,290	92,490	53,793	38,852	23,756	22,002	34,845
Mean	504	757	2,636	1,157	932	2,429	3,083	1,735	1,295	766	710	1,162
Cfsm	0.518	0.778	2.71	1.19	0.958	2.50	3.17	1.78	1.33	0.787	0.730	1.19
In.	0.60	0.87	3.12	1.37	1.00	2.88	3.53	2.06	1.48	0.91	0.84	1.33

Calendar year 1957: Max 5,590 Min 187 Mean 1,333 Cfsm 1.37 In. 18.58
Water year 1957-58: Max 6,070 Min 235 Mean 1,433 Cfsm 1.47 In. 19.99

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5, 12, 13, 17, 18, Jan. 3-9, 12, 19, 20.

2640. St. Lawrence River at Ogdensburg, N. Y.

Location.--Lat 44°42'05", long 75°29'40", at Ogdensburg, N. Y.

Drainage area.--295,200 sq mi, including that of Oswegatchie River.

Records available.--June 1860 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Discharge determined from ratings of several outflow structures of Lake St. Lawrence. Prior to August 1956, basic gage at lock 25 at Iroquois, Ont., and supplementary gages located at Prescott, Ont., at lock 27 above Cardinal, Ont., at lock 24 between Iroquois and Morrisburg, Ont., and at lock 23 at Morrisburg, Ont. August 1956 to June 1958, basic gage at lock 24 and auxiliary gages located at lock 24 and below Morrisburg. These were gages of the Canadian Hydrographic Service except the supplementary gages in use after August 1956, which are gages of the Hydro-Electric Power Commission of Ontario. The discharge in this reach of river is considered to be same as discharge at Ogdensburg, N. Y., which is directly opposite Prescott, Ont.

Average discharge.--98 years (June 1860 to September 1958), 241,000 cfs.

Extremes.--Maximum daily discharge during year, 239,000 cfs Nov. 9; minimum daily, 198,000 cfs Feb. 23, 24, 28, Mar. 2-4.
1917-58: Maximum daily discharge, 315,000 cfs May 13, 1952; minimum daily, 139,000 cfs Feb. 7, 1936.
1860-1958: Maximum monthly discharge, 314,000 cfs May 1870; minimum monthly, 154,000 cfs February 1936.

Remarks.--Records do not include water diverted from Lake Michigan by Illinois and Michigan Canal during period of its operation prior to 1910 and by Chicago Sanitary and Ship Canal, operation of which began in 1900. They include water diverted into Lake Superior from Hudson Bay drainage by the Long Lake project, operation of which began in July 1939, and by the Ogoki project, operation of which began in July 1943. The diversions into Lake Superior amounted to less than 1 percent of the average St. Lawrence River discharge before July 1943, and since that time have averaged about 5,000 cfs.

Cooperation.--Records of daily discharge furnished by U. S. Lake Survey, Corps of Engineers, U. S. Army.

Revisions (water years).--WSP 1437: 1870, 1875, 1881, 1883-84, 1890.

Note.--Discharges after June 1958 are considered provisional.

Discharge, in thousands cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	229	219	212	228	219	200	226	230	229	222	222	217
2	226	217	212	218	219	198	226	227	227	223	222	221
3	224	218	211	217	220	198	226	228	228	228	222	220
4	222	219	209	219	220	198	226	228	229	233	222	221
5	221	220	213	221	221	200	226	227	234	230	222	212
6	221	220	215	222	221	203	224	228	229	231	221	222
7	221	220	212	222	221	203	226	227	230	233	221	223
8	222	219	211	221	223	203	228	228	231	232	223	222
9	225	239	212	222	226	202	228	231	229	230	221	226
10	224	222	212	224	222	203	227	231	230	227	222	224
11	221	219	217	222	220	204	228	229	231	228	221	219
12	223	219	215	222	219	209	229	229	232	226	220	219
13	224	218	215	222	216	218	230	228	230	227	221	217
14	223	216	216	218	213	218	231	229	230	226	219	218
15	225	219	215	213	213	219	231	229	230	229	220	220
16	224	216	216	216	213	220	233	230	230	228	220	218
17	226	220	215	219	212	220	237	231	229	226	221	218
18	227	216	214	217	209	220	238	230	229	228	222	218
19	227	219	217	219	205	220	237	231	229	229	221	216
20	226	220	215	219	200	219	238	230	229	225	221	212
21	226	220	217	216	200	216	235	231	230	225	221	212
22	228	218	216	218	199	219	233	230	230	223	220	212
23	227	217	216	216	198	220	232	230	229	222	221	213
24	227	218	217	215	198	220	228	229	229	223	221	213
25	223	215	215	214	201	220	231	230	228	223	221	213
26	222	212	216	215	200	221	228	230	231	223	220	213
27	222	211	216	216	199	223	227	229	231	225	222	213
28	225	211	215	216	198	225	226	229	230	224	221	213
29	224	211	216	219	-	226	229	230	230	227	221	214
30	224	211	215	220	-------	226	230	229	230	224	220	214
31	222	-------	216	220	-------	226	-------	230	-------	221	220	-------
Total	6,951	6,539	6,649	6,786	5,925	6,617	6,894	7,108	6,893	7,021	6,852	6,513
Mean	224	218	214	219	212	213	230	229	230	226	221	217
Cfsm	0.759	0.738	0.725	0.742	0.718	0.722	0.779	0.776	0.779	0.766	0.749	0.735
In.	0.88	0.82	0.84	0.85	0.75	0.83	0.87	0.89	0.87	0.88	0.86	0.82

Calendar year 1957: Max 267 Min 209 Mean 234 Cfsm 0.793 In. 10.77
Water year 1957-58: Max 239 Min 198 Mean 221 Cfsm 0.749 In. 10.16

Note.--All figures of discharge are expressed in thousands of cubic feet per second.

2650. Grass River at Pyrites, N. Y.

Location.--Lat 44°31'30", long 75°11'50", on left bank 1,000 ft downstream from lower bridge in Pyrites, St. Lawrence County, and half a mile upstream from Harrison Creek.

Drainage area.--335 sq mi.

Records available.--August 1924 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 350.61 ft above mean sea level, datum of 1929.

Average discharge.--34 years, 596 cfs.

Extremes.--Maximum discharge during year, 2,420 cfs May 13 (gage height, 5.87 ft); maximum gage height, 7.10 ft Dec. 22 (backwater from ice); minimum daily discharge, 86 cfs Oct. 15.
1924-58: Maximum discharge, about 8,300 cfs Nov. 18, 1927 (gage height, 13.0 ft, from floodmark); minimum daily, 59 cfs Aug. 29 to Sept. 1, 1934.

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation at low flow caused by powerplant above station.

Revisions.--WSP 759: Drainage area.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 17				Apr. 18 to Sept. 30			
1.2	80	3.0	730	1.3	113	3.0	780
1.5	146	6.0	2,450	1.5	164	6.0	2,510
2.0	300			2.0	333		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	130	159	1,180	760	250	380	*1,160	1,100	431	273	353	203
2	122	149	960	500	230	350	1,200	910	991	242	252	249
3	107	172	640	370	210	330	1,300	800	*1,430	215	196	235
4	111	294	460	250	190	370	1,400	950	1,110	193	173	*212
5	113	449	400	250	180	350	1,550	980	770	178	150	193
6	100	461	380	280	180	310	1,750	830	648	176	137	181
7	102	379	450	310	180	280	1,550	725	612	173	145	187
8	102	311	820	280	170	260	1,400	840	612	178	468	225
9	107	293	1,050	250	160	240	1,300	1,080	443	225	710	245
10	98	300	900	200	165	250	1,200	1,040	418	242	590	228
11	*94	270	680	200	165	290	1,160	1,090	522	219	418	222
12	90	262	480	180	165	340	1,220	1,970	558	263	295	245
13	94	252	*350	160	160	340	1,220	2,230	469	303	232	228
14	94	252	310	180	165	350	1,270	1,610	612	281	190	209
15	86	293	290	200	160	350	1,490	1,170	725	*235	167	193
16	92	407	290	190	155	340	1,730	950	590	242	145	239
17	100	419	290	180	155	330	2,030	835	482	273	137	530
18	98	415	270	170	160	*320	2,200	730	431	273	127	727
19	134	403	290	150	155	310	2,110	690	385	299	135	1,200
20	226	*500	500	160	155	300	1,870	715	337	565	132	1,180
21	252	553	1,000	220	150	300	1,650	622	306	735	148	915
22	213	500	1,700	*310	150	320	*1,710	558	291	518	245	825
23	186	440	1,500	340	145	300	1,720	576	286	377	288	770
24	195	440	1,300	320	150	290	1,520	558	242	303	252	612
25	282	478	1,040	300	160	300	1,240	514	225	263	299	509
26	341	370	1,060	310	190	350	1,020	469	281	225	414	532
27	286	300	1,500	340	200	420	865	418	554	225	353	612
28	232	320	1,450	360	240	540	760	385	522	196	266	662
29	195	580	1,400	320	-	700	860	427	410	543	209	808
30	181	1,100	1,040	300	-------	900	1,090	491	322	608	178	*491
31	162	-------	840	270	-------	1,140	-------	456	-------	500	178	-------
Total	4,725	11,521	24,820	8,610	4,895	11,950	42,545	26,719	15,995	9,541	7,982	13,667
Mean	152	384	801	278	175	385	1,418	862	533	308	257	456
Cfsm	0.454	1.15	2.39	0.830	0.522	1.15	4.23	2.57	1.59	0.919	0.767	1.36
In.	0.52	1.28	2.76	0.96	0.54	1.33	4.72	2.97	1.78	1.06	0.89	1.52

Calendar year 1957: Max 2,300 Min 62 Mean 452 Cfsm 1.35 In. 18.31
Water year 1957-58: Max 2,230 Min 86 Mean 501 Cfsm 1.50 In. 20.33

Peak discharge (base, 3,600 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 10, 11, Nov. 26 to Apr. 10.

2665. Raquette River at Piercefield, N. Y.

Location.--Lat 44°14'05", long 74°34'20", on left bank half a mile downstream from dam of International Paper Co. at Piercefield, St. Lawrence County, and 1½ miles upstream from Dead Creek.

Drainage area.--722 sq mi.

Records available.--August 1908 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,502.12 ft above mean sea level, datum of 1929. Prior to Oct. 22, 1912, staff or chain gage at same site (datum of chain gage lowered 2 ft Jan. 1, 1911, to present datum).

Average discharge.--50 years, 1,278 cfs.

Extremes.--Maximum discharge during year, 4,760 cfs Apr. 28 (gage height, 9.81 ft); minimum, 26 cfs Oct. 1 (gage height, 1.35 ft); minimum daily, 173 cfs Oct. 29.
1908-58: Maximum discharge, 8,240 cfs May 16, 1943 (gage height, 12.09 ft); minimum, 4.1 cfs Oct. 12, 1947 (gage height, 0.61 ft), caused by construction work above station; minimum daily, 4.1 cfs Oct. 12, 1947.

Remarks.--Records excellent except those for periods of fragmentary or no gage-height record, which are fair. Seasonal distribution of flow appreciably modified by natural storage in lakes and ponds above station. Extensive diurnal fluctuation caused by powerplant at Piercefield.

Revisions (water years).--WSP 604: 1924. WSP 759: Drainage area. WSP 1387: 1910, 1913, 1914(M), 1916, 1921.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.5	128	6.0	1,300
3.0	208	7.0	1,970
4.0	457	8.0	2,850
5.0	812	10.0	5,010

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	208	490	890	2,980	760	524	620	4,290	896	1,010	943	565
2	546	448	930	2,770	712	580	672	4,070	*1,230	970	842	560
3	563	386	900	2,590	791	*a560	671	3,900	1,300	914	870	556
4	570	488	942	2,400	756	a540	738	3,650	1,500	861	889	530
5	612	474	968	2,210	700	a540	770	3,510	1,730	806	868	560
6	601	519	958	1,970	796	a520	764	3,320	2,070	828	874	402
7	584	544	978	1,470	868	a500	1,000	3,130	2,590	847	898	424
8	*601	542	1,090	1,380	756	a520	989	3,020	2,520	760	922	508
9	608	514	1,160	1,300	796	a540	1,000	2,920	2,410	f800	912	580
10	670	492	1,230	1,210	836	a560	1,050	2,770	2,260	f780	826	554
11	650	586	1,190	1,210	768	535	1,100	2,700	2,030	738	912	544
12	682	540	1,260	1,160	751	541	1,100	2,640	1,730	750	774	613
13	626	548	1,220	1,150	730	531	1,140	2,520	1,700	768	800	508
14	674	530	1,150	1,150	728	294	1,180	2,190	1,510	*808	913	578
15	588	548	1,160	1,120	689	302	1,260	1,930	1,460	792	740	552
16	647	588	1,080	1,080	674	394	1,410	1,890	1,470	742	726	686
17	618	578	1,060	1,080	726	272	1,670	1,850	1,490	744	672	772
18	679	*621	1,150	1,070	644	360	1,890	1,740	1,490	722	741	910
19	663	630	1,100	976	540	408	2,230	1,840	1,470	736	725	1,020
20	622	615	1,060	*1,010	597	356	2,610	1,790	1,450	797	630	1,000
21	708	649	1,400	931	a580	424	*2,950	1,700	1,370	965	683	1,080
22	670	745	1,680	878	a560	541	3,300	1,590	1,310	951	620	1,100
23	626	784	2,070	914	a500	499	3,650	1,390	1,260	*984	638	1,170
24	605	788	2,580	863	a540	567	4,100	1,380	1,180	1,000	556	1,120
25	636	743	2,980	826	a560	562	4,300	1,300	1,080	996	681	1,220
26	620	856	3,050	806	a600	574	4,480	1,220	1,040	888	*630	1,200
27	572	753	3,070	838	589	568	4,610	1,140	1,080	1,020	614	1,300
28	313	725	3,230	786	552	619	4,700	1,000	1,140	944	562	1,320
29	173	792	3,450	790	-	616	4,630	1,030	1,150	942	505	*1,330
30	581	873	3,240	818	-------	634	4,500	1,010	1,090	942	406	1,340
31	553	-------	3,090	790	-------	656	-------	928	-------	962	515	-------
Total	18,069	18,389	51,316	40,526	19,099	15,637	65,082	69,358	45,986	26,767	22,887	24,602
Mean	583	613	1,655	1,307	682	504	2,169	2,237	1,533	863	738	820
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 3,450 Min 26 Mean 1,011 Cfsm 1.40 In. 19.01
Water year 1957-58: Max 4,700 Min 173 Mean 1,144 Cfsm 1.58 In. 21.52

* Discharge measurement made on this day.
a No gage-height records; discharge estimated on basis of recorded range in stage and records for other stations in the Raquette River basin.
f Fragmentary gage height; discharge computed on basis of existing gage heights and records for other stations in the Raquette River basin.

2675. Raquette River at South Colton, N. Y.

Location.--Lat 44°30'40", long 74°53'00", on left bank 300 ft upstream from highway bridge at South Colton, St. Lawrence County, 500 ft downstream from South Colton powerplant, and three-quarters of a mile upstream from Cold Brook.

Drainage area.--939 sq mi.

Records available.--January 1953 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 882.05 ft above mean sea level, datum of 1929.

Average discharge.--5 years, 1,598 cfs.

Extremes.--Maximum discharge during year, 4,020 cfs June 18 (gage height, 6.55 ft); minimum, 6.4 cfs many times (gage height, 1.71 ft); minimum daily, 6.4 cfs Oct. 13.
1953-58: Maximum discharge, 8,330 cfs Apr. 22, 1954 (gage height, 9.07 ft); minimum, 1.5 cfs Aug. 25, 1957 (gage height, 1.50 ft); minimum daily, 4.6 cfs June 2, 1954.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by Carry Falls Reservoir (usable capacity, 5,011,000,000 cu ft) since 1953; considerable natural storage in large lakes above Piercefield.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.7	6.1	2.5	180
1.8	13	3.0	409
1.9	26	4.0	1,080
2.0	42	5.0	2,050
2.2	84	7.0	4,700

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,600	1,460	12	1,060	1,020	1,320	2,020	2,130	875	1,600	1,750	123
2	1,060	1,030	946	1,930	750	894	1,690	2,090	1,290	1,300	1,550	826
3	1,000	9.3	1,270	2,000	2,000	1,820	1,250	2,500	1,600	2,350	1,250	998
4	1,630	1,610	1,460	1,960	1,980	1,410	1,370	2,620	*1,530	1,650	1,800	1,650
5	58	784	1,300	1,610	1,870	*1,860	496	2,930	1,160	1,040	1,240	1,660
6	76	1,230	1,310	2,390	1,330	1,980	92	2,620	2,240	1,950	1,730	*8.6
7	1,300	1,500	733	2,130	2,220	2,190	2,230	2,940	2,580	1,800	1,450	124
8	1,400	1,510	13	2,260	1,540	1,010	2,310	2,260	3,430	1,350	1,610	1,640
9	1,140	700	1,210	1,840	582	702	2,160	2,670	3,410	1,450	1,310	1,460
10	*1,360	312	1,380	1,730	1,980	985	2,360	1,760	3,410	1,700	1,040	1,640
11	1,470	1,170	1,650	1,540	2,140	1,930	2,170	1,630	3,400	1,600	1,690	1,500
12	156	1,230	1,480	524	1,830	2,030	2,280	2,580	3,210	1,500	1,580	1,590
13	6.4	1,320	1,530	1,840	1,090	1,890	1,010	3,440	2,490	1,240	1,510	10
14	1,420	1,560	860	1,740	1,430	2,000	2,150	3,450	2,290	1,350	1,500	138
15	1,390	1,420	660	b1,900	930	542	2,310	3,460	2,000	1,400	1,680	1,780
16	1,170	317	1,900	b1,350	876	922	2,270	3,410	1,910	*1,800	1,260	1,220
17	1,500	374	1,460	b1,750	1,720	1,810	2,250	1,970	1,780	1,360	1,330	1,460
18	1,260	1,350	1,810	b1,250	1,540	1,740	2,190	1,800	1,640	1,890	1,120	1,510
19	7.4	1,240	2,010	b540	1,680	1,560	1,910	2,180	1,950	1,400	1,900	1,630
20	6.8	*1,410	1,430	b1,850	1,720	1,950	1,950	2,210	1,680	1,160	1,190	210
21	1,060	1,360	1,220	b1,850	1,850	1,220	2,100	1,860	1,580	1,560	1,540	191
22	1,200	1,500	14	*b1,550	1,130	934	1,380	2,270	941	1,620	1,670	1,660
23	1,260	542	2,130	b1,550	561	200	*1,340	2,210	1,580	1,460	1,710	1,570
24	1,540	13	1,220	1,440	1,480	694	1,310	1,430	1,840	1,700	1,060	1,490
25	1,110	1,390	168	896	1,740	760	1,860	1,040	1,490	1,850	1,570	1,560
26	1,160	1,980	2,170	679	1,910	1,410	832	1,540	1,870	1,550	1,550	1,320
27	51	1,630	2,240	1,870	1,580	1,180	243	1,780	1,580	540	1,380	1,140
28	1,600	12	1,590	1,480	1,230	1,600	1,620	1,440	2,200	1,600	1,680	514
29	1,460	1,840	625	1,790	--	219	1,910	1,600	1,550	1,850	1,650	1,660
30	910	14	2,100	2,040	------	16	2,130	1,200	1,700	1,700	485	1,600
31	1,240	------	1,980	2,010	------	1,890	------	1,650	------	1,600	389	------
Total	31,601.6	31,798.3	39,881	50,349	41,709	40,668	51,193	68,670	60,206	47,920	44,174	33,882.6
Mean	1,019	1,060	1,286	1,624	1,490	1,312	1,706	2,215	2,007	1,546	1,425	1,129
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-
(†)	-398	+32.0	+843	-125	-616	-356	+1,269	+588	-160	-433	-482	-12.0

Calendar year 1957: Max 3,560 Min 6.4 Mean 1,263 Cfsm 1.35 In. 18.26 † +37.1
Water year 1957-58: Max 3,460 Min 6.4 Mean 1,485 Cfsm 1.58 In. 21.47 † +14.7

* Discharge measurement made on this day.
† Change in contents, equivalent in cubic feet per second, in Carry Falls Reservoir (furnished by Niagara Mohawk Power Corp.).
b Stage-discharge relation affected by ice.
Note.--No gage-height record June 28 to July 16, July 24 to Aug. 4; discharge estimated on basis of existing gage heights and powerplant record.

2680. Raquette River at Raymondville, N. Y.

Location.--Lat 44°50'20", long 74°58'45", on right bank 250 ft upstream from old highway bridge at Raymondville, St. Lawrence County, 0.3 mile downstream from Trout Brook, 0.4 mile downstream from powerplant of Niagara Mohawk Power Corp., and 18 miles upstream from mouth.

Drainage area.--1,131 sq mi.

Records available.--November 1943 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 183.33 ft above mean sea level, datum of 1929.

Average discharge.--14 years (1944-58), 1,990 cfs.

Extremes.--Maximum discharge during year, 4,210 cfs May 16 (gage height, 4.67 ft); maximum gage height, 5.19 ft Jan. 6 (backwater from ice); minimum discharge, 8.8 cfs Sept. 14; minimum daily, 126 cfs Sept. 8.

1943-58: Maximum discharge, 11,000 cfs Apr. 17, 1954 (gage height, 7.60 ft); maximum gage height, 9.24 ft Feb. 22, 1954 (backwater from ice); minimum discharge, 4.4 cfs Oct. 15, 1951; minimum daily, 7.0 cfs Oct. 15, 1951; minimum gage height, 0.42 ft July 13, 1950.

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by Carry Falls Reservoir (usable capacity, 5,011,000,000 cu ft) about 46 miles upstream, since 1953; considerable natural storage in large lakes above Piercefield.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 27		Mar. 28 to Sept. 30			
2.0	571	1.2	121	3.0	1,550
2.5	1,030	1.5	255	4.0	3,000
3.0	1,610	2.0	580	5.0	4,870
4.0	3,010	2.5	1,010		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	954	1,330	636	2,090	1,800	1,960	2,510	2,590	1,650	1,770	1,560	595
2	1,400	1,320	884	1,850	1,800	1,800	2,360	2,800	1,630	1,670	1,570	1,320
3	1,110	1,220	1,220	1,700	1,800	1,800	2,240	2,810	1,670	1,680	1,590	1,350
4	1,370	1,290	1,350	1,800	1,800	1,950	2,340	2,810	*1,710	1,720	1,570	1,600
5	838	1,330	1,160	1,800	1,800	*1,950	2,300	2,800	1,700	1,670	1,570	1,560
6	638	1,330	1,220	1,600	1,800	1,950	2,320	2,780	1,670	1,670	1,650	1,420
7	708	1,310	1,440	1,750	1,800	1,950	2,770	2,780	1,670	1,650	1,620	*577
8	1,220	1,290	1,380	1,750	1,800	1,950	2,630	2,850	2,770	1,640	1,600	126
9	1,400	1,240	1,400	1,750	1,800	1,900	2,540	2,920	3,690	1,660	1,610	1,440
10	1,310	1,350	1,410	1,750	1,800	1,900	2,400	2,830	3,710	1,590	1,630	1,610
11	1,350	1,140	1,140	1,750	1,750	1,950	2,400	2,950	3,730	1,610	1,640	1,600
12	948	1,320	1,400	1,600	1,800	1,970	2,780	3,430	3,460	1,630	1,610	1,580
13	694	1,180	*1,600	1,700	1,750	1,910	2,800	3,200	3,560	1,560	1,530	870
14	787	1,310	1,500	1,700	1,800	1,910	2,770	3,340	2,530	1,660	1,620	652
15	1,120	1,260	1,650	1,700	1,800	1,870	2,920	3,770	2,760	1,660	1,620	1,190
16	1,490	1,260	1,710	1,750	1,800	1,870	2,570	3,880	2,460	1,660	1,600	1,140
17	1,410	1,210	1,700	1,750	1,750	1,840	2,720	3,440	1,900	*1,650	1,530	1,550
18	1,450	1,330	1,650	1,750	1,350	1,860	2,690	2,890	1,880	1,590	1,590	1,570
19	848	1,350	1,770	1,750	1,750	1,870	2,650	2,440	1,820	1,560	1,590	1,570
20	656	1,340	1,800	1,700	1,800	1,860	2,640	2,320	1,850	1,560	1,600	1,550
21	739	*1,310	2,110	1,700	1,800	1,460	2,590	2,170	1,890	1,570	1,600	251
22	1,110	1,310	2,100	1,700	1,200	1,340	2,070	2,220	1,720	1,590	1,570	1,150
23	1,320	1,300	1,990	*1,750	1,850	928	*1,900	2,300	1,900	1,620	1,590	1,630
24	1,310	1,220	1,880	1,750	1,800	1,340	1,880	2,010	1,720	1,630	1,610	1,660
25	1,260	1,200	1,840	1,750	1,800	1,720	1,830	1,750	1,670	1,620	1,580	1,660
26	1,280	1,240	1,910	1,700	1,850	2,140	1,790	1,720	1,650	1,620	1,610	1,670
27	1,190	1,180	2,420	1,600	1,900	2,740	1,780	1,700	1,560	1,590	1,620	1,620
28	1,380	1,330	2,200	1,750	1,900	2,980	1,770	1,680	1,660	1,630	1,610	1,530
29	1,330	1,300	2,050	1,750	-	2,760	1,860	1,660	1,730	1,580	1,620	1,480
30	1,380	1,140	1,900	1,750	-------	2,610	1,920	1,670	1,890	1,540	904	1,500
31	1,280	-------	1,880	1,750	-------	2,650	-------	1,650	-------	1,570	430	-------
Total	35,280	38,240	50,300	53,940	49,450	60,688	70,740	80,160	65,210	50,420	47,644	39,021
Mean	1,138	1,275	1,623	1,740	1,766	1,958	2,358	2,586	2,174	1,626	1,537	1,301
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 3,970 Min 272 Mean 1,505 Cfsm 1.33 In. 18.06
Water year 1957-58: Max 3,880 Min 126 Mean 1,756 Cfsm 1.55 In. 21.08

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 4, 5, 9, 11-14, 17, 18, Jan. 2-29, Jan. 31 to Feb. 28, Mar. 2-11.

2690. St. Regis River at Brasher Center, N. Y.

Location.--Lat 44°51'50", long 74°46'45", on left bank 600 ft upstream from highway bridge at Brasher Center, St. Lawrence County, and 6½ miles downstream from confluence of East and West Branches at Winthrop.

Drainage area.--616 sq mi.

Records available.--August 1910 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 217.23 ft above mean sea level, datum of 1929. Prior to June 24, 1916, chain gage at site 600 ft downstream at different datum. June 24, 1916, to Nov. 10, 1917, and Jan. 1, 1919, to Aug. 13, 1920, staff gage at present site and datum.

Average discharge.--48 years, 1,056 cfs.

Extremes.--Maximum discharge during year, 5,720 cfs Apr. 18 (gage height, 9.27 ft); minimum, 184 cfs Oct. 9 (gage height, 5.79 ft); minimum daily, 207 cfs Oct. 9.
1910-17, 1919-58: Maximum discharge, 16,800 cfs Apr. 6, 1937 (gage height, 12.82 ft); maximum gage height recorded, about 15.3 ft Apr. 6, 1937 (ice jam); minimum discharge observed, about 34 cfs Aug. 8, 1917 (gage height, 5.25 ft); minimum daily, 37 cfs Aug. 8, 1917.

Remarks.--Records good except those for periods of ice effect, which are fair. Slight diurnal fluctuation caused by power operations above station.

Revisions (water years).--WSP 584: Drainage area. WSP 1387: 1910-16, 1917(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

5.8	189
6.2	478
7.0	1,370
8.0	2,970
10.0	7,650

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	378	316	1,440	1,160	370	600	1,750	2,160	764	620	863	354
2	362	302	1,140	960	350	560	2,000	1,820	1,340	552	670	370
3	339	316	920	600	330	520	2,100	1,580	1,780	481	487	370
4	*316	410	720	480	320	580	2,300	1,570	1,480	354	410	331
5	296	524	620	480	310	540	2,470	1,510	*1,190	354	378	309
6	282	630	580	540	310	*500	2,840	1,370	1,020	354	354	296
7	316	640	733	600	310	430	3,550	1,220	885	362	347	289
8	248	610	977	560	300	370	2,840	1,230	764	362	416	316
9	207	469	1,200	500	280	310	2,240	1,510	680	385	691	339
10	224	506	1,200	420	290	320	2,000	1,380	640	402	966	354
11	230	487	1,000	420	290	360	2,030	1,450	660	402	863	347
12	230	436	860	380	290	400	2,210	2,900	722	410	680	354
13	224	347	740	340	280	400	2,170	2,830	712	444	542	362
14	224	402	660	350	290	410	2,580	2,210	896	444	427	339
15	224	452	580	370	280	410	3,050	1,830	1,220	410	378	324
16	218	496	560	350	270	400	3,940	1,550	1,100	385	347	*354
17	213	570	560	340	270	390	5,050	1,380	865	*427	324	452
18	218	580	480	330	280	380	5,550	1,250	754	410	309	660
19	242	630	520	300	270	370	5,620	1,120	640	515	289	1,470
20	282	754	880	320	270	360	4,910	1,040	580	620	275	1,680
21	354	*797	2,100	370	260	360	4,460	896	533	680	296	1,340
22	354	819	3,300	430	260	380	4,610	896	506	640	324	1,330
23	324	691	2,770	*480	250	360	*4,240	874	470	478	515	1,380
24	362	630	2,190	450	260	350	3,550	841	461	427	580	1,170
25	452	660	1,540	440	290	370	2,950	830	487	378	580	1,010
26	570	515	1,550	450	380	440	2,460	808	427	354	680	954
27	524	354	2,750	480	400	560	2,080	722	630	362	702	896
28	444	493	2,270	520	480	600	1,800	506	775	339	600	874
29	385	704	1,890	460	-	1,100	1,630	870	786	416	402	885
30	354	1,250	1,510	430	-------	1,400	2,300	775	722	850	370	808
31	339	-------	1,240	400	-------	1,750	-------	808	-------	1,060	347	-------
Total	9,735	16,790	39,480	14,710	8,540	16,480	91,480	41,536	24,509	14,657	15,414	20,317
Mean	314	560	1,274	475	305	532	3,049	1,340	817	473	497	677
Cfsm	0.510	0.909	2.07	0.771	0.495	0.864	4.95	2.18	1.33	0.768	0.807	1.10
In.	0.59	1.01	2.38	0.89	0.52	0.99	5.52	2.51	1.48	0.88	0.93	1.23

Calendar year 1957: Max 3,300 Min 138 Mean 775 Cfsm 1.26 In. 17.07
Water year 1957-58: Max 5,620 Min 207 Mean 859 Cfsm 1.39 In. 18.93

Peak discharge (base 5,600 cfs).--Apr. 18 (7:15 p.m.) 5,720 cfs (9.27 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 2-5, 9-22, Jan. 2 to Apr. 4.

2700. Salmon River at Chasm Falls, N. Y.

Location.--Lat 44°45'20", long 74°13'10", on right bank a quarter of a mile downstream from powerplant of Niagara Mohawk Power Corp. at Chasm Falls, Franklin County, and 3 miles downstream from Duane Stream.

Drainage area.--132 sq mi.

Records available.--July 1925 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,011.52 ft above mean sea level, datum of 1929.

Average discharge.--33 years, 226 cfs.

Extremes.--Maximum discharge during year, 1,560 cfs Apr. 22 (gage height, 3.85 ft); minimum, 14 cfs Oct. 13 (gage height, 0.52 ft); minimum daily, 71 cfs Oct. 9.
1925-58: Maximum discharge, 2,890 cfs Apr. 25, 1926 (gage height, 5.0 ft); minimum, 14 cfs Feb. 12, 1943, Aug. 15, 1952, Sept. 27, Oct. 13, 1957; minimum daily, 28 cfs Sept. 4, 1934.

Remarks.--Records good. Seasonal regulation of flow by upstream reservoirs. Diurnal fluctuation at low and medium flow caused by powerplant. A small diversion from tributary stream above station is used as water supply for village of Malone.

Revisions (water years).--WSP 729: 1931(m). WSP 759: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 22				Apr. 23 to Sept. 30			
1.0	60	2.3	473	1.2	93	3.0	886
1.4	133	3.0	886	1.6	195	4.0	1,700
1.8	250	4.0	1,700	2.3	474		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	152	93	130	226	118	109	213	334	159	288	136	108
2	118	92	158	191	118	111	196	295	350	241	125	113
3	*113	131	169	168	105	111	197	277	311	198	99	109
4	*109	136	156	179	111	112	223	295	241	171	106	94
5	100	149	147	167	110	113	250	273	*211	144	107	94
6	101	140	141	172	108	109	317	248	188	147	101	97
7	90	129	169	183	111	107	357	228	174	120	102	119
8	95	116	246	162	109	102	288	236	155	169	207	132
9	71	121	193	148	102	108	243	258	160	164	242	125
10	84	118	180	187	108	106	232	269	167	136	196	107
11	85	109	181	166	112	108	251	318	187	144	176	153
12	83	115	*149	151	104	108	277	570	207	168	109	144
13	84	121	144	138	109	106	292	474	135	159	114	127
14	85	120	153	133	103	110	422	338	329	129	124	122
15	90	129	146	136	104	101	564	311	284	124	102	152
16	81	131	145	134	101	110	792	288	230	153	96	199
17	76	138	150	128	98	112	1,040	262	199	*118	116	202
18	94	160	134	127	101	116	1,240	244	190	132	116	*291
19	108	152	160	107	106	105	1,370	217	166	175	116	412
20	109	177	274	111	102	110	1,270	173	156	277	96	326
21	98	161	519	113	103	108	1,360	179	142	221	97	266
22	103	163	388	122	99	110	1,390	178	156	174	158	334
23	93	170	247	120	100	106	1,210	188	113	150	142	299
24	116	161	217	*108	103	112	*940	182	126	131	132	244
25	121	154	217	126	105	123	632	174	147	124	168	241
26	112	123	246	118	120	137	510	168	213	123	162	248
27	100	109	450	124	113	169	416	158	234	118	129	241
28	96	128	330	121	112	126	394	165	198	130	120	244
29	93	192	288	121	-	169	384	197	171	179	106	211
30	95	245	254	124	-------	173	394	179	213	223	98	193
31	96	-------	250	123	-------	186	-------	175	-------	177	98	-------
Total	3,051	4,183	6,731	4,434	2,995	3,693	17,664	7,851	5,912	5,107	3,979	5,747
Mean	98.4	139	217	143	107	119	589	253	197	165	128	192
Cfsm	0.745	1.05	1.64	1.08	0.811	0.902	4.46	1.92	1.49	1.25	0.970	1.45
In.	0.86	1.18	1.90	1.25	0.84	1.04	4.98	2.21	1.67	1.44	1.12	1.62

Calendar year 1957: Max 639 Min 62 Mean 172 Cfsm 1.30 In. 17.72
Water year 1957-58: Max 1,390 Min 71 Mean 195 Cfsm 1.48 In. 20.11

* Discharge measurement made on this day.

2705. Chateaugay River near Chateaugay, N. Y.

Location.--Lat 44°54'35", long 74°05'10", on right bank 150 ft downstream from dam of International Hydroelectric Corp., 1 mile south of Chateaugay, Franklin County, and 5 miles upstream from Marble River.

Drainage area.--112 sq mi.

Records available.--September to December 1908, October 1926 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 847.04 ft above mean sea level, datum of 1929. September to December 1908, staff gage 2¼ miles downstream at different datum.

Average discharge.--32 years (1926-58), 175 cfs.

Extremes.--Maximum discharge during year, 1,390 cfs Apr. 22 (gage height, 5.80 ft); minimum, 54 cfs Nov. 19 (gage height, 1.23 ft); minimum daily, 67 cfs Nov. 19.
1908, 1926-58: Maximum discharge, 2,060 cfs Apr. 8, 1928 (gage height, 7.3 ft), from rating curve extended above 970 cfs by logarithmic plotting; minimum, 6 cfs Nov. 20, 1928 (gage height, 0.23 ft); minimum daily, 26 cfs July 8, 1934.

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by Upper and Lower Chateaugay Lakes. Considerable diurnal fluctuation caused by power operations prior to 1953.

Revisions.--WSP 759: Drainage area.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 22				Apr. 23 to Sept. 30	
1.3	60	3.0	361	3.0	361
1.5	85	4.0	646	4.0	656
2.0	156	5.6	1,290	5.6	1,330

Note.--Same as preceding table below 3.0 ft.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	81	78	84	296	140	136	125	431	121	131	98	90
2	80	78	78	290	140	136	126	361	158	121	99	89
3	*80	81	84	260	140	136	131	319	154	112	99	88
4	80	85	86	230	135	137	137	316	166	102	99	88
5	80	85	94	225	135	135	146	273	*180	98	99	88
6	80	80	100	220	130	*135	163	220	163	99	97	86
7	80	78	112	225	130	135	168	210	177	99	94	82
8	80	78	104	220	125	135	156	189	173	90	98	82
9	78	78	98	225	120	135	153	166	161	86	98	81
10	78	77	102	225	118	130	151	161	170	86	102	82
11	78	77	*104	220	120	140	156	200	*163	90	95	85
12	78	78	98	220	122	135	161	276	158	89	97	82
13	78	78	100	220	125	135	175	310	153	88	99	82
14	78	78	122	220	125	135	238	312	172	88	98	81
15	78	80	124	220	125	130	330	310	148	86	98	80
16	78	78	124	215	125	130	440	299	148	88	98	89
17	80	84	118	190	125	130	496	260	145	86	98	82
18	82	77	125	150	125	130	625	187	143	*85	98	107
19	82	67	140	145	130	130	867	187	142	97	98	*101
20	81	85	151	140	130	130	1,010	182	140	93	98	98
21	80	84	168	145	130	125	1,180	173	140	93	98	103
22	78	*84	199	150	135	122	1,270	175	136	92	98	107
23	80	84	238	150	135	125	1,320	166	134	92	98	102
24	85	86	301	*145	135	130	*1,260	164	132	92	98	101
25	81	84	303	140	135	130	*1,120	166	134	93	98	114
26	78	80	335	145	136	125	994	145	140	99	98	118
27	78	78	323	145	136	124	906	116	136	98	97	118
28	78	86	310	143	136	121	639	119	134	98	97	125
29	78	92	307	142	-	122	331	121	132	98	97	122
30	78	89	299	140	------	124	439	118	138	98	94	125
31	78	------	296	140	------	124	------	118	------	97	88	------
Total	2,462	2,427	5,227	5,941	3,643	4,047	15,413	6,752	4,489	2,966	3,021	2,878
Mean	79.4	80.9	169	192	130	131	514	218	150	95.7	97.5	95.9
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 399 Min 54 Mean 121 Cfsm 1.08 In. 14.69
Water year 1957-58: Max 1,320 Min 67 Mean 162 Cfsm 1.45 In. 19.68

Peak discharge (base, 580 cfs).--Apr. 22 (3:30 p.m.) 1,390 cfs (5.80 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 26, 27, Dec. 4-7, 9-14, 19, Jan. 2-27, Jan 30 to Feb. 25, Mar. 5-24. Increase in storage in Chateaugay Lakes during calendar year 1957 about 219,800,000 cu ft (equivalent mean discharge, 7.0 cfs; runoff, 0.85 in.); increase in elevation, 1.66 ft. Increase in storage during water year 1957-58 about 109,900,000 cu ft (equivalent discharge, 3.5 cfs; runoff, 0.42 in.); increase in elevation, 0.83 ft.

2715. Great Chazy River at Perry Mills, N. Y.

Location.--Lat 45°00'00", long 73°30'05", on left bank 500 ft upstream from highway bridge at Perry Mills, Clinton County, and 7½ miles upstream from Corbeau Creek.

Drainage area.--247 sq mi.

Records available.--September 1928 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 164.93 ft above mean sea level, datum of 1929.

Average discharge.--30 years, 268 cfs.

Extremes.--Maximum discharge during year, 4,750 cfs Apr. 19 (gage height, 8.81 ft); minimum, 23 cfs Oct. 17; minimum daily, 26 cfs Oct. 17.
1928-58: Maximum discharge, 6,000 cfs Apr. 7, 1937 (gage height, 9.74 ft); maximum gage height, 11.5 ft Mar. 9, 1946, from floodmark (ice jam); minimum discharge, about 0.8 cfs Sept. 18, 1932 (gage height, 1.33 ft); minimum daily, 10 cfs Sept. 18, 1932.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diurnal fluctuation caused by sawmill immediately upstream. Slight regulation by Chazy Lake, from which Clinton Prison at Dannemora obtains its water supply.

Revisions (water years).--WSP 714: 1930. WSP 759: Drainage area.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 19				Apr. 20 to Sept. 30			
1.8	22	4.0	643	2.1	54	5.0	1,160
2.0	42	5.0	1,180	2.5	126	6.0	1,840
2.3	90	6.0	1,900	3.0	250	7.0	2,730
2.8	205	7.0	2,760	3.5	410	8.0	3,790
3.5	434	9.0	5,000	4.0	620		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	39	107	235	170	210	840	485	150	123	79	68
2	62	32	90	190	165	220	*920	382	718	110	71	72
3	*40	42	66	160	150	230	1,110	325	680	102	69	68
4	30	94	60	150	160	240	1,420	400	341	90	73	64
5	30	97	56	155	160	245	1,560	368	249	90	77	66
6	31	86	54	160	155	230	1,650	290	*177	104	72	68
7	27	79	76	135	165	*220	1,390	273	160	108	68	76
8	31	71	149	122	165	210	954	294	146	108	80	86
9	28	62	168	120	155	220	672	370	145	112	99	80
10	32	53	145	135	160	215	764	311	146	99	106	70
11	41	46	*125	130	170	220	921	381	183	94	123	104
12	29	46	116	125	170	220	1,080	1,180	168	122	96	100
13	28	50	108	135	165	215	1,160	766	145	120	88	94
14	28	42	135	145	160	230	1,660	461	401	104	94	92
15	30	49	120	150	160	200	2,180	357	329	81	87	120
16	34	49	114	155	155	205	2,640	331	205	59	69	145
17	26	49	110	160	150	210	3,320	330	173	59	74	180
18	30	53	100	150	155	240	3,820	281	159	*79	81	340
19	70	69	112	140	165	230	4,150	255	139	103	74	760
20	90	72	280	135	*170	230	2,840	216	127	144	79	340
21	91	82	1,000	140	180	225	2,740	186	128	135	80	200
22	51	*78	741	150	160	225	2,650	176	141	113	77	164
23	42	56	417	160	170	210	2,150	171	114	86	72	217
24	55	49	280	145	175	215	*1,550	165	108	84	74	151
25	53	55	190	150	185	235	1,220	153	103	76	80	*113
26	52	46	230	160	230	280	855	126	130	81	82	204
27	45	32	815	165	220	360	583	148	164	99	77	187
28	46	38	470	165	215	320	509	138	127	88	72	167
29	45	88	340	165	-	370	458	184	113	87	66	141
30	41	145	275	170	------	430	637	182	105	85	64	115
31	35	------	245	170	------	640	------	153	------	84	64	------
Total	1,345	1,849	7,294	4,727	4,760	7,950	48,403	9,838	6,174	3,029	2,467	4,652
Mean	43.4	61.6	235	152	170	256	1,613	317	206	97.7	79.6	155
Cfsm	0.176	0.249	0.951	0.615	0.688	1.04	6.53	1.28	0.834	0.396	0.322	0.628
In.	0.20	0.28	1.10	0.71	0.72	1.20	7.29	1.48	0.93	0.46	0.37	0.70

Calendar year 1957: Max 1,570 Min 25 Mean 149 Cfsm 0.603 In. 8.15
Water year 1957-58: Max 4,150 Min 26 Mean 281 Cfsm 1.14 In. 15.44

Peak discharge (base, 2,500 cfs).--Apr. 19 (8 a.m.) 4,750 cfs (8.81 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 26, 27, Dec. 2-6, 10-21, 25, 26, Dec. 28 to Apr. 2. No gage-height record Aug. 30 to Sept. 20; discharge estimated on basis of weather records and records for Salmon River at Chasm Falls and Saranac River at Plattsburg.

2735. Saranac River at Plattsburg, N. Y.

Location.--Lat 44°40'50", long 73°28'20", on right bank in Plattsburg, Clinton County, 600 ft downstream from Imperial Paper & Color Corp. dam, 3 miles upstream from mouth, and 5½ miles downstream from Mead Brook.

Drainage area.--608 sq mi.

Records available.--March 1903 to September 1930, October 1943 to September 1958. Published as "near Plattsburg" 1903-30.

Gage.--Water-stage recorder. Datum of gage is 155.74 ft above mean sea level, datum of 1929. Prior to Nov. 12, 1919, staff gage and Nov. 12, 1919, to Sept. 30, 1930, water-stage recorder, at site 1.5 miles upstream at different datum.

Average discharge.--42 years, 830 cfs.

Extremes.--Maximum discharge during year, 5,370 cfs Apr. 22 (gage height, 7.99 ft); minimum, 5.1 cfs June 30 (gage height, 1.24 ft); minimum daily, 106 cfs Oct. 7.
1903-30, 1943-58: Maximum discharge, 11,500 cfs Apr. 8, 1928, from computation of flow over dam and through waste gates and powerplant; minimum daily, 18 cfs June 19, 1949.

Remarks.--Records good except those for periods of ice effect, which are fair. Considerable diurnal fluctuation caused by power and industrial operations. Slight regulation by storage in Lower Saranac Lake and elsewhere. During year, city of Plattsburg diverted about 7 cfs of flow of Saranac River and Mead and West Brooks, tributaries above station, for municipal supply.

Revisions (water years).--WSP 354: Drainage area. WSP 384: 1909-10 (monthly discharge only). WSP 1387: 1907-8. WSP 1437: 1908 (minimum daily only).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.2	100	5.5	1,950
2.8	233	7.0	3,770
3.5	487	8.0	5,390
4.5	1,080		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	244	344	322	959	608	733	690	1,990	681	682	517	452
2	*181	311	302	928	593	690	795	1,760	866	650	477	519
3	155	291	398	666	580	662	884	1,580	1,290	534	445	481
4	215	470	445	575	580	758	996	1,040	1,100	414	574	455
5	160	507	408	545	640	826	989	589	995	478	449	517
6	151	464	388	525	620	909	1,140	667	*952	366	514	473
7	106	450	302	645	580	*854	1,020	644	795	288	470	318
8	312	357	404	563	680	810	1,010	842	491	385	482	586
9	254	222	442	591	660	799	840	1,010	688	401	534	541
10	246	217	450	586	660	770	755	1,150	852	474	537	510
11	236	204	467	540	700	824	797	1,190	971	358	571	460
12	294	382	481	480	600	734	906	2,050	857	355	396	528
13	327	372	422	560	620	682	944	1,680	666	401	413	469
14	318	293	527	490	600	636	1,290	1,390	782	396	369	402
15	481	284	404	660	580	423	1,780	1,320	1,060	342	438	400
16	435	231	382	640	620	418	2,460	1,270	1,010	280	464	304
17	371	161	476	600	660	465	3,380	1,270	870	439	358	340
18	325	218	479	600	580	676	3,590	1,130	688	397	389	326
19	445	398	518	540	620	594	3,450	1,200	706	391	425	712
20	432	375	603	580	660	621	2,590	1,130	673	393	476	627
21	403	450	1,290	540	845	618	3,230	1,060	366	550	506	479
22	278	*449	1,560	657	764	588	4,670	1,020	541	483	440	400
23	298	448	916	737	672	470	5,020	947	606	445	564	490
24	508	309	994	580	634	545	*4,180	836	535	448	486	413
25	425	286	1,040	580	703	488	3,530	649	541	*381	570	333
26	395	365	1,100	509	712	593	2,940	697	687	316	632	320
27	342	343	1,380	657	641	616	2,440	445	742	324	617	458
28	402	192	1,220	577	744	710	2,260	555	952	380	*543	480
29	450	217	1,080	*599	-	650	2,220	789	670	492	452	474
30	428	304	1,040	596	-------	698	2,300	750	312	455	460	498
31	365	-------	961	691	-------	632	-------	749	-------	517	510	-------
Total	9,982	9,914	21,201	18,996	18,156	20,512	63,096	33,399	22,945	13,215	15,078	13,765
Mean	322	330	684	613	648	662	2,103	1,077	765	426	486	459
Cfsm	0.530	0.543	1.12	1.01	1.07	1.09	3.46	1.77	1.26	0.701	0.799	0.755
In.	0.61	0.61	1.30	1.16	1.11	1.25	3.86	2.04	1.40	0.81	0.92	0.84

Calendar year 1957: Max 2,480 Min 69 Mean 575 Cfsm 0.946 In. 12.86
Water year 1957-58: Max 5,020 Min 106 Mean 713 Cfsm 1.17 In. 15.91

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 11-21, 24, 25, Feb. 3-20.

2740. West Branch Ausable River near Lake Placid, N. Y.

Location.--Lat 44°18'40", long 73°55'00", on right bank 4 miles northeast of Lake Placid, Essex County, and 4 miles downstream from Lake Placid Outlet.

Drainage area.--116 sq mi.

Records available.--June 1916 to December 1917, July 1919 to September 1958. Prior to October 1956, published as "near Newman."

Gage.--Water-stage recorder. Datum of gage is 1,620.76 ft above mean sea level, datum of 1929. Prior to July 14, 1927, staff gage at same site and datum.

Average discharge.--39 years (1919-58), 219 cfs.

Extremes.--Maximum discharge during year, 5,700 cfs Dec. 21 (gage height, 9.39 ft); minimum, 34 cfs Oct. 17 (gage height, 2.37 ft); minimum daily, 41 cfs Oct. 15, 17.
1916-17, 1919-58: Maximum discharge, 10,800 cfs Sept. 22, 1938 (gage height, 12.20 ft), from rating curve extended above 4,100 cfs by logarithmic plotting; practically no flow Sept. 13, 1920 (gage height, 1.60 ft), caused by closing gates in logging dam; minimum daily discharge, 7.2 cfs July 29, 1920.

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation at low and medium flow caused by mills above station.

Revisions (water years).--WSP 1337: 1921-25.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.4	36	5.0	1,000
2.7	74	6.0	1,700
3.0	131	7.0	2,620
3.5	272	9.0	5,120
4.0	467		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*54	65	225	210	88	86	90	526	352	82	154	58
2	50	65	170	150	82	82	81	503	1,250	74	118	62
3	49	119	170	130	80	80	81	428	734	72	95	62
4	50	202	140	125	74	82	95	603	428	70	84	65
5	46	180	118	122	74	84	112	503	307	66	91	76
6	44	157	100	114	70	80	138	352	296	64	79	89
7	46	123	110	124	66	76	175	333	252	60	136	100
8	44	106	300	118	70	70	170	458	202	76	162	114
9	46	338	*270	108	66	62	127	517	183	97	172	131
10	46	239	190	110	70	64	118	387	*175	77	120	274
11	43	155	150	108	84	*64	138	386	252	79	99	279
12	46	116	100	86	74	64	133	750	211	118	79	230
13	42	102	94	70	64	66	127	531	175	197	140	149
14	44	93	110	80	56	66	177	367	259	140	131	114
15	41	241	110	94	72	72	214	304	239	110	102	97
16	45	249	100	98	66	80	454	300	180	104	84	145
17	41	200	88	98	54	80	928	337	180	99	72	224
18	49	186	82	88	54	76	1,520	387	167	82	86	392
19	297	288	96	76	60	86	1,840	531	145	132	82	526
20	175	521	840	68	60	82	1,670	383	129	328	72	337
21	116	279	3,830	70	68	88	3,070	293	114	246	70	224
22	91	180	1,150	94	86	92	*3,990	230	112	159	71	398
23	79	145	603	155	70	88	2,510	224	100	116	66	274
24	106	127	437	145	80	94	1,570	202	91	*100	60	170
25	307	106	300	120	80	100	1,360	183	88	93	*152	147
26	154	82	400	106	82	110	858	188	128	140	149	154
27	93	72	943	98	78	120	579	159	167	108	102	167
28	79	110	531	*96	82	114	485	152	133	93	81	217
29	93	201	387	96	-	106	579	265	108	567	74	180
30	71	379	282	98	-------	102	829	242	93	404	64	154
31	66	-------	236	96	-------	96	-------	183	-------	217	58	-------
Total	2,553	5,426	12,662	3,351	2,010	2,612	24,238	11,207	7,250	4,368	3,105	5,609
Mean	82.4	181	408	108	71.8	84.3	808	362	242	141	100	187
Cfsm	0.710	1.56	3.52	0.931	0.619	0.727	6.97	3.12	2.09	1.22	0.862	1.61
In.	0.82	1.74	4.06	1.07	0.64	0.84	7.77	3.59	2.32	1.40	1.00	1.80

Calendar year 1957: Max 3,830 Min 38 Mean 185 Cfsm 1.59 In. 21.64
Water year 1957-58: Max 3,990 Min 41 Mean 231 Cfsm 1.99 In. 27.05

Peak discharge (base, 2,000 cfs).--Dec. 21 (8:45 a.m.) 5,700 cfs (9.39 ft); Apr. 19 (12:45 a.m.) 2,270 cfs (6.65 ft); Apr. 22 (9:15 a.m.) 4,560 cfs (8.60 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 11, 25-27, Dec. 1-20, 25, 26, Jan. 1 to Apr. 1.

2745. Black Brook at Black Brook, N. Y.

Location.--Lat 44°26'50", long 73°44'45", on right bank three-quarters of a mile south of hamlet of Black Brook, Clinton County, and 1½ miles upstream from mouth.

Drainage area.--49.4 sq mi.

Records available.--September 1924 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 888.48 ft above mean sea level, datum of 1929. Prior to Oct. 24, 1936, staff gage at same site and datum.

Average discharge.--34 years, 49.3 cfs.

Extremes.--Maximum discharge during year, 478 cfs Apr. 18 (gage height, 4.75 ft); minimum, 5.0 cfs Oct. 10, 11, 12 (gage height, 1.39 ft).
1924-58: Maximum discharge, 1,050 cfs Apr. 6, 1937 (gage height, 6.95 ft), from rating curve extended above 450 cfs by logarithmic plotting; minimum, 0.8 cfs July 2, Aug. 29, 1931.

Remarks.--Records good except those for periods of ice effect, which are fair. Appreciable regulation by Fern Lake and Taylor Pond. Prior to October 1937, diurnal fluctuation at low and medium flow caused by powerplant.

Revisions (water years).--WSP 759: Drainage area. WSP 1337: 1925.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.4	5.2	3.0	141
1.6	11	4.0	311
2.0	33	5.0	540
2.5	80		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*5.5	7.2	20	25	13	16	116	69	30	26	11	48
2	5.2	7.2	17	20	12	15	118	56	76	19	8.0	48
3	5.5	8.8	15	17	12	15	80	49	98	16	7.0	48
4	5.5	14	14	16	12	15	63	57	65	14	7.4	48
5	5.7	14	14	16	11	15	77	53	52	9.8	9.8	48
6	5.7	12	22	15	11	15	95	47	43	9.8	9.1	47
7	5.5	11	26	16	11	15	99	46	37	10	8.0	48
8	5.5	10	29	15	13	19	84	59	33	17	11	48
9	5.5	11	27	15	21	30	70	69	31	29	21	47
10	5.2	12	26	14	23	41	67	59	*29	18	17	48
11	5.2	10	25	14	25	*39	76	65	40	13	12	48
12	5.2	10	24	13	23	37	81	127	31	18	10	47
13	5.2	10	23	12	21	35	78	110	26	21	8.4	47
14	5.5	10	23	13	17	40	115	79	30	16	15	47
15	5.7	11	23	17	13	50	163	62	31	12	28	46
16	5.7	12	22	30	13	58	263	54	24	11	28	49
17	10	12	22	40	12	56	399	51	20	12	29	49
18	25	15	21	40	11	52	429	46	18	10	29	77
19	35	13	23	39	12	48	393	43	16	14	28	108
20	29	17	49	37	12	66	258	39	14	22	62	56
21	26	17	99	38	13	86	275	34	12	18	36	25
22	21	15	109	42	15	92	351	30	12	12	31	21
23	9.1	*13	74	31	13	97	*284	28	11	10	29	19
24	8.8	12	61	22	14	96	170	26	10	*12	29	14
25	9.8	12	39	16	15	97	118	24	9.8	8.8	38	13
26	9.1	11	32	15	15	100	86	23	12	9.4	35	15
27	8.4	10	57	14	14	104	66	21	16	12	48	17
28	8.0	12	55	*14	15	107	68	20	14	13	50	23
29	8.0	14	42	14	-	108	89	27	12	18	*50	19
30	7.4	22	32	14	------	112	83	29	15	21	48	16
31	7.0	------	29	13	------	116	------	24	------	14	48	------
Total	308.9	365.2	1,094	657	412	1,792	4,712	1,526	867.8	465.8	800.7	1,234
Mean	9.96	12.2	35.3	21.2	14.7	57.8	157	49.2	28.9	15.0	25.8	41.1
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 161 Min 3.9 Mean 25.3 Cfsm 0.512 In. 6.95
Water year 1957-58: Max 429 Min 5.2 Mean 39.0 Cfsm 0.789 In. 10.72

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 26-28, Dec. 1-20, Jan. 2 to Mar. 22, Mar. 26, 27, 29, 30 (no gage-height record Jan. 20-27, Feb. 12-19).

2750. East Branch Ausable River at Au Sable Forks, N. Y.

Location.--Lat 44°26'20", long 73°40'55", on left bank 700 ft upstream from upper highway bridge in Au Sable Forks, Essex County, and half a mile upstream from confluence with West Branch.

Drainage area.--198 sq mi.

Records available.--September 1924 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 545.37 ft above mean sea level, datum of 1929. Prior to Sept. 21, 1938, staff gage at lower highway bridge in Au Sable Forks, 400 ft upstream from confluence with West Branch at datum 3.54 ft lower.

Average discharge.--34 years, 310 cfs.

Extremes.--Maximum discharge during year, 11,100 cfs Dec. 21 (gage height, 9.60 ft); minimum, 31 cfs Oct. 9 (gage height, 0.96 ft).
1924-58: Maximum discharge, 20,100 cfs Sept. 22, 1938 (gage height, 12.91 ft), from rating curve extended above 5,800 cfs by logarithmic plotting on basis of velocity-area studies; minimum observed, 20 cfs Aug. 11, 14, 28, 1934.

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions.--WSP 759: Drainage area.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.0	34	3.0	725
1.3	73	4.0	1,460
1.7	155	5.0	2,450
2.0	245	6.0	3,750
2.5	455	8.0	7,350

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*45	64	250	245	100	90	160	837	300	76	225	45
2	43	62	190	190	92	88	190	811	1,850	70	148	44
3	40	98	145	135	84	84	210	690	1,210	64	109	44
4	38	226	135	130	78	86	280	908	673	60	90	43
5	36	194	130	125	78	88	366	804	436	57	82	43
6	35	163	120	120	74	86	505	568	371	55	70	62
7	34	127	110	130	72	84	526	526	297	55	67	72
8	35	105	300	125	76	80	380	796	245	67	90	96
9	34	281	260	116	70	76	297	896	215	80	96	94
10	37	230	*210	116	74	60	312	645	197	64	83	169
11	36	148	190	112	88	82	398	591	*324	58	72	239
12	35	122	140	96	80	*86	366	1,160	289	87	62	200
13	35	105	130	76	70	88	402	749	232	160	72	141
14	36	96	120	84	60	88	622	531	256	131	70	109
15	36	414	120	98	76	90	887	436	263	105	57	90
16	36	412	110	102	74	94	1,700	417	212	92	52	82
17	35	277	100	102	60	94	2,640	450	200	82	46	124
18	38	235	94	94	60	90	3,530	521	182	73	53	359
19	203	282	100	82	64	94	3,210	679	153	82	50	767
20	220	673	1,300	72	64	90	2,860	536	136	215	46	476
21	145	400	6,600	74	*68	102	4,780	402	122	215	43	281
22	107	259	1,820	104	90	108	*6,380	304	116	148	43	607
23	88	188	838	180	76	102	3,640	274	103	109	40	449
24	82	153	547	170	84	120	2,310	245	96	*90	37	267
25	301	136	350	160	84	130	2,050	222	92	76	90	177
26	192	96	460	150	86	140	1,200	219	94	87	155	150
27	136	78	*1,400	*140	82	150	785	191	116	92	109	145
28	105	108	661	120	88	140	719	177	105	83	*83	160
29	87	150	465	110	-	135	800	273	90	722	67	143
30	76	340	340	112	-------	130	1,310	263	82	774	57	122
31	68	-------	280	104	-------	140	-------	212	-------	412	52	-------
Total	2,474	6,221	18,015	3,774	2,152	3,135	43,815	16,333	9,057	4,541	2,416	5,800
Mean	79.8	207	581	122	76.9	101	1,460	527	302	146	77.9	193
Cfsm	0.403	1.05	2.93	0.616	0.388	0.510	7.37	2.66	1.53	0.737	0.393	0.975
In.	0.46	1.17	3.38	0.71	0.40	0.59	8.23	3.07	1.70	0.85	0.45	1.09

Calendar year 1957: Max 6,600 Min 33 Mean 227 Cfsm 1.15 In. 15.53
Water year 1957-58: Max 6,600 Min 34 Mean 323 Cfsm 1.63 In. 22.10

Peak discharge (base, 3,700 cfs).--Dec. 21 (8:15 a.m.) 11,100 cfs (9.60 ft); Apr. 18 (11 p.m.) 4,990 cfs (6.78 ft); Apr. 22 (9 a.m.) 7,830 cfs (8.22 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 26 to Dec. 20, Dec. 25, 26, Dec. 30 to Apr. 4.

2755. Ausable River near Au Sable Forks, N. Y.

Location.--Lat 44°27'05", long 73°38'35", on left bank 1¾ miles downstream from confluence of East and West Branches at Au Sable Forks, Clinton County.

Drainage area.--448 sq mi.

Records available.--August 1910 to September 1958. Prior to September 1924, published as "at Au Sable Forks."

Gage.--Water-stage recorder at present site since September 1924. Datum of gage is 505.65 ft above mean sea level, datum of 1929. August 1910 to September 1925, chain gage at site 1½ miles upstream at different datum.

Average discharge.--48 years, 685 cfs.

Extremes.--Maximum discharge during year, 15,000 cfs Dec. 21 (gage height, 9.35 ft); minimum, 104 cfs Oct. 6 (gage height, 1.08 ft).
1910-58: Maximum discharge, 24,200 cfs Sept. 22, 1938 (gage height, 11.65 ft), from rating curve extended above 9,100 cfs on basis of slope-area measurement at gage height 11.39 ft; maximum gage height, about 14.0 ft Mar. 27, 1934 (ice jam); practically no flow July 21, 1912, result of unusual regulation.

Remarks.--Records good except those for periods of ice effect, which are fair. Regulation since 1905, principally by Taylor Pond and Fern Lake. Diurnal fluctuation at low and medium flow caused by powerplants above station.

Revisions (water years).--WSP 664: Drainage area. WSP 854: 1925(M), 1934 (maximum gage height). WSP 1307: 1911-19(M), 1922-24(M).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 22				Apr. 23 to Sept. 30			
1.1	108	4.0	2,210	1.3	157	3.0	1,110
1.5	222	5.0	3,700	1.6	253	4.0	2,190
2.0	443	7.0	7,960	2.0	423	5.0	3,650
2.5	755	9.0	13,900	2.5	711	7.0	7,850
3.0	1,170						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	140	196	540	618	240	210	544	1,700	652	236	443	189
2	*135	183	450	500	220	200	527	1,590	3,410	212	324	192
3	132	213	330	350	210	190	515	1,380	2,410	199	261	186
4	132	438	300	300	200	200	618	1,760	1,370	189	228	186
5	130	433	280	280	190	220	770	1,620	914	183	218	186
6	125	381	260	270	180	215	955	1,150	780	180	202	218
7	127	299	300	280	190	210	1,030	1,030	672	177	208	246
8	120	299	680	270	180	205	846	1,480	573	215	299	291
9	122	537	540	250	190	200	671	1,740	516	250	328	328
10	120	556	*500	260	200	230	664	1,320	484	228	283	471
11	120	367	450	250	220	250	808	1,260	*678	199	232	609
12	120	312	300	230	200	*270	785	2,440	616	257	196	539
13	125	263	260	200	180	280	800	1,740	539	409	232	390
14	122	259	270	210	170	280	1,220	1,210	568	345	283	320
15	118	602	270	230	180	290	1,640	966	622	280	232	287
16	120	734	250	240	170	310	2,790	906	500	250	202	268
17	118	539	230	250	150	312	4,620	948	463	236	192	418
18	143	498	210	240	150	295	6,340	1,060	433	215	199	784
19	444	492	270	220	160	280	6,480	1,390	376	242	199	1,620
20	515	1,280	1,600	205	160	280	5,720	1,160	324	538	225	1,000
21	348	800	10,600	210	170	295	9,310	858	287	550	192	640
22	271	539	3,740	280	200	303	12,400	692	291	381	183	986
23	215	412	1,800	440	185	303	*7,620	616	276	291	174	815
24	212	343	1,390	420	190	303	*4,930	568	253	*246	169	516
25	567	300	886	400	190	325	4,190	522	239	218	239	395
26	433	235	915	380	190	380	2,590	511	253	246	400	372
27	299	200	2,610	*360	200	400	1,750	458	341	272	307	372
28	237	287	1,450	340	210	407	1,540	423	268	236	*264	443
29	222	382	1,110	310	-	433	1,680	573	250	1,130	236	418
30	192	868	815	280	-------	487	2,620	628	236	1,330	208	350
31	189	-------	684	260	-------	544	-------	511	-------	711	202	-------
Total	6,413	13,247	34,270	9,333	5,275	9,107	87,013	34,210	19,594	10,651	7,560	14,035
Mean	207	442	1,105	301	188	294	2,900	1,104	653	344	244	468
Cfsm	0.462	0.987	2.47	0.672	0.420	0.656	6.47	2.46	1.46	0.768	0.545	1.04
In.	0.53	1.10	2.84	0.77	0.44	0.76	7.22	2.84	1.63	0.88	0.63	1.17

Calendar year 1957: Max 10,600 Min 108 Mean 502 Cfsm 1.12 In. 15.21
Water year 1957-58: Max 12,400 Min 118 Mean 687 Cfsm 1.53 In. 20.81

Peak discharge (base, 6,200 cfs).--Dec. 21 (10:15 a.m.) 15,000 cfs (9.35 ft); Apr. 19 (1 a.m.) 8,460 cfs (7.18 ft); Apr. 22 (9 to 10 a.m.) 14,000 cfs (9.04 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 25-27, Dec. 1-20, 23, Jan. 2 to Mar. 16, Mar. 19, 20, 26, 27.

2765. Bouquet River at Willsboro, N. Y.

Location.--Lat 44°21'30", long 73°23'50", on right bank at Willsboro, Essex County, 2½ miles downstream from North Branch Bouquet River and 3 miles upstream from mouth.

Drainage area.--275 sq mi.

Records available.--August and September 1904 (gage heights and discharge measurements only), August to November 1908, July 1923 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 150.88 ft above mean sea level, datum of 1929. Prior to November 1908, staff gages at site three-quarters of a mile downstream at various datums. July 23 to Aug. 28, 1923, staff gage at site 600 ft downstream at present datum.

Average discharge.--35 years (1923-58), 302 cfs.

Extremes.--Maximum discharge during year, 7,460 cfs Dec. 21 (gage height, 8.75 ft); minimum, 20 cfs Oct. 13 (gage height, 2.00 ft).
1923-58: Maximum discharge, 11,800 cfs Oct. 1, 1924 (gage height, 10.85 ft), from rating curve extended above 4,600 cfs by logarithmic plotting; minimum, 8.8 cfs Sept. 20, 1957 (gage height, 1.84 ft).

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation at low flow caused by powerplants above station.

Revisions.--WSP 759: Drainage area.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 22				Apr. 23 to Sept. 30			
2.0	20	3.5	621	2.3	51	4.0	960
2.2	43	4.0	1,020	2.5	95	5.0	1,940
2.4	79	5.0	2,000	2.8	194	7.0	4,480
2.7	166	8.0	6,200	3.3	445		
3.0	301						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	43	198	340	190	130	848	832	194	88	131	55
2	*30	46	180	306	175	125	856	720	985	82	101	60
3	30	51	155	175	160	122	1,130	668	997	78	92	51
4	26	76	130	160	150	125	1,160	728	490	75	82	57
5	27	120	120	155	140	130	1,110	698	352	70	90	57
6	29	93	116	150	130	125	1,320	575	300	85	82	59
7	27	75	125	155	125	120	1,390	530	266	101	80	62
8	32	69	163	150	125	118	974	752	231	104	82	59
9	29	75	190	145	130	114	736	872	210	115	82	62
10	28	106	*160	145	140	125	681	645	198	110	75	60
11	28	91	125	140	145	130	784	549	*258	110	75	62
12	28	77	96	125	150	*130	856	698	248	144	78	75
13	26	65	90	114	130	135	784	589	206	187	70	66
14	25	63	88	120	110	140	1,020	471	194	161	75	60
15	33	75	106	130	116	155	1,270	409	194	124	70	51
16	30	237	110	145	120	185	1,890	380	176	112	68	57
17	*30	170	96	150	104	180	2,650	374	157	104	70	57
18	34	120	92	145	102	180	3,020	363	157	95	64	96
19	49	109	94	135	104	190	3,300	374	140	95	70	272
20	51	321	400	125	110	210	2,240	363	134	110	68	223
21	69	281	4,930	130	118	240	3,020	300	121	115	66	137
22	59	182	2,360	190	140	261	4,800	266	134	107	64	101
23	49	132	816	310	112	238	*3,580	244	124	92	64	164
24	48	112	551	340	116	261	2,120	227	112	90	62	115
25	51	98	380	330	116	301	1,620	210	112	*88	70	80
26	82	72	400	310	118	380	1,160	202	110	75	82	70
27	73	68	1,460	280	112	470	848	190	112	92	80	72
28	54	80	864	260	120	558	816	176	110	90	*70	80
29	59	103	572	*250	-	666	904	210	95	144	66	78
30	49	123	436	240	-------	768	1,100	214	95	323	60	75
31	48	-------	345	220	-------	832	-------	190	-------	183	60	-------
Total	1,266	3,333	15,948	6,070	3,608	7,844	47,987	14,019	7,192	3,549	2,349	2,573
Mean	40.8	111	514	196	129	253	1,600	452	240	114	75.8	85.8
Cfsm	0.148	0.404	1.87	0.713	0.469	0.920	5.82	1.64	0.873	0.415	0.276	0.312
In.	0.17	0.45	2.16	0.82	0.49	1.06	6.49	1.90	0.97	0.48	0.32	0.35

Calendar year 1957: Max 4,930 Min 12 Mean 181 Cfsm 0.658 In. 8.93
Water year 1957-58: Max 4,930 Min 25 Mean 317 Cfsm 1.15 In. 15.66

Peak discharge (base, 2,800 cfs).--Dec. 21 (6 p.m.) 7,460 cfs (8.75 ft); Apr. 19 (10:45 a.m.) 3,910 cfs (6.50 ft); Apr. 22 (5:30 p.m.) 5,800 cfs (7.75 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 26-28, Dec. 2-7, 9-20, 25, Jan. 3 to Mar. 21, Mar. 28, 27.

2780. Lake George at Rogers Rock, N. Y.

Location.--Lat 43°48'10", long 73°27'25", on west shore about 500 ft north of Hooper's dock at Rogers Rock, Essex County, and 0.4 mile west of Baldwin.

Records available.--July 1913 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 315.93 ft above mean sea level, adjustment of 1912. Prior to Nov. 4, 1929, staff gages at several sites within half a mile of present site at same datum. Nov. 4, 1929, to Sept. 26, 1936, staff gage at present site and datum.

Extremes.--Maximum gage height during year, 4.36 ft Apr. 25; minimum, 2.25 ft Nov. 1, 2.
1913-58: Maximum gage height observed, 5.09 ft Apr. 9, 1936; minimum, 0.64 ft Dec. 20, 1941.

Remarks.--Elevation of lake surface regulated by powerplant and floodgates at Ticonderoga. Lake George has been controlled by a dam at its outlet for more than 100 years.

Mean gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.67	2.30	2.54	3.96	3.83	2.91	2.63	4.10	3.66	3.58	3.45	3.14
2	2.65	2.30	2.53	3.98	3.78	2.88	2.67	3.99	3.84	3.55	3.45	3.07
3	2.58	2.38	2.48	3.95	3.75	2.86	2.71	4.01	3.98	3.50	3.44	3.09
4	2.55	2.41	2.42	3.93	3.69	2.88	2.75	3.97	4.03	3.51	3.39	3.09
5	2.54	2.42	2.43	3.95	3.64	2.86	2.82	3.91	4.07	3.49	3.42	3.01
6	2.52	2.42	2.50	3.96	3.60	2.84	2.91	3.90	3.97	3.53	3.44	3.05
7	2.53	2.42	2.49	3.91	3.55	2.81	3.10	3.88	3.99	3.51	3.42	3.05
8	2.53	2.43	2.43	3.89	3.57	2.76	3.23	3.93	3.98	3.53	3.48	3.00
9	2.55	2.46	2.46	3.92	3.53	2.74	3.28	3.98	3.88	3.56	3.47	3.01
10	2.55	2.40	2.49	3.94	3.49	2.72	3.30	3.91	3.90	3.55	3.45	3.06
11	2.50	2.39	2.54	3.91	3.46	2.69	3.34	3.85	3.91	3.56	3.43	2.98
12	2.50	2.39	2.56	3.87	3.42	2.68	3.41	3.82	3.87	3.56	3.45	2.97
13	2.48	2.37	2.57	3.85	3.39	2.65	3.46	3.79	3.87	3.57	3.41	2.94
14	2.44	2.37	2.58	3.80	3.36	2.65	3.53	3.76	3.84	3.57	3.37	2.92
15	2.45	2.44	2.57	3.79	3.29	2.70	3.60	3.75	3.81	3.58	3.37	2.95
16	2.43	2.45	2.59	3.83	3.30	2.68	3.70	3.73	3.78	3.57	3.31	2.92
17	2.44	2.46	2.55	3.87	3.35	2.67	3.81	3.71	3.73	3.54	3.33	2.89
18	2.44	2.43	2.56	3.84	3.32	2.65	3.91	3.70	3.70	3.56	3.29	2.98
19	2.48	2.48	2.60	3.83	3.26	2.62	3.93	3.71	3.67	3.54	3.27	3.02
20	2.44	2.56	2.72	3.79	3.21	2.60	4.01	3.71	3.66	3.49	3.28	3.02
21	2.43	2.57	3.26	3.78	3.20	2.57	4.05	3.70	3.67	3.46	3.27	3.02
22	2.44	2.56	3.43	3.89	3.13	2.57	4.22	3.70	3.63	3.47	3.24	3.05
23	2.42	2.55	3.50	3.90	3.08	2.56	4.26	3.65	3.62	3.44	3.19	3.05
24	2.47	2.53	3.54	3.87	3.03	2.55	4.29	3.62	3.61	3.44	3.18	3.05
25	2.42	2.49	3.53	3.84	3.02	2.53	4.27	3.64	3.62	3.41	3.23	3.06
26	2.37	2.43	3.60	3.85	2.97	2.51	4.16	3.59	3.65	3.40	3.20	2.99
27	2.37	2.46	3.78	3.88	2.92	2.50	4.12	3.60	3.63	3.40	3.19	3.02
28	2.37	2.46	3.83	3.92	2.90	2.52	4.10	3.61	3.57	3.41	3.18	3.02
29	2.35	2.47	3.86	3.93	-	2.54	4.13	3.67	3.57	3.49	3.16	3.04
30	2.37	2.49	3.87	3.92	-------	2.56	4.12	3.65	3.56	3.50	3.17	3.07
31	2.33	-------	3.90	3.88	-------	2.60	-------	3.61	-------	3.50	3.16	-------
Mean	2.47	2.44	2.93	3.88	3.36	2.67	3.59	3.78	3.78	3.51	3.33	3.02

Calendar year 1957: Max 3.90 Min 2.27 Mean 2.96
Water year 1957-58: Max 4.29 Min 2.30 Mean 3.23

2790. Lake George Outlet at Ticonderoga, N. Y.

Location.--Lat 43°50'35", long 73°26'00", at Ticonderoga, Essex County. River channel gage on right bank 250 ft downstream from "C" milldam of International Paper Co., 250 ft upstream from Trout Brook, and half a mile downstream from upper dam ("A" milldam) of International Paper Co. Turbine gate-opening gage in powerhouse at "C" milldam.

Drainage area.--234 sq mi.

Records available.--August 1904 to December 1905, October 1942 to September 1958.

Gage.--Water-stage recorder and concrete control on river channel. Datum of gage is 190.41 ft above mean sea level, datum of 1929. Turbine gate-opening recorder in powerhouse. Prior to Dec. 31, 1905, staff gages at site 2,000 ft upstream at different datum.

Average discharge.--16 years (1942-58), 316 cfs.

Extremes.--Maximum daily discharge during year, 1,060 cfs Apr. 24; minimum daily, 34 cfs July 4-6.
1942-58: Maximum daily discharge, 1,290 cfs June 5, 6, 1947; minimum daily, 6.1 cfs July 6, 1952.

Remarks.--Records good except those for period of no gate-opening record, which are fair. Discharge in tailrace determined from rating for turbine gates developed from discharge measurements. Records represent total discharge from Lake George and include flow in river channel and in tailrace. Diurnal fluctuation at low and medium flow caused by three powerplants. Appreciable regulation by Lake George.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	85	66	63	255	913	614	546	996	146	197	87	95
2	85	67	63	281	905	614	475	944	204	197	87	95
3	85	67	63	302	896	614	425	960	251	175	87	90
4	85	67	63	302	863	614	368	944	342	34	85	90
5	85	67	63	302	839	614	241	926	573	34	86	88
6	52	66	63	302	823	614	120	788	648	34	87	88
7	36	66	63	302	799	601	209	772	522	114	87	90
8	76	66	63	300	775	581	255	935	522	151	89	88
9	90	66	63	302	775	575	255	953	506	151	89	88
10	89	63	63	371	759	569	254	935	511	151	72	90
11	90	63	63	413	751	563	252	885	511	154	61	90
12	90	63	63	408	735	563	254	901	506	153	73	90
13	90	63	61	408	719	551	156	876	506	151	73	88
14	90	63	63	404	719	546	206	860	501	151	71	88
15	90	65	63	404	697	557	248	772	426	153	71	86
16	90	63	63	408	697	543	251	659	392	151	71	86
17	89	63	61	413	719	548	254	503	389	149	71	84
18	89	63	63	413	705	551	336	354	382	158	70	88
19	92	63	63	413	690	540	485	449	325	156	70	86
20	90	63	101	408	683	534	506	445	231	152	70	86
21	90	63	201	408	705	506	588	445	234	152	70	86
22	78	63	133	554	683	512	1,030	445	232	152	70	86
23	69	63	174	751	669	522	1,040	436	230	152	70	86
24	67	63	139	743	661	522	1,060	379	230	a152	70	86
25	66	63	54	759	661	522	1,050	129	232	a113	70	86
26	67	63	158	775	640	517	1,010	190	213	a79	70	84
27	67	63	212	823	627	517	1,010	211	190	a85	70	86
28	67	63	214	913	621	522	996	193	189	a86	70	86
29	67	63	215	939	-	534	1,000	184	147	a89	69	86
30	67	63	214	939	--------	540	1,000	184	179	87	99	86
31	66	--------	231	930	--------	551	--------	181	--------	87	126	--------
Total	2,439	1,923	3,239	15,645	20,729	17,271	15,880	18,834	10,470	4,000	2,411	2,632
Mean	78.7	64.1	104	505	740	557	529	608	349	129	77.8	87.7
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1957: Max 237 Min 32 Mean 139 Cfsm 0.594 In. 8.07
Water year 1957-58: Max 1,060 Min 34 Mean 316 Cfsm 1.35 In. 18.35

a No gate-opening record; discharge estimated on basis of recorded range in gate opening.

2800. Poultney River below Fair Haven, Vt.

Location.--Lat 43°37'40", long 73°18'50", on right bank a third of a mile downstream from Carver Falls, 1.9 miles upstream from Hubbardton River, and 3½ miles northwest of Fair Haven, Rutland County.

Drainage area.--187 sq mi.

Records available.--October 1928 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 155 ft (from topographic map).

Average discharge.--30 years, 245 cfs.

Extremes.--Maximum discharge during year, about 4,700 cfs Dec. 21; minimum daily, 7.7 cfs Aug. 30.

1928-58: Maximum discharge, 14,800 cfs July 20, 1945 (gage height, 24.36 ft, from high-water mark in gage well), from rating curve extended above 2,400 cfs on basis of computations of peak flow over dam at gage heights 16.10, 21.40, and 24.36 ft; minimum daily, 2.9 cfs Oct. 13, 1935.

Remarks.--Records good except those for periods of ice effect or fragmentary or no gage-height record, which are fair. Flow regulated by powerplant above station and by Lake Bomoseen.

Revisions (water years).--WSP 1114: 1929(M), 1932-35.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	6.0	4.0	400
1.9	18	6.0	914
2.2	40	10.0	2,040
2.5	74	14.0	4,030
3.0	160		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	137	47	215	475	278	262	1,060	467	90	26	43	14
2	150	24	170	445	276	242	937	410	675	38	22	15
3	145	165	158	305	288	255	962	307	*790	38	10	15
4	145	130	138	350	288	312	1,040	444	440	16	30	15
5	145	180	112	340	280	338	982	340	362	17	28	15
6	145	*120	168	310	290	348	1,130	301	279	18	24	15
7	140	103	201	*290	290	365	1,930	300	153	20	28	11
8	140	78	222	278	290	343	1,410	465	145	33	31	28
9	150	141	179	290	280	321	909	594	205	32	37	14
10	33	140	*220	240	280	309	784	475	200	30	24	16
11	80	103	232	260	290	307	758	345	208	30	44	16
12	10	88	229	270	280	345	745	340	183	40	*39	27
13	85	88	220	190	290	350	724	359	122	36	40	14
14	95	87	234	240	270	398	755	278	120	40	34	9.9
15	130	286	224	220	260	380	623	243	72	39	32	27
16	140	283	220	215	230	355	776	248	84	25	18	*39
17	135	221	200	215	240	336	968	270	78	26	9.1	52
18	140	187	168	210	260	319	846	186	66	25	15	47
19	80	253	170	210	260	316	818	210	65	8.8	15	54
20	45	455	1,120	180	260	348	654	238	63	26	17	26
21	60	307	f3,700	170	*235	316	586	259	72	30	31	20
22	160	254	1,660	320	230	309	*867	273	42	33	13	100
23	60	217	960	500	230	314	654	276	57	26	13	122
24	160	197	714	450	230	347	563	166	46	22	15	130
25	120	165	532	400	210	*450	492	117	43	21	36	130
26	75	158	466	350	250	528	442	130	42	13	13	127
27	12	130	823	550	260	745	422	168	45	11	16	71
28	105	99	553	558	260	919	449	109	37	40	28	8.0
29	110	142	472	412	-	996	489	107	9.7	50	33	113
30	115	166	399	348	-------	999	558	86	49	46	7.7	105
31	110	-------	352	307	-------	1,140	-------	89	-------	44	12	---------
Total	3,357	5,014	15,431	9,898	7,385	13,612	24,393	8,600	4,842.7	899.8	757.8	1,395.9
Mean	108	167	498	319	264	439	813	277	161	29.0	24.4	46.5
Cfsm	0.578	0.893	2.66	1.71	1.41	2.35	4.35	1.48	0.861	0.155	0.130	0.249
In.	0.67	1.00	3.07	1.97	1.47	2.71	4.85	1.71	0.96	0.18	0.15	0.28

Calendar year 1957: Max 3,700 Min 6.0 Mean 180 Cfsm 0.963 In. 13.07
Water year 1957-58: Max 3,700 Min 7.7 Mean 262 Cfsm 1.40 In. 19.02

Peak discharge (base, 2,600 cfs).--Dec. 21 (about 12 m.) about 4,700 cfs.

* Discharge measurement made on this day.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.
Note.--No gage-height record Oct. 2 to Nov. 6, Feb. 17-21; discharge estimated on basis of 2 discharge measurements, weather records, recorded range in stage when available, powerplant records, and records for Otter Creek at Center Rutland. Stage-discharge relation affected by ice Dec. 13, 16, Jan. 3-6, 9-27, Feb. 5-28.

3810. East Creek at Rutland, Vt.

Location.--Lat 43°37'40", long 72°59'20", on left bank on grounds of Rutland Country Club, at Rutland, Rutland County, 280 ft downstream from Grove Street Bridge and 2 miles upstream from mouth.

Drainage area.--51.1 sq mi.

Records available.--August 1940 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 570 ft (from topographic map).

Average discharge.--18 years, 100 cfs (adjusted for diversion and storage).

Extremes.--Maximum discharge during year, 1,110 cfs Apr. 21 (gage height, 3.77 ft), from rating curve extended above 670 cfs on basis of computation of flow over dam and slope-area measurement at gage height 7.10 ft; minimum daily, 17 cfs Oct. 27.
1940-58: Maximum discharge, 36,500 cfs June 3, 1947 (gage height, 20.3 ft, from high-water mark in gage house), mean of two slope-area measurements, caused by failure of East Pittsford Dam 5.8 miles upstream; minimum daily, 3.1 cfs Nov. 8, 1947.

Remarks.--Records excellent except those for periods of ice effect, which are good. Diversion above station from Mendon Brook for municipal supply of Rutland. Flow regulated by powerplants and Chittenden Reservoir (usable capacity, 819,800,000 cu ft); prior to June 3, 1947, also regulated by East Pittsford Reservoir (usable capacity, 150,000,000 cu ft).

Revisions (water years).--WSP 1307: 1941-42(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.0	12	1.7	124
1.1	18	2.0	220
1.3	40	3.0	655
1.5	75	3.5	940

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	88	55	50	140	48	37	126	174	60	60	81	22
2	88	24	66	121	48	35	97	138	262	53	83	47
3	89	83	90	104	94	96	125	166	156	56	39	42
4	82	102	63	49	114	117	144	177	104	20	78	47
5	52	61	74	31	106	104	164	139	90	19	96	46
6	55	*70	70	104	110	104	202	107	63	27	101	22
7	106	77	69	110	103	105	267	121	40	56	81	21
8	74	36	75	101	47	106	148	207	31	89	166	39
9	87	90	105	100	34	32	123	185	70	79	59	47
10	89	42	*88	b91	103	104	122	118	65	74	27	57
11	73	74	121	50	101	102	136	97	64	111	62	49
12	44	58	56	38	104	109	102	184	63	45	59	46
13	64	75	b40	b85	100	104	113	125	56	34	70	22
14	74	71	61	*b105	103	111	155	88	37	70	72	20
15	62	133	35	100	38	109	215	87	30	74	69	52
16	60	66	87	92	b23	42	377	98	65	75	27	*64
17	71	53	64	93	b105	106	486	88	60	72	37	68
18	68	59	73	34	b100	b105	581	73	62	71	78	91
19	72	104	104	35	b100	108	496	127	65	81	80	79
20	30	101	385	b105	95	105	514	118	61	39	73	18
21	56	83	507	b100	98	106	707	90	25	74	61	18
22	44	75	195	112	38	104	814	71	23	78	73	68
23	48	43	151	123	19	41	582	67	52	85	43	61
24	58	33	147	104	89	115	*402	54	47	91	53	50
25	65	92	68	60	111	*123	354	45	61	96	87	79
26	31	71	146	79	98	124	208	62	61	99	80	56
27	17	66	243	150	102	145	140	45	58	116	56	27
28	65	37	111	125	94	162	167	46	19	81	61	38
29	65	61	85	112	-	166	211	71	18	*140	38	62
30	66	62	114	94	--------	101	305	*45	55	111	36	51
31	50	--------	125	107	--------	149	--------	44	--------	75	22	--------
Total	1,993	2,037	3,669	2,852	2,325	3,175	8,583	3,257	1,943	2,251	2,070	1,409
Mean	64.3	67.9	118	92.0	83.0	102	286	105	64.8	72.6	66.8	47.0
(†)	-24.8	+13.8	+36.5	-17.4	-27.4	-46.4	+161.8	+58.2	-1.93	-30.0	-38.4	-6.37

Adjusted for diversion and change in reservoir contents

Mean	39.5	81.7	155	74.5	55.6	56.1	448	163	62.8	42.6	28.4	40.6
Cfsm	0.773	1.60	3.03	1.46	1.09	1.10	8.77	3.19	1.23	0.834	0.556	0.795
In.	0.89	1.78	3.49	1.68	1.13	1.26	9.78	3.68	1.37	0.96	0.64	0.89

	Observed			Adjusted			
Calendar year 1957:	Max 507	Min 14	Mean 73.3	Mean 78.2	Cfsm 1.53	In. 20.77	
Water year 1957-58:	Max 814	Min 17	Mean 97.4	Mean 104	Cfsm 2.04	In. 27.55	

* Discharge measurement made on this day.
† Change in contents in Chittenden Reservoir and diversion from Mendon Brook for minicipal supply of Rutland, equivalent in cubic feet per second. Records furnished by Central Vermont Public Service Corp. and city of Rutland.
b Stage-discharge relation affected by ice.

2820. Otter Creek at Center Rutland, Vt.

Location.--Lat 43°36'15", long 73°00'50", on right bank at downstream side of bridge on U. S. Highway 4 at Center Rutland, Rutland County, 200 ft downstream from dam, 1.2 miles downstream from East Creek, and 1½ miles west of Rutland.

Drainage area.--307 sq mi.

Records available.--May 1928 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 475.80 ft above mean sea level, datum of 1929. Prior to July 22, 1929, chain gage at same site and datum.

Average discharge.--30 years, 552 cfs.

Extremes.--Maximum discharge during year, 7,280 cfs Apr. 22 (gage height, 9.99 ft); minimum daily, 79 cfs Aug. 31, Sept. 1.
1928-58: Maximum discharge, 13,700 cfs Sept. 22, 1938 (gage height, 12.45 ft), from rating curve extended above 7,400 cfs on basis of computation of peak flow over dam; minimum daily, 45 cfs Sept. 21, 1947.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by powerplants and Chittenden Reservoir on East Creek (usable capacity, 819,800,000 cu ft); prior to June 3, 1947, also regulated by East Pittsford Reservoir (usable capacity, 150,000,000 cu ft).

Revisions (water years).--WSP 1084: 1929.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Backwater from bridge construction Dec. 21, 22)

Oct. 1 to Mar. 31				Apr. 1 to Sept. 30			
0.7	123	3.0	935	0.4	78	3.0	965
1.0	179	4.0	1,560	.6	107	6.0	2,940
1.5	305	7.0	4,350	1.0	180	8.0	4,650
2.0	461			1.5	309	10.0	7,300
				2.0	477		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	175	160	433	757	389	256	812	2,100	313	187	306	79
2	175	160	360	782	372	247	779	1,690	1,310	159	255	103
3	170	350	326	511	389	297	825	1,490	*1,590	147	172	104
4	164	550	276	450	350	380	1,020	1,570	879	110	193	102
5	129	440	225	400	350	391	1,170	1,420	600	104	208	102
6	130	*344	223	430	340	385	1,430	1,160	463	105	193	82
7	176	287	311	400	330	587	1,640	1,120	373	135	175	84
8	162	239	567	370	280	362	1,580	1,510	318	163	322	103
9	182	517	538	350	270	293	1,240	1,760	343	258	292	120
10	190	475	*475	330	330	335	1,100	1,450	318	218	181	145
11	167	359	935	320	310	340	1,160	1,090	374	240	*183	145
12	128	297	591	280	310	377	1,040	1,270	529	354	169	137
13	143	284	356	310	300	365	991	1,100	351	329	158	108
14	155	271	422	*300	290	402	1,310	870	323	246	142	89
15	140	663	406	310	*242	402	1,520	747	266	205	151	109
16	140	662	432	300	230	326	2,150	711	267	192	110	*139
17	150	459	479	300	310	357	3,270	665	258	187	91	122
18	200	399	385	250	300	352	4,890	593	249	180	160	242
19	290	588	457	310	290	345	5,320	695	242	181	165	342
20	170	858	1,500	350	280	370	4,880	768	225	167	129	226
21	200	620	3,690	290	270	361	5,340	606	181	206	152	166
22	160	473	3,870	340	220	360	*6,970	510	178	185	156	238
23	170	376	1,820	562	200	303	5,990	442	196	168	97	292
24	190	326	1,130	549	260	403	*4,610	386	179	185	106	205
25	250	362	830	427	280	*459	*3,730	348	185	180	178	191
26	200	306	808	486	310	490	2,850	387	190	172	186	166
27	160	226	1,650	705	300	644	2,000	343	178	352	164	144
28	190	249	1,250	650	290	747	1,580	309	140	313	142	208
29	190	330	882	543	-	803	1,540	374	125	*472	98	207
30	180	409	754	478	------	774	2,180	*343	173	666	96	178
31	180	------	674	457	------	840	------	286	------	411	79	------
Total	5,406	12,029	27,055	13,297	8,392	13,153	75,117	28,113	11,316	7,197	5,209	4,678
Mean	174	401	873	429	300	424	2,504	907	377	232	168	156
Cfsm	0.567	1.31	2.84	1.40	0.977	1.38	8.16	2.95	1.23	0.756	0.547	0.508
In.	0.65	1.46	3.28	1.61	1.02	1.59	9.10	3.41	1.37	0.87	0.63	0.57
(†)	-29.1	+9.64	+32.1	-21.9	-32.0	-51.0	+157	+53.8	-6.71	-35.3	-43.5	-11.0

Calendar year 1957: Max 3,870 Min 97 Mean 405 Cfsm 1.32 In. 17.89 † +0.35
Water year 1957-58: Max 6,970 Min 79 Mean 578 Cfsm 1.88 In. 25.56 † +1.75

Peak discharge (base, 3,400 cfs).--Dec. 21 (11 p.m.) 5,000 cfs (7.95 ft); Apr. 22 (3:30 a.m.) 7,280 cfs (9.99 ft).

* Discharge measurement made on this day.
† Change in contents, equivalent in cubic feet per second, in Chittenden Reservoir, furnished by Central Vermont Public Service Corp.
Note.--No gage-height record Oct. 14 to Nov. 5, Jan. 4-6; discharge estimated on basis of weather records, recorded range in stage when available, and records for Otter Creek at Middlebury and East Creek at Rutland. Stage-discharge relation affected by ice Jan. 7-22, Feb. 4-14, 16-28, and at times during period of no gage-height record in January.

2825. Otter Creek at Middlebury, Vt.

Location.--Lat 44°00'45", long 73°10'05", on right bank 150 ft upstream from highway bridge in Middlebury, Addison County, and 3½ miles downstream from Middlebury River.

Drainage area.--628 sq mi.

Records available.--April 1903 to April 1907, October 1910 to January 1920, October 1928 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 335.75 ft above mean sea level, datum of 1929. Apr. 1, 1903, to Apr. 30, 1907, and Oct. 5, 1910, to Jan. 31, 1920, chain gage at site 1,800 ft upstream at datum 10 ft lower and Oct. 1, 1928, to Oct. 17, 1933, at present datum.

Average discharge.--42 years (1903-6, 1910-19, 1928-58), 979 cfs.

Extremes.--Maximum discharge during year, 6,880 cfs Apr. 25 (gage height, 8.17 ft); minimum daily, 170 cfs Sept. 1.

1903-7, 1910-20, 1928-58: Maximum discharge, 11,000 cfs Mar. 20, 21, 1936 (gage height, 10.3 ft); minimum daily, 100 cfs Dec. 28, 1914.

Maximum discharge known, 13,600 cfs Nov. 4, 1927 (gage height, 13.3 ft, present datum, at chain-gage site, 1,800 ft upstream), from rating curve extended above 9,000 cfs by logarithmic plotting.

Remarks.--Records good except those for periods of backwater from aquatic vegetation or debris or both, which are fair. Some regulation by Chittenden Reservoir (usable capacity, 819,800,000 cu ft) on East Creek.

Revisions (water years).--WSP 434: 1903-4. WSP 684: 1913(M), drainage area. WSP 1114: 1913. WSP 1207: 1929, 1931.

Rating table, water year 1957-58, except periods of ice effect or backwater from aquatic vegetation or debris (gage height, in feet, and discharge, in cubic feet per second)

1.1	166	3.0	1,300
1.5	281	5.0	3,410
2.0	555	8.0	7,280

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	281	249	646	2,430	962	667	2,360	4,240	625	274	744	170
2	281	249	667	2,250	880	611	2,300	3,770	1,800	281	542	201
3	285	259	590	2,020	786	597	2,280	3,580	2,010	274	402	226
4	281	478	503	1,460	786	709	2,280	3,430	2,020	242	329	220
5	259	772	340	1,070	765	821	2,290	3,230	2,010	191	307	220
6	230	660	349	880	750	888	2,340	3,060	1,690	204	302	206
7	206	*522	396	786	750	948	2,480	2,920	1,270	206	290	204
8	252	454	597	700	751	962	2,530	2,840	880	259	433	211
9	290	448	786	650	730	888	2,540	2,800	716	307	779	252
10	267	618	786	610	645	800	2,580	2,660	709	344	597	263
11	256	639	*888	580	645	786	2,640	2,580	702	364	402	302
12	252	516	1,120	560	690	872	2,610	2,530	716	454	402	320
13	242	436	918	540	690	902	2,580	2,430	793	590	*369	277
14	196	413	650	*560	690	970	2,560	2,320	695	529	339	239
15	209	538	702	604	630	1,020	2,530	2,180	597	402	311	198
16	214	895	737	604	600	932	2,680	2,010	503	359	294	*220
17	211	872	758	611	600	821	2,860	1,790	516	307	236	252
18	209	709	740	595	630	814	2,980	1,480	472	285	214	329
19	302	681	730	540	660	821	3,070	1,310	419	274	270	516
20	408	1,030	1,560	480	640	872	3,190	1,370	385	277	294	529
21	339	1,160	2,760	500	630	895	3,590	1,330	364	263	290	413
22	234	948	2,650	611	611	895	4,740	1,160	339	307	277	430
23	263	744	2,650	910	510	842	5,690	992	311	274	290	430
24	258	604	2,710	1,120	510	918	*6,530	842	334	259	259	442
25	315	536	2,800	1,090	576	1,140	*6,840	730	324	270	249	402
26	389	516	2,880	985	639	*1,310	6,620	667	307	267	302	369
27	364	454	3,090	1,020	660	1,830	6,240	681	311	334	315	339
28	294	380	3,000	1,200	674	1,930	5,730	653	294	430	302	344
29	270	396	2,900	1,200	-	2,150	5,220	674	263	*716	277	324
30	285	529	2,780	1,110	------	2,260	4,740	*688	217	1,020	242	408
31	270	------	2,600	1,020	------	2,350	------	618	------	1,000	198	------
Total	8,450	17,705	45,283	29,296	10,090	33,021	107,620	61,565	22,592	11,563	10,857	9,256
Mean	273	590	1,461	945	682	1,065	3,587	1,986	753	373	350	309
Cfsm	0.435	0.939	2.33	1.50	1.09	1.70	5.71	3.16	1.20	0.594	0.557	0.492
In.	0.50	1.05	2.68	1.73	1.13	1.96	6.37	3.65	1.34	0.68	0.64	0.55
(†)	-29.1	+9.64	+32.1	-21.9	-32.0	-51.0	+157	+53.8	-6.71	-35.3	-43.5	-11.0

Calendar year 1957: Max 3,090 Min 188 Mean 727 Cfsm 1.16 In. 15.69 † +0.35
Water year 1957-58: Max 6,840 Min 170 Mean 1,031 Cfsm 1.64 In. 22.28 † +1.75

* Discharge measurement made on this day.

† Change in contents, equivalent in cubic feet per second, in Chittendon Reservoir, furnished by Central Vermont Public Service Corp.

Note.--Stage-discharge relation affected by ice Dec. 5, 14, 18, Jan. 4-6, 8-14, 18-21, Feb. 5-7, 10-21, 23. Backwater from aquatic vegetation or debris or both Oct. 1 to Dec. 19, Apr. 7 to Sept. 30.

2840. Jail Branch at East Barre, Vt.

Location.--Lat 44°09'40", long 72°27'00", on right bank 75 ft downstream from highway bridge, at East Barre, Washington County, 0.8 mile downstream from East Barre Detention Reservoir, and 3.9 miles upstream from mouth.

Drainage area.--40.4 sq mi.

Records available.--August 1920 to September 1923, October 1933 to September 1958. October 1933 monthly discharge only, published in WSP 1307. Prior to October 1922, published as Jail Brook at East Barre.

Gage.--Water-stage recorder. Datum of gage is 1,071.59 ft above mean sea level (levels by Corps of Engineers). Aug. 14, 1920, to Sept. 30, 1923, staff gage at site a quarter of a mile upstream at different datum. Nov. 1, 1933, to Jan. 25, 1935, staff gage at present site and datum.

Average discharge.--28 years, 55.8 cfs (adjusted for storage).

Extremes.--Maximum discharge during year, 479 cfs Apr. 23 (gage height, 1.34 ft); maximum gage height, 2.20 ft Jan. 23 (ice jam); minimum discharge not determined.
1920-23, 1933-58: Maximum discharge, 1,820 cfs Oct. 1, 1920 (gage height, 9.50 ft, from graph based on gage readings, site and datum then in use), from rating curve extended above 900 cfs; minimum, 0.1 cfs Aug. 18, 1950. Aug. 3, 4, 31, Sept. 1, 3, 1953.

Remarks.--Records good except those below 5 cfs and those for periods of ice effect or no gage-height record, which are fair. Discharge affected by East Barre Detention Reservoir since 1935 (see p. 353). Diurnal fluctuation at low flow caused by mill above station and during summer by construction operations at outlet of East Barre Detention Reservoir. Diversion from reservoir on Orange Brook, a tributary above station, for city of Barre.

Revisions (water years).--WSP 564: 1922. WSP 1034: Drainage area. WSP 1237: 1921(M). WSP 1307: 1922-23(M).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 30 to Nov. 8, Apr. 18-20)

Oct. 1 to Apr. 20				Apr. 21 to Sept. 30			
-1.8	1.5	0	70	-1.7	1.9	-0.3	47
-1.3	4.8	.5	123	-1.4	3.3	0	82
-1.1	8.6	1.0	237	-1.2	5.0	.5	175
-.8	18	1.5	403	-1.0	9.1	1.0	330
-.5	33			-.7	20	1.3	455

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.0	4.5	30	71	25	18	94	410	90	8.9	7.0	2.8
2	2.0	6.2	21	52	24	18	82	401	506	7.5	5.2	2.7
3	2.0	41	15	42	23	19	74	389	302	6.4	5.4	2.7
4	2.0	51	*13	34	23	22	106	373	184	6.3	3.9	2.6
5	2.0	22	13	40	23	21	127	365	65	5.7	4.2	2.0
6	2.1	13	14	52	22	21	142	358	64	5.7	3.9	3.5
7	2.3	10	17	45	22	21	120	354	45	6.6	3.4	2.6
8	2.1	9.6	52	40	22	21	106	358	38	21	29	2.7
9	2.1	57	31	*35	21	21	84	354	36	23	35	2.1
10	2.0	25	32	31	21	21	88	351	33	*12	18	5.7
11	2.0	16	122	28	21	22	104	351	48	15	9.5	7.2
12	2.0	13	60	26	*21	23	94	348	38	30	6.3	5.6
13	2.1	12	50	24	21	24	112	340	28	30	5.9	4.9
14	2.1	11	40	24	20	26	157	334	32	14	4.6	3.3
15	2.1	82	35	25	18	28	192	316	24	9.7	4.0	4.8
16	2.1	48	30	25	18	27	245	292	20	9.4	3.9	4.8
17	2.1	28	27	25	18	27	287	215	24	8.2	3.1	5.5
18	2.0	24	24	23	18	26	327	115	22	6.1	3.3	62
19	14	28	27	21	17	*26	360	126	17	10	3.4	42
20	10	43	180	23	17	29	392	115	16	15	5.6	16
21	6.0	32	277	23	17	24	*401	111	18	9.1	3.7	11
22	5.0	25	255	29	17	29	389	85	31	*6.6	3.7	27
23	4.3	12	254	40	17	32	435	73	20	6.4	3.4	16
24	6.0	21	245	28	17	32	445	62	15	5.9	3.3	9.1
25	16	18	216	27	18	40	450	54	14	4.8	7.5	8.0
26	8.0	15	145	26	18	37	*445	53	13	4.3	7.7	7.0
27	6.0	12	178	30	18	51	430	44	15	4.0	5.4	8.4
28	5.5	14	100	30	18	60	430	*39	11	4.8	4.1	19
29	5.0	20	80	27	-	70	425	108	9.1	33	3.2	11
30	4.6	28	69	26	-------	81	420	70	9.1	23	2.6	8.9
31	*4.5	-------	66	25	-------	97	-------	42	-------	12	3.2	-------
Total	132.0	741.3	2,728	997	555	1,014	7,563	7,004	1,587.0	370.4	212.6	310.9
Mean	4.26	24.7	88.0	32.2	19.8	32.7	252	226	52.9	11.9	6.86	10.4
(†)	+0.29	+0.02	+0.75	-0.45	-0.25	+0.55	+95.3	-92.0	-1.01	-0.09	-0.09	+0.06

Adjusted for change in contents in East Barre Detention Reservoir

Mean	4.55	24.7	88.8	31.7	19.6	33.3	347	134	51.9	11.9	6.76	10.4
Cfsm	0.113	0.611	2.20	0.785	0.485	0.824	8.59	3.32	1.28	0.295	0.167	0.257
In.	0.13	0.68	2.53	0.90	0.50	0.95	9.59	3.82	1.43	0.34	0.19	0.29

	Observed			Adjusted			
Calendar year 1957:	Max 277	Min 1.0	Mean 51.9	Mean 31.9	Cfsm 0.790	In. 10.72
Water year 1957-58:	Max 450	Min 2.0	Mean 63.6	Mean 63.6	Cfsm 1.57	In. 21.35

* Discharge measurement made on this day.
† Change in contents, equivalent in cubic feet per second, in East Barre Detention Reservoir.

Note.--No gage-height record Oct. 1-29, July 27, Aug. 15, 19, 20, 30, Sept. 1-3, 5-8; discharge estimated on basis of weather records, recorded range in stage when available, and records for East Barre Detention Reservoir, Dog River at Northfield Falls, and Wells River at Wells River. Stage-discharge relation affected by ice Nov. 26, 27, Dec. 1-7, 12-15, 17-20, Jan. 2-19, Jan. 22 to Feb. 13, Feb. 17 to Mar. 17.

2855. North Branch Winooski River at Wrightsville, Vt.

Location.--Lat 44°18'00", long 72°34'45", on right bank at Wrightsville, Washington County, three-quarters of a mile downstream from Wrightsville Detention Reservoir and 3½ miles upstream from mouth.

Drainage area.--69.2 sq mi.

Records available.--October 1933 to September 1958.

Gage.--Water-stage recorder and concrete control. Datum of gage is 550.53 ft above mean sea level (levels by Corps of Engineers). Prior to Nov. 21, 1934, staff gage at same site and datum.

Average discharge.--25 years, 132 cfs (adjusted for storage).

Extremes.--Maximum discharge during year, 870 cfs Apr. 23 (gage height, 3.76 ft); minimum, daily, 6.5 cfs Oct. 12, 13.
1933-58: Maximum discharge, 2,170 cfs Apr. 12, 1934 (gage height, 6.53 ft), from rating curve extended above 920 cfs; minimum daily, 0.2 cfs Aug. 13, 1941.
Maximum discharge known, 17,200 cfs Nov. 3, 1927, by computation of peak flow over dam three-quarters of a mile above gage.

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair. Discharge affected since 1935 by Wrightsville Detention Reservoir (see following page). Diurnal fluctuation at low flow caused by small mill above station.

Revisions (water years).--WSP 1237: 1934-39.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.2	5.5	1.5	138
.5	16	2.0	240
.7	27	3.0	515
1.0	64	3.8	890

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.6	21	122	216	56	40	290	695	122	22	110	12
2	8.6	21	104	143	52	38	312	663	458	21	70	11
3	7.4	60	*84	97	50	38	315	632	504	17	50	8.8
4	7.2	214	71	85	50	45	352	600	455	15	42	8.1
5	7.2	178	56	77	50	50	396	555	385	14	*37	8.1
6	7.2	135	47	90	49	52	437	501	285	13	29	8.5
7	7.2	101	58	85	50	50	446	443	156	19	24	8.8
8	7.3	79	157	70	48	50	437	401	110	*44	43	11
9	7.2	98	186	*58	45	51	396	420	87	75	98	*12
10	6.8	114	152	55	42	50	350	396	72	60	92	14
11	6.7	92	317	54	42	52	328	350	84	80	78	24
12	6.5	74	336	50	*44	59	320	377	91	220	55	27
13	6.5	62	260	48	43	58	315	374	82	300	38	23
14	7.2	54	150	48	41	58	358	328	78	240	28	19
15	7.2	227	130	50	41	59	423	256	75	160	23	16
16	7.2	336	115	52	40	59	539	218	62	115	19	18
17	8.2	290	105	52	40	56	658	227	61	95	16	30
18	7.6	216	95	49	39	55	740	191	62	70	16	151
19	28	170	85	47	39	*55	785	172	52	70	18	292
20	81	256	175	45	38	62	795	156	41	110	19	205
21	54	216	676	50	37	64	820	132	37	110	17	116
22	33	154	725	55	37	62	860	110	75	85	16	191
23	25	119	700	95	36	61	865	94	79	60	14	212
24	12	100	658	80	36	65	860	82	64	42	13	125
25	135	90	609	68	38	75	840	71	46	31	31	90
26	82	75	551	63	37	*85	*820	64	36	25	58	71
27	56	52	547	63	37	113	790	55	38	31	48	56
28	27	51	519	64	38	147	765	*48	36	41	29	65
29	20	68	468	62	-	182	740	110	29	230	21	64
30	*22	118	404	59	-------	227	720	128	24	290	16	54
31	21	-------	323	56	-------	277	-------	107	-------	190	14	-------
Total	727.8	3,841	8,985	2,186	1,195	2,395	17,072	8,956	3,786	2,895	1,180	1,951.3
Mean	23.5	128	290	70.5	42.7	77.3	569	289	126	93.4	38.1	65.0
(†)	+3.15	+0.27	+5.34	-6.29	-0.62	+5.81	+86.8	-88.6	-2.26	+3.57	-4.07	+1.25

Adjusted for change in contents in Wrightsville Detention Reservoir

Mean	20.6	128	295	64.2	42.1	83.1	656	200	124	97.0	34.0	66.3
Cfsm	0.584	1.85	4.26	0.928	0.608	1.20	9.48	2.89	1.79	1.40	0.491	0.958
In.	0.44	2.07	4.92	1.07	0.63	1.38	10.6	3.34	2.00	1.62	0.57	1.07

	Observed			Adjusted		
Calendar year 1957:	Max 725	Min 4.3	Mean 116	Mean 117	Cfsm 1.69	In. 22.95
Water year 1957-58:	Max 865	Min 6.5	Mean 151	Mean 151	Cfsm 2.18	In. 29.71

* Discharge measurement made on this day.
† Change in contents, equivalent in cubic feet per second, in Wrightsville Detention Reservoir.
Note.--No gage-height record July 10 to Aug. 4; discharge estimated on basis of weather records, recorded range in stage, and records for Wrightsville Detention Reservoir. Stage-discharge relation affected by ice Nov. 27, Dec. 4-6, 13-20, Jan. 3 to Mar. 10, Mar. 19.

Reservoirs in Winooski River basin above Montpelier, Vt.

2835. East Barre Detention Reservoir.--Lat 44°09'20", long 72°26'40", at reservoir on Jail Branch at East Barre, Washington County, 4½ miles upstream from mouth of Jail Branch. Staff gage read once daily. Datum of gage is 1,127.9 ft above mean sea level (levels by Corps of Engineers). Drainage area, 38.8 sq mi. Records available, March and April 1936, September 1938 to September 1958. Maximum gage height observed during year, 31.8 ft Apr. 25; minimum not determined. Maximum gage height observed during period 1936, 1938-58, 36.0 ft Mar. 22, 1936; minimum observed, 0.1 ft several days in August and September 1939, Aug. 4, Sept. 1, 4, 5, 1953, Aug. 5, 6, 1955.

Reservoir is formed by earthfill dam completed by Corps of Engineers in 1935 for flood control. Capacity of reservoir, 506,000,000 cu ft between gage heights 0.0 ft (bottom of outlet opening) and 57.1 ft (crest of spillway). Dam has no gates; below gage height 37.1 ft, outflow from reservoir is dependent of capacity of outlet opening, 4 ft square, near base of dam. Outlet opening in process of enlargement and modification during August and September 1958. Gage read by employee of State of Vermont Water Conservation Board.

2850. Wrightsville Detention Reservoir.--Lat 44°18'35", long 72°34'30", at reservoir on North Branch Winooski River at Wrightsville, Washington County, a third of a mile downstream from Long Meadow Brook and 4½ miles upstream from mouth. Staff gage read once daily. Datum of gage is 612.75 ft above mean sea level (levels by Corps of Engineers). Drainage area, 66.5 sq mi. Records available, March and April 1936, September 1938 to September 1958. Maximum gage height observed during year, 52.0 ft Apr. 23; minimum observed, 1.0 ft Oct. 16-18. Maximum gage height during period 1936, 1938-58, 63.7 ft Mar. 22, 1936, from graph based on gage readings; minimum observed, 0.2 ft Aug. 17, 1949, and Aug. 17-19, 1950.

Reservoir is formed by earthfill dam completed by Corps of Engineers in 1935 for flood control. Capacity of reservoir, 873,500,000 cu ft between gage heights 0.0 ft (bottom of outlet opening) and 72.25 ft (crest of spillway). Dam has no gates; below gage height 72.25 ft, outflow from reservoir is dependent on capacity of outlet opening, 5½ ft square, near base of dam. Gage read by employee of State of Vermont Water Conservation Board.

Month-end gage height and contents, water year October 1957 to September 1958

Date	Gage height (feet)†	Contents (millions of cubic feet)	Change in contents	
			Millions of cubic feet	Equivalent, cubic feet per second
	East Barre Detention Reservoir			
Sept. 30	0.4	0.20	-	-
Oct. 31	1.8	.99	+0.79	+0.29
Nov. 30	1.9	1.05	+.06	+.02
Dec. 31	4.3	3.06	+2.01	+.75
Calendar year 1957	-	-	+2.07	+.07
Jan. 31	3.0	1.86	-1.20	-.45
Feb. 28	2.2	1.26	-.60	-.25
Mar. 31	4.0	2.74	+1.48	+.55
Apr. 30	27.1	249.8	+247.06	+95.3
May 31	4.6	3.37	-246.43	-92.0
June 30	1.4	.74	-2.63	-1.01
July 31	1.0	.50	-.24	-.09
Aug. 31	.5	.25	-.25	-.09
Sept. 30	.8	.40	+.15	+.06
Water year 1957-58	-	-	+.20	+.01
	Wrightsville Detention Reservoir			
Sept. 30	1.2	2.75	-	-
Oct. 31	4.2	11.2	+8.45	+3.15
Nov. 30	4.4	11.9	+.70	+.27
Dec. 31	8.3	26.2	+14.3	+5.34
Calendar year 1957	-	-	+18.95	+.60
Jan. 31	3.6	9.35	-16.85	-6.29
Feb. 28	3.1	7.85	-1.50	-.62
Mar. 31	7.6	23.4	+15.55	+5.81
Apr. 30	36.4	248.4	+225.0	+86.8
May 31	4.2	11.2	-237.2	-88.6
June 30	2.2	5.35	-5.85	-2.26
July 31	5.3	14.9	+9.55	+3.57
Aug. 31	1.7	4.00	-10.9	-4.07
Sept. 30	2.9	7.25	+3.25	+1.25
Water year 1957-58	-	-	+4.50	+.14

† Gage height at 12 p.m., determined from graph based on observer's readings and records for station on river below reservoir.

2860. Winooski River at Montpelier, Vt.

Location.--Lat 44°15'25", long 72°35'35", on right bank 0.4 mile upstream from Dog River and 1 mile downstream from depot at Montpelier, Washington County.
Drainage area.--397 sq mi.
Records available.--May 1909 to June 1914 (fragmentary), July 1914 to September 1923, August 1928 to September 1958.
Gage.--Water-stage recorder. Datum of gage is 499.99 ft above mean sea level, datum of 1929. Prior to June 16, 1914, chain gage at site 0.9 mile upstream at different datum. June 16 to July 3, 1914, staff gage at present site and datum.
Average discharge.--39 years (1914-23, 1928-58), 586 cfs (adjusted for storage since October 1935).
Extremes.--Maximum discharge during year, 6,390 cfs Apr. 22 (gage height, 10.51 ft); minimum daily, 47 cfs Oct. 6.
1909-23, 1928-58: Maximum discharge, 17,200 cfs Apr. 7, 1912 (gage height, 17.31 ft, from floodmarks, present datum), from rating curve extended above 6,900 cfs by logarithmic plotting; minimum daily, 17 cfs Sept. 3, 1933.
Maximum discharge known, 57,000 cfs Nov. 3, 1927 (gage height, 27.1 ft), from rating curve extended above 6,900 cfs by logarithmic plotting.
Remarks.--Records good except those for periods of ice effect or doubtful or no gage-height record, which are fair. Flow regulated by several small powerplants above station, by Peacham Pond, and since 1926 by Mollys Falls Reservoir (combined usable capacity, 492,000,000 cu ft), which regulate runoff from 24 sq mi, and by East Barre and Wrightsville Detention Reservoirs since 1935 (see preceding page).
Revisions (water years).--WSP 424: 1915. WSP 894: Drainage area. WSP 1437: 1912-14(M), 1915-18, 1919(M), 1920, 1921(M), 1922-23, 1929, 1933, 1934(M), 1936, 1937(M), 1938, 1946(M).

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	100	131	337	849	480	360	1,400	2,310	714	234	370	105
2	94	115	285	660	420	320	1,440	2,090	3,110	219	285	107
3	105	256	*270	450	370	300	1,520	1,950	2,160	188	253	98
4	121	670	220	320	400	430	1,860	1,970	1,480	120	254	89
5	67	490	200	320	420	420	1,990	1,800	1,110	125	237	98
6	47	328	200	370	400	400	2,080	1,620	962	130	*212	87
7	70	263	250	430	410	390	2,140	1,630	666	152	195	85
8	79	220	497	420	400	390	1,890	2,100	524	216	278	98
9	124	386	485	410	350	390	1,570	2,230	502	*307	460	*107
10	105	342	500	390	330	350	1,530	1,680	480	238	316	102
11	116	266	1,200	410	340	420	1,620	1,620	577	282	285	111
12	82	238	850	330	350	430	1,580	2,250	508	571	265	185
13	75	213	630	350	*330	430	1,720	1,740	450	673	233	142
14	55	179	530	370	330	430	2,100	1,500	502	486	214	102
15	97	643	460	*380	300	420	2,500	1,320	405	395	205	108
16	101	702	410	390	260	420	3,400	1,360	305	350	177	108
17	86	539	450	410	270	380	4,290	1,200	400	360	128	166
18	106	459	400	370	340	*390	4,870	985	360	285	128	528
19	161	443	380	320	330	399	4,720	a900	308	306	196	732
20	220	634	1,300	290	320	409	4,120	a840	294	420	203	455
21	154	506	3,930	330	310	409	*4,370	a800	290	370	171	285
22	171	390	2,320	380	310	380	5,660	a760	502	312	175	418
23	166	296	1,800	580	280	367	4,870	a640	405	238	122	525
24	140	274	1,640	610	290	376	4,080	a540	326	203	111	329
25	243	266	1,450	530	340	528	3,420	460	303	206	146	208
26	194	256	1,250	420	350	574	*2,950	486	290	238	277	232
27	134	192	1,800	470	350	735	2,650	455	288	316	231	224
28	107	213	1,340	540	360	878	2,690	*430	333	290	210	228
29	154	252	1,090	530	-	1,000	2,720	802	186	816	200	206
30	*141	334	960	510	--------	1,050	2,650	860	190	844	148	218
31	99	--------	885	500	--------	1,250	--------	491	--------	518	118	--------
Total	3,714	10,496	28,319	13,639	9,740	15,425	84,400	39,619	18,830	10,408	6,803	6,462
Mean	120	350	914	440	348	498	2,813	1,278	628	336	219	215
(†)	-20.3	+7.51	+29.1	-23.8	-40.1	-19.0	+292	-176	-3.88	+4.10	-28.5	+2.80

Adjusted for change in reservoir contents

Mean	99.5	357	943	416	308	479	3,105	1,102	624	340	191	218
Cfsm	0.251	0.899	2.38	1.05	0.776	1.21	7.82	2.78	1.57	0.856	0.481	0.549
In.	0.29	1.00	2.74	1.21	0.81	1.39	8.73	3.20	1.75	0.99	0.55	0.61

	Observed			Adjusted	
Calendar year 1957:	Max 3,930	Min 36	Mean 429	Mean 431	Cfsm 1.09 In. 14.73
Water year 1957-58:	Max 5,660	Min 47	Mean 679	Mean 681	Cfsm 1.72 In. 23.27

Peak discharge (base, 3,900 cfs).--Dec. 21 (10:30 a.m.) 5,300 cfs (9.52 ft); Apr. 18 (10:30 p.m.) 5,930 cfs (10.09 ft); Apr. 22 (4:30 to 5:30 a.m.) 6,390 cfs (10.51 ft).

* Discharge measurement made on this day.
† Change in contents, equivalent in cubic feet per second, in Peacham Pond, Mollys Falls Reservoir and East Barre and Wrightsville Detention Reservoirs. Part of records furnished by State of Vermont Water Conservation Board and Green Mountain Power Corp.
a Doubtful or no gage-height record; discharge estimated on basis of recorder graph, weather records, powerplant records, and records for other stations in Winooski River basin.
Note.--Stage-discharge relation affected by ice Dec. 3-7, 11-21, Jan. 2 to Mar. 16.

2870. Dog River at Northfield Falls, Vt.

Location.--Lat 44°10'55", long 72°38'30", on right bank 1 mile downstream from Northfield Falls, Washington County, and 1¼ miles downstream from Cox Branch.

Drainage area.--76.1 sq mi.

Records available.--October 1934 to September 1958. October 1934 monthly discharge only, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is 603.00 ft above mean sea level (levels by Corps of Engineers).

Average discharge.--24 years, 122 cfs.

Extremes.--Maximum discharge during year, 5,190 cfs Dec. 21 (gage height, 7.99 ft), from rating curve extended above 1,500 cfs as explained below; minimum, 5.8 cfs Aug. 22.
1934-58: Maximum discharge, 9,750 cfs Sept. 21, 1938 (gage height, 11.53 ft), from rating curve extended above 1,500 cfs on basis of computation of flow over dam at gage height 8.49 ft and slope-area measurements at gage heights 8.96 and 11.53 ft; minimum, 4.3 cfs Aug. 31, Sept. 7, 1942.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Some regulation at low flow by powerplant above station.

Revisions (water years).--WSP 1237: 1935-37.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.6	7.9	2.5	420
.8	16	3.0	655
1.0	32	4.0	1,230
1.2	54	5.0	1,900
1.5	106	6.0	2,800
2.0	240		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.8	13	64	180	74	54	225	336	113	28	28	11
2	9.2	15	53	148	71	52	231	280	548	26	22	11
3	9.2	33	*46	115	67	54	268	270	262	23	20	12
4	8.8	62	37	91	67	61	360	288	175	22	24	12
5	8.5	46	36	110	67	59	457	234	144	22	24	11
6	8.8	32	38	140	65	58	447	207	136	21	21	11
7	10	27	52	114	69	59	360	228	114	22	16	11
8	9.6	23	140	*106	67	58	298	348	102	*28	*34	11
9	9.6	68	98	90	61	58	246	360	93	36	46	12
10	9.2	50	100	86	63	60	252	258	91	26	33	12
11	8.5	37	295	86	*61	60	288	276	106	27	27	14
12	8.5	32	160	67	66	69	267	352	89	46	20	17
13	8.8	29	115	78	63	63	323	258	78	55	17	16
14	8.8	28	110	72	61	65	460	226	83	34	16	14
15	8.8	184	97	74	59	70	766	199	70	28	15	12
16	8.8	116	91	74	58	68	1,330	210	64	54	15	12
17	8.8	82	87	72	57	67	1,760	188	68	35	15	*12
18	8.5	65	75	66	56	*65	1,940	167	61	26	15	58
19	29	88	91	61	54	67	1,500	167	55	28	14	70
20	24	149	700	67	52	70	1,310	146	50	32	14	37
21	16	96	2,250	67	50	70	*1,560	151	54	26	13	25
22	14	76	508	78	50	70	1,990	126	62	21	10	56
23	12	65	319	120	48	70	1,200	118	50	21	12	39
24	15	61	258	82	50	73	776	102	52	20	11	26
25	33	58	205	78	54	82	575	96	47	18	20	21
26	20	46	257	77	50	85	396	89	44	20	18	19
27	16	33	500	87	50	106	308	*82	43	18	*15	20
28	15	50	270	87	52	136	340	78	37	20	14	37
29	*14	61	225	80	-	170	408	116	33	90	12	28
30	14	67	188	77	-------	205	496	93	30	62	12	22
31	14	-------	167	74	-------	231	-------	80	-------	39	11	-------
Total	397.2	1,792	7,632	2,804	1,662	2,535	21,137	6,129	2,954	974	584	669
Mean	12.8	59.7	246	90.5	59.4	81.8	705	198	98.5	31.4	18.8	22.3
Cfsm	0.168	0.784	3.23	1.19	0.781	1.07	9.26	2.60	1.29	0.413	0.247	0.293
In.	0.19	0.88	3.73	1.37	0.81	1.24	10.33	3.00	1.44	0.48	0.29	0.33

Calendar year 1957: Max 2,250 Min 6.4 Mean 82.9 Cfsm 1.09 In. 14.78
Water year 1957-58: Max 2,250 Min 8.5 Mean 135 Cfsm 1.77 In. 24.09

Peak discharge (base, 1,600 cfs).--Dec. 21 (6 a.m.) 5,190 cfs (7.99 ft); Apr. 22 (2 a.m.) 3,280 cfs (6.44 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 28 to Sept. 16; discharge estimated on basis of weather records, recorded range in stage, and records for Mad River nore Moretown. Stage-discharge relation affected by ice Dec. 2-20, Jan. 3-6, Jan. 9 to Mar. 14.

2880. Mad River near Moretown, Vt.

Location.--Lat 44°16'40", long 72°44'35", on left bank at downstream side of highway bridge, 2.4 miles downstream from Moretown, Washington County, and 3.8 miles upstream from mouth.
Drainage area.--139 sq mi.
Records available.--July to November 1910, October 1928 to September 1958. Monthly discharge only for some periods, published in WSP 1307.
Gage.--Water-stage recorder. Concrete control since Oct. 13, 1933. Altitude of gage is 545 ft (from topographic map). July 6 to Nov. 4, 1910, staff gage at same site at different datum. Nov. 20, 1928, to Sept. 27, 1930, chain gage at same site and datum.
Average discharge.--30 years (1928-58), 250 cfs.
Extremes.--Maximum discharge during year, 7,150 cfs Dec. 21 (gage height, 9.78 ft), from rating curve extended above 2,700 cfs as explained below; minimum, 8.5 cfs Oct. 15, 16; minimum daily, 19 cfs Oct. 6, 12, 13.
1910, 1928-58: Maximum discharge, 18,400 cfs Sept. 22, 1938 (gage height, 16.34 ft, from floodmarks), from rating curve extended above 2,700 cfs on basis of computations of flow over dam at gage heights 9.98, 11.51, 16.34, and 19.4 ft; minimum, 1.4 cfs Oct. 1, 1930.
Maximum discharge known, 23,000 cfs Nov. 3, 1927 (gage height, 19.4 ft, from floodmarks), by computation of peak flow over dam.
Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair. Regulation at low flow caused by mill in Moretown.
Revisions (water years).--WSP 744: Drainage area. WSP 854: 1934(M). WSP 1114: 1929, 1930(M), 1936-37.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 17				Apr. 18 to Sept. 30	
2.8	14	4.0	380	2.8	18
2.9	26	4.5	680	3.0	46
3.0	41	5.0	1,050	3.2	84
3.2	83	6.0	1,970	3.5	164
3.5	164	8.0	4,460	Note.--Same as preceding table above 3.5 ft.	

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	45	178	290	110	82	370	701	372	52	90	31
2	25	46	152	230	105	80	375	604	1,860	48	74	34
3	27	86	120	170	100	80	395	568	639	43	62	43
4	25	232	*90	150	100	93	551	638	394	42	68	34
5	21	157	68	180	105	92	668	514	300	40	76	32
6	19	113	85	210	97	90	682	435	286	40	53	36
7	30	89	150	160	95	90	580	452	225	45	*47	37
8	27	76	350	140	100	88	467	725	195	79	106	44
9	26	149	250	*130	97	88	370	830	174	*96	149	41
10	26	129	230	125	93	91	374	550	170	57	120	*86
11	25	97	450	120	91	91	452	534	207	229	76	95
12	19	85	230	105	96	97	430	954	164	280	60	91
13	19	81	180	120	*93	100	487	592	137	240	51	64
14	28	80	190	115	91	105	680	468	234	114	44	55
15	25	527	180	115	88	110	1,090	396	159	84	43	49
16	23	295	160	115	87	110	2,170	408	130	131	36	58
17	23	214	150	105	85	110	3,150	375	167	93	34	85
18	23	171	140	100	83	105	3,380	333	129	68	37	565
19	93	199	160	95	80	*105	*2,610	386	110	88	37	515
20	72	363	1,300	105	77	110	2,620	333	100	110	36	244
21	54	221	4,000	110	74	110	3,660	300	102	84	35	158
22	44	171	1,200	150	74	110	4,300	255	134	64	38	344
23	38	146	650	180	74	110	2,240	221	100	56	37	201
24	47	134	500	140	77	120	1,520	198	86	52	31	131
25	142	126	400	130	81	129	1,280	181	80	46	127	103
26	79	101	500	120	76	146	799	171	79	43	68	97
27	63	84	900	130	76	181	580	152	78	60	48	107
28	53	143	500	125	80	218	631	140	70	54	41	158
29	*52	161	400	120	-	263	781	*255	62	373	35	109
30	44	181	310	115	-------	323	1,160	209	56	222	30	89
31	44	-------	270	110	-------	364	-------	161	-------	128	31	-------
Total	1,263	4,702	14,443	4,310	2,485	3,991	38,852	13,039	6,999	3,161	1,820	3,726
Mean	40.7	157	466	139	88.8	129	1,295	421	233	102	58.7	124
Cfsm	0.293	1.13	3.35	1.00	0.639	0.928	9.32	3.03	1.68	0.734	0.422	0.892
In.	0.34	1.26	3.86	1.15	0.66	1.07	10.39	3.49	1.87	0.85	0.49	1.00

Calendar year 1957: Max 4,000 Min 14 Mean 189 Cfsm 1.36 In. 18.43
Water year 1957-58: Max 4,300 Min 19 Mean 271 Cfsm 1.95 In. 26.43

Peak discharge (base, 3,400 cfs).--Dec. 21 (8:30 a.m.) 7,150 cfs (9.78 ft); Apr. 18 (7 p.m.) 5,280 cfs (8.57 ft); Apr. 22 (3:30 a.m.) 5,940 cfs (9.01 ft).

* Discharge measurement made on this day.
Note.--No gage-height record Dec. 22 to Jan. 6; discharge estimated on basis of weather records and records for Dog River at Northfield Falls. Stage-discharge relation affected by ice Dec. 3-20, Jan. 7 to Mar. 22.

2885. Waterbury Reservoir near Waterbury, Vt.

Location.--Lat 44°22'55", long 72°43'15", at dam on Waterbury River, 2 ⅔ miles upstream from mouth and 3½ miles north of Waterbury, Washington County.

Drainage area.--109 sq mi.

Records available.--September 1937 to September 1958. September 1937 to August 1938 month-end contents only, published in WSP 1307.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (levels by Corps of Engineers). Prior to Dec. 10, 1938, staff gage at same site and datum.

Extremes.--Maximum elevation during year, 600.32 ft Apr. 23; minimum, 546.09 ft Mar. 21. 1937-58: Maximum elevation, 613.45 ft May 4, 1940; minimum observed, 501.3 ft Oct. 16, 1938.

Remarks.--Reservoir is formed by earth-fill dam completed by Corps of Engineers during summer of 1937 for conservation and flood control. Total usable capacity for flood control, 2,812,300,000 cu ft between elevations 500.0 ft (bottom of lowest outlet) and 617.5 ft (crest of spillway) above mean sea level. Usable capacity for conservation, 1,582,700,000 cu ft between elevations 500.0 and 592.0 ft (sill of taintor gate) above mean sea level.

Capacity table, water year 1957-58 (elevation, in feet, and contents, in millions of cubic feet)

540.0	302.7	580.0	1,168.5
550.0	461.7	590.0	1,505.0
560.0	658.8	600.0	1,913.4
570.0	891.9	610.0	2,398.0

Elevation, in feet, at 12 p.m. water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	572.21	569.46	580.98	590.68	579.37	555.27	553.68	593.13	592.17	589.61	591.02	583.32
2	571.69	569.72	580.53	590.21	578.82	554.03	554.71	592.75	592.98	589.29	590.64	583.36
3	571.19	570.63	580.11	589.65	578.04	552.85	556.31	592.46	592.58	588.99	590.63	583.31
4	570.83	572.00	579.56	589.29	577.18	551.80	558.56	592.42	591.99	589.07	590.14	583.25
5	570.93	572.59	578.92	589.11	576.43	551.25	561.31	592.05	591.45	589.18	589.56	583.22
6	571.02	572.82	578.40	588.51	575.82	550.73	562.95	591.79	590.85	589.32	588.92	583.34
7	570.52	572.87	579.05	588.30	574.72	550.73	563.15	591.63	591.13	589.52	588.39	583.60
8	570.06	572.62	580.46	588.05	574.55	549.99	562.92	592.18	591.42	589.68	588.29	583.72
9	569.68	573.44	580.81	587.59	573.82	550.23	563.40	592.53	591.21	589.94	588.53	583.75
10	569.30	573.98	581.07	587.18	573.02	549.86	564.04	592.23	591.07	589.60	588.94	583.90
11	568.89	574.17	582.40	587.11	572.21	549.23	564.64	593.37	591.00	589.64	588.49	584.49
12	568.98	574.03	582.90	587.38	571.43	548.90	565.23	594.13	590.83	590.29	588.12	584.42
13	569.04	573.86	583.04	586.70	570.59	548.45	566.06	593.63	590.60	590.60	587.88	584.70
14	568.57	573.66	583.40	586.07	569.77	548.02	567.12	592.99	591.13	590.57	587.62	584.93
15	568.16	575.95	583.85	585.53	568.95	547.99	569.11	592.42	591.42	590.26	587.01	584.81
16	567.83	576.91	583.65	585.05	568.20	548.23	572.99	592.18	591.22	590.47	586.99	585.20
17	567.48	578.03	583.44	584.29	567.41	547.85	578.32	591.94	591.13	590.50	586.80	585.29
18	567.21	578.36	582.90	584.39	566.56	547.44	583.29	591.70	590.95	590.38	586.14	588.57
19	566.56	578.73	582.82	583.90	565.69	547.05	586.42	591.88	590.71	590.79	585.81	589.82
20	569.11	579.64	585.89	582.69	564.71	547.66	589.10	591.72	590.49	591.53	585.35	590.17
21	569.19	580.13	592.45	582.34	563.76	546.27	594.07	591.48	590.66	591.56	584.64	590.24
22	569.15	580.45	592.78	582.04	562.89	546.80	599.37	591.12	591.10	591.32	584.17	590.92
23	569.06	580.73	592.41	581.71	561.90	547.34	600.03	590.77	590.87	590.96	584.31	590.82
24	569.43	581.13	591.92	581.50	560.84	547.01	598.35	590.58	590.58	590.64	584.42	590.43
25	569.96	580.66	591.30	581.81	559.82	546.88	596.71	590.30	590.21	590.15	584.50	589.94
26	570.30	580.17	591.61	582.16	558.65	547.11	595.02	590.18	589.96	590.02	584.36	589.69
27	570.59	579.66	592.19	581.69	557.53	547.68	593.84	589.99	589.84	590.42	584.04	589.65
28	570.38	580.01	591.81	581.67	556.37	548.55	593.36	589.88	590.00	590.13	583.60	589.74
29	570.12	579.90	591.27	581.19	-	550.01	593.28	590.37	590.03	591.32	583.14	589.47
30	570.00	580.44	590.77	580.63	------	551.65	593.54	590.86	589.76	591.90	583.28	589.18
31	569.73	------	590.35	570.07	------	552.63	------	591.21	------	591.57	583.43	------
(†)	885.3	1,182.5	1,518.6	1,170.7	583.9	511.1	1,642.8	1,551.9	1,496.4	1,565.9	1,278.1	1,475.9
(‡)	-27.4	+115	+125	-130	-243	-27.2	+437	-33.9	-21.4	+25.9	-107	+76.3

Calendar year 1957..... ‡ +15.8
Water year 1957-58..... ‡ +16.4

† Contents, in millions of cubic feet, at end of month.
‡ Change in contents, equivalent in cubic feet per second.

2890. Waterbury River near Waterbury, Vt.

Location.--Lat 44°22'10", long 72°46'10", on right bank 1 mile downstream from Waterbury Reservoir, 1 2/3 miles upstream from mouth, and 2½ miles north of Waterbury, Washington County.

Drainage area.--111 sq mi.

Records available.--July to October 1910 (gage heights only), October 1935 to September 1958. October, November 1935 monthly discharge only, published in WSP 1307.

Gage.--Water-stage recorder. Concrete control since Dec. 8, 1937. Datum of gage is 428.00 ft above mean sea level (levels by Corps of Engineers). July 7 to Oct. 31, 1910, staff gage at site 2 miles upstream at different datum.

Average discharge.--23 years, 232 cfs (adjusted for storage).

Extremes.--Maximum discharge during year, 2,340 cfs Apr. 24 (gage height, 11.34 ft); minimum daily, 4.5 cfs Oct. 6.
1935-58: Maximum discharge, 6,520 cfs Mar. 18, 1936 (gage height, 19.38 ft); minimum daily, 0.6 cfs several times during summers of 1938-39, 1941, and 1944.

Remarks.--Records excellent except those below 25 cfs and those for periods of no gage-height record, which are good. Flow completely regulated by Waterbury Reservoir (see preceding page).

Revisions (water years).--WSP 824: 1936.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

5.0	4.2	7.0	287
5.1	6.8	7.5	450
5.3	14	8.0	665
5.6	34	9.0	1,230
6.0	77	10.0	1,740
6.5	163	11.0	2,190

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	134	140	7.1	157	349	325	154	710	147	149	334	88
2	161	5.2	309	387	307	336	152	647	593	189	238	66
3	175	6.5	260	378	363	343	118	602	544	186	70	75
4	132	33	*292	250	365	342	70	588	525	5.9	284	73
5	4.9	70	307	164	348	238	21	575	397	5.7	307	62
6	4.5	102	272	392	289	223	215	512	437	5.7	321	6.2
7	174	122	8.3	237	282	253	494	407	11	7.2	308	6.5
8	171	205	9.5	*246	312	110	494	483	7.7	74	225	89
9	142	28	114	312	317	54	204	575	205	6.5	17	80
10	138	5.7	218	281	326	169	193	566	208	214	7.1	122
11	139	59	102	145	313	221	252	575	200	219	268	134
12	5.4	162	68	8.6	320	168	275	858	202	11	211	250
13	5.4	162	117	357	319	188	273	836	211	77	214	7
14	154	183	52	342	314	201	342	705	8.4	122	200	17
15	139	64	8.3	320	303	134	345	598	8.0	213	313	130
16	118	6.5	233	325	295	65	522	548	220	186	76	115
17	132	7.4	227	331	291	170	526	518	199	183	130	145
18	153	143	305	84	299	*177	534	425	211	149	326	140
19	7.7	209	204	276	313	170	534	367	202	75	250	65
20	5.7	96	284	370	322	169	539	364	181	7.7	252	7
21	80	79	588	361	324	170	552	355	66	176	324	200
22	97	94	620	244	311	5.4	588	347	8.4	204	252	350
23	82	53	611	267	336	5.4	1,410	361	200	243	5.9	340
24	121	6.5	566	201	338	167	2,010	338	203	*207	27	390
25	73	281	544	8.0	350	154	1,780	187	228	266	314	420
26	5.2	255	401	8.6	352	114	1,360	203	233	135	202	300
27	4.9	241	570	320	338	102	979	199	155	6.5	199	210
28	138	6.8	566	168	344	91	764	194	6.5	249	232	155
29	147	276	562	318	-	11	680	120	52	92	219	270
30	110	108	506	310	-------	12	718	8.9	210	48	5.9	260
31	130	-------	384	318	-------	163	-------	7.7	-------	294	5.7	-------
Total	3,103.7	3,209.6	9,315.2	7,886.2	9,060	5,050.8	17,098	13,779.6	6,079.0	4,006.2	6,137.6	4,572.7
Mean	100	107	300	254	324	163	570	445	203	129	198	152
(†)	-27.4	+115	+125	-130	-243	-27.2	+437	-33.9	-21.4	+25.9	-107	+76.3

Adjusted for change in contents in Waterbury Reservoir

Mean	72.7	222	426	125	81.0	136	1,007	411	181	155	90.5	229
Cfsm	0.655	2.00	3.84	1.13	0.730	1.23	9.07	3.70	1.63	1.40	0.815	2.06
In.	0.76	2.23	4.46	1.29	0.76	1.41	10.12	4.26	1.82	1.61	0.94	2.30

	Observed			Adjusted			
Calendar year 1957:	Max 620	Min 4.5	Mean 192	Mean 208	Cfsm 1.87	In. 25.43
Water year 1957-58:	Max 2,010	Min 4.5	Mean 245	Mean 261	Cfsm 2.35	In. 31.92

* Discharge measurement made on this day.
† Change in contents, equivalent in cubic feet per second, in Waterbury Reservoir.
Note.--No gage-height record Mar. 14-18, Sept. 12-30; discharge estimated on basis of 1 discharge measurement, weather records, recorded range in stage when available, powerplant records, and records for Waterbury Reservoir.

2905. Winooski River near Essex Junction, Vt.

Location.--Lat 44°28'40", long 73°08'20", on right bank half a mile downstream from Muddy Brook and 2 miles southwest of Essex Junction, Chittenden County.
Drainage area.--1,044 sq mi.
Records available.--October 1928 to September 1958.
Gage.--Water-stage recorder. Altitude of gage is 185 ft (from topographic map).
Average discharge.--30 years, 1,668 cfs (adjusted for storage since October 1938).
Extremes.--Maximum discharge during year, 22,100 cfs Apr. 22 (gage height, 13.03 ft); minimum daily, 125 cfs Aug. 24.

1928-58: Maximum discharge, 45,300 cfs Mar. 19, 1936 (gage height, 23.54 ft), from rating curve extended above 27,000 cfs on basis of computations of flow over dam at gage heights 18.72, 23.54, and 50.4 ft and slope-area measurement at gage height 50.4 ft; minimum daily, 70 cfs Sept. 25, 1937.

Maximum discharge known, 113,000 cfs Nov. 4, 1927 (gage height, 50.4 ft, from floodmarks), from rating curve extended above 27,000 cfs as explained above.

Remarks.--Records excellent except those for periods of ice effect, which are fair. Flow regulated by powerplants above station, by Peacham Pond and Mollys Falls Reservoir (combined usable capacity, 492,000,000 cu ft), by Waterbury Reservoir since 1937 (see p. 353), and by East Barre and Wrightsville Detention Reservoirs since 1935 (see p. 357).
Revisions (water years).--WSP 714: 1930(M). WSP 894: Drainage area. WSP 1307: 1929(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.4	125	3.0	2,380
.6	180	4.0	4,400
1.0	329	6.0	9,230
1.5	620	10.0	16,200
2.0	1,060	13.0	22,000
2.5	1,630		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	392	385	1,000	2,240	1,250	1,100	*3,910	5,580	1,270	622	1,300	398
2	360	326	943	2,310	1,050	1,050	4,100	4,920	9,320	644	846	216
3	335	330	945	1,550	1,250	1,000	3,880	4,450	5,960	658	590	288
4	364	1,020	970	1,050	1,150	1,100	5,010	4,770	3,820	450	848	342
5	166	1,280	745	1,150	1,250	1,200	5,410	4,220	2,760	431	742	340
6	154	981	775	1,250	1,100	1,050	6,300	3,730	2,470	236	785	226
7	474	762	890	1,350	1,100	1,050	6,560	3,380	1,990	455	750	212
8	293	722	1,150	1,200	1,150	1,100	5,340	4,380	1,460	534	1,040	337
9	312	766	1,450	1,100	950	900	4,060	6,170	1,200	643	1,010	338
10	372	741	1,320	1,050	1,100	900	3,580	4,490	1,130	758	634	446
11	353	618	2,160	1,100	1,050	1,000	4,130	4,150	1,390	892	946	*671
12	219	646	2,070	750	1,050	1,100	4,040	6,540	1,510	1,490	781	752
13	132	668	1,570	950	1,100	1,100	3,950	5,090	*1,260	1,490	742	412
14	377	653	1,370	1,150	1,000	1,100	5,260	4,130	1,320	1,500	724	302
15	340	1,200	1,250	1,050	950	1,050	6,150	3,500	1,110	1,130	717	444
16	326	1,980	1,190	1,100	950	900	9,880	3,420	1,040	*846	659	585
17	300	1,500	1,280	1,000	850	1,000	14,400	3,360	1,010	1,050	347	710
18	357	1,310	1,180	950	900	1,000	15,800	2,670	1,140	856	*476	1,330
19	356	1,230	1,180	550	1,050	1,050	16,200	2,510	1,100	750	636	2,910
20	486	1,430	3,650	800	950	1,100	12,300	2,510	972	732	637	1,790
21	*443	*1,530	16,900	950	900	1,130	14,500	2,180	754	1,090	650	1,190
22	446	1,260	9,380	1,100	950	1,060	20,100	1,990	790	830	702	1,030
23	462	862	5,140	1,300	950	832	15,900	1,800	1,280	899	516	1,530
24	494	773	4,170	1,500	900	1,040	13,000	1,630	952	595	125	1,460
25	550	748	3,600	1,600	1,000	1,310	10,600	1,370	912	686	640	958
26	465	834	2,950	1,050	1,050	1,800	7,870	1,150	869	771	882	822
27	394	856	6,400	1,100	1,050	1,840	*6,040	1,110	862	512	658	919
28	474	437	4,490	1,450	1,050	2,270	5,460	1,250	669	840	648	618
29	428	896	3,480	1,500	-	2,740	5,840	1,360	542	1,200	698	830
30	488	1,130	2,910	1,300	-------	3,120	7,160	1,560	826	1,800	298	720
31	336	-------	2,450	1,250	-------	3,700	-------	1,310	-------	1,600	378	-------
Total	11,448	28,074	88,958	37,550	29,050	41,692	246,730	100,680	51,488	26,990	21,405	23,126
Mean	369	936	2,870	1,211	1,038	1,345	8,224	3,248	1,716	871	690	771
(†)	-47.7	+122	+155	-154	-283	-46.2	+728	-210	-25.3	+30.0	-136	+78.9

Adjusted for change in reservoir contents

Mean	322	1,058	3,024	1,058	755	1,299	8,953	3,037	1,691	901	555	850
Cfsm	0.308	1.01	2.90	1.01	0.723	1.24	8.58	2.91	1.62	0.863	0.532	0.814
In.	0.36	1.13	3.34	1.17	0.75	1.43	9.57	3.35	1.81	0.99	0.61	0.91

	Observed					Adjusted				
Calendar year 1957:	Max	16,900	Min	103	Mean	1,293	Mean	1,311	Cfsm	1.26	In.	17.05
Water year 1957-58:	Max	20,100	Min	125	Mean	1,938	Mean	1,955	Cfsm	1.87	In.	25.42

Peak discharge (base, 12,500 cfs).--Dec. 21 (7 p.m.) 20,200 cfs (12.08 ft); Apr. 19 (7:30 to 8 a.m.) 18,700 cfs (11.33 ft); Apr. 22 (4 to 6 p.m.) 22,100 cfs (13.03 ft).

* Discharge measurement made on this day.
† Change in contents, equivalent in cubic feet per second, in Peacham Pond, Mollys Falls Reservoir, East Barre and Wrightsville Detention Reservoirs, and Waterbury Reservoir. Part of records furnished by State of Vermont Water Conservation Board and Green Mountain Power Corp.
Note.--Stage-discharge relation affected by ice Dec. 5, 6, 13, Jan. 3 to Mar. 20.

2920. Lamoille River at Johnson, Vt.

Location.--Lat 44°37'20", long 72°40'50", on right bank at falls 0.7 mile upstream from bridge in Johnson, Lamoille County, and 0.8 mile upstream from Gihon River.

Drainage area.--310 sq mi.

Records available.--July to December 1910, June 1911 to December 1913 (monthly discharge only, January to March 1912, February 1913), September 1928 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 495 ft (from topographic map). Prior to Dec. 31, 1913, chain gage at bridge 0.7 mile downstream at different datum.

Average discharge.--32 years (1911-13, 1928-58), 527 cfs.

Extremes.--Maximum discharge during year, 8,440 cfs Dec. 21 (gage height, 13.35 ft); minimum, 89 cfs Sept. 8; minimum daily, 173 cfs Sept. 5.
1910-13, 1928-58: Maximum discharge, 13,000 cfs Mar. 18, 1936 (gage height, 16.48 ft), from rating curve extended above 8,500 cfs on basis of computation of peak flow over dam; minimum, 11 cfs Sept. 2, 1935; minimum daily, 16 cfs Oct. 26, 1947.

Remarks.--Records excellent except those for periods of ice effect, which are fair. Flow regulated by powerplant above station.

Revisions (water years).--WSP 894: Drainage area. WSP 1114: 1933, 1934(M), WSP 1237: 1912(M), 1930, 1932(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.9	162	6.0	1,990
2.0	188	9.0	4,000
3.0	550	13.0	8,020
4.0	1,000		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	185	182	540	546	320	270	*899	1,130	659	312	300	242
2	197	224	380	580	320	248	1,040	883	2,400	274	226	214
3	188	346	300	300	300	264	950	*775	1,470	239	223	181
4	183	775	240	220	280	278	1,330	960	870	188	214	194
5	185	462	220	320	300	352	1,500	838	604	211	244	173
6	180	386	230	350	300	308	1,710	608	528	202	223	191
7	177	264	340	340	300	278	1,620	564	313	251	236	178
8	178	255	988	350	290	255	1,340	860	212	345	386	251
9	191	464	727	340	280	242	986	1,470	394	348	352	226
10	194	466	501	320	285	245	865	932	356	242	301	243
11	188	312	1,550	320	290	281	1,080	1,060	434	306	271	291
12	191	255	924	320	285	315	1,110	1,920	390	703	240	270
13	188	248	522	320	280	308	1,190	1,200	356	1,090	266	245
14	180	245	470	300	280	312	1,700	874	*409	553	264	188
15	183	1,050	418	320	280	308	2,150	703	386	360	239	280
16	178	860	434	325	280	312	3,370	730	303	485	239	255
17	185	739	*414	330	275	315	4,890	726	330	*685	197	327
18	188	788	331	330	270	312	5,230	593	291	370	274	873
19	539	680	386	305	270	312	4,940	734	269	525	244	784
20	372	1,510	1,530	300	260	315	3,660	640	200	1,000	*219	344
21	*209	*856	7,030	*300	250	337	4,360	538	195	647	230	209
22	202	604	2,740	360	250	312	6,450	520	403	371	229	502
23	214	502	1,390	470	250	312	4,670	470	368	292	211	391
24	286	390	924	560	260	345	3,590	438	259	248	194	244
25	449	506	481	420	265	360	2,350	358	242	226	405	236
26	258	244	762	350	*270	371	1,600	370	239	268	360	315
27	214	210	2,210	370	270	470	1,210	275	322	308	245	304
28	202	208	1,070	370	270	586	1,290	248	275	291	206	325
29	196	461	793	350	-	626	1,450	544	255	616	225	354
30	194	698	672	330	-------	770	1,570	526	251	649	226	261
31	183	-------	546	320	-------	888	-------	442	-------	430	217	-------
Total	6,856	15,190	30,063	11,036	7,830	11,207	70,100	22,929	13,983	13,035	7,906	9,071
Mean	221	506	970	356	280	362	2,337	740	466	420	255	302
Cfsm	0.713	1.63	3.13	1.15	0.903	1.17	7.54	2.39	1.50	1.35	0.823	0.974
In.	0.82	1.82	3.61	1.32	0.94	1.34	8.41	2.75	1.68	1.56	0.95	1.09

Calendar year 1957: Max 7,030 Min 140 Mean 481 Cfsm 1.55 In. 21.06
Water year 1957-58: Max 7,030 Min 173 Mean 601 Cfsm 1.94 In. 26.29

Peak discharge (base, 5,400 cfs).--Dec. 21 (1 p.m.) 8,440 cfs (13.35 ft); Apr. 19 (2:30 a.m.) 6,380 cfs (11.56 ft); Apr. 22 (10 a.m.) 7,480 cfs (12.55 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 27, Dec. 1-7, Jan. 2 to Mar. 1.

2925. Lamoille River at East Georgia, Vt.

Location.--Lat 44°40'45", long 73°04'20", on right bank at East Georgia, Franklin County, 0.5 mile upstream from railroad bridge and 1 mile downstream from Beaver Meadow Brook.

Drainage area.--686 sq mi.

Records available.--August 1929 to September 1958. Prior to December 1937, published as "near Milton."

Gage.--Water-stage recorder. Altitude of gage is 285 ft (from topographic map). Prior to December 1937, at site 3½ miles downstream at different datum.

Average discharge.--29 years, 1,216 cfs, adjusted to present drainage area.

Extremes.--Maximum discharge during year, 15,100 cfs Apr. 22 (gage height, 10.56 ft); minimum daily, 270 cfs Oct. 16.
1929-58: Maximum discharge, 23,200 cfs Mar. 19, 1936 (gage height, 12.52 ft, site and datum then in use), by computation of peak flow over dam; maximum gage height, 16.59 ft Apr. 5, 1956 (ice jam); minimum daily discharge, 91 cfs July 30, 1933.

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair. Low flow regulated by powerplants above station.

Revisions.--WSP 894: Drainage area.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.6	244	5.0	2,010
3.0	390	7.0	5,050
3.5	665	9.0	9,930
4.0	1,030	11.0	16,800

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	336	435	1,400	a1,350	760	620	2,980	2,690	1,130	566	838	441
2	315	501	950	a1,300	740	620	3,230	*2,070	3,740	543	672	422
3	344	488	710	a900	730	600	3,140	1,770	3,970	464	512	422
4	312	1,510	580	a600	720	650	3,940	2,050	1,840	386	496	367
5	301	1,430	520	730	710	710	4,380	2,000	1,330	349	484	366
6	327	1,120	540	800	705	780	4,930	1,560	1,170	354	512	392
7	303	988	700	830	700	710	5,210	1,350	942	577	630	382
8	276	570	2,100	800	690	640	3,990	1,710	772	966	1,460	452
9	274	830	1,600	780	680	600	2,800	3,530	704	1,010	1,240	522
10	343	1,090	1,200	760	670	580	2,360	2,440	744	758	950	477
11	276	868	2,200	750	670	580	2,830	2,340	890	594	779	*556
12	307	724	2,600	740	670	680	3,050	5,130	920	1,030	570	815
13	280	678	1,600	740	660	750	2,970	3,760	*786	1,640	606	665
14	306	632	1,200	a740	660	780	4,100	2,320	1,210	1,200	665	507
15	287	1,360	1,100	a740	660	760	4,500	1,800	1,020	815	632	464
16	270	2,110	1,030	a730	650	760	6,550	1,700	793	*714	626	1,010
17	285	1,570	960	a730	650	760	9,260	1,800	758	1,710	*594	1,300
18	337	1,820	860	a720	640	750	10,600	1,500	758	1,040	548	2,770
19	612	1,690	1,000	a720	630	750	10,800	1,660	678	995	621	3,970
20	1,290	*3,170	2,700	a720	620	780	8,220	1,660	588	1,790	600	1,540
21	793	2,240	11,500	710	620	770	8,700	1,240	452	1,620	511	1,040
22	670	1,400	9,610	740	590	760	13,500	1,130	648	974	634	1,350
23	439	1,130	3,600	900	580	750	12,300	1,150	751	751	620	1,520
24	524	1,010	2,390	1,200	590	840	8,110	1,060	665	672	484	958
25	1,020	928	1,460	1,050	620	880	5,670	920	487	576	992	751
26	852	800	1,650	850	*630	920	3,910	852	507	480	1,500	830
27	652	500	4,910	870	620	1,200	2,760	786	658	955	860	875
28	592	480	2,930	890	590	1,500	2,480	672	626	606	672	966
29	422	900	2,010	850	-	2,000	2,810	1,060	498	870	535	868
30	458	1,650	a1,650	800	-------	2,700	3,520	1,290	494	1,970	489	765
31	443	-------	a1,400	770	-------	*3,010	-------	1,030	-------	1,320	440	-------
Total	14,246	34,622	68,660	25,810	18,455	29,170	163,600	56,030	30,529	28,295	21,772	27,763
Mean	460	1,154	2,215	833	659	941	5,453	1,807	1,018	913	702	925
Cfsm	0.671	1.68	3.23	1.21	0.961	1.37	7.95	2.63	1.48	1.33	1.02	1.35
In.	0.77	1.88	3.72	1.40	1.00	1.58	8.87	3.04	1.66	1.53	1.18	1.51

Calendar year 1957: Max 11,500 Min 246 Mean 1,077 Cfsm 1.57 In. 21.30
Water year 1957-58: Max 13,500 Min 270 Mean 1,422 Cfsm 2.07 In. 28.14

Peak discharge (base, 10,400 cfs).--Dec. 21 (9 to 10 p.m.) 14,000 cfs (10.27 ft); Apr. 19 (1 p.m.) 11,200 cfs (9.42 ft); Apr. 22 (8 to 10 p.m.) 15,100 cfs (10.56 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for station at Johnson.
Note.--Stage-discharge relation affected by ice Nov. 26 to Dec. 20, Jan. 5 to Mar. 29, and during part of period of no gage-height record Dec. 30 to Jan. 4.

2930. Missisquoi River near North Troy, Vt.

Location.--Lat 44°58'20", long 72°23'15", on right bank 200 ft upstream from Big Falls, 1½ miles downstream from Jay Branch, and 2¼ miles upstream from North Troy, Troy County.

Drainage area.--131 sq mi.

Records available.--August 1931 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 580 ft (from topographic map).

Average discharge.--27 years, 268 cfs.

Extremes.--Maximum discharge during year, 5,110 cfs Dec. 21 (gage height, 10.26 ft); minimum, 37 cfs Oct. 17; minimum daily, 38 cfs Oct. 16, 17.
1931-58: Maximum discharge, 7,980 cfs May 3, 1940 (gage height, 12.87 ft), from rating curve extended above 3,600 cfs by logarithmic plotting, verified by computation of flow over dam at gage height 11.70 ft; minimum, 9.4 cfs Aug. 28, 1949; minimum daily, 11 cfs Aug. 28, 1949, Aug. 30, 1953.

Remarks.--Records good except those for periods of ice effect, which are fair. Some regulation caused by small powerplant above station.

Revisions (water years).--WSP 924: 1940. WSP 1114: 1933(M), 1936-39.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.3	33	3.0	352
1.6	55	5.0	1,170
2.0	107	7.0	2,350
2.5	213	10.0	4,850

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	89	375	255	120	87	375	*518	223	95	187	66
2	67	105	234	245	115	87	465	472	664	80	129	72
3	58	198	165	125	110	88	442	359	452	130	104	63
4	43	500	160	105	105	110	657	388	235	82	110	56
5	45	355	115	125	110	130	778	336	181	67	118	57
6	46	287	120	100	110	130	887	278	165	133	82	55
7	45	200	215	140	110	120	737	265	135	640	148	61
8	45	154	860	135	105	110	583	444	122	563	542	91
9	43	331	413	120	97	105	413	651	112	460	330	73
10	42	257	334	120	96	100	378	378	114	201	180	*80
11	40	183	994	125	94	105	476	828	173	158	118	252
12	40	154	457	105	92	110	514	1,660	*231	276	94	187
13	39	157	260	110	90	100	602	651	131	443	154	107
14	39	166	260	110	89	110	895	416	520	190	*196	98
15	39	733	*239	110	87	100	1,240	321	233	*127	160	73
16	38	487	216	110	86	105	2,200	304	157	357	196	206
17	38	*530	208	115	84	105	3,230	289	193	662	108	230
18	47	626	164	*110	81	105	3,500	244	163	225	112	1,050
19	*324	594	217	105	78	110	3,000	354	132	526	166	1,050
20	269	862	1,500	100	76	120	2,370	276	101	1,320	119	332
21	153	424	4,250	105	74	110	3,650	207	102	498	109	223
22	105	284	1,370	150	76	105	4,120	176	115	247	180	534
23	89	234	571	200	75	115	2,840	211	91	184	122	354
24	164	213	420	170	74	115	1,700	164	76	152	100	193
25	516	184	298	150	*80	130	1,320	141	75	206	544	134
26	218	115	355	140	80	150	762	124	140	824	368	270
27	140	95	1,230	140	81	175	495	117	200	461	185	218
28	115	145	491	140	86	225	503	113	113	220	120	278
29	107	389	368	125		260	618	264	82	531	95	180
30	100	533	270	130		*301	807	280	80	645	82	128
31	92		242	120		365		179		338	68	
Total	3,205	9,604	17,371	4,140	2,561	4,188	40,357	11,408	5,811	11,041	5,326	6,769
Mean	103	320	560	134	91.5	135	1,345	368	194	356	172	226
Cfsm	0.786	2.44	4.27	1.02	0.698	1.03	10.27	2.81	1.48	2.72	1.31	1.73
In.	0.91	2.73	4.93	1.18	0.73	1.19	11.46	3.24	1.65	3.13	1.51	1.92

Calendar year 1957: Max 4,250 Min 28 Mean 268 Cfsm 2.05 In. 27.77
Water year 1957-58: Max 4,250 Min 38 Mean 334 Cfsm 2.55 In. 34.58

Peak discharge (base, 3,300 cfs).--Dec. 21 (8 a.m.) 5,110 cfs (10.26 ft); Apr. 19 (2 a.m.) 4,260 cfs (9.54 ft); Apr. 22 (10 a.m.) 4,760 cfs (9.90 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 3-8, 20, Jan. 3 to Mar. 28.

2935. Missisquoi River near Richford, Vt.

Location.--Lat 44°57'30", long 72°41'55", on left bank 1 2/3 miles upstream from Trout River, 3 miles south of Richford, Franklin County, and 3¾ miles downstream from North Branch.

Drainage area.--479 sq mi.

Records available.--July 1911 to September 1923, October 1928 to September 1958. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Water-stage recorder. Altitude of gage is 410 ft (from topographic map). Prior to Aug. 1, 1915, chain gage at site a quarter of a mile downstream at datum 4.35 ft lower. Aug. 1, 1915, to Sept. 30, 1923, water-stage recorder at present site and datum. Oct. 1, 1928, to Sept. 30, 1929, chain gage at former site at datum 4.6 ft lower.

Average discharge.--42 years (1911-23, 1928-58), 910 cfs.

Extremes.--Maximum discharge during year, 10,600 cfs Apr. 18 (gage height, 12.42 ft); minimum, 126 cfs Oct. 17, 18.

1911-23, 1928-58: Maximum discharge, 17,200 cfs May 4, 1940 (gage height, 15.15 ft), from rating curve extended above 9,300 cfs on basis of computation of peak flow over dam at gage height 14.70 ft, slope-area measurement at gage height 12.90 ft, and study of discharge per foot of width at measuring section; maximum gage height, 18.92 ft Mar. 15, 1946 (ice jam); minimum discharge observed, 8 cfs July 14, 1911.

Maximum discharge known, 45,000 cfs during flood of November 1927 (gage height, 23.1 ft, from floodmarks), from rating curve extended above 9,300 cfs as explained above.

Remarks.--Records excellent except those for periods of ice effect, which are fair. Slight diurnal fluctuation at low flow; regulation greater prior to 1934.

Revisions (water years).--WSP 784: Drainage area. WSP 1237: 1913-14(M), 1922(M), 1923, 1929-30. WSP 1307: 1916(M). WSP 1437: 1912.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 21				Dec. 22 to Sept. 30			
2.8	120	6.0	2,350	3.1	205	6.0	2,330
3.0	185	8.0	4,310	3.5	370	9.0	5,520
3.5	400	11.0	8,350	4.0	630	13.0	11,600
4.0	700						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	277	390	1,780	976	450	340	1,930	*1,630	465	254	920	299
2	273	395	1,220	960	435	345	2,200	1,290	1,550	250	636	286
3	268	488	800	530	415	350	2,330	1,060	1,810	343	505	278
4	243	1,080	640	490	410	400	2,960	1,030	1,730	316	440	246
5	222	1,190	520	465	405	450	3,460	984	1,330	235	440	231
6	192	936	520	450	410	490	3,950	784	520	396	406	212
7	189	707	900	530	420	480	4,240	697	455	1,600	873	807
8	189	565	2,240	500	410	450	3,220	867	384	1,840	2,660	559
9	182	763	2,070	475	390	425	2,320	1,660	348	1,660	3,210	425
10	168	852	1,460	460	375	415	1,970	1,280	325	982	1,600	*415
11	154	637	2,440	450	365	410	2,240	1,270	348	666	896	588
12	151	541	2,430	440	355	405	2,440	3,220	*388	816	636	690
13	148	500	1,200	430	350	400	2,640	2,720	410	1,280	588	500
14	145	483	1,100	420	340	405	3,270	1,400	1,000	890	776	415
15	139	1,190	1,000	415	330	420	3,910	1,000	966	*554	636	356
16	136	1,840	960	410	325	425	5,770	856	532	830	*666	392
17	126	1,380	900	410	320	425	8,180	816	505	2,060	564	541
18	133	1,680	800	400	310	420	9,790	690	490	1,300	490	1,460
19	753	1,740	880	390	305	440	9,420	666	410	1,670	600	2,920
20	*1,310	*2,600	3,700	380	300	465	7,700	597	356	3,720	559	1,720
21	785	2,070	8,110	370	290	450	8,620	570	312	3,100	480	864
22	523	1,390	8,360	480	300	425	10,100	505	304	1,820	588	1,630
23	445	1,100	4,200	650	295	440	8,960	480	295	1,170	548	1,600
24	757	976	2,250	710	300	470	6,020	470	254	888	425	928
25	1,500	898	1,510	620	*315	530	4,270	410	231	648	980	690
26	1,130	630	1,170	550	340	600	2,820	370	370	944	1,460	965
27	721	450	2,820	540	330	760	1,770	330	520	2,220	808	1,060
28	572	460	2,400	530	335	1,000	1,480	304	420	1,220	537	1,150
29	511	1,050	1,500	510	-	1,400	1,710	480	304	1,130	430	880
30	456	1,860	1,140	490	-------	1,600	2,180	684	254	1,970	370	636
31	425	-------	920	465	-------	*1,900	-------	542	-------	1,590	325	-------
Total	13,243	30,841	61,940	15,896	9,925	17,935	131,870	29,762	17,586	38,362	25,052	23,743
Mean	427	1,028	1,998	513	354	579	4,396	960	586	1,237	808	791
Cfsm	0.891	2.15	4.17	1.07	0.739	1.21	9.18	2.00	1.22	2.58	1.69	1.65
In.	1.03	2.39	4.81	1.23	0.77	1.39	10.24	2.31	1.37	2.98	1.95	1.84

Calendar year 1957: **Max** 8,360 **Min** 82 **Mean** 906 **Cfsm** 1.89 **In.** 25.66
Water year 1957-58: **Max** 10,100 **Min** 126 **Mean** 1,140 **Cfsm** 2.38 **In.** 32.31

Peak discharge (base, 7,600 cfs).--Dec. 22 (1 to 2 a.m.) 9,650 cfs (11.84 ft); Apr. 18 (9:45 p.m.) 10,600 cfs (12.42 ft); Apr. 22 (9:45 p.m.) 10,400 cfs (12.29 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 26-29, Dec. 3-7, 13-20, Jan. 2 to Mar. 30.

2945. Lake Champlain at Burlington, Vt.

Location.--Lat 44°29'00", long 73°13'30", 50 ft south of Gulf Oil Co. dock at Burlington, Chittenden County, 0.1 mile north of Burlington Water Department pumping station, and 0.6 mile north of railroad station.

Records available.--May 1907 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 92.86 ft above mean sea level, datum of 1929. Prior to July 20, 1937, staff gage at site three-quarters of a mile south, and July 20, 1937, to Sept. 7, 1939, float gage at site 0.1 mile south, both at present datum.

Extremes.--Maximum gage height during year, 7.60 ft Apr. 26, 27, affected by seiche; minimum, 0.52 ft Oct. 17, affected by seiche.
1907-58: Maximum gage height observed, 8.65 ft Mar. 27, 28, 1936; minimum observed, -0.25 ft Dec. 4, 1908.

Revisions (water years).--WSP 684: 1912-29 (datum correction). WSP 1207: 1938 (datum correction).

Mean gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.86	0.68	1.15	3.55	3.13	2.73	3.79	7.38	4.92	3.25	2.62	1.95
2	.87	.69	1.15	3.57	3.12	2.71	3.95	7.34	5.00	3.19	2.58	1.94
3	.84	.72	1.20	3.59	3.09	2.69	4.11	7.22	5.09	3.15	2.53	1.90
4	.85	.75	1.21	3.54	3.07	2.72	4.27	7.18	5.08	3.08	2.53	1.78
5	.83	.79	1.20	3.47	3.05	2.72	4.41	7.14	5.00	3.03	2.51	1.79
6	.80	.79	1.10	3.37	3.03	2.73	4.60	7.05	4.98	2.99	2.46	1.77
7	.79	.79	1.15	3.36	3.03	2.74	4.86	6.94	4.91	2.95	2.44	1.75
8	.79	.76	1.22	3.37	3.02	2.74	5.02	6.90	4.80	2.93	2.47	1.74
9	.77	.77	1.28	3.32	3.00	2.75	5.09	6.81	4.74	2.90	2.48	1.72
10	.74	.78	1.31	3.26	2.98	2.74	5.11	6.76	4.63	2.89	2.49	1.64
11	.73	.78	1.37	3.23	2.95	2.73	5.14	6.75	4.53	2.85	2.49	1.64
12	.70	.76	1.43	3.17	2.92	2.71	5.17	6.76	4.52	2.85	2.44	1.65
13	.67	.76	1.43	3.13	2.90	2.71	5.20	6.76	4.42	2.84	2.38	1.62
14	.66	.75	1.43	3.11	2.88	2.73	5.22	6.72	4.36	2.83	2.38	1.60
15	.63	.79	1.47	3.13	2.86	2.90	5.28	6.62	4.31	2.78	2.38	1.55
16	.63	.85	1.46	3.11	2.88	2.80	5.38	6.51	4.25	2.77	2.34	1.58
17	.57	.88	1.48	3.08	2.90	2.79	5.58	6.42	4.19	2.75	2.30	1.60
18	.59	.93	1.45	3.05	2.88	2.78	5.80	6.34	4.12	2.74	2.27	1.71
19	.66	.94	1.41	3.01	2.87	2.77	6.11	6.24	4.05	2.71	2.21	1.84
20	.68	1.05	1.56	2.97	2.87	2.77	6.34	6.15	3.95	2.70	2.16	1.89
21	.70	1.07	2.06	2.93	2.84	2.79	6.54	6.04	3.87	2.70	2.13	1.90
22	.66	1.12	2.64	2.96	2.83	2.78	6.91	5.94	3.81	2.70	2.12	1.90
23	.68	1.10	2.89	2.97	2.80	2.78	7.26	5.83	3.74	2.67	2.13	1.91
24	.69	1.08	3.01	2.97	2.79	2.78	7.45	5.72	3.66	2.65	2.08	1.92
25	.68	1.14	3.08	2.97	2.77	2.80	7.53	5.54	3.60	2.64	2.06	1.89
26	.72	1.15	3.10	2.99	2.75	2.87	7.59	5.45	3.55	2.61	2.08	1.94
27	.74	1.09	3.31	3.00	2.74	2.97	7.58	5.33	3.48	2.60	2.10	1.95
28	.70	1.01	3.47	3.06	2.74	3.09	7.52	5.23	3.42	2.55	2.06	1.97
29	.70	1.10	3.52	3.11	-	3.24	7.45	5.14	3.36	2.56	2.05	1.95
30	.66	1.13	3.56	3.14	-------	3.42	7.44	5.05	3.30	2.60	2.01	1.83
31	.67	-------	3.56	3.14	-------	3.61	-------	5.00	-------	2.64	1.97	-------
Mean	0.72	0.90	1.96	3.18	2.92	2.84	5.79	6.33	4.25	2.81	2.30	1.79

Calendar year 1957: Max 3.56 Min 0.57 Mean 1.91
Water year 1957-58: Max 7.59 Min 0.57 Mean 2.98

2950. Richelieu River (Lake Champlain) at Rouses Point, N. Y.

Location.--Lat 44°59'45", long 73°21'40", on left bank at outlet of Lake Champlain 90 ft north of Rutland Railway bridge at Rouses Point, Clinton County, and 1 mile south of Fort Montgomery.

Drainage area.--8,277 sq mi.

Records available.--October 1863 to December 1870 (maximum and minimum monthly gage heights at St. Johns, Quebec, published in WSP 97) and March 1871 to September 1958 (daily gage heights; those for 1871-1907 published in WSP 894). January 1875 to September 1916 (monthly discharge) at Chambly, Quebec, published in WSP 424. Gage heights prior to Oct. 1, 1925, published as Richelieu River at Fort Montgomery, Rouses Point.

Gage.--Water-stage recorder. Datum of gage is 93.00 ft above mean sea level, datum of 1929. March 1871 to May 1923 staff gage located in Fort Montgomery at present datum. May 1923 to October 1938 staff gage at present site and datum.

Extremes.--Maximum gage height during year, 7.78 ft May 3; minimum, 0.39 ft Oct. 20, 29.
1871-1958: Maximum gage height observed, 8.80 ft Mar. 30, 1903; minimum observed, -0.83 ft Oct. 23, 1941.
Observations at St. Johns, Quebec, indicate a maximum gage height of 8.83 ft (computed) during April 1869.

Mean gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.86	0.51	1.07	3.55	3.02	2.58	3.66	7.36	4.88	3.20	2.51	1.86
2	.70	.51	1.02	3.39	2.98	2.58	3.80	7.16	4.82	3.08	2.51	1.77
3	.66	.54	1.08	3.37	2.98	2.59	3.97	7.55	4.94	3.02	2.47	1.84
4	.67	.61	1.03	3.39	2.98	2.59	4.16	7.03	4.99	2.96	2.38	1.96
5	.68	.66	1.08	3.43	2.95	2.59	4.34	6.98	5.05	2.87	2.39	1.69
6	.70	.72	1.46	3.44	2.93	2.61	4.48	6.90	4.79	2.88	2.45	1.80
7	.70	.73	1.14	3.29	2.88	2.59	4.72	6.81	4.83	2.84	2.39	1.65
8	.65	.98	1.04	3.17	2.87	2.60	4.92	6.72	4.80	2.87	2.38	1.59
9	.68	.79	1.14	3.23	2.87	2.60	4.96	6.78	4.57	2.81	2.36	1.64
10	.63	.60	1.20	3.23	2.82	2.60	5.01	6.71	4.73	2.83	2.33	1.80
11	.58	.75	1.26	3.12	2.80	2.60	5.01	6.61	4.54	2.80	2.35	1.50
12	.58	.75	1.32	3.12	2.78	2.59	4.98	6.57	4.37	2.79	2.51	1.54
13	.59	.75	1.45	3.06	2.75	2.58	5.07	6.60	4.39	2.76	2.38	1.54
14	.58	.77	1.46	3.01	2.75	2.58	5.11	6.56	4.21	2.80	2.31	1.53
15	.57	.73	1.37	2.92	2.71	2.63	5.17	6.55	4.21	2.77	2.26	1.60
16	.56	.79	1.47	2.97	2.70	2.67	5.28	6.46	4.14	2.67	2.21	1.50
17	.69	.79	1.36	2.99	2.78	2.67	5.44	6.35	4.05	2.57	2.22	1.47
18	.63	.84	1.48	2.91	2.80	2.66	5.70	6.30	3.99	2.67	2.13	1.56
19	.55	1.04	1.70	2.89	2.78	2.65	5.95	6.15	3.93	2.67	2.09	1.66
20	.48	.98	1.56	2.88	2.74	2.63	6.24	6.05	3.93	2.54	2.18	1.77
21	.59	1.13	2.05	2.84	2.73	2.59	6.42	5.90	3.84	2.58	2.18	1.87
22	.72	1.10	2.56	2.86	2.68	2.61	6.75	5.86	3.69	2.66	2.04	1.85
23	.56	1.30	3.05	2.86	2.67	2.63	7.12	5.64	3.62	2.60	1.99	1.89
24	.77	1.10	2.90	2.87	2.66	2.65	7.45	5.61	3.56	2.57	2.11	1.96
25	.48	.96	3.04	2.86	2.65	2.69	7.40	5.63	3.52	2.52	2.09	2.02
26	.51	.99	3.20	2.85	2.63	2.73	7.38	5.28	3.52	2.50	1.99	1.80
27	.53	1.16	3.13	2.87	2.60	2.82	7.45	5.31	3.42	2.54	1.98	1.87
28	.59	1.22	3.40	2.93	2.58	2.95	7.49	5.16	3.32	2.71	2.00	1.79
29	.55	.96	3.44	3.00	~	3.13	7.47	5.08	3.31	2.53	1.96	1.87
30	.71	1.04	3.44	3.04	-------	3.32	7.36	4.95	3.25	2.54	1.98	2.31
31	.57	-------	3.45	3.04	-------	3.50	-------	4.86	-------	2.49	2.04	-------
Mean	0.62	0.86	1.91	3.08	2.79	2.70	5.68	6.23	4.17	2.73	2.23	1.75

Calendar year 1957: Max 3.47 Min 0.48 Mean 1.84
Water year 1957-58: Max 7.49 Min 0.48 Mean 2.90

2955. Lake Memphremagog at Newport, Vt.

Location.--Lat 44°56'10", long 72°12'15", on east side of bridge on U. S. Highway 5 at Newport, Orleans County.

Records available.--May 1931 to September 1958.

Gage.--Chain gage read once daily. Datum of gage is 673.00 ft above mean sea level, datum of 1929. Prior to July 21, 1934, chain gage on highway bridge 0.1 mile southeast at same datum.

Extremes.--Maximum gage height observed during year, 11.81 ft Apr. 24; minimum observed, 7.31 ft Oct. 17.
1931-58: Maximum gage height observed, 12.92 ft Apr. 20, 1933; minimum observed, 6.69 ft Nov. 4, 1934.

Remarks.--Elevation of lake regulated by powerplant and gates at Magog, Quebec.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.07	7.46	8.73	10.11	9.82	9.75	8.47	10.72	9.72	9.23	9.99	9.35
2	8.08	7.52	8.74	10.08	9.79	9.75	8.55	10.60	9.78	9.23	9.88	9.26
3	8.00	7.53	8.75	10.09	9.78	9.75	8.59	10.50	9.89	9.16	9.79	9.14
4	7.89	7.54	8.76	10.12	9.76	9.75	8.65	10.38	9.84	9.13	9.75	9.06
5	7.83	7.56	8.77	10.10	9.76	9.75	8.69	10.30	9.89	9.10	9.70	9.04
6	7.76	7.57	8.81	10.07	9.76	9.06	8.78	10.24	9.89	9.16	9.67	9.01
7	7.74	7.55	8.84	10.03	9.76	9.04	8.87	10.22	9.90	9.33	9.71	9.04
8	7.70	7.53	8.89	10.08	9.76	9.01	8.99	10.21	9.90	9.40	9.89	8.97
9	7.67	7.52	9.01	10.08	9.76	8.97	9.16	10.20	9.87	9.47	9.94	8.89
10	7.64	7.52	9.09	10.05	9.76	8.90	9.16	10.18	9.85	9.48	10.00	8.83
11	7.58	7.53	9.26	10.03	9.76	8.85	9.17	10.20	9.83	9.50	9.98	8.77
12	7.54	7.53	9.44	10.03	9.76	8.76	9.17	10.23	9.80	9.51	9.94	8.72
13	7.48	7.54	9.53	10.01	9.77	8.72	9.26	10.24	9.76	9.51	9.90	8.66
14	7.44	7.61	9.61	10.04	9.77	8.69	9.32	10.20	9.76	9.50	9.88	8.61
15	7.39	7.68	9.71	10.00	9.77	8.65	9.41	10.09	9.75	9.49	9.89	8.58
16	7.35	7.77	9.72	9.95	9.77	8.62	9.57	10.03	9.72	9.57	9.90	8.56
17	7.31	7.87	9.73	9.91	9.77	8.58	9.72	9.98	9.68	9.68	9.91	8.63
18	7.39	7.94	9.75	9.90	9.77	8.55	10.46	9.96	9.64	9.78	9.88	8.67
19	7.50	8.10	9.80	9.89	9.77	8.52	10.84	9.95	9.61	10.00	9.83	8.73
20	7.49	8.19	9.88	9.89	9.77	8.48	11.02	9.94	9.56	10.21	9.77	8.74
21	7.45	8.31	10.23	9.89	9.77	8.45	11.18	9.91	9.54	10.18	9.70	8.75
22	7.43	8.37	10.66	9.89	9.77	8.42	11.58	9.87	9.52	10.13	9.65	8.76
23	7.42	8.45	10.63	9.89	9.77	8.38	11.79	9.84	9.50	10.06	9.59	8.77
24	7.40	8.47	10.56	9.89	9.77	8.36	11.81	9.80	9.50	10.01	9.57	8.77
25	7.47	8.50	10.52	9.92	9.75	8.34	11.69	9.74	9.49	10.04	9.56	8.77
26	7.55	8.52	10.47	9.95	9.75	8.33	11.60	9.71	9.50	10.01	9.53	8.76
27	7.51	8.55	10.42	9.95	9.75	8.32	11.52	9.68	9.46	9.98	9.51	8.75
28	7.48	8.58	10.36	9.95	9.75	8.34	11.41	9.70	9.43	9.99	9.49	8.74
29	7.45	8.61	10.29	9.95	-	8.36	11.29	9.73	9.39	10.03	9.46	8.76
30	7.41	8.66	10.22	9.96	-------	8.37	10.99	9.73	9.28	10.01	9.43	8.79
31	7.39	-------	10.13	9.88	-------	8.40	-------	9.75	-------	10.00	9.39	-------

Note.--Gage heights for Jan. 11-29, Feb. 4 to Mar. 5, were taken to top of ice.

2960. Black River at Coventry, Vt.

Location.--Lat 44°52'08", long 72°16'14", on right bank 15 ft downstream from highway bridge, 800 ft upstream from Stony Brook, and 0.35 mile northwest of Coventry, Orleans County.

Drainage area.--122 sq mi.

Records available.--October 1951 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 725 ft (from topographic map).

Average discharge.--7 years, 195 cfs.

Extremes.--Maximum discharge during year, 2,620 cfs Apr. 19 (gage height, 6.79 ft); minimum daily, 16 cfs Oct. 17.
1951-58: Maximum discharge, that of Apr. 19, 1958; minimum daily, 11 cfs Aug. 29 to Sept. 1, 1953.

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by mill above station.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 11				Dec. 12 to Sept. 30			
1.6	16	3.0	205	1.8	28	4.0	490
1.9	32	3.5	324	2.1	50	5.0	960
2.2	60	4.0	490	2.5	112	6.0	1,670
2.5	105	4.5	705	3.0	210	6.6	2,350
				3.5	331		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	50	255	258	115	74	355	456	187	64	146	40
2	32	48	192	262	110	75	448	366	516	70	98	38
3	31	84	152	150	108	79	442	298	452	73	80	44
4	31	255	145	110	106	85	592	288	331	60	80	43
5	41	250	130	120	105	105	696	275	193	53	86	34
6	22	179	115	140	105	115	770	234	156	53	76	32
7	41	124	123	120	105	110	710	212	137	218	68	38
8	36	99	422	115	100	99	628	302	118	185	143	70
9	21	158	349	97	97	94	506	463	114	191	161	*49
10	19	179	319	97	94	85	428	389	105	125	116	47
11	23	132	660	105	91	94	482	413	*120	102	80	74
12	38	102	479	96	89	98	522	735	135	234	65	75
13	20	96	358	93	87	96	602	550	127	270	*106	53
14	39	95	302	91	84	95	770	438	148	*189	83	44
15	36	360	*241	89	81	91	949	305	163	114	76	42
16	33	380	219	90	78	92	1,410	280	116	260	105	112
17	16	*327	208	91	76	96	1,930	278	107	414	72	169
18	18	335	210	88	74	94	2,270	234	101	200	68	375
19	*133	382	185	*91	72	94	2,230	237	91	263	59	526
20	225	606	579	87	70	91	1,650	250	77	651	62	308
21	152	436	1,760	91	72	105	1,530	210	74	333	61	164
22	81	319	1,500	97	73	101	2,340	181	118	183	62	198
23	62	216	927	140	74	99	1,980	175	144	139	63	234
24	68	181	660	160	*76	103	1,470	163	94	118	48	140
25	164	167	420	150	73	116	1,080	148	72	102	197	99
26	124	136	350	130	74	130	a630	135	80	120	228	87
27	83	110	682	130	76	155	a420	118	103	161	135	87
28	70	99	506	130	75	191	a430	107	91	127	81	118
29	58	147	398	127	-	*219	a460	179	70	321	64	118
30	53	267	308	122	-------	260	*526	223	64	402	49	89
31	55	-------	258	120	-------	308	-------	177	-------	264	42	-------
Total	1,858	6,319	13,412	3,787	2,440	3,650	29,256	8,819	4,404	6,059	2,859	3,547
Mean	59.9	211	433	122	87.1	118	975	284	147	195	92.2	118
Cfsm	0.491	1.73	3.55	1.00	0.714	0.967	7.99	2.33	1.20	1.60	0.756	0.967
In.	0.57	1.93	4.09	1.15	0.74	1.11	8.92	2.69	1.34	1.85	0.87	1.08

Calendar year 1957: Max 1,760 Min 16 Mean 180 Cfsm 1.48 In. 20.07
Water year 1957-58: Max 2,340 Min 16 Mean 237 Cfsm 1.94 In. 26.34

Peak discharge (base, 1,700 cfs).--Dec. 21 (6:45 p.m.) 1,980 cfs (6.31 ft); Apr. 19 (5:30 a.m.) 2,620 cfs (6.79 ft); Apr. 22 (12 m.) 2,570 cfs (6.76 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for Missisquoi River near North Troy.

2965. Clyde River at Newport, Vt.

Location.--Lat 44°56'20", long 72°11'25", on right bank in Newport, Orleans County, just downstream from small tributary entering from north, 1 mile upstream from mouth.

Drainage area.--142 sq mi.

Records available.--May 1909 to September 1919, May 1920 to August 1923, October 1922 to September 1924, November 1928 to May 1936, September 1938 to September 1958. Prior to November 1928, published as "at West Derby."

Gage.--Water-stage recorder; and since Mar. 6, 1957, records of power generation. Datum of gage is 682.36 ft above mean sea level, datum of 1929. May 25, 1909, to Sept. 20, 1915, staff or chain gage and Sept. 21, 1915, to Sept. 30, 1924, Nov. 16, 1928, to May 4, 1936, water-stage recorder, at site 0.65 mile upstream at different datum.

Average discharge.--39 years (1909-19, 1920-21, 1922-24, 1929-35, 1938-58), 248 cfs.

Extremes.--Maximum discharge during year, about 2,800 cfs Apr. 24; minimum daily, 16 cfs Aug. 23, Sept. 6.
1909-24, 1928-36, 1938-58: Maximum discharge, 3,900 cfs Mar. 20, 1936 (gage height, 5.76 ft, site and datum then in use), from rating curve extended above 2,800 cfs on basis of computation of peak flow over dam; minimum daily, 2.6 cfs June 18, 1956.

Remarks.--Records good except those above 500 cfs, which are fair. Flow regulated by powerplant and reservoirs above station. Diversion around station through penstock of powerplant computed from relation of output and discharge measurements. After Mar. 6, 1957, discharge computed by adding river flow and flow diverted through penstock.

Cooperation.--Records of power generation furnished by Citizens Utilities Co.

Revisions (water years).--WSP 744: 1913(M), drainage area. WSP 924: 1940. WSP 1307: 1913-15(M).

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	184	251	27	437	237	88	271	785	82	233	331	30
2	147	50	253	404	159	25	306	731	318	213	360	199
3	164	53	243	408	238	242	373	652	394	216	230	29
4	75	45	240	465	239	228	373	604	284	225	240	83
5	26	137	247	531	238	251	374	567	335	20	242	119
6	31	121	231	320	245	229	291	551	407	22	238	16
7	44	231	27	239	231	239	372	526	376	233	230	25
8	58	229	180	254	111	99	421	511	82	240	238	17
9	64	233	261	244	105	21	423	512	311	235	254	*228
10	62	26	301	243	239	234	443	510	353	250	188	230
11	34	240	435	238	238	242	463	497	*255	260	237	196
12	49	238	434	148	240	241	464	532	242	250	232	107
13	45	250	245	243	243	197	419	572	241	70	230	40
14	56	293	259	246	236	138	501	568	47	*251	231	34
15	46	279	326	237	66	35	480	543	43	266	206	94
16	42	253	*273	239	111	22	467	532	255	285	232	201
17	33	218	273	234	240	222	585	514	247	379	17	207
18	53	308	326	*235	231	211	1,020	450	252	364	233	239
19	33	*394	288	20	239	226	1,470	412	237	278	232	203
20	37	*393	376	237	242	144	1,750	420	237	369	218	18
21	238	456	521	234	242	112	1,830	450	40	359	86	64
22	227	460	647	236	103	23	2,230	449	40	370	93	283
23	209	328	866	237	26	24	2,480	293	251	372	16	256
24	222	241	849	233	*232	243	2,410	157	235	358	79	252
25	230	350	746	240	239	240	2,050	83	228	382	245	272
26	79	338	650	217	243	235	1,600	286	232	364	230	258
27	50	232	637	237	235	77	1,240	260	93	368	234	17
28	178	239	586	238	240	174	1,150	252	20	375	216	18
29	182	214	526	251	-	24	957	259	20	288	212	243
30	169	106	509	266	-------	*27	*847	239	238	358	158	243
31	216	-------	494	269	-------	247	-------	142	-------	358	17	-------
Total	3,283	7,208	12,276	8,280	5,688	4,760	28,060	13,859	6,395	8,611	6,205	4,221
Mean	106	240	396	267	203	154	935	447	213	278	200	141
Cfsm	0.746	1.69	2.79	1.88	1.43	1.08	6.58	3.15	1.50	1.96	1.41	0.993
In.	0.86	1.89	3.22	2.17	1.49	1.25	7.35	3.63	1.67	2.26	1.63	1.11

Calendar year 1957: Max 866 Min 10 Mean 217 Cfsm 1.53 In. 20.73
Water year 1957-58: Max 2,480 Min 16 Mean 298 Cfsm 2.10 In. 28.53

* Discharge measurement made on this day.
Note.--Discharge in cubic feet per second per square mile and runoff in inches may not represent natural flow because of regulation.

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations and the second a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a third table.

Low-flow partial-record stations

Measurements of streamflow in the area covered by this report made at low-flow partial-record stations are given in the following table. Most of these measurements were made during periods of base flow when streamflow is primarily from ground-water storage. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will give a picture of the low-flow potentiality of stream. The column headed "Period of record" shows the water years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at low-flow partial-record stations during water year 1958

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Streams tributary to Lake Superior				
189	East Two Rivers near Iron Junction, Minn.	Lat 47°23'34", long 92°39'51", at culvert on State Highway 216, 2.2 miles southwest of Iron Junction.		1958	11-19-57 12-21-57 1-27-58 2-28-58 4-26-58 5-23-58 6-19-58 6-24-58 7-19-58 8-11-58	14.4 11.3 8.1 11.4 14.6 8.2 27.7 18.0 14.4 11.9
433	Iron River near Big Bay, Mich.	SW¼ sec.13, T.51 N., R.27 W., at outlet of Lake Independence, near Big Bay.	88.1	1946-58	10-11-57 4-22-58 7-23-58	38.7 404 89.8
		Streams tributary to Lake Michigan				
464	Gulliver Lake Outlet near Gulliver, Mich.	SW¼ sec.2, T.41 N., R.14 W., 1½ miles southwest of Gulliver.	a7	1946-58	10-16-57 1-20-58 5- 1-58 7-17-58	0 3.97 13.9 2.41
470	North Manistique Lake Outlet at Helmer, Mich.	Sec.20, T.45 N., R.11 W., at bridge on State Highway 98, ¼ mile northeast of Helmer.	a15	1942-44‡, 1946-58	10-15-57 1-21-58 4-23-58 7-16-58	.94 14.7 31.3 10.4
569	Big Spring near Manistique, Mich.	S½ sec.25, T.42 N., R.17 W., at Palms Brook State Park, 7 miles northwest of Manistique.	-	1950-58	10-17-57 5- 1-58 7-15-58	21.2 30.9 29.4
614	Chicagon Creek near Iron River, Mich.	Chicagon Lake Outlet, in SW¼ sec.24, T.43 N., R.34 W., at U. S. Highway 2, 6½ miles east of Iron River.	17.4	1945-58	10- 3-57 1- 6-58 4- 3-58 7- 8-58	1.18 5.95 9.54 25.9
614.7	Briar Hill Creek near Crystal Falls, Mich. b/	Fortune Lake Outlet, in SW¼ sec.24, T.43 N., R.33 W., at New Bristol location, near Crystal Falls.	11.8	1945-58	10- 3-57 1- 6-58 4- 3-58 7- 8-58	3.82 9.29 2.06 16.2
851	East River tributary at Greenleaf, Wis.	Lat 44°18'24", long 88°05'47", at railroad box culvert, ½ mile south of Greenleaf.	8.00	1957-58	8-16-57 8-17-58	0 0
1257	Bear Creek near Brethren, Mich.	NE¼ sec.18, T.22 N., R.14 W., at Potter's Bridge, 1.5 miles northwest of Brethren.	170	1958	6- 3-58	105
		Streams tributary to Lake Huron				
1323	Hunt Creek near Lewiston, Mich.	SW¼ sec.25, T.29 N., R.2 E., 8 miles east-southeast of Lewiston.	a11	1943-58	10- 2-57 1-28-58 4- 2-58 6-17-58 8- 4-58	21.6 21.3 25.6 20.2 18.3
1357	South Branch Au Sable River near Luzerne, Mich.	SE¼ sec.29, T.26 N., R.1 W., 10 miles west of Luzerne.	300	1951-58	10- 3-57 1-28-58 4- 3-58 7- 2-58	136 164 272 121

‡ Operated as a continuous-record gaging station.
a Approximately.
b Published as Fortune Lake Outlet, 1945.

Discharge measurements made at low-flow partial-record stations during water year 1958--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Streams tributary to Lake Huron--Continued				
1358	North Branch Au Sable River near Lovells, Mich.	SE¼ sec.16, T.27 N., R.1 W., 5 miles southeast of Lovells.	140	1951, 1953-58	10- 4-57 1-24-58 4- 2-58	124 127 135
1359	Big Creek near Lovells, Mich.	SW¼ sec.23, T.27 N., R.1 W., 7 miles southeast of Lovells.	180	1951-58	10- 4-57 1-24-58 4- 2-58	51.2 51.1 80.6
1459.45	Spring Bank Creek near Ortonville, Mich.	NW¼ sec.29, T.6 N., R.9 E., at Jasmond Rd., 3½ miles south of Hadley and 5 miles northeast of Ortonville.	2.05	1955-58	3-25-58 5- 9-58 9-16-58	.12 .37 .04
1459.5	Spring Bank Creek near Hadley, Mich.	NW¼ sec.20, T.6 N., R.9 E., at Hegel Rd., 3 miles southwest of Hadley.	3.18	1955-58	3-25-58 5- 9-58 9-16-58	.91 .88 .08
1481	Lime Lake Outlet near Ortonville, Mich.	SE¼ sec.31, T.6 N., R.9 E., at outlet of lake, 2 miles north of Ortonville.	.61	1955-58	3-25-58 5- 9-58 9-16-58	.42 .46 .36
1481.9	Swartz Creek near Five Points, Mich.	SW¼ sec.25, T.5 N., R.7 E., at Mackey Rd., 1⅝ miles southeast of Five Points and 2 miles east of Holly.	2.48	1955-58	3-25-58 5- 9-58 9-15-58	1.16 .30 .15
1481.95	Swartz Creek at Five Points, Mich.	NE¼ sec.22, T.5 N., R.7 E., at Fagan Rd., ¼ mile north of Five Points and 2 miles northeast of Holly.	6.17	1955-58	3-25-58 5- 9-58 9-15-58	2.92 1.48 .42
1483.95	Thread Creek near Davisburg, Mich.	NE¼ sec.29, T.5 N., R.8 E., at McGinnis Rd., 4½ miles north of Davisburg and 5 miles east of Holly.	7.56	1955-58	3-25-58 5- 9-58 9-15-58	2.03 1.37 1.08
1484	Thread Creek near Holly, Mich.	SE¼ sec.18, T.5 N., R.8 E., at Groveland Mills, 5½ miles northeast of Holly.	12.2	1955-58	10-15-57 1-28-58 3-25-58 5- 9-58 6-20-58 7-28-58 9-15-58	2.00 4.08 5.02 2.79 2.73 1.48 1.80
		Streams tributary to St. Clair River				
1593	Black River near Croswell, Mich.	SE¼ sec.8, T.9 N., R.16 E., 3½ miles south of Croswell.	370	1956-58	10-16-57 8- 9-58 9- 4-58	6.65 14.2 19.5
		Streams tributary to Lake St. Clair				
1615.2	Trout Creek near Lake Orion, Mich.	SE¼ sec.24, T.4 N., R.10 E., at Greenshield Rd., 3 miles southeast of Lake Orion.	7.83	1955-58	3-25-58 5- 9-58 9-16-58	6.61 2.86 .91
1615.22	Trout Creek tributary near Lake Orion, Mich.	NW¼ sec.13, T.4 N., R.11 E., at outlet of Michigan Conservation Dept. (Fish Division) pond, 3 miles southeast of Lake Orion.	2.35	1955-58	3-25-58 5- 9-58 9-16-58	2.80 1.62 1.57
1615.98	West Branch Stony Creek near Lake Orion, Mich.	SW¼ sec.5, T.4 N., R.11 E., at Harmon Rd., 2 miles east of Lake Orion.	11.7	1955-58	3-25-58 5- 9-58 9-16-58	3.34 1.80 .58
1616	West Branch Stony Creek near Lakeville, Mich.	SE¼ sec.5, T.4 N., R.11 E., at Predmore Rd., 2½ miles east of Lake Orion and 3 miles southwest of Lakeville.	14.8	1955-58	10-15-57 1-28-58 3-13-58 3-25-58 4-25-58 5- 9-58 6-18-58 7-23-58 8-15-58 9- 5-58	1.00 3.51 5.64 5.92 4.84 2.58 1.92 .78 .48 .37
		Streams tributary to Lake Erie				
1706	Mann Creek near Brighton, Mich.	NW¼ sec.27, T.2 N., R.6 E., 3 miles east of Brighton.	18.4	1955-58	12-31-57 1-27-58 3-10-58 4-18-58 5-27-58 6-23-58 7-18-58	14.7 12.0 12.0 10.0 6.50 6.46 6.23
1724	South Lake Outlet near Unadilla, Mich.	NE¼ sec.9, T.1 S., R.3 E., at Boyce Rd., 2 miles southwest of Unadilla.	14.3	1955-58	2- 6-58 4- 3-58 5- 8-58	4.80 6.90 3.55
1724.3	Gosling Lake Outlet near Pinckney, Mich.	NW¼ sec.32, T.1 N., R.4 E., 3 miles southeast of Pinckney.	1.34	1955-58	2- 6-58 4- 3-58 5- 8-58	0 .19 .15

Discharge measurements made at low-flow partial-record stations during water year 1958--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Streams tributary to Lake Erie--Continued				
1724.6	Crooked Lake Outlet near Pinckney, Mich.	SE¼ sec.32, T.1 N., R.4 E., 3½ miles southwest of Pinckney.	2.08	1955-58	2- 6-58 4- 3-58 5- 8-58	0.78 .93 .56
1726	Portage River tributary near Pinckney, Mich.	NW¼ sec.11, T.1 S., R.4 E., at Stinchfield Woods Rd., 3½ miles south of Pinckney.	2.44	1955-58	4- 3-58 5- 8-58	.59 .44
1733	North Fork Mill Creek near Chelsea, Mich.c/	SE¼ sec.2, T.2 S., R.3 E., at highway bridge, 1½ miles northwest of Chelsea.	7.73	1955-58	4- 3-58 5- 8-58	2.41 1.54
2142	Eighteenmile Creek at North Boston, N. Y.	Lat 42°41'04", long 78°46'40", at bridge on Zimmerman St., State Highway 277 at North Boston.	37.1	1957-58	10-15-57 7-31-58	4.91 17.6
		Streams tributary to Lake Ontario				
2201	Oak Orchard Creek at Shelby, N. Y.	Lat 43°11'25", long 78°23'14", at bridge on Main St., at Shelby.	154	1957-58	10-16-57 7-31-58	2.49 4.94
2216	Van Campen Creek at Friendship, N. Y.	Lat 42°12'22", long 78°07'46", at bridge on Moss Brook St., at Friendship.	45.8	1954-55, 1957-58	7-29-58 9-15-58	4.87 3.24
2217	Angelica Creek near Angelica, N. Y.	Lat 42°18'38", long 78°02'16", at bridge on State Highway 408, 1.2 miles west of Angelica.	61.3	1942, 1954-55, 1957-58	7-29-58 9-15-58	4.47 8.96
2218	Black Creek at Rockville, N. Y.	Lat 42°18'08", long 78°09'49", at bridge on State Highway 305, at Rockville.	21.3	1957-58	7-29-58 9-15-58	2.08 1.47
2227	Wiscoy Creek at Pike, N. Y.	Lat 42°33'19", long 78°09'19", at bridge on Allegany Rd., at Pike.	43.9	1957-58	7-31-58 9-16-58	31.3 18.6
2260	Keshequa Creek at Craig Colony, Sonyea, N. Y.	Lat 42°40'53", long 77°49'45", at bridge at Craig Colony, Sonyea.	69.1	1910-12‡, 1917-32‡, 1957-58	7-31-58 9-16-58	6.74 4.32
2322	Catherine Creek at Montour Falls, N. Y.	Lat 42°19'42", long 76°50'40", at bridge, 0.4 mile south of Montour Falls.	41.1	1957-58	11-21-57 7-21-58 8-22-58 9-30-58	7.89 20.7 7.13 15.1
2326	Marsh Creek at Geneva, N. Y.	Lat 42°52'32", long 76°58'35", at bridge on East North St., Geneva.	8.37	1957-58	11-18-57	.30
2332	Enfield Creek near Ithaca, N. Y.	Lat 42°23'54", long 76°32'45", at bridge on State Highway 13, 0.2 mile above mouth and 3.6 miles southwest of Ithaca.	27.9	1956-58	8- 5-58 8-18-58 9-30-58	4.47 7.06 9.66
2333	Sixmile Creek near Ithaca, N. Y.	Lat 42°24'11", long 76°28'07", at bridge on German Cross Rd., 3.4 miles southeast of Ithaca.	39.3	1955-58	8- 4-58 8-18-58	10.4 10.6
2336	Cascadilla Creek near Ithaca, N. Y.	Lat 42°26'33", long 76°28'13", at bridge at entrance to Cornell fish hatchery, 1.9 miles east of Ithaca.	12.7	1935, 1955-58	8- 5-58 8-18-58	1.80 3.03
2337	Virgil Creek at Freeville, N. Y.	Lat 42°30'18", long 76°21'01", at bridge on Johnson St., 0.6 mile southwest of Freeville.	40.4	1955-58	8- 5-58 8-20-58	13.9 9.63
2338	Salmon River at Myers, N. Y.	Lat 42°32'18", long 76°32'34", at Timber Bridge, Myers, N. Y., 0.3 mile above mouth.	89.3	1935, 1956-58	8- 5-58 8-18-58	8.11 5.67
2342	Mud Creek at East Victor, N. Y.	Lat 42°58'32", long 77°22'58", at bridge on State Highway 96, at East Victor.	64.1	1957-58	11-18-57 5-14-58 6-13-58 7-30-58 9-17-58	1.38 32.2 57.2 11.2 2.84
2352	Flint Creek at Seneca Castle, N. Y.	Lat 42°53'25", long 77°06'05", at bridge on Castle Rd., 0.4 mile northeast of Seneca Castle.	82.5	1957-58	11-18-57 7-22-58	6.86 14.6
2353	Owasco Inlet at Moravia, N. Y.	Lat 42°43'01", long 76°26'18", at bridge on West Cayuga St., extension, about 0.8 mile northwest of Moravia.	108	1949-50, 1955-58	11-18-57 7-22-58 8-20-58	34.1 39.5 20.2
2417	East Branch Fish Creek at Swancott Mills, N. Y.	Lat 43°27'44", long 75°35'51", at bridge on Osceola-West Leydon road, 0.3 mile east of Swancott Mills.	95.7	1957-58	9-12-58	398
2448	Butternut Creek near Jamesville, N. Y.	Lat 42°56'45", long 76°03'41", at bridge on Smith Rd., 3.3 miles south of Jamesville.	34.7	1955-58	10- 4-57	8.08

‡ Operated as a continuous-record gaging station.
c Published as Mill Creek 1955-56.

Discharge measurements made at low-flow partial-record stations during water year 1958--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Streams tributary to Lake Ontario--Continued				
2530	Sugar River at Talcottville, N. Y.	Lat 43°32'08", long 75°22'03", at bridge on State Highway 12D, 0.3 mile north of Talcottville.	41.5	1926-32‡, 1953, 1957-58	8- 8-58 9-12-58	49.0 80.1
2532	Otter Creek near Glenfield, N. Y.	Lat 43°42'59", long 75°22'04", at bridge on Glenfield-Donnattsburg road at Otter Creek, 1.8 mile northeast of Glenfield.	65.6	1924-33‡, 1953, 1957-58	8- 8-58	64.4
2562	Roaring Brook at Martinsburg, N. Y.	Lat 43°44'00", long 75°28'13", at bridge on State Highway 12D and 26, at Martinsburg.	21.8	1953, 1957-58	7- 7-58	46.2 64.6
2572	Sunday Creek near Number Four, N. Y.	Lat 43°52'19", long 75°07'03", at bridge on Moshier power-plant road, 3.1 miles east of Number Four.	9.07	1954-55, 1957-58	8-20-58	6.53
		Streams tributary to St. Lawrence River				
2642	Little Sucker Brook at Waddington, N.Y.	Lat 44°50'30", long 75°11'27", at bridge on State Highway 345, at Waddington.	19.9	1958	4-11-58 9-10-58	23.8 0
2689	Trout Brook at Stockholm Center, N. Y.	Lat 44°46'16", long 74°48'47", at bridge, 0.7 mile upstream from mouth and 1 mile northeast of Stockholm Center.	44.9	1958	9-11-58 9-12-58	13.1
2691	Lawrence Brook near Moira, N.Y.	Lat 44°50'22", long 74°35'46", at bridge on county highway, 2.4 miles northwest of Moira, and 5.4 miles upstream from mouth.	28.0	1958	9-11-58	5.98
2708	English River near Mooers Forks, N. Y.	Lat 44°57'36", long 73°40'27", at bridge on Mooers Forks-Cannon Corner road, 1.7 miles west of Mooers Forks.	40.1	1956-58	6- 6-58 7-18-58	31.1 12.2
2718	Little Chazy River near Chazy, N.Y.	Lat 44°50'46", long 73°27'24", at bridge on Slosson Rd., 1.5 miles west of U. S. Highway 9, 3.2 miles southwest of Chazy.	35.4	1956-58	8-26-58	5.39
2722	North Branch Saranac River near Clayburg, N. Y.	Lat 44°35'33", long 73°52'34", at bridge on State Highways 3 and 365, 2.0 miles west of Clayburg.	124	1956-58	8-26-58	134
*2737	Salmon River at South Plattsburg, N. Y.	Lat 44°38'24", long 73°29'43", at bridge on Salmon River Rd., at South Plattsburg, 0.4 mile west of State Highway 22.	61.9	1954, 1957-58	8-26-58	17.1
2738	Little Ausable River near Valcour, N. Y.	Lat 44°35'39", long 73°29'48", at bridge on town road, at Laphams Mills, 2.8 miles southwest of Valcour.	67.8	1956-58	8-26-58	10.9
2748	East Branch Ausable River at Keene Valley, N. Y.	Lat 44°11'31", long 73°47'08", at bridge on village park road, at Keene Valley.	49.2	1949, 1957-58	6-10-58 8-27-58	59.8 52.1
*2762	Bouquet River at New Russia, N.Y.	Lat 44°09'51", long 73°36'30", at bridge on county road, 0.2 mile east of U. S. Highway 9, at New Russia.	37.6	1949, 1951, 1953-54, 1957-58	10-18-57 8-27-58	5.30 9.21
2792	Hadlock Pond Outlet at West Fort Ann, N. Y.	Lat 43°24'19", long 73°34'42", at bridge on State Highway 149, 0.6 mile southwest of West Fort Ann.	16.5	1953-54, 1957-58	8-29-58	12.2

* Also a crest-stage partial-record station.
‡ Operated as a continuous-record gaging station.

Crest-stage partial-record stations

The following table contains annual maximum discharges for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined. The maximum discharge for each year since the crest-stage gage was established is given. The peak discharge for some years may have been published in a previous report as a measurement of discharge. Figures given herein supersede all previous figures of peak discharge for the floods listed.

Annual maximum discharge at crest-stage partial-record stations

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Streams tributary to Lake Superior					
252	Pearson Creek near Maple, Wis.	Lat 46°38'51", long 91°42'55", at box culvert, 4 miles north of Maple.	4.55	1957-58	7-20-57 7- 2-58	22.65 25.71	1,030 1,190
264	Spillieberg Creek near Cayuga, Wis.	Lat 46°11'48", long 90°37'32", at concrete culvert pipe, 4¼ miles southeast of Cayuga.	a6.6	1958	7- 2-58	13.86	157
297	Boomer Creek near Saxon, Wis.	Lat 46°29'40", long 90°21'02", at concrete culvert pipe, 3 miles east of Saxon.	6.73	1958	8-30-58	12.81	48
410	Perch River near Sidnaw, Mich.	NE¼ sec.34, T.48 N., R.35 W., at State Highway 28, 2½ miles east of Sidnaw.	63.1	1913-15‡, 1957-58	4-24,25-13 4-29-14 4-18-15 4-21-57 4-16-58	- - - 9.47 9.09	b500 b500 b226 470 347
423	Sturgeon River near Pelkie, Mich.	On line between secs. 2 and 11, T.51 N., R.34 W., 2¾ miles northeast of Pelkie.	506	1958	4-17-58	10.80	2,440
		Streams tributary to Lake Michigan					
638	Woods Creek near Fence, Wis.	Lat 45°49'53", long 88°23'17", at box culvert, 6 miles north of Fence.	42.3	1958	7- 2-58	9.95	130
678	Armstrong Creek near Armstrong Creek, Wis.	Lat 45°39'29", long 88°28'44", at bridge, 1⅛ miles northwest of Armstrong Creek.	23.1	1958	9- -58	10.04	(†)
717	North Branch Little River near Coleman, Wis.	Lat 45°00'37", long 88°02'43", at bridge, 3⅝ miles south of Coleman.	23.3	1958	4- 6-58	12.49	(†)
747	Hunting River near Elcho, Wis.	Lat 45°25'10", long 89°11'15", at twin section plate-pipe arch, 1½ miles south of Elcho.	a6.0	1958	7- 2-58	11.58	50
*851	East River tributary at Greenleaf, Wis.	See previous table.	8.00	1958	4- -58	c12.77	<80
852	Kewaunee River near Kewaunee, Wis.	Lat 44°27'30", long 87°33'23", at bridge, 2.3 miles west of Kewaunee.	129	1958	4- -58	12.16	(†)
870.5	Little Menomonee River near Freistadt, Wis.	Lat 43°12'24", long 88°02'24", at bridge, 2 miles south of Freistadt.	a9.3	1958	3- -58	10.32	(†)
872	Oak Creek near South Milwaukee, Wis.	Lat 42°52'58", long 87°53'31", at bridge, 3 miles southwest of South Milwaukee.	15.2	1958	6- 1-58	11.11	57
873	Lake Michigan tributary at Winthrop Harbor, Ill.	SW¼SW¼ sec.3, T.46 N., R.23 E., at culvert on State Highway 42, ¼ mile north of center of Winthrop Harbor.	1.71	1956-58	3-19-56 2- -57 2- -58	11.99 d11.59 d11.94	(†) (†) (†)
877	Little Calumet River at Calumet City, Ill.	N½NE¼ sec.29, T.36 N., R.15 E., at Wentworth Avenue Bridge at south edge of Calumet City.	-	1954-58	3-26-54 10-11-54 4-30-56 7-14-57 6-10-58	9.88 14.34 10.60 >15 9.38	(†) (†) (†) (†) (†)
907	Thorn Creek near Lansing, Ill.	W½ sec.25, T.36 N., R.14 E., at end of Bernice Road, ½ mile south of 167th St., 0.6 mile west of State Highway 50 and 2 miles northeast of Tinley Park.	-	1954-58	3-25-54 10-11-54 4-29-56 7-13-57 6-10-58	5.50 11.14 7.44 >10 6.94	(†) 3,430 (†) (†) (†)
919	Midlothian Creek near Tinley Park, Ill.	NE¼NW¼ sec.28, T.36 N., R.13 E., at bridge on 167th St., 0.6 mile west of State Highway 50 and 2 miles northeast of Tinley Park.	-	1954-58	3-25-54 1- 5-55 4-29-56 7-13-57 6-13-58	5.32 8.42 10.12 >11 5.12	(†) (†) (†) (†) (†)
		Streams tributary to Lake Huron					
1388	Gamble Creek at Lupton, Mich.	SE¼ sec.35, T.24 N., R.3 E., at bridge ¾ mile south of Lupton.	8.96	1953-56	6- -53 6- -54 3-14-55 3- 4-56	1.72 1.83 2.52 3.01	80 88 130 168

* Also low-flow partial-record station.
† Discharge not determined.
‡ Operated as a continuous-record gaging station.
a Approximately.
b Maximum daily discharge.
c Backwater from ice.
d Peak may be affected by ice in culvert.

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Streams tributary to Lake Huron--Continued					
1387	Bixby Creek near Rose City, Mich.	NW¼ sec.31, T.24 N., R.3 E., at bridge on State Highway 33, 1 mile north of Rose City.	3.20	1953-58	6- -53	2.94	99
					6- -54	2.88	96
					3-14-55	2.71	86
					4- 4-56	4.76	234
					4- 6-57	1.88	46
					4- 6-58	2.11	58
1388	Houghton Creek at Rose City, Mich.	NE¼ sec.6, T.23 N., R.3 E., at bridge ¼ mile east of Rose City.	11.2	1953-58	7- 2-53	1.48	147
					6- -54	3.23	542
					3-14-55	2.03	222
					4- 4-56	3.64	720
					4- 6-57	1.13	110
					4- 6-58	1.28	127
1389	Wilkins Creek near Rose City, Mich.	NE¼ sec.7, T.23 N., R.3 E., at bridge on State Highway 33, 1 mile south of Rose City.	8.22	1953-58	6- -53	1.54	49
					6- -54	2.60	190
					8-30-55	2.08	112
					4- 4-56	2.95	255
					4- 6-57	1.94	91
					4- 6-58	2.02	103
1397	Prior Creek near Rose City, Mich.	NE¼ sec.19, T.23 N., R.3 E., at bridge on State Highway 33, 3¼ miles south of Rose City.	5.22	1953-58	6- -53	1.73	53
					6- -54	2.33	108
					8-30-55	1.94	69
					4- 4-56	2.44	123
					4- 6-57	1.54	44
					4- 6-58	1.55	44
1399	Ammond Creek near Selkirk, Mich.	NW¼ sec.32, T.33 N., R.3 E., at bridge, 3 miles northwest of Selkirk.	3.05	1953-58	3-24-53	2.30	140
					6- -54	3.04	255
					3-14-55	2.64	187
					4- 4-56	3.06	258
					4- 6-57	2.62	184
					4- 6-58	2.10	115
1402	Klacking Creek near Selkirk, Mich.	NE¼ sec.2, T.22 N., R.2 E., at bridge, 3½ miles northwest of Selkirk.	7.42	1953-58	6- -53	1.37	49
					6- -54	2.13	102
					8-30-55	1.64	70
					4- 4-56	2.70	155
					4- 6-57	1.90	84
					4- 6-58	1.65	72
1411	Shepards Creek near Selkirk, Mich.	SE¼ sec.8, T.22 N., R.3 E., at bridge, 1 mile southwest of Selkirk.	4.51	1953-58	3-24-53	3.10	45
					6- -54	3.79	88
					4- 4-55	3.94	107
					4- 4-56	4.46	454
					4- 6-57	4.05	128
					4- 6-58	2.99	42
		Streams tributary to Lake Erie					
1769	Hill ditch near Richards, Ohio.	Lat 41°39'50", long 83°40'05", at culvert on U. S. Highway 20, 3.4 miles north of intersection of U. S. Highway 20 and State Highway 2 and 1.4 miles west of Richards, Lucas County.	3.23	1947-58	1947	10.14	23
					1948	10.49	30
					1949	10.47	29
					2-14-50	13.50	172
					1951	11.54	60
					1952	12.72	117
					1953	10.41	28
					1954	11.56	61
					1955	11.76	68
					1956	13.40	165
					1957	10.69	34
					1958	12.16	86
1774	Eagle Creek tributary near Montpelier, Ohio.	Lat 41°35'10", long 84°40'50", at culvert on State Highway 107, 3.5 miles west of Montpelier, Williams County.	1.56	1947-58	1947	12.45	(†)
					1948	16.20	(†)
					1949	11.20	(†)
					4-24-50	11.43	131
					1951	10.41	75
					1952	-	<55
					1953	9.7	43
					1954	9.86	50
					1955	10.52	70
					5- 4-56	12.54	195
					1957	9.99	44
					1958	11.15	106
1891	Tiderishi Creek near Jenera, Ohio.	Lat 40°55'50", long 83°43'40", at culvert on State Highway 698, 2.2 miles north of Jenera, Hancock County.	4.51	1947-58	1947	13.20	219
					1948	14.03	298
					1949	12.81	184
					2-14-50	13.15	214
					1951	12.97	196
					1952	13.18	219
					1953	10.72	47
					1954	11.74	106
					1955	13.45	243
					2-25-56	14.53	348
					6-28-57	14.46	260
					1958	11.95	128

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Streams tributary to Lake Erie--Continued					
1905	Roller Creek at Ohio City, Ohio.	Lat 40°46'15", long 84°38'15", at bridge, ¼ mile west of Ohio City, Van Wert County.	4.94	1947-48‡, 1949-58	2-15-49	8.05	222
					2-13-50	8.08	228
					2-21-51	8.23	234
					1-26-52	7.27	290
					3- 3-53	6.33	242
					8- 5-54	7.72	84
					3- 4-55	8.65	351
					11-16-55	8.98	350
					6-28-57	7.76	150
					6-10-58	8.73	260
1967	St. James Run near Upper Sandusky, Ohio.	Lat 40°46'55", long 83°18'10", at bridge on State Highway 67, 3.5 miles southwest of Upper Sandusky, Wyandot County.	5.35	1947-58	6- 7-47	12.25	356
					1948	10.76	188
					1949	10.98	212
					1950	11.09	224
					1951	10.80	192
					1952	10.97	211
					1953	9.3	65
					1954	8.61	28
					1955	10.22	136
					1956	10.67	179
					1957	11.10	225
					1958	10.26	139
1975	Havens Creek at Havens, Ohio.	Lat 41°17'40", long 83°11'55", at bridge on State Highway 12, ½ mile southwest of Havens, Sandusky County, and 1⅝ miles upstream from mouth.	5.00	1947-49‡, 1950-58	2-14-50	e5.16	214
					11-19-50	e4.57	150
					3-11-52	e4.40	265
					5-22-53	e.46	41
					3-25-54	e1.46	96
					3- 3-55	4.72	163
					5-12-56	7.66	312
					6-28-57	5.30	207
					7-12-58	4.95	190
1981	Norwalk Creek at Norwalk, Ohio.	Lat 41°14'00", long 82°32'30", at county road bridge, 300 ft south of junction of State Highways 601 and 18, 4 miles southeast of Norwalk, Huron County, and 6 miles upstream from mouth.	4.18	1947-58	1947	13.12	311
					3-21-48	13.60	470
					1949	12.44	163
					1950	13.09	302
					1951	13.78	551
					1952	13.17	326
					1953	12.80	236
					1954	12.89	256
					1955	12.86	249
					5-12-56	14.37	1,060
					1957	13.48	423
					1958	12.07	102
2001	Plum Creek at Oberlin, Ohio.	Lat 41°17'15", long 82°13'10", at bridge on Professor St., in Oberlin, Lorain County.	4.88	1947-58	6- 2-47	14.69	658
					3-22-48	13.88	530
					1949	10.84	100
					4-24-50	14.54	626
					1951	12.54	326
					1952	12.40	304
					1953	10.62	77
					1954	12.89	379
					1955	11.95	240
					5-12-56	13.48	469
					1957	13.42	451
					1958	10.81	97
2101	Hoskins Creek at Hartsgrove, Ohio.	Lat 41°36'20", long 80°58'00", at bridge on State Highway 6, 0.7 mile west of Hartsgrove, Ashtabula County.	6.94	1947-58	1947	13.87	212
					3-21-48	14.53	543
					1949	12.90	110
					1950	14.00	256
					1951	14.24	376
					1952	14.0	256
					1953	13.15	124
					1954	13.50	150
					10-16-54	13.86	208
					1956	14.23	364
					1957	13.72	176
					1958	13.82	200
		Streams tributary to St. Lawrence River					
*2607	Chaumont River near Depauville, N. Y.	Lat 44°10'30", long 76°00'57", at highway bridge, 3.6 miles northeast of Depauville.	18.3	1958	12-21-57	13.48	(†)
*2702	Little Salmon River at Bombay, N. Y.	Lat 44°56'23", long 74°33'25", at highway bridge, 0.5 mile east of Bombay.	93.6	1958	4- 7-58	6.86	(†)
*2737	Salmon River at South Platts-burg, N. Y.	See previous table.	61.9	1958	4-22-58	4.03	(†)
*2762	Bouquet River at New Russia, N. Y.	See previous table.	37.6	1949, 1951, 1953, 1956-58	12-31-48	12.29	3,780
					3-31-51	9.78	1,600
					3-25-53	11.60	2,480
					4- 5-56	8.21	1,150
					1-23-57	7.92	1,070
					12-21-57	13.5	4,480

* Also low-flow partial-record station.
† Discharge not determined.
‡ Operated as a continuous-record gaging station.
e Datum of gage was 2.00 ft higher for period 1947-54.

Measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table. Those that are measurements of base flow are designated by an asterisk (*); measurements of peak flow by a dagger (†).

Discharge measurements made at miscellaneous sites during water year 1958

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Superior						
Elbow Creek..	St. Louis River.	Lat 47°24'05", long 92°36'35", at culvert on State Highway 216, 1¼ miles south of Iron Junction, Minn.	-		7-19-58 8-16-58	5.9 4.7
Otter Creek..	....do.....	Lat 46°42'18", long 92°31'15", at culvert on highway, 0.1 mile east of entrance to Cloquet Forest Experiment Station and 2 miles southwest of Cloquet, Minn.	-	1948	5-20-58	3.5
Tioga River..	Sturgeon River.	NW¼ sec.8, T.48 N., R.32 W., at U.S. Highway 41, 10 miles east of Covington, Mich.	18.5	1957	4-10-58 4-15-58 4-16-58	56.7 115 142
Pelkie Creek.	....do.....	SE¼ sec.34, T.49 N., R.33 W., at old U.S. Highway 41, 5 miles southeast of Alberta, Mich.	16.2	1957	4-16-58 4-17-58	259 221
Sturgeon River.	Portage Lake.	E½ sec.29, T.49 N., R.33 W., at old U.S. Highway 41, 2½ miles southeast of Alberta, Mich.	83.6	1957	4-16-58 4-17-58	1,150 1,150
Plumbago Creek.	Sturgeon River.	N½ sec.18, T.49 N., R.33 W., at Alberta, Mich.	1.64	1957	4- 7-58 4-15-58	5.37 23.9
Rock River...	....do.....	NE¼ sec.12, T.48 N., R.34 W., at U.S. Highway 141, 3 miles northeast of Covington, Mich.	40.3	1957	4- 7-58 4-15-58	61.8 296
Sidnaw Creek.	....do.....	N½ sec.19, T.48 N., R.35 W., 3 miles north of Sidnaw, Mich.	17.6	1957	4-11-58 4-16-58	32.5 48.7
Silver Mountain Creek.	....do.....	NW¼ sec.7, T.49 N., R.35 W., 7½ miles south of Alston, Mich.	10.5	1957	4-16-58 4-18-58	39.1 20.3
Clear Creek..	....do.....	Sec.23, T.50 N., R.35 W., 6 miles southeast of Alston, Mich.	12.5	1957	4-10-58 4-16-58	9.96 9.92
Mustard Creek.	Clear Creek..	NW¼ sec.24, T.50 N., R.35 W., 6½ miles southeast of Alston, Mich.	a4.0	1957	4-10-58	2.78
Silver River.	Sturgeon River.	NW¼ sec.4, T.50 N., R.35 W., at State Highway 35, 3 miles east of Alston, Mich.	39.0	1957	4- 9-58 4-16-58	116 185
West Branch Sturgeon River.	....do.....	On line between sec.6, T.50 N., R.35 W., and sec.34, T.51 N., R.35 W., at State Highway 35, 1 mile east of Alston, Mich.	47.2	1957	4- 9-58	108
North Branch Otter River.	Otter River..	W½ sec.31, T.52 N., R.34 W., 2 miles southwest of Elo, Mich.	93.2	1957	4- 9-58 4-16-58	279 939
West Branch Otter River.	....do.....	S½ sec.12, T.51 N., R.35 W., 2½ miles northwest of Pelkie, Mich.	53.1	1957	4- 9-58 4-16-58	134 442
Streams tributary to Lake Michigan						
West Branch Sturgeon River.	Sturgeon River.	NE¼ sec.30, T.42 N., R.29 W., 4 miles northeast of Randville, Mich.	57.3	1949,1950, 1957	10-23-57 11-12-57	32.1 29.1
Do.....	....do.....	Sec.27, T.41 N., R.28 W., near Foster City, Mich.	-		10-23-57	49.7
Hills Pond Creek.	South Branch Oconto River.	SW¼ sec.27, T.32 N., R.15 E., 6.2 miles northeast of Langlade, Wis.	-		7-31-58	*3.35
Do.....	....do.....	Sec.4, T.31 N., R.15 E., at bridge on State Highway 64, 5.5 miles east of Langlade, Wis.	-		3- 5-58	10.7
Neenah Creek.	Fox River....	NW¼ sec.12, T.15 N., R.7 E., at bridge 2.5 miles northwest of Oxford, Wis.	-		2-22-58	9.6
Peppermill Creek.	Neenah Creek.	Sec.11, T.15 N., R.7 E., 2.5 miles northwest of Oxford, Wis.	-		2-22-58	5.8
Chaffee Creek.	Mecan River..	Sec.35, T.18 N., R.8 E., at bridge, 1½ miles northeast of Liberty Bluff, Wis.	-		3-27-58	1.72
Do.....	....do.....	Sec.1, T.17 N., R.8 E., at bridge, ½ mile northeast of Liberty Bluff, Wis.	-		3-11-58	9.53
Do.....	....do.....	Sec.5, T.17 N., R.9 E., at bridge, 2¼ miles east of Liberty Bluff, Wis.	-		3-11-58	14.1
West Branch White River.	White River..	Sec.30, T.19 N., R.10 E., below dam, 3½ miles west of Wautoma, Wis.	-		9-19-58	*5.73

* Base flow.
a Approximately.

Discharge measurements made at miscellaneous sites during water year 1958--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Streams tributary to Lake Michigan--Continued				
West Branch White River.	White River..	Sec.5, T.18 N., R.10 E., at bridge, 2½ miles west of Wautoma, Wis.	-		9-19-58	*15.7
Wolf River...	Fox River....	Sec.19, T.34 N., R.12 E., 2¾ miles southeast of Post Lake, Wis.	-		6-24-58	56.4
Nine Mile Creek.	Wolf River...	Sec.18, T.32 N., R.14 E., at bridge, 4.8 miles northwest of Langlade, Wis.	-		5- 6-58	14.7
Wolf River...	Fox River....	Between secs. 3 and 10, T.31 N., R.14 E., at bridge in Langlade, Wis.	-		5- 7-58	569
Drew Creek...	West Branch Wolf River.	Sec.29, T.31 N., R.13 E., 2.3 miles south of Elton, Wis.	-		3-12-58	7.6
McGee Lake Outlet.	Drew Creek...	Sec.33, T.31 N., R.13 E., 2.7 miles south of Elton, Wis.	-		3- 5-58	2.7
Red River....	Wolf River...	Sec.22, T.30 N., R.12 E., 1.6 miles northwest of Phlox, Wis.	-		5- 6-58	17.6
Little Wolf River.	....do.....	SE¼ sec.21, T.25 N., R.12 E., at bridge, 1.5 miles west of Big Falls, Wis.	-		12- 4-57	34.8
Blake Creek..	Little Wolf River.	Between secs. 33 and 34, T.24 N., R.13 E., at bridge on State Highway 22, south of Symco, Wis.	-		6-12-58	18.1
Radley Creek.	Crystal River.	NW¼ sec.36, T.21 N., R.10 E., at bridge on State Highway 22, 11.4 miles southwest of Waupaca, Wis.	-		4-16-58	1.65
Do.....	....do.....	Sec.20, T.21 N., R.11 E., at bridge on State Highway 22, 7.5 miles southwest of Waupaca, Wis.	-		10-31-57 11-27-57 2-13-58 3-11-58	*15.6 *18.0 15.2 16.2
Do.....	....do.....	SW¼ sec.15, T.21 N., R.11 E., at bridge, 6 miles southwest of Waupaca, Wis.	-		11-27-57	*25.4
Emmons Creek.	....do.....	NE¼ sec.14, T.21 N., R.10 E., at bridge, 9.4 southwest of Waupaca, Wis.	-		2-13-58 2-25-58	7.11 10.0
Do.....	....do.....	Sec.13, T.21 N., R.10 E., at bridge, 9.1 miles southwest of Waupaca, Wis.	-		3-20-58	14.0
Do.....	....do.....	NW¼ sec.13, T.21 N., R.10 E., at bridge, 8.8 miles southwest of Waupaca, Wis.	-		2-25-58 3-11-58	20.4 16.1
Do.....	....do.....	Sec.8, T.21 N., R.11 E., 6 miles southwest of Waupaca, Wis.	-		3- 5-58	21.9
Crystal River.	Waupaca River.	Sec.1, T.21 N., R.11 E., at Little Hope Dam, 3 miles southwest of Waupaca, Wis.	-		2-13-58	41.3
Pine River...	Lake Poygan..	Sec.19, T.20 N., R.11 E., at Wild Rose, Wis.	-		9-26-58	5.14
Davis Creek..	Pine River...	NE¼ sec.11, T.20 N., R.11 E., at bridge, 3 miles northeast of Wild Rose, Wis.	-		9-26-58	3.47
Pine River tributary.	....do.....	SW¼ sec.10, T.20 N., R.11 E., 4 miles northeast of Wild Rose, Wis.	-		9-26-58	.12
Humphrey Creek.	....do.....	Sec.10, T.20 N., R.11 E., at bridge, 4 miles northeast of Wild Rose, Wis.	-		9-26-58	4.18
Pine River...	Lake Poygan..	Sec.22, T.20 N., R.11 E., at bridge, 3.5 miles east of Wild Rose, Wis.	-		9-26-58	27.1
Willow Creek.	....do.....	NE¼ sec.24, T.19 N., R.11 E., at bridge, 4 miles northwest of Red Granite, Wis.	-		4-16-58	25.2
Pigeon River.	Lake Michigan.	SW¼ sec.13, T.16 N., R.22 E., at bridge, 4.1 miles east of Franklin, Wis.	-		5- 7-58	*3.44
Do.....	....do.....	SW¼ sec.17, T.15 N., R.23 E., at bridge, 2.9 miles northeast of Sheboygan Falls, Wis.	-		7-25-58	*.3
Onion River..	Sheboygan River.	SE¼ sec.4, T.14 N., R.21 E., at bridge, 2.5 miles northwest of Waldo, Wis.	-		9- 5-58	5.13
Milwaukee River tributary.	Milwaukee River.	Sec.19, T.11 N., R.20 E., at bridge, 2.1 miles southeast of West Bend, Wis.	-		7-25-58	*.5
North Branch Milwaukee River.	....do.....	Sec.30, T.13 N., R.21 E., at bridge, 1.3 miles northwest of Silver Creek, Wis.	-		3-25-58	33.8
Klinger Lake Outlet.	Pawn River...	SE¼ sec.35, T.7 S., R.11 W., 5 miles east of White Pigeon, Mich.	-	1941-57	6- 3-58 7- 9-58	11.8 17.4

* Base flow.

Discharge measurements made at miscellaneous sites during water year 1958--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
Rice Creek...	Kalamazoo River.	SW¼ sec.25, T.2 S., R.6 W., 0.2 mile above mouth, at Monroe St. in Marshall, Mich.	-	1957	10- 7-57	*28.6
					11- 8-57	*51.4
					12- 9-57	*64.5
					1-20-58	*48.6
					3- 3-58	132
					4- 7-58	104
					5- 5-58	*56.5
					6- 2-58	37.6
					7- 8-58	46.2
					9- 9-58	*30.7
Gun Lake Outlet.b/	Gun River....	NW¼ sec.6, T.2 N., R.10 W., near Shelbyville, Mich.	-	1943,1944, 1946-57	12-17-57	*25.0
					3-25-58	*33.9
					6-11-58	8.52
					7-14-58	*2.40
Pine Creek...	Maple River..	SW¼ sec.9, T.9 N., R.3 W., 300 ft upstream from State Highway 57 and ½ mile southeast of Perrington, Mich.	-	1955	5-30-58	*3.29
Libhart Creek.	Grand River..	SW¼ sec.24, T.7 N., R.6 W., at railroad bridge, 1 mile west of Lyons, Mich.	-	1955	5-27-58	*13.8
Little Thornapple River.c/	Thornapple River.	NW¼ sec.9, T.4 N., R.7 W., 2 miles southwest of Lake Odessa, Mich.	26.2	1946-57	12-30-57	32.4
					3-25-58	*23.0
					6-11-58	5.47
					7-14-58	*4.50
Cedar Creek..	Rouge River..	SE¼ sec.25, T.10 N., R.11 W., at bridge on Cherry St., at Cedar Springs, Mich.	-	1955	5-27-58	*3.01
Backus Creek.	Houghton Lake.	N½ sec.5, T.22 N., R.2 W., 4 miles northeast of Prudenville, Mich.	a4	1944-57	10- 4-57	0
					4- 3-58	18.8
					7-16-58	1.35
Hess Lake Outlet.	Muskegon River.	NW¼ sec.33, T.12 N., R.12 W., 3 miles southwest of Newaygo, Mich.	a22	1945-48, 1948-57	10-10-57	1.36
					1-16-58	8.53
					4- 9-58	9.90
					7-16-58	0
Portage Creek.	Manistee River.	SW¼ sec.8, T.26 N., R.4 W., 5½ miles west of Grayling, Mich.	15.6	1942-57	10- 3-57	*10.2
					1- 2-58	26.8
					4- 1-58	21.1
					7- 1-58	2.72
Fife Lake Outlet.	....do.....	SW¼ sec.13, T.25 N., R.9 W., at Fife Lake, Mich.	11.1	1944-57	10-14-57	*2.46
					1-29-58	5.61
					4- 4-58	4.29
					7-29-58	1.05
Betsie River.	Lake Michigan.	Sec.5, T.25 N., R.12 W., 1 mile northwest of Karlin, Mich.	44.7	1944-57	10-15-57	27.9
					1-29-58	62.3
					4- 4-58	55.4
					7-29-58	29.2
Tobeco Creek.	P-To-Ba-Go Pond.	NW¼ sec.5, T.28 N., R.9 W., 2 miles south of Elk Rapids, Mich.	a8	1949-57	10-30-57	4.10
					1- 3-58	4.10
					4- 4-58	5.75
					7- 3-58	.73
Deer Creek...	Jordan River.	NE¼ sec.24, T.32 N., R.6 W., at Deer Lake Outlet, 3 miles west of village of Boyne Falls, Mich.	a6		6- 3-58	*2.15
Carp River...	Lake Michigan.	SE¼ sec.15, T.38 N., R.4 W., at Carp Lake, Mich.	26.3	1944-57	10-18-57	5.37
					1-10-58	14.5
					4- 3-58	18.4
					7- 8-58	7.16
Streams tributary to Lake Huron						
Little Black River.	Lake Huron...	NE¼ sec.26, T.38 N., R.2 W., ½ mile west of Cheboygan, Mich.	a10	1955-57	10-17-57	2.20
					11- 6-57	*4.04
					12- 4-57	13.3
					1- 9-58	6.93
					2- 5-58	6.61
					3- 5-58	7.63
					4- 3-58	27.4
					5- 6-58	16.6
					6- 5-58	1.48
					7- 8-58	2.72
					8- 6-58	0
					9- 4-58	.14
West Branch Sturgeon River.	Sturgeon River.	NW¼ sec.28, T.33 N., R.3 W., 5½ miles southwest of Wolverine, Mich.	49.7	1954	8- 1-58	26.8
					8- 4-58	27.2
Do.....	....do.....	SE¼ sec.16, T.33 N., R.3 W., 1 mile upstream from Fulmer Creek and 3⅝ miles southwest of Wolverine, Mich.	56.8	1954	8- 1-58	38.0
					8- 4-58	37.1

* Base flow.
a Approximately.
b Published as Gun River 1943.
c Published as Jordan Lake Outlet.

Discharge measurements made at miscellaneous sites during water year 1958--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Huron--Continued						
West Branch Sturgeon River.	Sturgeon River.	SW¼ sec.14, T.33 N., R.3 W., 3 miles southwest of Wolverine, Mich.	a60		8- 1-58	47.5
East Branch Maple River.	Maple River..	NW¼ sec.25, T.37 N., R.4 W., 2⅔ miles northeast of Pellston, Mich.	26.5	1942-57	10-18-57	2.24
					1-10-58	27.9
					4- 3-58	20.6
					7- 8-58	7.06
Lake Nettie Outlet.	Ocqucoc River.	SW¼ sec.19, T.34 N., R.4 E., 3 miles southeast of Millerburg and 6 miles west of Hawks.	a40		6- 4-58	*8.88
Grand Lake Outlet.	Lake Huron...	SE¼ sec.15, T.34 N., R.7 E., 14 miles southeast of Rogers City, Mich.	34.3	1945-57	10- 2-57	*1.92
					1- 8-58	54.5
					4- 2-58	38.5
					7- 2-58	.13
East Fish Lake Outlet.	Fuller Creek.	NE¼ sec.34, T.29 N., R.2 E., 7 miles east of Lewiston, Mich.	a.5	1943-57	10- 2-57	1.79
					1-28-58	1.34
					4- 2-58	1.36
					7-16-58	1.39
Fuller Creek.	Hunt Creek...	S½NE¼ sec.35, T.29 N., R.2 E., 7⅓ miles east of Lewiston, Mich.	a3	1943-57	10- 2-57	*7.13
					1-28-58	7.52
					4- 2-58	7.05
					7-16-58	7.91
North Branch Thunder Bay River.	Thunder Bay River.	SE¼ sec.21, T.32 N., R.3 E., 10 miles northwest of Hillman, Mich.	a16		6- 3-58	*6.72
East Branch Au Sable River.	Au Sable River.	NW¼ sec.8, T.26 N., R.3 W., at Grayling fish hatchery.	a80		3-28-58	12.4
					4- 1-58	35.5
					4-29-58	67.8
					5- 1-58	33.0
					6-27-58	26.1
					7- 2-58	26.0
					8- 1-58	19.1
					9- 2-58	21.9
Lake St. Helen Outlet.	South Branch Au Sable River.	SE¼ sec.8, T.33 N., R.1 W., 2⅔ miles northwest of St. Helen, Mich.	72.2	1944-57	10- 4-57	*16.7
					1-28-58	38.2
					4- 3-58	46.6
					7-17-58	6.14
East Branch Au Gres River.	Lake Huron...	E½ sec.8, T.22 N., R.6 E., 7 miles northeast of Whittemore, Mich.	a54	1944-57	10-23-57	26.0
					1-21-58	19.8
					4-15-58	42.3
					7-21-58	*17.9
Guiley Creek.	East Branch Au Gres River.	W½ sec.9, T.22 N., R.6 E., 7 miles northeast of Whittemore, Mich.	a21	1944-57	10-23-57	19.8
					1-21-58	12.9
					4-15-58	15.3
					7-21-58	*9.34
Butternut Creek.	Flint River..	NW¼NW¼ sec.12, T.8 N., R.7 E., 1 mile northeast of Genesee, Mich.	40.6	1952-54	3-25-58	*20.1
					5- 9-58	*9.66
					9- 3-58	*4.57
Kearsley Creek.	....do.....	NW¼SE¼ sec.2, T.7 N., R.7 E., 1½ miles east of Flint, Mich.	99.6	1952-54	3-25-58	*61.7
					5- 9-58	*23.4
					9- 3-58	*11.8
Swartz Creek.	....do.....	SE¼SW¼ sec.28, T.7 N., R.6 E., at bridge on State Highway 121, 1½ miles east of Otterburn, Mich.	65.0	1952-54	3-25-58	*36.0
					5- 9-58	*12.8
					9- 3-58	*.59
West Branch Swartz Creek.	Swartz Creek.	NW¼NW¼ sec.33, T.7 N., R.6 E., at bridge on State Highway 121, 1 mile east of Otterburn, Mich.	40.1	1952-54	3-25-58	*14.0
					5- 9-58	*4.79
					9- 3-58	*.80
Thread Creek.	....do.....	SE¼NE¼ sec.20, T.7 N., R.7 E., at bridge on U.S. Highway 10, at Flint. Mich.	61.8	1952-54	3-25-58	*30.9
					5- 9-58	*10.1
					9- 3-58	*1.87
Middle Branch Tittabawassee River.	Tittabawassee River.	SE¼ sec.1, T.20 N., R.1 E., at bridge on State Highway 30, 9 miles south of West Branch, Mich.	-		5- 7-58	*34.9
					6-17-58	*24.4
					7-10-58	27.6
East Branch Tittabawassee River.	Middle Branch Tittabawassee River.	SE¼ sec.16, T.20,N., R.2 E., 10 miles south of West Branch, Mich.	-		5- 6-58	*19.7
					6-17-58	*8.62
West Branch Tittabawassee River.	Tittabawassee River.	On line between secs. 26 and 35, T.21 N., R.1 W., 11 miles southwest of West Branch, Mich.	-		5- 7-58	*29.1
					6-17-58	*24.7
					7-10-58	26.9
Sugar River..	....do.....	NW¼ sec.12, T.19 N., R.1 W., 7⅓ miles northeast of Gladwin, Mich.	-		5- 7-58	*22.5
					6-17-58	*15.0
					7-11-58	14.5

* Base flow.
a Approximately.

Discharge measurements made at miscellaneous sites during water year 1958--Continued

Streams	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Huron--Continued						
Molasses River.	Tittabawassee River.	Sec.7 T.18 N., R.2 E., at bridge on State Highway 61, 10 miles east of Gladwin, Mich.	-		5- 8-58 6-18-58 6-25-58	*14.2 *3.30 *9.69
Little Molasses River.	Molasses River.	NW¼ sec.19, T.18 N., R.2 E., 10 miles east of Gladwin, Mich.	-		5- 6-58 6-18-58	*13.0 *5.10
South Branch Tobacco River.	Tobacco River.	On line between secs. 19 and 20, T.17 N., R.2 W., at Old Plank Rd., 5.3 miles west of Beaverton, Mich.	149		5- 8-58 6-16-58 9-23-58	*65.6 *49.6 *67.0
Middle Branch Tobacco River.	....do.....	On line between secs. 2 and 3, T.17 N., R.2 W., just above Ross Lake, 2.2 miles west of Beaverton, Mich.	33.8		5- 8-58 6-16-58 9-23-58	*23.0 *19.1 *17.9
North Branch Tobacco River.	....do.....	NE¼ sec.30, T.18 N., R.2 W., at Old Plank Rd., 5.8 miles northwest of Beaverton, Mich.	59.4		5- 8-58 6-16-58 9-23-58	*41.9 *31.3 *30.0
Cedar River..	....do.....	On line between secs. 20 and 29, T.19 N., R.2 W., 1 mile below confluence of West Branch and North Branch and 5 miles south of Skeels, Mich.	96.1	1953	6-18-58	*54.3
North Branch Chippewa River.	Chippewa River.	NE¼ sec.24, T.14 N., R.5 W., 4 miles west of Mount Pleasant, Mich.	-		7-11-58	15.2
Streams tributary to Lake St. Clair						
Clinton River.d/	Lake St. Clair.	SW¼ sec.10, T.3 N., R.9 E., at outlet of Loon Lake, at Drayton Plains, Mich.	74.7	1943, 1947-57	12-21-57 3-14-58 6-13-58 8-19-58	71.3 *60.8 *24.5 *6.02
Do.e/....	....do.....	NE¼ sec.2, T.2 N., R.9 E., at outlet of Cass Lake at Keego Harbor, Mich.	99.9	1945, 1948-57	3-14-58 6-13-58 8-19-58	*71.1 *17.7 *6.74
Streams tributary to Lake Erie						
Letts Creek..	North Fork Mill Creek.	On line between secs. 1 and 12, T.2 S., R.3 E., at State Highway 92, ½ mile north of Chelsea, Mich.	18.2	1957	10-10-57 12-27-57 4- 3-58 5-14-58	*3.41 28.5 8.39 *3.58
North Fork Mill Creek.	Mill Creek...	On line between secs. 9 and 16, T.2 S., R.4 E., 1 mile north of Lima, Mich.	51.8	1957	10-10-57 12-27-57 4- 3-58 5-14-58	*5.07 59.9 20.9 *8.98
Miami and Erie Canal.	Jennings Creek.	Lat 40°50'45", long 84°20'25", at former gaging station at Third Street Bridge, in Delphos, Allen County, Ohio.	-	1928-35‡, 1945-57	10- 7-57 11-20-57 1- 7-58 4- 4-58 8-14-58	9.12 2.52 .49 .48 7.60
Roller Creek.	Town Creek...	Lat 40°46'15", long 84°38'15", at highway bridge, ¾ mile west of Ohio City, Van Wert County, Ohio.	4.94	1946-57	10-20-57 12- 3-57 1-14-58 2-25-58 4-11-58 5-27-58 6-24-58 7-21-58 8-27-58	*.10 *.14 .58 5.01 6.90 .75 1.44 1.09 *.10
Havens Creek.	Sandusky River.	Lat 41°17'40", long 83°11'55", at bridge on State Highway 12, ¾ mile southwest of Havens, Sandusky County, Ohio. f/	5.00	1946-57	10- 2-57 10-25-57 12-10-57 1- 7-58 3- 3-58 4-24-58 6-25-58 8-21-58	*.04 2.68 6.20 1.03 5.09 1.82 *.04 1.14
Big Sister Creek.	Lake Erie....	Lat 42°39'24", long 59°02'12", at bridge at State Highway 5, Evans Center, N. Y.	48.0		8-14-58	1.36
South Branch Smoke Creek.	....do.....	Lat 42°47'54", long 78°48'30", just above Bethford subdivision treatment plant outfall, about 1,000 ft south of Lake Ave., 0.7 mile northwest of Windom, N.Y.	13.4		8- 8-58	1.25

* Base flow.
‡ Operated as a continuous-record gaging station.
d Published as Loon Lake Outlet 1947-54.
e Published as Cass Lake Outlet 1945, 1948-54.
f At crest-stage partial-record station.

Discharge measurements made at miscellaneous sites during water year 1958--Continued

Streams	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Niagara River						
Murder Creek.	Ledge Creek..	Lat 43°01'42", long 78°30'24", above sewage-treatment plant outfall, at State Highway 93, Akron, N.Y.	54.4		8- 7-58	1.49
Ransom Creek.	Tonawanda Creek.	Lat 42°59'18", long 78°35'38", at bridge on Greiner Rd., 0.6 mile northwest of Clarence, N.Y.	10.4		8- 7-58	.55
Got Creek....	Ransom Creek.	Lat 43°00'18", long 78°39'48", at bridge on Shimerville Rd., 1.3 miles southwest of Clarence Center, N.Y.	7.71		8- 7-58	.75
Do.....	....do.....	Lat 43°00'06", long 78°40'54", at bridge on Newhouse Rd., 1.5 miles southwest of East Amherst, N.Y.	8.95		8- 7-58	1.86
Tonawanda Creek.	Niagara River.	Lat 43°03'12, long 78°49'36", at Niagara Falls Blvd. bridge, 2.0 miles northeast of North Tonawanda, N.Y.	512		8- 8-58	g1,060
Ellicott Creek.	Tonawanda Creek.	Lat 42°58'54", long 78°45'54", at bridge on North Forrest Rd., 1.6 miles northwest of Williamsville, N.Y.	82.2		8- 6-58 8- 7-58	3.22 4.54
Streams tributary to Lake Ontario						
Cayuga Inlet.	Seneca River.	Lat 42°27'35", long 76°30'46", at Clinton Street Bridge, Ithaca, N.Y.	160		4- 6-57 3-31-58 5- 8-58	1,200 769 716
Onondaga Creek tributary.	Onondaga Creek.	Lat 42°53'30", long 76°08'29", at culvert on State Highway 20, 0.2 mile northeast of Cardiff, N.Y.	.99		6- 1-58	†310
Onondaga Creek.	Seneca River.	Lat 43°02'27", long 76°09'22", at Temple St., Syracuse, N.Y.	h104	1949-51‡	10-16-57 10-17-57 10-21-57 10-22-57 10-23-57 10-29-57 11- 5-57 11-12-57 11-26-57	50.0 38.5 37.5 33.2 31.7 36.1 47.7 39.5 36.3
Do.....	....do.....	Lat 43°03'30", long 76°09'48", at Spencer St., Syracuse, N.Y.	109		10-16-57 10-17-57 10-21-57 10-22-57 10-23-57 10-29-57 11- 5-57 11-12-57 11-26-57	63.7 53.2 55.9 47.8 46.1 50.0 69.2 57.8 54.2
Harbor Brook.	Onondaga Lake	Lat 43°02'06", long 76°11'17", at Velasco Rd., near west city line, Syracuse, N.Y.	9.47		10-16-57 10-17-57 10-21-57 10-22-57 10-23-57 10-29-57 11- 5-57 11-12-57 11-26-57	4.54 2.95 2.85 2.82 2.91 2.90 2.66 2.94 2.05
Do.....	....do.....	Lat 43°03'24", long 76°11'06", at Hiawatha Blvd., near mouth, at Syracuse, N.Y.	11.3		10-16-57 10-17-57 10-21-57 10-22-57 10-23-57 10-29-57 11- 5-57 11-12-57 11-26-57	6.95 7.27 7.76 7.69 7.91 7.47 7.12 6.96 7.29

† Peak flow.
‡ Operated as a continuous-record gaging station.
g Flow upstream--water from Niagara River diverted for use in navigation of Erie (Barge) canal.
h Revised.

Low-flow investigation in Betsie River basin near Thompsonville, Mich.

An investigation in the Betsie River basin was made on Oct. 15, 1957, for the purpose of determining the base-flow yields of various parts of the basin. The Michigan Department of Conservation, which sponsored the investigation, intends to use the data collected in planning watershed and channel improvement work in the basin, one of the main objectives being the improvement of habitat for trout. Results of base-flow investigations such as this are used to determine which portions of the basin are adapted to successful improvement work and to appraise the results of such work later on. Weather records at Thompsonville, which is located within the basin, show that there was no significant precipitation for two weeks preceding Oct. 15; the measurements therefore represent base flow.

The measurements on each stream are listed in order proceeding downstream and each tributary is inserted in the order in which it enters the main stream. Drainage areas shown were determined from U. S. Geological Survey topographic maps (contour interval, 20 ft), dated 1956.

Discharge measurements of Betsie River and tributaries near Thompsonville, Mich., Oct. 15, 1957

Stream	Location	Drainage area (sq mi)	Discharge (cfs)	Cfs per square mile
Ellis Lake Outlet.....	NW¼ sec.15, T.26 N., R.12 W., 75 ft downstream from U. S. Highway 31, ½ mile downstream from Ellis Lake, 1 mile northeast of Interlochen, and 2½ miles west of Grawn.	1.79	1.04	0.581
Cedar-Hedge Lake Outlet.	SE¼ sec.8, T.26 N., R.12 W., 30 ft upstream from U. S. Highway 31, ¼ mile downstream from Cedar-Hedge Lake, and 1 mile northwest of Interlochen.	4.02	2.85	.709
Betsie River.....	NW¼ sec.5, T.25 N., R.12 W., 600 ft downstream from Green Lake, 1¾ miles northwest of Karlin, and 4¼ miles southwest of Interlochen.	59.6	27.9	.468
Do.....	SW¼ sec.2, T.25 N., R.13 W., 250 ft downstream from Michigan Conservation Dept. dam, ¾ mile downstream from Grass Lake Creek, and 4½ miles northwest of Karlin.	80.9	45.0	.556
Do.....	SW¼ sec.10, T.25 N., R.13 W., 100 ft upstream from Worlds Bridge, ¾ mile east of Wallin and 5 miles northeast of Thompsonville.	83.0	43.0	.518
Do.....	On line between secs. 16 and 17, T.25 N., R.13 W., ½ mile southwest of Wallin and 4 miles northeast of Thompsonville.	86.9	44.1	.507
Do	NW¼ sec.20, T.25 N., R.13 W., 1¾ miles southwest of Wallin, 2½ miles upstream from Little Betsie River, and 3 miles northeast of Thompsonville.	89.6	47.4	.529
Do.....	SW¼ sec.19, T.25 N., R.13 W., on County Road 669, 1¼ miles upstream from Little Betsie River and 1¾ miles north of Thompsonville.	95.4	47.4	.497
Little Betsie River...	SW¼ sec.27, T.25 N., R.13 W., 1 mile north of Nessen City and 3½ miles northeast of Thompsonville.	4.90	6.86	1.40
Do.....	SW¼ sec.29, T.25 N., R.13 W., 2 miles northeast of Thompsonville, 2 miles northwest of Nessen City, and 2½ miles upstream from Betsie River.	5.94	8.39	1.41
Do.....	SW¼ sec.30, T.25 N., R.13 W., on County Road 669, ½ mile upstream from mouth and 1 mile north of Thompsonville.	9.30	9.21	.990
Betsie River.....	SW¼ sec.25, T.25 N., R.14 W., 200 ft downstream from Thompsonville Dam.	106	65.9	.622
Do.....	SE¼ sec.35, T.25 N., R.14 W., 10 ft downstream from Red Bridge and ¾ mile west of Thompsonville.	110	67.9	.617
Unnamed tributary.....	SW¼ sec.36, T.25 N., R.14 W., 500 ft upstream from Betsie River and ¾ mile southwest of Thompsonville.	1.83	0	0
Betsie River.....	SW¼ sec.2, T.24 N., R.14 W., 2 miles southwest of Thompsonville and 3¼ miles northwest of Copemish.	115	80.9	.703
Do.....	NW¼ sec.8, T.24 N., R.14 W., 4½ miles southwest of Thompsonville and 5½ miles northwest of Copemish.	121	82.1	.679
Do.....	NE¼ sec.6, T.24 N., R.14 W., 50 ft upstream from Manistee-Benzie County line, 5 miles west of Thompsonville and 6½ miles northwest of Copemish.	128	89.4	.698
Do.....	NE¼ sec.36, T.25 N., R.15 W., 5¾ miles west of Thompsonville and about 8 miles upstream from Homestead Dam.	134	90.0	.672
Deer Creek.....	NW¼ sec.15, T.25 N., R.14 W., 10 ft upstream from County Road 671, 4½ miles northwest of Thompsonville and 6 miles southeast of Benzonia.	10.2	3.04	.298
Do.....	SW¼ sec.16, T.25 N., R.14 W., 4½ miles northwest of Thompsonville and 6 miles southeast of Benzonia.	14.4	4.26	.296
Unnamed tributary.....	NW¼ sec.22, T.25 N., R.14 W., on County Road 671, 1 mile upstream from mouth and 3½ miles northwest of Thompsonville.	1.30	.30	.231
Deer Creek.....	NE¼ sec.19, T.25 N., R.14 W., 25 ft upstream from State Highway 115, 5¼ miles northwest of Thompsonville, and 5½ miles southeast of Benzonia.	17.6	7.38	.419
Betsie River.....	NW¼ sec.19, T.25 N., R.14 W., 50 ft upstream from State Highway 115, 4¾ miles southeast of Benzonia and about 5 miles upstream from Homestead Dam.	158	101	.639

Low-flow investigation in Platte River basin near Honor, Mich.

An investigation in the Platte River basin was made on Oct. 7, 1957, for the purpose of determining the base-flow yields of various parts of the basin. The Michigan Department of Conservation, which sponsored the investigation, intends to use the data collected in planning watershed and channel improvement work in the basin, one of the main objectives being the improvement of habitat for trout. Results of base-flow investigations such as this are used to determine which portions of the basin are adapted to successful improvement work and to appraise the results of such work later on. The basin is located between Thompsonville and Traverse City. The only precipitation at Thompsonville during the week preceding the date of the measurements was 0.15 in. Oct. 1. There was no precipitation at Traverse City during the week. The measurements are believed to represent base flow.

The measurements on each stream are listed in order proceeding downstream, and each tributary is inserted in the order in which it enters the main stream. Drainage areas shown were determined from U. S. Geological Survey topographic maps (contour interval, 20 ft), dated 1956.

Discharge measurements of Platte River and tributaries near Honor, Mich., Oct. 7, 1957

Stream	Location	Drainage area (sq mi)	Discharge (cfs)	Cfs per square mile
Unnamed tributary.....	NE¼ sec.26, T.27 N., R.13 W., on County Road 665, ⅛ mile upstream from Lake Ann and ¼ mile south of village of Lake Ann.	4.78	5.02	1.05
Platte River.....	SE¼ sec.27, T.27 N., R.13 W., ½ mile downstream from Lake Ann and 1½ miles southwest of village of Lake Ann.	47.6	16.9	.355
Do.....	NW¼ sec.4, T.26 N., R.13 W., ½ mile downstream from Bronson Lake and 3½ miles southwest of Lake Ann.	66.2	32.8	.495
Do.....	SE¼ sec.6, T. 26 N., R.13 W., at Allyn, 5 miles east of Honor.	71.6	36.6	.511
Kinney Creel.....	SE¼ sec.18, T.26 N., R.13 W., 75 ft upstream from Brundage Creek and 5 miles east of Honor.	3.46	1.93	.558
Stanley Creek.....	SE¼ sec.7, T.26 N., R.13 W., 300 ft upstream from Brundage Creek and 5 miles east of Honor.	4.18	3.74	.895
Brundage Creek.....	SW¼ sec.7, T.26 N., R.13 W., 500 ft upstream from Platte River at State fish hatchery and 4½ miles east of Honor.	12.7	13.5	1.06
Platte River.....	SE¼ sec.12, T.26 N., R.14 W., on U. S. Highway 31, 4 miles east of Honor.	91.9	66.0	.718
Do.....	NE¼ sec.14, T.26 N., R.14 W., at Hayes Bridge, 3 miles east of Honor.	93.5	61.8	.661
Carter Creek.....	NE¼ sec.25, T.26 N., R.14 W., on County Road 669, ½ mile north of Carter Corner and 4⅝ miles southeast of Honor.	6.65	1.97	.296
Do.....	SE¼ sec.23, T.26 N., R.14 W., about 2½ miles upstream from mouth and 3½ miles southeast of Honor.	8.15	5.43	.666
Do.....	NE¼ sec.22, T.26 N., R.14 W., ½ mile upstream from mouth and 2½ miles southeast of Honor.	10.9	4.83	.443
Platte River.....	SW¼ sec.15, T.26 N., R.14 W., at Case Bridge, ½ mile downstream from Carter Creek and 2 miles southeast of Honor.	109	81.6	.749
Collision Creek.....	SE¼ sec.9, T.26 N., R.14 W., at east edge of Honor, ¼ mile upstream from mouth.	4.75	.44	.093
Platte River.....	NW¼ sec.16, T.26 N., R.14 W., at south edge of Honor.	117	94.2	.805
Do.....	NE¼ sec.7, T.26 N., R.14 W., ½ mile west of Honor and 2 miles upstream from Platte Lake.	118	96.1	.814
Do.....	SE¼ sec.1, T.26 N., R.15 W., 300 ft upstream from North Branch Platte River, ¼ mile upstream from Platte Lake, and 2½ miles northwest of Honor.	119	101	.849
North Branch Platte River.	NE¼ sec.31, T.27 N., R.14 W., on County Road 671, 3 miles northwest of Honor.	19.7	14.6	.741
Do.....	NE¼ sec.1, T.26 N., R.15 W., on County Road 673, 2½ miles northwest of Honor.	31.1	17.1	.550
Platte River.....	NE¼ sec.28, T.27 N., R.15 W., 200 ft downstream from State Highway M22, ½ mile downstream from Platte Lake and 6 miles northwest of Honor.	166	115	.693
Do.....	NW¼ sec.20, T.27 N., R.15 W., ¼ mile upstream from Lake Michigan and 8 miles northwest of Honor.	171	118	.690

Low-flow investigation in Tobacco River basin near Clare, Mich.

An investigation in the Tobacco River basin was made on Sept. 23, 1958, for the purpose of determining the base-flow yields of various parts of the basin. The Michigan Department of Conservation, which sponsored the investigation, intends to use the data collected in planning watershed and channel improvement work in the basin, one of the main objectives being the improvement of habitat for trout. Results of base-flow investigations such as this are used to determine which portions of the basin are adapted to successful improvement work and to appraise the results of such work later on. The basin is located in the vicinity of Harrison and Gladwin. Precipitation in the area amounted to approximately 0.16 in. on Sept. 22. Although this amount may have influenced the quantity of runoff, its effect is believed to be minor and the measurements probably represent base flow.

The measurements on each stream are listed in order proceeding downstream and each tributary is inserted in the order in which it enters the main stream. Drainage areas shown were determined from good quality U. S. Geological Survey topographic maps in the western part and Michigan State Highway county maps without contours in the eastern part.

Discharge measurements of Tobacco River and tributaries near Clare, Mich., Sept. 23, 1958

Stream	Location	Drainage area (sq mi)	Discharge (cfs)	Cfs per square mile
Loon Lake Creek.....	NE¼NE¼ sec.6, T.17 N., R.4 W., ¼ mile above unnamed tributary and 5 miles north of Farwell.	13.0	2.37	0.182
Unnamed tributary to Loon Lake Creek.	NE¼ sec.6, T.17 N., R.4 W., ¼ mile above Loon Lake Creek and 5 miles north of Farwell.	5.20	1.02	.196
South Branch Tobacco River.	SE¼ sec.12, T.17 N., R.5 W., 1 mile below Loon Lake Creek and 2.8 miles north of Farwell.	31.1	11.8	.379
Runyon Creek.....	NE¼ sec.14, T.17 N., R.5 W., ½ mile above Thirteen Lake and 2.3 miles north of Farwell.	5.07	4.01	.791
South Branch Tobacco River.	On line between secs. 13, 24, T.17 N., R.5 W., at West Surrey Rd., 1.8 miles northeast of Farwell.	40.1	18.5	.461
Do.....	SE¼ sec.30, T.17 N., R.4 W., at U. S. Highway 10, 1.6 miles east of Farwell.	43.7	23.2	.531
Elm Creek.....	On line between secs. 21, 28, T.17 N., R.5 W., at Maple Grove Rd., 2.3 miles west of Farwell.	5.44	1.97	.362
South Branch of South Branch Tobacco River.	On line between secs. 26, 27, T.17 N., R.5 W., 1.2 miles west of Farwell.	13.6	5.23	.385
Overton Creek.....	On line between secs. 23, 26, T.17 N., R.5 W., at Maple Grove Rd., 0.8 mile northwest of Farwell.	3.74	1.90	.508
South Branch of South Branch Tobacco River.	S½ sec.30, T.17 N., R.4 W., ½ mile above mouth and 1.5 miles east of Farwell.	33.6	18.6	.554
South Branch Tobacco River.	NW¼ sec.33, T.17 N., R.4 W., at U. S. Highway 10, 2.0 miles west of Clare.	77.7	33.7	.434
Five Lake Creek.....	Center of sec.29, T.17 N., R.4 W., at Rock Rd., 2.8 miles northwest of Clare.	6.84	.62	.091
South Branch Tobacco River.	On line between secs. 26, 27, T.17 N., R.4 W., at U. S. Highway 27, 0.9 mile north of Clare.	88.0	34.6	.393
Unnamed tributary to South Branch Tobacco River.	On line between secs. 35, 36, T.17 N., R.4 W., at Eberhart Ave., 1.0 mile east of Clare.	10.5	1.02	.097
South Branch Tobacco River.	On line between sec.31, T.17 N., R.3 W., and sec.36, T.17 N., R.4 W., 2.0 miles east of Clare.	103	45.3	.440
Sanford Creek.....	On line between secs. 13, 14, T.17 N., R.4 W., at Eberhart Rd., 3.2 miles north of Clare.	4.16	1.75	.421
McCuran Creek.....	On line between secs. 24, 25, T.17 N., R.4 W., at Colonville Rd., 2.6 miles northeast of Clare.	9.92	3.01	.303
South Branch Tobacco River.	On line between secs. 32, 33, T.17 N., R.3 W., 2 miles below McCuran Creek and 4.1 miles east of Clare.	123	45.3	.368
Unnamed tributary to South Branch Tobacco River.	On line between secs. 21, 28, T.17 N., R.3 W., at Colonville Rd., 3.5 miles north of Loomis.	4.57	.34	.074
South Branch Tobacco River.	SE¼ sec.22, T.17 N., R.3 W., at Tobacco Drive, 3.6 miles north of Loomis.	131	47.0	.359
Do.....	SW¼SW¼ sec.24, T.17 N., R.3 W., 1 mile above Carrow Creek and 4.0 miles northeast of Loomis.	135	54.6	.404
Carrow Creek.....	On line between secs. 14, 23, T.17 N., R.3 W., at Surrey Rd., 4.8 miles north of Loomis.	12.1	.80	.066
South Branch Tobacco River.	On line between secs. 19, 20, T.17 N., R.2 W., at Old Plank Rd., 5.3 miles west of Beaverton.	149	67.0	.450
Middle Branch Tobacco River.	On line between secs. 23, 24, T.18 N., R.4 W., at Eberhart Rd., 3.6 miles east of Hatton.	7.71	8.77	1.14
Middle Branch Tobacco River.	On line between secs. 29, 30, T.18 N., R.3 W., 1 mile below Clear Creek and 5.6 miles east of Hatton.	16.4	13.3	.811

Low-flow investigation in Tobacco River basin near Clare, Mich.--Continued

Discharge measurements of Tobacco River and tributaries near Clare, Mich., Sept. 23, 1958--Continued

Stream	Location	Drainage area (sq mi)	Discharge (cfs)	Cfs per square mile
Unnamed tributary to Middle Branch Tobacco River.	NW¼ sec.32, T.18 N., R.3 W., 150 ft above mouth and 5.9 miles east of Hatton.	3.12	0.46	0.147
Middle Branch Tobacco River.	On line between secs. 27, 28, T.18 N., R.3 W., 9.6 miles west of Beaverton.	23.1	17.6	.762
Do.....	NW¼ sec.36, T.18 N., R.3 W., 7.3 miles west of Beaverton.	27.9	18.4	.659
Do.....	On line between secs. 5, 6, T.17 N., R.2 W., at Old Plank Rd., 5.2 miles west of Beaverton.	31.3	17.8	.569
Do.....	On line between secs. 2, 3, T.17 N., R.2 W., just above Ross Lake, 2.2 miles west of Beaverton.	33.8	17.9	.530
Jose Creek.....	W½ sec.26, T.19 N., R.4 W., 2.1 miles east of Harrison.	11.8	.06	.005
Do.....	NW¼NW¼ sec.1, T.18 N., R.4 W., at State Highway 61, 3.7 miles southeast of Harrison.	22.7	7.97	.351
Mostellar Creek.....	E½ sec. 25, T.19 N., R.4 W., 3.4 miles east east of Harrison.	3.61	1.49	.413
Unnamed tributary to Mostellar Creek.	W½ sec.25, T.19 N., R.4 W., 3.0 miles east of Harrison.	.38	.16	.421
Mostellar Creek.....	NW¼ sec.1, T.18 N., R.4 W., at State Highway 61, 3.8 miles southeast of Harrison.	28.6	4.75	.166
Beaver Creek.....	W½ sec.12, T.18 N., R.4 W., ¼ mile above mouth and 4.7 miles southeast of Harrison.	1.70	3.72	2.19
North Branch Tobacco River.	E½ sec.12, T.18 N., R.4 W., ½ mile below Beaver Creek, 5.2 miles southeast of Harrison.	32.6	17.6	.540
Unnamed tributary to North Branch Tobacco River.	S½ sec.8, T.18 N., R.3 W., just above mouth, 6.6 miles southeast of Harrison.	11.0	1.22	.111
North Branch Tobacco River.	On line between secs. 8, 17, T.18 N., R.3 W., ½ mile below unnamed tributary and 7.0 miles southeast of Harrison.	46.3	25.1	.542
Do.....	On line between secs. 14, 15, T.18 N., R.3 W., 8.8 miles southeast of Harrison.	50.7	28.8	.568
Do.....	SW¼ sec.24, T.18 N., R.3 W., 7.7 miles northwest of Beaverton.	55.5	30.6	.551
Do.....	NE¼ sec.30, T.18 N., R.2 W., at Old Plank Rd., 5.8 miles northwest of Beaverton.	59.4	30.0	.505
Do.....	On line between secs. 28, 33, T.18 N., R.2 W., 4.2 miles northwest of Beaverton.	65.8	31.6	.480
Do.....	NW¼ sec.2, T.17 N., R.2 W., at Bard Rd., 2.3 miles northwest of Beaverton.	71.6	35.4	.494

For several years records of the water-surface elevation of many of the lakes in Indiana have been collected by the Geological Survey under cooperative agreements with the Indiana Department of Conservation, Division of Water Resources. These records have not been published but are available in the files of the district office of the Geological Survey in Indianapolis, Indiana. In general, the records are based on once-daily readings of a staff gage by a local observer and consist of daily, monthly, and yearly mean water surface elevations as well as graphs showing the fluctuation in elevation. Discharge measurements, made at the outflow, are also available in some instances.

The lakes for which records have been collected are listed in the following table. The established level, sometimes referred to as the legal level, is that elevation set by the courts to which the average level of the lake is to be held; it is normally set at about the average level that has prevailed for a number of years prior to the establishment of the level.

Lakes in Indiana in the St. Lawrence River basin for which records are available

Lake	County	Drainage area (square miles)	Surface area (acres)	Established level†	Records available
Adams Lake near Wolcottville	Lagrange	5.69	293	953.59	1945-58
Atwood Lake near Wolcottville	Lagrange	1.31	170	899.99	1947-52
Bass Lake near Angola	Steuben	.60	56	-	1954-58
Bear Lake at Wolflake	Noble	6.12	*136	-	1942-58
Big Long Lake near Stroh	Lagrange	4.13	366	-	1953-58
Big Otter Lake near Fremont	Steuben	19.8	69	965.18	1945-52
Big Turkey Lake at Stroh	Lagrange	34.6	450	926.61	1945-58
Bixler Lake at Kendallville	Noble	3.63	112	963.65	1945-58
Blackman Lake near Wolcottville	Lagrange	1.4	67	973.69	1953-58
Bower Lake near Pleasant Lake	Steuben	87.5	*25	-	1945-58
Cedar Lake near Ontario	Lagrange	1.66	120	871.90	1948-51
Cedar Lake near Waterloo	De Kalb	21.8	28	896.76	1943-55
Clear Lake at Clear Lake	Steuben	7.25	800	1,037.38	1943-58
Cree Lake near Kendallville	Noble	4.90	58	945.23	1949-58
Crooked Lake at Crooked Lake	Steuben	11.9	802	988.17	1945-58
Dallas Lake near Wolcottville	Lagrange	39.4	283	897.36	1945-58
DeWart Lake near Leesburg	Kosciusko	7.88	476	867.70	1945-58
Diamond Lake near Wawaka	Noble	2.82	96	-	1945-58
Duley Lake near Cromwell	Noble	11.0	17	-	1952-58
Eagle Lake near Kimmel	Noble	1.77	59	-	1945-48
Emma Lake near Emma	Lagrange	14.8	38	-	1954-58
Engle Lake near Ligonier	Noble	3.22	*48	-	1955-58
Fish Lake near Plato	Lagrange	10.8	*100	936.50	1945-58
Fish Lake near Scott	Lagrange	6.14	*139	-	1954-58
Fox Lake near Angola	Steuben	1.13	142	1,018.83	1945-52
Golden Lake near Pleasant Lake	Steuben	92.4	*119	-	1945-58
Gordy Lake near Cromwell	Noble	*8.82	27	-	1952-58
Hackenburg Lake near Wolcottville	Lagrange	54.8	42	897.36	1945-58
Hamilton Lake at Hamilton	Steuben	12.8	802	898.83	1943-58
Harper Lake near Washington Center	Noble	2.67	11	-	1945-58
Heaton Lake near Elkhart	Elkhart	8.78	87	767.30	1945-52
Hindman Lake near Washington Center	Noble	*8.00	*13	-	1945-58
Hogback Lake near Angola	Steuben	106	*146	-	1945-58
Howard Lake near Angola	Steuben	39.4	34	-	1954-58
Hudson Lake at Hudson	La Porte	3.06	432	763.09	1945-58
Hunter Lake near Middlebury	Elkhart	.72	99	856.90	1945-52
Indian Lake near Corunna	De Kalb	3.50	54	-	1957
Indiana Lake near Bristol	Elkhart	.53	122	759.73	1945-52
Jimerson Lake at Nevada Mills	Steuben	47.0	203	964.66	1945-58
Knapp Lake near Washington Center	Noble	5.64	88	878.25	1945-58
Lake Gage at Panama	Steuben	17.2	327	954.25	1945-58
Lake George at Hobart	Lake	125	282	-	1946-58
Lake George at Jamestown	Steuben	12.3	509	985.28	1945-58
Lake James at Lake James	Steuben	43.0	1,318	964.96	1942-49
Lake Pleasant near Nevada Mills	Steuben	2.51	287	-	1954-58
Lake of the Woods near Helmer	Lagrange	5.62	*136	-	1951-58
Latta Lake near Rome City	Noble	4.37	35	-	1954-58
Lime Lake at Panama	Steuben	17.4	-	954.25	1945-58
Little Long Lake at Kendallville	Noble	4.34	66	-	1954-58
Little Otter Lake near Fremont	Steuben	19.8	34	965.18	1945-52
Little Turkey Lake at Elmira	Lagrange	56.0	135	925.72	1945-58
Long Lake at Moonlight	Steuben	70.8	92	-	1945-58
Long Lake near Burr Oak	Noble	11.5	40	-	1954-58
Loon Lake near Angola	Steuben	2.73	129	-	1954-58
Lower Long Lake near Albion	Noble	3.96	66	889.81	1945-52
Martin Lake near Valentine	Lagrange	5.36	22	-	1945-58
Messick Lake near Wolcottville	Lagrange	55.8	68	897.36	1945-58
Moss Lake near Washington Center	Noble	5.90	*9	-	1945-58
Mud Lake near Orland	Steuben	1.64	25	-	1956-58
Muncie Lake near Burr Oak	Noble	43.4	41	-	1954-58
North Twin Lake near Howe	Lagrange	1.99	*135	-	1953-58
Olin Lake near Valentine	Lagrange	6.12	95	899.45	1945-58
Oliver Lake near Valentine	Lagrange	11.3	371	899.45	1945-58
Otter Lake near Flint	Steuben	6.82	115	-	1954-58
Pigeon Lake near Angola	Steuben	30.6	53	-	1954-58
Pleasant Lake at Pleasant Lake	Steuben	.94	53	963.52	1945-58
Pleasant Lake near Wolflake	Noble	.30	-	-	1951-53
Pretty Lake near Stroh	Lagrange	2.91	184	965.50	1949-52
Rider Lake near Cromwell	Noble	9.73	3	-	1952-58
River Lake near Burr Oak	Noble	18.7	22	-	1954-58
Round Lake at Clear Lake	Steuben	7.25	30	1,037.38	1943-58
Round Lake at Kendallville	Noble	3.60	99	-	1954-58
Royer Lake near Plato	Lagrange	4.91	69	936.50	1952-58
Sackrider Lake near Kendallville	Noble	8.42	40	-	1954-58
Sand Lake near Burr Oak	Noble	15.0	47	893.56	1945-51
Sandford Lake near Cosperville	Noble	104.0	94	-	1947-58
Saugany Lake near Rolling Prairie	La Porte	.82	74	781.21	1945-50
Shipshewana Lake near Shipshewana	Lagrange	4.00	202	852.04	1951-58
Silver Lake near Angola	Steuben	3.72	238	959.40	1945-52
Silver Lake near Rolling Prairie	La Porte	.82	54	795.20	1945-58
Silver Lake near Wolflake	Noble	.32	29	-	1952-58

* Revised.
† Elevation, in feet, above mean sea level.

Lakes in Indiana in the St. Lawrence River basin for which records are available--Continued

Lake	County	Drainage area (square miles)	Surface area (acres)	Established level†	Records available
Simonton Lake near Elkhart	Elkhart	4.37	282	772.19	1945-58
Skinner Lake near Albion	Noble	13.8	125	927.74	1945-58
Snow Lake at Lake James	Steuben	36.3	-	964.96	1942-49
South Twin Lake near Howe	Lagrange	3.13	*116	-	1953-58
Sparta Lake at Kimmel	Noble	.26	31	888.50	1945-51
Steinbarger Lake near Cosperville	Noble	25.3	65	-	1947-58
Stone Lake near Scott	Lagrange	1.32	116	-	1954-58
Story Lake near Hudson	De Kalb	2.48	*77	-	1946, 1954-58
Sylvan Lake at Rome City	Noble	31.5	630	916.20	1942-58
Syracuse Lake at Syracuse	Kosciusko	37.3	367	858.87	1943-58
Tamarack Lake near Cosperville	Noble	15.1	40	-	1947-58
Upper Long Lake near Wolflake	Noble	2.03	77	-	1955-58
Village Lake near Cromwell	Noble	11.6	11	-	1952-58
Wabee Lake near Milford	Kosciusko	13.4	*187	829.79	1945-52
Waldron Lake near Cosperville	Noble	131.0	198	-	1947-58
Wall Lake near Orland	Lagrange	1.43	141	942.25	1953-55
Wawasee Lake near Wawasee	Kosciusko	36.1	2,620	858.89	1942-58
Westler Lake near Wolcottville	Lagrange	37.3	88	897.36	1945-58
Witmer Lake near Wolcottville	Lagrange	35.8	204	897.36	1945-58
Wolf Lake near Goshen	Elkhart	.87	100	813.00	1947-57
Wolf Lake at Hammond	Lake	5.72	999	-	1946-48

* Revised.
† Elevation, in feet, above mean sea level.

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