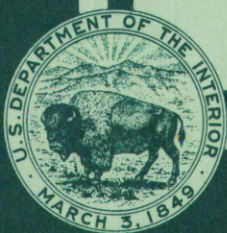


1972

Water Resources Data for Michigan

Part 1. Surface Water Records



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Prepared in cooperation with the State of Michigan
and with other agencies

CALENDAR FOR WATER YEAR 1972

OCTOBER 1971

S	M	T	W	T	F	S
					1	2
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31						

NOVEMBER 1971

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MARCH 1972

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MAY 1972

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JUNE 1972

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JULY 1972

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AUGUST 1972

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SEPTEMBER 1972

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1972

**Water Resources Data
for
Michigan**

Part 1. Surface Water Records



**UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY**

**Prepared in cooperation with the State of Michigan
and with other agencies**

Prepared in cooperation with

Michigan State Department of Natural Resources
Water Resources Commission
Geological Survey Division
Michigan Department of State Highways
Genesee County Drain Commission
Kalamazoo County Board of Supervisors
Macomb County Board of Supervisors
Macomb County Road Commission
Oakland County Department of Public Works
Oakland County Drain Commission
Washtenaw County Planning Commission
Huron-Clinton Metropolitan Authority
York Township
City of Kalamazoo
City of Saline
Village of Imlay City
Village of Milan
Corps of Engineers, U.S. Army
Soil Conservation Service, U.S. Department of Agriculture

Water resources records, 1972, for Michigan are in the following reports of the U.S. Geological Survey:

1. Water Resources Data for Michigan
Part 1: Surface Water Records
2. Water Resources Data for Michigan
Part 2: Water Quality Records

Copies of this report may be obtained from
District Chief, Water Resources Division
U.S. Geological Survey
2400 Science Parkway
Okemos, Michigan 48864

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WATER RESOURCES DATA FOR MICHIGAN, 1972

PART 1: SURFACE-WATER RECORDS

INTRODUCTION

Surface-water records for the 1972 water year for gaging stations, partial-record stations, and miscellaneous sites within the State of Michigan are given in this report. For convenience there are also included records for a few pertinent gaging stations in bordering States. The records were collected and computed by the Water Resources Division of the U.S. Geological Survey, under the direction of T. R. Cummings, district chief. These data represent that portion of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Michigan.

Records of discharge and stage of streams, and contents and stage of lakes or reservoirs are published in a series of U.S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States". Through September 30, 1960, these water-supply papers were in an annual series and since then are in a 5-year series. Since 1951 there have been 20 volumes in the series; each volume covered an area whose boundaries coincided with those of certain natural drainage areas. The records in Michigan were contained in Part 4 of that series.

Beginning with the 1961 water year, streamflow records and related data have been released by the Geological Survey in annual reports on a State-boundary basis. Distribution of these basic-data reports is limited and primarily for local needs.

COOPERATION

The systematic collection of streamflow records began in 1898 by cooperation with cities, municipalities, and private organizations. Cooperative agreements between the U.S. Geological Survey and organizations of the State of Michigan for the collection of streamflow records began in 1930. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

Michigan State Department of Natural Resources
Ralph A. MacMullen, director.

Water Resources Commission, Ralph W. Purdy,
executive secretary.

Geological Survey Division, Arthur E.
Slaughter, chief.

Michigan Department of State Highways, Henrik E.
Stafseth, director.

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting records for 29 gaging stations published in this report.

Assistance was also furnished by the U.S. Department of Commerce, ESSA, Weather Bureau, and the Soil Conservation Service, U.S. Department of Agriculture.

The following organizations aided in collecting records:

Kalamazoo County Board of Supervisors; Macomb County Board of Supervisors; Macomb County Road Commission; Oakland County Department of Public Works; Oakland County Drain Commission; Genesee County Drain Commission; Washtenaw County Planning Commission; Huron-Clinton Metropolitan Authority; York Township; city of Saline; villages of Imlay City and Milan; Consumers Power Co.; Cleveland-Cliffs Iron Co.; Hanna Mining Co.; Michigan Power Co.; Michigan Sugar Co.; Upper Peninsula Power Co.; and Wisconsin-Michigan Power Co.

DEFINITION OF TERMS

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

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or 325,851 gallons.

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, 1.9835 acre-feet, or 646,317 gallons, and represents a runoff of 0.0372 inch from 1 square mile.

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

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, an artificial structure, or a uniform cross section over a long reach of the channel.

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.

Cubic foot per second (cfs) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second, and is equivalent to 7.48 gallons per second or 448.8 gallons per minute.

Discharge is the volume of water (or more broadly, total fluids), that passes a given point within a given period of time.

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

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage", although gage height is more appropriate when used with a reading on a gage.

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 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.

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.

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.

WRD is used as an abbreviation for "Water-Resources Data" in the summary REVISIONS paragraph to refer to previously published State annual basic-data reports.

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

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from man-made changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

International Hydrological Decade (IHD) River Stations provide a general index of runoff and materials in the water balance (discharge of water, and dissolved and transported solids) of the world. In the United States, IHD Stations provide indices of runoff and of the general distribution of water in the principal river basins of the conterminous United States and Alaska.

DOWNSTREAM ORDER AND STATION NUMBERS

Records are listed in a downstream direction along the main stream, and stations on tributaries are listed between stations on the main stream in the order in which those tributaries enter the main stream. Stations on tributaries entering above all mainstream stations are listed before the first mainstream station. Stations on tributaries to tributaries are listed in a similar manner. In the list of gaging stations in the front of this report the rank of tributaries is indicated by indention, each indention representing one rank.

As an added means of identification, each gaging station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and continuous-record gaging stations; therefore, 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 8-digit number for each station such as 04042500, includes the part number "04" and a 6-digit station number. In this report, the complete number 04042500 appears just to the left of the station name. In this report, the records are listed in downstream order by parts. All records for a drainage basin encompassing more than one State could be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

EXPLANATION OF DATA

Collection and Computation of Data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams, and stage, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relations, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from a water-stage recorder that gives a continuous chart of fluctuations (for digital recorders, a tape punched at 15-, 30-, or 60-minute intervals) or from direct readings on a nonrecording gage. 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 standard textbooks on the measurement of stream discharge. (See also SELECTED REFERENCES.)

For a stream-gaging station, 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, or computation of flow over dams or weirs), 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 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 in effect the shifting-control method.

At some stream-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 required 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. For such stations, the rate of change in stage is used as a factor in determining discharge.

At some stream-gaging stations the stage-discharge relation is affected by ice in 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 hydrologist, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, adjoining good record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise daily contents may be estimated on the basis of operator's log, adjoining good record, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of basic data. For gaging stations on the streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs a monthly summary table of stage and contents is given. Tables of daily mean gage heights are included for some stations. Records are published for the water year, which begins on October 1 and ends on September 30. A calendar for the 1972 water year is shown on the reverse side of the front cover to facilitate finding the day of the week for any date.

The description of the gaging station gives the location, drainage area, period of record, type and history of gages, average discharge, extremes of discharge or contents, and general remarks. 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 or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD". The type of gage currently in use, 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 record are given under "GAGE". In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the Topographic Division of the Geological Survey, unless otherwise qualified. The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. The maximum discharge (or contents) and the maximum gage height, the minimum discharge if there is little or no regulation (or the minimum contents), and the minimum gage height if it is significant are given under "EXTREMES". The minimum daily discharge is given if there is extensive regulation (also the minimum discharge and gage height if they are abnormally low). In the first paragraph headed "Current year:" the data given are for the complete current water year unless otherwise specified. In the second paragraph under "EXTREMES" headed "Period of record:" the data given are for the period of record given in the PERIOD OF RECORD paragraph. Reliable information concerning major floods that occurred outside the period of record is given in the third or last paragraph under "EXTREMES". Unless otherwise qualified, the maximum discharge (or contents) corresponds to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, 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 or contents, it is given separately. Information pertaining to the accuracy of the discharge records, to conditions that affect the natural flow at the gaging station, and availability of Water Quality records, is given under "REMARKS"; for reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir, is also 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 or compilation 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 were revised, 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 stream-gaging stations where they serve a useful purpose and the dates of applicability can be easily identified.

The daily tables for stream-gaging stations give the discharge corresponding to the daily mean gage height unless there are large or rapid changes in the discharge during a day. For days having large or rapid changes, discharge for the day is computed by averaging the mean discharge for several parts of a day. For digital recorders, the daily mean discharge is always the average of the discharges at each punched reading. For stations equipped with nonrecording gages, the daily discharge corresponds to once-daily readings of the gage or to the mean of twice-daily readings; but for periods of rapidly changing stage the discharge is determined from a gage-height graph based on gage readings.

The monthly summary is given below the daily table. For stream-gaging stations the line headed "TOTAL" gives the sum of the daily figures; it is the total cubic feet per second per day for the month. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."). Figures of cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, or if the drainage area includes large noncontributing areas.

For reservoir stations the monthly summary gives the elevation (or gage height) at the end of the month and the change in contents during the month. For reservoir stations the yearly summary gives the change in contents for the calendar year and for the water year.

In the yearly summary below the monthly summary, the figures of maximum are the maximum daily discharges for the calendar and water years; likewise, the minimums in this summary are the minimum daily discharges.

Peak discharges and their times of occurrence and corresponding gage heights for many stations are listed below the yearly summary. 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 can be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030 and 1:30 p.m. is 1330.

In a general footnote introduced by the word "NOTE" certain periods are indicated for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Period of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-discharge relation, or of any other unusual condition at the gage are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs. Footnotes to reservoir tables may be used to explain the use of new capacity tables or for other special conditions.

Accuracy of Data

The accuracy of discharge 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 under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good" within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumptive use, regulation, evaporation, or other factors. For such stations, discharge in cubic feet per second per square mile and runoff in inches are not published unless satisfactory adjustments can be made for such effects. 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 if adjustments or unadjusted losses (consumptive use, evaporation, seepage, etc.) are large in comparison with the observed discharge.

Publications

Each volume of the 1960 series of U.S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States" contains a listing of the numbers of all water-supply papers in which records of surface-water data were published for the area covered by the individual volumes. Each volume also contains a list of water-supply papers that give detailed information on major floods for the area. A new series of water-supply papers containing surface-water records for the 5-year period October 1, 1960, to September 30, 1965, also will include lists of annual and special reports published as water-supply papers.

Records through September 1950 for the area covered by this report have been compiled and published in Water-Supply Paper 1307; records for October 1950 to September 1960 have been compiled and published in Water-Supply Paper 1727. These reports contain summaries of monthly and annual discharge and month-end storage 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 yearly summary table for each gaging station lists the numbers of the water-supply papers in which daily records were published for that station.

Special reports on major floods, droughts, lake levels, or of other hydrologic studies for the area have been issued in publications other than water-supply papers. Information relative to these reports may be obtained from the district office.

Other Data Available

Data collected at partial-record stations and at miscellaneous sites are given in three tables at the end of the surface-water records in this report. The first is a table of discharge measurements at low-flow partial-record stations, the second is a table of annual maximum stage and discharge at crest-stage stations, and the third is a table of discharge measurements at miscellaneous sites. 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.

More detailed information than that published for most of the gaging stations, such as discharge measurements, gage-height records, and rating tables, is on file in the district office. Many gaging-station records in Michigan through 1967 have been analyzed to give several statistical summaries: (1) the number of days in each year that the daily discharge was between selected limits (duration tables); (2) the lowest mean discharge for selected numbers of consecutive days in each year; and (3) the highest mean discharge for selected numbers of consecutive days in each year.

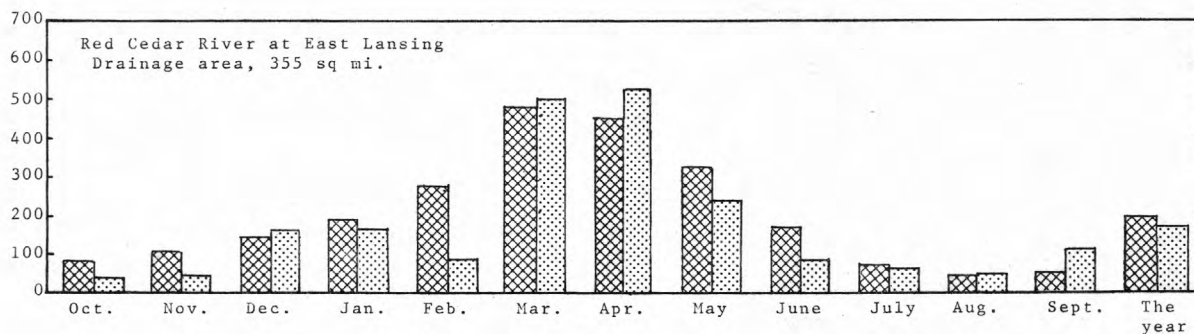
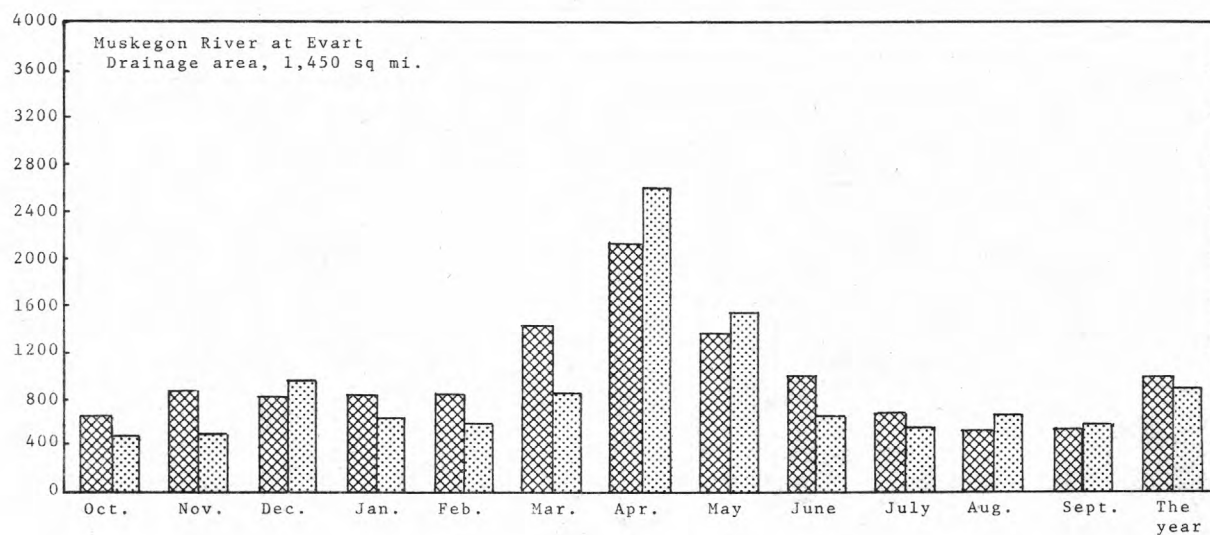
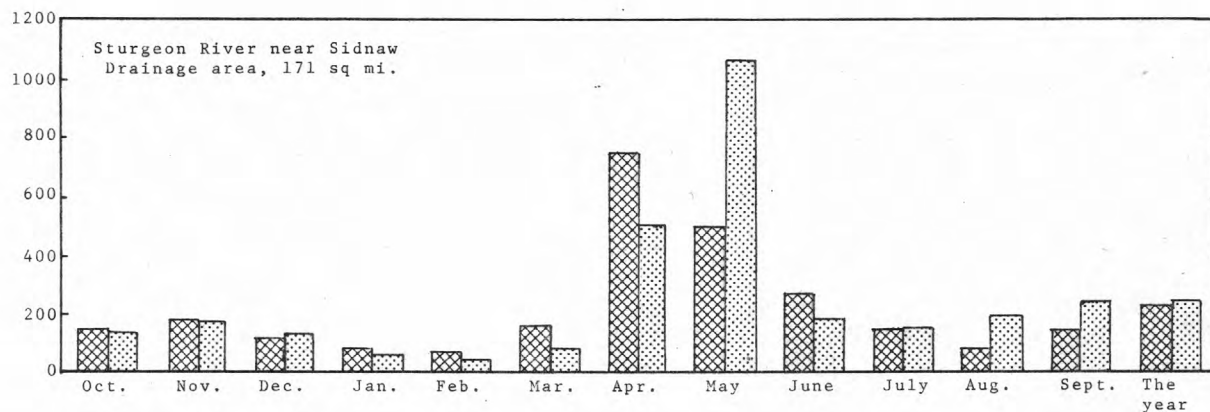
At or near some gaging stations, water-quality records also are collected. Data are obtained on the chemical quality of the stream water, on the water temperature, and on the sediment. These data are given in Part 2 of this report. Under the "REMARKS" paragraph of the gaging-station description, reference is made to water-quality records collected on a regular basis.

HYDROLOGIC CONDITIONS

Annual runoff during the 1972 water year was considerably above the mean in the Upper Peninsula and considerably below in the Lower Peninsula. Floods occurred in the western part of the Upper Peninsula as a result of heavy precipitation on August 15, 16. As much as 6 inches was recorded in some areas. Damage was widespread with roads, small bridges, and culverts being washed out. No other floods of significance occurred.

SELECTED REFERENCES

- Carter, R. W., and Davidian, Jacob, 1968, General procedure for gaging stream: U.S. Geol. Survey Techniques Water-Resources Inv., book 3, chap. A6, 13 p.
- Corbett, D. M., and others, 1943, Stream-gaging procedure, a manual describing methods and practices of the Geological Survey: U.S. Geol. Survey Water-Supply Paper 888, 245 p.
- Langbein, W. B., and Iseri, D. T., 1960, General introduction and hydrologic definitions: U.S. Geol. Survey Water-Supply Paper 1541-A, 29 p.



Explanation



-  Monthly and yearly mean discharge for period 1931-60.
-  Monthly and yearly mean discharge for 1972 water year.

Figure 1.--Comparison of discharge at three long-term representative gaging stations during 1972 water year with mean discharge for period 1931-60.



SURFACE-WATER RECORDS

STREAMS TRIBUTARY TO LAKE SUPERIOR

04001000 Washington Creek at Windigo, Mich.
(Hydrologic bench-mark station)

LOCATION.--Lat 47°55'23", long 89°08'42", in NW¼ sec.28, T.64 N., R.38 W., Keweenaw County, Isle Royale National Park, on left bank 0.8 mile northeast of Windigo, and 35 miles southwest of Rock Harbor.

DRAINAGE AREA.--13.2 sq mi.

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 605 ft (from topographic map).

AVERAGE DISCHARGE.--8 years, 21.9 cfs (22.53 inches per year).

EXTREMES.--Current year: Maximum discharge, 480 cfs May 1 (gage height, 6.82 ft); minimum, 1.6 cfs July 10, Sept. 10 (gage height, 2.84 ft).

Period of record: Maximum discharge, 480 cfs May 1, 1972 (gage height 6.82 ft), from rating curve extended above 160 cfs based on runoff characteristics of nearby stations; minimum discharge, 0.57 cfs Aug. 21, 1970 (gage height, 2.57 ft).

REMARKS.--Records fair. Recording rain gage at station and capacity rain gage located near mouth. Records of chemical analyses, water temperatures, and suspended sediment loads for the current year are published in Part 2 of this report. Hydrologic bench mark stations are installed in specially selected areas where water resources have not yet been affected by works of man. Continuous records of natural hydrologic conditions, such as streamflow and water quality, will make possible assessment of changes which occur as a result of the changes in climate and other natural factors. These data will provide a frame of reference against which hydrologic changes wrought by man may be evaluated.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	31	11	6.8	5.7	4.7	4.8	386	15	3.0	4.5	2.4
2	30	40	11	6.8	5.4	4.6	4.8	373	12	2.9	4.1	2.3
3	27	44	10	6.6	5.7	4.4	4.7	294	10	2.8	4.1	2.2
4	20	36	10	6.2	5.8	4.4	4.7	239	8.6	2.6	3.7	2.1
5	17	28	10	6.1	5.8	4.4	4.6	204	8.0	2.4	3.7	2.0
6	14	22	11	6.1	5.6	4.4	4.5	237	7.0	2.2	3.5	2.0
7	11	16	10	6.1	5.6	4.4	4.5	170	6.4	2.1	3.4	2.0
8	10	13	10	6.1	5.6	4.3	4.4	135	7.1	2.0	3.4	2.0
9	8.5	12	11	6.6	5.6	4.3	4.4	130	6.9	1.9	3.3	2.0
10	7.8	11	12	6.3	5.6	4.3	4.8	122	5.8	1.8	3.2	2.0
11	7.2	11	16	6.2	5.4	4.3	5.2	120	6.6	2.0	3.1	2.1
12	6.6	10	13	6.3	5.4	4.2	6.0	105	15	4.1	3.1	2.1
13	6.0	10	11	6.4	5.4	4.2	7.0	90	12	4.0	3.0	2.2
14	5.4	14	11	6.4	5.4	4.2	10	88	10	4.4	3.0	2.2
15	4.7	30	12	6.4	5.4	4.2	16	72	8.4	4.6	3.0	2.2
16	4.4	27	13	6.3	5.4	4.2	23	60	7.1	4.0	5.0	2.2
17	13	42	12	6.5	5.2	4.6	35	51	6.1	4.1	4.0	2.1
18	20	60	11	6.4	5.2	4.7	47	43	5.5	6.5	3.0	2.1
19	20	52	10	6.2	5.2	4.6	62	34	5.2	5.4	2.6	2.1
20	15	40	9.5	6.1	5.2	4.5	84	29	13	5.4	2.2	2.7
21	12	30	9.1	6.0	5.2	5.2	100	25	11	6.0	3.1	8.0
22	11	22	9.1	6.2	5.0	6.6	87	22	8.2	70	6.9	6.4
23	9.3	19	9.0	6.2	5.0	5.8	79	18	6.3	69	6.1	5.2
24	7.9	17	8.5	6.2	5.0	5.3	68	15	5.6	35	5.2	4.5
25	7.5	16	8.4	6.3	5.0	5.0	75	13	5.2	20	7.2	4.0
26	7.1	14	8.2	6.1	4.9	4.9	91	11	4.5	12	5.0	3.7
27	15	13	8.0	6.0	4.9	4.8	114	9.8	4.0	8.5	4.0	3.4
28	17	12	7.4	6.0	4.8	4.8	152	8.9	3.7	7.2	3.3	4.0
29	15	11	7.2	6.0	4.7	4.7	218	30	3.8	6.4	3.0	5.0
30	26	12	7.1	6.0	-----	4.7	238	30	3.5	5.6	2.7	4.2
31	40	-----	6.8	5.9	-----	4.8	-----	20	-----	5.0	2.5	-----
TOTAL	456.4	715	313.3	193.8	154.1	144.5	1,563.4	3,184.7	231.5	312.9	117.9	91.4
MEAN	14.7	23.8	10.1	6.25	5.31	4.66	52.1	103	7.72	10.1	3.80	3.05
MAX	41	60	16	6.8	5.8	6.6	238	386	15	70	7.2	8.0
MIN	4.4	10	6.8	5.9	4.7	4.2	4.4	8.9	3.5	1.8	2.2	2.0
CFSM	1.11	1.80	.77	.47	.40	.35	3.95	7.80	.58	.77	.29	.23
IN.	1.29	2.02	.88	.55	.43	.41	4.41	8.98	.65	.88	.33	.26

CAL YR 1971 TOTAL 8,912.1 MEAN 24.4 MAX 349 MIN 1.8 CFSM 1.85 IN 25.12
WTR YR 1972 TOTAL 7,478.9 MEAN 20.4 MAX 386 MIN 1.8 CFSM 1.55 IN 21.08

PEAK DISCHARGE (BASE, 110 CFS).--May 1 (1500) 480 cfs (6.82 ft).

STREAMS TRIBUTARY TO LAKE SUPERIOR

19

04031000 Black River near Bessemer, Mich.

LOCATION.--Lat 46°30'41", long 90°04'28", in NE1/4SE1/4 sec.32, T.48 N., R.46 W., Gogebic County, on right bank 450 ft downstream from bridge on county highway, 500 ft downstream from Powder Mill Creek, and 2.5 miles northwest of Bessemer.

DRAINAGE AREA.--200 sq mi.

PERIOD OF RECORD.--October 1954 to current year.

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

AVERAGE DISCHARGE.--18 years, 235 cfs (15.96 inches per year).

EXTREMES.--Current year: Maximum discharge, 8,360 cfs Aug. 16 (gage height, 11.73 ft); minimum daily, 33 cfs Mar. 2, 3; minimum gage height, 0.78 ft July 16.

Period of record: Maximum discharge, 14,800 cfs Apr. 24, 1960 (gage height, 14.27 ft, from floodmark), from rating curve extended above 5,300 cfs on basis of slope-area measurement of peak flow; minimum, 7.8 cfs Sept. 9, 1970 (gage height, 0.36 ft).

REMARKS.--Records good except those for winter periods, which are poor. Prior to 1967, some ground water pumped from mines at Bessemer.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	267	160	54	37	34	72	2,240	238	447	120	166
2	156	338	150	52	37	33	72	1,990	186	330	100	139
3	135	356	145	50	37	33	72	1,470	151	248	95	125
4	105	332	135	48	37	34	72	1,100	115	205	75	115
5	94	341	130	46	37	35	72	842	97	158	63	117
6	115	332	120	45	37	36	72	876	85	126	60	108
7	125	252	115	44	37	38	72	734	73	103	78	124
8	133	231	110	42	37	39	73	594	65	85	101	107
9	131	195	110	40	37	40	76	481	54	74	112	90
10	137	182	110	39	36	40	80	382	46	64	86	85
11	121	174	120	38	36	40	88	333	42	57	96	80
12	103	166	130	37	36	40	110	288	47	50	95	72
13	102	155	160	37	36	40	150	253	51	43	80	80
14	100	152	145	36	36	40	250	227	120	42	71	81
15	93	170	130	36	36	41	406	204	160	38	70	73
16	94	174	120	35	36	42	733	184	132	38	5,830	67
17	105	320	115	35	36	43	1,120	163	113	52	3,630	80
18	103	558	105	35	36	45	1,380	145	94	130	1,800	77
19	113	539	100	35	36	46	1,380	125	84	112	1,090	66
20	111	461	95	35	36	49	1,880	110	831	155	721	85
21	104	403	90	35	36	56	2,110	98	915	229	530	213
22	109	357	85	35	36	66	1,770	88	591	635	624	221
23	106	330	82	36	36	84	1,460	80	416	886	503	193
24	100	290	78	36	36	96	1,210	69	307	737	468	165
25	97	251	74	36	36	100	1,280	61	229	539	443	146
26	95	226	70	36	36	94	1,710	54	177	390	336	316
27	102	208	67	36	36	85	2,280	54	199	294	282	333
28	120	192	64	36	36	78	2,840	63	617	236	227	354
29	108	185	62	36	35	74	3,180	138	729	208	187	530
30	167	170	59	36	-----	72	2,800	389	587	163	156	481
31	330	-----	57	36	-----	72	-----	309	-----	152	155	-----
TOTAL	3,677	8,307	3,293	1,213	1,052	1,665	28,870	14,144	7,551	7,026	18,284	4,889
MEAN	119	277	106	39.1	36.3	53.7	962	456	252	227	590	163
MAX	330	558	160	54	37	100	3,180	2,240	915	886	5,830	530
MIN	63	152	57	35	35	33	72	54	42	38	60	66
CFSM	.60	1.39	.53	.20	.18	.27	4.81	2.28	1.26	1.14	2.95	.82
IN.	.68	1.55	.61	.23	.20	.31	5.37	2.63	1.40	1.31	3.40	.91

CAL YR 1971 TOTAL 97,673 MEAN 268 MAX 4,860 MIN 18 CFSM 1.34 IN 18.17
WTR YR 1972 TOTAL 59,971 MEAN 273 MAX 5,830 MIN 33 CFSM 1.37 IN 18.59

PEAK DISCHARGE (BASE, 1,500 CFS)

DATE	TIME	G.H.	DISCHARGE
04-28	2400	7.72	3,360
08-16	1200	11.73	8,360

STREAMS TRIBUTARY TO LAKE SUPERIOR

04031500 Presque Isle River at Marenisco, Mich.

LOCATION.--Lat 46°22'20", long 89°41'32", in SE1/4NW1/4 sec.21, T.46 N., R.43 W., Gogebic County, on left bank 0.3 mile upstream from highway bridge in Marenisco, and 1.5 miles downstream from confluence of East and West Branches.

DRAINAGE AREA.--171 sq mi.

PERIOD OF RECORD.--February 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,489.30 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to May 27, 1949, nonrecording gage at site 0.3 mile downstream at different datum.

AVERAGE DISCHARGE.--27 years, 176 cfs (13.98 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,260 cfs Aug. 18 (gage height, 7.98 ft); minimum, 61 cfs June 9, 11 (gage height, 3.72 ft).

Period of record: Maximum discharge, 3,520 cfs Apr. 25, 1960 (gage height, 11.25 ft); minimum observed, 13 cfs Sept. 30, 1948 (gage height, 2.25 ft, site and datum then in use).

REMARKS.--Records fair. Occasional regulation for lake or pond level control at several places above station.

REVISIONS (WATER YEARS).--WSP 1707: 1954. WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	117	154	115	85	80	74	125	1,070	195	298	149	316
2	121	182	110	85	80	72	125	994	159	244	103	303
3	135	191	105	84	82	70	125	890	130	200	91	269
4	123	183	105	84	82	70	125	748	111	174	96	246
5	103	185	102	84	81	70	125	649	100	148	97	242
6	93	175	101	84	81	72	122	619	90	129	94	238
7	92	157	101	83	81	74	122	616	84	112	118	229
8	99	188	101	82	81	78	122	538	76	106	134	221
9	101	136	103	82	80	80	122	485	66	102	144	204
10	114	134	122	82	80	80	125	430	65	95	135	191
11	109	122	140	81	80	81	135	335	64	92	154	185
12	98	109	150	81	80	82	160	298	65	93	147	177
13	95	103	130	80	78	82	200	295	72	88	128	178
14	97	100	115	80	78	82	240	287	145	92	108	168
15	83	107	110	80	78	84	300	273	161	87	103	150
16	80	106	100	80	77	84	376	258	143	86	659	151
17	86	150	100	80	77	86	458	239	124	95	1,160	209
18	82	254	98	80	77	86	567	184	106	139	1,180	190
19	86	285	96	80	77	88	537	161	93	131	988	168
20	83	273	94	80	77	92	589	166	415	157	572	174
21	82	240	93	80	77	105	691	159	548	219	424	304
22	87	215	92	80	77	125	728	158	474	360	500	324
23	84	195	91	80	77	140	673	147	323	502	415	292
24	110	180	90	78	77	140	625	132	147	523	409	252
25	103	165	89	78	76	140	604	119	152	467	476	215
26	98	150	88	78	76	135	631	110	148	391	471	311
27	113	140	87	78	76	135	728	103	133	309	435	345
28	114	130	87	78	76	130	905	101	202	223	318	329
29	103	125	87	78	75	130	1,070	124	306	198	218	327
30	152	120	87	80	-----	130	1,130	222	326	184	236	312
31	193	-----	86	80	-----	125	-----	234	-----	164	265	-----
TCTAL	3,236	4,954	3,175	2,505	2,274	3,022	12,585	11,144	5,227	6,208	10,527	7,220
MEAN	104	165	102	80.8	78.4	97.5	420	359	174	200	340	241
MAX	193	285	150	85	82	140	1,130	1,070	548	523	1,180	345
MIN	80	100	86	78	75	70	122	101	64	86	91	150
CFSM	.61	.96	.60	.47	.46	.57	2.46	2.10	1.02	1.17	1.99	1.41
IN.	.70	1.08	.69	.54	.49	.66	2.74	2.42	1.14	1.35	2.29	1.57

CAL YR 1971 TOTAL 71,701 MEAN 196 MAX 1,700 MIN 42 CFSM 1.15 IN 15.60
WTR YR 1972 TOTAL 72,077 MEAN 197 MAX 1,180 MIN 64 CFSM 1.15 IN 15.68

STREAMS TRIBUTARY TO LAKE SUPERIOR

21

04032000 Presque Isle River near Tula, Mich.

LOCATION.—Lat 46°32'49", long 89°46'38", in NW¼ sec.23, T.48 N., R.44 W., Gogebic County, on downstream handrail of bridge on State Highway 28, 2.0 miles east of Tula, 5.5 miles downstream from Little Presque Isle River, and 7 miles southwest of Merriweather.

DRAINAGE AREA.—261 sq mi.

PERIOD OF RECORD.—February 1945 to current year.

GAGE.—Nonrecording gage and crest-stage gage. Datum of gage is 1,299.66 ft above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.—27 years, 275 cfs (14.31 inches per year).

EXTREMES.—Current year: Maximum discharge, 3,750 cfs Aug. 17 (gage height, 13.16 ft); minimum daily, 90 cfs Mar. 23; minimum gage height, 4.75 ft June 10.

Period of record: Maximum discharge, 4,640 cfs Apr. 25, 1960 (gage height, 14.04 ft); minimum, 22 cfs Oct. 5, 6, 1948 (gage height, 4.22 ft).

REMARKS.—Records fair. Occasional regulation for lake or pond level control at several places above station at Marenisco.

REVISIONS (WATER YEARS).—WSP 1387: 1945. WSP 1707: 1953-55. WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP.
1	127	295	165	110	100	91	150	2,480	370	478	323	304
2	156	262	160	105	100	90	145	2,240	282	370	210	381
3	165	300	160	105	100	90	145	1,940	220	291	172	360
4	176	306	155	105	100	91	145	1,560	180	240	147	330
5	152	291	155	105	100	92	140	1,270	154	207	147	295
6	140	295	155	105	98	93	140	1,130	145	175	160	286
7	134	250	155	100	98	95	140	1,060	130	158	203	290
8	129	229	160	100	98	97	135	980	121	141	216	291
9	127	242	160	100	98	98	135	848	106	140	230	273
10	128	210	165	100	97	100	140	732	93	134	234	250
11	129	198	165	98	97	100	145	620	93	123	220	234
12	134	216	170	98	96	105	150	502	99	129	225	227
13	125	172	165	98	96	105	160	415	106	116	200	230
14	120	170	160	96	96	105	200	380	280	120	172	234
15	109	174	155	96	96	110	260	365	314	125	156	218
16	99	207	150	96	96	110	350	342	262	120	1,140	198
17	110	280	140	94	95	110	500	310	216	141	3,490	280
18	113	370	135	93	95	115	650	278	170	251	2,630	256
19	116	496	135	92	95	120	800	234	152	250	1,920	238
20	120	520	130	92	95	125	950	218	460	238	1,420	250
21	120	400	130	92	95	130	1,150	205	1,110	340	1,080	440
22	125	333	125	92	95	140	1,200	198	1,000	438	970	592
23	123	290	120	92	95	150	1,050	194	778	602	952	520
24	140	260	120	92	95	155	950	175	568	680	830	400
25	134	240	120	93	95	160	950	156	270	638	784	345
26	130	220	115	93	95	160	1,200	147	225	505	736	368
27	135	205	115	94	94	160	1,470	132	201	475	670	450
28	141	190	115	96	93	160	1,960	130	280	388	592	508
29	143	180	110	97	92	155	2,510	200	463	304	493	592
30	141	175	110	98	-----	155	2,630	421	560	310	370	641
31	320	-----	110	98	-----	150	-----	466	-----	318	306	-----
TOTAL	4,261	7,976	4,385	3,025	2,795	3,717	20,650	20,328	9,408	8,945	21,398	10,281
MEAN	137	266	141	97.6	96.4	120	688	656	314	289	690	343
MAX	320	520	170	110	100	160	2,630	2,480	1,110	680	3,490	641
MIN	99	170	110	92	92	90	135	130	93	116	147	198
CFSM	.52	1.02	.54	.37	.37	.46	2.64	2.51	1.20	1.11	2.64	1.31
IN.	.61	1.14	.62	.43	.40	.53	2.94	2.90	1.34	1.27	3.05	1.47

CAL YR 1971 TOTAL 114,007 MEAN 312 MAX 3,470 MIN 49 CFSM 1.20 IN 16.25
WTR YR 1972 TOTAL 117,169 MEAN 320 MAX 3,490 MIN 90 CFSM 1.23 IN 16.70

STREAMS TRIBUTARY TO LAKE SUPERIOR

04033000 Middle Branch Ontonagon River near Paulding, Mich.

LOCATION.--Lat 46°21'25", long 89°04'38", in SE1/4NE1/4 sec.29, T.46 N., R.38 W., Ontonagon County, Ottawa National Forest, on right bank, 25 ft downstream from highway bridge, 2.4 miles upstream from Bond Falls Reservoir, and 5.7 miles southeast of Paulding.

DRAINAGE AREA.--164 sq mi.

PERIOD OF RECORD.--June 1942 to current year. 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 (levels by Michigan Department of Natural Resources). Prior to Sept. 28, 1942, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--30 years, 172 cfs (14.24 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,010 cfs May 1 (gage height, 7.80 ft); minimum daily, 90 cfs Mar. 3-6; minimum gage height, 3.62 ft about Aug. 5, from recorded range in stage.

Period of record: 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 fair.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	154	150	125	115	102	96	130	976	228	175	115	191
2	163	160	125	115	102	92	125	950	197	158	115	193
3	180	170	125	110	104	90	125	881	186	152	110	187
4	187	170	125	105	104	90	125	764	197	141	110	178
5	172	160	125	105	104	90	120	654	170	130	105	186
6	156	155	125	105	104	90	120	621	161	125	120	186
7	152	145	125	105	104	92	120	593	156	125	135	196
8	151	145	125	105	100	93	120	521	145	123	170	187
9	157	140	128	105	100	94	125	448	139	120	170	170
10	156	135	132	105	100	96	125	383	134	115	155	155
11	148	135	138	105	100	100	130	332	132	114	154	151
12	148	132	140	105	100	105	135	300	140	113	148	147
13	143	132	145	102	100	108	146	281	141	109	138	150
14	138	132	150	102	100	110	153	266	175	109	131	148
15	135	130	148	100	100	115	156	244	195	105	128	143
16	135	130	145	100	100	120	194	229	165	105	338	156
17	135	130	140	100	100	125	249	214	146	120	631	246
18	135	135	135	100	100	130	278	203	136	150	724	222
19	132	150	135	100	100	135	286	193	130	180	708	183
20	132	155	132	98	98	140	309	192	164	140	535	169
21	132	150	130	98	98	140	373	231	210	200	404	255
22	130	140	130	98	98	145	383	216	179	230	331	260
23	130	135	125	98	98	145	370	197	156	220	289	231
24	130	135	125	98	98	145	356	184	142	190	303	195
25	130	130	120	97	98	140	354	173	134	165	347	183
26	130	130	120	97	98	140	380	159	128	155	325	276
27	130	130	118	97	98	135	457	149	124	145	289	306
28	132	128	115	97	97	135	606	146	213	135	251	316
29	132	125	115	97	97	130	829	174	239	130	216	406
30	135	125	115	98	-----	130	979	303	195	125	195	398
31	142	-----	115	100	-----	130	-----	277	-----	120	184	-----
TOTAL	4,462	4,219	3,996	3,162	2,902	3,626	8,358	11,454	4,957	4,424	8,074	6,370
MEAN	144	141	129	102	100	117	279	369	165	143	260	212
MAX	187	170	150	115	104	145	979	976	239	230	724	406
MIN	130	125	115	97	97	90	120	146	124	105	105	143
CFSM	.88	.86	.79	.62	.61	.71	1.70	2.25	1.01	.87	1.59	1.29
IN.	1.01	.96	.91	.72	.66	.82	1.90	2.60	1.12	1.00	1.83	1.44

CAL YR 1971 TOTAL 69,735 MEAN 191 MAX 1,220 MIN 98 CFSM 1.16 IN 15.82
WTR YR 1972 TOTAL 66,004 MEAN 180 MAX 979 MIN 90 CFSM 1.10 IN 14.97

NOTE.--No gage-height record Oct. 12 to Dec. 7.

STREAMS TRIBUTARY TO LAKE SUPERIOR

23

04033500 Bond Falls Canal near Paulding, Mich.

LOCATION.--Lat 46°23'57", long 89°08'47", in SW1/4NE1/4 sec.11, T.46 N., R.39 W., Ontonagon County, on left bank 40 ft upstream from intake to pipeline No. 2, 0.8 mile downstream from Bond Falls Reservoir on Middle Branch Ontonagon River, and 1.6 miles east of Paulding.

PERIOD OF RECORD.--July 1942 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,441.59 ft above mean sea level. Prior to Oct. 1, 1968, nonrecording gage at datum 3.00 ft higher.

AVERAGE DISCHARGE.--30 years, 137 cfs.

EXTREMES.--Current year: Maximum discharge, 314 cfs Sept. 13, 15 (gage height, 5.85 ft); no flow part of Apr. 24 (gage height, 3.06 ft).

Period of record: Maximum discharge, 373 cfs Sept. 23, 1960 (gage height, 6.17 ft, present datum); no flow at times each year since 1961; minimum gage height observed, -0.03 ft Apr. 17, 1963, present datum (two drain holes in weir open and canal gate closed).

REMARKS.--Records excellent except those between 0 and 15 cfs, which are fair. Canal diverts water from Bond Falls Reservoir (see sta. 04034000) to South Branch Ontonagon River; water is used for power production at Victoria Dam near Rockland.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	298	291	296	220	183	1.5	.40	298	8.5	109	11
2	4.8	302	289	293	225	181	1.2	.50	297	8.5	109	10
3	4.5	301	288	287	222	178	53	.50	296	78	57	10
4	4.5	300	295	267	220	174	105	.50	296	153	1.8	10
5	4.8	300	301	252	218	174	113	.60	294	154	53	10
6	4.5	298	299	251	217	174	124	.80	293	153	106	10
7	4.5	296	297	250	215	174	146	.80	292	154	129	40
8	4.8	229	296	249	215	171	146	1.0	291	153	153	154
9	4.5	163	295	248	215	167	146	1.0	289	153	153	274
10	4.5	305	294	224	215	113	145	1.5	288	153	153	274
11	4.8	304	293	201	214	84	145	1.8	287	212	153	273
12	4.5	303	291	201	210	97	145	1.8	249	301	153	287
13	4.5	301	290	198	206	98	75	112	213	300	153	310
14	4.5	301	289	193	204	108	1.8	204	213	299	152	311
15	4.4	300	288	193	202	121	1.0	205	212	298	152	311
16	95	298	286	193	201	121	.80	248	184	296	98	310
17	131	298	292	191	200	121	.40	306	157	295	9.0	310
18	254	143	297	223	198	118	.20	306	157	236	8.0	309
19	292	11	295	241	156	118	.20	305	157	183	8.0	308
20	298	10	293	238	155	111	.30	304	87	124	8.5	307
21	304	10	290	236	152	102	.30	303	8.5	61	9.0	306
22	303	150	286	234	190	102	.20	302	8.0	31	9.0	305
23	302	301	294	225	190	53	.10	302	7.6	8.5	9.0	305
24	301	300	297	218	190	2.1	.10	301	7.6	8.5	9.4	303
25	300	298	293	217	189	1.5	.20	300	7.6	8.5	9.4	303
26	299	297	291	217	185	.80	.40	300	7.6	8.5	9.8	303
27	298	296	290	222	185	46	.40	299	8.0	8.5	9.8	269
28	296	295	284	228	182	90	.40	298	8.0	8.0	9.8	72
29	295	294	286	223	182	90	.40	297	8.0	58	9.8	64
30	295	292	295	220	-----	47	.40	297	8.0	109	9.8	64
31	293	-----	299	218	-----	1.8	-----	298	-----	109	10	-----
TOTAL	4,464.2	7,594	9,064	7,147	5,893	3,322.20	1,353.30	5,298.20	4,928.9	4,130.5	2,023.1	6,133
MEAN	144	253	292	231	203	107	45.1	171	164	133	65.3	204
MAX	304	305	301	296	225	183	146	306	298	301	153	311
MIN	4.5	10	284	191	182	.80	.10	.40	7.6	8.0	1.8	10

CAL YR 1971 TOTAL 55,239.70 MEAN 151 MAX 324 MIN 1.2
WTR YR 1972 TOTAL 61,351.40 MEAN 168 MAX 311 MIN .10

STREAMS TRIBUTARY TO LAKE SUPERIOR

04034000 Bond Falls Reservoir near Paulding, Mich.

LOCATION.--Lat 46°24'29", long 89°07'42", in SW1/4 sec.1, T.46 N., R.39 W., Ontonagon County, at Bond Falls Dam on Middle Branch Ontonagon River, 2.5 miles east of Paulding.

DRAINAGE AREA.--190 sq mi.

PERIOD OF RECORD.--June 1942 to current year. Prior to October 1950, monthend contents only published in WSP 1307.

GAGE.--Nonrecording gage read once daily. Datum of gage is 1,335.59 ft above mean sea level.

EXTREMES.--Current year: Maximum contents, 40,270 acre-ft Oct. 14, 15 (gage height, 140.57 ft); no usable storage Feb. 24 to Apr. 14; minimum gage height, 118.02 ft Mar. 20.

1947-1972: Maximum contents observed, 42,880 acre-ft July 3, 1953 (gage height, 141.66 ft), of which 1,610 acre-ft was uncontrolled storage; no usable storage at times during 1961-64, 1967, 1968, 1970, 1972; minimum gage height observed, 115.98 ft Mar. 21, 1970.

REMARKS.--Reservoir is formed by earth fill and concrete dam with one taintor gate; dam completed 1937. Usable capacity, 39,720 acre-ft between gage heights of 120 ft (maximum drawdown) and 141 ft (full pond). Dead storage unknown. Water diverted to South Branch Ontonagon River through Bond Falls Canal (see sta 04033500); water used for power production at Victoria Dam near Rockland.

COOPERATION.--Gage-height record furnished by Upper Peninsula Power Co. and converted to acre-feet by Geological Survey.

REVISIONS.--WSP 1911: Drainage area.

MONTHEND GAGE HEIGHT AND CONTENTS AT 0930, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

Date	Gage height (feet)	Contents (acre- feet)	Change in contents during month	
			(Acre- feet)	Equivalent in cfs
Sept. 30	140.2	39,380	-	-
Oct. 31	138.2	34,760	-4,620	-75.1
Nov. 30	134.4	26,340	-8,420	-142
Dec. 31	128.5	14,750	-11,590	-188
Calendar year 1971	-	-	-7,150	-9.9
Jan. 31	123.4	5,340	-9,410	-153
Feb. 29	119.2	0	-5,340	-92.8
Mar. 31	119.4	0	0	0
Apr. 30	127.3	12,470	+12,470	+210
May 31	134.0	25,500	+13,030	+212
June 30	132.6	22,700	-2,800	-47.1
July 31	132.7	22,900	+200	+3.3
Aug. 31	137.5	33,150	+10,250	+167
Sept. 30	136.9	31,780	-1,370	-23.0
Water year 1971-72	-	-	-7,600	-10.5

STREAMS TRIBUTARY TO LAKE SUPERIOR

25

04034500 Middle Branch Ontonagon River near Trout Creek, Mich.

LOCATION.--Lat 46°28'40", long 89°05'25", in SW1/4 sec.8, T.47 N., R.38 W., Ontonagon County, on right bank 0.1 mile upstream from State Highway 28, 3.8 miles west of village of Trout Creek, and 7.5 miles downstream from Bond Falls Reservoir.

DRAINAGE AREA.--203 sq mi.

PERIOD OF RECORD.--June 1942 to current year.

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

AVERAGE DISCHARGE.--30 years, 71.2 cfs.

EXTREMES.--Current year: Maximum discharge, 198 cfs Aug. 16 (gage height, 2.34 ft); minimum discharge, 27 cfs Dec. 11 (gage height, 1.43 ft); minimum daily discharge, 39 cfs Dec. 12.

Period of record: 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 good except those for winter periods, which are fair. Flow regulated by Bond Falls Reservoir (see sta 04034000). Diversion to South Branch Ontonagon River by Bond Falls Canal (see sta 04033500).

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	44	43	46	43	42	43	79	52	55	55	134
2	80	50	45	45	44	43	43	79	58	55	56	102
3	75	49	44	43	44	43	44	66	58	55	56	56
4	100	48	45	44	45	43	44	60	57	54	55	56
5	153	47	47	44	45	44	44	56	57	54	55	57
6	154	46	45	45	45	44	43	65	57	53	58	56
7	153	46	45	45	45	43	43	57	56	54	56	57
8	147	45	45	45	44	44	44	54	56	54	57	56
9	143	45	45	45	44	44	44	51	55	54	55	56
10	141	45	48	44	44	43	44	50	55	53	54	55
11	143	46	46	44	44	43	45	50	56	54	55	55
12	141	46	39	44	43	43	47	48	57	57	54	53
13	138	45	42	44	43	43	52	49	56	54	53	49
14	136	45	44	44	43	43	49	48	62	54	54	47
15	136	45	47	44	44	43	55	48	57	53	53	46
16	112	46	46	44	44	43	64	47	56	55	120	47
17	74	48	42	44	44	42	63	47	55	59	67	47
18	65	51	43	44	44	42	63	46	55	59	59	45
19	45	49	44	44	44	42	66	46	57	55	56	45
20	44	48	44	43	44	43	79	46	64	68	56	51
21	45	46	46	43	44	45	81	47	58	62	61	55
22	45	45	52	43	44	45	73	46	56	60	67	48
23	45	45	46	43	43	45	65	46	55	58	60	46
24	45	45	47	43	43	45	63	46	55	57	78	46
25	45	45	46	43	43	44	65	46	55	55	66	49
26	45	45	46	43	44	44	76	46	55	56	61	65
27	46	45	44	43	43	44	92	45	56	56	59	52
28	46	45	43	43	43	43	110	47	60	59	57	58
29	46	45	44	42	43	44	105	57	58	56	56	57
30	49	44	45	42	-----	44	89	57	56	55	56	52
31	46	-----	45	43	-----	44	-----	50	-----	56	88	-----
TOTAL	2,754	1,384	1,393	1,356	1,270	1,351	1,838	1,625	1,700	1,739	1,893	1,698
MEAN	88.8	46.1	44.9	43.7	43.8	43.6	61.3	52.4	56.7	56.1	61.1	56.6
MAX	154	51	52	46	45	49	110	79	64	68	120	134
MIN	44	44	39	42	43	42	43	45	52	53	53	45

* CAL YR 1971 TOTAL 27,319 MEAN 74.8 MAX 647 MIN 39
WTR YR 1972 TOTAL 20,001 MEAN 54.6 MAX 154 MIN 39

STREAMS TRIBUTARY TO LAKE SUPERIOR

04035000 East Branch Ontonagon River near Mass, Mich.

LOCATION.--Lat 46°41'24", long 89°04'24", in SW1/4NW1/4 sec.33, T.50 N., R.38 W., Ontonagon County, on right bank 700 ft downstream from abandoned highway bridge, 1,000 ft downstream from Adventure Creek, 5.0 miles south of Mass, and 7.5 miles upstream from mouth.

DRAINAGE AREA.--272 sq mi.

PERIOD OF RECORD.--July 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 873.55 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to Oct. 1, 1949, nonrecording gage at site 700 ft upstream at same datum.

AVERAGE DISCHARGE.--30 years, 259 cfs (12.93 inches per year).

EXTREMES.--Current year: Maximum discharge, 3,430 cfs Aug. 16 (gage height, 9.56 ft); minimum, 114 cfs Aug. 5, but may have been less during period of ice effect; minimum gage height, 3.50 ft Aug. 5.
Period of record: Maximum discharge, 4,590 cfs July 1, 1953 (gage height, 10.57 ft); maximum gage height, 10.65 ft Apr. 24, 1960; minimum discharge, 60 cfs Aug. 25, 1948 (gage height, 3.55 ft, site then in use).

REMARKS.--Records good except those for winter periods, which are fair.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	167	215	170	140	140	125	220	1,720	288	186	140	175
2	370	312	160	140	140	120	215	1,830	226	148	129	154
3	297	340	160	140	145	120	215	1,370	196	137	125	142
4	292	313	165	140	145	115	210	1,080	183	132	120	137
5	244	339	170	140	145	120	210	905	173	127	117	145
6	210	313	175	135	145	125	210	1,220	170	124	118	138
7	201	230	180	135	140	130	205	950	158	125	133	138
8	205	199	180	135	140	135	205	730	156	128	145	136
9	213	229	190	130	140	135	205	598	146	128	152	130
10	189	208	220	130	140	140	210	488	141	127	144	126
11	182	199	310	130	135	140	220	424	142	124	135	125
12	192	193	270	130	135	140	250	382	150	203	130	124
13	183	188	250	130	135	140	320	347	158	216	126	312
14	168	183	240	135	135	140	400	333	213	161	120	265
15	155	189	225	135	135	145	600	312	210	144	118	191
16	148	187	210	135	135	150	1,070	288	176	132	1,910	160
17	151	334	200	135	135	160	1,330	267	156	175	1,180	199
18	152	579	195	135	130	170	1,230	252	146	263	645	224
19	149	489	185	140	130	180	1,060	240	143	236	701	188
20	147	365	180	140	130	190	1,320	233	622	230	466	180
21	145	303	175	140	130	210	1,500	218	403	401	451	576
22	151	250	170	135	130	220	1,060	208	291	347	820	444
23	151	240	165	135	130	240	821	200	210	295	377	317
24	149	230	160	135	130	245	729	193	166	226	457	253
25	149	220	160	130	130	240	804	183	152	173	609	205
26	153	211	155	130	130	240	1,120	170	141	151	405	561
27	168	202	155	130	130	235	1,620	164	135	145	322	564
28	183	196	150	130	130	230	2,070	160	210	190	256	402
29	169	194	150	135	125	230	2,260	226	315	213	210	636
30	193	180	145	135	-----	225	2,030	484	240	169	181	570
31	244	-----	145	140	-----	225	-----	414	-----	148	175	-----
TOTAL	5,870	7,830	5,765	4,185	3,520	5,360	23,919	16,589	6,216	5,704	11,121	7,917
MEAN	189	261	186	135	135	173	797	535	207	184	359	264
MAX	370	579	310	140	145	245	2,260	1,830	622	401	1,910	636
MIN	145	180	145	130	125	115	205	160	135	124	117	124
CFSM	.65	.96	.68	.50	.50	.64	2.93	1.97	.76	.68	1.32	.97
IN.	.80	1.07	.75	.57	.54	.73	3.27	2.27	.85	.78	1.52	1.08

CAL YR 1971 TOTAL 106,241 MEAN 291 MAX 2,690 MIN 108 CFSM 1.07 IN 14.53
WTR YR 1972 TOTAL 104,396 MEAN 285 MAX 2,260 MIN 115 CFSM 1.05 IN 14.28

PEAK DISCHARGE (BASE, 1,400 CFS)

DATE	TIME	G.H.	DISCHARGE
04-21	0100	7.43	1,800
04-28	2000	8.80	2,800
08-16	1000	9.56	3,430
08-22	0100	6.91	1,480

STREAMS TRIBUTARY TO LAKE SUPERIOR

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04035500 Middle Branch Ontonagon River near Rockland, Mich.

LOCATION.--Lat 46°41'57", long 89°09'36", in SE1/4 sec.27, T.50 N., R.39 W., Ontonagon County, on left bank 10 ft upstream from bridge on U.S. Highway 45, 700 ft downstream from East Branch and 2.8 miles southeast of Rockland.

DRAINAGE AREA.--671 sq mi.

PERIOD OF RECORD.--July 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 661.1 ft above mean sea level. Prior to Apr. 1, 1959, non-recording gage at site 400 ft upstream at same datum. Apr. 1, 1959 to Oct. 21, 1968, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--30 years, 526 cfs.

EXTREMES.--Current year: Maximum discharge, 10,200 cfs Aug. 16 (gage height, 11.79 ft); minimum daily, 205 cfs Mar. 3, 4; minimum gage height, 4.09 ft Aug. 5, 6, 15.

Period of record: 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, 142 cfs Dec. 3, 1963 (discharge measurement).

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Bond Falls Reservoir (see sta. 04034000). Diversion to South Branch Ontonagon River by Bond Falls Canal (see sta. 04033500).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	295	443	310	245	240	210	370	3,190	432	346	254	500
2	714	582	282	240	240	210	370	3,690	338	285	239	450
3	606	746	290	240	240	205	365	2,480	291	257	231	370
4	501	657	290	235	240	205	360	1,940	273	247	222	340
5	504	674	300	235	240	215	360	1,520	259	239	221	350
6	462	717	310	230	240	225	360	2,260	253	232	221	340
7	450	477	330	230	240	230	355	1,700	245	231	246	330
8	462	382	323	230	240	235	350	1,250	239	237	268	325
9	464	407	311	225	240	240	350	981	230	238	271	315
10	424	368	325	225	240	240	357	766	223	237	257	310
11	408	372	500	225	240	245	500	659	224	232	244	305
12	417	358	450	230	235	245	550	608	242	295	236	300
13	413	345	420	230	235	250	700	553	244	375	231	698
14	383	327	400	230	235	250	1,000	529	384	275	223	569
15	358	331	380	230	235	255	1,500	501	364	255	220	413
16	343	330	360	230	235	265	2,880	462	292	244	6,650	370
17	296	520	330	235	235	280	4,200	404	261	301	3,020	438
18	286	1,330	320	235	235	280	3,720	373	248	464	1,290	466
19	272	1,310	310	235	230	300	2,970	338	244	402	1,280	402
20	259	794	300	235	230	320	3,900	325	1,340	429	898	453
21	254	639	290	235	230	350	4,670	309	802	709	993	1,260
22	263	550	280	235	230	380	2,790	296	530	624	1,880	845
23	259	470	280	235	230	400	2,020	278	367	560	988	601
24	262	430	270	235	225	420	1,770	266	299	402	1,460	486
25	261	410	270	235	225	420	2,030	256	274	296	1,560	423
26	265	390	260	235	225	410	2,970	247	260	263	938	1,510
27	280	371	260	235	220	400	4,390	237	256	254	729	1,180
28	300	354	255	235	220	390	5,330	233	866	389	617	809
29	287	350	250	240	215	390	5,300	328	916	540	508	1,360
30	334	330	250	240	-----	380	4,200	844	505	341	458	1,050
31	549	-----	245	240	-----	380	-----	625	-----	275	430	-----
TOTAL	11,631	15,764	9,751	7,250	6,765	9,225	60,987	28,488	11,701	10,474	27,283	17,568
MEAN	375	525	315	234	233	298	2,033	919	390	338	880	586
MAX	714	1,330	500	245	240	420	5,330	3,690	1,340	709	6,650	1,510
MIN	254	327	245	225	215	205	350	233	223	231	220	300
CAL YR 1971	TOTAL 228,295	MEAN 625	MAX 8,320	MIN 208	CFSM .93	IN 12.66						
WTR YR 1972	TOTAL 216,887	MEAN 593	MAX 6,650	MIN 205	CFSM .88	IN 12.02						

STREAMS TRIBUTARY TO LAKE SUPERIOR

04036000 West Branch Ontonagon River near Bergland, Mich.

LOCATION.--Lat 46°35'15", long 89°32'30", in SW¼ NE¼ sec.3, T.48 N., R.42 W., Ontonagon County, on right bank 0.4 mile downstream from dam at outlet of Gogebic Lake and 1.5 miles east of Bergland.

DRAINAGE AREA.--162 sq mi.

PERIOD OF RECORD.--July 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,290.81 ft above mean sea level. Prior to Nov. 5, 1942, nonrecording gage 0.4 mile upstream at different datum.

AVERAGE DISCHARGE.--30 years, 175 cfs (14.67 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,080 cfs Aug. 18 (gage height, 5.28 ft); minimum daily, 3.5 cfs Oct. 5, 6, 13-17. Period of record: Maximum discharge, 1,400 cfs Apr. 26, 1960 (gage height, 5.98 ft); minimum daily, 0.70 cfs Sept. 26 to Oct. 19, 1963; minimum gage height observed, 0.13 ft Oct. 2, 1963.

REMARKS.--Records good except those below 20 cfs, which are poor. Flow regulated by Gogebic Lake (usable capacity, 35,200 acre-ft).

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	110	262	159	182	72	131	739	147	299	256	536
2	3.8	60	290	151	178	72	130	803	143	257	294	377
3	3.8	34	305	145	178	72	132	831	148	331	273	305
4	3.8	3.8	289	159	180	77	136	834	147	242	274	224
5	3.5	4.4	281	188	176	80	127	829	152	184	256	172
6	3.5	30	207	193	168	80	124	837	143	184	226	160
7	3.8	64	206	232	164	80	130	821	109	133	186	113
8	3.8	89	253	246	161	76	123	801	89	126	150	91
9	3.8	38	253	240	157	75	123	784	37	68	145	45
10	3.8	71	199	239	154	73	126	546	8.2	18	135	21
11	3.8	198	79	276	152	71	125	354	8.2	10	96	19
12	3.8	196	171	289	148	70	123	345	8.2	11	65	17
13	3.5	216	192	287	147	70	131	217	43	30	67	130
14	3.5	211	186	283	143	68	132	145	80	52	57	292
15	3.5	211	188	267	140	65	134	65	112	43	64	289
16	3.5	194	197	260	136	67	142	64	128	44	605	267
17	3.5	167	198	252	133	67	149	63	133	89	1,030	245
18	145	62	195	250	135	66	163	62	133	191	1,070	226
19	202	5.5	198	244	135	65	179	64	164	223	1,060	225
20	114	17	198	228	130	64	202	62	239	101	1,030	243
21	99	129	186	221	127	95	230	58	354	106	999	152
22	96	201	170	221	121	132	266	59	376	243	981	12
23	94	234	171	217	110	137	292	59	366	283	956	12
24	94	219	171	212	93	131	309	57	246	175	941	13
25	101	105	157	219	82	128	327	57	217	198	923	11
26	95	47	148	210	77	128	351	57	281	252	890	10
27	124	159	146	206	72	128	395	57	340	251	864	8.2
28	119	215	146	201	72	127	463	56	326	258	830	8.2
29	119	224	135	195	72	126	560	57	320	256	795	8.2
30	155	255	126	190	-----	133	661	60	326	259	769	8.2
31	261	-----	147	184	-----	132	-----	128	-----	239	750	-----
TOTAL	1,880.5	3,769.7	6,050	6,864	3,923	2,827	6,616	9,971	5,323.6	5,156	17,037	4,239.8
MEAN	60.7	126	195	221	135	91.2	221	322	177	166	550	141
MAX	261	255	305	289	182	137	661	837	376	331	1,070	536
MIN	3.5	3.8	79	145	72	64	123	56	8.2	10	57	8.2

CAL YR 1971 TOTAL 71,501.8 MEAN 196 MAX 1,140 MIN 3.3 CFSM 1.21 IN 16.42
WTR YR 1972 TOTAL 73,657.6 MEAN 201 MAX 1,070 MIN 3.5 CFSM 1.24 IN 16.91

STREAMS TRIBUTARY TO LAKE SUPERIOR

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04037500 Cisco Branch Ontonagon River at Cisco Lake Outlet, Mich.

LOCATION.--Lat 46°15'12", long 89°27'05", in E½ sec.32, T.45 N., R.41 W., Gogebic County, on right bank 80 ft downstream from Cisco Lake Dam, 2.5 miles upstream from Langford Creek, 5.0 miles upstream from U.S. Highway 2, and 13 miles west of Watersmeet.

DRAINAGE AREA.--50.7 sq mi.

PERIOD OF RECORD.--October 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,672.69 ft above mean sea level. Prior to Oct. 1, 1968, nonrecording gage at same site at datum 4.0 ft higher.

AVERAGE DISCHARGE.--28 years, 46.7 cfs (12.51 inches per year).

EXTREMES.--Current year: Maximum discharge, 203 cfs Aug. 16 (gage height, 5.65 ft); minimum daily, 0.19 cfs June 6-9, 13; minimum gage height, 3.87 ft June 5-10, 12-14.

Period of record: Maximum discharge, 288 cfs May 1-4, 1951 (gage height, 6.10 ft, present datum); minimum daily, 0.13 cfs Aug. 4-7, Aug. 22 to Sept. 5, 1970.

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

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	94	41	56	57	43	28	89	.22	.72	60	30
2	69	93	41	55	57	43	28	93	.22	.54	58	30
3	78	91	41	40	56	43	29	95	.22	.37	30	30
4	74	90	40	26	56	44	29	92	.22	.35	3.9	30
5	54	90	41	27	39	45	29	87	.22	.34	3.3	51
6	38	84	34	27	26	45	29	92	.19	.34	2.9	68
7	39	82	27	27	26	52	29	98	.19	.31	10	64
8	40	82	27	28	26	58	36	96	.19	.28	22	63
9	38	79	28	28	27	57	44	96	.19	.21	48	63
10	38	78	29	28	27	56	44	89	.20	.24	62	63
11	37	77	46	28	27	55	52	44	.22	.26	71	60
12	38	75	59	28	27	54	58	5.8	.22	.31	78	60
13	38	74	58	29	27	46	70	1.9	.19	.34	77	58
14	39	74	57	29	26	39	78	1.9	15	10	47	32
15	38	71	57	29	26	32	77	1.6	24	16	26	12
16	39	70	58	30	27	24	77	1.2	24	16	119	8.2
17	40	72	57	29	27	25	78	1.2	24	44	197	4.8
18	90	72	57	29	27	25	79	1.0	25	104	195	4.5
19	138	72	56	29	28	25	80	.70	25	134	192	18
20	131	71	42	29	28	25	81	.40	64	135	185	41
21	127	71	28	30	28	44	83	.40	97	138	180	95
22	121	72	28	30	29	71	87	.37	94	163	172	128
23	118	72	28	30	29	78	88	.31	58	180	168	124
24	114	70	28	31	29	77	89	.25	11	172	170	120
25	111	69	28	33	35	76	89	.25	.86	93	166	86
26	107	69	28	41	44	74	89	.25	.83	29	162	97
27	108	68	29	62	44	64	92	.25	.55	30	159	121
28	101	67	37	62	44	53	92	.25	.40	47	105	122
29	98	53	52	61	44	40	82	.25	.38	61	43	124
30	99	41	57	60	-----	27	87	.25	.50	61	30	124
31	97	-----	57	59	-----	28	-----	.22	-----	61	31	-----
TOTAL	2,356	2,243	1,296	1,130	993	1,468	1,933	989.75	467.21	1,498.61	2,873.1	1,931.5
MEAN	76.0	74.8	41.8	36.5	34.2	47.4	64.4	31.9	15.6	48.3	92.7	64.4
MAX	138	94	59	62	57	78	92	98	97	180	197	128
MIN	37	41	27	26	26	24	28	.22	.19	.21	2.9	4.5

CAL YR 1971 TOTAL 19,685.15 MEAN 53.9 MAX 179 MIN .37 CFSM 1.06 IN 14.44
WTR YR 1972 TOTAL 19,179.17 MEAN 52.4 MAX 197 MIN .19 CFSM 1.03 IN 14.07

STREAMS TRIBUTARY TO LAKE SUPERIOR

04040000 Ontonagon River near Rockland, Mich.

LOCATION.--Lat 46°43'15", long 89°12'25", in NE¼ sec.20, T.50 N., R.39 W., Ontonagon County, on left bank, 50 ft downstream from bridge on highway between Rockland and Victoria, 1.8 miles southwest of Rockland and 2.4 miles downstream from confluence of Middle and West Branches.

DRAINAGE AREA.--1,340 sq mi.

PERIOD OF RECORD.--June 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 638.72 ft above mean sea level. Prior to Nov. 23, 1943, nonrecording gage and Nov. 23, 1943 to Oct. 17, 1967, water-stage recorder at site 50 ft upstream at same datum.

AVERAGE DISCHARGE.--30 years, 1,404 cfs (14.23 inches per year).

EXTREMES.--Current year: Maximum discharge, 15,400 cfs Aug. 16 (gage height, 15.96 ft); minimum, 296 cfs Oct. 20, 21; minimum gage height, 5.29 ft July 12; minimum daily discharge, 299 cfs Oct. 20.

Period of record: 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, 192 cfs July 28, 29, 1963.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Victoria powerplant on West Branch 5 miles above station, by Bond Falls Reservoir (usable capacity, 39,700 acre-ft), and by Gogebic and Cisco Lakes (combined usable capacity, 50,800 acre-ft).

REVISIONS (WATER YEARS).--WSP 1387: 1943, 1946-47. WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	481	1,250	1,090	620	870	600	950	9,340	1,170	836	925	1,500
2	828	1,480	994	940	900	900	840	9,250	1,040	726	986	1,300
3	849	1,640	1,030	950	860	700	840	6,630	991	720	955	1,150
4	774	1,620	972	960	880	760	780	5,570	958	637	978	1,100
5	757	1,530	1,150	760	840	640	820	4,040	821	667	646	1,020
6	735	1,570	1,290	700	800	680	860	5,170	928	665	696	980
7	702	1,390	1,160	760	880	380	900	4,220	883	644	723	960
8	694	1,230	1,140	800	800	800	960	3,280	793	643	732	960
9	693	1,150	1,120	900	700	610	860	2,820	628	606	687	940
10	669	903	1,190	880	760	710	940	2,480	554	623	724	920
11	647	990	1,200	850	720	560	1,100	1,740	608	575	734	880
12	655	1,300	1,200	840	720	600	1,300	1,560	673	583	726	720
13	644	1,290	1,150	840	760	760	1,500	1,510	711	831	721	1,100
14	612	1,040	1,150	900	720	740	2,000	1,390	725	757	713	1,200
15	589	1,280	1,220	960	740	700	3,000	1,320	847	591	677	1,100
16	563	1,160	1,280	780	760	720	4,020	1,170	962	725	9,950	1,000
17	471	1,500	1,200	780	700	760	5,600	1,080	602	767	9,240	1,050
18	328	2,520	968	780	700	700	7,990	1,050	763	943	7,340	800
19	310	2,600	935	800	740	560	7,300	1,000	806	1,130	5,440	800
20	299	1,930	980	860	700	760	8,690	1,000	2,250	1,190	3,480	840
21	399	1,550	960	920	740	820	10,200	999	2,120	1,390	2,720	2,000
22	726	1,410	1,050	800	700	380	8,160	829	1,860	1,340	5,120	1,650
23	893	1,160	980	880	760	820	6,150	895	1,370	1,360	2,800	1,450
24	1,120	1,330	920	820	740	1,200	4,450	863	1,110	1,280	3,900	1,250
25	946	1,260	1,050	980	720	1,080	4,610	844	971	1,140	4,600	1,100
26	864	1,350	900	800	660	1,080	5,990	670	802	1,070	3,000	2,400
27	635	1,220	720	760	600	1,100	8,920	677	736	922	2,050	2,000
28	837	1,230	800	780	720	1,100	11,500	803	1,470	964	1,850	2,050
29	814	1,180	920	860	800	1,100	12,700	926	1,710	1,120	1,700	2,350
30	1,110	1,150	680	800	-----	1,050	11,300	1,580	1,120	805	1,600	2,100
31	1,120	-----	980	840	-----	1,000	-----	1,380	-----	867	1,550	-----
TOTAL	21,764	42,263	32,379	25,900	21,990	25,370	135,230	76,086	30,982	27,117	77,963	38,670
MEAN	702	1,409	1,044	835	758	818	4,508	2,454	1,033	875	2,515	1,289
MAX	1,120	2,600	1,290	980	900	1,200	12,700	9,340	2,250	1,390	9,950	2,400
MIN	299	903	680	620	600	560	780	670	554	575	646	720

CAL YR 1971 TOTAL 579,879 MEAN 1,589 MAX 18,100 MIN 299 CFSM 1.19 IN 16.10
WTR YR 1972 TOTAL 555,714 MEAN 1,518 MAX 12,700 MIN 299 CFSM 1.13 IN 15.43

PEAK DISCHARGE (BASE, 9,000 CFS)

NOTE.--No gage-height record Aug. 23 to Sept. 30.

DATE	TIME	G.H.	DISCHARGE
04-21	0300	13.79	11,000
04-28	2400	15.52	14,400
08-16	1400	15.96	15,400

STREAMS TRIBUTARY TO LAKE SUPERIOR

31

04040500 Sturgeon River near Sidnaw, Mich.

LOCATION.—Lat 46°35'03", long 88°34'33", in NE¼ SE¼ sec. 5, T.48 N., R.34 W., Baraga County, on right bank 30 ft downstream from highway bridge, 3.0 miles downstream from Rock River, 3.5 miles northwest of Covington, 6.5 miles upstream from Perch River, 8.5 miles northeast of Sidnaw, and at mile 71.

DRAINAGE AREA.—171 sq mi.

PERIOD OF RECORD.—October 1912 to September 1915, April 1943 to current year. 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. October 1912 to September 1915, nonrecording gage at site 200 ft upstream at different datum. Apr. 2, 1943, to Oct. 1, 1946, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.—32 years, 211 cfs (16.76 inches per year).

EXTREMES.—Current year: Maximum discharge, 2,890 cfs May 2 (gage height, 9.04 ft); minimum 43 cfs Aug. 15, 16 (gage height, 3.95 ft).
Period of record: Maximum discharge, 4,630 cfs Apr. 24, 1960 (gage height, 11.63 ft); minimum, 4.6 cfs Oct. 8, 1948; minimum gage height, 3.42 ft Aug. 30, 1969.

REMARKS.—Records good except those for winter periods, which are fair.

REVISIONS.—WSP 1507: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	119	143	78	57	54	110	2,270	368	161	126	139
2	114	178	128	77	56	54	105	2,810	273	130	110	119
3	235	220	128	76	54	55	105	2,760	210	110	96	105
4	259	225	122	76	53	55	100	2,670	165	98	81	94
5	230	222	114	75	51	55	100	2,490	137	86	69	90
6	240	238	112	74	50	56	100	2,590	121	75	63	82
7	232	202	112	74	49	56	100	2,500	107	75	59	79
8	235	180	112	73	48	56	100	2,050	94	81	58	71
9	222	171	112	72	48	55	100	1,730	78	75	61	66
10	198	153	145	72	47	55	105	1,440	69	67	60	61
11	180	143	225	71	47	55	105	1,270	65	69	57	58
12	180	135	210	70	46	56	115	1,140	67	161	56	51
13	165	130	190	70	46	57	130	990	74	165	54	139
14	147	126	175	69	45	58	170	860	105	131	49	198
15	124	130	165	68	45	60	260	745	107	115	44	182
16	114	143	161	67	47	62	472	645	97	100	446	149
17	108	171	155	66	49	65	610	540	84	147	492	173
18	105	235	150	65	50	68	595	456	71	218	452	208
19	102	240	145	65	51	71	575	382	74	182	388	195
20	98	240	140	64	52	75	665	326	624	267	285	216
21	96	230	130	63	52	82	790	276	665	267	220	560
22	94	225	125	62	53	105	745	240	472	222	215	468
23	91	230	115	62	53	150	665	205	336	452	218	396
24	86	195	110	62	53	145	605	178	231	329	332	318
25	84	185	100	61	53	130	595	151	182	228	476	261
26	84	173	92	60	53	120	690	135	147	173	428	525
27	88	163	90	60	53	110	955	119	122	141	371	525
28	97	149	86	60	53	105	1,400	108	117	126	291	600
29	97	141	82	59	53	105	1,850	192	195	133	231	812
30	98	135	80	59	-----	105	2,190	515	202	126	182	710
31	122	-----	78	59	-----	110	-----	448	-----	131	157	-----
TOTAL	4,407	5,427	4,032	2,089	1,467	2,445	15,207	33,231	5,659	4,841	6,227	7,650
MEAN	142	181	130	67.4	50.6	78.9	507	1,072	189	156	201	255
MAX	259	240	225	78	57	150	2,190	2,810	665	452	492	812
MIN	82	119	78	59	45	54	100	108	65	67	44	51
CFSM	.83	1.06	.76	.39	.30	.46	2.96	6.27	1.11	.91	1.18	1.49
IN.	.96	1.18	.88	.45	.32	.53	3.31	7.23	1.23	1.05	1.35	1.66

CAL YR 1971 TOTAL 84,201 MEAN 231 MAX 2,430 MIN 15 CFSM 1.35 IN 18.32
WTR YR 1972 TOTAL 92,682 MEAN 253 MAX 2,810 MIN 44 CFSM 1.48 IN 20.16

STREAMS TRIBUTARY TO LAKE SUPERIOR

04041500 Sturgeon River near Alston, Mich.

LOCATION.--Lat 46°43'35", long 88°39'43", in SE¼ sec.15, T.50 N., R.35 W., Baraga County, on right bank in powerhouse of Upper Peninsula Power Co. at Prickett Dam, 4.0 miles upstream from Clear Creek, 5.0 miles southeast of Alston, and at mile 45.

DRAINAGE AREA.--346 sq mi.

PERIOD OF RECORD.--February 1932 to June 1941, October 1942 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 710.3 ft above mean tide at New York City (levels by Corps of Engineers). Prior to Oct. 1, 1963, at datum 40.00 ft lower.

AVERAGE DISCHARGE.--38 years (1932-40, 1942-72), 419 cfs (16.45 inches per year).

EXTREMES.--Current year: Maximum discharge, 4,120 cfs May 2 (gage height, 9.33 ft); minimum, 9.0 cfs Oct. 31; minimum daily, 10 cfs Dec. 5.

Period of record: Maximum discharge, 7,360 cfs Apr. 24, 1960 (gage height, 13.09 ft, present datum); minimum daily, 1 cfs Aug. 14-19, 1960.

REMARKS.--Records good except those below 15 cfs, which are poor. Flow regulated by powerplant at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	179	277	324	204	177	369	281	3,480	617	306	233	617
2	308	354	269	221	172	364	270	3,920	618	300	270	568
3	311	421	271	221	191	370	293	3,790	603	306	217	496
4	392	455	244	217	192	293	305	3,330	368	14	207	457
5	580	460	10	235	192	296	283	3,060	370	188	217	405
6	361	454	249	213	192	290	276	3,290	317	228	14	379
7	376	460	248	213	193	293	298	3,270	271	225	217	339
8	448	463	248	197	180	237	284	2,510	242	229	217	326
9	446	467	244	15	186	230	264	2,170	236	169	213	330
10	439	390	313	192	194	224	261	1,650	235	179	195	328
11	407	379	628	218	184	224	274	1,440	208	177	215	327
12	386	334	559	230	190	234	296	1,370	210	168	214	317
13	314	330	297	238	16	237	390	1,310	207	232	202	297
14	294	11	300	227	189	286	435	1,110	211	326	378	343
15	311	329	300	239	190	338	573	963	213	319	610	363
16	315	324	350	237	128	335	622	927	211	270	612	362
17	11	328	342	212	236	282	831	784	212	281	632	362
18	317	380	322	172	192	200	938	676	213	341	633	362
19	309	420	291	186	193	248	864	637	214	381	631	363
20	314	642	241	186	14	248	1,070	626	442	388	632	363
21	269	600	240	187	193	193	1,380	629	627	444	632	829
22	265	306	241	187	196	303	1,590	623	626	629	630	1,130
23	266	378	239	14	197	259	1,280	620	626	669	627	692
24	13	377	239	188	193	218	909	425	614	666	620	478
25	216	375	238	189	192	215	864	319	566	628	627	437
26	220	373	239	189	195	267	1,010	433	360	613	625	908
27	276	376	241	188	191	298	1,520	389	310	324	628	1,110
28	277	378	240	186	314	287	2,220	338	308	315	626	838
29	276	270	215	190	368	280	3,140	263	310	312	625	1,330
30	279	324	219	17	-----	297	3,550	450	301	253	622	1,330
31	13	-----	214	199	-----	303	-----	615	-----	360	616	-----
TOTAL	9,188	11,435	8,615	5,807	5,440	8,518	26,571	45,417	10,866	10,240	13,637	16,786
MEAN	296	381	278	187	188	275	886	1,465	362	330	440	560
MAX	580	642	628	239	368	370	3,550	3,920	627	669	633	1,330
MIN	11	11	10	14	14	193	261	263	207	14	14	297
CFSM	.86	1.10	.80	.54	.54	.79	2.56	4.23	1.05	.95	1.27	1.62
IN.	.99	1.23	.93	.62	.58	.92	2.86	4.88	1.17	1.10	1.47	1.80

CAL YR 1971 TOTAL 164,081.6 MEAN 450 MAX 3,900 MIN 7.5 CFSM 1.30 IN 17.64
WTR YR 1972 TOTAL 172,520.0 MEAN 471 MAX 3,920 MIN 10 CFSM 1.36 IN 18.55

STREAMS TRIBUTARY TO LAKE SUPERIOR

33

04042500 Otter River near Elo, Mich.

LOCATION.—Lat 46°50'09", long 88°38'12", in NE¼ NE¼ sec.8, T.51 N., R.34 W., Houghton County, on right bank 50 ft upstream from highway bridge, 1.6 miles north of Palkie, 2.5 miles south of Elo, and 5.5 miles upstream from Otter Lake.

DRAINAGE AREA.—162 sq mi.

PERIOD OF RECORD.—October 1942 to September 1972 (discontinued as a continuous-record station; converted to a crest-stage partial-record station). Monthly discharge only for some periods, published in WSP 1307.

GAGE.—Water-stage recorder. Datum of gage is 631.02 ft above mean sea level. Prior to Nov. 1, 1962, nonrecording gage at site 2.5 miles downstream at datum 617.88 ft above mean sea level. Nov. 1, 1962 to Nov. 7, 1965, nonrecording gage at site 50 ft downstream at present datum.

AVERAGE DISCHARGE.—30 years, 216 cfs (18.11 inches per year).

EXTREMES.—Current year: Maximum discharge, 3,870 cfs May 2 (gage height, 10.43 ft); minimum daily, 74 cfs Feb. 11-17, Mar. 7, 8; minimum gage height, 0.83 ft July 16.

Period of record: Maximum discharge, 4,540 cfs Apr. 19, 1952 (gage height, 13.52 ft, site and datum then in use); minimum observed, 68 cfs Nov. 18, 1947 (discharge measurement, site then in use).

REMARKS.—Records good except those for winter periods, which are fair.

REVISIONS.—WSP 1911: Drainage area at former site.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	126	125	90	84	80	155	2,090	198	109	106	106
2	122	152	120	88	82	78	150	3,410	161	105	100	100
3	152	183	120	86	81	76	150	3,010	145	102	106	98
4	136	188	115	86	80	76	150	2,460	132	99	98	98
5	115	169	110	86	80	76	150	1,740	124	97	95	103
6	110	156	110	86	79	75	150	2,490	120	96	105	108
7	106	142	105	86	78	74	145	2,180	115	102	127	121
8	108	140	110	84	77	74	145	1,660	112	101	119	111
9	107	129	111	84	76	75	150	1,430	111	98	113	103
10	102	126	115	84	75	76	155	1,290	105	97	100	100
11	104	127	120	83	74	78	160	1,250	105	98	97	100
12	107	128	135	83	74	79	170	1,090	123	107	97	98
13	103	128	170	83	74	80	190	850	128	96	94	133
14	100	127	160	84	74	82	240	713	148	94	93	142
15	99	131	140	84	74	84	370	570	149	92	93	120
16	99	146	130	86	74	86	540	463	124	93	126	108
17	101	183	120	88	74	90	700	379	113	97	135	106
18	103	361	115	90	75	94	640	314	108	124	111	102
19	102	392	110	92	77	98	730	260	107	105	102	100
20	102	290	105	92	78	105	940	225	266	247	97	107
21	101	229	105	92	79	115	1,120	202	317	231	102	210
22	106	197	100	92	80	155	864	181	190	179	299	157
23	107	180	98	92	81	190	636	166	149	193	201	133
24	105	160	96	92	81	180	561	155	131	143	230	121
25	104	153	96	92	81	170	635	144	121	116	274	117
26	105	147	94	92	81	165	969	136	114	106	170	192
27	116	141	94	90	81	160	1,490	128	106	101	147	176
28	122	138	92	90	81	155	1,960	123	110	107	129	153
29	112	133	91	88	80	150	2,400	143	137	151	114	173
30	119	129	90	86	-----	155	2,510	462	121	121	106	168
31	135	-----	90	84	-----	155	-----	285	-----	118	106	-----
TOTAL	3,408	5,131	3,492	2,715	2,265	3,386	19,325	29,999	4,190	3,725	3,992	3,764
MEAN	110	171	113	87.6	78.1	109	644	968	140	120	129	125
MAX	152	392	170	92	84	190	2,510	3,410	317	247	299	210
MIN	98	126	90	83	74	74	145	123	105	92	93	98
CFSM	.68	1.06	.70	.54	.48	.67	3.98	5.98	.86	.74	.80	.77
IN.	.78	1.18	.80	.62	.52	.78	4.44	6.89	.96	.86	.92	.86

CAL YR 1971 TOTAL 95,395 MEAN 261 MAX 2,860 MIN 85 CFSM 1.61 IN 21.91
WTR YR 1972 TOTAL 85,392 MEAN 233 MAX 3,410 MIN 74 CFSM 1.44 IN 19.61

PEAK DISCHARGE (BASE, 1,300 CFS).—May 2 (1900) 3,870 cfs (10.43 ft).

NOTE.—No gage-height record Mar. 9 to Apr. 20.

STREAMS TRIBUTARY TO LAKE SUPERIOR

04043000 Sturgeon River near Arnheim, Mich.

LOCATION.—Lat 46°55'42", long 88°33'23", in NE 1/4 sec. 1, T. 52 N., R. 34 W., Houghton County, on right bank 0.2 mile downstream from Otter Lake, 3.5 miles west of Arnheim, 8.5 miles northeast of Pelkie, and at mile 11.

DRAINAGE AREA.—705 sq mi.

PERIOD OF RECORD.—October 1942 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.—Water-stage recorder. Datum of gage is 605.98 ft above mean tide at New York City (Corps of Engineers bench mark).

AVERAGE DISCHARGE.—30 years, 819 cfs (15.78 inches per year).

EXTREMES.—Current year: Maximum discharge, 9,760 cfs May 3 (gage height, 14.08 ft); minimum, 304 cfs Jan. 11; minimum gage height, 0.60 ft Oct. 26, Aug. 8.

Period of record: Maximum discharge, 15,500 cfs Apr. 20, 1952 (gage height, 14.57 ft, from graph based on gage readings); minimum, 157 cfs July 30, 31, 1963 (gage height, 0.20 ft); minimum gage height, 0.01 ft Sept. 1, 1970, Sept. 8, 1971.

REMARKS.—Records good. Occasional slight regulation caused by Prickett Dam at mile 45.

REVISIONS (WATER YEARS).—WSP 1387: 1943-45 (M), 1950-52. WSP 1507: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	351	398	540	383	338	505	642	7,370	1,040	540	536	882
2	360	405	522	389	358	559	640	8,260	1,040	518	485	862
3	415	481	502	387	381	600	628	9,220	1,010	504	461	815
4	474	591	463	387	394	631	620	7,870	949	493	429	745
5	514	683	455	379	399	647	598	6,570	826	417	407	698
6	620	722	434	382	400	647	589	6,170	726	358	399	663
7	590	731	413	391	397	652	592	6,450	651	372	370	631
8	572	718	438	390	394	653	587	6,090	571	387	354	599
9	588	704	450	387	393	653	571	5,450	510	394	384	561
10	597	698	465	372	392	621	553	4,830	474	394	391	537
11	601	680	500	316	393	596	558	4,220	451	385	390	522
12	601	645	560	332	395	583	612	3,680	444	399	386	510
13	586	612	650	357	401	570	738	3,230	441	391	384	522
14	559	571	560	381	377	556	833	2,830	449	388	380	548
15	518	490	500	441	339	556	975	2,450	461	419	423	573
16	495	463	480	453	355	579	1,200	2,120	452	455	593	582
17	489	530	460	447	355	604	1,720	1,890	433	474	767	574
18	408	670	480	442	350	607	2,330	1,650	417	490	895	563
19	393	853	498	436	370	570	2,650	1,440	405	508	902	555
20	424	961	500	411	379	527	2,820	1,280	446	568	889	556
21	445	1,050	488	391	355	511	3,220	1,180	650	712	867	604
22	443	1,030	453	385	322	525	3,460	1,110	840	783	956	836
23	437	845	417	384	345	543	3,450	1,050	886	889	1,120	1,110
24	435	775	428	369	368	598	3,230	1,010	882	930	1,130	1,080
25	377	741	432	322	386	589	2,970	904	865	920	1,200	908
26	351	709	423	322	396	584	3,020	767	825	877	1,200	844
27	373	685	420	336	401	587	3,540	712	708	833	1,130	1,050
28	394	665	411	359	412	620	4,400	694	615	712	1,060	1,280
29	414	647	405	380	446	640	5,630	682	576	641	992	1,280
30	432	592	395	394	-----	659	7,200	773	562	601	940	1,480
31	454	-----	387	382	-----	651	-----	937	-----	543	909	-----
TOTAL	14,710	20,345	14,529	11,887	10,991	18,423	60,576	102,889	19,605	17,295	21,729	22,970
MEAN	475	678	469	383	379	594	2,019	3,319	654	558	701	766
MAX	620	1,050	650	453	446	659	7,200	9,220	1,040	930	1,200	1,480
MIN	351	398	387	316	322	505	553	682	405	358	354	510
CFSM	.67	.96	.67	.54	.54	.84	2.86	4.71	.93	.79	.99	1.09
IN.	.78	1.07	.77	.63	.58	.97	3.20	5.43	1.03	.91	1.15	1.21

CAL YR 1971 TOTAL 359,132 MEAN 984 MAX 8,890 MIN 218 CFSM 1.40 IN 18.95
WTR YR 1972 TOTAL 335,949 MEAN 918 MAX 9,220 MIN 316 CFSM 1.30 IN 17.73

STREAMS TRIBUTARY TO LAKE SUPERIOR

35

04043050 Trap Rock River near Lake Linden, Mich.

LOCATION.—Lat 47°13'43", long 88°23'07", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.20, T.56 N., R.32 W., Houghton County, on right bank, 20 ft upstream from bridge on county highway, 2.0 miles northeast of Lake Linden, and 3.0 miles upstream from mouth.

DRAINAGE AREA.—28.0 sq mi.

PERIOD OF RECORD.—Occasional low-flow measurements, water years 1964 and 1966. October 1966 to current year.

GAGE.—Water-stage recorder. Datum of gage is 621.7 ft above mean sea level.

AVERAGE DISCHARGE.—6 years, 44.0 cfs (21.34 inches per year).

EXTREMES.—Current year: Maximum discharge, 1,180 cfs May 2 (gage height, 9.30 ft); minimum, 11 cfs on many days; minimum gage height, 3.97 ft Oct. 17-19, Sept. 12, 19, 20.

Period of record: Maximum discharge, 1,180 cfs May 2, 1972 (gage height, 9.30 ft); minimum, 7.0 cfs Sept. 17, 1971 (gage height, 3.86 ft).

REMARKS.—Records good except those for winter periods, which are fair. Small diversions for sprinkler irrigation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	16	19	13	12	11	21	622	42	15	15	14
2	14	21	19	13	12	11	20	1,110	34	15	19	13
3	16	28	19	13	12	11	20	676	35	14	22	12
4	14	28	19	12	12	11	32	510	32	14	17	12
5	13	24	19	12	12	11	28	397	27	14	16	12
6	13	21	19	12	12	11	39	550	24	14	29	12
7	13	19	20	12	12	11	25	371	21	14	35	12
8	14	18	19	12	12	11	28	320	20	14	22	12
9	13	18	23	12	12	11	19	308	19	14	18	12
10	13	19	29	11	11	12	20	285	18	13	17	11
11	12	19	37	11	11	12	30	300	18	14	16	12
12	12	19	50	11	11	12	35	236	26	14	15	11
13	11	19	42	11	11	12	35	184	24	13	14	14
14	11	18	35	12	11	13	35	154	27	13	14	14
15	11	31	28	12	11	13	37	122	25	13	13	13
16	11	31	27	12	11	14	55	101	21	12	15	12
17	11	74	24	12	11	14	77	87	19	13	16	12
18	11	100	21	12	11	15	101	73	18	17	14	12
19	11	83	20	12	11	16	134	61	18	15	13	11
20	11	57	19	12	11	16	194	52	70	15	13	12
21	11	44	18	12	11	17	244	46	61	19	14	24
22	12	34	17	12	11	17	210	40	36	61	39	18
23	12	30	16	13	12	27	165	36	26	58	31	15
24	12	27	16	13	12	26	140	33	21	34	29	15
25	12	26	16	13	11	25	150	30	20	23	41	14
26	13	24	15	12	11	25	193	27	18	19	28	16
27	15	23	15	12	11	24	297	24	17	17	22	17
28	18	22	14	12	11	23	446	22	17	16	19	18
29	15	21	14	12	11	23	612	38	17	15	16	29
30	15	20	14	12	-----	23	606	63	16	15	15	23
31	17	-----	13	12	-----	22	-----	43	-----	15	14	-----
TOTAL	398	934	676	374	330	500	4,048	6,921	787	572	621	434
MEAN	12.8	31.1	21.8	12.1	11.4	16.1	135	223	26.2	18.5	20.0	14.5
MAX	18	100	50	13	12	27	612	1,110	70	61	41	29
MIN	11	16	13	11	11	11	19	22	16	12	13	11
CFSM	.46	1.11	.78	.43	.41	.58	4.82	7.96	.94	.66	.71	.52
IN.	.53	1.24	.90	.50	.44	.66	5.38	9.20	1.05	.76	.83	.58

CAL YR 1971 TOTAL 15,668.3 MEAN 42.9 MAX 605 MIN 8.7 CFSM 1.53 IN 20.82
WTR YR 1972 TOTAL 16,595.0 MEAN 45.3 MAX 1,110 MIN 11 CFSM 1.62 IN 22.05

PEAK DISCHARGE (BASE, 380 CFS, REVISED).—May 2 (1500) 1,180 cfs (9.30 ft).

STREAMS TRIBUTARY TO LAKE SUPERIOR

04044400 Carp River near Negaunee, Mich.

LOCATION.--Lat 46°31'29", long 87°34'25", in SE¼ sec.29, T.48 N., R.26 W., Marquette County, on right bank 30 ft downstream from bridge on U. S. Highway 41 and 2.0 miles northeast of Negaunee.

DRAINAGE AREA.--51.4 sq mi.

PERIOD OF RECORD.--July 1961 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,320 ft (from topographic map). Prior to Aug. 24, 1961, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--11 years, 56.3 cfs.

EXTREMES.--Current year: Maximum discharge, 208 cfs May 6 (gage height, 3.96 ft); maximum gage height, 5.24 ft Mar. 2 (backwater from ice); minimum discharge, 12 cfs Apr. 13 (gage height, 2.24 ft); minimum daily, 13 cfs Apr. 14.

Period of record: Maximum discharge, 351 cfs June 27, 28, 1968 (gage height, 4.68 ft); maximum gage height, 5.24 ft Mar. 2, 1972 (backwater from ice); minimum discharge, 3.7 cfs July 29, 1965; minimum gage height, 1.94 ft Aug. 1, 1962; minimum daily discharge, 3.9 cfs July 29, 30, 1965.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Deer Lake storage reservoir (capacity 22,500 acre-feet) 5 miles above station. The city of Ishpeming diverted an average of 2.9 cfs into the basin as waste effluent (see sta 04058200).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	95	49	38	44	110	94	140	51	43	48	51
2	77	111	48	38	45	110	93	178	46	43	48	49
3	104	109	47	37	45	110	92	169	44	43	47	47
4	99	100	46	37	45	105	92	172	42	43	46	48
5	81	98	47	27	45	105	92	153	39	43	45	52
6	74	95	49	37	45	105	91	189	18	43	45	52
7	70	90	48	38	45	105	90	122	17	42	46	52
8	71	87	49	38	45	105	90	86	30	24	48	49
9	57	87	49	39	65	100	89	77	75	22	48	37
10	40	88	56	39	80	100	73	76	65	22	47	29
11	29	90	86	39	76	100	18	77	62	22	47	26
12	23	91	96	40	78	102	15	67	65	24	46	25
13	20	91	72	41	78	101	14	60	64	22	45	42
14	18	91	74	42	78	101	13	52	63	22	45	47
15	18	90	55	42	78	101	16	44	62	21	46	41
16	17	88	52	42	78	101	25	41	45	28	55	40
17	17	88	39	42	100	101	32	60	17	31	55	54
18	17	91	40	42	120	102	31	57	15	32	49	51
19	19	93	40	41	120	98	32	54	14	24	47	42
20	23	91	40	41	115	98	38	51	67	27	47	38
21	20	92	40	40	115	101	47	48	51	31	48	52
22	19	89	39	39	115	100	41	46	24	51	56	51
23	29	65	40	38	115	100	39	44	15	106	54	45
24	77	51	40	37	115	100	34	43	18	77	68	48
25	93	49	40	36	112	100	28	42	17	57	74	56
26	93	48	40	36	110	101	37	41	16	53	63	110
27	94	48	40	36	111	59	59	40	15	52	62	83
28	96	47	40	38	110	96	87	39	14	51	58	59
29	93	48	39	39	110	96	126	52	20	52	52	85
30	91	51	39	40	-----	96	149	104	42	50	50	90
31	97	-----	38	42	-----	94	-----	61	-----	50	50	-----
TOTAL	1,747	2,452	1,517	1,211	2,440	3,143	1,777	2,485	1,141	1,251	1,585	1,551
MEAN	56.4	81.7	48.9	39.1	84.1	101	59.2	80.2	38.0	40.4	51.1	51.7
MAX	104	111	96	42	120	110	149	189	75	106	74	110
MIN	17	47	38	36	44	94	13	39	14	21	45	25

CAL YR 1971 TOTAL 25,682 MEAN 70.4 MAX 197 MIN 17
WTR YR 1972 TOTAL 22,300 MEAN 60.9 MAX 189 MIN 13

STREAMS TRIBUTARY TO LAKE SUPERIOR

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04045500 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., Luce County, 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.

PERIOD OF RECORD.--August 1953 to current year.

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

AVERAGE DISCHARGE.--19 years, 919 cfs (15.80 inches per year).

EXTREMES.--Current year: Maximum discharge, 6,540 cfs about May 4 (gage height, 9.96 ft, from peak-stage indicator); minimum, 290 cfs July 8-10 (gage height, 3.30 ft).

Period of record: Maximum discharge, 6,990 cfs May 10, 1960 (gage height, 10.26 ft); minimum, 157 cfs July 26, 1955; minimum gage height, 2.86 ft July 7, 1963.

REMARKS.--Records good, except those for periods of no gage-height record, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	832	864	674	649	556	465	713	5,600	729	319	618	794
2	814	995	645	629	547	460	732	6,000	742	312	698	814
3	803	1,220	618	615	542	460	750	6,300	685	312	787	811
4	829	1,350	612	602	538	455	761	6,400	634	310	822	784
5	832	1,500	606	587	534	450	768	6,500	609	308	779	736
6	804	1,540	603	567	521	450	771	6,400	547	306	716	705
7	785	1,530	614	551	520	450	771	6,300	523	299	667	663
8	785	1,500	638	540	514	450	766	6,100	485	295	634	629
9	876	1,450	670	534	507	450	763	5,800	494	294	604	604
10	966	1,370	742	540	504	455	760	5,640	544	294	589	581
11	1,030	1,310	1,060	552	502	460	755	5,370	573	338	561	552
12	1,090	1,240	1,210	555	499	470	769	5,090	568	408	536	536
13	1,130	1,180	1,220	547	499	480	808	4,790	563	445	527	519
14	1,150	1,120	1,280	541	500	500	859	4,490	549	460	501	528
15	1,100	1,070	1,300	534	500	520	935	4,240	536	455	488	529
16	1,050	1,030	1,320	524	495	530	1,060	4,000	527	467	490	517
17	1,010	986	1,300	505	490	550	1,310	3,750	527	451	541	518
18	952	953	1,260	490	485	560	1,550	3,480	503	442	581	525
19	897	936	1,220	504	480	570	1,830	3,190	481	434	589	526
20	877	927	1,180	525	480	580	2,170	2,900	446	427	574	520
21	886	907	1,130	546	480	590	2,600	2,560	441	534	542	513
22	883	917	1,080	562	480	600	2,940	2,250	440	604	529	532
23	891	868	1,010	575	475	610	3,180	1,920	439	617	555	537
24	898	830	957	585	470	620	3,430	1,660	443	603	620	525
25	899	795	899	599	470	630	3,700	1,410	438	560	722	512
26	894	775	837	598	470	640	3,900	1,180	434	521	793	557
27	884	752	790	592	470	650	4,200	941	425	479	882	634
28	887	747	745	584	470	660	4,600	718	408	451	934	680
29	899	726	708	576	465	670	5,000	580	353	444	927	738
30	903	684	682	570	-----	686	5,300	630	323	446	895	807
31	913	-----	670	566	-----	701	-----	735	-----	485	831	-----
TOTAL	28,449	32,072	28,280	17,444	14,463	16,822	58,451	116,924	15,409	13,120	20,532	18,426
MEAN	918	1,069	912	563	499	543	1,948	3,772	514	423	662	614
MAX	1,150	1,540	1,320	649	556	701	5,300	6,500	742	617	934	814
MIN	785	684	603	490	465	450	713	580	323	294	488	512
CFSM	1.16	1.35	1.15	.71	.63	.69	2.47	4.77	.65	.54	.84	.78
IN.	1.34	1.51	1.33	.82	.68	.79	2.75	5.11	.73	.62	.97	.87

CAL YR 1971 TOTAL 430,844 MEAN 1,180 MAX 5,960 MIN 393 CFSM 1.49 IN 20.29
WTR YR 1972 TOTAL 380,392 MEAN 1,039 MAX 6,500 MIN 294 CFSM 1.32 IN 17.91

NOTE.--No gage-height record Feb. 14 to Mar. 29, Apr. 25 to May 9.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04046000 Black River near Garnet, Mich.

LOCATION.--Lat 46°07'05", long 85°21'55", in SE¼ sec.13, T.43 N., R.9 W., Mackinac County, on right bank 10 ft upstream from highway bridge, 15 ft downstream from Peters Creek entering from right, 3.5 miles upstream from Lake Michigan, and 4 miles southwest of Garnet.

DRAINAGE AREA.--28 sq mi, approximately.

PERIOD OF RECORD.--September 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 629.7 ft above mean sea level.

AVERAGE DISCHARGE.--21 years, 28.7 cfs (13.92 inches per year).

EXTREMES.--Current year: Maximum discharge, 372 cfs Apr. 26 (gage height, 5.96 ft); minimum, 13 cfs July 28-30, Sept. 16 (gage height, 2.54 ft).

Period of record: Maximum discharge, 860 cfs May 7, 1960 (gage height, 8.55 ft), from rating curve extended above 400 cfs; minimum, 4.9 cfs Mar. 11, 1956 (gage height, 2.10 ft).

REMARKS.--Records fair. Records of water temperatures for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1707: 1959.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	35	29	30	19	15	22	236	26	17	15	23
2	25	93	28	28	19	16	22	266	24	18	18	21
3	29	83	27	27	19	16	21	261	23	17	20	19
4	47	67	26	27	19	16	21	204	22	16	17	18
5	36	56	26	27	18	15	21	174	21	16	16	18
6	31	49	33	26	18	15	20	172	20	16	15	17
7	28	43	37	25	18	15	20	146	19	15	15	16
8	40	40	37	24	17	15	20	119	26	15	15	15
9	66	40	40	23	17	15	19	102	49	15	17	15
10	58	39	71	22	16	15	19	91	38	16	16	14
11	50	36	124	22	16	15	20	83	33	21	17	14
12	44	35	93	23	16	15	22	75	31	25	18	14
13	39	34	70	23	16	15	35	69	29	23	16	15
14	35	33	59	22	16	15	43	65	27	20	15	15
15	32	33	66	24	16	15	51	61	26	22	15	14
16	29	32	73	25	16	15	64	57	24	19	23	16
17	27	34	53	23	16	15	80	52	22	18	25	29
18	27	36	57	22	16	16	97	48	21	18	21	21
19	29	39	52	24	16	16	129	45	20	16	19	18
20	42	38	48	25	16	16	164	42	20	16	17	17
21	35	37	43	24	16	16	223	39	20	17	16	18
22	46	34	40	24	16	17	234	36	19	16	16	17
23	42	31	38	24	16	17	215	33	18	16	16	16
24	37	31	37	24	16	18	215	30	18	15	25	16
25	35	31	35	23	16	18	286	29	18	14	24	19
26	35	31	35	24	15	18	325	27	17	14	24	28
27	39	32	33	24	15	19	312	25	17	14	28	25
28	55	32	33	23	15	20	289	24	16	13	24	22
29	42	32	31	21	15	20	279	24	16	13	20	38
30	39	31	30	21	-----	20	262	31	16	13	18	33
31	37	-----	31	20	-----	21	-----	29	-----	14	17	-----
TOTAL	1,184	1,217	1,445	744	480	510	3,550	2,695	696	518	578	581
MEAN	38.2	40.6	46.6	24.0	16.6	16.5	118	86.9	23.2	16.7	18.6	19.4
MAX	66	93	124	30	19	21	325	266	49	25	28	38
MIN	25	31	24	20	15	15	19	24	16	13	15	14
CFSM	1.36	1.45	1.66	.86	.59	.59	4.21	3.10	.83	.60	.66	.69
IN.	1.57	1.62	1.92	.99	.64	.68	4.72	3.58	.92	.69	.77	.77

CAL YR 1971 TOTAL 17,075 MEAN 46.8 MAX 419 MIN 15 CFSM 1.67 IN 22.69
WTR YR 1972 TOTAL 14,198 MEAN 38.8 MAX 325 MIN 13 CFSM 1.39 IN 18.86

PEAK DISCHARGE (BASE, 120 CFS)

DATE	TIME	G.H.	DISCHARGE
12-11	0100	4.24	139
04-26	2200	5.96	372

04056500 Manistique River near Manistique, Mich.

LOCATION.—Lat 46°01'50", long 86°09'40", in SE¼ sec.15, T.42 N., R.15 W., Schoolcraft County, on left bank 1.0 mile downstream from West Branch, 6.0 miles northeast of Manistique, and at mile 19.5

DRAINAGE AREA.—1,100 sq mi, approximately.

PERIOD OF RECORD.—March 1938 to current year.

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

AVERAGE DISCHARGE.—34 years, 1,394 cfs (17.21 inches per year).

EXTREMES.—Current year: Maximum discharge, 9,750 cfs Apr. 30 (gage height, 11.40 ft); minimum, 606 cfs July 30 (gage height, 2.76 ft).
Period of record: Maximum discharge, 16,900 cfs May 11, 1960 (gage height, 12.85 ft); minimum, 288 cfs Oct. 4, 1948; minimum gage height, 1.01 ft Aug. 23, 1941.

REMARKS.—Records good except those for winter periods, which are fair. Since July 1948, slight regulation by dam on outlet of Manistique Lake.

REVISIONS (WATER YEARS).—WSP 1387: 1940-42 (M), 1943, 1945. WSP 1627, 1727: 1938, 1939.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	777	1,130	1,100	920	860	760	1,200	9,550	1,600	701	799	1,050
2	786	1,180	1,050	900	850	750	1,200	9,440	1,590	697	856	1,000
3	803	1,350	1,000	880	840	740	1,250	9,190	1,520	694	872	1,050
4	871	1,500	960	870	820	740	1,250	8,750	1,430	683	862	1,000
5	960	1,570	960	860	800	740	1,250	8,150	1,340	669	814	950
6	1,010	1,630	960	850	800	740	1,250	7,450	1,270	659	762	900
7	1,020	1,640	980	850	780	740	1,250	6,800	1,220	673	734	850
8	1,040	1,600	1,050	850	780	740	1,250	6,220	1,190	652	708	800
9	1,080	1,560	1,100	900	770	750	1,250	5,700	1,190	641	726	785
10	1,150	1,520	1,300	920	770	760	1,250	5,250	1,160	638	738	767
11	1,200	1,490	1,600	940	770	770	1,250	4,810	1,120	638	725	753
12	1,220	1,450	1,800	950	770	790	1,250	4,370	1,090	669	701	728
13	1,220	1,400	1,800	950	770	810	1,350	3,890	1,080	673	673	726
14	1,220	1,360	1,800	950	770	830	1,500	3,470	1,070	683	647	752
15	1,200	1,340	1,750	950	770	850	1,700	3,160	1,060	648	622	767
16	1,170	1,310	1,700	940	780	870	2,000	2,960	1,060	638	637	770
17	1,140	1,290	1,700	920	780	890	2,400	2,840	1,040	631	725	801
18	1,110	1,270	1,600	890	780	920	2,800	2,710	1,010	627	822	844
19	1,080	1,270	1,500	880	780	940	3,450	2,560	976	645	819	853
20	1,120	1,270	1,400	900	780	960	3,810	2,400	960	701	761	837
21	1,190	1,290	1,350	920	780	970	4,710	2,250	956	715	704	835
22	1,250	1,280	1,350	940	780	980	6,440	2,100	952	708	665	856
23	1,280	1,180	1,300	950	770	1,000	7,790	1,960	948	776	650	868
24	1,280	1,180	1,250	960	770	1,050	7,720	1,830	928	804	692	856
25	1,270	1,230	1,200	950	770	1,050	7,590	1,710	916	784	815	846
26	1,240	1,250	1,150	940	770	1,050	7,880	1,600	900	743	918	861
27	1,200	1,240	1,100	930	760	1,100	8,690	1,500	860	701	1,050	943
28	1,190	1,200	1,050	920	760	1,100	9,300	1,420	764	648	1,180	1,040
29	1,170	1,180	1,000	900	760	1,100	9,580	1,360	729	622	1,210	1,150
30	1,160	1,130	950	880	-----	1,150	9,700	1,420	708	616	1,180	1,260
31	1,140	-----	940	870	-----	1,150	-----	1,540	-----	662	1,100	-----
TOTAL	34,547	40,290	39,750	28,230	22,740	27,790	113,310	128,360	32,637	21,039	25,167	26,498
MEAN	1,114	1,343	1,282	911	784	896	3,777	4,141	1,088	679	812	883
MAX	1,280	1,640	1,800	960	860	1,150	9,700	9,550	1,600	804	1,210	1,260
MIN	777	1,130	940	850	760	740	1,200	1,360	708	616	622	726
CFSM	1.01	1.22	1.17	.83	.71	.81	3.43	3.76	.99	.62	.74	.80
IN.	1.17	1.36	1.34	.95	.77	.94	3.83	4.34	1.10	.71	.85	.90

CAL YR 1971 TOTAL 651,019 MEAN 1,784 MAX 10,800 MIN 545 CFSM 1.62 IN. 22.01
WTR YR 1972 TOTAL 540,358 MEAN 1,476 MAX 9,700 MIN 616 CFSM 1.34 IN. 18.27

STREAMS TRIBUTARY TO LAKE MICHIGAN

04057510 Sturgeon River near Nahma Junction, Mich.

LOCATION.--Lat 45°56'35", long 86°42'20", in SW¼ SE¼ sec.17, T.41 N., R.19 W., Delta County, Hiawatha National Forest, on left bank, 30 ft upstream from bridge on Forest Service Road 2231, 500 ft downstream from Mormon Creek, 0.1 mile east of Federal Forest Highway 13, and 3.2 miles north of Nahma Junction.

DRAINAGE AREA.--183 sq mi.

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 611.0 ft above mean sea level.

AVERAGE DISCHARGE.--6 years, 212 cfs (15.73 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,580 cfs Apr. 30 (gage height, 9.85 ft); minimum, 63 cfs Aug. 15, 16 (gage height, 3.92 ft).

Period of record: Maximum discharge, 1,580 cfs Apr. 18, 1971, Apr. 30, 1972 (gage height, 9.85 ft); minimum, 39 cfs Sept. 20, 1967 (gage height, 3.71 ft).

REMARKS.--Records good except those for winter periods, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	107	150	143	130	88	90	135	1,450	190	81	152	216
2	117	247	130	125	86	90	140	1,460	168	83	119	182
3	146	323	125	120	84	90	140	1,450	151	77	116	151
4	218	307	125	120	82	90	145	1,320	140	73	94	135
5	207	288	125	115	82	90	145	1,210	128	70	79	128
6	188	260	140	110	82	90	145	964	123	69	71	121
7	168	233	160	105	80	90	145	859	116	68	72	115
8	187	211	170	105	80	90	145	757	116	71	80	111
9	219	199	174	100	78	90	145	669	149	71	107	102
10	266	195	216	100	78	90	145	596	140	71	92	96
11	279	188	411	100	78	90	150	536	128	69	87	94
12	250	183	381	100	78	90	170	499	127	70	86	94
13	227	178	328	98	80	90	205	450	125	68	75	95
14	207	173	300	98	82	90	225	392	122	66	69	101
15	188	174	270	96	82	90	260	379	138	67	65	94
16	174	167	250	94	84	92	320	339	133	67	140	88
17	163	167	240	92	86	94	400	308	120	67	178	100
18	154	164	230	90	88	96	526	280	111	80	143	96
19	154	166	220	90	90	98	622	254	104	75	116	90
20	206	163	210	90	90	98	687	230	110	84	95	85
21	212	162	200	94	90	100	781	223	119	111	83	93
22	209	159	190	96	90	105	765	202	111	108	81	101
23	204	148	180	96	90	105	721	182	103	98	79	97
24	192	167	170	96	90	110	731	168	99	95	196	93
25	182	156	165	96	90	110	788	155	96	85	315	103
26	176	149	155	96	90	115	906	143	92	77	310	140
27	170	150	150	94	90	120	1,110	135	87	71	440	165
28	162	150	145	92	90	120	1,360	127	83	67	375	163
29	152	149	140	92	90	125	1,530	124	82	66	279	208
30	147	145	135	90	-----	125	1,570	189	80	66	212	209
31	150	-----	130	90	-----	130	-----	207	-----	98	180	-----
TOTAL	5,781	5,671	6,108	3,110	2,468	3,093	15,257	16,257	3,591	2,389	4,586	3,666
MEAN	186	189	197	100	85.1	99.8	509	524	120	77.1	148	122
MAX	279	323	411	130	90	130	1,570	1,460	190	111	440	216
MIN	107	145	125	90	78	90	135	124	80	66	65	85
CFSM	1.02	1.03	1.08	.55	.47	.55	2.78	2.86	.66	.42	.81	.67
IN.	1.18	1.15	1.24	.63	.50	.63	3.10	3.30	.73	.49	.93	.75

CAL YR 1971 TOTAL 85,833 MEAN 235 MAX 1,560 MIN 60 CFSM 1.28 IN 17.45
WTR YR 1972 TOTAL 71,977 MEAN 197 MAX 1,570 MIN 65 CFSM 1.08 IN 14.63

STREAMS TRIBUTARY TO LAKE MICHIGAN

41

04057800 Middle Branch Escanaba River at Humboldt, Mich.

LOCATION.--Lat 46°29'57", long 87°53'11", in SW $\frac{1}{4}$ sec.1, T.47 N., R.29 W., Marquette County, on left bank 15 ft upstream from county highway, 0.3 mile north of Humboldt, and 1.5 miles downstream from Halfway Creek.

DRAINAGE AREA.--46.0 sq mi.

PERIOD OF RECORD.--June 1959 to current year.

GAGE.--Water-stage recorder. V-notch sharp-crested weir since Oct. 3, 1960. Datum of gage is 1,521.20 ft above mean sea level (Cleveland-Cliffs Iron Co. bench mark). Prior to Sept. 1, 1960, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--13 years, 60.1 cfs (17.74 inches per year), adjusted for diversion.

EXTREMES.--Current year: Maximum discharge, 860 cfs May 4 (gage height, 6.43 ft); minimum, 11 cfs Sept. 12, 13 (gage height, 1.73 ft).
Period of record: Maximum discharge, 1,640 cfs Apr. 24, 1960 (gage height, 8.30 ft, from floodmark); minimum, 4.5 cfs Aug. 18, 1961, Aug. 11, 1962; minimum gage height, 1.07 ft Aug. 24, 1960.

REMARKS.--Records good except those for winter periods, which are fair. From July 1960 to June 1972, some diversion 100 ft above station by industry for iron ore processing. Flow is returned to the basin through the Black River; figures of runoff adjusted.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	46	46	37	22	21	32	590	86	28	31	19
2	80	73	45	37	22	21	32	710	69	26	27	17
3	170	89	44	36	21	21	31	798	59	23	24	15
4	240	81	43	36	21	21	31	829	51	21	21	14
5	156	74	43	35	21	21	31	756	46	19	19	16
6	89	70	42	33	21	21	31	794	43	17	20	15
7	70	61	42	33	21	21	30	755	39	17	19	17
8	74	55	43	32	21	21	30	572	40	18	23	15
9	70	51	43	32	21	21	30	473	44	18	24	14
10	60	50	50	31	21	21	31	413	40	19	20	13
11	55	48	92	30	21	21	35	390	37	21	19	12
12	51	47	109	29	21	21	33	380	41	57	19	11
13	46	45	87	29	21	22	40	348	43	48	17	69
14	42	44	70	28	21	22	40	311	43	34	16	91
15	38	46	62	28	21	23	41	282	42	27	15	55
16	35	44	64	27	21	23	54	240	37	23	50	49
17	34	47	59	27	21	24	72	197	34	26	58	123
18	33	59	59	26	21	25	79	161	31	37	39	97
19	35	73	57	26	21	26	83	135	29	30	30	60
20	38	69	54	26	21	27	101	111	133	30	24	76
21	37	67	51	25	21	28	127	94	265	40	31	226
22	41	64	48	24	21	29	121	82	203	45	44	304
23	39	60	47	24	21	29	123	72	89	200	32	193
24	36	58	45	23	21	30	122	64	63	242	53	113
25	36	55	43	23	21	30	123	58	52	95	66	88
26	35	53	41	23	21	31	138	56	45	60	50	190
27	38	52	40	23	21	31	177	49	39	48	46	304
28	44	50	39	23	21	31	250	45	36	41	38	246
29	40	48	39	22	21	32	356	61	34	44	31	206
30	38	47	38	22	-----	32	520	150	30	38	25	180
31	47	-----	37	22	-----	32	-----	123	-----	36	22	-----
TOTAL	1,914	1,726	1,622	872	611	779	2,944	10,099	1,843	1,428	953	2,848
MEAN	61.7	57.5	52.3	28.1	21.1	25.1	98.1	326	61.4	46.1	30.7	94.9
MAX	240	89	109	37	22	32	520	829	265	242	66	304
MIN	33	44	37	22	21	21	30	45	29	17	15	11
+	.5	.4	.2	0	0	0	0	0	.1	0	0	0
MEAN#	62.2	57.9	52.5	28.1	21.1	25.1	98.1	326	61.5	46.1	30.7	94.9
CFSM#	1.35	1.26	1.14	.61	.46	.55	2.13	7.09	1.34	1.00	.67	2.06
IN#	1.56	1.41	1.31	.70	.50	.63	2.38	8.17	1.50	1.15	.77	2.30

CAL YR 1971 TOTAL 24,051.7 MEAN 65.9 MAX 718 MIN 7.6 MEAN# 67.1 CFSM# 1.46 IN# 19.46
WTR YR 1972 TOTAL 27,639.0 MEAN 75.5 MAX 829 MIN 11 MEAN# 75.4 CFSM# 1.64 IN# 22.35

+ Average monthly diversion, equivalent in cubic feet per second, for industrial use; furnished by Cleveland-Cliffs Iron Co.

Adjusted for diversion.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04058000 Middle Branch Escanaba River near Ishpeming, Mich.

LOCATION.—Lat 46°23'40", long 87°45'30", in NW¼ SW¼ sec.12, T.46 N., R.28 W., Marquette County, on left bank 0.5 mile downstream from County Highway 581, 6 miles southwest of Ishpeming, and 10 miles east of Republic.

DRAINAGE AREA.—128 sq mi.

PERIOD OF RECORD.—June 1954 to current year.

GAGE.—Water-stage recorder. Datum of gage is 1,389.02 ft above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.—18 years, 139 cfs (14.75 inches per year).

EXTREMES.—Current year: Maximum discharge, 1,790 cfs May 5 (gage height, 10.33 ft); minimum, 41 cfs Sept. 12 (gage height, 1.63 ft).
Period of record: Maximum discharge, 2,680 cfs Apr. 25, 1960 (gage height, 12.55 ft); minimum, 12 cfs Aug. 21-23, 1957; minimum gage height, 1.17 ft Aug. 22, 23, 1957.

REMARKS.—Records good except those for winter periods, which are fair. Some flow diverted and returned above station by iron ore processing plant. Records of water temperatures for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	490	140	110	88	50	48	72	1,320	244	83	85	76
2	518	190	105	86	49	48	74	1,480	188	77	79	65
3	414	245	105	84	49	48	74	1,660	158	73	69	59
4	275	230	103	82	49	48	72	1,770	135	69	62	53
5	233	202	103	80	48	48	70	1,760	121	65	56	54
6	238	181	103	80	48	48	70	1,690	113	60	52	54
7	208	158	102	78	48	48	70	1,660	103	58	50	54
8	178	143	102	76	48	48	70	1,460	96	59	54	53
9	160	141	104	74	48	48	72	1,160	100	58	60	50
10	147	125	117	72	48	48	74	963	95	57	56	46
11	138	120	188	72	48	48	78	854	87	54	53	43
12	129	116	245	70	48	48	84	795	94	58	52	42
13	120	116	236	68	48	48	94	753	114	80	50	68
14	110	111	206	68	48	50	110	699	104	72	47	124
15	104	109	181	66	48	52	130	643	103	62	46	129
16	103	108	170	64	48	54	153	580	94	57	94	101
17	122	108	160	62	48	56	167	497	92	65	159	113
18	119	128	150	62	48	58	189	414	82	79	123	151
19	111	168	140	60	48	60	212	350	74	76	88	144
20	108	173	130	60	48	62	254	296	193	89	73	117
21	102	160	125	58	48	64	316	252	434	167	74	228
22	98	152	120	58	48	66	329	221	480	139	114	377
23	96	145	115	56	48	68	314	193	351	176	111	437
24	98	140	110	56	48	68	324	171	191	239	116	409
25	120	130	105	54	48	70	347	155	150	245	174	315
26	124	125	105	54	48	72	377	141	129	136	157	377
27	113	124	100	54	48	72	457	134	110	103	136	499
28	120	119	96	54	48	72	578	122	98	89	113	533
29	130	115	94	52	48	72	756	126	96	92	93	540
30	140	113	90	52	-----	72	1,110	256	91	88	80	523
31	130	-----	88	50	-----	72	-----	314	-----	86	75	-----
TOTAL	5,296	4,335	4,008	2,050	1,397	1,784	7,097	22,889	4,520	2,911	2,651	5,834
MEAN	171	145	129	66.1	48.2	57.5	237	738	151	93.9	85.5	194
MAX	518	245	245	88	50	72	1,110	1,770	480	245	174	540
MIN	96	108	88	50	48	48	70	122	74	54	46	42
CFSM	1.34	1.13	1.01	.52	.38	.45	1.85	5.77	1.18	.73	.67	1.52
IN.	1.54	1.26	1.16	.60	.41	.52	2.06	6.65	1.31	.85	.77	1.70
CAL YR 1971	TOTAL 61,908	MEAN 170	MAX 1,440	MIN 24	CFSM 1.33	IN 17.99						
WTR YR 1972	TOTAL 64,772	MEAN 177	MAX 1,770	MIN 42	CFSM 1.38	IN 18.82						

04058100 Middle Branch Escanaba River near Princeton, Mich.

LOCATION.--Lat 46°19'02", long 87°30'07", in NW¼ sec.12, T.45 N., R.26 W., Marquette County, on right bank 400 ft downstream from powerplant, 0.3 mile upstream from Green Creek, and 2.2 miles northwest of Princeton.

DRAINAGE AREA.--210 sq mi.

PERIOD OF RECORD.--July 1961 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,100 ft (from topographic map).

AVERAGE DISCHARGE.--11 years, 215 cfs (13.90 inches per year).

EXTREMES.--Current year: Maximum discharge, 2,580 cfs May 6 (gage height, 7.85 ft); minimum, 5.5 cfs Mar. 17, Apr. 5, 6, 8, 9, 11, 12, 14 (gage height, 0.45 ft); minimum daily, 8.0 cfs Jan. 9.

Period of record: Maximum discharge, 2,580 cfs May 6, 1972 (gage height, 7.85 ft); minimum recorded, 2.2 cfs Oct. 5, 1964; minimum daily, 4.1 cfs Feb. 4, 1967.

REMARKS.--Records good. Flow regulated by powerplant above station. Some flow diverted and returned above station by iron ore processing plant. Records of chemical analyses for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	147	238	181	180	130	115	145	1,530	415	124	134	149
2	213	282	114	180	130	115	145	1,870	414	125	162	144
3	553	381	145	180	130	110	160	2,150	390	158	170	129
4	628	379	148	145	130	110	160	2,400	379	164	174	119
5	659	378	145	130	130	110	155	2,540	213	138	163	115
6	625	375	264	130	130	125	155	2,550	93	142	154	69
7	503	370	233	130	130	130	130	2,360	201	133	82	93
8	415	175	187	130	130	130	130	2,180	202	131	155	128
9	406	97	187	8.0	130	130	130	1,820	201	128	136	131
10	411	256	188	205	130	125	195	1,380	199	73	148	128
11	384	257	192	255	130	115	145	1,180	197	105	98	104
12	377	172	195	145	130	115	200	1,080	163	120	102	99
13	260	174	330	145	130	115	155	1,010	168	105	100	85
14	252	175	378	115	115	145	110	958	187	122	152	126
15	252	223	290	115	100	145	115	900	193	122	167	92
16	248	224	266	115	115	130	180	833	169	122	164	96
17	247	224	240	180	110	115	250	754	167	136	278	98
18	111	231	240	180	115	115	350	660	167	167	204	207
19	234	189	240	115	115	115	480	572	167	165	200	201
20	152	190	240	115	115	145	600	508	198	135	165	238
21	260	200	240	145	145	195	681	463	250	134	141	212
22	235	314	180	145	145	115	745	426	467	216	174	319
23	235	372	180	145	115	130	781	412	559	273	215	431
24	224	260	195	115	115	130	730	358	449	361	236	508
25	126	265	195	125	115	130	639	244	387	401	255	474
26	142	183	195	125	115	130	618	267	312	393	283	612
27	202	181	195	125	115	225	652	269	229	263	300	663
28	172	182	195	130	115	195	795	262	225	178	271	717
29	173	251	145	130	115	160	980	256	162	171	228	760
30	174	233	145	130	-----	145	1,210	266	120	169	183	728
31	175	-----	180	130	-----	145	-----	290	-----	176	157	-----
TOTAL	9,195	7,431	6,448	4,343.0	3,570	4,155	11,921	32,748	7,643	5,350	5,551	7,975
MEAN	297	248	208	140	123	134	397	1,056	255	173	179	266
MAX	659	381	378	255	145	225	1,210	2,550	559	401	300	760
MIN	111	97	114	8.0	100	110	110	244	93	73	82	69
CFSM	1.41	1.18	.99	.67	.59	.64	1.89	5.03	1.21	.82	.85	1.27
IN.	1.63	1.32	1.14	.77	.63	.74	2.11	5.80	1.35	.95	.98	1.41

CAL YR 1971 TOTAL 98,770.3 MEAN 271 MAX 1,830 MIN 6.3 CFSM 1.29 IN 17.50
WTR YR 1972 TOTAL 106,330.0 MEAN 291 MAX 2,550 MIN 8.0 CFSM 1.39 IN 18.84

STREAMS TRIBUTARY TO LAKE MICHIGAN

04058190 Schweitzer Reservoir near Palmer, Mich.

LOCATION.--Lat 46°25'00", long 87°38'48", in SE1/4NW1/4 sec.2, T.46 N., R.27 W., Marquette County, on left bank 120 ft upstream from dam on Schweitzer Creek, and 3.0 miles southwest of Palmer.

DRAINAGE AREA.--23.1 sq mi.

PERIOD OF RECORD.--January 1963 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is 1,300.00 ft above mean sea level. Gage readings have been converted to elevations above mean sea level. Prior to Oct. 25, 1967, nonrecording gage at same site and datum.

EXTREMES.--Current year: Maximum contents, 5,620 acre-ft Apr. 29, 30 (elevation, 1,338.8 ft); minimum, 4,110 acre-ft Oct. 1 (elevation 1,334.2).

Period of record: Maximum contents recorded, 5,900 acre-ft May 31, 1970 (elevation, 1,339.5 ft); minimum recorded, 3,050 acre-ft Apr. 7, 1970 (elevation, 1,330.2 ft).

REMARKS.--Records good. Reservoir is formed by an earth-fill dam with fixed crest concrete spillway completed in 1963. Capacity of reservoir is 5,300 acre-ft at spillway elevation 1,338.00 ft. The dam includes a discharge pipe equipped with valve to control released flow to Schweitzer Creek (see sta 04058200). An average of 8.1 cfs was diverted from reservoir for iron ore processing and returned to the Middle Branch Escanaba River basin by Green Creek.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

Date	Elevation (feet)	Contents (acre- feet)	Change in contents during month	
			(Acre- feet)	Equivalent in cfs
Sept. 30	1,334.2	4,110	--	--
Oct. 31	1,335.9	4,620	+510	+8.3
Nov. 30	1,337.2	5,020	+400	+6.7
Dec. 31	1,338.0	5,300	+280	+4.6
Calendar year 1971	--	--	+40	+1
Jan. 31	1,337.2	5,020	-280	-4.6
Feb. 29	1,336.1	4,680	-340	-5.9
Mar. 31	1,334.9	4,320	-360	-5.9
Apr. 30	1,338.7	5,580	+1260	+21.2
May 31	1,338.2	5,380	-200	-3.3
June 30	1,337.8	5,230	-150	-2.5
July 31	1,337.8	5,230	0	0
Aug. 31	1,338.0	5,300	+70	+1.1
Sept. 30	1,338.1	5,340	+40	+7
Water year 1971-72	--	--	+1230	+1.7

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04058200 Schweitzer Creek near Palmer, Mich.

LOCATION.--Lat 46°24'40", long 87°37'27", in SW¼ sec.1, T.46 N., R.27 W., Marquette County, on right bank 10 ft upstream from highway bridge, 2.5 miles southwest of Palmer.

DRAINAGE AREA.--23.6 sq mi.

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Concrete control since Oct. 1, 1963. Altitude of gage is 1,270 ft (from topographic map). Prior to Aug. 21, 1961, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--12 years, 16.9 cfs.

EXTREMES.--Current year: Maximum discharge, 323 cfs May 2 (gage height, 4.96 ft); minimum, 4.0 cfs Aug. 15 (gage height, 2.82 ft); minimum daily, 4.3 cfs Aug. 15.

Period of record: Maximum discharge, 860 cfs May 31, 1970 (gage height, 6.50 ft); minimum, 0.4 cfs Sept. 6, 1962 (gage height, 1.22 ft); minimum daily, 1.0 cfs Apr. 9-18, May 5, 6, 1963.

REMARKS.--Records good. Since August 1962, flow completely regulated by Schweitzer Reservoir (see sta 04058190), 1 mile above station. An average of 2.9 cfs was diverted from headwaters of basin by the city of Ishpeming for municipal supply and the effluent discharged to the Carp River basin. An average of 8.1 cfs was diverted from basin 1 mile above station by industry for iron ore processing and returned to the Middle Branch Escanaba River basin.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.1	5.6	5.4	5.6	4.5	6.9	7.5	251	28	4.8	4.5	4.9
2	7.2	8.3	5.4	5.4	4.5	6.9	7.5	302	17	4.8	4.6	4.7
3	9.7	6.9	5.4	5.4	4.5	6.9	7.5	290	13	4.8	4.5	4.7
4	6.2	6.2	5.4	5.0	4.5	6.9	7.5	265	8.6	4.8	4.5	4.7
5	5.1	5.9	5.4	5.0	4.5	6.9	7.5	233	6.9	4.7	4.6	4.6
6	5.1	5.6	5.6	5.0	4.5	6.9	7.5	258	6.7	4.6	4.6	4.7
7	5.1	5.4	5.6	5.1	4.5	6.9	7.2	218	6.3	4.8	4.5	4.7
8	5.9	5.4	5.6	5.1	4.5	6.9	7.2	160	6.4	4.8	4.8	4.6
9	5.9	5.4	5.6	5.1	4.5	6.9	7.5	125	6.9	4.8	4.6	4.7
10	5.6	5.4	7.5	5.1	4.5	6.9	7.7	107	6.1	4.5	4.5	4.7
11	5.1	5.4	7.7	5.0	4.5	6.9	7.7	94	6.1	4.5	4.6	4.6
12	5.1	5.4	6.7	5.0	4.5	6.9	7.7	87	6.2	4.5	4.5	4.6
13	4.9	5.4	8.3	5.0	4.5	7.2	8.0	79	5.9	4.5	4.4	6.6
14	4.9	5.1	10	5.0	4.5	7.2	7.7	73	5.4	4.7	4.4	5.0
15	4.9	5.1	13	5.0	4.5	7.2	8.6	72	5.3	4.6	4.3	4.7
16	4.9	5.1	12	5.0	4.5	7.2	9.1	60	5.2	4.7	5.9	5.2
17	4.9	5.4	11	5.0	4.5	7.2	10	47	5.0	4.9	4.6	5.0
18	4.7	6.2	10	5.0	4.5	7.2	10	39	5.0	4.7	4.5	4.8
19	5.4	5.9	9.0	5.0	4.5	7.2	10	32	4.9	4.5	4.6	4.7
20	5.1	5.6	8.0	5.0	4.5	7.2	12	26	8.7	6.5	4.4	5.1
21	5.1	5.6	7.0	5.0	4.4	7.5	13	27	31	5.3	6.9	5.7
22	5.1	5.4	6.2	5.0	4.4	7.5	12	26	26	5.3	5.8	5.3
23	5.1	5.4	6.2	5.0	4.4	7.5	11	22	16	5.5	4.9	5.7
24	4.9	5.4	6.4	5.0	4.4	7.5	12	17	9.7	4.8	7.4	5.1
25	4.9	5.4	5.9	5.0	4.4	7.5	38	13	7.5	4.7	5.8	5.1
26	5.1	5.4	5.9	5.0	4.4	7.5	62	10	5.6	4.6	9.8	63
27	5.4	5.4	5.6	5.0	4.4	7.5	96	8.3	4.9	4.6	16	91
28	5.4	5.4	5.6	4.5	5.4	7.5	158	7.2	4.8	4.7	13	63
29	5.1	5.4	5.6	4.5	6.9	7.5	235	11	4.8	5.0	7.8	66
30	5.4	5.4	5.6	4.5	-----	7.5	300	41	4.8	4.6	5.5	50
31	6.2	-----	5.6	4.5	-----	7.5	-----	40	-----	4.6	4.9	-----
TOTAL	168.5	168.9	218.2	154.8	133.1	222.9	1,102.4	3,040.5	278.7	149.2	179.7	457.2
MEAN	5.44	5.63	7.04	4.99	4.59	7.19	36.7	98.1	9.29	4.81	5.80	15.2
MAX	9.7	8.3	13	5.6	6.9	7.5	300	302	31	6.5	16	91
MIN	4.7	5.1	5.4	4.5	4.4	6.9	7.2	7.2	4.8	4.5	4.3	4.6

CAL YR 1971 TOTAL 6,668.8 MEAN 18.3 MAX 241 MIN 4.0

WTR YR 1972 TOTAL 6,274.1 MEAN 17.1 MAX 302 MIN 4.3

STREAMS TRIBUTARY TO LAKE MICHIGAN

04058400 Goose Lake Outlet near Sands Station, Mich.

LOCATION.--Lat 46°23'36", long 87°29'40", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.12, T.46 N., R.26 W., Marquette County, on left bank 0.8 mile upstream from mouth, and 3 miles west of Sands Station.

DRAINAGE AREA.--37.5 sq mi.

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,160 ft (from topographic map).

AVERAGE DISCHARGE.--7 years, 32.4 cfs (11.73 inches per year).

EXTREMES.--Current year: Maximum discharge, 414 cfs Apr. 29 (gage height, 5.59 ft); minimum, 8.4 cfs Aug. 16 (gage height, 1.51 ft).
Period of record: Maximum discharge, 458 cfs May 31, 1970 (gage height, 5.89 ft); minimum, 6.2 cfs Oct. 12, 13, 1966, Oct. 6, 7, 1967; minimum gage height, 1.45 ft Oct. 12, 13, 1966.

REMARKS.--Records fair. Some mine water pumped into basin at headwaters.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	19	19	19	12	11	18	388	51	15	12	15
2	23	32	18	18	12	11	19	383	45	15	11	14
3	40	30	18	18	12	11	19	372	40	14	11	13
4	41	31	18	17	12	11	19	357	36	14	10	13
5	42	32	19	16	12	11	19	322	33	13	10	13
6	34	28	20	15	12	11	20	307	30	13	10	12
7	27	25	20	15	12	11	20	279	27	13	10	12
8	34	22	21	15	12	11	20	235	27	13	11	11
9	34	22	21	15	12	11	21	196	28	12	10	11
10	32	22	27	15	12	11	21	165	25	12	9.6	10
11	25	21	31	15	12	11	22	142	24	12	9.4	10
12	22	21	31	14	12	11	24	125	24	11	9.4	10
13	21	20	30	14	12	11	24	112	23	11	8.9	17
14	20	20	30	13	12	11	24	101	24	11	9.1	14
15	19	20	30	13	12	11	27	92	23	10	8.9	13
16	18	19	27	13	12	11	40	83	21	10	14	13
17	18	19	27	12	12	11	54	75	20	12	11	16
18	17	24	22	12	12	11	54	68	19	13	9.8	15
19	22	24	22	12	12	11	55	61	19	11	9.5	14
20	20	22	22	12	12	11	65	56	28	20	9.3	15
21	19	21	21	12	12	11	75	51	24	21	10	20
22	20	20	21	12	12	12	87	47	22	19	16	16
23	19	20	21	12	12	11	97	43	21	23	13	15
24	18	20	22	12	12	12	125	40	20	20	27	15
25	18	20	21	12	12	17	122	38	20	18	25	15
26	18	20	21	12	12	18	126	35	19	17	25	54
27	19	20	20	12	12	18	142	33	18	16	26	43
28	19	20	19	12	12	18	196	30	17	15	21	56
29	18	20	19	12	12	18	311	39	16	15	19	59
30	18	19	19	12	-----	18	396	54	15	14	17	51
31	21	-----	19	12	-----	18	-----	48	-----	13	16	-----
TOTAL	727	673	696	425	348	391	2,262	4,377	759	446	418.9	605
MEAN	23.5	22.4	22.5	13.7	12.0	12.6	75.4	141	25.3	14.4	13.5	20.2
MAX	42	32	31	19	12	18	396	388	51	23	27	59
MIN	11	19	18	12	12	11	18	30	15	10	8.9	10
CFSM	.63	.60	.60	.37	.32	.34	2.01	3.76	.67	.38	.36	.54
IN.	.72	.67	.69	.42	.35	.39	2.24	4.34	.75	.44	.42	.60

CAL YR 1971 TOTAL 12,729.9 MEAN 34.9 MAX 382 MIN 7.2 CFSM .93 IN 12.63
WTR YR 1972 TOTAL 12,127.9 MEAN 33.1 MAX 396 MIN 8.9 CFSM .88 IN 12.03

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

EXTREMES.--Current year: Maximum discharge, 1,350 cfs Apr. 30 (gage height, 12.83 ft); minimum, 34 cfs Aug. 15, 16 (gage height, 6.77 ft).
Period of record: Maximum discharge, 2,390 cfs June 1, 1970 (gage height, 14.97 ft); minimum, 19 cfs July 30, Oct. 11, 1963 (gage height, 6.48 ft).

REMARKS.--Records good except those for winter periods, which are fair. Since August, 1962, flow partly regulated by Schweitzer Reservoir (usable capacity, 231,000,000 cu ft). Water diverted from basin for municipal supply and for iron ore processing (see sta 04058200). Records of chemical analyses for the current year are published in Part 2 of this report.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	94	72	62	40	36	61	1,300	195	48	43	55
2	129	146	72	60	39	37	59	1,260	155	47	42	51
3	224	180	70	60	38	38	58	1,300	130	45	41	47
4	254	149	68	59	37	38	56	1,230	113	44	40	45
5	170	134	68	58	37	38	54	1,100	97	43	38	45
6	125	117	70	56	37	38	55	1,030	91	42	37	45
7	104	98	72	56	37	37	54	988	85	43	40	45
8	107	87	75	56	37	37	54	786	79	45	41	44
9	129	81	79	54	37	38	56	612	81	43	43	41
10	175	81	93	54	37	38	58	508	77	43	39	40
11	141	78	182	52	37	38	65	447	73	42	37	39
12	109	76	150	52	36	38	71	406	78	42	37	41
13	95	74	120	50	36	39	71	374	79	40	36	50
14	86	72	110	50	36	40	77	343	77	40	35	71
15	79	73	100	49	36	41	84	316	75	40	35	59
16	74	72	96	48	36	42	123	289	69	38	64	49
17	70	71	92	47	36	43	185	252	65	42	73	54
18	68	84	88	46	36	44	209	219	62	58	52	55
19	73	117	86	46	36	45	220	193	59	47	43	51
20	104	106	84	46	36	47	253	174	75	49	40	50
21	92	102	80	45	36	48	315	173	105	116	39	78
22	91	97	78	45	36	51	336	162	103	85	74	80
23	88	92	77	45	36	52	308	144	87	91	75	67
24	80	86	76	45	36	54	326	129	75	83	117	61
25	75	84	74	45	36	56	322	116	67	66	148	56
26	72	80	72	44	36	58	375	104	61	56	109	216
27	72	78	70	44	36	59	469	95	56	51	119	303
28	84	76	68	43	36	60	678	88	53	48	102	263
29	80	74	66	42	36	60	968	95	51	50	78	258
30	73	72	64	41	-----	62	1,310	275	49	49	63	226
31	87	-----	64	40	-----	63	-----	259	-----	46	58	-----
TOTAL	3,276	2,831	2,636	1,540	1,061	1,415	7,330	14,767	2,522	1,622	1,838	2,585
MEAN	106	94.4	85.0	49.7	36.6	45.6	244	476	84.1	52.3	59.3	86.2
MAX	254	180	182	62	40	63	1,310	1,300	195	116	148	303
MIN	66	71	64	40	36	36	54	88	49	38	35	39
CFSM	.85	.76	.69	.40	.30	.37	1.97	3.84	.68	.42	.48	.70
IN.	.98	.85	.79	.46	.32	.42	2.20	4.43	.76	.49	.55	.78
CAL YR 1971	TOTAL 45,086		MEAN 124	MAX 1,180	MIN 32	CFSM 1.00	IN 13.53					
WTR YR 1972	TOTAL 43,423		MEAN 119	MAX 1,310	MIN 35	CFSM .96	IN 13.03					

STREAMS TRIBUTARY TO LAKE MICHIGAN

04059000 Escanaba River at Cornell, Mich.

LOCATION.—Lat 45°54'31", long 87°12'49", in NW¼ sec. 32, T.41 N., R.23 W., Delta County, on right bank 50 ft downstream from highway bridge, 0.4 mile downstream from Bobs Creek, 0.7 mile northeast of Cornell, and 16 miles upstream from mouth.

DRAINAGE AREA.—870 sq mi.

PERIOD OF RECORD.—August 1903 to December 1912, January 1913 to November 1915 (gage heights only), October 1950 to current year. 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 (levels by Michigan Department of Natural Resources). August 1903 to November 1915, nonrecording gage at site 10 miles downstream at different datum.

AVERAGE DISCHARGE.—31 years (1903-12, 1950-70), 898 cfs (14.02 inches per year).

EXTREMES.—Current year: Maximum discharge, 8,580 cfs May 2 (gage height, 4.62 ft); minimum, 203 cfs July 11, 12 (gage height, 1.37 ft). Period of record: Maximum discharge, 10,500 cfs May 7, 1960 (gage height, 4.90 ft); maximum gage height, 6.40 ft Apr. 9, 1971 (backwater from ice); minimum discharge observed, 90 cfs July 5, 1910 (gage height, 1.5 ft, site and datum then in use), but may have been less during extended periods of no gage-height record during winter seasons of 1903-12, or during periods of ice effect in 1959.

REMARKS.—Records good except those for winter periods, which are fair. Diurnal fluctuation and occasional slight regulation caused by Boney Falls powerplant, 7 miles above station, since 1950. Since August 1962, some regulation by Schweitzer Reservoir (capacity 231,000,000 cu ft), at headwaters (see sta 04058190).

REVISIONS (WATER YEARS).—WSP 1387: 1904.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	667	778	595	540	390	310	550	7,820	1,570	362	528	648
2	757	1,260	585	540	390	310	550	8,350	1,460	327	555	610
3	1,380	1,420	445	520	390	300	550	8,270	1,260	370	364	690
4	2,010	1,590	686	520	390	300	540	7,780	945	290	328	461
5	2,040	1,450	595	510	390	300	540	7,200	897	359	434	273
6	1,850	1,280	585	500	380	300	530	6,720	619	325	471	523
7	1,570	1,100	697	490	380	310	530	6,280	545	362	359	421
8	1,410	924	674	480	370	320	530	5,480	604	602	314	330
9	1,370	746	595	470	370	330	530	4,730	542	285	420	429
10	1,520	602	772	470	360	330	540	4,010	564	222	515	382
11	1,460	850	1,100	460	360	340	550	3,390	532	249	423	432
12	1,360	733	1,460	450	360	350	560	3,080	601	374	364	314
13	1,150	640	1,350	450	350	360	620	2,770	501	317	321	361
14	944	628	1,250	440	350	380	700	2,600	591	353	374	371
15	772	651	1,100	440	350	390	800	2,410	589	318	319	365
16	860	662	1,000	440	350	400	1,000	2,230	553	335	816	306
17	686	686	950	440	350	410	1,500	1,960	518	481	842	391
18	720	686	900	430	350	430	1,800	1,750	475	327	1,050	380
19	623	925	850	420	350	440	2,200	1,530	466	574	694	439
20	828	970	800	420	350	450	2,500	1,450	584	463	636	419
21	901	837	760	410	340	470	2,700	1,720	551	588	485	536
22	892	850	730	400	340	480	2,800	1,740	747	780	588	585
23	787	970	700	390	340	490	2,890	1,570	909	1,160	694	676
24	749	880	680	390	330	500	2,990	1,410	902	1,240	856	816
25	772	824	660	390	330	520	3,240	1,090	668	1,100	1,400	779
26	659	798	620	390	330	530	3,460	842	639	904	1,130	1,260
27	551	686	600	390	320	540	4,370	819	551	763	1,230	2,020
28	738	686	600	390	320	540	5,020	764	452	617	1,170	2,210
29	720	616	580	390	320	540	6,330	722	448	503	969	2,560
30	732	720	580	390	-----	540	7,310	1,330	384	465	729	2,450
31	703	-----	560	390	-----	550	-----	1,690	-----	507	623	-----
TOTAL	32,181	26,448	24,059	13,750	10,300	12,760	58,730	103,507	20,667	15,922	20,001	22,437
MEAN	1,038	882	776	444	355	412	1,958	3,339	689	514	645	748
MAX	2,040	1,590	1,460	540	390	550	7,310	8,350	1,570	1,240	1,400	2,560
MIN	551	602	445	390	320	300	530	722	384	222	314	273
CFSM	1.19	1.01	.89	.51	.41	.47	2.25	3.84	.79	.59	.74	.86
IN.	1.38	1.13	1.03	.59	.44	.55	2.51	4.43	.88	.68	.86	.96
CAL YR 1971	TOTAL 362,931	MEAN 994	MAX 7,210	MIN 220	CFSM 1.14	IN 15.52						
WTR YR 1972	TOTAL 360,762	MEAN 986	MAX 8,350	MIN 222	CFSM 1.13	IN 15.43						

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LOCATION.--Lat 45°48'38", long 87°22'00", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.3, T.39 N., R.25 W., Menominee County, on left bank, 10 ft downstream from county bridge, 700 ft upstream from County Road 569 and 1.0 mile northwest of Perronville.

PERIOD OF RECORD.—Occasional low-flow measurements, water years 1969, 70. April 1971 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 810 ft (from topographic map). Prior to Sept. 29, 1972, nonrecording gage at present site and datum.

EXTREMES.--Maximum discharge, 488 cfs May 2 (gage height, 4.62 ft); minimum, 1.4 cfs Aug. 2, 6-8 (gage height, 2.09 ft).

Period of record: Maximum discharge, 488 cfs May 2, 1972 (gage height, 4.62 ft); minimum, 0.09 cfs Aug. 25, 1970 (discharge measurement).

REMARKS.--Records good except those for winter periods, which are fair.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	23	19	16	7.0	6.2	13	437	61	3.0	1.7	58
2	17	68	18	15	7.0	6.2	13	480	51	2.3	1.5	63
3	24	95	17	15	7.0	6.2	13	450	40	1.5	3.6	54
4	33	91	16	15	6.8	6.2	12	356	34	2.2	2.7	42
5	34	73	16	14	6.8	6.2	12	285	28	2.0	1.8	35
6	29	59	17	14	6.6	6.2	12	235	23	2.0	1.5	32
7	25	46	18	13	6.6	6.2	12	199	19	2.1	1.4	30
8	32	48	19	13	6.6	6.2	12	170	16	2.3	2.6	27
9	42	31	21	12	6.6	6.2	14	146	14	2.3	4.0	22
10	42	29	31	12	6.4	6.2	16	125	13	2.3	3.7	17
11	38	27	72	12	6.4	6.2	20	108	9.9	2.1	3.8	16
12	31	26	68	11	6.4	6.2	30	92	10	2.3	3.7	14
13	28	25	55	11	6.4	6.2	40	81	12	2.2	2.8	13
14	25	24	45	11	6.4	6.4	60	76	12	1.8	2.2	11
15	22	24	35	10	6.4	7.0	100	89	13	1.8	1.9	8.9
16	20	23	40	10	6.4	8.0	140	81	11	3.7	23	7.6
17	19	22	38	9.8	6.4	10	170	69	9.0	6.2	52	7.7
18	17	24	35	9.4	6.4	12	190	59	7.6	7.8	45	7.8
19	19	30	33	9.0	6.4	13	226	49	6.9	6.0	36	7.5
20	26	31	30	8.8	6.4	14	242	54	7.7	6.1	25	7.2
21	29	31	28	8.6	6.4	15	275	101	8.7	7.0	20	9.9
22	28	29	26	8.4	6.2	16	273	98	8.2	5.8	30	9.6
23	26	26	24	8.2	6.2	16	270	83	7.3	5.4	32	9.1
24	24	22	23	8.0	6.2	17	275	66	6.6	6.1	49	8.7
25	22	21	22	7.8	6.2	17	279	52	6.0	3.8	66	12
26	21	20	21	7.6	6.2	17	306	40	4.6	3.0	75	37
27	22	20	20	7.4	6.2	17	347	32	4.7	1.6	111	58
28	28	19	19	7.4	6.2	16	386	26	4.1	2.0	96	69
29	25	19	18	7.2	6.2	15	442	26	3.5	1.8	71	92
30	23	19	17	7.2	-----	15	466	66	3.2	1.6	51	89
31	23	-----	16	7.2	-----	14	-----	72	-----	1.8	39	-----
TOTAL	810	1,045	877	326.0	187.4	326.0	4,666	4,303	455.0	101.9	859.9	875.0
MEAN	26.1	34.8	28.3	10.5	6.46	10.5	156	139	15.2	3.29	27.7	29.2
MAX	42	95	72	16	7.0	17	466	480	61	7.8	111	92
MIN	16	19	16	7.2	6.2	6.2	12	26	3.2	1.5	1.4	7.2
CF5M	.68	.91	.74	.27	.17	.27	4.06	3.62	.40	.09	.72	.76
IN.	.78	1.01	.85	.32	.18	.32	4.52	4.17	.44	.10	.83	.88

WTR YR 1972 TOTAL 14,832.2 MEAN 40.5 MAX 480 MIN 1.4 CFSM 1.05 IN 14.37

STREAMS TRIBUTARY TO LAKE MICHIGAN

04059500 Ford River near Hyde, Mich.

LOCATION.--Lat 45°45'20", long 87°12'05", in SW $\frac{1}{4}$ sec.19, T.39 N., R.23 W., Delta County, on right bank 40 ft downstream from county highway bridge, 1.4 miles downstream from Tenmile Creek, and 1.5 miles north of Hyde.

DRAINAGE AREA.--450 sq mi.

PERIOD OF RECORD.--October 1954 to current year.

GAGE.--Water-stage recorder. Datum of gage is 677.9 ft above mean sea level.

AVERAGE DISCHARGE.--18 years, 467 cfs (10.92 inches per year).

EXTREMES.--Current year: Maximum discharge, 4,380 cfs May 2 (gage height, 6.79 ft); minimum, 64 cfs July 14 (gage height, 1.71 ft).
Period of record: Maximum discharge, 7,590 cfs May 7, 1960 (gage height, 8.27 ft); minimum, 21 cfs Sept. 1, 2, 1970 (gage height, 1.34 ft).

REMARKS.--Records good except those for winter periods, which are fair. Records of water temperatures for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	145	333	180	180	110	95	250	3,770	740	91	138	543
2	187	540	167	170	110	95	240	4,240	734	105	130	503
3	298	738	170	160	110	95	240	4,310	661	95	135	430
4	428	765	186	160	110	95	230	4,000	545	86	118	374
5	526	749	229	160	110	95	220	3,550	421	80	100	332
6	576	698	236	150	110	95	220	3,160	337	73	92	296
7	605	600	234	140	110	95	220	2,750	282	70	86	277
8	620	463	249	140	110	95	220	2,370	248	71	92	263
9	613	403	260	140	110	95	230	2,030	232	70	105	242
10	594	391	346	140	110	95	250	1,750	213	72	128	215
11	569	347	636	140	100	100	300	1,500	200	72	147	195
12	511	315	781	130	100	100	400	1,290	199	73	156	179
13	457	302	700	130	100	110	500	1,130	196	68	150	165
14	402	289	580	130	100	110	700	1,020	200	69	143	153
15	354	281	470	130	100	120	900	929	201	92	118	143
16	313	275	500	130	100	140	1,200	847	194	94	252	129
17	280	268	470	130	100	170	1,660	760	177	127	553	125
18	256	275	430	120	100	190	1,940	680	158	132	625	123
19	260	314	390	120	95	220	2,100	608	138	147	619	119
20	289	357	350	120	95	230	2,260	564	143	172	566	121
21	333	391	330	120	95	260	2,600	785	160	200	464	144
22	351	378	300	120	95	270	2,620	910	191	235	448	141
23	348	238	280	120	95	280	2,590	824	189	272	418	164
24	328	240	260	120	95	290	2,740	698	174	356	492	204
25	305	240	250	120	95	290	2,700	574	153	368	645	219
26	284	230	240	110	95	290	2,910	467	135	347	724	319
27	275	230	220	110	95	290	3,100	384	121	295	1,000	620
28	309	220	210	110	95	280	3,240	319	108	236	906	773
29	319	210	200	110	95	280	3,430	294	98	194	743	1,010
30	312	200	190	110	-----	270	3,660	522	89	153	619	1,160
31	319	-----	180	110	-----	260	-----	712	-----	145	508	-----
TOTAL	11,766	11,280	10,224	4,080	2,945	5,500	43,870	47,747	7,637	4,660	11,420	9,681
MEAN	380	376	330	132	102	177	1,462	1,540	255	150	368	323
MAX	620	765	781	180	110	290	3,660	4,310	740	368	1,000	1,160
MIN	145	200	167	110	95	95	220	294	89	68	86	119
CFSM	.84	.84	.73	.29	.23	.39	3.25	3.42	.57	.33	.82	.72
IN.	.97	.93	.85	.34	.24	.45	3.63	3.95	.63	.39	.94	.80

CAL YR 1971 TOTAL 166,929 MEAN 457 MAX 4,380 MIN 34 CFSM 1.02 IN 13.80
WTR YR 1972 TOTAL 170,810 MEAN 467 MAX 4,310 MIN 68 CFSM 1.04 IN 14.12

04060500 Iron River at Caspian, Mich.

LOCATION.--Lat 46°03'31", long 88°37'38", on line between SE $\frac{1}{4}$ and SW $\frac{1}{4}$ sec.1, T.42 N., R.35 W., Iron County, on right bank 10 ft downstream from bridge on County Highway 424 in Caspian, 5.0 miles upstream from mouth.

DRAINAGE AREA.--92.1 sq mi.

PERIOD OF RECORD.--March 1948 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,438.78 ft above mean sea level. Prior to Sept. 25, 1969, nonrecording gage at site 10 ft upstream at same datum.

AVERAGE DISCHARGE.--24 years, 84.6 cfs.

EXTREMES.--Current year: Maximum discharge, 836 cfs Aug. 17 (gage height, 8.84 ft); minimum, 43 cfs Mar. 23, Apr. 5 (gage height, 3.65 ft, result of freezeup).

Period of record: Maximum discharge, 1,430 cfs July 2, 1953 (gage height, 10.20 ft); minimum, 25 cfs Mar. 29, 1969 (gage height 3.30 ft, result of freezeup).

REMARKS.--Records good except those for winter periods, which are fair. The average flow includes mine pumpage and sewage plant effluent. Pumpage rates have diminished over the years due to the closing of most mines. Remaining mine pumpage averages about 25 cfs.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	115	78	64	63	60	58	64	608	121	82	82	132
2	123	99	67	60	59	58	63	552	104	80	80	119
3	203	96	64	59	59	58	63	495	96	77	81	112
4	175	85	63	58	58	58	63	410	89	77	76	109
5	117	78	63	58	58	58	64	343	88	74	75	119
6	95	75	64	58	58	58	63	329	87	73	78	111
7	83	68	64	58	58	58	61	308	83	82	80	113
8	95	65	65	60	58	59	62	263	82	82	98	106
9	96	65	66	59	58	60	62	232	80	78	96	100
10	86	65	75	58	58	60	65	210	78	75	86	98
11	82	65	84	61	58	60	68	191	77	75	94	98
12	80	65	78	60	58	60	71	176	88	73	87	95
13	76	64	79	61	58	60	78	163	86	73	80	94
14	74	64	68	58	59	60	79	158	86	76	78	93
15	71	65	70	59	58	61	97	149	84	75	77	91
16	69	68	70	59	57	62	134	141	78	75	585	90
17	68	89	70	59	57	63	186	132	76	88	792	105
18	68	98	77	60	58	62	232	124	74	106	479	94
19	74	97	72	60	58	61	260	116	75	84	275	86
20	71	90	70	60	58	62	308	126	132	125	183	111
21	71	83	66	60	58	69	432	132	115	185	160	209
22	77	77	69	60	58	74	345	114	102	187	213	153
23	74	76	64	60	58	68	274	107	86	168	183	116
24	72	72	65	58	58	69	253	101	78	131	257	104
25	73	70	66	56	57	66	254	96	74	104	380	109
26	72	70	64	60	56	65	305	92	77	96	299	299
27	74	70	63	66	57	65	436	88	78	95	223	311
28	73	69	64	60	57	65	596	88	117	92	186	233
29	68	69	67	60	57	66	725	123	104	90	159	232
30	69	65	66	60	-----	67	698	198	90	86	144	199
31	87	-----	64	60	-----	65	-----	168	-----	89	140	-----
TOTAL	2,731	2,260	2,111	1,848	1,679	1,935	6,461	6,533	2,685	2,953	5,906	4,041
MEAN	88.1	75.3	68.1	59.6	57.9	62.4	215	211	89.5	95.3	191	135
MAX	203	99	84	66	60	74	725	608	132	187	792	311
MIN	68	64	63	56	56	58	61	88	74	73	75	86

CAL YR 1971 TOTAL 35,131 MEAN 96.2 MAX 675 MIN 58
WTR YR 1972 TOTAL 41,143 MEAN 112 MAX 792 MIN 56

STREAMS TRIBUTARY TO LAKE MICHIGAN

04061000 Brule River near Florence, Wis.

LOCATION.--Lat 45°57'31", long 88°15'57", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 11, T.41 N., R.32 W., Michigan meridian, Iron County, on left bank 40 ft up-stream from highway bridge, 1 mile upstream from Paint River, 2.5 miles north of Florence, and 5.0 miles upstream from confluence with Michigamme River.

DRAINAGE AREA.--389 sq mi.

PERIOD OF RECORD.--January 1914 to February 1916, June 1944 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,210 ft (from topographic map). Prior to Aug. 29, 1944, nonrecording gage at bridge 40 ft downstream at same datum.

AVERAGE DISCHARGE.--29 years (1914-15, 1944-72), 355 cfs (12.39 inches per year).

EXTREMES.--Current year: Maximum discharge, 2,320 cfs Apr. 30 (gage height, 4.65 ft); maximum gage height, 7.13 ft Dec. 30 (backwater from ice); minimum daily discharge, 240 cfs Jan. 16-22; minimum gage height, 2.12 ft Aug. 6.

Period of record: Maximum discharge, 4,700 cfs July 2, 1953 (gage height, 6.57 ft); maximum gage height, 8.27 ft Dec. 26, 1969 (backwater from ice); minimum discharge, 118 cfs Dec. 2, 1963 (discharge measurement); minimum gage height, 1.79 ft July 24, 1964.

REMARKS.--Records good except those for winter periods, which are fair. Discharge includes some mine pumpage (see sta 04060500).

REVISIONS (WATER YEARS).--WSP 1387: 1914-16. WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	450	356	250	290	265	260	325	2,250	501	321	289	454
2	600	423	245	300	265	255	320	2,140	446	311	280	414
3	760	449	245	290	260	250	315	1,970	423	285	286	383
4	800	404	250	275	260	250	310	1,700	418	275	280	368
5	700	370	255	260	260	245	305	1,370	392	270	270	399
6	560	344	260	260	255	245	300	1,180	373	275	267	379
7	530	326	270	255	255	245	300	1,080	356	294	295	373
8	540	333	280	260	255	250	300	939	345	302	350	363
9	550	314	290	265	255	255	295	809	359	301	391	346
10	540	297	300	270	255	260	300	707	361	299	343	343
11	510	293	315	260	255	265	310	645	349	284	343	331
12	480	291	325	255	255	275	320	594	401	302	335	324
13	450	291	335	250	255	285	340	553	414	279	304	317
14	430	287	340	250	255	295	370	540	403	278	285	312
15	410	289	340	245	255	305	420	521	394	283	277	299
16	390	287	330	240	255	320	494	487	375	275	1,060	292
17	370	302	325	240	255	340	651	457	351	311	1,750	301
18	350	341	320	240	255	350	807	434	334	425	1,640	300
19	340	368	315	240	250	360	877	412	327	377	1,250	291
20	330	352	310	240	250	370	900	395	482	331	816	304
21	330	334	305	240	250	370	1,100	421	593	452	638	645
22	330	325	300	240	250	375	1,130	398	491	520	657	619
23	320	320	290	245	250	375	991	373	403	536	631	486
24	320	315	285	245	250	370	922	358	367	486	710	405
25	315	310	285	250	255	365	906	350	346	409	990	387
26	315	300	280	250	255	360	1,010	345	329	359	1,020	916
27	315	295	280	255	260	355	1,270	342	312	348	816	1,070
28	315	290	280	260	260	350	1,640	346	411	326	647	976
29	313	280	280	265	260	345	2,030	425	460	315	547	990
30	308	260	285	270	-----	335	2,290	650	369	301	484	866
31	348	-----	290	270	-----	330	-----	619	-----	294	459	-----
TOTAL	13,619	9,746	9,060	7,975	7,415	9,610	21,848	23,810	11,885	10,424	18,710	14,253
MEAN	439	325	292	257	256	310	728	768	396	336	604	475
MAX	800	449	340	300	265	375	2,290	2,250	593	536	1,750	1,070
MIN	308	260	245	240	250	245	295	342	312	270	267	291
CFSM	1.13	.84	.75	.66	.66	.80	1.87	1.97	1.02	.86	1.55	1.22
IN.	1.30	.93	.87	.76	.71	.92	2.09	2.28	1.14	1.00	1.79	1.36

CAL YR 1971 TOTAL 141,662 MEAN 388 MAX 1,940 MIN 219 CFSM 1.00 IN 13.55
 WTR YR 1972 TOTAL 158,355 MEAN 433 MAX 2,290 MIN 240 CFSM 1.11 IN 15.14

STREAMS TRIBUTARY TO LAKE MICHIGAN

53

04061500 Paint River at Crystal Falls, Mich.

LOCATION.--Lat 46°06'21", long 88°20'05", in SE¼ sec.20, T.43 N., R.32 W., Iron County, on right bank 150 ft downstream from municipal powerplant at Crystal Falls, and 14.5 miles upstream from mouth.

DRAINAGE AREA.--597 sq mi.

PERIOD OF RECORD.--August 1944 to current year.

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

AVERAGE DISCHARGE.--28 years, 585 cfs (13.31 inches per year).

EXTREMES.--Current year: Maximum discharge, 6,300 cfs Apr. 30 (gage height, 7.39 ft); minimum, 175 cfs Jan. 4 (gage height, 2.00 ft); minimum daily, 256 cfs Mar. 4.

Period of record: Maximum discharge, 10,900 cfs Apr. 25, 1960 (gage height, 9.82 ft); minimum 7.7 cfs Sept. 17, 1950 (gage height, 0.89 ft); minimum daily, 81 cfs Nov. 1, 1947.

REMARKS.--Records good. Diurnal fluctuation caused by powerplant immediately above station.

REVISIONS (WATER YEARS).--WSP 1174: 1947-48 (m). WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	633	502	349	369	310	296	402	6,040	1,130	597	381	669
2	687	586	362	369	318	270	395	5,610	912	531	373	601
3	1,040	685	361	374	320	283	388	5,530	798	454	357	534
4	1,360	697	353	324	318	256	379	5,070	715	429	362	487
5	1,110	681	381	326	309	262	361	4,190	613	398	332	477
6	916	650	402	315	323	291	369	3,650	532	377	312	488
7	802	550	384	320	339	277	372	3,500	481	384	341	474
8	761	472	384	323	313	278	362	3,020	444	392	379	469
9	836	551	384	335	299	288	360	2,580	407	390	456	447
10	847	497	412	338	303	308	371	2,140	387	379	449	419
11	768	519	477	332	306	306	387	1,800	370	367	434	402
12	740	469	470	320	293	304	417	1,630	381	339	431	393
13	698	442	458	313	302	326	423	1,430	388	340	402	389
14	629	434	443	317	303	336	469	1,270	394	330	368	397
15	554	432	462	308	309	351	555	1,180	418	331	346	400
16	497	437	483	298	315	343	701	1,080	404	336	660	401
17	474	442	453	306	309	411	1,050	979	380	418	1,710	450
18	445	496	395	303	303	392	1,340	900	355	508	1,800	513
19	445	562	415	310	296	417	1,470	839	363	538	1,540	511
20	455	618	429	305	303	445	1,660	781	549	526	1,500	512
21	450	604	419	300	307	428	2,080	806	851	797	1,180	918
22	445	487	386	300	292	431	2,110	799	886	926	1,060	1,220
23	440	489	384	300	305	462	1,950	731	766	963	893	1,010
24	425	535	414	300	302	445	1,800	662	681	855	914	876
25	430	496	383	290	295	444	1,820	577	568	721	1,670	787
26	415	482	383	280	302	444	2,040	523	490	588	1,640	1,410
27	420	456	387	280	299	436	2,590	475	443	495	1,360	2,060
28	425	447	358	280	297	423	3,770	449	467	468	1,070	1,840
29	430	426	346	290	291	422	5,310	499	638	436	906	1,800
30	432	385	363	300	-----	408	6,110	1,040	689	424	798	1,710
31	466	-----	372	330	-----	406	-----	1,390	-----	401	719	-----
TOTAL	19,475	15,529	12,452	9,755	8,881	11,189	41,811	61,170	16,900	15,438	25,143	23,064
MEAN	628	518	402	315	306	361	1,394	1,973	563	498	811	769
MAX	1,360	697	483	374	339	462	6,110	6,040	1,130	963	1,800	2,060
MIN	415	385	346	280	291	256	360	449	355	330	312	389
CFSM	1.05	.87	.67	.53	.51	.60	2.34	3.30	.94	.83	1.36	1.29
IN.	1.21	.97	.78	.61	.55	.70	2.61	3.81	1.05	.96	1.57	1.44

CAL YR 1971 TOTAL 239,988 MEAN 658 MAX 5,530 MIN 208 CFSM 1.10 IN 14.95
 WTR YR 1972 TOTAL 260,807 MEAN 713 MAX 6,110 MIN 256 CFSM 1.19 IN 16.25

STREAMS TRIBUTARY TO LAKE MICHIGAN

04062000 Paint River near Alpha, Mich.

LOCATION.--Lat 46°00'40", long 88°15'30", in NW¼ NW¼ sec.25, T.42 N., R.32 W., Iron County, on right bank 0.6 mile downstream from Lower Paint Dam, 5.5 miles upstream from Brule River, and 6.0 miles southeast of Alpha.

DRAINAGE AREA.--631 sq mi.

PERIOD OF RECORD.--June 1952 to current year. Monthly discharge only for period October 1953 to September 1960, published in WSP 1727.

GAGE.--Water-stage recorder. Altitude of gage is 1,260 ft (from topographic map).

AVERAGE DISCHARGE.--20 years, 168 cfs.

EXTREMES.--Current year: Maximum discharge, 5,860 cfs May 3 (gage height, 9.30 ft); minimum daily, 80 cfs Sept. 2, 3; minimum gage height, 2.79 ft Sept. 21.

Period of record: Maximum discharge, 8,050 cfs July 2, 1953 (gage height, 10.50 ft); minimum daily, 62 cfs Mar. 22, 1963.

REMARKS.--Records good except those for winter periods, which are fair. Flow completely regulated by powerplant and Lower Paint Dam 0.6 mile above station. Records not adjusted for diversion of Michigamme River by Paint River diversion canal.

REVISIONS.--WSP 1727: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	86	92	90	86	95	86	4,060	659	93	88	82
2	90	87	92	90	86	95	86	3,860	363	93	88	80
3	92	86	92	90	86	94	86	4,550	93	93	88	80
4	89	88	93	90	86	94	85	5,370	93	90	88	82
5	88	88	93	90	86	93	85	4,890	93	90	88	86
6	87	88	94	90	85	92	85	3,600	93	90	86	88
7	86	88	94	89	85	92	85	1,740	92	90	86	88
8	86	88	93	89	85	92	86	1,700	92	90	87	88
9	89	87	93	89	85	91	86	2,490	90	90	86	88
10	88	88	93	89	85	91	86	2,460	90	90	87	88
11	87	88	93	89	84	91	87	2,360	92	91	88	88
12	86	88	93	89	84	91	87	1,870	93	92	88	88
13	86	88	93	88	84	91	87	1,280	93	90	88	90
14	86	90	93	88	84	91	88	1,350	93	89	88	90
15	86	90	93	88	83	90	88	1,520	93	88	88	90
16	86	90	93	88	83	90	89	1,280	93	89	100	90
17	86	90	93	88	83	90	89	1,100	93	89	92	90
18	88	90	93	88	83	90	90	537	93	88	92	90
19	88	90	92	88	84	90	91	93	93	88	88	90
20	87	90	92	88	84	89	92	93	94	88	88	91
21	86	90	92	88	85	89	93	337	93	88	88	88
22	86	90	91	88	86	89	93	638	93	88	86	91
23	86	90	91	88	87	89	94	638	93	88	86	93
24	86	93	91	87	89	89	94	341	93	88	86	93
25	86	93	91	87	90	88	95	93	92	88	86	93
26	86	93	91	87	92	87	96	93	92	88	87	100
27	86	93	91	87	92	87	212	93	93	88	87	109
28	86	93	91	87	93	87	1,020	93	97	88	86	112
29	86	93	90	86	94	86	2,500	97	96	88	86	374
30	86	92	90	86	-----	86	3,690	359	94	88	86	674
31	86	-----	90	86	-----	86	-----	664	-----	88	86	-----
TOTAL	2,697	2,688	2,856	2,735	2,499	2,795	9,731	49,649	3,624	2,769	2,722	3,574
MEAN	87.0	89.6	92.1	88.2	86.2	90.2	324	1,602	121	89.3	87.8	119
MAX	92	93	94	90	94	95	3,690	5,370	659	93	100	674
MIN	86	86	90	86	83	86	85	93	90	88	86	80

CAL YR 1971 TOTAL 70,585 MEAN 193 MAX 3,790 MIN 86
WTR YR 1972 TOTAL 88,339 MEAN 241 MAX 5,370 MIN 80

Note.--No gage-height record Mar. 2 to Apr. 25.

04062200 Peshekee River near Champion, Mich.

LOCATION.—Lat 46°33'25", long 88°00'09", in NW¼ sec.13, T.48 N., R.30 W., Marquette County, on left bank 10 ft downstream from bridge on county highway, 0.6 mile downstream from West Branch, and 3.5 miles northwest of Champion.

DRAINAGE AREA.—133 sq mi.

PERIOD OF RECORD.—July 1961 to current year.

GAGE.—Water-stage recorder. Datum of gage is 1,557.49 ft above mean sea level. Prior to Aug. 15, 1961, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.—11 years, 215 cfs (21.95 inches per year).

EXTREMES.—Current year: Maximum discharge, 2,670 cfs May 6 (gage height, 6.76 ft); minimum, 18 cfs Sept. 12 (gage height, 1.50 ft).

Period of record: Maximum discharge, 3,610 cfs May 8, 1965 (gage height, 8.01 ft); minimum, 4.2 cfs Sept. 10, 1961 (gage height, 1.24 ft); minimum gage height, 1.23 ft Sept. 7, 1969.

REMARKS.—Records good except those for winter periods which are fair. Records of water temperatures for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	114	122	135	88	52	45	76	1,790	362	65	65	58
2	147	174	130	86	50	45	76	2,230	275	57	60	48
3	304	234	125	84	50	45	76	2,430	211	51	52	39
4	326	241	125	82	49	45	74	2,520	163	44	44	32
5	252	235	120	80	49	45	72	2,360	132	38	38	35
6	209	243	120	78	48	44	72	2,600	111	32	35	34
7	190	214	120	78	48	44	70	2,500	92	35	32	34
8	202	200	120	76	47	44	70	2,160	83	39	33	33
9	199	174	128	74	46	44	70	1,900	100	40	34	30
10	173	152	153	74	46	45	70	1,780	93	36	31	26
11	152	141	279	72	46	45	72	1,770	82	46	29	22
12	146	134	230	70	46	46	78	1,730	89	128	27	20
13	133	128	210	68	46	47	84	1,540	92	109	26	86
14	116	122	180	68	45	48	100	1,300	96	82	25	158
15	101	129	170	66	45	49	120	1,100	94	73	23	146
16	90	133	160	64	45	50	150	918	84	65	62	123
17	85	152	150	64	45	52	200	762	72	84	73	143
18	81	218	145	62	45	53	230	625	63	83	62	116
19	80	282	140	62	45	55	250	522	58	82	53	90
20	82	278	135	60	45	56	290	424	419	96	43	82
21	80	256	130	60	45	58	370	354	621	172	38	273
22	85	236	120	58	45	58	390	296	492	197	80	297
23	80	230	115	58	45	60	390	245	315	244	108	246
24	79	210	110	56	45	62	380	208	212	202	140	187
25	82	190	110	56	45	64	380	177	159	152	204	149
26	85	169	105	54	45	66	420	155	126	112	191	364
27	88	157	100	54	45	70	540	137	100	86	166	413
28	93	147	96	54	45	72	700	120	85	73	132	377
29	92	140	94	52	45	74	1,000	143	80	73	104	407
30	87	140	92	52	-----	76	1,520	377	75	68	84	392
31	107	-----	90	52	-----	76	-----	422	-----	69	67	-----
TOTAL	4,140	5,581	4,237	2,062	1,343	1,683	8,390	35,595	5,036	2,713	2,161	4,460
MEAN	134	186	137	66.5	46.3	54.3	280	1,148	168	87.5	69.7	149
MAX	326	282	279	88	52	76	1,520	2,600	621	244	204	413
MIN	79	122	90	52	45	44	70	120	58	32	23	20
CFSM	1.01	1.40	1.03	.50	.35	.41	2.11	8.63	1.26	.66	.52	1.12
IN.	1.16	1.56	1.19	.58	.38	.47	2.35	9.96	1.41	.76	.60	1.25

CAL YR 1971 TOTAL 82,289.9 MEAN 225 MAX 2,470 MIN 9.3 CFSM 1.69 IN 23.02
WTR YR 1972 TOTAL 77,401.0 MEAN 211 MAX 2,600 MIN 20 CFSM 1.59 IN 21.65

PEAK DISCHARGE (BASE, 600 CFS).—May 6 (1900) 2,670 cfs (6.76 ft); June 20 (2300) 665 cfs (3.95 ft).

STREAMS TRIBUTARY TO LAKE MICHIGAN

04062230 Michigamme River near Michigamme, Mich.

LOCATION.—Lat 46°28'00", long 88°04'28", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.16, T.47 N., R.30 W., Marquette County, on right bank 20 ft upstream from Northern Natural Gas Co. pipeline, 0.6 mile upstream from mouth of Spruce River, 1.2 miles downstream from Lake Michigamme, and 5.0 miles southeast of Michigamme.

DRAINAGE AREA.—194 sq mi.

PERIOD OF RECORD.—October 1968 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 1,520 ft (from topographic map).

EXTREMES.—Current year: Maximum discharge, 2,590 cfs May 7, 8 (gage height, 7.42 ft); minimum, 60 cfs Oct. 1 (gage height, 2.73 ft).
Period of record: Maximum discharge, 2,590 cfs May 7, 8, 1972 (gage height, 7.42 ft); maximum gage height, 7.54 ft Apr. 23, 1969; minimum discharge, 36 cfs Sept. 14, 1969 (gage height, 2.39 ft).

REMARKS.—Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	147	228	183	112	88	118	1,100	429	232	166	177
2	71	160	220	179	112	88	121	1,420	427	220	158	167
3	91	171	214	176	112	88	123	1,790	407	202	152	157
4	107	188	208	173	112	88	125	2,090	384	187	143	147
5	122	197	203	167	112	90	126	2,280	355	176	136	143
6	135	207	199	163	108	92	127	2,440	340	165	134	136
7	142	215	196	160	106	92	128	2,550	320	155	126	134
8	154	214	193	157	105	92	128	2,560	305	147	121	130
9	165	217	190	153	104	90	129	2,480	293	143	118	124
10	170	218	194	150	103	89	133	2,360	274	138	113	118
11	176	213	204	146	101	88	134	2,260	256	133	111	116
12	178	212	210	145	99	87	137	2,180	250	138	112	112
13	178	210	217	146	97	86	154	2,090	240	139	108	126
14	176	205	221	142	96	86	155	1,980	234	137	105	131
15	176	204	229	139	95	85	156	1,830	230	136	99	136
16	174	202	234	136	94	87	161	1,670	220	133	114	146
17	168	203	238	134	93	87	170	1,510	206	131	119	166
18	164	214	239	130	92	87	184	1,350	192	136	120	173
19	162	227	235	128	90	87	202	1,200	185	132	120	175
20	163	241	232	126	90	86	221	1,070	238	133	119	184
21	160	258	228	124	90	88	247	964	283	139	123	228
22	162	257	223	124	90	90	283	858	317	155	137	247
23	157	255	217	123	90	94	311	767	329	190	137	259
24	155	258	213	123	90	96	333	676	324	201	152	265
25	154	257	207	120	90	96	356	593	314	204	168	270
26	152	254	204	120	89	97	386	517	300	201	181	314
27	151	250	200	120	88	99	437	455	283	194	189	340
28	151	244	200	118	88	101	531	410	272	187	193	366
29	150	240	195	117	88	105	686	396	261	182	193	396
30	148	235	192	116	-----	113	886	411	246	173	188	418
31	145	-----	188	114	-----	116	-----	411	-----	172	182	-----
TOTAL	4,618	6,573	6,571	4,352	2,836	2,858	7,388	44,668	8,714	5,111	4,337	6,001
MEAN	149	219	212	140	97.8	92.2	246	1,441	290	165	140	200
MAX	178	258	239	183	112	116	886	2,560	429	232	193	418
MIN	61	147	188	114	88	85	118	396	185	131	99	112
CFSM	.77	1.13	1.09	.72	.50	.48	1.27	7.43	1.49	.85	.72	1.03
IN.	.89	1.26	1.26	.83	.54	.55	1.42	8.57	1.67	.98	.83	1.15

CAL YR 1971 TOTAL 114,338 MEAN 313 MAX 2,480 MIN 39 CFSM 1.61 IN 21.92
WTR YR 1972 TOTAL 104,027 MEAN 284 MAX 2,560 MIN 61 CFSM 1.46 IN 19.95

STREAMS TRIBUTARY TO LAKE MICHIGAN

57

04062300 Michigamme River at Republic, Mich.

LOCATION.—Lat 46°23'03", Long 87°58'48", in SE¼ sec.18, T.46 N., R.29 W., Marquette County, on left bank 400 ft upstream from county highway bridge, 0.3 mile upstream from Trout Falls Creek, and 0.6 mile south of Republic.

DRAINAGE AREA.—240 sq mi.

PERIOD OF RECORD.—July 1961 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 1,480 ft (from topographic map).

AVERAGE DISCHARGE.—11 years, 319 cfs.

EXTREMES.—Current year: Maximum discharge, 3,440 cfs May 7 (gage height, 7.44 ft); minimum, 38 cfs Oct. 1 (gage height, 0.49 ft); minimum daily, 49 cfs Oct. 1.

Period of record: Maximum discharge, 3,950 cfs May 10, 1965 (gage height, 8.17 ft); minimum, 7.0 cfs Mar. 26-28, 1964 (gage height, 0.14 ft); minimum daily, 7.7 cfs Mar. 26-29, 1964.

REMARKS.—Records fair. Prior to June 1, 1963, diurnal fluctuation caused by powerplant 0.4 mile above station; powerplant abandoned and only occasional regulation since. Since June 1, 1963, water diverted 0.5 mile above station for industrial use and returned to river by Gambles Creek, 5 miles downstream. Records are not adjusted for diversion.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	163	242	191	115	92	116	1,560	514	281	171	177
2	90	169	230	201	115	92	118	1,930	496	258	171	178
3	186	182	214	194	115	92	118	2,400	486	177	168	155
4	320	209	202	167	115	92	125	2,740	470	141	138	128
5	378	232	202	157	110	92	126	2,980	415	158	118	129
6	300	227	202	155	110	92	128	3,210	379	169	104	129
7	176	230	202	157	110	92	134	3,410	366	170	105	128
8	98	239	204	156	110	90	133	3,390	336	169	106	125
9	116	240	204	153	105	90	133	3,260	319	158	107	107
10	157	240	195	153	105	88	138	3,070	307	148	114	89
11	189	239	194	150	105	88	150	2,880	268	135	134	89
12	196	233	199	150	100	88	155	2,740	241	113	116	89
13	196	226	213	145	100	88	182	2,600	244	114	92	91
14	194	224	233	145	98	86	205	2,450	257	115	92	111
15	190	211	264	140	96	86	189	2,270	267	116	91	140
16	182	198	283	140	96	86	183	2,030	260	134	105	146
17	172	200	283	135	96	86	216	1,850	237	132	153	147
18	171	207	261	130	96	86	369	1,640	204	150	206	176
19	172	221	241	130	96	86	297	1,470	166	160	193	202
20	171	245	240	125	96	88	282	1,310	189	169	134	205
21	171	287	240	125	96	90	357	1,170	334	194	113	335
22	170	324	241	125	96	90	419	1,070	500	186	144	486
23	159	329	237	125	96	92	439	913	456	183	212	440
24	147	315	233	125	94	94	451	813	431	211	325	353
25	147	299	222	125	94	96	472	708	407	258	323	256
26	147	285	208	120	92	98	508	606	369	273	263	346
27	150	270	206	120	92	100	584	511	316	242	222	547
28	149	269	205	120	92	105	771	479	281	202	208	639
29	155	259	200	120	92	105	970	455	286	186	205	594
30	161	252	194	120	-----	110	1,370	481	287	185	202	505
31	162	-----	191	120	-----	116	-----	513	-----	184	190	-----
TOTAL	5,421	7,224	6,885	4,419	2,933	2,876	9,838	56,909	10,088	5,471	5,025	7,242
MEAN	175	241	222	143	101	92.8	328	1,836	336	176	162	241
MAX	378	329	283	201	115	116	1,370	3,410	514	281	325	639
MIN	49	163	191	120	92	86	116	455	166	113	91	89

CAL YR 1971 TOTAL 129,021.5 MEAN 353 MAX 3,050 MIN 9.7
WTR YR 1972 TOTAL 124,331.0 MEAN 340 MAX 3,410 MIN 49

STREAMS TRIBUTARY TO LAKE MICHIGAN

04062400 Michigamme River near Witch Lake, Mich.

LOCATION.—Lat 46°14'48", long 88°00'45", in NW¼ NW¼ sec.1, T.44 N., R.30 W., Dickinson County, on left bank 20 ft upstream from bridge on county highway, 0.4 miles upstream from Witch Lake Outlet, and 2.0 miles south of Witch Lake.

DRAINAGE AREA.—316 sq mi.

PERIOD OF RECORD.—August 1964 to current year.

GAGE.—Water-stage recorder. Datum of gage is 1384.25 ft above mean sea level.

AVERAGE DISCHARGE.—8 years, 448 cfs (19.25 inches per year).

EXTREMES.—Current year: Maximum discharge, 3,920 cfs May 8 (gage height, 10.84 ft); minimum, 134 cfs Oct. 1 (gage height, 2.67 ft).
Period of record: Maximum discharge, 4,360 cfs May 11, 1965, (gage height, 11.60 ft); minimum, 44 cfs Sept. 22, 23, 1971 (gage height 2.13 ft).

REMARKS.—Records good except those for winter periods, which are fair. Occasional regulation caused by dam 14 miles above station. Some flow diverted and returned above station by iron ore processing plant. Records of chemical analyses for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	138	264	350	260	170	150	205	1,790	704	380	256	270
2	192	313	335	260	165	150	205	2,050	680	350	237	261
3	362	333	320	255	165	150	210	2,510	653	350	259	249
4	480	341	310	240	165	150	215	2,900	625	220	225	206
5	584	375	299	230	165	150	220	3,240	568	200	206	206
6	500	366	290	220	165	150	220	3,510	508	222	175	198
7	366	350	290	215	165	150	225	3,790	466	225	167	197
8	230	345	290	215	165	150	230	3,910	449	226	176	192
9	212	349	290	215	160	150	230	3,790	412	225	176	186
10	229	344	285	210	160	150	240	3,590	401	209	171	162
11	270	339	280	210	160	150	250	3,320	368	203	191	149
12	279	335	290	210	160	145	270	3,080	328	179	196	144
13	276	321	300	205	155	145	280	2,880	326	170	164	155
14	270	315	310	200	155	145	340	2,690	338	173	154	166
15	261	315	325	200	150	145	343	2,490	356	173	152	192
16	255	286	370	195	150	145	338	2,280	350	181	232	205
17	242	289	380	195	150	145	385	2,040	328	199	287	217
18	243	318	370	190	150	150	496	1,860	292	217	312	216
19	255	346	350	190	150	150	557	1,650	251	228	327	257
20	267	364	330	190	150	155	467	1,500	270	255	246	265
21	261	399	330	185	150	155	581	1,340	450	354	211	424
22	255	442	330	180	150	160	623	1,250	680	347	309	678
23	247	455	320	180	150	160	691	1,100	600	362	300	636
24	226	446	310	180	150	165	673	981	580	365	443	551
25	226	417	300	175	150	170	697	897	560	374	512	382
26	231	408	290	175	150	170	761	798	520	394	430	559
27	238	379	285	175	150	175	831	689	450	370	383	739
28	252	374	280	170	150	180	1,020	616	380	302	330	907
29	239	368	270	170	150	185	1,220	626	380	262	306	929
30	244	360	265	170	-----	190	1,510	686	380	250	292	820
31	261	-----	260	170	-----	200	-----	708	-----	263	284	-----
TOTAL	8,591	10,656	9,604	6,235	4,525	4,885	14,533	64,561	13,653	8,228	8,109	10,718
MEAN	277	355	310	201	156	158	484	2,083	455	265	262	357
MAX	584	455	380	260	170	200	1,510	3,910	704	394	512	929
MIN	138	264	260	170	150	145	205	616	251	170	152	144
CFSM	.88	1.12	.98	.64	.49	.50	1.53	6.59	1.44	.84	.83	1.13
IN.	1.01	1.25	1.13	.73	.53	.58	1.71	7.60	1.61	.97	.95	1.26

CAL YR 1971 TOTAL 166,495 MEAN 456 MAX 3,390 MIN 44 CFSM 1.44 IN 19.60
WTR YR 1972 TOTAL 164,298 MEAN 449 MAX 3,910 MIN 138 CFSM 1.42 IN 19.34

STREAMS TRIBUTARY TO LAKE MICHIGAN

59

04062500 Michigamme River near Crystal Falls, Mich.

LOCATION.--Lat 46°06'50", long 88°12'57", in NW¼ sec.20, T.43 N., R.31 W., Iron County, on right bank 400 ft upstream from highway bridge, 5.0 miles downstream from Michigamme Reservoir, 6.0 miles east of Crystal Falls, and 15 miles upstream from confluence with Brule River.

DRAINAGE AREA.--656 sq mi.

PERIOD OF RECORD.--August 1944 to current year.

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

AVERAGE DISCHARGE.--28 years, 695 cfs.

EXTREM.--Current year: Maximum discharge, 2,960 cfs May 15 (gage height, 7.25 ft); minimum, 98 cfs Mar. 10 (gage height, 1.41 ft); minimum daily, 119 cfs Sept. 16.

Period of record: Maximum discharge, 7,260 cfs Apr. 28, 1960 (gage height, 10.73 ft); minimum daily, 71 cfs Nov. 26, 1950.

REMARKS.--Records excellent. Flow regulated by powerplant and by Michigamme Reservoir (capacity, 119,950 acre-ft) 5 miles above station.

REVISIONS.--MSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	153	618	613	1,190	808	1,100	470	1,170	1,180	635	867	1,230
2	153	243	611	1,190	558	761	464	1,200	1,230	631	625	894
3	177	137	654	1,190	555	328	445	1,200	1,330	629	620	700
4	166	456	692	1,000	554	132	440	1,170	1,270	627	620	701
5	159	625	695	1,190	557	130	479	1,160	1,050	626	321	1,020
6	158	669	907	1,190	554	725	457	1,160	720	626	138	884
7	153	709	1,080	1,140	900	1,080	441	1,630	666	628	558	697
8	159	719	1,120	581	1,150	1,020	436	2,490	635	319	848	693
9	166	935	1,140	579	800	912	449	2,810	633	180	627	690
10	162	1,120	1,150	912	550	290	458	2,830	629	482	625	690
11	159	1,170	345	1,200	540	131	479	2,840	630	624	628	691
12	156	1,220	132	861	536	123	511	2,880	633	624	625	689
13	154	1,210	741	575	534	701	483	2,900	633	624	623	689
14	153	1,210	1,190	885	885	1,200	555	2,910	636	624	955	639
15	151	1,200	1,200	832	1,170	688	647	2,720	633	300	1,090	424
16	148	1,200	1,210	574	1,160	491	758	2,180	631	1,180	430	119
17	147	1,200	1,210	572	789	350	893	1,900	630	460	475	131
18	447	1,210	890	572	539	127	505	1,920	630	290	660	453
19	618	907	611	569	533	319	171	1,920	632	220	646	613
20	615	695	924	570	534	447	178	1,460	670	639	637	994
21	615	697	1,200	569	950	646	437	1,660	665	639	972	642
22	613	702	1,190	570	1,150	687	605	2,180	652	651	918	140
23	239	700	1,190	568	1,120	487	610	2,170	712	662	633	133
24	170	692	1,190	880	1,110	463	613	1,780	1,190	935	651	131
25	478	225	1,180	1,190	753	458	625	1,350	1,140	856	648	747
26	620	425	1,180	1,190	506	471	651	1,160	1,130	641	648	710
27	620	310	1,180	1,190	506	482	699	933	1,130	638	647	698
28	614	127	1,180	1,190	950	499	778	722	1,140	637	1,020	702
29	614	437	1,190	816	1,130	501	1,030	745	835	302	1,250	700
30	613	614	1,200	562	-----	481	1,290	1,140	637	130	1,246	1,030
31	623	-----	1,190	931	-----	465	-----	1,440	-----	557	1,230	-----
TOTAL	10,173	22,382	30,185	27,028	22,381	16,695	17,057	55,730	24,932	16,616	22,475	19,274
MEAN	328	746	974	872	772	539	569	1,798	831	536	725	642
MAX	623	1,220	1,210	1,200	1,170	1,200	1,290	2,910	1,330	935	1,250	1,230
MIN	147	127	132	562	506	123	171	722	629	130	138	119
CAL YR 1971	TOTAL 308,374		MEAN 845	MAX 2,320	MIN 127							
WTR YR 1972	TOTAL 284,928		MEAN 778	MAX 2,910	MIN 119							

STREAMS TRIBUTARY TO LAKE MICHIGAN

04063000 Menominee River near Florence, Wis.

LOCATION.--Lat 45°57'04", long 88°11'13", in NE¼ sec.16, T.41 N., R.31 W., Michigan meridian, Iron County, on left bank 0.5 mile downstream from confluence of Brule and Michigamme Rivers, 3.5 miles northeast of Florence, and at mile 117.

DRAINAGE AREA.--1,780 sq mi.

PERIOD OF RECORD.--January 1914 to current year. Published as "at Twin Falls near Iron Mountain, Mich." 1914-57. Records published for both sites July 1950 to September 1957.

GAGE.--Water-stage recorder. Altitude of gage is 1,120 ft (from topographic map). Prior to July 1950, headwater and tailwater gages and generation data entered hourly in daily log sheets by company employees at the Twin Falls Powerplant of Wisconsin-Michigan Power Co., 10.4 miles downstream.

AVERAGE DISCHARGE.--58 years, 1,788 cfs.

EXTREMES.--Current year: Maximum discharge, 9,500 cfs May 4 (gage height, 9.35 ft); minimum, 110 cfs Oct. 31 (gage height, 1.56 ft); minimum daily, 660 cfs Jan. 29.

Period of record: Maximum discharge, 19,500 cfs Apr. 26, 1960 (gage height, 14.15 ft); minimum, 38 cfs Aug. 21, 1962; minimum gage height, 1.18 ft Aug. 21, 1962, Nov. 4, 1965; minimum daily discharge, 154 cfs Aug. 9, 1925.

REMARKS.--Records excellent. Prior to July 1950 discharge determined from powerplant records computed on basis of load-discharge rating of hydroelectric units and rating for tailwater gage during periods of spill. Rating developed by Geological Survey. 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.

REVISIONS (WATER YEARS).--WSP 1707: 1953 (M). WSP 1911: Drainage area of former site.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,670	1,610	1,430	1,830	1,380	2,100	1,600	8,880	3,330	1,840	1,510	2,210
2	1,840	1,680	1,630	1,670	1,290	2,010	1,390	8,790	3,040	1,620	1,410	2,170
3	2,100	1,830	1,400	2,150	1,360	1,350	1,220	8,650	2,490	1,210	1,480	1,720
4	1,990	1,850	1,470	1,790	1,500	1,160	1,260	9,270	2,180	1,180	1,350	1,750
5	2,230	2,000	1,450	2,140	921	1,140	1,230	8,400	2,380	1,490	727	1,760
6	2,100	1,650	1,470	1,780	750	1,970	1,570	7,360	2,050	1,550	757	1,750
7	2,060	1,790	1,680	1,510	1,790	2,260	1,490	5,310	1,680	1,450	1,620	1,730
8	1,840	1,900	1,670	1,050	1,700	2,240	1,140	5,310	1,850	961	1,530	1,860
9	1,640	1,870	1,840	1,340	1,590	2,070	1,010	6,070	1,440	710	1,550	1,350
10	1,050	1,890	2,060	1,750	1,410	1,580	1,270	6,890	1,020	1,580	1,720	1,180
11	1,610	1,840	2,120	1,530	1,630	1,160	1,830	6,450	947	1,610	1,470	1,480
12	1,380	1,970	1,230	1,640	1,080	1,130	2,110	5,250	1,560	1,500	1,500	1,630
13	1,710	1,900	1,770	2,030	714	1,920	2,370	4,360	1,470	1,290	1,060	1,530
14	1,770	1,980	1,650	2,060	1,790	2,210	2,020	4,700	1,660	1,440	1,660	1,330
15	1,320	2,110	1,800	1,630	1,660	1,900	2,020	5,100	1,660	740	1,600	1,380
16	947	1,950	2,080	1,060	1,870	1,800	1,760	4,250	1,680	790	2,920	980
17	729	2,120	2,170	1,900	1,880	1,480	2,170	3,940	1,350	1,640	4,610	929
18	1,670	2,020	1,810	1,400	1,410	884	2,720	3,370	1,040	1,560	4,080	1,570
19	1,600	1,930	1,850	1,620	1,010	971	3,000	2,830	1,410	1,630	3,790	1,520
20	1,690	1,870	2,000	1,440	950	1,680	2,480	2,800	1,840	1,870	3,250	1,800
21	1,730	1,740	1,850	1,680	1,870	2,070	3,240	3,100	2,330	2,000	3,210	1,690
22	1,690	1,550	2,100	1,000	1,920	2,180	3,960	3,630	2,210	2,020	3,000	2,030
23	885	1,570	2,000	781	1,970	1,910	3,680	3,530	2,260	2,210	2,510	1,720
24	819	1,540	1,980	2,260	2,090	2,170	3,510	2,890	2,140	2,230	2,630	1,940
25	1,740	834	1,710	1,940	1,890	1,950	3,530	2,630	2,180	2,260	3,320	2,240
26	1,510	1,460	1,560	1,250	1,430	2,070	3,630	2,370	2,280	2,170	3,740	3,800
27	1,700	1,120	1,940	1,500	1,640	1,730	4,030	1,630	2,140	1,600	3,570	4,040
28	1,480	898	2,000	1,430	1,740	1,880	4,730	1,470	2,220	1,240	3,340	3,930
29	1,420	1,610	2,000	660	2,230	1,510	6,960	2,040	1,850	836	2,920	4,040
30	1,480	1,500	2,000	800	-----	1,680	8,420	3,020	2,050	752	2,730	4,120
31	1,310	-----	1,900	1,580	-----	1,570	-----	3,650	-----	1,680	2,560	-----
TOTAL	48,710	51,582	55,620	48,201	44,465	53,735	81,350	147,940	57,737	46,659	73,124	61,179
MEAN	1,571	1,719	1,794	1,555	1,533	1,733	2,712	4,772	1,925	1,505	2,359	2,039
MAX	2,230	2,120	2,170	2,260	2,230	2,260	8,420	9,270	3,330	2,260	4,610	4,120
MIN	729	834	1,230	660	714	884	1,010	1,470	947	710	727	929

CAL YR 1971 TOTAL 731,973 MEAN 2,005 MAX 9,920 MIN 484
WTR YR 1972 TOTAL 770,302 MEAN 2,105 MAX 9,270 MIN 660

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04064500 Pine River below Pine River Powerplant, near Florence, Wis.

LOCATION.--Lat 45°50'16", long 88°13'31", in SW1/4 sec.22, T.39 N., R.18 E., Florence County, on left bank 60 ft upstream from bridge on County Trunk N, 1.9 miles downstream from powerplant of Wisconsin-Michigan Power Co., 6.0 miles south of Florence, and 7.0 miles downstream from Popple River.

DRAINAGE AREA.--528 sq mi.

PERIOD OF RECORD.--October 1923 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,098.84 ft above mean sea level. Prior to October 1968, record obtained from Pine River powerplant 1.9 miles upstream with a drainage area of 528 sq mi.

AVERAGE DISCHARGE.--49 years, 427 cfs (10.98 inches per year).

EXTREMES.--Current year: Maximum discharge, 4,000 cfs May 2 (gage height, 8.46 ft); minimum daily, 150 cfs Feb. 2, 3.

Period of record: Maximum daily discharge, 4,380 cfs Apr. 9, 1929; no flow at times during 1924, 1926-27, 1930-31, 1933, 1940.

REMARKS.--Records good except those for winter months, which are fair. Flow regulated by Pine River powerplant 1.9 miles upstream; pondage is small and monthly discharge is near normal.

REVISIONS.--WSP 1237: Drainage area.

Rating table (gage height, in feet, and discharge, in cubic feet per second).
(Stage-discharge relation affected by ice Dec. 2-4, 11-14, Dec. 17 to Apr. 14.)

1.8	128	5.5	1,690
2.5	305	6.5	2,330
3.5	665	7.5	3,080
4.5	1,130	8.5	4,040

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	822	473	265	290	180	190	320	3,100	600	288	203	576
2	1,330	602	220	290	150	180	310	3,680	526	316	291	505
3	1,570	641	270	290	150	180	300	3,540	476	309	279	480
4	1,830	648	200	290	160	180	310	3,190	395	245	305	410
5	1,690	640	282	280	180	190	280	2,780	379	258	258	445
6	1,480	540	355	270	200	190	310	2,440	324	252	236	481
7	1,300	494	324	270	220	190	270	2,120	333	243	255	453
8	1,260	334	322	290	230	200	260	1,850	395	272	390	439
9	1,150	404	323	300	240	200	270	1,630	318	254	474	398
10	1,010	436	356	310	230	200	300	1,390	304	364	493	381
11	860	376	380	320	220	190	310	1,240	226	206	559	397
12	740	327	460	320	210	190	340	1,080	331	256	520	357
13	669	390	330	300	200	180	400	1,000	336	283	469	260
14	601	341	380	270	230	190	490	886	332	207	421	265
15	565	340	442	240	210	200	614	903	332	235	361	204
16	474	379	363	220	190	190	918	824	296	267	526	265
17	367	325	350	260	220	190	1,350	736	253	373	780	261
18	446	434	340	250	200	200	1,630	730	280	436	900	301
19	406	427	310	240	180	210	1,620	640	323	493	840	189
20	465	458	300	230	170	220	1,700	577	262	471	800	254
21	504	488	300	260	190	260	1,950	562	485	449	700	538
22	460	358	310	270	190	300	1,730	508	469	585	616	698
23	457	317	310	270	200	310	1,530	508	399	704	601	724
24	434	351	310	270	200	320	1,610	507	330	730	621	621
25	421	357	310	270	200	330	1,570	499	306	613	739	539
26	401	360	310	270	200	330	1,680	334	308	535	840	1,300
27	402	335	300	280	200	330	1,950	335	220	331	900	1,500
28	409	333	280	280	200	330	2,290	337	377	357	800	1,700
29	379	326	260	270	200	330	2,660	451	446	332	654	1,900
30	379	380	280	270	-----	330	2,930	699	376	320	571	1,600
31	402	-----	290	250	-----	320	-----	656	-----	334	504	-----
TOTAL	23,683	12,614	9,832	8,490	5,750	7,350	32,202	39,732	10,737	11,318	16,906	18,441
MEAN	764	420	317	274	198	237	1,073	1,282	358	365	545	615
MAX	1,830	648	460	320	240	330	2,930	3,680	600	730	900	1,900
MIN	367	317	200	220	150	180	260	334	220	206	203	189
CFSM	1.45	.80	.60	.52	.38	.45	2.03	2.43	.68	.69	1.03	1.16
IN.	1.67	.89	.69	.60	.41	.52	2.27	2.80	.76	.80	1.19	1.30

CAL YR 1971 TOTAL 172,297 MEAN 472 MAX 2,480 MIN 124 CFSM .89 IN 12.14
WTR YR 1972 TOTAL 197,055 MEAN 538 MAX 3,680 MIN 150 CFSM 1.02 IN 13.88

STREAMS TRIBUTARY TO LAKE MICHIGAN

04065300 West Branch Sturgeon River near Randville, Mich.

LOCATION.--Lat 46°00'45", long 87°58'41", in NE1/4 sec.30, T.42 N., R.29 W., Dickinson County, on right bank 500 ft downstream from county highway bridge, 3.0 miles downstream from Tom Kings Creek, and 4.0 miles northeast of Randville.

DRAINAGE AREA.--56.1 sq mi.

PERIOD OF RECORD.--August 1958 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,170 ft (from topographic map).

AVERAGE DISCHARGE.--14 years, 42.3 cfs (10.24 inches per year), adjusted for diversion.

EXTREMES.--Current year: Maximum discharge, 455 cfs May 3 (gage height, 5.97 ft); minimum, 5.0 cfs Sept. 16 (gage height, 1.70 ft); minimum daily, 5.9 cfs Sept. 15.

Period of record: Maximum discharge, 570 cfs May 7, 1960 (gage height, 6.40 ft); minimum, 1.5 cfs July 22, 1964 (gage height, 1.35 ft).

REMARKS.--Records fair. Since December 1958, diversion above station for industrial use; figures of runoff adjusted thereafter. Small diversions for sprinkler irrigation.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	43	25	19	17	16	21	402	75	18	14	29
2	105	73	25	19	17	15	21	412	47	16	12	20
3	146	100	25	19	17	15	20	435	35	15	12	16
4	158	82	25	19	17	15	20	351	28	15	11	12
5	134	62	27	18	17	15	20	275	25	15	11	14
6	82	49	26	18	17	15	20	232	24	14	14	16
7	57	40	24	18	17	15	20	208	22	16	15	22
8	60	39	25	18	17	15	20	181	21	16	23	17
9	80	29	29	17	17	16	20	149	19	16	35	12
10	76	29	39	17	17	16	20	122	18	15	28	9.6
11	59	29	71	17	16	16	21	103	18	15	28	9.2
12	52	28	84	17	16	17	23	88	23	28	26	8.4
13	46	28	67	17	16	17	25	75	24	29	20	8.2
14	43	28	47	17	16	18	30	71	25	24	18	8.3
15	36	29	38	17	16	19	50	67	25	22	14	5.9
16	32	27	32	17	16	20	96	61	23	18	100	6.3
17	30	24	30	17	16	21	120	54	22	21	172	9.6
18	29	34	28	17	16	22	163	47	20	47	147	8.5
19	35	57	27	16	16	23	194	42	20	39	88	7.4
20	64	51	26	16	16	23	200	39	23	30	42	13
21	60	43	25	16	16	24	226	39	27	36	31	100
22	49	36	24	16	16	24	242	37	24	41	68	107
23	41	31	24	16	16	24	231	33	19	66	54	68
24	36	29	23	16	16	24	193	33	18	39	64	41
25	34	26	22	16	16	24	180	29	17	26	88	37
26	32	25	22	16	16	24	208	25	16	21	75	142
27	34	26	21	17	16	23	280	24	15	19	87	240
28	39	26	21	17	16	23	350	22	19	17	78	224
29	38	25	20	17	16	22	424	34	27	15	49	216
30	34	25	20	17	-----	22	445	113	23	14	32	219
31	39	-----	20	17	-----	22	-----	123	-----	15	25	-----
TOTAL	1,833	1,173	962	531	474	605	3,903	3,926	742	738	1,481	1,646.4
MEAN	59.1	39.1	31.0	17.1	16.3	19.5	130	127	24.7	23.8	47.8	54.9
MAX	158	100	84	19	17	24	445	435	75	66	172	240
MIN	29	24	20	16	16	15	20	22	15	14	11	5.9
+	2.0	3.2	4.8	5.7	5.8	5.7	5.4	4.0	5.1	5.8	4.8	4.9
MEAN#	61.1	42.3	35.8	22.9	22.2	25.3	136	131	29.8	29.5	52.6	59.8
CFSM#	1.09	.75	.64	.41	.40	.45	2.42	2.34	.53	.53	.94	1.07
IN#	1.26	.84	.74	.47	.43	.52	2.70	2.68	.59	.61	1.08	1.19

CAL YR 1971 TOTAL 15,105.0 MEAN 41.4 MAX 367 MIN 8.5 MEAN# 46.1 CFSM# 0.82 IN# 11.17
WTR YR 1972 TOTAL 18,014.4 MEAN 49.2 MAX 445 MIN 5.9 MEAN# 54.0 CFSM# 0.96 IN# 13.10

+ Average monthly diversion, equivalent in cubic feet per second, for industrial use; furnished by Hanna Mining Co.
Adjusted for diversion.

04065500 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., Dickinson County, on left bank 30 ft downstream from bridge on County Highway 569, 1.8 miles downstream from confluence of East and West Branches, and 4.0 miles south of Foster City.

DRAINAGE AREA.--237 sq mi.

PERIOD OF RECORD.--October 1954 to current year.

GAGE.--Water-stage recorder. Datum of gage is 966.6 ft above mean sea level.

AVERAGE DISCHARGE.--18 years, 179 cfs (10.26 inches per year), adjusted for diversion.

EXTREMES.--Current year: Maximum discharge, 1,990 cfs May 2 (gage height, 9.56 ft); minimum, 46 cfs Aug. 7 (gage height, 2.47 ft).
Period of record: Maximum discharge, 2,570 cfs May 8, 1960 (gage height, 10.35 ft); minimum, 15 cfs July 24, 1964; minimum gage height, 1.96 ft Aug. 21, 1970.

REMARKS.--Records good except those for winter periods, which are fair. Since December 1958, diversion above station for industrial use, figures of runoff adjusted thereafter. Small diversions for sprinkler irrigation. Records of water temperatures for the current year are published in Part 2 of this report.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	208	173	125	110	84	70	92	1,890	435	85	67	261
2	263	244	125	105	84	68	90	1,960	401	82	63	241
3	349	332	125	105	84	68	90	1,950	337	76	62	197
4	440	347	125	100	84	66	88	1,780	271	69	56	162
5	446	334	130	100	84	66	88	1,590	202	64	53	146
6	424	298	129	98	82	66	88	1,390	164	61	49	136
7	377	254	127	96	82	66	90	1,180	139	61	47	138
8	338	202	124	94	82	66	92	1,010	124	63	57	138
9	335	181	127	92	80	66	100	867	133	65	83	125
10	329	164	140	90	80	68	110	739	125	66	75	109
11	314	150	238	90	80	68	125	622	114	63	101	96
12	278	143	300	90	78	70	150	528	116	63	98	89
13	244	138	315	90	78	72	180	460	120	62	90	83
14	216	133	250	88	76	74	220	427	125	71	82	77
15	189	132	220	86	76	76	260	413	123	79	71	72
16	166	131	200	86	74	80	310	384	118	77	177	67
17	148	131	190	84	74	84	370	349	107	83	420	73
18	137	142	180	84	74	88	450	314	100	102	478	76
19	139	182	170	84	74	92	600	280	92	102	456	75
20	182	206	160	84	74	96	750	255	113	116	384	72
21	210	211	155	84	72	98	1,000	277	168	173	302	81
22	221	181	145	84	72	98	1,240	278	160	190	274	119
23	209	164	140	84	72	100	1,200	245	135	187	285	164
24	191	155	135	84	72	100	1,180	212	114	194	300	168
25	175	140	135	84	72	100	1,220	183	102	175	341	152
26	161	137	130	84	72	100	1,240	164	91	152	345	288
27	155	133	125	84	72	100	1,290	143	83	128	374	555
28	165	127	120	84	70	100	1,400	131	77	110	376	615
29	168	125	115	84	70	98	1,570	126	79	94	330	782
30	163	125	110	84	-----	96	1,770	294	84	85	275	872
31	168	-----	110	84	-----	94	-----	422	-----	76	232	-----
TOTAL	7,508	5,515	4,920	2,780	2,228	2,554	17,453	20,863	4,552	3,074	6,423	6,229
MEAN	242	184	159	89.7	76.8	82.4	582	673	152	99.2	207	208
MAX	446	347	315	110	84	100	1,770	1,960	435	194	478	872
MIN	137	125	110	84	70	66	88	126	77	61	47	67
+	2.0	3.2	4.8	5.7	5.8	5.7	5.4	4.0	5.1	5.8	4.8	4.9
MEAN†	244	187	164	95.4	82.7	88.1	587	677	157	105	212	213
CFSM†	1.03	.79	.69	.40	.35	.37	2.48	2.86	.66	.44	.89	.90
IN†	1.19	.88	.80	.46	.38	.43	2.77	3.29	.74	.51	1.03	1.00

CAL YR 1971 TOTAL 76,937 MEAN 211 MAX 1,770 MIN 29 MEAN† 216 CFSM† 0.91 IN† 12.35
WTR YR 1972 TOTAL 84,099 MEAN 230 MAX 1,960 MIN 47 MEAN† 235 CFSM† 0.99 IN† 13.47

+ Average monthly diversion, equivalent in cubic feet per second, for industrial use; furnished by Hanna Mining Co.
† Adjusted for diversion.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04065600 Pine Creek near Iron Mountain, Mich.

LOCATION.—Lat 45°55'51", long 87°58'18", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.19, T.41 N., R.29 W., Dickinson County, on left bank, 20 ft upstream from bridge on County Road 866, 1.2 miles downstream from Steel Creek and 9.0 miles northeast of Iron Mountain.

DRAINAGE AREA.—16.8 sq mi.

PERIOD OF RECORD.—Occasional low-flow measurements, water year 1971. October 1971 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 1,034 ft above mean sea level (from topographic leveling). Prior to Nov. 23, 1971, nonrecording gage 20 ft downstream at same datum.

EXTREMES.—Current year: Maximum discharge, 137 cfs Apr. 29 (gage height, 4.76 ft); maximum gage height, 5.40 ft Apr. 17 (ice jam); minimum discharge, 1.8 cfs Aug. 6 (gage height, 1.54 ft).

Period of record: Maximum discharge, 137 cfs Apr. 29, 1972 (gage height, 4.76 ft); maximum gage height, 5.40 ft Apr. 17, 1972 (ice jam); minimum discharge, 1.8 cfs Aug. 6, 1972 (gage height, 1.54 ft).

REMARKS.—Records good except those prior to Apr. 1, which are fair. Flow includes an average of 4.8 cfs diverted from West Branch Sturgeon River Basin. Some regulation by mine tailings ponds in headwaters.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SF?
1	14	13	9.6	9.5	8.0	6.0	30	111	23	3.2	3.0	24
2	20	16	9.4	9.5	8.0	6.0	28	129	23	3.8	5.3	16
3	25	20	8.9	9.5	8.0	6.0	27	122	22	3.1	2.8	13
4	26	23	8.7	9.4	7.9	6.2	26	98	19	2.6	2.4	11
5	24	20	8.5	9.3	7.8	6.5	25	87	17	2.6	2.1	13
6	22	17	8.5	9.2	7.5	6.8	25	72	16	3.0	2.1	13
7	20	14	8.5	9.2	7.0	7.2	24	64	13	3.2	2.4	16
8	19	12	8.5	9.2	6.6	7.8	24	57	11	3.4	4.0	14
9	18	11	9.0	9.2	6.2	8.5	25	49	8.7	3.3	7.1	12
10	17	10	14	9.2	5.8	9.2	25	42	6.4	3.2	4.4	10
11	17	10	25	9.2	5.5	10	26	37	6.0	3.3	4.9	8.5
12	16	10	22	9.0	5.0	11	28	33	8.7	7.1	4.4	7.3
13	15	9.5	20	9.0	4.7	11	33	28	9.4	3.4	3.5	7.6
14	14	9.5	18	9.0	4.5	10	45	27	8.2	3.3	3.3	7.8
15	14	10	17	9.0	4.5	9.8	65	27	7.3	3.8	2.8	8.2
16	14	11	16	8.8	4.5	9.8	85	25	6.9	3.5	43	8.0
17	15	12	15	8.8	4.7	10	100	24	5.7	9.2	69	9.8
18	17	13	15	8.2	5.0	11	100	22	5.7	9.2	60	11
19	19	14	14	7.8	5.5	12	105	20	5.7	4.6	40	8.7
20	19	14	14	7.4	6.5	15	115	21	8.7	4.2	31	8.7
21	18	13	13	7.0	7.5	20	127	22	11	8.5	29	20
22	17	13	13	6.6	8.0	35	119	21	6.9	9.2	36	19
23	15	12	12	6.8	7.5	35	108	20	4.6	12	27	16
24	14	11	12	7.0	7.2	32	102	18	4.0	6.6	28	12
25	12	11	12	7.6	6.8	30	100	17	3.9	4.4	30	13
26	12	11	11	8.0	6.5	27	106	16	4.0	3.5	27	70
27	11	11	11	8.2	6.3	26	122	15	3.2	3.1	33	91
28	11	12	11	8.1	6.2	26	133	14	3.9	2.9	33	82
29	11	11	10	8.1	6.0	28	135	16	4.6	2.9	27	100
30	11	10	10	8.0	-----	30	125	23	3.6	2.8	23	90
31	12	-----	9.5	8.0	-----	31	-----	24	-----	4.0	22	-----
TOTAL	509	384.0	394.1	262.8	185.2	499.8	2,138	1,301	281.1	142.9	612.5	740.6
MEAN	16.4	12.8	12.7	8.48	6.39	16.1	71.3	42.0	9.37	4.61	19.8	24.7
MAX	26	23	25	9.5	8.0	35	135	129	23	12	69	100
MIN	11	9.5	8.5	6.6	4.5	6.0	24	14	3.2	2.6	2.1	7.3

WTR YR 1972 TOTAL 7,451.0 MEAN 20.4 MAX 135 MIN 2.1

STREAMS TRIBUTARY TO LAKE MICHIGAN

65

04066000 Menominee River near Pembine, Wis.

LOCATION.--Lat 45°35'24", long 87°46'34", in sec.21, T.37 N., R.28 W., Michigan meridian, Menominee County, Mich., on left bank 0.1 mile upstream from Pemene Creek, 4.0 miles west of Nathan, Mich., 15 miles south-east of Pembine, and at mile 65.3.

DRAINAGE AREA.--3,240 sq mi, approximately.

PERIOD OF RECORD.--October 1949 to current year. 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.--23 years, 2,965 cfs.

EXTREMES.--Current year: Maximum daily discharge, 18,000 cfs May 1-3; minimum, 946 cfs Aug. 7 (gage height, 1.85 ft).

Period of record: Maximum discharge, 26,900 cfs May 8, 1960 (gage height, 13.90 ft); minimum, 694 cfs Sept. 3, 1969 (gage height, 1.66 ft).

REMARKS.--Records good except those for winter months, which are poor. 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 (gage height, in feet, and discharge, in cubic feet per second).
(Stage-discharge relation affected by ice Dec. 3-5, 7, Dec. 13 to Apr. 11.)

1.8	855	6.0	6,470
2.5	1,500	8.0	10,400
4.0	3,330	11.0	18,200

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,860	2,260	2,360	2,700	1,500	2,400	2,500	18,000	5,640	2,800	2,220	3,670
2	3,310	3,200	2,190	2,500	1,800	2,300	2,200	18,000	4,850	2,590	2,070	3,110
3	4,330	3,690	2,300	2,400	1,600	2,000	2,200	18,000	4,490	2,310	1,920	3,020
4	4,860	3,660	2,500	2,500	1,700	1,700	2,200	17,000	3,750	2,050	2,180	2,660
5	4,940	3,580	2,400	2,500	1,700	1,600	2,200	16,000	2,970	1,940	1,960	2,280
6	4,880	3,600	2,400	2,400	1,600	1,700	2,100	14,000	3,140	2,080	1,420	2,360
7	4,400	2,750	2,400	2,300	1,800	2,000	2,300	11,000	2,770	2,250	1,390	2,470
8	4,090	2,810	2,230	2,200	1,500	2,300	2,300	9,600	2,410	1,840	1,680	2,660
9	4,130	2,930	2,530	2,200	1,900	2,300	1,900	9,800	2,490	1,620	2,410	2,670
10	3,590	2,560	2,760	2,000	2,000	2,300	2,200	10,500	2,320	1,470	2,440	2,140
11	2,930	2,860	3,280	2,200	1,900	2,000	2,600	9,690	1,930	1,880	2,530	1,790
12	2,970	3,050	2,910	2,300	1,700	1,600	3,400	8,520	1,630	2,170	2,630	1,700
13	2,960	2,810	2,300	2,300	1,500	1,800	4,000	6,720	2,110	2,070	2,550	2,020
14	2,970	2,560	3,000	2,400	1,600	2,100	4,900	6,380	2,500	1,960	2,000	2,230
15	2,830	2,950	3,600	2,200	2,000	2,600	6,000	6,650	2,540	1,860	2,220	1,700
16	2,470	2,690	2,900	2,100	2,200	2,300	8,600	7,190	2,420	1,570	2,420	1,640
17	1,390	2,890	2,400	2,000	2,200	2,100	10,000	5,580	2,490	1,490	5,800	1,460
18	1,910	2,800	2,300	1,800	2,000	2,200	11,000	5,470	2,170	2,130	6,220	1,410
19	2,190	3,040	2,500	2,300	1,900	1,800	11,000	4,580	1,610	2,600	5,700	1,870
20	2,940	2,920	2,600	2,100	1,600	2,300	11,400	4,420	2,180	2,550	5,090	2,040
21	2,770	2,870	2,700	2,200	1,800	2,700	11,600	3,790	3,020	3,110	4,640	2,280
22	2,920	2,800	2,800	2,100	2,000	2,600	11,000	4,660	3,270	3,110	4,500	2,940
23	2,410	2,530	3,200	1,800	2,200	2,500	10,800	4,830	3,460	3,370	4,600	2,890
24	1,930	2,210	3,100	2,100	2,200	2,400	10,600	4,340	3,140	3,480	3,250	2,880
25	1,870	1,890	2,900	1,700	2,300	2,700	10,600	3,780	2,970	3,570	4,860	2,980
26	2,520	1,890	2,600	1,800	2,200	2,800	11,000	3,610	3,020	3,340	4,820	4,040
27	2,680	2,070	2,300	2,100	2,000	2,800	12,000	3,100	3,250	2,800	6,200	6,830
28	2,620	1,990	2,600	1,800	2,200	2,600	13,000	2,370	2,850	2,480	5,150	6,970
29	2,310	1,790	2,500	2,000	2,300	2,500	15,000	2,160	3,100	2,010	5,090	7,490
30	2,150	2,040	2,600	1,600	-----	2,500	17,000	4,160	3,120	1,510	4,070	7,550
31	2,340	-----	2,400	1,500	-----	2,400	-----	5,250	-----	1,520	3,530	-----
TOTAL	93,470	81,690	81,560	66,100	54,900	69,900	217,600	249,150	87,610	71,530	107,560	91,750
MEAN	3,015	2,723	2,631	2,132	1,893	2,255	7,253	8,037	2,920	2,307	3,470	3,058
MAX	4,940	3,690	3,600	2,700	2,300	2,800	17,000	18,000	5,640	3,570	6,220	7,550
MIN	1,390	1,790	2,190	1,500	1,500	1,600	1,900	2,160	1,610	1,470	1,390	1,410

CAL YR 1971 TOTAL 1,114,060 MEAN 3,052 MAX 15,600 MIN 1,130
WTR YR 1972 TOTAL 1,272,820 MEAN 3,478 MAX 18,000 MIN 1,390

NOTE.--No gage-height record Apr. 12 to May 5, May 7-10.

04067000 Menominee River below Koss. Mich.

LOCATION.--Lat 45°21'16", long 87°38'55", in sec.9, T.34 N., R.27 W., Michigan meridian, Menominee County, 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.

PERIOD OF RECORD.--July 1907 to March 1909 (published as "at Koss"), July 1913 to current year.

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.--60 years (1907-8, 1913-72), 3,129 cfs.

EXTREMES.--Current year: Maximum daily discharge, 18,700 cfs May 3; minimum daily, 1,360 cfs Aug. 7.

Period of record: Maximum daily discharge, 33,000 cfs May 10, 1960; 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. since 1913.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,590	2,690	2,020	2,640	1,660	2,360	2,520	15,900	6,650	2,880	1,870	4,120
2	2,690	3,350	2,020	2,880	1,630	2,590	2,560	17,100	6,590	2,760	2,110	4,450
3	4,070	3,840	2,300	2,640	1,940	2,500	2,320	18,700	5,540	2,350	2,200	2,740
4	4,650	4,150	2,160	2,640	1,740	2,360	2,340	18,300	5,140	2,160	2,010	3,070
5	4,940	4,150	2,370	2,640	1,860	1,940	2,300	18,400	3,540	2,050	2,060	2,500
6	4,900	3,960	2,400	2,660	1,860	1,730	2,300	17,200	3,240	1,940	1,870	2,690
7	5,080	3,480	2,740	2,550	1,790	1,790	2,210	15,100	3,240	2,100	1,360	2,760
8	4,590	3,240	2,950	2,550	1,950	2,200	2,400	12,900	2,770	2,270	1,690	2,460
9	4,370	3,000	2,950	2,300	1,620	2,400	2,400	10,300	2,570	2,020	2,210	2,880
10	3,960	3,160	3,000	2,350	2,040	2,500	2,020	9,790	2,560	1,780	2,480	2,480
11	4,030	3,190	3,810	2,090	2,160	2,500	2,210	9,980	2,400	1,850	2,760	2,400
12	3,000	3,190	3,370	2,460	2,110	2,210	2,730	11,000	2,140	1,930	2,880	2,180
13	3,240	3,480	2,730	2,400	2,020	1,730	3,580	9,990	1,930	2,150	2,880	2,070
14	3,300	3,000	2,480	2,500	1,780	1,910	4,110	7,740	2,350	2,200	2,620	2,210
15	3,120	2,910	3,490	2,560	1,620	2,220	4,580	7,540	2,810	2,180	2,180	2,300
16	2,960	3,350	4,070	2,410	1,950	2,700	5,350	7,880	2,710	1,930	2,420	1,920
17	2,680	3,000	3,200	2,280	2,260	2,560	7,970	7,990	2,400	1,910	4,330	1,600
18	1,610	3,240	2,550	2,220	2,320	2,280	10,100	6,390	2,500	2,060	6,370	1,800
19	2,270	3,120	2,460	1,940	2,240	2,240	10,600	5,870	2,210	2,390	6,720	1,920
20	2,800	3,480	2,730	2,420	2,180	1,850	11,700	4,940	1,870	2,690	6,600	1,920
21	3,240	3,220	2,760	2,280	1,750	2,120	11,800	4,580	2,750	2,690	5,470	2,100
22	3,000	3,270	2,950	2,280	1,700	2,850	11,800	4,330	3,120	3,360	5,250	2,640
23	3,240	3,000	3,000	2,350	2,050	2,880	12,000	4,970	2,910	3,120	4,780	2,920
24	2,510	2,850	3,400	1,940	2,300	2,880	11,600	5,250	2,950	3,360	4,300	2,760
25	2,310	2,450	3,320	2,270	2,300	2,520	11,100	4,580	2,880	3,360	3,720	3,000
26	2,350	2,120	3,120	1,890	2,400	2,880	11,100	3,720	2,760	3,480	4,940	3,760
27	2,740	2,310	2,820	1,860	2,500	3,000	11,100	3,360	2,620	2,960	5,800	5,780
28	2,860	2,490	2,470	2,280	2,110	3,000	11,400	2,800	3,070	2,680	6,900	7,450
29	2,910	2,230	2,760	1,940	2,210	2,880	12,700	2,500	2,980	2,400	5,770	7,750
30	2,600	2,490	2,640	2,090	-----	2,700	14,100	3,600	2,680	1,930	6,510	7,730
31	2,530	-----	2,760	1,800	-----	2,700	-----	5,480	-----	1,660	4,740	-----
TOTAL	101,140	93,410	87,800	72,110	58,050	74,980	205,000	278,180	93,880	74,600	117,800	96,360
MEAN	3,263	3,114	2,832	2,326	2,002	2,419	6,833	8,974	3,129	2,406	3,800	3,212
MAX	5,080	4,150	4,070	2,880	2,500	3,000	14,100	18,700	6,650	3,480	6,900	7,750
MIN	1,610	2,120	2,020	1,800	1,620	1,730	2,020	2,500	1,870	1,660	1,360	1,600
CAL YR 1971	TOTAL 1,271,050		MEAN 3,482		MAX 17,000	MIN 1,300						
WTR YR 1972	TOTAL 1,353,310		MEAN 3,698		MAX 18,700	MIN 1,360						

STREAMS TRIBUTARY TO LAKE MICHIGAN

67

04096400 St. Joseph River near Burlington, Mich.

LOCATION.--Lat 42°06'10", long 85°02'25", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.20, T.4 S., R.6 W., Calhoun County, on right bank 10 ft upstream from bridge on 13 Mile Rd., 2.0 miles east of Burlington, 4.0 miles downstream from Tekonsha Creek, and at mile 164.

DRAINAGE AREA.--201 sq mi.

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 930 ft (from topographic map).

AVERAGE DISCHARGE.--10 years, 141 cfs (9.53 inches per year).

EXTREMES.--Current year: Maximum discharge, 454 cfs Apr. 22 (gage height, 4.17 ft); minimum, 34 cfs Oct. 5, 6; minimum gage height, 1.67 ft. Aug. 16.

Period of record: Maximum discharge, 1,000 cfs Feb. 5, 1968 (gage height, 5.51 ft); minimum, 8.0 cfs Aug. 9, 10, 11, 1964; minimum gage height, 1.67 ft Aug. 16, 1972.

REMARKS.--Records good except those for the winter period and those for period of indefinite stage-discharge relation, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	47	55	187	110	125	215	253	141	94	67	88
2	41	46	57	201	110	154	217	245	136	92	66	82
3	36	46	60	198	110	150	211	233	130	86	65	82
4	36	46	63	198	105	155	213	227	125	81	65	82
5	35	46	54	169	105	136	211	221	120	78	64	82
6	37	43	59	147	100	121	208	224	120	76	62	76
7	39	41	67	161	100	120	211	235	120	74	60	70
8	39	41	73	172	100	115	206	270	115	73	57	75
9	43	41	78	159	100	112	203	287	113	72	60	90
10	44	41	95	148	100	113	199	274	109	70	64	98
11	44	42	114	148	100	113	193	263	105	69	65	95
12	42	42	119	141	100	117	186	250	101	68	64	92
13	42	42	118	136	100	160	187	242	100	67	62	92
14	43	42	112	110	100	234	185	271	98	68	61	146
15	42	42	129	100	100	231	214	330	112	70	60	160
16	40	41	141	100	100	264	269	320	108	73	60	180
17	39	41	139	100	95	302	384	298	102	76	62	180
18	38	42	132	100	95	300	382	283	101	78	64	180
19	37	47	118	105	95	294	367	271	97	82	68	175
20	36	48	120	110	90	292	406	259	93	86	75	170
21	37	49	113	120	85	298	428	242	89	88	85	150
22	49	48	107	130	80	335	447	222	87	86	90	140
23	55	45	98	130	70	324	447	204	91	82	90	130
24	60	44	103	130	75	292	419	193	94	78	94	120
25	64	46	99	130	80	271	383	184	95	76	100	120
26	61	45	98	130	80	257	350	168	92	74	115	130
27	57	46	97	120	80	244	323	139	89	74	120	160
28	58	47	97	120	86	230	299	135	84	74	120	180
29	58	50	95	110	96	219	278	143	91	74	110	200
30	53	53	142	110	-----	216	264	144	94	72	100	210
31	49	-----	196	110	-----	214	-----	145	-----	69	96	-----
TOTAL	1,398	1,340	3,148	4,230	2,747	6,508	8,505	7,175	3,152	2,380	2,391	3,835
MEAN	45.1	44.7	102	136	94.7	210	284	231	105	76.8	77.1	128
MAX	64	53	196	201	110	335	447	330	141	94	120	210
MIN	35	41	54	100	70	112	185	135	84	67	57	70
CFSM	.22	.22	.51	.68	.47	1.04	1.41	1.15	.52	.38	.38	.64
IN.	.26	.25	.58	.78	.51	1.20	1.57	1.33	.58	.44	.44	.71

CAL YR 1971 TOTAL 43,343 MEAN 119 MAX 695 MIN 28 CFSM .59 IN 8.02
WTR YR 1972 TOTAL 46,809 MEAN 128 MAX 447 MIN 35 CFSM .64 IN 8.66

NOTE.--Stage-discharge relation indefinite July 6 to Sept. 12.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04096515 Hog Creek near Allen, Mich.

LOCATION.--Lat 41°56'55", long 84°49'40", in NE1/4SE1/4 sec.13, T.6 S., R.5 W., Branch County, on left bank 12 ft downstream from bridge on U.S. Highway 12, 1.0 mile downstream from Little Hog Creek, and 3.1 miles west of Allen.

DRAINAGE AREA.--48.7 sq mi.

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage 1,010 ft (from topographic map). Prior to May 23, 1970, non-recording gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 117 cfs Mar. 18 (gage height, 3.82 ft); minimum, 3.8 cfs Dec. 1 (gage height, 1.37 ft), result of freezeup.

Period of record: Maximum discharge, 180 cfs Feb. 22, 1971, based on correlation with nearby stations; maximum gage height, 5.73 ft Feb. 20, 1971 (backwater from ice); minimum discharge, 1.2 cfs Aug. 20, 21, 1971 (gage height, 1.35 ft).

REMARKS.--Records good except those for the winter period, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG.	SEP
1	4.8	6.0	8.1	62	15	18	55	60	28	15	10	13
2	4.8	6.4	7.5	49	14	23	54	70	26	14	11	16
3	4.5	6.4	6.9	42	14	28	52	75	29	14	11	16
4	4.5	6.3	6.8	36	14	24	55	74	30	13	11	14
5	4.5	6.0	7.2	30	13	22	56	69	27	13	10	13
6	4.8	5.7	9.9	29	13	21	54	67	25	12	9.9	12
7	5.6	5.5	13	28	13	20	52	69	22	11	11	11
8	5.4	5.2	11	27	13	20	51	76	20	12	12	11
9	7.5	5.6	10	26	12	20	48	79	19	12	13	10
10	6.5	6.4	16	25	12	20	47	77	17	9.8	11	9.4
11	5.6	6.8	21	25	12	21	45	71	16	8.3	10	9.4
12	4.9	6.4	17	24	13	24	43	65	15	9.2	10	9.8
13	4.8	6.1	15	21	13	49	45	60	17	9.4	9.5	20
14	5.0	5.9	14	19	13	77	45	61	18	12	9.1	33
15	4.8	5.9	19	17	14	87	57	65	18	17	8.8	41
16	4.6	5.8	23	16	15	94	82	70	19	22	8.4	55
17	4.5	5.8	20	16	15	105	107	70	18	19	12	65
18	4.7	5.7	19	16	15	116	115	66	17	17	13	71
19	4.7	6.3	17	16	15	109	109	60	16	22	29	71
20	4.6	6.7	16	16	14	98	106	53	15	20	36	68
21	4.7	6.7	16	18	14	87	104	46	15	17	29	64
22	8.8	5.9	16	21	13	86	102	41	15	15	21	58
23	10	5.8	15	25	13	87	100	37	14	14	18	51
24	9.6	5.9	14	23	13	82	94	33	14	13	18	44
25	9.2	5.8	13	21	12	74	86	29	14	12	17	42
26	7.9	5.8	14	19	12	67	76	26	13	11	18	45
27	7.5	6.8	14	18	13	60	68	23	13	13	17	48
28	7.0	6.9	15	17	14	55	61	22	12	13	17	45
29	6.6	7.5	18	16	15	52	56	20	12	11	16	44
30	6.5	8.1	37	16	-----	53	52	25	15	9.9	14	44
31	6.3	-----	61	15	-----	56	-----	30	-----	10	13	-----
TOTAL	185.2	186.1	510.4	749	391	1,755	2,077	1,689	549	420.6	453.7	1,053.6
MEAN	5.97	6.20	16.5	24.2	13.5	56.6	69.2	54.5	18.3	13.6	14.6	35.1
MAX	10	8.1	61	62	15	116	115	79	30	22	36	71
MIN	4.5	5.2	6.8	15	12	18	43	20	12	8.3	8.4	9.4
CFSM	.12	.13	.34	.50	.28	1.16	1.42	1.12	.38	.28	.30	.72
IN.	.14	.14	.39	.57	.30	1.34	1.59	1.29	.42	.32	.35	.80

CAL YR 1971 TOTAL 8,597.2 MEAN 23.6 MAX 170 MIN 1.3 CFSM .48 IN 6.57
WTR YR 1972 TOTAL 10,019.6 MEAN 27.4 MAX 116 MIN 4.5 CFSM .56 IN 7.65

STREAMS TRIBUTARY TO LAKE MICHIGAN

69

04096600 Coldwater River near Hodunk, Mich.

LOCATION.--Lat 42°01'45", Long 85°06'25", in NW¼ NE¼ sec.22, T.5 S., R.7 W., Branch County, on upstream side of bridge on Girard Rd., 2.5 miles northwest of Hodunk, and 3.5 miles upstream from mouth.

DRAINAGE AREA.--293 sq mi.

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 900 ft (from topographic map). Prior to July 26, 1963, nonrecording gage and crest-stage gage at same site and datum.

AVERAGE DISCHARGE.--10 years, 203 cfs (9.41 inches per year).

EXTREMES.--Current year: Maximum discharge, 696 cfs Apr. 18 (gage height, 5.83 ft); minimum, 23 cfs Nov. 1 (gage height, 2.39 ft).
Period of record: Maximum discharge, 1,420 cfs Feb. 4, 1968 (gage height, 7.3 ft); minimum, 6.2 cfs Sept. 26, 1964; minimum gage height, 2.28 ft Oct. 4-14, 1964.

REMARKS.--Records good except those for the winter period, which are fair. Diurnal fluctuation caused by mills above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	48	69	233	130	145	328	384	142	97	76	68
2	36	64	67	251	130	183	330	404	139	94	80	68
3	36	183	67	254	130	176	324	419	149	94	80	72
4	36	168	68	240	130	179	322	404	154	91	76	72
5	31	156	69	220	125	156	326	388	145	89	73	73
6	36	136	73	180	120	157	326	375	137	87	69	72
7	46	118	80	193	120	157	322	377	132	85	72	69
8	43	112	84	213	120	142	312	395	128	84	76	72
9	48	106	84	181	120	132	300	407	124	82	76	69
10	45	101	97	181	120	132	294	407	118	80	75	67
11	42	100	112	178	120	139	284	388	116	78	72	66
12	40	100	120	173	120	137	278	368	113	75	71	68
13	40	95	113	166	113	202	278	352	118	68	68	128
14	41	92	109	140	113	324	284	398	118	69	66	185
15	41	88	126	120	116	388	344	450	134	76	62	171
16	40	76	139	120	120	417	444	457	132	80	58	162
17	39	61	140	120	120	468	577	450	128	82	62	161
18	40	62	132	120	120	517	683	417	124	85	72	168
19	41	64	124	130	112	504	660	384	116	88	85	176
20	41	67	126	130	110	468	627	354	115	92	112	178
21	42	66	123	140	113	450	612	328	142	91	106	171
22	51	66	118	170	109	478	597	304	136	87	92	166
23	58	64	112	190	106	504	574	258	129	82	88	162
24	61	66	112	200	109	478	550	154	116	80	85	159
25	63	66	113	200	104	437	517	140	88	77	81	159
26	64	67	110	190	106	398	512	134	87	76	77	171
27	64	68	110	170	101	364	473	126	88	82	75	179
28	60	68	106	150	106	342	437	118	91	84	73	179
29	57	69	104	140	113	332	404	116	101	85	73	191
30	56	71	149	130	-----	326	382	124	100	82	72	191
31	55	-----	207	130	-----	326	-----	140	-----	78	69	-----
TOTAL	1,430	2,668	3,363	5,353	3,376	9,558	12,701	9,920	3,660	2,580	2,372	3,893
MEAN	46.1	88.9	108	173	116	308	423	320	122	83.2	76.5	130
MAX	64	183	207	254	130	517	683	457	154	97	112	191
MIN	31	48	67	120	101	132	278	116	87	68	58	66
CFSM	.16	.30	.37	.59	.40	1.05	1.44	1.09	.42	.28	.26	.44
IN.	.18	.34	.43	.68	.43	1.21	1.61	1.26	.46	.33	.30	.49

CAL YR 1971 TOTAL 60,125 MEAN 165 MAX 986 MIN 30 CFSM .56 IN 7.63
WTR YR 1972 TOTAL 60,874 MEAN 166 MAX 683 MIN 31 CFSM .57 IN 7.73

STREAMS TRIBUTARY TO LAKE MICHIGAN

04096900 Nottawa Creek near Athens, Mich.

LOCATION.—Lat 42°03'20", long 85°18'30", in NW¼ sec.12, T.5 S., R.9 W., St. Joseph County, on right bank at downstream side of bridge on Shorts Road, 4.2 miles southwest of Athens, and 5.0 miles downstream from Pine Creek.

DRAINAGE AREA.—162 sq mi.

PERIOD OF RECORD.—October 1966 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 850 ft (from topographic map).

AVERAGE DISCHARGE.—6 years, 130 cfs (10.90 inches per year).

EXTREMES.—Current year: Maximum discharge, 414 cfs Apr. 19 (gage height, 3.40 ft); minimum 37 cfs Oct. 16, 18, 20, 21 (gage height, 0.37 ft).

Period of record: Maximum discharge, 554 cfs Feb. 22, 1971 (gage height, 4.50 ft); maximum gage height, 4.66 ft Feb. 3, 1968; minimum daily discharge, 28 cfs Aug. 24, 25, 1971; minimum gage height, 0.37 ft Oct. 16, 18, 20, 21, Nov. 8, 1971.

REMARKS.—Records good except those for the winter period and those for period of no gage-height record, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	44	48	180	90	92	156	178	106	76	52	71
2	43	44	50	180	90	113	166	177	106	74	55	72
3	41	43	54	180	86	118	170	174	105	71	55	72
4	40	43	54	180	86	95	177	164	103	67	57	70
5	41	42	51	150	86	137	181	153	99	64	55	66
6	41	41	54	140	84	97	176	150	96	61	54	59
7	42	41	60	150	82	86	169	168	94	59	53	57
8	44	40	66	150	80	114	150	199	93	60	56	67
9	46	41	74	145	80	100	164	236	90	61	60	79
10	46	43	90	135	80	95	163	242	87	61	59	84
11	44	43	100	120	80	88	155	222	84	59	58	78
12	41	43	105	110	80	85	147	193	82	58	57	74
13	41	42	100	90	80	149	154	172	82	56	57	94
14	41	41	105	70	80	237	161	175	82	57	56	119
15	41	43	120	70	80	250	211	225	86	63	54	142
16	39	42	130	70	80	283	281	290	85	63	52	149
17	38	41	125	70	80	307	362	332	84	63	53	145
18	37	42	120	72	78	297	403	329	82	74	59	151
19	38	46	110	77	75	266	411	298	79	79	68	151
20	38	48	105	85	75	232	400	258	78	78	78	155
21	38	52	100	95	70	209	385	221	76	73	82	150
22	48	48	95	100	65	221	368	189	74	67	79	134
23	54	46	90	105	58	232	351	163	70	62	79	114
24	62	44	90	105	62	216	329	146	70	59	93	98
25	63	44	90	105	64	200	297	132	70	57	104	92
26	60	45	90	100	64	180	263	122	70	56	106	111
27	55	45	90	100	64	160	232	113	70	61	105	138
28	52	46	90	95	65	148	210	108	67	64	100	154
29	49	46	90	90	72	142	194	105	69	63	93	182
30	46	47	130	90	-----	143	183	105	71	58	85	194
31	46	-----	180	90	-----	148	-----	106	-----	53	77	-----
TOTAL	1,399	1,316	2,856	3,499	2,216	5,240	7,169	5,845	2,510	1,977	2,151	3,322
MEAN	45.1	43.9	92.1	113	76.4	169	239	189	83.7	63.8	69.4	111
MAX	63	52	180	180	90	307	411	332	106	79	106	194
MIN	37	40	48	70	58	85	147	105	67	53	52	57
CFSM	.28	.27	.57	.70	.47	1.04	1.48	1.17	.52	.39	.43	.69
IN.	.32	.30	.66	.80	.51	1.20	1.65	1.34	.58	.45	.49	.76

CAL YR 1971 TOTAL 37,199 MEAN 102 MAX 546 MIN 28 CFSM .63 IN 6.54
WTR YR 1972 TOTAL 39,500 MEAN 108 MAX 411 MIN 37 CFSM .67 IN 9.07

NOTE.—No gage-height record Nov. 26 to Jan. 13.

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04097170 Portage River near Vicksburg, Mich.

LOCATION.--Lat 42°06'53", long 85°29'08", in SW¼ sec.16, T.4 S., R.10 W., Kalamazoo County, on right bank 15 ft upstream from bridge on W Avenue, 2.4 miles east of Vicksburg.

DRAINAGE AREA.--68.2 sq mi.

PERIOD OF RECORD.--March 1946 to September 1951, October 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 839.94 ft above mean sea level. Mar. 13, 1946, to Sept. 30, 1951, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--13 years, 59.4 cfs (11.83 inches per year).

EXTREMES.--Current year: Maximum discharge, 156 cfs Apr. 17 (gage height, 4.74 ft); minimum, 19 cfs Aug. 13, 14, 15, 16, 17, 18, 19, 20, 21, minimum gage height, 3.17 ft Aug. 17, 18.

Period of record: Maximum discharge, 356 cfs Apr. 7, 1947 (gage height, 5.66 ft); minimum, 10 cfs on many days during July and August, 1965; minimum gage height, 3.08 ft July 17, 1946, Aug. 14, 1946, July 30, 31, 1965.

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	38	40	85	50	53	84	81	46	29	24	22
2	29	37	39	84	50	59	85	79	43	29	24	23
3	30	36	39	81	48	56	82	77	42	28	24	23
4	36	35	38	79	46	51	84	75	41	28	23	22
5	35	32	38	70	46	48	81	71	39	27	22	22
6	36	32	40	70	45	48	79	71	39	26	22	22
7	36	32	44	65	45	49	80	78	37	26	22	22
8	36	31	43	62	44	51	78	81	35	27	22	25
9	38	31	43	60	43	51	77	85	35	26	22	25
10	37	31	56	60	42	51	75	80	34	26	21	24
11	37	32	70	60	42	48	73	75	32	25	20	24
12	36	32	67	60	42	51	72	72	31	25	20	26
13	37	32	65	60	41	83	75	70	32	26	20	35
14	37	31	63	58	41	108	76	72	32	26	19	38
15	36	30	73	55	41	104	90	84	42	27	19	35
16	36	32	85	45	41	115	108	104	40	27	19	34
17	36	32	81	42	41	126	152	93	38	29	19	34
18	36	32	78	41	40	124	133	86	36	34	19	37
19	34	34	73	43	40	117	127	81	34	35	20	40
20	34	36	72	46	40	114	133	76	33	32	20	38
21	34	38	71	50	41	112	128	72	33	31	20	37
22	41	38	68	60	42	119	125	68	32	30	20	36
23	46	36	63	71	43	116	124	63	32	29	21	35
24	48	36	63	67	43	108	118	60	31	28	21	35
25	49	36	61	54	43	102	111	57	31	28	21	36
26	46	36	61	50	43	96	105	54	30	27	21	47
27	44	37	60	48	41	93	99	50	29	27	22	47
28	42	38	59	46	42	87	92	48	29	26	22	42
29	41	40	59	45	44	84	87	46	30	26	21	50
30	40	40	79	45	-----	82	83	48	30	25	21	51
31	39	-----	93	47	-----	83	-----	47	-----	24	21	-----
TOTAL	1,171	1,033	1,884	1,809	1,250	2,589	2,916	2,204	1,048	859	652	987
MEAN	37.8	34.4	60.8	58.4	43.1	83.5	97.2	71.1	34.9	27.7	21.0	32.9
MAX	49	40	93	85	50	126	152	104	46	35	24	51
MIN	29	30	38	41	40	48	72	46	29	24	19	22
CFSM	.55	.50	.89	.86	.63	1.22	1.43	1.04	.51	.41	.31	.48
IN.	.64	.56	1.03	.99	.68	1.41	1.59	1.20	.57	.47	.36	.54

CAL YR 1971 TOTAL 18,533 MEAN 50.8 MAX 180 MIN 15 CFSM .74 IN 10.11
WTR YR 1972 TOTAL 18,402 MEAN 50.3 MAX 152 MIN 19 CFSM .74 IN 10.04

STREAMS TRIBUTARY TO LAKE MICHIGAN

04097195 Gourdneck Canal near Schoolcraft, Mich.

LOCATION.--Lat 42°09'54", long 85°36'15", in NW1/4 sec.33, T.3 S., R.11 W., Kalamazoo County, on right bank at downstream end of culvert on Osterhout Avenue; 3.8 miles northeast of Schoolcraft.

PERIOD OF RECORD.--October 1965 to December 1972 (discontinued).

GAGE.--Water-stage recorder. Metal V-notch weir since Aug. 4, 1969. Datum of gage is 854.98 ft above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--7 years, 4.00 cfs.

EXTREMES.--Period of record: Maximum daily discharge, 16 cfs Dec. 10-12, 1966, Apr. 22-24, 1967; no flow for several days during period November 1970 to February 1971.
No flow observed at times during 1964, 1965.

REMARKS.--Records fair. Canal diverts water from Gourdneck Creek (see station 04097200) to West Lake to sustain lake levels.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	1.6	1.4	2.0	1.4	1.6	3.8	2.1	.79	.10	.07	.19
2	1.3	1.7	1.4	2.0	1.4	1.6	3.8	2.1	.70	.10	.10	.20
3	1.3	1.6	1.4	1.9	1.4	1.6	3.7	2.0	.66	.10	.13	.17
4	1.5	1.6	1.4	1.9	1.4	1.6	3.8	2.0	.56	.08	.13	.15
5	1.4	1.5	1.4	1.8	1.3	1.6	3.7	1.9	.47	.07	.12	.12
6	1.5	1.5	1.4	1.7	1.3	1.6	3.5	2.0	.40	.07	.12	.09
7	1.5	1.4	1.4	1.7	1.3	1.6	3.5	2.1	.40	.09	.16	.10
8	1.5	1.3	1.5	1.7	1.3	1.6	3.9	2.2	.34	.08	.20	.12
9	1.6	1.4	1.5	1.7	1.2	1.6	3.8	2.2	.24	.05	.20	.09
10	1.6	1.4	2.0	1.7	1.3	1.6	3.7	2.1	.19	.05	.16	.07
11	1.6	1.4	2.1	1.7	1.3	1.6	3.5	1.9	.17	.04	.15	.09
12	1.5	1.4	1.9	1.6	1.3	1.6	3.4	1.9	.17	.03	.15	.10
13	1.5	1.4	1.8	1.7	1.3	2.3	3.5	1.8	.19	.04	.12	.29
14	1.6	1.4	1.5	1.6	1.4	3.8	3.4	1.9	.18	.06	.11	.27
15	1.5	1.4	1.7	1.5	1.4	4.8	3.8	2.1	.29	.10	.11	.27
16	1.5	1.3	1.5	1.7	1.4	4.8	4.4	2.0	.24	.14	.11	.27
17	1.4	1.3	1.3	1.5	1.4	4.7	4.9	2.1	.20	.16	.10	.27
18	1.5	1.4	1.1	1.4	1.4	4.6	4.6	2.0	.17	.29	.08	.35
19	1.5	1.3	1.2	1.5	1.4	4.4	4.5	1.9	.12	.26	.06	.33
20	1.5	1.4	1.1	1.6	1.4	4.3	4.5	1.8	.12	.24	.04	.31
21	1.5	1.3	1.1	1.6	1.4	4.3	4.4	1.7	.10	.20	.03	.27
22	1.8	1.3	1.2	1.7	1.4	4.4	4.6	1.6	.10	.18	.05	.27
23	2.1	1.3	1.2	1.7	1.4	4.3	4.6	1.5	.10	.19	.33	.24
24	2.3	1.2	1.4	1.7	1.5	4.3	4.4	1.3	.10	.20	.77	.22
25	2.1	1.2	1.7	1.3	1.5	4.1	4.3	1.1	.09	.17	.66	.25
26	2.0	1.2	1.7	1.7	1.4	4.0	2.8	1.1	.07	.18	.59	.27
27	2.0	1.2	1.7	1.6	1.4	3.8	2.1	1.0	.06	.22	.55	.25
28	2.0	1.2	1.6	1.5	1.4	3.7	2.1	.90	.07	.18	.46	.27
29	1.9	1.2	1.5	1.4	1.7	3.7	2.1	.84	.09	.10	.37	.46
30	1.8	1.4	2.1	1.4	-----	3.9	2.1	.80	.10	.07	.31	.40
31	1.7	-----	2.1	1.4	-----	3.7	-----	.80	-----	.06	.25	-----
TOTAL	50.8	41.2	47.3	50.9	40.1	97.1	111.2	52.74	7.48	3.90	6.79	6.75
MEAN	1.64	1.37	1.53	1.64	1.38	3.13	3.71	1.70	.25	.13	.22	.23
MAX	2.3	1.7	2.1	2.0	1.7	4.8	4.9	2.2	.79	.29	.77	.46
MIN	1.3	1.2	1.1	1.3	1.2	1.6	2.1	.80	.06	.03	.03	.07

CAL YR 1971 TOTAL 582.40 MEAN 1.60 MAX 4.5 MIN 0
WTR YR 1972 TOTAL 516.26 MEAN 1.41 MAX 4.9 MIN .03

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04097195 Gourdneck Canal near Schoolcraft, Mich.--Continued

DAY	DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1972											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.33	.27	.03									
2	.33	1.1	.02									
3	.32	1.5	.02									
4	.27	1.8	.02									
5	.27	1.9	1.3									
6	.27	1.8	4.5									
7	.27	1.8	4.0									
8	.30	2.4	3.8									
9	.27	1.7	3.5									
10	.25	.90	3.3									
11	.30	1.1	2.9									
12	.31	.80	2.9									
13	.27	.10	3.7									
14	.29	.10	3.3									
15	.27	.10	3.2									
16	.30	.07	2.9									
17	.33	.07	2.8									
18	.33	.07	2.6									
19	.32	.07	2.4									
20	.25	.07	2.5									
21	.23	.05	2.7									
22	.29	.05	2.7									
23	.35	.05	2.7									
24	.33	.03	2.6									
25	.33	.03	2.6									
26	.28	.05	2.7									
27	.27	.05	2.6									
28	.28	.03	2.5									
29	.32	.02	2.5									
30	.27	.03	3.7									
31	.27	-----	6.0									
TOTAL	9.07	18.11	82.99									
MEAN	.29	.60	2.68									
MAX	.35	2.4	6.0									
MIN	.23	.02	.02									

CAL YR 1972	TOTAL 487.13	MEAN 1.33	MAX 6.0	MIN .02
WTR YR 1973	TOTAL --	MEAN --	MAX --	MIN --

STREAMS TRIBUTARY TO LAKE MICHIGAN

04097200 Gourdneck Creek near Schoolcraft, Mich.

LOCATION.--Lat 42°09'20", long 85°36'48", in NE1/4 sec.5, T.4 S., R.11 W., Kalamazoo County, on left bank at upstream side of bridge on Oakland Drive, 3.2 miles northeast of Schoolcraft.

DRAINAGE AREA.--7.29 sq mi.

PERIOD OF RECORD.--January 1964 to December 1972 (discontinued).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 853.71 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to May 21, 1964, nonrecording gage at same site and datum.

AVERAGE DISCHARGE (Creek only).--8 years, 4.81 cfs (8.96 inches per year).

(Combined creek and diversion).--7 years, 9.18 cfs (17.10 inches per year).

EXTREMES.--Water year 1972: Maximum discharge, 16 cfs Dec. 15 (gage height, 1.59 ft); minimum, 0.50 cfs Apr. 14 (gage height, 1.07 ft).

October to December 1972: Maximum discharge during period, 19 cfs Dec. 31 (gage height, 1.66 ft); minimum, 0.65 cfs Jan. 2; minimum gage height, 1.09 ft Nov. 7.

Period of record: Maximum discharge, 29 cfs Apr. 13, 1965 (caused by release of water from storage above station), Feb. 2, 1968; maximum gage height, 1.83 ft Feb. 2, 1968; minimum discharge, 0.1 cfs Feb. 3-6, 1965 (gage height, 1.00 ft).

REMARKS.--Records fair except those for period of no gage-height record, which are poor. Gourdneck canal diverts water from stream 100 ft above station to sustain lake levels (see sta 04097195). Figures of runoff have been adjusted since September 1965.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	2.9	4.3	8.3	5.7	5.6	.61	1.4	.90	1.8	1.5	2.4
2	2.0	3.1	4.2	8.0	5.7	6.3	.57	1.7	1.1	1.9	1.6	2.5
3	2.0	2.9	3.8	7.4	6.2	5.8	.57	2.0	1.2	1.6	1.6	2.3
4	2.5	2.6	3.5	7.0	6.2	5.5	.57	2.2	1.3	1.5	1.4	2.0
5	2.3	2.3	3.4	6.6	5.9	5.4	.57	2.6	1.3	1.4	1.2	1.7
6	2.5	2.4	4.2	5.8	6.4	5.2	.57	2.5	1.3	1.3	1.1	1.6
7	2.6	2.1	4.6	5.5	6.2	5.2	.60	2.4	1.1	1.2	1.2	1.5
8	2.6	2.0	4.6	5.0	5.8	5.1	.65	2.0	1.1	1.1	1.4	1.8
9	2.9	1.9	4.8	5.0	5.5	5.0	.57	1.8	1.0	1.1	1.4	1.7
10	2.9	2.1	9.5	5.0	5.4	5.0	.55	1.4	.93	1.1	1.3	1.5
11	2.9	2.0	10	4.8	5.0	5.0	.55	1.6	.89	1.2	1.2	1.6
12	2.6	2.0	9.4	4.6	5.2	5.0	.55	1.6	.90	1.2	1.1	1.9
13	2.5	1.8	8.9	4.9	5.8	12	.55	1.7	1.1	1.2	1.0	5.3
14	2.6	1.7	8.3	4.8	6.1	9.0	.52	1.6	1.1	1.2	.92	5.8
15	2.5	1.9	13	4.3	6.7	4.8	.77	1.4	1.5	1.5	.81	5.2
16	2.5	1.9	12	3.7	6.8	4.6	3.3	2.0	1.4	2.4	.79	4.5
17	2.3	2.0	9.9	3.4	6.9	4.2	4.3	1.9	1.3	3.3	.72	4.0
18	2.3	2.1	9.7	3.5	6.8	3.1	2.9	1.8	1.3	3.7	.69	5.7
19	2.3	3.1	10	4.0	6.5	2.4	2.5	1.6	1.2	3.2	.65	5.5
20	2.1	3.4	9.8	4.7	5.4	2.0	3.0	1.2	1.1	2.8	.71	4.9
21	2.0	3.3	9.5	4.9	5.0	1.2	5.5	1.3	1.1	2.5	.65	4.4
22	3.6	3.1	8.7	5.8	4.6	.73	2.0	1.1	1.1	2.3	.73	3.6
23	4.3	3.1	8.2	6.2	4.3	.58	1.8	1.0	1.0	2.2	2.2	3.2
24	5.7	3.1	6.0	6.0	4.0	.85	1.6	1.0	1.1	2.1	11	2.9
25	6.1	3.1	4.3	2.2	4.0	.65	1.5	1.0	1.1	2.0	7.7	3.2
26	5.7	3.1	4.3	4.3	4.0	.63	1.7	.90	1.1	1.9	6.3	4.3
27	5.0	3.7	4.8	5.5	4.0	.78	1.9	.80	.98	2.1	5.6	3.7
28	4.3	3.9	4.1	5.2	4.0	.64	1.6	.80	.96	2.0	4.8	3.3
29	4.3	3.9	3.4	5.1	4.1	.64	1.4	.80	1.2	1.8	4.0	7.0
30	4.0	4.3	9.5	6.0	-----	.65	1.4	.80	1.3	1.7	3.2	6.8
31	3.6	-----	8.9	5.7	-----	.57	-----	.80	-----	1.6	2.7	-----
TOTAL	97.5	80.8	219.6	163.2	158.2	114.12	45.17	46.70	33.96	57.9	71.17	105.8
MEAN	3.15	2.69	7.08	5.26	5.46	3.68	1.51	1.51	1.13	1.87	2.30	3.53
MAX	6.1	4.3	13	8.3	6.9	12	5.5	2.6	1.5	3.7	11	7.0
MIN	2.0	1.7	3.4	2.2	4.0	.57	.52	.80	.89	1.1	.65	1.5
MEAN+	4.79	4.06	8.61	6.90	6.84	6.81	5.22	3.21	1.38	2.00	2.52	3.76
CFSM+	.66	.56	1.18	.95	.94	.93	.72	.44	.19	.27	.35	.52
IN+	.76	.62	1.36	1.09	1.01	1.08	.80	.51	.21	.32	.40	.57

CAL YR 1971 TOTAL 1,815.82 MEAN 4.97 MAX 20 MIN .65 MEAN+ 6.57 CFSM+ .90 IN+ 12.23
WTR YR 1972 TOTAL 1,194.12 MEAN 3.26 MAX 13 MIN .52 MEAN+ 4.67 CFSM+ .64 IN+ 8.73

+ Adjusted for diversion.

NOTE.--No gage-height record Apr. 24 to June 7.

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04097200 Gourdneck Creek near Schoolcraft, Mich.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1972												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	6.7	7.5									
2	5.5	4.0	7.2									
3	4.9	1.5	7.1									
4	4.5	1.4	6.8									
5	4.2	1.2	7.6									
6	4.0	.99	10									
7	3.6	1.1	8.9									
8	3.2	1.5	8.5									
9	2.6	1.7	8.5									
10	2.3	2.4	8.6									
11	2.6	2.7	8.2									
12	2.5	5.1	9.9									
13	2.4	7.4	12									
14	2.3	10	11									
15	2.1	9.9	11									
16	2.2	9.2	10									
17	2.0	9.0	10									
18	1.9	8.4	9.9									
19	1.9	8.1	10									
20	2.0	9.2	10									
21	2.3	9.0	9.9									
22	4.9	8.2	9.8									
23	9.3	8.2	9.8									
24	8.7	7.7	9.4									
25	8.4	7.5	9.4									
26	8.0	8.4	9.3									
27	7.3	8.5	9.0									
28	7.4	8.1	8.6									
29	8.3	7.4	8.8									
30	7.5	7.5	14									
31	6.9	-----	17									
TOTAL	141.8	181.99	297.7									
MEAN	4.57	6.07	9.60									
MAX	9.3	10	17									
MIN	1.9	.99	6.8									
MEAN+	4.86	6.67	12.28									
CFSM+	.67	.91	1.68									
IN+	.77	1.02	1.94									

CAL YR 1972	TOTAL 1,417.71	MEAN 3.87	MAX 17	MIN .52	MEAN+ 5.20	CFSM+ .71	IN+ 9.72
WTR YR 1973	TOTAL --	MEAN --	MAX --	MIN --	MEAN+ --	CFSM+ --	IN+ --

+ Adjusted for diversion.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04097500 St. Joseph River at Three Rivers, Mich.

LOCATION.--Lat 41°56'25", long 85°38'00", in SW1/4SE1/4 sec.18, T.6 S., R.11 W., St. Joseph County, on right bank in Scidmore Park at Three Rivers, 250 ft downstream from Rocky River, and at mile 112.

DRAINAGE AREA.--1,350 sq mi.

PERIOD OF RECORD.--May 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 781.34 ft above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--19 years, 1,008 cfs (10.14 inches per year).

EXTREMES.--Current year: Maximum discharge, 3,310 cfs Apr. 19 (gage height, 6.82 ft); minimum, 245 cfs Oct. 3; minimum gage height, 2.24 ft Aug. 1, 18, 19; minimum daily discharge, 248 cfs Oct. 2, Nov. 26.
Period of record: Maximum discharge, 4,910 cfs Feb. 5, 1968 (gage height, 8.40 ft); minimum daily, 78 cfs Sept. 12, 1964.

Maximum discharge since at least 1918, 8,260 cfs Apr. 27, 1950 (gage height, 10.6 ft).

REMARKS.--Records good. Flow regulated by powerplants above station.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	405	592	532	1,430	900	703	1,600	1,800	791	640	471	431
2	248	629	528	1,120	906	671	1,600	1,740	739	668	388	394
3	252	533	520	1,360	890	1,060	1,600	1,710	820	716	427	337
4	457	454	519	1,450	879	1,290	1,620	1,690	902	593	621	350
5	548	441	351	1,320	866	1,110	1,610	1,650	1,060	770	608	800
6	528	265	462	985	639	895	1,640	1,660	1,030	662	600	800
7	518	363	571	1,030	654	916	1,660	1,720	964	532	519	650
8	520	797	579	1,070	806	707	1,550	1,800	926	550	437	524
9	346	842	584	1,210	946	809	1,550	1,920	740	546	538	408
10	273	690	651	1,350	786	907	1,550	1,960	637	541	623	336
11	410	510	569	1,290	624	917	1,520	1,970	649	530	487	558
12	529	452	779	1,110	595	910	1,440	1,930	838	528	325	637
13	432	501	1,060	976	717	1,270	1,440	1,810	940	528	467	750
14	264	536	1,130	913	889	1,440	1,450	1,790	775	530	634	921
15	354	531	1,130	706	751	1,670	1,530	1,840	675	548	585	1,100
16	361	519	1,040	700	595	1,960	1,820	2,140	722	555	488	1,010
17	254	429	1,200	700	622	2,330	2,260	2,470	753	547	478	764
18	410	348	1,250	709	782	2,230	2,800	2,490	791	573	476	894
19	514	534	1,070	1,010	910	2,270	3,110	2,340	967	614	377	1,130
20	499	371	901	1,040	850	2,290	3,130	2,110	957	621	303	1,200
21	491	414	925	1,030	722	2,200	3,060	1,950	755	620	510	1,080
22	524	532	942	1,050	535	2,240	2,900	1,830	606	609	598	1,040
23	460	514	911	1,090	651	1,980	2,820	1,700	621	606	609	990
24	320	503	734	1,290	819	2,090	2,680	1,550	648	595	643	973
25	505	405	633	1,360	875	2,190	2,600	1,320	697	582	652	997
26	594	248	762	1,200	833	2,010	2,390	1,160	895	579	539	1,080
27	587	282	940	1,100	574	1,860	2,290	1,120	762	598	383	1,100
28	566	548	882	900	689	1,780	2,130	1,080	592	585	730	1,100
29	614	556	620	700	872	1,700	1,950	1,030	624	572	758	1,350
30	548	546	907	700	-----	1,640	1,760	999	650	566	561	1,480
31	447	-----	1,240	800	-----	1,610	-----	972	-----	485	477	-----
TOTAL	13,778	14,885	24,922	32,699	22,177	47,655	61,060	53,251	23,526	18,189	16,312	25,184
MEAN	444	496	804	1,055	765	1,537	2,035	1,718	784	587	526	839
MAX	614	842	1,250	1,450	946	2,330	3,130	2,490	1,060	770	758	1,480
MIN	248	248	351	700	535	671	1,440	972	592	485	303	336
CFSM	.33	.37	.60	.78	.57	1.14	1.51	1.27	.58	.43	.39	.62
IN.	.38	.41	.69	.90	.61	1.31	1.68	1.47	.65	.50	.45	.69

CAL YR 1971 TOTAL 328,013 MEAN 899 MAX 3,410 MIN 207 CFSM .67 IN 9.04
WTR YR 1972 TOTAL 353,638 MEAN 966 MAX 3,130 MIN 248 CFSM .72 IN 9.74

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04097540 Prairie River near Nottawa, Mich.

LOCATION.--Lat 41°53'18", long 85°24'34", in NW1/4SW1/4 sec.6, T.7 S., R.9 W., St. Joseph County, on left bank 10 ft upstream from bridge on State Highway 66, 3.0 miles upstream from unnamed tributary, and 3.0 miles southeast of Nottawa.

DRAINAGE AREA.--106 sq mi.

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 850 ft (from topographic map).

AVERAGE DISCHARGE.--10 years, 80.5 cfs (10.31 inches per year).

EXTREMES.--Current year: Maximum discharge, 190 cfs Apr. 20 (gage height, 4.28 ft); maximum gage height, 4.40 ft Jan. 6 (backwater from ice); minimum discharge, 25 cfs Oct. 19-21; minimum gage height, 2.15 ft Oct. 2, 3. Period of record: Maximum discharge, 467 cfs Feb. 4, 1968 (gage height, 5.49 ft); minimum, 11 cfs Aug. 9, 10, Sept. 8, 9, 10, 1964; minimum gage height, 1.77 ft Aug. 9, 10, 1964.

REMARKS.--Records good except those for the winter period, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	32	38	114	70	65	117	118	67	46	39	28
2	27	33	37	122	70	78	117	121	68	45	39	30
3	27	33	35	117	65	80	116	128	69	44	39	31
4	29	32	35	109	65	75	120	130	69	43	38	31
5	29	31	35	109	65	69	120	124	67	42	37	30
6	29	30	37	100	62	63	120	118	65	41	36	29
7	28	29	40	84	60	61	124	119	62	40	36	28
8	28	28	42	80	60	59	122	128	59	42	38	29
9	29	28	42	78	58	57	120	143	58	42	39	28
10	29	29	48	76	58	61	117	143	56	41	39	28
11	28	30	56	74	58	52	114	140	53	41	38	28
12	28	30	61	73	58	54	111	131	52	40	38	29
13	27	30	62	71	58	82	109	123	54	39	37	34
14	27	30	59	70	58	119	107	128	54	40	36	60
15	27	30	68	60	58	145	115	140	58	43	35	72
16	27	30	76	55	59	168	131	153	58	44	34	76
17	26	30	77	55	57	174	155	167	57	44	33	69
18	26	30	73	55	56	175	165	164	55	47	32	64
19	25	32	68	55	55	174	180	151	53	51	32	59
20	25	32	65	60	55	166	189	136	51	51	31	55
21	25	33	62	76	52	155	185	123	50	52	29	50
22	31	33	59	90	54	156	186	112	49	51	29	47
23	35	33	57	103	51	156	180	103	47	48	31	44
24	40	33	55	108	50	155	174	95	48	46	34	44
25	42	33	53	110	49	148	165	89	47	44	34	45
26	43	32	53	100	49	137	154	83	47	43	33	52
27	42	34	53	80	49	127	141	78	46	44	33	58
28	39	34	52	70	51	119	130	72	45	44	32	62
29	37	35	51	60	54	116	121	68	46	43	31	70
30	35	37	72	60	-----	115	116	67	47	42	30	72
31	34	-----	97	65	-----	115	-----	66	-----	40	29	-----
TOTAL	951	946	1,718	2,539	1,664	3,476	4,121	3,661	1,657	1,363	1,071	1,382
MEAN	30.7	31.5	55.4	81.9	57.4	112	137	118	55.2	44.0	34.5	46.1
MAX	43	37	97	122	70	175	189	167	69	52	39	76
MIN	25	28	35	55	49	52	107	66	45	39	29	28
CFSM	.29	.30	.52	.77	.54	1.06	1.29	1.11	.52	.42	.33	.43
IN.	.33	.33	.60	.89	.58	1.22	1.45	1.28	.58	.48	.38	.49

CAL YR 1971 TOTAL 22,834 MEAN 62.6 MAX 241 MIN 17 CFSM .59 IN 8.01
WTR YR 1972 TOTAL 24,549 MEAN 67.1 MAX 189 MIN 25 CFSM .63 IN 8.62

STREAMS TRIBUTARY TO LAKE MICHIGAN

04097970 Lime Lake Outlet at Panama, Ind.

LOCATION.--Lat 41°42'46", long 85°07'10", in NW 1/4 NW 1/4 sec.35, T.38 N., R.12 E., Steuben County, on right bank 10 ft downstream from dam for Lime Lake, 30 ft upstream from bridge on Orland Road, and 0.7 mile northwest of Panama.

DRAINAGE AREA.--17.5 sq mi, of which 3.68 sq mi does not contribute directly to surface runoff.

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 950.00 ft above mean sea level.

EXTREMES.--Current year: Maximum daily discharge, 17 cfs Apr. 22-25; no flow for many days.

Period of record: Maximum discharge, 26 cfs Apr. 20, 1970 (gage height, 4.38 ft); no flow at times most years.

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	3.4	6.4	4.6	2.5	2.2	0	12	6.5	.74	.48	.41
2	0	3.4	6.3	4.6	2.4	2.4	0	13	6.1	.79	.79	.65
3	.02	.20	6.0	4.5	2.4	2.4	.02	13	6.3	.84	.70	1.1
4	0	.13	5.8	4.2	2.4	2.3	.02	14	6.0	.70	.52	1.0
5	0	.26	5.6	4.2	2.3	2.2	.02	14	5.8	.61	.28	.79
6	0	.03	5.8	3.9	2.3	2.2	.03	14	5.2	.52	.70	.56
7	0	0	5.8	3.8	2.3	2.1	.08	13	4.8	.48	1.4	.45
8	.02	0	5.6	3.7	2.2	2.0	.10	13	4.4	.70	1.4	.38
9	0	0	5.5	3.5	2.1	2.1	.10	13	3.9	.74	1.4	.34
10	0	0	5.9	3.5	2.0	2.1	.10	13	3.2	.74	1.1	.31
11	0	0	5.5	3.3	1.9	2.0	.10	13	2.8	.74	1.1	.34
12	0	0	5.4	3.2	1.8	.84	.11	13	2.4	.70	1.4	.52
13	0	0	5.1	3.2	1.8	0	.50	13	2.4	.79	1.4	1.1
14	0	.02	5.1	3.2	1.8	0	1.0	13	2.4	.84	1.4	6.5
15	0	0	5.4	3.1	1.9	0	3.5	13	2.8	1.8	1.8	6.0
16	0	0	5.0	2.9	1.9	0	10	13	2.6	1.8	1.6	5.8
17	0	0	4.7	2.8	1.9	0	11	13	2.2	1.8	1.3	5.0
18	.02	.06	4.6	2.7	1.9	0	12	13	2.0	1.8	1.1	5.9
19	.02	.05	4.5	2.7	1.8	0	14	12	2.0	2.1	.84	5.5
20	0	.10	4.5	3.0	1.8	0	15	12	2.2	2.2	.65	5.0
21	0	.02	4.2	3.0	1.7	0	16	12	1.8	2.1	.74	3.5
22	.17	.02	4.1	3.1	1.7	0	17	11	1.3	1.9	.65	2.8
23	.48	.03	4.1	3.1	1.7	0	17	10	.70	1.8	1.2	2.4
24	.95	.03	3.8	3.1	1.7	0	17	9.6	.70	1.7	1.6	2.2
25	1.1	.03	3.7	3.0	1.7	0	17	8.8	.56	1.7	1.4	2.6
26	1.5	4.6	3.7	2.9	1.9	0	16	7.7	.56	1.3	1.0	4.0
27	3.3	7.2	3.7	2.8	1.8	0	15	6.8	.56	1.4	.95	4.5
28	3.1	6.9	3.3	2.8	1.8	0	14	5.9	.61	1.2	.61	4.0
29	3.4	6.8	3.2	2.7	1.8	0	13	6.5	.74	.95	.52	4.8
30	3.9	6.7	4.6	2.6	-----	0	12	8.0	.70	.79	.52	4.8
31	3.4	-----	4.7	2.5	-----	0	-----	7.0	-----	.61	.48	-----
TOTAL	21.38	39.98	151.6	102.2	57.2	24.84	221.68	353.3	84.23	36.88	31.03	83.25
MEAN	.69	1.33	4.89	3.30	1.97	.80	7.39	11.4	2.81	1.19	1.00	2.78
MAX	3.9	7.2	6.4	4.6	2.5	2.4	17	14	6.5	2.2	1.8	6.5
MIN	0	0	3.2	2.5	1.7	0	0	5.9	.56	.48	.28	.31
CFSM	.04	.08	.28	.19	.11	.05	.42	.65	.16	.07	.06	.16
IN.	.05	.08	.32	.22	.12	.05	.47	.75	.18	.08	.07	.18

CAL YR 1971 TOTAL 1,488.71 MEAN 4.08 MAX 16 MIN 0 CFSM .23 IN 3.16
WTR YR 1972 TOTAL 1,207.57 MEAN 3.30 MAX 17 MIN 0 CFSM .19 IN 2.57

NOTE.--No gage-height record Apr. 11 to May 16.

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04098500 Fawn River near White Pigeon, Mich.

LOCATION.--Lat 41°46'56", long 85°35'00", in SW $\frac{1}{4}$ sec.10, T.8 S., R.11 W., St. Joseph County, on right bank 0.3 mile downstream from bridge on county highway, 3.1 miles east of White Pigeon, and 3.5 miles upstream from Sherman Mill Creek.

DRAINAGE AREA.--192 sq mi.

PERIOD OF RECORD.--July 1903 to July 1904 (gage heights and discharge measurements only), October 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 805.4 ft above mean sea level.

AVERAGE DISCHARGE.--15 years, 151 cfs (10.68 inches per year).

EXTREMES.--Current year: Maximum discharge, 252 cfs Apr. 21 (gage height, 3.21 ft); minimum, 46 cfs Oct. 5 (gage height, 1.90 ft).
Period of record: Maximum daily discharge, 600 cfs Jan. 30, 1969; minimum discharge, 26 cfs Aug. 5, 1964; minimum gage height, 1.72 ft Jan. 10, Sept. 10, 1964.
A daily mean discharge of 750 cfs occurred Mar. 15, 1904.

REMARKS.--Records good. Small diurnal fluctuation caused by powerplants above station.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	87	81	189	130	131	200	217	148	105	92	60
2	76	93	79	192	132	143	194	224	139	104	83	66
3	69	61	72	200	134	147	190	226	132	93	82	80
4	54	82	85	192	127	133	196	218	121	84	82	78
5	47	84	91	173	115	136	193	205	133	90	73	70
6	71	82	80	153	113	109	188	198	138	92	70	56
7	67	76	94	145	110	126	193	215	122	86	75	54
8	77	73	89	164	110	124	186	210	120	93	86	61
9	60	56	94	159	111	125	189	226	108	94	85	74
10	67	75	105	146	116	121	190	238	122	94	67	71
11	69	83	125	165	113	116	182	222	102	101	81	60
12	71	75	124	152	116	128	181	218	111	91	78	63
13	61	72	127	145	120	165	183	221	109	88	84	87
14	73	66	110	121	119	199	191	218	108	84	86	95
15	70	65	130	110	123	210	199	236	112	96	66	123
16	76	71	145	100	129	234	219	246	115	102	59	114
17	71	55	132	100	136	244	230	248	106	98	73	110
18	69	75	136	100	128	226	230	247	110	101	67	98
19	76	81	135	110	125	231	240	239	106	112	76	116
20	71	71	139	130	125	232	237	228	95	117	71	119
21	55	70	122	159	120	213	246	219	102	102	66	123
22	84	82	121	169	121	216	246	208	100	94	59	122
23	84	87	113	190	120	218	246	195	102	94	69	111
24	90	79	129	170	113	228	237	184	96	107	68	114
25	98	77	103	145	114	222	237	176	102	107	81	120
26	89	75	113	120	114	211	231	164	99	96	78	129
27	87	76	122	115	116	203	225	140	94	96	81	130
28	97	76	119	110	115	197	230	147	91	100	77	138
29	84	67	103	110	123	194	219	140	97	97	64	151
30	98	83	133	100	-----	203	204	144	97	93	76	162
31	61	-----	172	120	-----	197	-----	138	-----	91	61	-----
TOTAL	2,296	2,255	3,523	4,454	3,488	5,582	6,332	6,355	3,337	3,002	2,316	2,955
MEAN	74.1	75.2	114	144	120	180	211	205	111	96.8	74.7	98.5
MAX	98	93	172	200	136	244	246	248	148	117	92	162
MIN	47	55	72	100	110	109	181	138	91	84	59	54
CFSM	.39	.39	.59	.75	.63	.94	1.10	1.07	.58	.50	.39	.51
IN.	.44	.44	.68	.86	.68	1.08	1.23	1.23	.65	.58	.45	.57
CAL YR 1971	TOTAL 46,605	MEAN 128	MAX 323	MIN 42	CFSM .67	IN 9.03						
WTR YR 1972	TOTAL 45,895	MEAN 125	MAX 248	MIN 47	CFSM .65	IN 8.89						

STREAMS TRIBUTARY TO LAKE MICHIGAN

04099000 St. Joseph River at Mottville, Mich.

LOCATION.--Lat 41°48'03", long 85°45'22", in SW1/4 sec.6, T.8 S., R.12 W., Michigan meridian, St. Joseph County, on right bank 500 ft upstream from bridge on U.S. Highway 12 at Mottville, 0.4 mile downstream from Michigan Power Co. hydroelectric plant, 4 miles upstream from Pigeon River, and at mile 96.

DRAINAGE AREA.--1,866 sq mi.

PERIOD OF RECORD.--October 1923 to current year. 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 Power Co. benchmark). Prior to Oct. 1, 1951, at site 0.4 mile upstream at datum 4.2 ft higher.

AVERAGE DISCHARGE.--49 years, 1,493 cfs (10.87 inches per year).

EXTREMES.--Current year: Maximum discharge, 4,060 cfs Apr. 19 (gage height, 6.08 ft); minimum, 150 cfs Aug. 8 (gage height, 1.16 ft); minimum daily, 512 cfs Oct. 17.

Period of record: Maximum discharge, 10,700 cfs Apr. 27, 1950 (gage height, 6.56 ft, site and datum then in use); minimum daily, 39 cfs Oct. 19, 1963.

REMARKS.--Records good. Flow regulated by powerplants above station.

REVISIONS (WATER YEARS).--WSP 1387: 1930, 1932, 1938, 1940-42, 1945. WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	701	806	924	1,660	1,300	1,200	2,020	2,160	1,370	783	700	571
2	571	981	860	1,750	1,400	1,150	1,990	2,230	1,240	842	698	535
3	524	823	855	1,580	1,300	1,130	2,080	2,140	1,120	1,210	597	539
4	671	813	559	1,800	1,200	1,590	2,090	2,180	1,220	809	669	551
5	797	716	616	1,800	1,200	1,570	2,060	2,100	1,480	1,050	563	879
6	809	574	912	1,430	1,200	1,230	2,080	2,070	1,530	992	651	891
7	763	573	885	1,280	1,000	1,240	2,110	2,170	1,320	878	808	793
8	723	847	891	1,350	1,000	1,270	2,040	2,270	1,170	669	799	600
9	624	1,090	870	1,450	1,260	1,060	1,970	2,390	1,230	808	807	570
10	588	1,080	1,010	1,830	1,340	1,270	1,970	2,420	1,060	924	715	558
11	695	795	1,110	1,780	1,030	1,200	1,970	2,450	812	779	804	830
12	711	652	949	1,610	936	1,210	1,910	2,470	1,100	784	615	853
13	719	599	1,370	1,410	972	1,540	1,850	2,400	1,330	858	585	1,070
14	703	739	1,450	1,210	1,170	1,810	1,890	2,330	1,130	737	582	1,520
15	691	865	1,400	1,000	1,280	1,890	1,920	2,420	1,050	781	906	1,570
16	545	824	1,500	900	1,050	2,320	2,090	2,550	1,030	831	726	1,160
17	512	679	1,510	900	974	2,660	2,610	2,930	748	880	561	742
18	566	813	1,570	900	1,060	2,720	3,020	3,020	943	900	602	1,000
19	723	702	1,390	1,050	1,190	2,600	3,420	2,980	1,400	906	592	1,410
20	767	756	1,390	1,290	1,080	2,640	3,780	2,680	1,210	960	560	1,490
21	685	507	1,410	1,390	1,180	2,720	3,550	2,590	1,200	888	577	1,450
22	791	831	1,340	1,420	1,050	2,700	3,500	2,400	895	793	633	1,520
23	633	820	1,270	1,490	935	2,550	3,370	2,240	1,010	849	894	1,170
24	678	826	1,020	1,580	1,010	2,440	3,210	2,140	683	824	845	1,000
25	898	558	1,110	1,640	1,150	2,480	3,120	2,030	842	911	852	1,370
26	954	717	857	1,600	1,200	2,640	2,930	1,820	1,190	902	679	1,460
27	967	562	1,360	1,500	703	2,300	2,730	1,700	1,210	919	903	1,520
28	953	545	1,170	1,500	1,300	2,240	2,690	1,380	884	946	587	1,490
29	836	879	1,150	1,000	1,110	2,180	2,470	1,670	948	641	864	1,620
30	735	883	1,200	950	-----	2,130	2,140	1,490	1,160	665	820	1,530
31	749	-----	1,630	1,100	-----	2,080	-----	1,310	-----	978	669	-----
TOTAL	22,282	22,955	35,538	43,150	32,580	59,760	74,580	69,130	33,515	26,697	21,863	32,263
MEAN	719	765	1,146	1,392	1,123	1,928	2,486	2,230	1,117	861	705	1,073
MAX	967	1,090	1,630	1,830	1,400	2,720	3,780	3,020	1,530	1,210	906	1,620
MIN	512	545	559	900	703	1,060	1,850	1,310	683	641	560	535
CFSM	.39	.41	.61	.75	.60	1.03	1.33	1.20	.60	.46	.38	.58
IN.	.44	.46	.71	.86	.65	1.19	1.49	1.38	.67	.53	.44	.64

CAL YR 1971 TOTAL 471,829 MEAN 1,293 MAX 4,100 MIN 487 CFSM .69 IN 9.41
WTR YR 1972 TOTAL 474,312 MEAN 1,296 MAX 3,780 MIN 512 CFSM .69 IN 9.46

STREAMS TRIBUTARY TO LAKE MICHIGAN

81

04099750 Pigeon River near Scott, Ind.

LOCATION.--Lat 41°44'56", long 85°34'35", in SE 1/4 NW 1/4 sec.14, T.38 N., R.8 E., Lagrange County, on right bank 20 ft downstream from bridge on County Road 750 North, 1,200 ft downstream from Page ditch, 0.7 mile south of Indiana-Michigan state line, and 1.2 miles northwest of Scott.

DRAINAGE AREA.--361 sq mi, of which 53.9 sq mi does not contribute directly to surface runoff.

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder. Datum of gage is 815.00 ft above mean sea level.

EXTREMES.--Current year: Maximum discharge, 584 cfs May 16 (gage height, 4.18 ft); minimum daily, 42 cfs Oct. 21.
Period of record: Maximum discharge, 1,450 cfs Feb. 1, 1969 (gage height, 6.34 ft); minimum daily, 42 cfs Oct. 21, 1971.

REMARKS.--Records good. WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86	94	117	338	155	190	380	443	268	150	141	86
2	86	94	110	275	150	205	378	473	255	139	139	88
3	84	96	106	250	140	185	370	465	245	137	137	96
4	86	94	104	215	135	173	375	443	235	128	135	100
5	90	92	106	200	130	163	373	428	223	121	128	94
6	90	94	115	200	125	150	355	420	208	117	124	90
7	90	90	137	220	125	168	348	423	198	110	132	84
8	94	86	158	223	125	163	340	448	190	115	155	86
9	104	90	141	210	120	148	333	483	183	135	143	90
10	113	92	146	208	120	150	325	506	175	121	132	84
11	102	94	180	205	130	158	318	480	165	110	126	84
12	94	96	178	198	150	155	308	448	160	106	124	100
13	92	92	158	195	168	255	315	435	139	104	124	121
14	94	94	146	160	163	405	330	458	141	117	121	200
15	94	94	170	140	163	393	345	500	190	139	117	353
16	92	92	198	140	160	388	380	548	195	163	121	335
17	90	96	193	140	158	440	455	515	173	160	119	280
18	92	96	170	150	160	435	488	480	160	178	117	268
19	77	100	158	150	158	410	460	455	153	188	115	313
20	73	104	155	170	168	403	475	435	148	198	113	300
21	42	102	158	190	153	410	490	415	141	180	106	295
22	73	98	153	258	146	458	495	398	139	183	104	278
23	130	94	146	263	137	478	495	380	137	178	106	258
24	137	94	143	220	135	450	485	363	139	185	124	250
25	132	94	141	195	130	428	470	345	141	193	128	258
26	124	96	146	190	137	413	458	323	137	183	119	295
27	115	102	146	180	132	405	445	300	130	183	115	310
28	108	108	148	175	135	393	433	288	130	180	110	298
29	104	113	143	170	153	388	423	280	137	175	102	328
30	100	119	233	165	-----	398	415	278	153	165	94	340
31	98	-----	373	160	-----	393	-----	278	-----	153	88	-----
TOTAL	2,986	2,900	4,876	6,153	4,161	9,751	12,060	12,934	5,188	4,694	3,759	6,162
MEAN	96.3	96.7	157	198	143	315	402	417	173	151	121	205
MAX	137	119	373	338	168	478	495	548	268	198	155	353
MIN	42	86	104	140	120	148	308	278	130	104	88	84
CFSM	.27	.27	.43	.55	.40	.87	1.11	1.16	.48	.42	.34	.57
IN.	.31	.30	.50	.63	.43	1.00	1.24	1.33	.53	.48	.39	.63
CAL YR 1971	TOTAL 83,976	MEAN 230	MAX 1,130	MIN 42	CFSM .64	IN 8.65						
WTR YR 1972	TOTAL 75,624	MEAN 207	MAX 548	MIN 42	CFSM .57	IN 7.79						

STREAMS TRIBUTARY TO LAKE MICHIGAN

04100222 North Branch Elkhart River at Cosperville, Ind.

LOCATION.--Lat 41°28'54", long 85°28'32", in NE 1/4 NW 1/4 sec.22, T.35 N., R.9 E., Noble County, on right bank downstream side of bridge on County Road 900 North, 1,300 ft downstream from Boyd ditch, 1.7 miles upstream from Hustin ditch, and 3.1 miles downstream from Waldron Lake.

DRAINAGE AREA.--142 sq mi.

PERIOD OF RECORD.--October 1971 to current year. October 1950 to September 1971 at site 3.1 miles upstream, published as North Branch Elkhart River near Cosperville. Records may not be equivalent.

GAGE.--Water-stage recorder. Datum of gage is 880.00 ft above mean sea level.

EXTREMES.--Current year: Maximum discharge, 332 cfs Apr. 23 (gage height, 5.52 ft); minimum daily, 2.4 cfs Nov. 21.
Period of record: Maximum discharge, 332 cfs Apr. 23, 1972 (gage height, 5.52 ft); minimum daily, 2.4 cfs Nov. 21, 1971.

REMARKS.--Records good. Flow regulated at times by dam at Waldron Lake.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	32	3.0	105	43	64	147	255	103	30	34	21
2	11	31	5.2	95	43	73	146	254	95	26	34	25
3	11	30	11	86	40	69	141	249	94	25	34	31
4	11	28	16	70	38	63	139	236	93	23	33	28
5	10	29	19	60	37	50	137	218	87	20	29	25
6	11	30	24	55	37	55	137	210	81	17	28	23
7	9.8	25	32	68	36	50	141	207	76	15	31	21
8	10	24	39	64	36	44	136	207	70	16	31	23
9	13	24	39	67	35	47	134	226	66	16	29	22
10	12	23	50	68	35	45	129	229	63	15	27	19
11	12	23	59	65	35	46	126	223	58	14	25	20
12	11	23	60	63	45	48	123	214	53	12	25	39
13	12	23	53	63	64	88	141	210	58	14	24	48
14	12	24	52	64	63	134	150	228	58	33	30	206
15	12	23	60	40	60	151	165	262	70	63	62	267
16	12	23	69	40	58	171	206	268	74	98	49	294
17	12	22	66	40	54	190	257	265	65	103	39	296
18	12	22	58	45	48	192	281	255	57	97	33	297
19	14	19	57	48	46	190	295	241	50	93	36	299
20	17	3.2	58	53	43	185	314	229	45	88	37	294
21	20	2.4	53	56	41	182	319	217	37	80	31	283
22	31	2.8	51	62	40	180	324	204	32	71	27	272
23	40	2.8	47	69	39	182	326	192	29	63	45	259
24	44	3.0	44	74	37	181	319	180	32	60	51	248
25	44	3.0	46	62	36	174	310	168	31	54	45	244
26	43	3.2	48	68	37	166	296	157	30	49	37	247
27	42	7.0	50	60	36	161	281	145	25	50	33	244
28	41	11	47	55	39	155	266	131	22	47	31	236
29	38	13	48	50	51	151	252	119	30	44	29	246
30	36	3.8	73	47	-----	147	240	113	34	39	27	247
31	33	-----	103	45	-----	150	-----	108	-----	36	24	-----
TOTAL	647.8	533.2	1,440.2	1,907	1,252	3,784	6,378	6,420	1,718	1,411	1,050	4,824
MEAN	20.9	17.8	46.5	61.5	43.2	122	213	207	57.3	45.5	33.9	161
MAX	44	32	103	105	64	192	326	268	103	103	62	299
MIN	9.8	2.4	3.0	40	35	44	123	108	22	12	24	19
CFSM	.15	.13	.33	.43	.30	.86	1.50	1.46	.40	.32	.24	1.13
IN.	.17	.14	.38	.50	.33	.99	1.67	1.68	.45	.37	.28	1.26

WTR YR 1972 TOTAL 31,365.2 MEAN 85.7 MAX 326 MIN 2.4 CFSM .60 IN 8.22

STREAMS TRIBUTARY TO LAKE MICHIGAN

83

04100500 Elkhart River at Goshen, Ind.

LOCATION.--Lat 41°35'36", long 85°50'55", in NE 1/4 NE 1/4 sec.8, T.36 N., R.6 E., Elkhart County, on right bank 20 ft downstream from River Avenue bridge at Goshen and 0.5 mile upstream from Rock Run.

DRAINAGE AREA.--594 sq mi.

PERIOD OF RECORD.--April 1931 to current year.

GAGE.--Water-stage recorder. Datum of gage is 769.43 ft above mean sea level. Prior to Nov. 20, 1931, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--41 years, 493 cfs (11.27 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,830 cfs Apr. 17 (gage height, 5.44 ft); minimum daily, 97 cfs Oct. 6, 21.
Period of record: 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, 7.0 cfs Aug. 11, 1964, result of extreme regulation.

REMARKS.--Records good. The flow is regulated by three powerplants upstream from station.

REVISIONS (WATER YEARS).--WSP 1337: 1939(M). WSP 1557: 1954. WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	118	153	763	230	378	642	867	359	216	234	192
2	99	124	144	560	210	453	649	889	337	209	227	179
3	102	132	135	476	200	408	653	856	321	209	227	195
4	104	138	129	435	190	345	654	801	309	195	223	179
5	99	132	132	300	180	305	656	746	293	188	209	169
6	97	115	150	250	180	237	601	702	289	182	206	156
7	104	115	172	300	170	289	618	680	277	182	227	150
8	104	118	179	343	170	285	718	752	265	179	234	179
9	112	118	182	345	170	244	651	1,090	258	175	230	150
10	115	141	227	350	170	250	619	1,310	248	172	209	135
11	110	124	281	350	170	270	594	1,030	237	172	202	165
12	104	115	281	338	200	280	576	829	230	156	206	234
13	107	118	262	330	205	430	920	746	244	153	202	255
14	118	118	248	281	206	600	1,300	862	258	220	199	779
15	112	118	285	199	220	883	1,020	1,370	265	440	297	1,220
16	104	112	370	195	230	900	1,160	1,590	285	670	341	1,070
17	102	115	350	200	229	1,030	1,640	1,300	273	605	293	921
18	99	118	340	257	244	840	1,660	1,030	258	565	251	908
19	110	129	330	275	242	713	1,310	878	244	702	234	992
20	110	126	310	301	198	667	1,270	785	230	691	220	988
21	97	129	300	344	210	668	1,360	719	227	550	213	940
22	129	126	290	399	200	808	1,290	665	220	471	206	908
23	138	118	280	556	190	954	1,310	625	209	435	213	886
24	129	115	260	554	180	797	1,190	590	209	440	277	875
25	129	115	270	451	180	701	1,090	560	209	395	258	962
26	150	118	280	269	180	660	1,020	530	202	350	237	1,210
27	132	126	289	300	198	637	977	490	195	337	220	1,340
28	124	129	285	280	205	631	921	440	192	313	206	1,140
29	124	138	273	270	314	642	882	408	220	285	220	1,180
30	124	150	476	260	-----	681	852	386	241	255	241	1,450
31	121	-----	774	250	-----	687	-----	372	-----	241	220	-----
TOTAL	3,511	3,708	9,437	10,781	5,871	17,673	28,803	24,898	7,604	10,353	7,182	20,107
MEAN	113	124	272	348	202	570	960	803	253	334	232	670
MAX	150	150	774	763	314	1,030	1,660	1,590	359	702	341	1,450
MIN	97	112	129	195	170	237	576	372	192	153	199	135
CFSM	.19	.21	.46	.59	.34	.96	1.62	1.35	.43	.56	.39	1.13
IN.	.22	.23	.53	.68	.37	1.11	1.80	1.56	.48	.65	.45	1.26

CAL YR 1971 TOTAL 122,019 MEAN 334 MAX 1,920 MIN 94 CFSM .56 IN 7.64
WTR YR 1972 TOTAL 148,928 MEAN 407 MAX 1,660 MIN 97 CFSM .69 IN 9.33

PEAK DISCHARGE (BASE, 1,800 CFS).--Apr. 17 (2100) 1,830 cfs (5.44 ft).

STREAMS TRIBUTARY TO LAKE MICHIGAN

04101000 St. Joseph River at Elkhart, Ind.

LOCATION.--Lat 41°41'30", long 85°58'30", in SW 1/4 NE 1/4 sec.5, T.37 N., R.5 E., Elkhart County, on left bank 200 ft downstream from mouth of Elkhart River, 200 ft upstream from Main Street bridge in Elkhart, 2,000 ft downstream from Christiana Creek, and 0.5 mile downstream from Elkhart Hydroelectric Plant.

DRAINAGE AREA.--3,370 sq mi.

PERIOD OF RECORD.--August 1947 to current year. Gage heights at site 0.8 mile downstream at different datum for September 1924 to March 1926 are available in the district office.

GAGE.--Water-stage recorder. Datum of gage is 700.00 ft above mean sea level.

AVERAGE DISCHARGE.--25 years, 2,985 cfs (12.03 inches per year).

EXTREMES.--Current year: Maximum discharge, 7,190 cfs Apr. 19 (gage height, 21.97 ft); minimum daily, 784 cfs Oct. 4.
Period of record: Maximum discharge, 18,400 cfs Apr. 5, 1950 (gage height, 27.82 ft); minimum daily, 336 cfs Aug. 5, 1964.

REMARKS.--Records good. The flow is regulated by Elkhart Hydroelectric Plant and by a hydroelectric plant on Elkhart River at Goshen.

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,280	1,240	1,570	3,630	2,500	2,510	4,040	4,420	2,600	1,810	1,490	1,100
2	1,050	1,540	1,460	3,520	3,030	2,690	3,950	4,730	2,400	1,620	1,410	1,040
3	982	1,360	1,430	3,160	2,010	2,410	4,080	4,230	2,250	1,860	1,330	1,080
4	784	1,400	1,170	3,200	2,310	2,540	4,140	4,450	2,420	1,690	1,360	1,090
5	875	1,240	1,110	3,270	1,990	3,060	4,090	4,210	2,300	1,730	1,170	1,300
6	1,300	1,050	1,450	2,890	2,220	2,250	4,000	4,120	2,630	1,790	1,280	1,470
7	1,270	1,070	1,540	2,500	2,130	2,270	4,000	4,210	2,540	1,480	1,500	1,460
8	1,250	1,240	1,540	3,120	2,140	2,390	4,040	4,430	2,160	1,330	1,460	1,170
9	1,120	1,530	1,570	3,220	2,000	1,990	3,880	5,120	2,160	1,470	1,530	1,090
10	1,120	1,790	1,790	3,550	2,280	2,180	3,810	5,310	2,110	1,500	1,460	1,060
11	1,170	1,450	1,950	3,650	1,890	2,160	3,730	5,050	1,640	1,520	1,400	1,330
12	1,220	1,020	2,090	3,360	1,800	2,200	3,680	4,800	1,950	1,390	1,330	1,590
13	1,230	1,080	2,020	3,330	1,880	3,370	3,830	4,650	2,040	1,410	1,240	1,870
14	1,230	1,240	2,550	2,630	1,960	4,570	4,480	4,770	2,300	1,450	1,150	3,000
15	1,210	1,500	2,410	2,270	2,310	4,460	4,200	5,570	2,070	1,740	1,530	3,690
16	1,040	1,360	2,620	2,680	2,120	4,830	4,560	5,680	1,870	1,950	1,630	3,360
17	964	1,230	2,660	2,660	1,910	5,210	5,710	5,830	1,710	1,980	1,260	2,560
18	1,070	1,320	2,740	2,240	2,060	5,370	6,200	5,550	1,920	2,120	1,200	2,390
19	1,190	1,290	2,690	2,290	2,120	4,800	6,420	5,550	1,920	2,280	1,270	3,010
20	1,150	1,170	2,390	2,550	1,990	4,770	6,970	4,980	2,350	2,250	1,210	3,070
21	1,220	1,360	2,310	2,810	2,020	4,910	6,700	4,680	1,800	2,120	1,050	3,090
22	1,290	1,340	2,300	2,980	2,070	5,020	6,570	4,440	1,850	1,900	1,160	2,990
23	1,280	1,330	2,230	3,330	1,780	5,110	6,460	4,080	1,610	1,650	1,380	2,870
24	1,250	1,380	2,200	3,230	1,840	4,700	6,010	3,810	1,550	1,920	1,510	3,060
25	1,410	1,110	1,840	3,280	1,990	4,570	5,960	3,700	1,600	1,830	1,510	3,060
26	1,620	1,210	2,000	2,440	2,040	4,820	5,590	3,410	1,750	1,770	1,370	3,480
27	1,520	1,140	2,030	2,490	1,620	4,390	5,160	3,140	2,040	1,820	1,560	3,820
28	1,590	1,120	2,190	2,590	2,140	4,120	5,050	2,800	1,780	1,830	1,220	3,630
29	1,350	1,350	2,080	2,440	2,180	4,050	4,840	2,820	1,920	1,510	1,250	3,940
30	1,430	1,510	2,720	2,160	-----	4,160	4,460	2,920	2,040	1,440	1,520	4,130
31	1,340	-----	3,510	2,230	-----	4,120	-----	2,460	-----	1,740	1,230	-----
TOTAL	37,905	38,970	64,160	89,700	60,330	116,000	146,610	135,920	61,280	53,900	41,970	71,800
MEAN	1,223	1,299	2,070	2,894	2,080	3,742	4,887	4,385	2,043	1,739	1,354	2,393
MAX	1,590	1,790	3,510	3,650	3,030	5,370	6,970	5,830	2,630	2,280	1,630	4,130
MIN	784	1,020	1,110	2,160	1,620	1,990	3,680	2,460	1,550	1,330	1,050	1,040
CFS4	.36	.39	.61	.86	.62	1.11	1.45	1.30	.61	.52	.40	.71
IN.	.42	.43	.71	.99	.67	1.28	1.62	1.50	.68	.59	.46	.79

CAL YR 1971 TOTAL 871,633 MEAN 2,388 MAX 7,260 MIN 651 CFSM .71 IN 9.62
WTR YR 1972 TOTAL 918,545 MEAN 2,510 MAX 6,970 MIN 784 CFSM .74 IN 10.14

STREAMS TRIBUTARY TO LAKE MICHIGAN

85

04101500 St. Joseph River at Niles, Mich.

LOCATION.--Lat 41°49'45", long 86°15'35", in SW1/4 sec.26, T.7 S., R.17 W., Berrien County, on right bank 100 ft upstream from Main Street Bridge at Niles, 0.6 mile downstream from dam at French Paper Co., 1 mile upstream from Dowagiac River, and at mile 44.

DRAINAGE AREA.--3,666 sq mi.

PERIOD OF RECORD.--October 1930 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 633.02 ft above mean sea level. Prior to Oct. 1, 1968, at datum 2.0 ft higher. Oct. 1, 1930, to Feb. 11, 1931, nonrecording gage on Main Street Bridge, and Feb. 12 to June 30, 1931, nonrecording gage 50 ft upstream from present site (gage heights referred to mean sea level). Since Apr. 13, 1970, auxiliary water-stage recorder 1.1 miles downstream from base gage at same datum. Oct. 1, 1943, to Apr. 12, 1970, auxiliary gage was headwater gage at hydroelectric plant at Buchanan Dam, 8 miles downstream from base gage at different datum.

AVERAGE DISCHARGE.--42 years, 3,083 cfs (11.42 inches per year).

EXTREMES.--Current year: Maximum discharge, 8,780 cfs Apr. 20 (gage height, 9.24 ft); minimum daily, 1,100 cfs Nov. 27, 28.

Period of record: Maximum discharge, 20,200 cfs Apr. 5, 1950 (gage height, 15.10 ft, present datum); minimum daily, 420 cfs Aug. 30, 1931.

REMARKS.--Records good. Flow regulated by powerplants above station.

REVISIONS (WATER YEARS).--WSP 1387: 1931, 1933-36, 1940-43, 1945-46 (M), 1949 (M). WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,470	1,410	1,800	4,240	1,970	2,660	4,280	4,460	2,660	2,280	1,860	1,380
2	1,400	1,590	1,700	3,580	3,140	2,500	4,070	4,620	2,920	1,710	1,530	1,150
3	1,250	1,620	1,700	3,190	2,660	2,500	4,190	4,560	2,440	1,870	1,710	1,310
4	1,260	1,830	1,200	3,240	2,220	2,740	4,450	4,530	2,540	2,230	1,680	1,290
5	1,180	1,390	1,200	3,840	1,930	3,330	4,230	4,390	2,500	1,620	1,470	1,330
6	1,210	1,280	1,500	3,110	2,000	3,130	4,110	4,160	2,820	2,080	1,690	1,640
7	1,480	1,250	1,610	2,820	2,000	2,440	4,230	4,700	2,660	2,130	1,560	1,320
8	1,480	1,340	1,810	2,150	2,000	2,520	4,220	4,590	2,360	1,740	1,800	1,790
9	1,510	1,620	1,690	2,760	2,000	2,710	4,080	5,240	2,210	1,580	1,750	1,350
10	1,420	2,020	2,320	2,880	2,010	2,240	4,030	5,570	2,470	1,230	1,770	1,260
11	1,310	2,850	2,050	3,100	2,340	2,410	4,210	5,800	2,020	1,660	1,620	1,660
12	1,530	1,400	2,240	2,860	1,850	2,430	3,810	4,500	1,980	1,900	1,720	2,370
13	1,370	1,300	2,250	2,950	1,910	3,830	3,920	4,760	2,300	1,300	1,440	2,530
14	1,350	1,400	2,450	2,860	2,160	5,850	4,650	4,850	2,430	1,930	1,740	3,000
15	1,440	1,700	2,770	2,480	2,370	5,130	4,320	6,200	2,400	2,290	2,230	3,500
16	1,390	1,700	2,900	2,000	2,380	4,950	4,850	6,060	2,090	2,630	2,420	4,000
17	1,270	1,400	2,770	2,000	2,270	5,320	5,610	5,600	1,970	2,110	1,800	3,000
18	1,250	1,600	2,830	2,120	2,130	5,510	6,260	5,690	1,760	2,800	1,600	2,000
19	1,530	1,400	2,630	2,230	2,370	5,160	6,400	5,390	2,350	3,190	1,650	3,000
20	1,160	1,500	2,530	2,450	2,170	4,890	7,470	5,120	2,640	3,150	1,630	3,800
21	1,490	1,300	2,700	2,790	2,180	4,960	7,190	4,860	2,500	2,710	1,610	3,450
22	1,540	1,500	2,540	2,980	2,320	5,000	6,400	4,600	2,300	2,270	1,370	3,420
23	1,630	1,700	2,370	3,610	2,310	5,250	6,680	4,400	1,940	1,980	1,500	3,470
24	1,410	1,700	2,190	3,430	1,820	4,890	6,330	4,360	2,060	2,170	2,120	3,240
25	1,520	1,200	2,240	3,330	2,160	4,700	5,650	3,610	1,700	1,950	1,790	3,210
26	1,700	1,400	2,430	2,680	2,230	4,770	6,030	3,500	1,390	2,090	1,610	4,140
27	1,790	1,100	2,050	2,430	2,270	4,620	5,280	3,350	1,550	1,990	1,570	4,400
28	1,820	1,100	2,520	2,300	1,910	4,310	4,990	3,220	2,370	2,070	1,770	4,500
29	1,700	1,800	2,080	2,100	2,610	4,230	5,030	2,790	2,250	2,010	1,320	4,480
30	1,560	1,800	2,810	1,970	-----	4,380	4,820	3,130	2,220	1,600	1,830	5,150
31	1,600	-----	4,060	2,000	-----	4,090	-----	2,720	-----	1,830	1,430	-----
TOTAL	45,020	46,200	69,940	86,480	63,690	123,450	151,790	141,330	67,800	64,100	52,590	82,140
MEAN	1,452	1,540	2,256	2,790	2,196	3,982	5,060	4,559	2,260	2,068	1,696	2,738
MAX	1,820	2,850	4,060	4,240	3,140	5,850	7,470	6,200	2,920	3,190	2,420	5,150
MIN	1,160	1,100	1,200	1,970	1,820	2,240	3,810	2,720	1,390	1,230	1,320	1,150
CFSM	.40	.42	.62	.76	.60	1.09	1.38	1.24	.62	.56	.46	.75
IN.	.46	.47	.71	.88	.65	1.25	1.54	1.43	.69	.65	.53	.83

CAL YR 1971 TOTAL 936,432 MEAN 2,566 MAX 7,280 MIN 622 CFSM .70 IN 9.50
 MTR YR 1972 TOTAL 994,530 MEAN 2,717 MAX 7,470 MIN 1,100 CFSM .74 IN 10.09

STREAMS TRIBUTARY TO LAKE MICHIGAN

04101800 Dowagiac River at Summerville, Mich.

LOCATION.--Lat 41°54'57", long 86°12'47", in SE $\frac{1}{4}$ sec.30, T.6 S., R.16 W., Cass County, on right bank 30 ft upstream from bridge on Indian Lake Road, 0.3 mile west of Summerville.

DRAINAGE AREA.--255 sq mi.

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 692.62 ft above mean sea level.

AVERAGE DISCHARGE.--12 years, 258 cfs (13.71 inches per year).

EXTREMES.--Current year: Maximum discharge, 634 cfs Apr. 17 (gage height, 5.87 ft); minimum, 121 cfs Aug. 22 (gage height, 2.94 ft).
Period of record: Maximum discharge, 1,280 cfs June 26, 1968 (gage height, 8.78 ft); minimum, 86 cfs Sept. 10, 1964; minimum gage height, 2.57 ft Aug. 8, 9, 1964.

REMARKS.--Records excellent. Flow regulated by millpond and lake-level control dam above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	163	167	228	451	234	377	308	328	193	166	137	128
2	159	173	219	389	228	441	326	340	189	161	141	138
3	156	175	211	354	230	377	317	320	189	161	143	139
4	162	171	205	324	225	326	311	303	192	157	140	135
5	161	170	200	297	218	287	298	288	185	156	134	132
6	159	168	216	263	233	263	288	294	184	153	132	130
7	161	162	252	270	225	263	297	364	185	151	141	131
8	168	179	254	261	214	262	288	425	181	151	151	157
9	184	179	250	263	219	245	290	421	178	151	157	150
10	188	178	360	279	202	237	283	374	174	151	149	143
11	189	176	539	273	206	239	275	331	169	149	148	146
12	181	174	473	264	222	253	271	307	171	145	153	163
13	175	173	383	262	224	462	305	297	184	141	147	230
14	177	171	330	245	224	605	295	319	186	148	144	335
15	173	170	383	206	233	529	399	396	202	161	142	286
16	169	169	461	235	232	496	484	386	198	160	139	242
17	166	173	402	234	230	460	625	346	188	152	136	221
18	164	175	342	236	246	416	553	322	184	180	132	295
19	163	184	314	274	242	370	481	299	179	185	130	302
20	161	187	301	297	228	346	465	275	175	179	128	267
21	160	186	295	326	235	331	431	255	171	168	123	235
22	172	197	279	319	246	364	420	243	171	161	122	219
23	185	196	264	359	244	372	403	230	167	154	128	206
24	184	196	258	332	241	344	373	222	169	148	144	197
25	185	195	252	299	233	331	354	217	170	146	145	201
26	183	194	254	277	231	314	333	209	169	142	147	231
27	180	207	254	260	227	302	316	203	166	159	145	227
28	176	226	254	250	230	290	304	195	164	154	145	213
29	174	235	245	230	275	285	292	193	168	148	140	329
30	172	237	422	238	-----	291	292	193	172	142	135	342
31	169	-----	528	223	-----	303	-----	193	-----	139	132	-----
TOTAL	5,319	5,543	9,628	8,790	6,677	10,781	10,677	9,088	5,373	4,819	4,330	6,260
MEAN	172	185	311	284	230	348	356	293	179	155	140	209
MAX	189	237	539	451	275	605	625	425	202	185	157	342
MIN	156	162	200	206	202	237	271	193	164	139	122	128
CFSM	.67	.73	1.22	1.11	.90	1.36	1.40	1.15	.70	.61	.55	.82
IN.	.78	.81	1.40	1.28	.97	1.57	1.56	1.33	.78	.70	.63	.91

CAL YR 1971 TOTAL 89,940 MEAN 246 MAX 715 MIN 122 CFSM .96 IN 13.12
WTR YR 1972 TOTAL 87,285 MEAN 238 MAX 625 MIN 122 CFSM .93 IN 12.73

04102500 Paw Paw River at Riverside, Mich.

LOCATION.--Lat 42°11'10", long 86°22'06", in SW¼ SE¼ sec.23, T.3 S., R.18 W., Berrien County, on left bank 40 ft upstream from bridge on Coloma Road, 0.8 mile east of Riverside.

DRAINAGE AREA.--390 sq mi.

PERIOD OF RECORD.--October 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 588.80 ft above mean sea level. May 10, 1966, to July 11, 1967, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--21 years, 404 cfs (14.07 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,170 cfs Mar. 19 (gage height, 8.21 ft); minimum, 230 cfs June 2 (gage height, 3.90 ft).
Period of record: Maximum discharge, 2,140 cfs Feb. 6, 1968 (gage height, 9.32 ft); minimum, 99 cfs July 5, 1964 (gage height, 2.66 ft).

REMARKS.--Records good except those for the winter period, which are fair. Diurnal fluctuation, principally during low flow, caused by paper mill above station.

REVISIONS.--WSP 1337: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	333	329	398	705	490	539	588	538	308	264	244	250
2	364	327	398	660	480	647	576	525	246	256	247	246
3	342	330	396	660	470	693	574	518	248	255	250	241
4	335	389	394	693	470	671	571	503	251	254	254	242
5	324	398	386	724	460	673	566	487	251	252	267	245
6	313	381	384	764	460	688	559	491	255	255	256	239
7	311	370	403	705	460	708	560	512	261	247	263	236
8	308	362	414	645	448	691	557	542	263	242	262	256
9	309	352	419	608	451	660	548	572	263	242	260	260
10	334	345	483	571	403	608	538	588	258	244	256	262
11	334	346	547	547	405	547	524	590	264	249	272	268
12	321	347	595	527	438	521	507	590	265	259	265	281
13	314	344	598	515	451	640	495	592	288	262	267	331
14	312	339	590	480	427	863	483	588	286	257	260	388
15	309	339	651	450	397	972	479	575	342	271	257	371
16	302	339	748	450	399	921	523	557	332	279	260	359
17	302	336	810	470	402	1,000	627	531	354	278	251	356
18	308	328	788	500	417	1,100	782	466	360	302	244	399
19	307	326	780	550	424	1,160	731	424	351	315	252	418
20	296	329	780	592	419	1,150	733	400	322	290	249	402
21	294	342	776	605	424	1,090	798	381	314	310	241	390
22	300	355	748	600	436	1,020	883	366	305	298	241	382
23	309	357	705	578	443	963	915	353	302	280	244	363
24	308	358	660	578	442	888	871	339	310	266	253	347
25	316	358	610	571	437	820	815	298	299	254	258	327
26	334	357	571	562	430	770	757	279	295	246	265	348
27	332	361	543	540	421	731	695	267	295	248	276	375
28	338	367	523	520	418	699	637	259	284	250	274	373
29	335	379	503	510	451	675	604	271	296	253	267	412
30	334	395	543	500	-----	639	571	255	274	256	262	441
31	336	-----	622	500	-----	607	-----	301	-----	250	257	-----
TOTAL	9,914	10,585	17,766	17,880	12,673	24,354	19,067	13,958	8,742	8,184	7,974	9,808
MEAN	320	353	573	577	437	786	636	450	291	264	257	327
MAX	364	398	810	764	490	1,160	915	592	360	315	276	441
MIN	294	326	384	450	397	521	479	255	246	242	241	236
CFSM	.82	.91	1.47	1.48	1.12	2.02	1.63	1.15	.75	.68	.66	.84
IN.	.95	1.01	1.69	1.71	1.21	2.32	1.82	1.33	.83	.78	.76	.94
CAL YR 1971	TOTAL 157,773	MEAN 432	MAX 1,340	MIN 229	CFSM 1.11	IN 15.05						
WTR YR 1972	TOTAL 160,905	MEAN 440	MAX 1,160	MIN 236	CFSM 1.13	IN 15.35						

STREAMS TRIBUTARY TO LAKE MICHIGAN

04102700 Black River near Bangor, Mich.

LOCATION.--Lat 42°21'15", long 86°11'15", in NW1/4 sec.28, T.1 S., R.16 W., Van Buren County, on left bank 50 ft upstream from bridge on 66th Street, 4.9 miles northwest of Bangor.

DRAINAGE AREA.--83.6 sq mi.

PERIOD OF RECORD.--June 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 615 ft (from topographic map).

AVERAGE DISCHARGE.--6 years, 94.6 cfs (15.37 inches per year).

EXTREMES.--Current year: Maximum discharge, 521 cfs Mar. 14 (gage height, 8.40 ft); minimum, 27 cfs Sept. 7, 10; minimum gage height, 1.97 ft Sept. 7.

Period of record: Maximum discharge, 681 cfs Feb. 2, 1968 (gage height, 9.92 ft); minimum, 20 cfs Sept. 28, 1966 (gage height, 1.83 ft).

REMARKS.--Records good except those for the winter period, which are fair. Occasional regulation caused by mills above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	41	70	337	85	258	121	80	40	36	30	31
2	58	42	65	272	85	417	139	92	39	36	34	30
3	51	43	60	231	85	338	140	92	40	36	34	30
4	48	42	60	194	85	260	133	85	40	34	32	29
5	46	42	77	161	80	190	123	78	39	33	31	28
6	46	41	85	130	90	150	111	83	40	32	32	28
7	47	39	91	110	90	138	108	118	39	31	35	28
8	49	38	126	98	85	120	104	153	38	33	36	31
9	52	38	86	92	85	110	101	175	38	32	37	28
10	51	40	176	106	80	104	98	159	38	32	35	28
11	51	41	332	106	80	98	93	128	36	31	34	31
12	48	41	312	98	80	120	87	105	38	31	35	39
13	46	41	269	94	85	299	86	94	46	32	33	50
14	45	40	226	95	85	503	83	90	41	33	34	53
15	46	40	290	95	84	446	85	94	108	39	34	44
16	46	41	363	95	84	369	133	91	83	35	33	40
17	44	40	314	95	86	333	338	85	69	34	33	38
18	43	40	251	95	97	284	322	77	57	44	33	58
19	42	41	207	95	102	234	263	70	49	43	32	62
20	42	44	176	100	98	195	225	65	46	39	31	56
21	41	49	154	110	91	169	191	60	43	37	31	50
22	40	52	130	130	102	174	176	57	43	37	31	45
23	42	52	109	170	105	182	163	53	42	35	36	42
24	44	50	99	140	99	164	141	51	42	34	39	39
25	47	49	93	110	92	147	121	48	41	33	32	40
26	48	49	90	100	86	131	107	47	39	31	36	47
27	48	56	89	95	81	118	96	43	38	33	35	45
28	47	70	92	90	82	109	88	41	39	32	34	44
29	46	81	89	85	118	102	82	40	38	31	36	59
30	44	78	215	85	-----	102	80	40	38	30	35	59
31	42	-----	390	85	-----	112	-----	40	-----	30	32	-----
TOTAL	1,458	1,401	5,186	3,899	2,587	6,476	4,138	2,534	1,367	1,059	1,045	1,232
MEAN	47.0	46.7	167	126	89.2	209	138	81.7	45.6	34.2	33.7	41.1
MAX	68	81	390	337	118	503	338	175	108	44	39	62
MIN	40	38	60	85	80	98	80	40	36	30	30	28
CFSM	.56	.56	2.00	1.51	1.07	2.50	1.65	.98	.55	.41	.40	.49
IN.	.65	.62	2.31	1.73	1.15	2.88	1.84	1.13	.61	.47	.47	.55

CAL YR 1971 TOTAL 29,949 MEAN 82.1 MAX 450 MIN 23 CFSM .98 IN 13.33

WTR YR 1972 TOTAL 32,382 MEAN 88.5 MAX 503 MIN 28 CFSM 1.06 IN 14.41

PEAK DISCHARGE, BASE, 400 CFS

DATE	TIME	G.H.	DISCHARGE
12-31	1200	7.43	400
03-02	1500	7.55	431
03-14	1700	8.40	521

04102850 South Branch Kalamazoo River near Albion, Mich.

LOCATION.—Lat 42°12'11", long 84°47'39", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.17, T.3 S., R.4 W., Calhoun County, on right bank at downstream side of bridge on F Drive South, 3.6 miles southwest of Albion.

DRAINAGE AREA.—146 sq mi.

PERIOD OF RECORD.—October 1971 to September 1972.

GAGE.—Water-stage recorder. Altitude of gage is 950 ft (from topographic map).

EXTREMES.—Maximum discharge, 246 cfs Apr. 17 (gage height, 2.82 ft); maximum gage height, 3.19 ft Jan. 25 (backwater from ice); minimum daily discharge, 36 cfs Aug. 16; minimum gage height, 1.60 ft Dec. 2, result of freezeup.

REMARKS.—Records good except those for the winter period, period of no gage-height record, and period of indefinite stage-discharge relation, which are poor. Records of suspended sediment loads for the current year are published in part 2 of this report.

Discharge measurements made prior to beginning of continuous discharge record

Date	Discharge (cfs)
Sept. 2, 1971	44.1
Sept. 16, 1971	43.9
Sept. 21, 1971	53.8

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	52	56	110	60	82	110	105	75	50	48	48
2	50	52	54	120	58	106	110	112	76	50	52	50
3	47	50	52	120	57	101	106	110	80	50	57	50
4	45	50	50	110	56	85	112	101	88	48	52	48
5	43	49	45	95	55	80	115	90	90	48	47	47
6	45	48	52	80	54	78	113	90	88	48	45	43
7	47	47	66	72	54	76	115	96	80	48	48	43
8	47	46	71	79	54	73	108	125	75	48	52	50
9	48	46	70	82	53	72	106	136	68	48	57	48
10	54	45	85	82	53	70	105	120	68	48	52	43
11	53	45	101	80	53	68	103	98	63	48	47	45
12	50	46	101	75	53	70	101	83	63	49	47	48
13	49	47	87	68	52	110	106	78	64	50	45	87
14	48	44	80	60	52	159	108	90	71	52	42	108
15	48	43	92	55	52	155	131	110	72	53	38	96
16	47	44	108	53	52	160	176	120	72	56	36	80
17	45	45	105	54	52	183	243	130	70	57	40	73
18	45	45	90	60	52	171	234	130	70	58	45	83
19	43	45	83	70	52	148	218	130	68	59	73	96
20	43	46	80	76	52	133	211	130	64	60	70	96
21	42	46	80	80	52	131	203	120	62	60	63	87
22	55	46	75	85	52	145	195	110	60	60	64	76
23	68	47	70	88	52	150	182	100	57	60	73	70
24	68	48	71	88	52	134	168	95	56	59	70	68
25	66	48	70	84	52	122	153	90	55	57	66	68
26	64	49	70	78	53	113	138	80	54	56	63	83
27	62	51	70	72	55	108	124	72	53	73	57	94
28	60	52	70	68	57	105	115	70	53	70	57	90
29	58	53	70	66	66	105	108	70	52	64	54	94
30	56	54	80	64	-----	103	105	76	51	57	52	92
31	54	-----	94	62	-----	105	-----	85	-----	52	48	-----
TOTAL	1,598	1,429	2,348	2,436	1,567	3,501	4,222	3,152	2,018	1,696	1,660	2,104
MEAN	51.5	47.6	75.7	78.6	54.0	113	141	102	67.3	54.7	53.5	70.1
MAX	68	54	108	120	66	183	243	136	90	73	73	108
MIN	42	43	45	53	52	68	101	70	51	48	36	43
CFSM	.35	.33	.52	.54	.37	.77	.97	.70	.46	.37	.37	.48
IN.	.41	.36	.60	.62	.40	.89	1.08	.80	.51	.43	.42	.54

WTR YR 1972 TOTAL 27,731 MEAN 75.8 MAX 243 MIN 36 CFSM .52 IN 7.07

NOTE.—No gage-height record Oct. 27 to Nov. 30. Stage-discharge relation indefinite June 15 to July 24.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04103500 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., Calhoun County, on left bank at upstream side of bridge on U. S. Highway 27 at Marshall.

DRAINAGE AREA.--449 sq mi.

PERIOD OF RECORD.--October 1948 to current year. Monthly discharge only for October 1948, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 877.09 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to Nov. 11, 1948, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--24 years, 293 cfs (8.86 inches per year).

EXTREMES.--Current year: Maximum discharge, 744 cfs Apr. 19 (gage height, 5.71 ft); minimum, 40 cfs Aug. 17; minimum gage height, 3.28 ft Aug. 1, 17; minimum daily discharge, 49 cfs Dec. 4, Aug. 5.
Period of record: Maximum discharge, 2,130 cfs Mar. 29, 1950 (gage height, 8.20 ft); minimum, 12 cfs Aug. 2, 1967; minimum gage height, 3.00 ft May 16, 1963; minimum daily discharge, 31 cfs Aug. 16, 1964.

REMARKS.--Records good. Diurnal fluctuation caused by powerplant above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	256	235	200	448	238	251	302	409	281	318	98	206
2	135	158	181	458	185	265	303	336	269	309	270	251
3	80	191	157	298	178	265	400	372	266	312	219	80
4	257	176	49	350	213	264	354	317	262	132	294	196
5	242	178	259	242	242	255	300	383	259	244	49	249
6	149	95	272	227	103	250	306	279	260	317	228	112
7	161	180	208	275	262	250	413	390	185	196	207	252
8	177	237	211	290	185	249	335	377	258	173	218	162
9	215	168	173	296	181	246	289	454	254	296	288	270
10	62	173	272	269	251	90	288	466	152	218	281	158
11	220	171	281	267	176	201	309	389	247	335	77	115
12	229	168	307	200	239	247	381	392	251	173	172	252
13	166	61	332	266	211	307	329	286	192	235	144	259
14	185	207	281	257	163	493	292	341	242	333	248	320
15	182	233	361	191	180	499	305	491	199	274	196	331
16	149	171	348	94	238	504	508	480	288	82	251	287
17	158	161	390	212	156	538	661	480	162	301	50	247
18	237	172	299	245	181	549	693	470	265	294	350	407
19	152	175	179	241	245	532	701	400	261	342	270	428
20	169	95	402	217	146	520	723	315	203	261	260	361
21	170	234	226	265	194	358	689	250	197	257	250	315
22	184	238	230	275	241	479	642	381	202	260	310	331
23	175	177	317	304	238	512	610	243	206	227	330	310
24	222	174	194	309	163	356	565	238	282	321	330	286
25	245	160	176	286	171	455	519	272	93	127	330	289
26	234	233	261	269	234	446	435	259	321	236	310	289
27	179	287	261	261	63	317	423	254	294	324	250	312
28	199	194	258	256	247	311	395	250	294	206	290	287
29	259	193	189	104	241	306	293	244	73	159	254	304
30	132	225	258	246	-----	394	347	196	328	308	247	312
31	168	-----	383	252	-----	328	-----	263	-----	205	72	-----
TOTAL	5,748	5,520	7,915	8,170	5,765	11,037	13,110	10,677	7,046	7,775	7,143	7,978
MEAN	185	184	255	264	199	356	437	344	235	251	230	266
MAX	259	287	402	458	262	549	723	491	328	342	350	428
MIN	62	61	49	94	63	90	288	196	73	82	49	80
CFSM	.41	.41	.57	.59	.44	.79	.97	.77	.52	.56	.51	.59
IN.	.48	.46	.66	.68	.48	.91	1.09	.88	.58	.64	.59	.66

CAL YR 1971 TOTAL 102,123 MEAN 280 MAX 1,250 MIN 40 CFSM .62 IN 8.46
WTR YR 1972 TOTAL 97,884 MEAN 267 MAX 723 MIN 49 CFSM .59 IN 8.11

STREAMS TRIBUTARY TO LAKE MICHIGAN

91

04105000 Battle Creek at Battle Creek, Mich.

LOCATION.--Lat 42°19'55", long 85°09'15", in NW1/4 sec.5, T.2 S., R.7 W., Calhoun County, on right bank 350 ft upstream from Emmett Street Bridge at Battle Creek, and 3.0 miles upstream from mouth.

DRAINAGE AREA.--241 sq mi.

PERIOD OF RECORD.--October 1930 to September 1931, October 1932 to July 1933, January 1934 to current year. 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 (levels by Michigan Department of Natural Resources). Prior to May 14, 1951, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--39 years (1930-31, 1934-72), 188 cfs (10.59 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,020 cfs Mar. 19 (gage height, 2.12 ft); minimum, 60 cfs Oct. 21 (gage height, 0.61 ft).
Period of record: 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 gages at dam forming control.

REMARKS.--Records good. Occasional slight regulation prior to November 1943.

REVISIONS (WATER YEARS).--WSP 1387: 1931, 1944. WSP 1507: 1956.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	118	78	87	248	134	162	324	296	163	101	66	120
2	105	77	80	337	126	223	316	278	173	98	68	107
3	92	76	80	379	122	228	314	264	177	95	76	100
4	82	75	79	322	122	294	316	251	172	89	82	94
5	78	74	81	243	118	300	326	239	158	83	82	86
6	78	75	88	223	118	263	340	232	151	80	80	79
7	76	72	102	218	118	237	344	230	139	78	78	81
8	75	72	117	199	118	194	338	234	126	78	85	95
9	75	72	136	190	111	190	326	239	116	78	93	126
10	75	73	170	184	108	177	311	242	109	77	96	163
11	73	75	213	182	104	182	296	240	104	75	94	194
12	67	75	241	178	101	198	283	234	101	74	93	212
13	66	75	273	134	104	276	275	224	101	72	87	223
14	66	76	289	130	108	337	269	223	103	75	81	208
15	66	75	300	130	118	462	267	235	118	78	75	193
16	66	75	297	120	122	733	285	258	131	85	72	186
17	66	75	302	120	130	855	339	289	142	86	77	186
18	66	74	339	120	138	902	463	330	149	91	84	196
19	63	79	347	145	138	996	749	351	147	106	95	192
20	63	85	333	146	138	915	821	339	131	98	102	185
21	60	93	299	172	138	800	720	308	113	93	103	185
22	69	95	258	199	126	727	650	277	102	89	112	190
23	93	89	219	203	126	686	598	248	95	83	130	188
24	110	84	198	218	126	658	547	221	94	78	151	174
25	117	80	180	223	122	598	494	194	93	72	163	161
26	115	78	169	237	126	521	445	171	91	71	188	163
27	107	84	162	218	122	455	403	150	89	79	205	164
28	100	86	159	180	122	410	368	130	92	80	203	168
29	93	93	155	162	130	383	340	121	96	77	185	195
30	86	94	199	154	-----	358	317	136	105	74	155	223
31	82	-----	233	138	-----	338	-----	150	-----	69	135	-----
TOTAL	2,548	2,384	6,185	6,052	3,534	14,058	12,184	7,334	3,681	2,562	3,396	4,837
MEAN	82.2	79.5	200	195	122	453	406	237	123	82.6	110	161
MAX	118	95	347	379	138	996	821	351	177	106	205	223
MIN	60	72	79	120	101	162	267	121	89	69	66	79
CFSM	.34	.33	.83	.81	.51	1.88	1.68	.98	.51	.34	.46	.67
IN.	.39	.37	.95	.93	.55	2.17	1.88	1.13	.57	.40	.52	.75

CAL YR 1971 TOTAL 57,626 MEAN 158 MAX 1,200 MIN 40 CFSM .66 IN 8.89
WTR YR 1972 TOTAL 68,755 MEAN 188 MAX 996 MIN 60 CFSM .78 IN 10.61

STREAMS TRIBUTARY TO LAKE MICHIGAN

04105500 Kalamazoo River near Battle Creek, Mich.

LOCATION.--Lat 42°19'26", long 85°11'51", in SW $\frac{1}{4}$ sec.1, T.2 S., R.8 W., Calhoun County, on left bank 20 ft upstream from bridge on Kendall Street in Battle Creek.

DRAINAGE AREA.--824 sq mi.

PERIOD OF RECORD.--July 1937 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Altitude of gage is 815 ft (from topographic map). Prior to Oct. 1, 1957, water-stage recorder at site 4.7 miles downstream at different datum. Oct. 1, 1957, to June 15, 1959, nonrecording gage at bridge 1,800 ft upstream at different datum. June 16, 1959, to Oct. 13, 1960, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--35 years, 621 cfs (10.23 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,920 cfs Apr. 20 (gage height, 5.01 ft); minimum, 176 cfs Dec. 4, 5 (gage height, 2.95 ft); minimum daily, 202 cfs Aug. 6.

Period of record: 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, site then in use; minimum daily, 86 cfs Aug. 5, 1964.

REMARKS.--Records fair. 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 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	389	387	359	822	473	589	824	861	500	474	370	241
2	413	334	293	1,010	407	651	819	837	550	433	259	374
3	307	303	356	921	452	634	834	852	600	429	341	348
4	302	288	228	798	346	697	910	749	650	399	361	205
5	381	283	217	705	436	670	800	738	650	244	320	342
6	342	269	519	481	399	583	790	781	650	364	202	317
7	293	208	359	650	394	642	860	732	601	346	318	300
8	299	330	434	583	439	560	813	883	515	306	338	367
9	308	289	369	559	301	536	794	820	538	334	402	411
10	280	273	638	643	405	472	773	967	420	348	406	519
11	220	278	656	556	352	406	759	940	401	350	365	397
12	351	280	666	486	403	576	753	786	453	438	249	487
13	336	259	722	538	434	938	849	800	419	324	343	685
14	325	215	747	427	356	1,200	726	850	520	414	274	697
15	334	344	856	383	406	1,280	726	900	532	418	345	661
16	269	285	922	370	477	1,390	996	1,000	528	406	404	639
17	241	271	790	370	494	1,610	1,310	1,000	483	290	436	612
18	331	279	882	370	364	1,630	1,470	1,000	476	522	276	688
19	315	298	717	400	513	1,680	1,720	1,000	537	531	578	910
20	293	296	759	450	594	1,700	1,910	1,000	462	460	478	710
21	305	283	770	490	371	1,500	1,770	950	415	411	472	715
22	401	389	613	548	464	1,410	1,640	850	382	392	456	635
23	370	306	585	592	469	1,460	1,530	750	381	385	566	624
24	388	300	604	622	396	1,320	1,410	700	432	421	603	586
25	468	288	472	552	377	1,200	1,300	650	399	373	602	597
26	494	351	522	588	458	1,250	1,110	600	353	307	635	808
27	392	397	542	599	376	1,040	1,060	500	477	488	573	685
28	405	405	526	523	371	934	957	500	462	420	432	667
29	386	324	453	447	489	887	874	500	395	359	536	763
30	373	367	643	374	-----	874	874	550	302	363	464	764
31	287	-----	783	500	-----	928	-----	600	-----	401	395	-----
TOTAL	10,598	9,179	18,002	17,357	12,216	31,247	31,961	24,646	14,483	12,150	12,799	16,754
MEAN	342	306	581	560	421	1,008	1,065	795	483	392	413	558
MAX	494	405	922	1,010	594	1,700	1,910	1,000	650	531	635	910
MIN	220	208	217	370	301	406	726	500	302	244	202	205
CFSM	.42	.37	.71	.68	.51	1.22	1.29	.96	.59	.48	.50	.68
IN.	.48	.41	.81	.78	.55	1.41	1.44	1.11	.65	.55	.58	.76
CAL YR 1971	TOTAL 198,469	MEAN 544	MAX 2,800	MIN 151	CFSM .66	IN 8.96						
WTR YR 1972	TOTAL 211,392	MEAN 578	MAX 1,910	MIN 202	CFSM .70	IN 9.54						

STREAMS TRIBUTARY TO LAKE MICHIGAN

93

04105700 Augusta Creek near Augusta, Mich.

LOCATION.--Lat 42°21'12", long 85°21'14", in SW¼ sec.27, T.1 S., R.9 W., Kalamazoo County, on left bank 15 ft downstream from bridge on EF Road, and 1.3 miles north of Augusta.

DRAINAGE AREA.--38.9 sq mi.

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 815 ft (from topographic map). Prior to June 15, 1965, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--8 years, 37.5 cfs (13.09 inches per year).

EXTREMES.--Current year: Maximum discharge, 90 cfs Apr. 18 (gage height, 1.92 ft); minimum, 18 cfs Feb. 7 (gage height, 0.80 ft, result of freezeup).

Period of record: Maximum discharge, 125 cfs Feb. 3, 1968 (gage height, 2.39 ft); minimum, 9.5 cfs Dec. 30, 1970 (gage height, 0.71 ft), result of freezeup; minimum gage height, 0.65 ft Jan. 19, 1970.

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	27	36	64	32	52	51	48	43	27	27	37
2	34	30	33	59	33	54	52	50	39	27	31	37
3	33	29	32	54	34	45	51	49	40	27	33	36
4	41	28	32	49	32	44	51	47	37	25	31	34
5	37	28	32	43	31	36	50	44	34	24	29	32
6	35	28	37	41	30	36	50	45	37	23	28	31
7	34	27	43	42	30	39	51	52	33	23	31	33
8	32	26	45	39	30	39	48	57	31	24	34	60
9	32	28	47	43	30	36	48	56	30	23	35	55
10	31	30	66	43	29	33	47	51	28	23	33	45
11	29	30	74	42	29	36	45	47	27	28	33	43
12	27	30	73	42	27	40	44	44	27	35	33	44
13	28	30	63	42	29	74	45	43	30	37	31	53
14	31	35	56	34	33	87	44	47	31	38	29	57
15	29	35	66	33	36	83	45	51	59	46	27	53
16	28	33	71	32	34	79	60	50	57	49	26	48
17	24	33	67	33	34	77	80	48	46	43	37	45
18	23	32	59	34	36	71	87	44	40	46	42	56
19	23	36	53	39	34	63	84	42	36	46	45	65
20	22	38	50	41	29	60	78	39	33	41	47	61
21	22	42	48	42	34	61	70	38	31	38	43	54
22	36	39	44	47	31	67	68	36	30	35	40	48
23	43	34	42	52	31	65	64	34	30	32	52	44
24	45	33	42	46	33	59	59	33	32	29	77	41
25	43	32	41	39	31	55	55	32	31	27	72	42
26	39	32	41	40	31	52	51	31	30	28	56	48
27	35	35	41	36	30	49	48	28	29	38	49	49
28	31	37	42	34	32	48	46	29	28	35	47	46
29	29	38	39	33	38	47	44	31	29	32	46	53
30	28	38	64	33	-----	47	45	54	29	30	42	53
31	28	-----	70	32	-----	48	-----	48	-----	28	40	-----
TOTAL	990	973	1,549	1,283	923	1,682	1,661	1,348	1,037	1,007	1,226	1,403
MEAN	31.9	32.4	50.0	41.4	31.8	54.3	55.4	43.5	34.6	32.5	39.5	46.8
MAX	45	42	74	64	38	87	87	57	59	49	77	65
MIN	22	26	32	32	27	33	44	28	27	23	26	31
CFSM	.82	.83	1.29	1.06	.82	1.40	1.42	1.12	.89	.84	1.02	1.20
IN.	.95	.93	1.48	1.23	.88	1.61	1.59	1.29	.99	.96	1.17	1.34

CAL YR 1971 TOTAL 12,680 MEAN 34.7 MAX 87 MIN 17 CFSM .89 IN 12.13
WTR YR 1972 TOTAL 15,082 MEAN 41.2 MAX 87 MIN 22 CFSM 1.06 IN 14.42

STREAMS TRIBUTARY TO LAKE MICHIGAN

04105800 Gull Creek near Galesburg, Mich.

LOCATION.--Lat 42°18'54", long 85°24'04", in NW1/4 sec.7, T.2 S., R.9 W., Kalamazoo County, on right bank 15 ft upstream from bridge on 37th Street, and 2.0 miles northeast of Galesburg.

DRAINAGE AREA.--38.1 sq mi.

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 820 ft (from topographic map).

AVERAGE DISCHARGE.--8 years, 25.0 cfs (8.91 inches per year).

EXTREMES.--Current year: Maximum discharge, 95 cfs Aug. 31 (gage height, 3.52 ft); maximum gage height, 3.94 ft Jan. 16 (backwater from ice); minimum discharge, 8.2 cfs July 7 (gage height, 2.44 ft).

Period of record: Maximum discharge, 136 cfs July 25, 1970; maximum gage height, 4.73 ft Dec. 29, 1967 (backwater from ice); minimum discharge, 2.0 cfs Aug. 10, 1966, Aug. 14, 16, 1968; minimum gage height, 2.20 ft July 15, Aug. 10, 1966.

REMARKS.--Records good except those for the winter period, which are poor. Occasional regulation by many dams upstream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	33	28	37	24	22	22	35	14	9.8	17	64
2	30	33	27	36	26	33	20	34	13	9.6	12	62
3	31	33	26	35	28	31	20	34	13	9.6	11	60
4	33	33	25	34	27	30	20	34	13	9.0	12	58
5	30	32	25	34	26	30	18	33	12	8.7	11	56
6	34	32	28	33	24	29	18	34	13	8.6	11	50
7	36	31	28	31	23	29	20	37	12	8.5	12	46
8	38	31	28	31	23	30	18	36	12	8.8	12	43
9	40	31	29	31	23	28	18	36	11	8.8	12	42
10	41	31	38	31	22	28	18	35	11	8.9	12	37
11	41	30	37	31	22	28	17	33	11	9.0	12	33
12	41	29	36	31	23	30	17	31	12	9.3	12	32
13	42	30	35	31	24	47	18	30	12	9.4	12	37
14	41	34	33	26	25	45	18	32	12	9.5	11	34
15	40	32	40	24	27	44	19	33	19	11	11	33
16	39	30	37	22	27	44	27	34	17	11	10	31
17	38	29	37	22	27	44	29	34	17	14	13	30
18	37	29	35	22	27	42	27	33	15	23	13	34
19	37	30	34	23	26	39	27	31	14	27	15	33
20	35	31	33	27	25	38	29	29	13	30	14	32
21	35	31	32	30	25	39	31	27	12	32	13	31
22	42	30	31	33	25	41	35	29	11	35	13	29
23	40	29	30	33	25	39	36	29	10	38	17	28
24	38	28	30	32	25	37	36	29	10	39	32	28
25	37	27	29	31	24	36	35	28	10	40	31	29
26	38	27	30	29	24	36	35	25	9.9	42	39	30
27	36	29	30	28	23	35	34	20	10	45	47	33
28	35	28	30	27	22	33	33	16	9.8	39	54	38
29	36	29	29	26	22	29	33	14	10	32	58	48
30	36	29	41	25	-----	25	33	15	10	26	60	51
31	33	-----	37	24	-----	22	-----	14	-----	22	70	-----
TOTAL	1,142	911	988	910	714	1,063	761	914	368.7	633.5	679	1,192
MEAN	36.8	30.4	31.9	29.4	24.6	34.3	25.4	29.5	12.3	20.4	21.9	39.7
MAX	42	34	41	37	28	47	36	37	19	45	70	64
MIN	30	27	25	22	22	22	17	14	9.8	8.5	10	28
CFSM	.97	.80	.84	.77	.65	.90	.67	.77	.32	.54	.57	1.04
IN.	1.12	.89	.96	.89	.70	1.04	.74	.89	.36	.62	.66	1.16

CAL YR 1971 TOTAL 9,177.7 MEAN 25.1 MAX 54 MIN 6.0 CFSM .66 IN 8.96
WTR YR 1972 TOTAL 10,276.2 MEAN 28.1 MAX 70 MIN 8.5 CFSM .74 IN 10.03

04106000 Kalamazoo River at Comstock, Mich.

LOCATION.--Lat 42°17'05", long 85°30'50", in NE1/4 sec.19, T.2 S., R.10 W., Kalamazoo County, on left bank at downstream side of bridge on River Street, in Comstock, 0.2 mile downstream from Comstock Creek.

DRAINAGE AREA.--1,010 sq mi, approximately.

PERIOD OF RECORD.--April to August 1931, October 1932 to current year. 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. Prior to November 1945, non-recording gage at same site and datum.

AVERAGE DISCHARGE.--40 years (1932-72), 809 cfs (10.88 inches per year).

EXTREMES.--Current year: Maximum discharge, 2,250 cfs Apr. 21 (gage height, 3.41 ft); minimum, 354 cfs Feb. 5 (gage height, 0.84 ft); minimum daily, 410 cfs Dec. 6.

Period of record: Maximum discharge, 6,910 cfs Apr. 8, 1947 (gage height, 7.94 ft); minimum, 119 cfs May 29, 1958 (gage height, 0.09 ft); minimum daily, 185 cfs Aug. 7, 1934.

REMARKS.--Records good. Flow regulated by powerplants above station. Records of water temperature for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 824: 1933-36. WSP 1387: 1933, 1934 (M), 1935, 1936 (M), 1938 (M), 1940 (M), 1941.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	674	575	594	1,080	633	709	1,220	1,150	794	554	506	745
2	638	567	602	1,150	695	819	1,150	1,170	846	767	500	517
3	640	527	515	1,270	667	964	1,090	1,140	982	840	579	510
4	658	532	491	1,190	644	908	1,110	1,130	938	597	579	650
5	554	510	448	1,090	430	891	1,180	918	970	736	586	637
6	519	520	410	900	515	846	1,120	947	837	591	586	524
7	551	464	622	759	519	873	1,060	1,090	996	542	558	540
8	538	449	685	819	494	841	1,050	1,120	836	561	488	646
9	545	527	685	855	560	784	1,070	1,180	677	533	464	728
10	630	506	810	891	480	656	1,100	1,100	682	636	760	728
11	589	485	1,070	864	505	643	1,050	1,180	737	627	696	886
12	484	476	1,100	810	552	619	999	1,180	720	629	624	868
13	529	482	1,080	776	593	956	965	1,040	817	654	524	814
14	552	464	980	693	631	1,360	1,070	1,070	721	603	434	1,050
15	512	436	1,160	620	561	1,430	978	1,220	898	648	428	1,100
16	522	496	1,270	570	554	1,560	1,110	1,400	980	701	464	972
17	506	497	1,230	570	580	1,630	1,430	1,450	914	779	558	823
18	501	493	1,160	600	606	1,830	1,590	1,430	843	600	783	1,010
19	463	499	1,150	725	540	1,900	1,810	1,430	834	823	685	1,140
20	484	517	1,050	859	507	1,980	1,900	1,350	795	868	697	1,170
21	487	499	964	801	576	1,980	2,110	1,250	747	814	945	1,060
22	605	503	1,010	786	552	1,890	2,160	1,130	669	656	750	904
23	824	582	900	860	581	1,740	2,020	1,040	684	608	755	832
24	836	590	864	898	596	1,680	1,910	1,030	644	656	1,060	760
25	614	533	837	834	563	1,640	1,730	932	746	632	1,070	895
26	719	505	742	597	514	1,510	1,580	739	824	624	1,010	895
27	772	519	742	678	563	1,500	1,460	706	675	558	967	1,070
28	678	647	750	797	549	1,320	1,330	751	700	728	975	886
29	626	675	750	767	494	1,210	1,230	761	781	720	794	904
30	556	606	924	637	-----	1,170	1,110	915	814	600	739	948
31	629	-----	1,040	520	-----	1,120	-----	881	-----	518	897	-----
TOTAL	18,435	15,681	26,635	25,266	16,254	38,959	40,692	33,830	24,101	20,403	21,461	25,212
MEAN	595	523	859	815	560	1,257	1,356	1,091	803	658	692	840
MAX	836	675	1,270	1,270	695	1,980	2,160	1,450	996	868	1,070	1,170
MIN	463	436	410	520	430	619	965	706	644	518	428	510
CFSM	.59	.52	.85	.81	.55	1.24	1.34	1.08	.80	.65	.69	.83
IN.	.68	.58	.98	.93	.60	1.43	1.50	1.25	.89	.75	.79	.93
CAL YR 1971	TOTAL 275,313	MEAN 754	MAX 3,050	MIN 325	CFSM .75	IN 10.14						
WTR YR 1972	TOTAL 306,929	MEAN 839	MAX 2,160	MIN 410	CFSM .83	IN 11.30						

STREAMS TRIBUTARY TO LAKE MICHIGAN

04106300 Portage Creek near Kalamazoo, Mich.

LOCATION.--Lat 42°14'46", long 85°34'33", in SE1/4 sec.34, T.2 S., R.11 W., Kalamazoo County, on left bank 25 ft upstream from bridge on Lovers Lane, and 3.0 miles south of Kalamazoo.

DRAINAGE AREA.--22.4 sq mi.

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 814.88 ft above mean sea level.

AVERAGE DISCHARGE.--8 years, 39.9 cfs (unadjusted).

EXTREMES.--Current year: Maximum discharge, 103 cfs Aug. 23; maximum gage height, 3.03 ft Apr. 18; minimum daily discharge, 24 cfs Oct. 1, Nov. 3-11, Feb. 20, 22-26.

Period of record: Maximum discharge, 180 cfs June 25, 1968 (gage height, 3.60 ft); minimum, 8.0 cfs Jan. 19, 1965 (gage height, 0.88 ft, result of bridge construction upstream).

REMARKS.--Records fair except those for periods of no gage-height record, which are poor. Flow includes water which is pumped from ground water sources by industry and discharged into stream two miles above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	26	26	55	26	30	34	47	42	26	34	33
2	25	25	26	50	27	40	33	48	38	27	36	32
3	27	24	26	46	28	36	34	47	36	27	36	31
4	31	24	26	43	27	33	36	45	36	26	34	31
5	28	24	26	40	25	32	34	44	35	28	32	33
6	28	24	27	37	25	31	37	45	35	29	32	33
7	28	24	29	35	26	31	36	52	34	30	35	36
8	28	24	32	34	26	32	31	54	31	32	36	38
9	30	24	37	33	26	31	32	52	28	30	34	32
10	30	24	42	32	26	30	33	50	26	31	33	31
11	29	24	50	31	26	32	34	46	26	31	34	40
12	29	25	55	30	27	32	34	43	33	30	33	36
13	30	25	57	29	27	77	36	43	43	36	32	40
14	30	26	57	28	28	57	35	47	42	35	32	44
15	29	26	56	27	27	48	38	48	52	34	34	40
16	29	27	54	26	25	50	65	47	40	32	38	36
17	29	27	52	26	26	46	80	45	36	33	41	40
18	29	28	50	27	27	43	85	43	34	44	42	70
19	29	28	47	28	26	40	80	40	38	38	38	50
20	29	29	44	34	24	41	75	38	39	34	30	44
21	30	29	40	32	25	43	70	36	36	34	31	40
22	31	29	38	36	24	43	65	35	35	32	32	36
23	35	29	36	33	24	40	60	33	28	30	41	34
24	41	29	35	32	24	38	55	32	27	32	75	33
25	40	29	34	29	24	36	50	31	28	32	43	37
26	36	29	33	28	24	35	48	29	29	33	36	39
27	33	29	32	29	25	37	46	28	28	35	33	36
28	31	28	32	28	25	38	44	28	28	34	34	36
29	29	28	32	27	25	38	44	35	31	33	32	48
30	28	27	32	26	-----	36	45	50	32	32	33	38
31	27	-----	60	26	-----	33	-----	47	-----	33	33	-----
TOTAL	932	794	1,223	1,017	745	1,209	1,429	1,308	1,026	993	1,119	1,147
MEAN	30.1	26.5	39.5	32.8	25.7	39.0	47.6	42.2	34.2	32.0	36.1	38.2
MAX	41	29	60	55	28	77	85	54	52	44	75	70
MIN	24	24	26	26	24	30	31	28	26	26	30	31

CAL YR 1971 TOTAL 13,780 MEAN 37.8 MAX 78 MIN 24
WTR YR 1972 TOTAL 12,942 MEAN 35.4 MAX 85 MIN 24

PEAK DISCHARGE, BASE, 85 CFS

DATE	TIME	G.H.	DISCHARGE
03-13	1300	2.88	89
04-18	unknown	3.03	102
08-23	2400	2.92	103
09-18	unknown	2.72	87

NOTE.--No gage-height record Oct. 17 to Jan. 18 and Apr. 16 to June 12.

04106320 West Fork Portage Creek near Oshtemo, Mich.

LOCATION.--Lat 42°14'07", long 85°38'54", in SE¼ sec.1, T.3 S., R.12 W., Kalamazoo County, on right bank at upstream side of bridge on 12th Street, 2.1 miles southeast of Oshtemo.

DRAINAGE AREA.--13.0 sq mi.

PERIOD OF RECORD.--May to September 1972.

GAGE.--Water-stage recorder. Datum of gage is 868.86 ft above mean sea level (Kalamazoo County Road Commission bench mark).

EXTREMES.--Maximum daily discharge during period, 12 cfs May 8-10, Sept. 14; maximum gage height, 1.66 ft Sept. 14; minimum discharge, 4.8 cfs May 28, July 25; minimum gage height, 1.30 ft May 28.

REMARKS.--Records fair.

Discharge measurements made prior to beginning of continuous discharge record:

Date	Discharge (cfs)	Date	Discharge (cfs)
Nov. 10, 1959	7.37	Aug. 18, 1964	4.06
Dec. 1, 1959	7.33	Oct. 19, 1965	5.22
July 27, 1964	2.92	May 8, 1967	7.88

DISCHARGE, IN CUBIC FEET PER SECOND, MAY TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								7.5	8.0	7.3	6.0	5.8
2								7.5	7.2	7.5	6.8	5.8
3								7.5	6.5	7.3	7.0	5.8
4								7.5	6.0	7.0	6.8	5.6
5								8.0	6.0	6.8	6.6	5.6
6								9.0	6.5	6.8	6.8	5.3
7								11	6.5	7.3	7.0	5.6
8								12	6.0	7.8	7.5	6.0
9								12	5.5	7.5	7.8	6.0
10								12	5.5	7.3	7.8	5.8
11								10	5.5	7.3	8.0	6.8
12								9.0	6.0	6.8	8.0	8.0
13								8.5	6.6	6.8	7.8	11
14								9.0	8.0	7.3	6.8	12
15								11	9.2	8.3	6.8	11
16								11	9.5	8.0	6.6	9.5
17								9.7	9.0	7.3	6.6	8.0
18								8.7	8.7	8.3	6.6	8.0
19								8.0	7.8	8.5	6.8	8.0
20								7.8	7.5	8.0	6.3	7.3
21								7.0	7.0	8.4	6.3	6.8
22								6.6	6.8	7.8	6.0	6.3
23								6.3	6.8	7.2	6.8	5.8
24								6.0	7.0	6.7	10	5.6
25								5.8	7.0	5.3	9.7	5.6
26								5.6	7.0	5.0	9.2	6.8
27								5.3	6.8	5.6	8.5	6.8
28								5.3	6.8	6.3	7.8	6.3
29								5.3	7.3	7.3	7.3	8.0
30								6.3	7.5	6.3	6.8	8.5
31								6.6	-----	6.0	6.0	-----
TOTAL								252.8	211.5	221.1	224.8	213.4
MEAN								8.15	7.05	7.13	7.25	7.11
MAX								12	9.5	8.5	10	12
MIN								5.3	5.5	5.0	6.0	5.3
CF SM								.63	.54	.55	.56	.55
IN.								.72	.61	.63	.64	.61

STREAMS TRIBUTARY TO LAKE MICHIGAN

04106400 West Fork Portage Creek at Kalamazoo, Mich.

LOCATION.—Lat 42°14'40", long 85°36'50", in NE¼ sec. 5, T.3 S., R.11 W., Kalamazoo County, on right bank 30 ft upstream from culvert on Oakland Drive, 2.5 miles upstream from mouth, and 3.7 miles southwest of main business district of Kalamazoo.

DRAINAGE AREA.—18.7 sq mi.

PERIOD OF RECORD.—September 1959 to current year.

GAGE.—Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 858.09 ft above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.—13 years, 9.28 cfs (6.74 inches per year).

EXTREMES.—Current year: Maximum discharge, 19 cfs Mar. 13, 14, Apr. 16; maximum gage height, 2.76 ft Mar. 13, 14; minimum discharge, 3.2 cfs Apr. 29, 30, May 28, June 8, 9; minimum gage height, 2.19 ft May 28, June 8, 9.
Period of record: Maximum discharge, 39 cfs Dec. 8, 1966; maximum gage height, 3.12 ft Mar. 20, 1963; minimum discharge, 1.0 cfs Aug. 9, 1964; minimum gage height, 0.88 ft July 30, 1963, caused by construction.

REMARKS.—Records good except those for winter periods and those for period of no gage-height record, which are fair. Records of specific conductance, water temperatures and periodic samples are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.0	7.1	10	14	7.5	12	11	5.1	10	9.0	7.0	6.3
2	8.5	7.6	10	14	8.0	12	11	7.1	9.3	9.0	8.0	6.7
3	8.5	7.2	9.8	12	8.0	11	11	11	7.7	8.5	8.0	7.5
4	10	7.0	9.4	11	7.5	10	11	12	5.3	8.0	8.0	6.9
5	9.0	7.1	9.4	11	7.0	9.0	11	10	5.8	8.0	8.0	6.5
6	8.5	7.3	9.9	10	7.0	9.0	10	12	6.3	8.0	8.0	6.0
7	8.5	7.1	10	9.7	7.0	10	10	15	6.6	9.0	8.5	6.6
8	8.0	7.0	11	9.0	7.0	10	10	15	4.6	9.0	9.0	8.6
9	8.0	7.5	11	9.1	7.0	8.3	10	15	3.9	9.0	9.0	8.2
10	7.5	7.9	14	9.2	7.0	9.1	10	14	4.6	8.5	9.0	7.5
11	7.0	7.9	17	9.2	7.0	9.2	9.8	13	5.2	8.5	9.0	8.6
12	7.0	7.9	15	9.1	7.0	9.5	9.4	12	6.9	8.0	9.0	10
13	7.0	7.1	15	9.0	7.0	17	9.8	11	7.0	8.0	8.5	13
14	7.5	6.5	13	8.5	8.0	19	9.5	12	9.0	8.5	8.0	14
15	7.7	7.2	15	8.0	8.5	18	11	14	11	9.5	8.0	13
16	7.4	8.0	15	7.6	8.0	18	14	14	11	9.5	7.5	13
17	7.1	7.4	14	7.8	8.0	17	17	13	11	9.0	7.5	12
18	7.2	6.9	13	8.5	8.5	16	16	12	10	10	7.5	12
19	6.8	7.8	12	9.5	8.0	15	15	11	9.0	10	7.5	11
20	6.5	9.0	11	10	7.5	13	15	10	9.0	9.5	7.5	10
21	6.2	9.3	10	11	7.5	13	13	9.5	8.5	9.0	7.0	9.8
22	9.0	9.1	9.8	12	7.5	14	13	9.1	8.0	8.0	7.0	9.3
23	9.5	8.8	9.5	11	7.5	14	13	8.7	8.0	7.0	8.5	8.8
24	11	8.5	9.4	10	7.5	13	12	8.1	8.0	6.0	12	8.6
25	12	8.6	8.9	9.0	7.0	13	11	7.3	8.0	5.3	11	8.6
26	11	8.8	9.1	9.0	7.0	12	11	6.5	8.0	6.0	11	9.5
27	10	9.7	9.4	8.5	7.0	11	10	6.3	8.0	7.0	10	9.6
28	9.6	9.9	9.6	8.0	7.0	10	6.7	5.3	8.0	8.0	9.0	9.4
29	9.0	11	9.4	8.0	7.0	10	3.6	5.9	9.0	9.0	8.5	11
30	8.5	11	14	7.5	-----	11	3.5	9.1	9.0	8.0	7.5	11
31	7.9	-----	15	7.5	-----	11	-----	9.1	-----	7.0	6.7	-----
TOTAL	260.4	243.2	358.6	297.7	215.5	384.1	328.3	323.1	235.7	256.8	260.7	283.0
MEAN	8.40	8.11	11.6	9.60	7.43	12.4	10.9	10.4	7.86	8.28	8.41	9.43
MAX	12	11	17	14	8.5	19	17	15	11	10	12	14
MIN	6.2	6.5	8.9	7.5	7.0	8.3	3.5	5.1	3.9	5.3	6.7	6.0
CFSM	.45	.43	.62	.51	.40	.66	.58	.56	.42	.44	.45	.50
IN.	.52	.48	.71	.59	.43	.76	.65	.64	.47	.51	.52	.56

CAL YR 1971 TOTAL 4,018.4 MEAN 11.0 MAX 28 MIN 6.2 CFSM .59 IN 7.99
WTR YR 1972 TOTAL 3,447.1 MEAN 9.42 MAX 19 MIN 3.5 CFSM .50 IN 6.86

NOTE.—No gage-height record Jan. 13 to Mar. 8, June 13 to Aug. 30.

04108500 Kalamazoo River near Fennville, Mich.

LOCATION.--Lat 42°35'36", long 85°59'03", in NE 1/4 sec. 5, T.2 N., R.14 W., Allegan County, on left bank 40 ft upstream from bridge on State Highway 89, 2.1 miles downstream from Swan Creek; 4.0 miles downstream from Calkins Dam, and 6.1 miles east of Fennville.

DRAINAGE AREA.--1,600 sq mi, approximately.

PERIOD OF RECORD.--April 1929 to September 1936, October 1937 to current year. 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 (levels by Michigan Department of Natural Resources). April 1929 to September 1936 at bridge and October 1937 to September 1950 in powerplant, 4.0 miles upstream at mean sea level datum (levels by city of Allegan).

AVERAGE DISCHARGE.--42 years, 1,329 cfs (11.28 inches per year).

EXTREMES.--Current year: Maximum discharge, 3,490 cfs Apr. 19 (gage height, 11.68 ft); minimum, 148 cfs July 10 (gage height, 3.43 ft); minimum daily, 627 cfs July 10.

Period of record: 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. Flow regulated at low and medium stages by powerplants above station and since June 1936, by Calkins Dam and powerplant, 4.0 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 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,040	769	1,150	2,510	1,520	1,290	1,640	1,950	1,130	872	1,130	1,060
2	1,100	1,110	1,120	2,280	1,080	1,590	1,850	1,700	1,130	1,130	867	1,060
3	1,010	1,110	1,170	1,940	1,120	1,760	1,770	1,890	1,140	792	1,150	1,050
4	1,030	782	819	2,030	1,360	1,810	2,180	2,070	1,130	862	1,120	1,050
5	1,040	1,110	793	1,900	1,210	1,610	1,810	1,710	1,130	1,150	768	796
6	1,030	1,050	868	1,660	1,180	1,590	1,840	1,680	1,140	1,150	856	796
7	1,000	729	1,140	1,640	1,210	1,590	2,210	1,800	1,140	1,120	882	1,040
8	694	749	849	1,630	1,040	1,600	2,010	1,880	1,133	789	1,140	1,050
9	707	1,070	1,150	1,620	1,030	1,590	1,630	2,040	1,130	993	1,140	1,040
10	1,020	719	1,320	1,620	1,110	1,580	1,610	2,050	1,130	627	1,110	791
11	734	801	1,940	1,560	1,140	1,530	1,730	1,930	1,130	727	769	1,030
12	1,030	1,160	2,620	1,480	1,120	1,450	1,900	1,700	1,140	759	858	1,020
13	1,040	741	2,060	1,480	1,170	1,550	1,800	1,680	1,140	812	860	1,340
14	1,020	717	1,640	1,480	1,150	2,080	1,620	1,690	1,130	725	854	1,730
15	717	1,090	1,900	1,470	1,140	3,000	1,610	1,690	1,400	789	1,110	1,400
16	1,030	810	2,520	1,360	1,140	2,810	1,870	1,800	1,570	1,160	1,110	1,030
17	759	788	2,660	751	1,130	2,550	2,700	2,130	1,550	1,150	1,110	1,020
18	707	811	2,330	904	1,130	2,500	3,390	1,970	1,540	1,170	1,100	1,410
19	1,030	1,100	2,030	1,240	1,140	2,550	3,260	1,710	1,340	1,170	735	1,760
20	1,020	763	1,900	1,290	1,130	2,750	2,870	1,710	1,150	1,340	1,100	1,750
21	692	1,050	1,670	1,470	1,130	2,790	2,810	1,750	1,150	1,210	1,090	1,440
22	712	763	1,660	1,550	1,130	2,800	2,830	1,750	1,150	1,170	852	1,400
23	1,040	1,120	1,640	1,630	1,130	2,810	2,820	1,710	839	1,140	1,470	1,040
24	1,050	1,110	1,640	1,930	1,130	2,800	2,830	1,700	1,150	1,130	1,770	1,370
25	1,080	737	1,630	2,180	1,130	2,640	2,830	1,640	1,160	1,130	1,560	1,740
26	1,280	807	1,570	1,680	1,130	2,250	2,770	1,540	859	817	2,090	1,180
27	1,240	1,070	1,490	1,560	1,120	2,310	2,300	1,340	1,140	772	1,280	1,350
28	1,050	802	1,500	1,490	1,120	2,320	1,920	1,140	1,150	756	1,440	1,450
29	1,050	849	1,490	935	1,130	2,310	2,120	1,140	878	775	715	1,210
30	1,040	1,410	1,560	1,240	-----	2,170	2,120	1,140	1,160	1,600	1,160	1,250
31	1,020	-----	1,930	1,570	-----	1,820	-----	1,130	-----	781	1,410	-----
TOTAL	30,012	27,697	49,759	49,080	33,400	65,800	66,650	52,760	35,056	30,568	34,606	36,653
MEAN	968	923	1,605	1,583	1,152	2,123	2,222	1,702	1,169	986	1,116	1,222
MAX	1,280	1,410	2,660	2,510	1,520	3,000	3,390	2,130	1,570	1,600	2,090	1,760
MIN	692	717	793	751	1,030	1,290	1,610	1,130	839	627	715	791
CFSM	.61	.58	1.00	.99	.72	1.33	1.39	1.06	.73	.62	.70	.76
IN.	.70	.64	1.16	1.14	.78	1.53	1.55	1.23	.82	.71	.80	.85

CAL YR 1971 TOTAL 476,822 MEAN 1,306 MAX 4,130 MIN 462 CFSM .82 IN 11.09
WTR YR 1972 TOTAL 512,041 MEAN 1,399 MAX 3,390 MIN 627 CFSM .87 IN 11.90

STREAMS TRIBUTARY TO LAKE MICHIGAN

04108600 Rabbit River near Hopkins, Mich.

LOCATION.--Lat 42°38'32", long 85°43'19", in SE1/4 sec.16, T.3 N., R.12 W., Allegan County, on left bank at downstream side of bridge on 18th Street, 2.5 miles northeast of Hopkins.

DRAINAGE AREA.--71.4 sq mi.

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 700 ft (from topographic map).

AVERAGE DISCHARGE.--7 years, 48.8 cfs (9.28 inches per year).

EXTREMES.--Current year: Maximum discharge, 530 cfs Apr. 17 (gage height, 8.19 ft); minimum, 12 cfs Sept. 7; minimum gage height, 2.31 ft Aug. 1, 2.

Period of record: Maximum discharge, 550 cfs Feb. 1, 1968; maximum gage height, 8.19 ft Apr. 17, 1972; minimum discharge not determined; minimum daily, 9.2 cfs Aug. 27, 28, 1970; Sept. 18, 1971; minimum gage height, 1.93 ft Sept. 20, 26, 27, 1966.

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	15	24	132	37	90	69	60	30	29	16	18
2	19	16	25	101	37	174	77	70	29	26	17	18
3	18	16	31	84	37	146	83	67	29	24	23	18
4	20	16	34	73	37	108	91	62	28	22	22	17
5	19	16	21	67	37	84	81	58	25	22	19	15
6	18	16	24	75	37	76	75	58	24	21	16	14
7	20	15	31	73	37	73	71	69	23	21	27	13
8	20	15	30	63	36	99	60	94	22	25	41	16
9	21	16	31	59	36	92	62	89	21	24	41	16
10	20	18	83	68	35	78	59	73	21	23	33	14
11	18	17	169	71	35	67	56	62	20	21	27	13
12	17	17	130	64	35	107	53	56	21	20	26	14
13	20	17	92	60	36	180	132	52	24	20	24	23
14	23	17	66	55	37	230	113	53	26	21	21	36
15	20	17	188	50	38	164	121	58	137	50	19	29
16	18	16	287	45	39	200	182	66	152	64	18	23
17	16	16	208	43	41	235	440	61	102	44	35	20
18	15	16	121	43	43	192	335	54	63	48	46	33
19	15	19	80	43	44	143	240	48	48	57	45	59
20	15	21	67	45	44	125	163	43	41	47	53	55
21	14	27	64	50	44	123	126	40	38	35	39	41
22	17	25	56	60	43	184	115	37	35	29	30	32
23	22	27	50	75	43	159	112	35	33	25	27	28
24	24	21	49	60	42	113	99	34	33	23	33	26
25	24	20	48	50	42	91	88	33	32	21	38	25
26	22	20	48	45	42	78	79	31	30	19	33	28
27	19	22	48	42	42	71	72	29	29	23	33	32
28	18	25	51	40	42	66	67	28	27	23	31	30
29	17	26	48	38	42	63	63	27	27	20	28	41
30	16	28	113	37	-----	61	61	29	32	18	23	50
31	16	-----	207	37	-----	65	-----	30	-----	17	20	-----
TOTAL	582	573	2,524	1,848	1,140	3,737	3,445	1,606	1,202	882	904	797
MEAN	18.8	19.1	81.4	59.6	39.3	121	115	51.8	40.1	28.5	29.2	26.6
MAX	24	28	287	132	44	235	440	94	152	64	53	59
MIN	14	15	21	37	35	61	53	27	20	17	16	13
CFSM	.26	.27	1.14	.83	.55	1.69	1.61	.73	.56	.40	.41	.37
IN.	.30	.30	1.32	.96	.59	1.95	1.79	.84	.63	.46	.47	.42

CAL YR 1971 TOTAL 17,183.1 MEAN 47.1 MAX 400 MIN 9.2 CFSM .66 IN 8.95
WTR YR 1972 TOTAL 19,240.0 MEAN 52.6 MAX 440 MIN 13 CFSM .74 IN 10.02

PEAK DISCHARGE (BASE, 300 CFS).--Dec. 16 (0100) 323 cfs (7.28 ft); Apr. 17 (0100) 530 cfs (8.19 ft).

04108800 Black River near Zeeland, Mich.

LOCATION.--Lat 42°46'40", long 86°01'06", in NW¼ sec.31, T.5 N., R.14 W., Ottawa County, on left bank 20 ft upstream from bridge on State Road, 0.2 mile downstream from South Branch, and 2.5 miles south of Zeeland.

DRAINAGE AREA.--65.8 sq mi.

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 595 ft (from topographic map).

AVERAGE DISCHARGE.--12 years, 53.0 cfs (10.94 inches per year).

EXTREMES.--Current year: Maximum discharge, 2,010 cfs Apr. 17 (gage height, 11.53 ft); minimum, .3 cfs Nov. 15, 16, 17; minimum gage height, 2.05 ft Oct. 31.

Period of record: Maximum discharge, 2,760 cfs Feb. 10, 1966 (gage height, 12.66 ft); minimum, 0.9 cfs Aug. 24, 1962; minimum gage height, 1.79 ft Sept. 30, Oct. 3, 1969.

REMARKS.--Records fair except those for the winter period, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.1	3.6	4.8	131	33	382	121	31	6.2	34	14	20
2	6.7	3.9	4.3	89	32	450	150	35	5.9	32	24	18
3	5.5	4.0	9.6	71	31	200	111	29	6.3	26	39	16
4	5.0	3.9	8.7	50	30	96	86	25	5.4	17	26	14
5	4.8	3.9	3.4	40	29	59	52	21	5.9	13	21	13
6	4.8	3.7	3.8	34	29	50	40	24	5.7	11	19	12
7	5.1	3.6	5.6	30	28	97	37	59	5.1	9.8	379	12
8	4.9	3.6	5.9	34	28	208	30	164	5.1	12	279	14
9	4.7	3.7	6.6	41	28	93	29	82	5.6	12	85	12
10	4.6	3.8	163	74	28	52	29	41	5.4	11	44	11
11	4.4	3.8	354	58	28	65	27	29	5.2	8.7	30	11
12	4.2	3.8	96	37	28	278	25	25	7.0	7.5	28	12
13	4.5	3.6	42	35	29	375	57	23	8.3	9.0	22	143
14	4.8	3.5	30	35	31	243	41	22	13	9.4	19	117
15	4.6	3.3	578	35	34	132	225	22	611	867	15	40
16	4.4	3.4	883	35	40	410	459	20	361	715	14	26
17	4.0	3.3	247	35	41	470	1,520	19	67	152	33	20
18	4.0	3.5	73	36	40	311	402	18	37	164	38	326
19	3.9	4.3	51	60	40	141	96	16	27	166	163	415
20	3.9	5.0	55	65	40	163	64	16	23	70	83	122
21	3.9	5.9	56	56	45	268	46	15	20	41	29	51
22	4.0	5.6	40	107	58	525	66	14	17	31	20	35
23	4.2	7.6	32	262	60	145	59	13	15	25	16	27
24	4.2	4.1	32	108	51	74	41	12	14	21	58	23
25	4.3	3.8	31	75	44	54	35	11	13	19	43	24
26	4.1	3.8	34	60	34	44	31	9.2	12	18	318	30
27	3.8	4.3	36	50	34	39	28	8.1	11	22	288	32
28	3.9	5.0	54	45	30	35	25	7.1	10	20	91	24
29	3.7	5.2	36	40	103	33	23	6.6	39	17	46	268
30	3.7	5.6	344	37	-----	33	23	6.6	101	15	31	221
31	3.6	-----	557	35	-----	46	-----	6.3	-----	14	24	-----
TOTAL	141.3	126.1	3,876.7	1,900	1,106	5,571	3,978	829.9	1,468.1	2,589.4	2,339	2,109
MEAN	4.56	4.20	125	61.3	38.1	180	133	26.8	48.9	83.5	75.5	70.3
MAX	9.1	7.6	883	262	103	525	1,520	164	611	867	379	415
MIN	3.6	3.3	3.4	30	28	33	23	6.3	5.1	7.5	14	11
CFSM	.07	.06	1.90	.93	.58	2.74	2.02	.41	.74	1.27	1.15	1.07
IN.	.08	.07	2.19	1.07	.63	3.15	2.25	.47	.83	1.46	1.32	1.19

CAL YR 1971 TOTAL 23,035.6 MEAN 63.1 MAX 1,970 MIN 1.6 CFSM .96 IN 13.02
WTR YR 1972 TOTAL 26,034.5 MEAN 71.1 MAX 1,520 MIN 3.3 CFSM 1.08 IN 14.72

PEAK DISCHARGE (BASE, 900 CFS)

DATE	TIME	G.H.	DISCHARGE
12-16	0100	10.43	1,180
04-17	0200	11.53	2,010
07-15	1800	10.99	1,440

STREAMS TRIBUTARY TO LAKE MICHIGAN

04109000 Grand River at Jackson, Mich.

LOCATION.--Lat 42°17'05", long 84°24'30", in sec.22, T.2 S., R.1 W., Jackson County, on left bank of sewage-treatment plant, 1 mile north of Jackson, 2.2 miles upstream from Portage River, and at mile 216.

DRAINAGE AREA.--174 sq mi.

PERIOD OF RECORD.--April 1935 to current year.

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, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--37 years, 114 cfs (8.90 inches per year).

EXTREMES.--Current year: Maximum discharge, 436 cfs Apr. 16, 19 (gage height, 10.93 ft); minimum, 32 cfs Oct. 17 (gage height, 8.29 ft).
Period of record: Maximum discharge, 1,070 cfs June 25, 1937 (gage height, 13.50 ft); maximum gage height, 15.44 ft June 25, 1968;
minimum discharge, 9.2 cfs Aug. 22, 1936.

REMARKS.--Records good. Slight regulation by mills above station. Flow includes about 17 cfs as sewage effluent from the city of Jackson which originates from ground water sources.

REVISIONS (WATER YEARS).--WSP 974: 1937 (M). WSP 1387: 1936. WSP 1727: 1950 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	45	106	208	61	101	104	149	134	106	47	65
2	45	51	106	189	62	156	96	253	92	52	50	59
3	33	46	104	169	64	149	111	295	85	49	47	86
4	46	44	53	173	57	142	175	279	122	41	45	78
5	44	91	43	161	52	119	210	169	131	49	40	51
6	45	92	64	146	50	89	217	127	129	50	35	50
7	42	80	66	157	56	83	216	151	81	49	57	50
8	45	86	119	137	56	75	128	262	70	44	64	60
9	41	46	129	135	57	66	99	270	69	41	50	45
10	33	41	180	135	59	72	109	187	58	49	47	38
11	40	45	155	135	58	67	109	145	48	54	47	49
12	43	45	144	94	58	60	109	140	57	45	43	49
13	50	41	150	82	54	140	113	131	59	49	37	94
14	44	37	151	71	65	219	158	217	60	49	47	109
15	43	43	153	62	73	247	206	272	73	63	47	66
16	38	46	170	55	118	301	260	261	58	43	47	57
17	32	45	156	63	124	290	330	259	50	96	63	58
18	42	45	93	73	123	276	362	255	44	88	53	163
19	43	49	81	75	116	260	365	247	56	113	69	202
20	42	54	93	84	95	255	363	209	61	108	46	192
21	44	41	146	128	112	172	343	175	56	102	56	159
22	91	45	150	146	112	176	348	173	55	57	110	83
23	112	46	147	137	66	154	329	158	53	42	93	72
24	104	47	128	148	59	154	333	105	48	48	115	63
25	111	38	69	139	58	235	327	93	50	47	105	91
26	105	38	67	131	54	258	250	84	57	54	65	149
27	57	49	72	137	49	256	184	70	107	53	50	124
28	54	45	73	122	67	241	168	61	109	48	58	77
29	51	55	66	67	72	224	149	65	92	43	58	87
30	44	64	165	56	-----	119	131	127	122	37	58	71
31	39	-----	198	61	-----	105	-----	137	-----	45	59	-----
TOTAL	1,658	1,540	3,637	3,676	2,107	5,261	6,402	5,526	2,286	1,814	1,808	2,597
MEAN	53.5	51.3	117	119	72.7	170	213	178	76.2	58.5	58.3	86.6
MAX	112	92	198	208	124	301	365	295	134	113	115	202
MIN	32	37	43	55	49	60	96	61	44	37	35	38
CFSM	.31	.29	.67	.68	.42	.98	1.22	1.02	.44	.34	.34	.50
IN.	.35	.33	.78	.79	.45	1.12	1.37	1.18	.49	.39	.39	.56

CAL YR 1971 TOTAL 37,896 MEAN 104 MAX 501 MIN 24 CFSM .60 IN 8.10
WTR YR 1972 TOTAL 38,312 MEAN 105 MAX 365 MIN 32 CFSM .60 IN 8.19

04111000 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., Eaton County, on right bank 400 ft upstream from bridge on Petrieville Highway, 2 miles northeast of Eaton Rapids, 2.5 miles downstream from Spring Brook, 25 miles upstream from Cedar River and at mile 178.

DRAINAGE AREA.--661 sq mi.

PERIOD OF RECORD.--October 1950 to current year. Gage-height record 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 (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--22 years, 424 cfs (8.71 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,780 cfs Apr. 19 (gage height, 5.32 ft); minimum, 32 cfs Oct. 11 (gage height, 0.95 ft); minimum daily, 91 cfs Aug. 6.

Period of record: Maximum discharge, 3,500 cfs Feb. 21, 1971; maximum gage height, 8.19 ft June 28, 1968; minimum discharge, 14 cfs Dec. 20, 1962; minimum gage height, 0.67 ft Dec. 20, 1962; minimum daily discharge, 21 cfs Oct. 12, 1964. Flood of Apr. 4, 1950 reached a stage of 8.15 ft (discharge, 3,860 cfs).

REMARKS.--Records good except those for the winter period, which are fair. Diurnal fluctuation caused by powerplant at Smithville and mills at Eaton Rapids. Records of water temperatures for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1707: 1951 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	200	167	176	555	320	356	740	780	430	337	141	188
2	181	127	178	604	301	506	724	736	449	352	144	181
3	168	128	194	644	259	521	691	711	436	339	146	171
4	112	158	202	639	224	583	670	695	423	252	147	204
5	121	157	210	500	220	459	666	688	394	202	143	186
6	176	147	228	400	210	494	615	687	372	176	91	179
7	114	176	206	450	210	415	661	695	360	178	159	174
8	168	172	260	500	200	392	622	686	394	177	192	247
9	103	177	288	539	200	372	636	677	304	173	151	232
10	158	178	437	573	210	370	615	680	207	184	183	191
11	101	173	504	509	210	304	607	706	220	143	183	184
12	114	151	492	497	210	331	571	719	231	142	131	190
13	119	145	492	459	220	479	555	694	224	156	115	220
14	120	138	528	350	254	929	576	705	208	192	183	278
15	166	144	584	300	251	1,020	578	773	251	187	182	365
16	108	150	654	330	286	1,320	704	783	241	181	129	341
17	116	149	636	280	288	1,580	1,120	788	240	191	133	271
18	160	149	609	320	321	1,480	1,270	802	222	193	146	336
19	109	153	582	340	323	1,300	1,640	784	206	211	134	468
20	110	154	563	353	330	1,150	1,680	744	204	236	253	550
21	108	155	533	380	287	1,070	1,600	702	196	302	291	504
22	120	176	419	427	298	1,120	1,520	663	181	230	253	418
23	180	175	460	521	289	1,120	1,410	633	182	211	211	472
24	250	172	403	537	305	1,050	1,300	560	179	199	332	379
25	259	146	457	525	235	965	1,200	503	179	164	338	307
26	253	149	379	421	188	885	1,100	471	206	149	325	409
27	243	153	398	364	225	821	1,040	391	207	191	310	403
28	210	154	334	362	206	794	942	332	198	140	246	520
29	192	163	309	350	290	777	885	271	212	135	201	390
30	207	183	430	330	-----	759	805	339	260	174	206	494
31	189	-----	542	330	-----	738	-----	389	-----	175	206	-----
TOTAL	4,935	4,719	12,687	13,689	7,370	24,460	27,743	19,787	8,016	6,272	6,005	9,452
MEAN	159	157	409	442	254	789	925	638	267	202	194	315
MAX	259	183	654	644	330	1,580	1,680	802	449	352	338	550
MIN	101	127	176	280	188	304	555	271	179	135	91	171
CFSM	.24	.24	.62	.67	.38	1.19	1.40	.97	.40	.31	.29	.48
IN.	.28	.27	.71	.77	.41	1.38	1.56	1.11	.45	.35	.34	.53

CAL YR 1971 TOTAL 150,987 MEAN 414 MAX 3,400 MIN 40 CFSM .63 IN 8.50
WTR YR 1972 TOTAL 145,135 MEAN 397 MAX 1,680 MIN 91 CFSM .60 IN 8.17

STREAMS TRIBUTARY TO LAKE MICHIGAN

04111500 Deer Creek near Dansville, Mich.

LOCATION.—Lat 42°36'30", long 84°19'15", in E₁ sec.33, T.3 N., R.1 E., Ingham County, on right bank 15 ft upstream from bridge on Clark Road, 3.5 miles north of Dansville, and 7.2 miles upstream from mouth.

DRAINAGE AREA.—16.3 sq mi.

PERIOD OF RECORD.—May 1954 to current year.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 889.08 ft above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.—18 years, 9.46 cfs (7.88 inches per year).

EXTREMES.—Current year: Maximum discharge, 293 cfs Apr. 17 (gage height, 6.59 ft); minimum, 0.46 cfs Sept. 6, 7 (gage height, 2.72 ft).
Period of record: Maximum discharge, 570 cfs May 13, 1956 (gage height, 8.83 ft); minimum, 0.06 cfs Jan. 10, 1970, result of freezeup.

REMARKS.—Records poor.

REVISIONS (WATER YEAR).—WSP 1727: 1954 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	.95	1.3	18	4.5	60	19	11	9.0	1.9	.54	.60
2	.86	1.0	1.1	15	4.5	40	22	10	8.0	1.7	.83	.63
3	.65	1.1	1.1	13	4.5	20	20	10	7.0	1.4	1.1	.69
4	.77	1.1	1.1	10	4.5	11	19	9.0	5.5	2.0	.95	.64
5	.67	1.1	1.4	9.2	4.0	8.0	20	8.5	5.0	1.8	.80	.57
6	.62	.96	2.2	8.3	4.0	6.5	21	9.0	4.0	1.4	.70	.51
7	.67	.93	4.1	7.5	4.0	6.2	18	10	3.5	1.2	1.0	.66
8	.66	.92	4.5	6.7	4.0	14	15	12	3.2	1.2	1.2	7.6
9	.74	1.0	4.6	8.4	3.5	9.0	13	14	2.9	1.2	1.1	6.0
10	.66	1.0	12	11	3.5	6.5	13	12	2.7	1.1	1.0	4.5
11	.60	.95	16	10	3.5	11	13	10	2.4	.94	.90	3.0
12	.53	.95	9.5	8.6	3.5	22	13	9.0	2.3	.82	.85	2.5
13	.58	.95	6.9	7.4	4.0	50	18	8.0	2.4	.99	.85	3.0
14	.74	.95	5.7	7.1	5.0	104	17	8.0	2.5	1.4	.80	4.5
15	.73	.95	31	5.0	8.0	88	19	10	3.0	2.5	.75	6.0
16	.66	.89	27	5.0	10	118	104	20	9.0	2.0	.70	3.5
17	.58	.93	16	5.0	12	105	219	38	6.0	1.8	1.0	2.7
18	.59	.95	11	5.0	13	49	94	25	4.0	1.6	1.0	2.2
19	.57	1.1	9.4	7.0	5.7	30	74	16	3.0	2.0	1.0	12
20	.58	1.2	8.4	9.0	4.3	26	74	12	2.7	1.7	.90	13
21	.61	1.4	8.2	8.0	4.5	31	44	10	2.5	1.3	.90	8.0
22	1.3	1.1	7.1	18	4.5	114	37	8.0	2.4	1.1	1.0	5.5
23	2.1	.92	6.5	35	4.5	60	30	7.0	2.3	.86	1.5	3.5
24	2.1	1.0	6.4	20	4.5	25	24	5.5	2.2	.71	2.5	3.0
25	1.8	1.1	6.1	14	4.0	20	23	4.8	2.2	.63	1.6	3.0
26	1.6	1.2	6.3	11	4.0	17	20	4.1	2.3	.68	1.2	4.5
27	1.3	1.4	6.4	8.0	4.0	15	17	3.7	2.5	1.2	1.0	60
28	1.2	1.5	6.6	6.0	4.0	14	15	3.4	2.2	.99	1.0	40
29	1.1	1.7	5.7	5.5	4.5	13	13	3.2	2.0	.79	.86	20
30	1.1	1.6	31	5.0	-----	12	12	6.8	2.0	.63	.71	14
31	1.0	-----	34	4.5	-----	14	-----	7.5	-----	.56	.63	-----
TOTAL	28.77	32.80	298.6	311.2	148.5	1,119.2	1,060	325.5	110.7	40.10	30.87	236.30
MEAN	.93	1.09	9.63	10.0	5.12	36.1	35.3	10.5	3.69	1.29	1.00	7.88
MAX	2.1	1.7	34	35	13	118	219	38	9.0	2.5	2.5	60
MIN	.53	.89	1.1	4.5	3.5	6.2	12	3.2	2.0	.56	.54	.51
CFSM	.06	.07	.59	.61	.31	2.21	2.17	.64	.23	.08	.06	.48
IN.	.07	.07	.68	.71	.34	2.55	2.42	.74	.25	.09	.07	.54

CAL YR 1971 TOTAL 3,340.43 MEAN 9.15 MAX 300 MIN .09 CFSM .56 IN 7.62

WTR YR 1972 TOTAL 3,742.54 MEAN 10.2 MAX 219 MIN .51 CFSM .63 IN 8.54

PEAK DISCHARGE, BASE, 100 CFS

NOTE.—No gage height record Jan. 15 to Feb. 16, May 31 to July 9.

DATE	TIME	G.H.	DISCHARGE
03-14	unknown	4.98	151
03-16	unknown	4.89	146
03-22	unknown	4.63	132
04-17	0100	6.59	293

04112000 Sloan Creek near Williamston, Mich.

LOCATION.--Lat 42°40'33", long 84°21'50", in SE¼ NE¼ sec.1, T.3 N., R.1 W., Ingham County, on left bank 30 ft downstream from bridge on Meridian Road, 2.1 miles upstream from mouth, and 4.2 miles west of Williamston.

DRAINAGE AREA.--9.34 sq mi.

PERIOD OF RECORD.--June 1954 to current year.

GAGE.--Water-stage recorder and concrete control with V-notch sharp-crested weir. Datum of gage is 862.12 ft above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--18 years, 4.99 cfs (7.26 inches per year).

EXTREMES.--Current year: Maximum discharge, 290 cfs Apr. 16 (gage height, 5.03 ft); minimum, 0.13 cfs Oct. 3.

Period of record: Maximum discharge, 773 cfs June 25, 1968 (gage height, 7.84 ft); minimum, 0.01 cfs Sept. 11, 1954, Jan. 18, 1957 (gage height, 1.10 ft), caused by unusual regulation; minimum natural discharge, 0.02 cfs July 27, 1965 (gage height, 1.18 ft).

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.22	.25	.95	9.4	2.5	39	9.7	4.6	3.2	.69	.25	.47
2	.17	.28	.83	6.9	2.5	20	11	4.6	2.7	.60	.37	.49
3	.16	.27	.83	5.6	2.5	9.5	9.3	4.1	2.3	.85	.49	.47
4	.16	.28	.87	4.8	2.4	5.8	9.2	3.9	2.2	.79	.39	.39
5	.15	.31	.90	4.0	2.3	4.0	9.6	3.4	1.7	.60	.32	.36
6	.17	.37	1.4	3.6	2.3	3.1	10	4.5	1.5	.53	.30	.34
7	.17	.34	2.0	3.4	2.2	11	8.0	5.0	1.3	.49	.40	.38
8	.19	.32	1.9	2.9	2.1	9.7	6.7	6.0	1.2	.50	.51	4.5
9	.20	.33	1.9	3.8	2.1	5.0	6.2	5.3	1.1	.48	.49	3.2
10	.19	.34	4.7	5.5	2.0	3.3	6.2	4.4	1.0	.45	.40	1.5
11	.20	.34	4.5	5.4	2.0	4.6	5.9	3.8	.95	.49	.38	1.1
12	.18	.34	2.9	4.4	2.1	13	5.6	3.4	1.0	1.2	.37	.95
13	.23	.84	2.5	3.9	2.4	43	7.1	3.3	1.1	.80	.36	1.8
14	.26	.82	2.3	3.6	3.2	72	6.4	4.3	1.1	1.1	.35	2.8
15	.24	.93	20	2.8	4.4	55	8.9	8.7	3.8	3.2	.32	1.7
16	.35	.81	14	2.3	3.9	67	109	16	2.5	2.1	.29	1.2
17	.36	.77	7.1	2.3	3.1	51	85	8.5	1.6	1.1	.42	.94
18	.22	.80	4.7	2.8	2.9	30	41	6.1	1.3	.89	.43	5.5
19	.21	.96	3.7	5.1	2.5	19	37	4.8	1.1	.77	.42	5.8
20	.20	.95	3.3	5.2	2.4	16	34	4.0	1.1	.60	.39	3.6
21	.20	1.0	3.0	4.4	2.8	24	21	3.5	1.0	.49	.36	2.4
22	.40	.93	2.7	13	2.9	48	18	2.9	.99	.43	.40	1.7
23	.72	.83	2.7	21	2.6	20	14	2.5	.93	.37	.64	1.3
24	.54	.85	2.7	9.2	2.4	12	11	2.2	.92	.30	2.0	1.2
25	.46	.84	2.5	7.5	2.5	9.2	8.2	1.9	.93	.28	1.9	1.6
26	.40	.87	2.6	5.5	2.2	8.0	7.1	1.6	1.1	.29	.95	28
27	.35	.95	2.6	3.9	2.1	7.3	6.1	1.4	.97	.41	.76	19
28	.31	1.0	2.7	3.4	2.4	6.7	5.4	1.3	.83	.36	.63	8.0
29	.28	1.1	2.6	2.9	6.6	6.5	4.9	1.3	.85	.30	.52	6.0
30	.29	1.1	20	2.7	-----	6.0	4.5	2.8	.81	.28	.48	4.9
31	.27	-----	22	2.6	-----	6.8	-----	3.9	-----	.25	.46	-----
TOTAL	8.45	20.02	147.38	163.8	78.1	635.5	526.0	134.0	43.08	21.99	16.75	111.59
MEAN	.27	.67	4.75	5.28	2.69	20.5	17.5	4.32	1.44	.71	.54	3.72
MAX	.72	1.1	22	21	6.6	72	109	16	3.8	3.2	2.0	.28
MIN	.15	.25	.83	2.3	2.0	3.1	4.5	1.3	.81	.25	.25	.34
CFSM	.03	.07	.51	.57	.29	2.19	1.87	.46	.15	.08	.06	.40
IN.	.03	.08	.59	.65	.31	2.53	2.09	.53	.17	.09	.07	.44

CAL YR 1971 TOTAL 1,899.89 MEAN 5.21 MAX 173 MIN .05 CFSM .56 IN 7.57
WTR YR 1972 TOTAL 1,906.66 MEAN 5.21 MAX 109 MIN .15 CFSM .56 IN 7.59

PEAK DISCHARGE (BASE, 120 CFS).--Apr. 16 (1600) 290 cfs (5.03 ft).

STREAMS TRIBUTARY TO LAKE MICHIGAN

04112500 Red Cedar River at East Lansing, Mich.

LOCATION (revised).--Lat 42°43'40", long 84°28'40", in SW¼ sec.18, T.4 N., R.1 W., Ingham County, in left downstream bridge abutment of Farm Lane Bridge on Michigan State University Campus in East Lansing, 4.0 miles upstream from Sycamore Creek, and 5.6 miles upstream from mouth.

DRAINAGE AREA.--355 sq mi.

PERIOD OF RECORD.--August 1902 to December 1903, March 1931 to current year. Monthly discharge only for some periods, published in WSP 1307. Published as Red Cedar River at Agricultural College August 1902 to December 1903 and as Cedar River at East Lansing March 1931 to September 1965. 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. August 1902 to December 1903 non-recording gage at site 0.8 mile downstream at different datum. March 1931 to November 1940 water-stage recorder at site 250 ft upstream at present datum.

AVERAGE DISCHARGE.--42 years, 197 cfs (7.54 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,430 cfs Apr. 18 (gage height, 6.26 ft); minimum, 20 cfs Oct. 17-21; minimum gage height, 3.13 ft Oct. 7, 8, 12, 13.

Period of record: Maximum discharge, 5,920 cfs Apr. 7, 1947 (gage height, 11.58 ft); minimum, 3 cfs July 31, 1931.

Flood of Mar. 24, 1904, reached a stage of 13.4 ft (discharge, 8,000 cfs).

REMARKS.--Records good. Occasional regulation at low flow by mill at Williamston, 16 miles above station.

REVISIONS (WATER YEARS).--WSP 1307: 1936 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	32	42	339	79	135	303	272	166	65	34	44
2	29	40	34	279	79	395	327	268	156	62	42	42
3	28	38	38	247	79	395	335	283	138	62	44	40
4	26	38	34	219	79	315	327	283	126	62	42	40
5	24	38	34	146	79	240	323	261	108	62	42	42
6	24	38	42	123	79	170	331	244	95	62	38	40
7	23	38	53	166	79	135	331	261	84	62	42	40
8	24	36	62	138	79	240	287	295	77	62	44	72
9	26	38	69	146	79	240	272	303	72	62	47	146
10	24	38	120	163	67	170	258	279	69	60	47	146
11	24	38	170	177	65	135	258	250	65	60	47	117
12	23	40	180	163	55	170	247	226	67	57	44	105
13	24	42	174	142	55	275	268	208	67	57	42	117
14	21	44	149	92	82	580	291	219	72	57	40	123
15	21	44	202	108	95	830	291	355	105	97	36	132
16	21	44	291	105	114	1,030	455	419	111	142	36	120
17	20	44	307	105	117	1,210	1,090	415	92	102	42	105
18	20	47	307	105	114	1,270	1,400	359	79	82	47	132
19	20	55	299	105	108	930	1,260	303	69	72	62	129
20	20	60	287	105	89	730	1,080	258	62	60	47	132
21	20	62	264	135	82	630	990	219	60	55	44	117
22	32	60	230	135	92	680	870	184	60	51	47	102
23	53	53	194	240	92	830	760	160	60	44	53	92
24	60	49	170	315	82	780	665	138	60	40	55	87
25	55	47	146	244	82	580	570	126	60	36	65	87
26	49	36	129	205	77	530	485	117	67	36	65	149
27	42	40	114	170	72	435	423	105	65	44	60	219
28	40	44	111	135	69	391	367	97	65	44	60	198
29	42	47	108	105	79	355	323	95	65	42	57	174
30	38	51	198	105	-----	323	287	108	65	38	51	156
31	32	-----	363	105	-----	303	-----	146	-----	34	47	-----
TOTAL	937	1,321	4,921	5,067	2,399	15,432	15,474	7,256	2,507	1,871	1,469	3,245
MEAN	30.2	44.0	159	163	82.7	498	516	234	83.6	60.4	47.4	108
MAX	60	62	363	339	117	1,270	1,400	419	166	142	65	219
MIN	20	32	34	92	55	135	247	95	60	34	34	40
CFSM	.09	.12	.45	.46	.23	1.40	1.45	.66	.24	.17	.13	.30
IN.	.10	.14	.52	.53	.25	1.62	1.62	.76	.26	.20	.15	.34

CAL YR 1971 TOTAL 63,270 MEAN 173 MAX 2,030 MIN 15 CFSM .49 IN 6.63

WTR YR 1972 TOTAL 61,899 MEAN 169 MAX 1,400 MIN 20 CFSM .48 IN 6.49

PEAK DISCHARGE (BASE, 1,100 CFS).--Mar. 17 (2300) 1,300 cfs (6.05 ft); Apr. 18 (1300) 1,430 cfs (6.26 ft).

04113000 Grand River at Lansing, Mich.

LOCATION.--Lat 42°45'02", long 84°33'19", in NW¼ sec.9, T.4 N., R.2 W., Ingham County, on right bank 30 ft upstream from bridge on North Grand River Avenue in Lansing, 2.0 miles downstream from Red Cedar River, and at mile 152.

DRAINAGE AREA.--1,230 sq mi, approximately.

PERIOD OF RECORD.--March 1901 to September 1906, October 1934 to current year. 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 (levels by Michigan Department of Natural Resources). Prior to August 1906, nonrecording gage at same site at different datum. November 1934 to June 1949 water-stage recorder at site 1.8 miles downstream at datum 2.42 ft lower.

AVERAGE DISCHARGE.--43 years, 800 cfs (8.83 inches per year).

EXTREMES.--Current year: Maximum discharge, 3,910 cfs Apr. 19 (gage height, 8.33 ft); minimum, 38 cfs June 15 (gage height, 1.56 ft); minimum daily, 147 cfs Oct. 12.

Period of record: 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, 2.8 cfs Sept. 9, 1963 (gage height, 0.85 ft); minimum daily, 20 cfs Aug. 25, 1941.

Maximum discharge since at least 1901, that of Mar. 26, 1904.

REMARKS.--Records good. Large diurnal fluctuation at medium and low flows caused by powerplants above station. Records of water temperature for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1174: 1949. WSP 1387: 1901, 1903-4, 1935, 1937, 1942.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	299	270	270	1,150	515	836	1,320	1,270	722	416	256	259
2	290	261	274	1,130	452	972	1,320	1,290	704	434	308	215
3	280	331	302	1,100	427	1,260	1,310	1,200	617	436	191	223
4	204	217	279	1,050	377	1,000	1,160	1,180	681	406	205	231
5	245	427	355	797	384	853	1,280	1,120	568	304	216	238
6	186	217	396	623	396	699	1,200	1,110	560	273	205	225
7	259	234	355	788	389	714	1,200	1,220	489	253	210	229
8	215	284	373	791	341	821	1,120	1,190	547	234	245	418
9	199	323	514	905	356	718	1,150	1,150	483	230	268	571
10	210	209	823	871	337	584	1,020	1,160	326	274	248	491
11	198	261	853	840	335	558	1,100	1,110	351	237	239	381
12	147	221	853	799	344	676	1,010	1,080	368	228	198	381
13	242	256	736	763	364	1,010	1,170	1,070	332	252	180	539
14	177	230	772	443	376	2,000	1,090	1,150	423	350	178	519
15	266	201	1,240	477	482	2,850	1,140	1,430	566	584	264	551
16	197	238	1,320	508	462	3,110	1,820	1,550	425	359	214	606
17	169	243	1,190	429	511	3,790	3,220	1,500	446	332	248	526
18	230	153	1,120	501	511	3,720	3,630	1,410	345	346	186	655
19	234	213	973	550	535	3,120	3,700	1,310	303	330	448	718
20	161	173	853	548	475	2,500	3,650	1,170	323	322	279	878
21	177	177	904	568	445	2,350	3,340	1,090	300	330	408	787
22	360	248	683	738	488	2,390	3,180	946	285	387	554	700
23	266	279	679	965	477	2,540	2,830	937	284	256	423	618
24	368	266	627	980	457	2,390	2,570	834	297	306	420	647
25	373	248	665	966	456	2,090	2,300	760	269	231	500	475
26	368	197	603	813	331	1,850	2,100	656	329	210	483	799
27	355	310	638	621	391	1,590	1,860	620	308	264	432	952
28	319	248	608	581	359	1,460	1,650	495	308	210	385	931
29	315	288	524	520	456	1,360	1,460	466	344	186	257	984
30	274	292	998	527	-----	1,360	1,440	526	340	239	289	777
31	284	-----	1,190	515	-----	1,220	-----	642	-----	182	272	-----
TOTAL	7,867	7,515	21,970	22,857	12,229	52,391	56,340	32,642	12,643	9,401	9,209	16,524
MEAN	254	251	709	737	422	1,690	1,878	1,053	421	303	297	551
MAX	373	427	1,320	1,150	535	3,790	3,700	1,550	722	584	554	984
MIN	147	153	270	429	331	558	1,010	466	269	182	178	215
CFSM	.21	.20	.58	.60	.34	1.37	1.53	.86	.34	.25	.24	.45
IN.	.24	.23	.66	.69	.37	1.58	1.70	.99	.38	.28	.28	.50

CAL YR 1971 TOTAL 253,583 MEAN 695 MAX 5,280 MIN 58 CFSM .57 IN 7.67
WTR YR 1972 TOTAL 261,588 MEAN 715 MAX 3,790 MIN 147 CFSM .58 IN 7.91

STREAMS TRIBUTARY TO LAKE MICHIGAN

04114000 Grand River at Portland, Mich.

LOCATION.--Lat 42°51'20", long 84°54'45", in NW¼ sec.4, T.5 N., R.5 W., Ionia County, 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.

PERIOD OF RECORD.--August 1952 to current year. 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 (levels by Michigan Department of Natural Resources). Prior to July 6, 1953, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--20 years, 820 cfs (8.04 inches per year).

EXTREMES.--Current year: Maximum discharge, 5,680 cfs Apr. 17 (gage height, 9.87 ft); minimum, 189 cfs Oct. 6 (gage height, 4.40 ft); minimum daily, 221 cfs Oct. 18.

Period of record: Maximum discharge, 9,100 cfs May 13, 1956; maximum gage height, 11.77 ft Feb. 12, 1968 (backwater from ice); minimum discharge, 38 cfs Oct. 10, 1963; minimum daily, 58 cfs Oct. 9, 1963.

REMARKS.--Records good except those for the winter period, which are fair. Slight diurnal fluctuation caused by powerplants above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	480	346	388	1,560	650	778	1,470	1,580	757	455	297	409
2	388	314	351	1,480	600	1,310	1,600	1,500	812	478	367	420
3	349	344	325	1,340	550	1,350	1,600	1,450	820	503	418	363
4	354	376	360	1,310	500	1,330	1,660	1,360	706	503	301	330
5	322	324	356	1,190	500	1,120	1,510	1,320	734	471	274	346
6	272	441	412	990	500	945	1,690	1,260	639	384	294	351
7	278	304	501	824	500	882	1,550	1,390	629	365	306	349
8	320	267	469	948	450	1,200	1,530	1,500	568	348	325	342
9	262	344	490	918	440	1,050	1,320	1,450	627	318	324	519
10	278	378	724	1,160	430	861	1,330	1,310	565	325	393	625
11	236	288	1,390	1,110	430	747	1,250	1,370	440	346	308	556
12	283	319	1,100	1,020	430	865	1,300	1,270	427	353	329	486
13	224	308	1,080	984	450	1,130	1,610	1,230	483	323	330	531
14	299	288	892	874	500	1,900	1,670	1,250	454	344	264	657
15	257	293	1,460	625	600	2,690	1,690	1,630	798	834	262	602
16	296	276	2,050	600	600	3,290	2,060	2,040	733	893	354	638
17	270	275	1,800	600	598	4,160	5,110	1,910	551	554	321	651
18	221	309	1,500	600	636	4,680	4,790	1,750	547	521	375	709
19	249	259	1,300	650	614	4,230	4,690	1,560	448	548	460	841
20	291	297	1,170	700	614	3,420	4,510	1,420	419	492	648	836
21	238	250	1,020	700	556	2,960	4,110	1,290	432	447	420	965
22	265	251	1,050	900	559	3,020	3,700	1,190	413	439	503	829
23	531	286	782	1,200	604	2,990	3,360	1,060	412	472	1,010	743
24	383	348	824	1,240	566	2,800	3,000	1,040	401	345	1,060	698
25	445	342	725	1,210	551	2,500	2,670	922	390	390	861	700
26	452	296	812	1,000	533	2,190	2,380	836	392	325	790	620
27	446	291	686	800	425	2,000	2,190	761	453	310	699	956
28	417	391	784	750	470	1,790	1,980	680	495	361	606	1,000
29	404	345	715	700	479	1,720	1,790	589	414	324	549	1,050
30	358	363	798	650	-----	1,620	1,630	599	343	264	441	999
31	340	-----	1,820	650	-----	1,530	-----	646	-----	269	435	-----
TOTAL	10,208	9,513	28,134	29,283	15,335	63,058	70,750	39,163	16,302	13,304	14,324	19,121
MEAN	329	317	908	945	529	2,034	2,358	1,263	543	429	462	637
MAX	531	441	2,050	1,560	650	4,680	5,110	2,040	820	893	1,060	1,050
MIN	221	250	325	600	425	747	1,250	589	343	264	262	330
CFSM	.24	.23	.66	.68	.38	1.47	1.70	.91	.39	.31	.33	.46
IN.	.27	.26	.76	.79	.41	1.69	1.90	1.05	.44	.36	.38	.51

CAL YR 1971 TOTAL 308,127 MEAN 844 MAX 6,010 MIN 134 CFSM .61 IN 8.28
WTR YR 1972 TOTAL 328,495 MEAN 898 MAX 5,110 MIN 221 CFSM .65 IN 8.82

04114500 Looking Glass River near Eagle, Mich.

LOCATION.--Lat 42°49'45", long 84°46'40", in sec.10, T.5 N., R.4 W., Clinton County, on right bank at upstream side of highway bridge, 1.5 miles northeast of Eagle and 10 miles upstream from mouth.

DRAINAGE AREA.--281 sq mi.

PERIOD OF RECORD.--August 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 747.09 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to June 2, 1962, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--28 years, 161 cfs (7.78 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,770 cfs Apr. 17 (gage height, 6.17 ft); minimum, 31 cfs Oct. 8, 20, 21 (gage height, 1.38 ft).

Period of record: 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; maximum gage height, 9.9 ft Mar. 7, 1956 (backwater from ice), from high water mark; minimum discharge, 10 cfs July 28, 1965 (gage height, 1.01 ft).

REMARKS.--Records good except those for the winter period, which are poor. Small intermittent diversion at times into Lake Geneva when discharge is above 50 cfs.

REVISIONS (WATER YEARS).--WSP 1387: 1946-47.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	40	53	217	100	170	481	623	87	57	45	65
2	40	40	58	169	95	230	464	564	88	53	59	63
3	37	41	56	161	90	230	444	508	90	52	68	57
4	37	40	52	160	85	190	425	458	86	50	76	52
5	35	40	48	135	80	170	401	414	80	47	77	50
6	34	39	48	139	80	160	386	386	75	46	73	47
7	34	40	54	150	75	160	360	378	69	46	74	45
8	32	38	58	150	75	160	336	365	65	47	69	46
9	33	39	68	150	70	160	322	341	61	44	70	45
10	33	40	122	160	70	160	312	310	58	43	71	45
11	32	40	146	170	70	180	303	291	55	42	71	47
12	32	45	129	160	70	190	291	279	56	42	68	47
13	34	49	116	150	75	250	356	269	58	41	62	59
14	36	48	110	130	80	400	363	281	60	46	57	58
15	34	46	283	110	90	530	393	308	126	169	53	58
16	33	43	264	95	100	527	614	320	110	144	50	61
17	32	42	206	95	105	579	1,480	281	99	138	56	60
18	33	42	171	100	105	664	940	255	90	157	58	77
19	33	42	174	110	110	540	871	245	83	182	100	74
20	32	41	162	120	100	502	848	245	76	173	78	69
21	32	42	163	140	95	595	822	248	68	164	74	67
22	45	41	160	170	100	776	840	245	65	151	71	66
23	52	43	183	200	100	700	880	236	63	133	97	62
24	47	41	145	170	95	647	905	220	62	110	196	59
25	46	40	133	150	95	651	905	193	63	88	125	56
26	43	39	128	140	70	635	885	165	73	71	100	59
27	42	43	122	130	70	615	844	138	65	66	96	58
28	41	46	117	120	90	595	799	117	63	57	96	61
29	42	48	119	110	130	568	740	102	61	54	90	69
30	41	51	165	105	-----	547	678	93	61	51	81	71
31	39	-----	215	100	-----	508	-----	89	-----	48	71	-----
TOTAL	1,158	1,269	4,028	4,366	2,570	12,989	18,688	8,967	2,216	2,612	2,432	1,753
MEAN	37.4	42.3	130	141	88.6	419	623	289	73.9	84.3	78.5	58.4
MAX	52	51	283	217	130	776	1,480	623	126	182	196	77
MIN	32	38	48	95	70	160	291	89	55	41	45	45
CFSM	.13	.15	.46	.50	.32	1.49	2.22	1.03	.26	.30	.28	.21
IN.	.15	.17	.53	.58	.34	1.72	2.47	1.19	.29	.35	.32	.23

CAL YR 1971 TOTAL 69,319 MEAN 190 MAX 1,700 MIN 23 CFSM .68 IN 9.18
WTR YR 1972 TOTAL 63,048 MEAN 172 MAX 1,480 MIN 32 CFSM .61 IN 8.35

STREAMS TRIBUTARY TO LAKE MICHIGAN

04115000 Maple River at Maple Rapids, Mich.

LOCATION.--Lat 43°06'35", long 84°41'35", in sec.5, T.8 N., R.3 W., Clinton County, on right bank at downstream side of bridge on Maple Road at Maple Rapids, 50 ft upstream from Pine Creek, and 0.8 mile upstream from Hayworth Creek. Records include flow of Pine Creek.

DRAINAGE AREA.--434 sq mi.

PERIOD OF RECORD.--August 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 642.58 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to Oct. 4, 1968, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--28 years, 232 cfs (7.26 inches per year).

EXTREMES.--Current year: Maximum discharge, 2,500 cfs Mar. 22 (gage height, 9.13 ft); minimum, 31 cfs Oct. 11, 12 (gage height, 3.07 ft).
Period of record: 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, 4.4 cfs Aug. 13, 1965 (gage height, 1.62 ft).
Flood in March 1904 reached a stage of 13.8 ft, from information by local resident.

REMARKS.--Records good except those for the winter period, which are poor.

REVISIONS (WATER YEAR).--WSP 1707: 1956.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	50	51	311	150	98	652	508	114	109	102	239
2	40	47	50	302	140	103	611	482	109	101	136	223
3	38	45	48	293	130	101	593	462	103	94	145	204
4	37	45	47	286	130	98	599	446	98	86	137	188
5	35	44	46	276	120	99	624	423	91	79	125	174
6	34	45	47	263	120	101	665	401	85	71	117	172
7	34	44	51	248	110	101	685	388	78	66	115	165
8	33	48	55	235	110	142	652	373	71	61	112	158
9	33	56	60	226	110	173	602	352	67	58	108	144
10	33	61	73	222	105	186	565	333	61	56	104	132
11	32	61	119	232	105	207	532	315	56	54	100	123
12	32	61	163	244	105	306	510	302	55	51	95	117
13	33	64	198	240	103	467	555	290	56	50	90	115
14	36	62	222	210	101	560	636	280	56	51	84	120
15	38	59	288	170	104	644	734	279	105	73	78	120
16	38	60	473	150	110	764	864	275	161	98	73	121
17	37	61	606	150	115	1,010	1,350	273	192	103	79	119
18	36	60	699	150	117	1,350	1,470	272	207	112	84	127
19	35	58	695	160	120	1,560	1,560	272	215	122	95	150
20	34	60	649	180	133	1,840	1,550	267	217	134	110	165
21	34	60	595	200	123	2,000	1,460	258	212	151	113	171
22	37	58	551	224	118	2,400	1,310	246	202	169	118	170
23	47	54	511	264	117	2,100	1,180	230	186	183	128	163
24	53	52	472	303	116	1,800	1,070	216	174	187	195	147
25	56	50	445	300	112	1,600	947	200	162	183	283	140
26	57	49	418	270	108	1,350	833	183	157	172	317	134
27	57	50	393	210	106	1,180	734	167	146	160	325	129
28	56	50	371	190	102	1,030	644	153	135	146	321	121
29	56	52	353	170	99	912	585	141	126	133	308	117
30	54	52	353	160	-----	798	540	131	118	120	286	113
31	51	-----	332	150	-----	716	-----	123	-----	108	261	-----
TOTAL	1,268	1,618	9,434	6,989	3,339	25,796	25,312	9,041	3,815	3,341	4,744	4,481
MEAN	40.9	53.9	304	225	115	832	844	292	127	108	153	149
MAX	57	64	699	311	150	2,400	1,560	508	217	187	325	239
MIN	32	44	46	150	99	98	510	123	55	50	73	113
CFSM	.09	.12	.70	.52	.27	1.92	1.94	.67	.29	.25	.35	.34
IN.	.11	.14	.81	.60	.29	2.21	2.17	.77	.33	.29	.41	.38

CAL YR 1971 TOTAL 82,345.5 MEAN 226 MAX 1,760 MIN 9.2 CFSM .52 IN 7.06
WTR YR 1972 TOTAL 99,178.0 MEAN 271 MAX 2,400 MIN 32 CFSM .62 IN 8.50

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04116000 Grand River at Ionia, Mich.

LOCATION.--Lat 42°58'20", long 85°04'13", in NW1/4 sec.30, T.7 N., R.6 W., Ionia County, 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.

PERIOD OF RECORD.--March to June 1931, July and September 1931 (fragmentary), July 1951 to current year. 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 615.38 ft above mean sea level. Mar. 19 to Sept. 24, 1931, non-recording gage at site 1.5 miles upstream at different datum.

AVERAGE DISCHARGE.--21 years (1951-72), 1,703 cfs (8.14 inches per year).

EXTREMES.--Current year: Maximum discharge, 11,800 cfs Apr. 18 (gage height, 19.58 ft); minimum, 242 cfs Nov. 8 (gage height, 6.81 ft); minimum daily, 430 cfs Oct. 16, 17.

Period of record: Maximum discharge, 21,500 cfs Apr. 1, 1960 (gage height, 23.43 ft); minimum, 40 cfs May 13, 1968 (gage height, 5.61 ft); minimum daily, 115 cfs Aug. 27, 1953.

REMARKS.--Records good except those for the winter period and those for period of no gage-height record, which are fair. Diurnal fluctuation below about 5,000 cfs caused by powerplants above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	596	800	677	3,180	1,300	1,400	4,200	4,000	1,250	856	617	1,220
2	837	700	584	2,700	1,200	1,800	3,900	3,700	1,310	763	678	1,260
3	627	700	678	2,670	1,200	2,300	3,800	3,500	1,310	854	884	1,230
4	578	700	658	2,480	1,100	2,500	3,700	3,180	1,290	868	866	972
5	561	700	629	2,320	1,100	2,500	3,700	3,060	1,250	832	712	908
6	579	750	668	2,080	1,000	2,000	3,700	2,990	1,120	597	700	959
7	650	639	779	1,720	950	1,800	3,700	2,880	1,130	855	980	878
8	650	505	920	1,900	900	2,200	3,600	3,010	993	592	1,030	837
9	630	577	1,070	1,940	900	2,500	3,500	3,060	904	693	752	874
10	620	637	1,500	2,210	900	2,000	3,400	2,930	936	686	858	1,190
11	600	646	2,880	2,350	900	1,900	3,200	2,700	917	628	845	1,110
12	570	611	2,670	2,550	900	2,000	3,000	2,610	714	733	770	1,060
13	550	545	2,570	2,100	950	2,500	3,000	2,580	733	637	739	1,130
14	500	557	2,230	1,800	1,000	3,000	2,900	2,550	823	663	717	1,220
15	450	590	2,840	1,400	1,100	4,020	3,000	2,700	2,070	1,640	592	1,360
16	430	555	4,680	1,300	1,200	4,790	5,000	3,670	2,120	2,400	574	1,310
17	430	528	4,890	1,300	1,300	6,000	9,610	3,600	1,570	1,690	733	1,270
18	800	559	4,700	1,300	1,300	7,000	11,700	2,970	1,400	1,310	813	1,320
19	500	568	3,750	1,500	1,300	8,500	11,400	3,060	1,170	1,360	1,250	2,140
20	450	593	3,430	1,500	1,300	9,500	10,600	2,720	1,130	1,370	1,290	2,080
21	500	616	3,040	1,500	1,300	9,000	9,800	2,420	1,080	1,180	1,140	2,020
22	600	536	2,550	1,800	1,200	8,000	8,880	2,360	1,060	1,040	895	2,010
23	700	499	2,760	2,300	1,200	8,500	8,160	2,200	1,000	1,020	1,900	2,200
24	1,100	505	2,020	2,500	1,200	9,000	7,360	1,890	991	981	2,750	1,890
25	800	623	2,190	2,400	1,200	8,020	6,590	1,950	938	670	2,830	1,570
26	700	589	2,020	2,000	1,200	7,520	6,200	1,630	903	830	2,080	1,330
27	1,000	601	1,980	1,800	1,100	6,580	6,000	1,580	906	824	2,160	1,300
28	850	617	2,080	1,600	1,100	6,500	5,500	1,390	1,020	747	1,800	1,580
29	800	716	1,800	1,500	1,100	5,500	5,000	1,370	957	745	1,630	1,620
30	750	718	1,780	1,400	-----	5,000	4,500	1,160	930	710	1,360	1,690
31	850	-----	2,320	1,300	-----	4,500	-----	1,160	-----	623	1,270	-----
TOTAL	20,258	18,480	67,343	60,400	32,400	148,330	168,600	80,580	33,925	29,397	36,215	41,538
MEAN	653	616	2,172	1,948	1,117	4,785	5,620	2,599	1,131	948	1,168	1,385
MAX	1,100	800	4,890	3,180	1,300	9,500	11,700	4,000	2,120	2,400	2,830	2,200
MIN	430	499	584	1,300	900	1,400	2,900	1,160	714	592	574	837
CFSM	.23	.22	.76	.69	.39	1.68	1.98	.92	.40	.33	.41	.49
IN.	.27	.24	.88	.79	.42	1.94	2.21	1.06	.44	.39	.47	.54

CAL YR 1971 TOTAL 664,039 MEAN 1,819 MAX 13,000 MIN 225 CFSM .64 IN 8.70
WTR YR 1972 TOTAL 737,466 MEAN 2,015 MAX 11,700 MIN 430 CFSM .71 IN 9.66

NOTE.--No gage-height record Oct. 7 to Nov. 6.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04116500 Flat River at Smyrna, Mich.

LOCATION.—Lat 43°03'10", long 85°15'50", in NW¼ sec.28, T.8 N., R.8 W., Ionia County, on right bank at downstream side of highway bridge, 600 ft downstream from dam and inactive powerplant, and 0.5 mile south of Smyrna.

DRAINAGE AREA.—528 sq mi.

PERIOD OF RECORD.—October 1950 to current year. Monthly discharge only for some periods, published in WSP 1727.

GAGE.—Water-stage recorder. Datum of gage is 729.53 ft above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.—22 years, 403 cfs (10.37 inches per year).

EXTREMES.—Current year: Maximum discharge, 1,220 cfs Mar. 24 (gage height, 5.38 ft); maximum gage height, 7.38 ft Jan. 8 (backwater from ice); minimum discharge, 138 cfs Sept. 7; minimum gage height, 3.27 ft Dec. 3; minimum daily discharge, 148 cfs July 12, 13. Period of record: Maximum discharge, 3,100 cfs Apr. 22, 1967 (gage height, 7.27 ft caused by momentary release of water from storage above station); maximum gage height, 7.75 ft Jan. 8, 1971 (backwater from ice); minimum discharge, 7.4 cfs Sept. 9, 1953; minimum daily, 70 cfs Sept. 6, 1964.

REMARKS.—Records good except those for the winter period, which are poor. Diurnal fluctuation caused by powerplants above station prior to September 1956; occasional diurnal fluctuation since.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	312	246	461	479	430	344	969	519	235	184	160	671
2	289	283	360	526	410	307	866	551	251	199	175	686
3	275	336	247	619	390	328	691	518	293	283	194	551
4	233	237	251	540	380	338	900	546	260	159	283	491
5	229	236	254	372	370	340	812	533	192	155	179	505
6	226	239	295	370	350	340	765	497	193	155	186	385
7	230	243	368	370	340	340	744	512	189	150	243	349
8	235	243	362	400	340	340	711	544	185	153	338	566
9	236	247	383	480	330	340	700	594	184	155	297	248
10	237	249	524	492	330	340	689	447	176	154	200	362
11	240	253	701	461	330	337	692	439	171	149	199	357
12	237	256	783	392	340	373	697	434	190	148	204	261
13	260	287	818	448	350	436	727	429	198	148	209	406
14	313	329	758	400	360	443	752	430	221	154	296	585
15	268	233	987	350	264	457	805	470	482	238	218	360
16	294	234	937	370	363	462	887	542	497	237	268	487
17	278	235	792	400	359	501	1,020	566	305	368	250	363
18	269	244	938	430	366	517	1,010	498	304	511	342	587
19	231	265	901	470	349	550	965	364	326	236	394	520
20	236	297	864	520	321	581	917	369	374	304	516	525
21	239	321	842	600	350	589	865	372	326	301	351	520
22	252	323	745	640	338	917	842	360	217	254	468	502
23	285	311	616	660	330	979	800	366	213	199	516	404
24	278	332	696	670	334	1,050	758	394	268	323	685	382
25	276	301	525	660	339	1,160	732	245	348	156	719	463
26	249	252	629	630	321	1,130	649	230	184	154	687	373
27	252	284	551	590	318	1,120	634	227	189	167	826	424
28	253	341	551	550	331	1,070	608	240	183	164	800	339
29	246	392	504	500	356	1,080	529	279	187	159	851	431
30	241	334	456	470	-----	1,000	517	221	242	157	864	351
31	242	-----	444	450	-----	1,040	-----	229	-----	155	772	-----
TOTAL	7,941	8,383	18,743	15,309	10,189	19,149	23,253	12,965	7,583	6,429	12,690	13,454
MEAN	256	279	605	494	351	618	775	418	253	207	409	448
MAX	313	392	992	670	430	1,160	1,020	594	497	511	864	686
MIN	226	233	247	350	318	307	517	221	171	148	160	248
CFSM	.48	.53	1.15	.94	.66	1.17	1.47	.79	.48	.39	.77	.85
IN.	.56	.59	1.32	1.08	.72	1.35	1.64	.91	.53	.45	.89	.95

CAL YR 1971 TOTAL 152,012 MEAN 416 MAX 1,340 MIN 179 CFSM .79 IN 10.71
WTR YR 1972 TOTAL 156,088 MEAN 426 MAX 1,160 MIN 148 CFSM .81 IN 11.00

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04117000 Quaker Brook near Nashville, Mich.

LOCATION.--Lat 42°33'57", long 85°05'37", in NW1/4 sec.13, T.2 N., R.7 W., Barry County, on left bank 150 ft upstream from culvert on county road, 500 ft upstream from small tributary, and 2.5 miles south of Nashville.

DRAINAGE AREA.--7.60 sq mi.

PERIOD OF RECORD.--August 1954 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 821.89 ft above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--18 years, 5.82 cfs (10.40 inches per year).

EXTREMES.--Current year: Maximum discharge, 198 cfs Aug. 23 (gage height, 5.16 ft); minimum, 2.4 cfs July 25 (gage height, 1.77 ft).

Period of record: Maximum discharge, 294 cfs Oct. 4, 1954 (gage height, 5.47 ft), from rating curve extended above 140 cfs; minimum, 0.44 cfs Nov. 3, 1966 (gage height, 1.40 ft, result of snow dam).

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	3.6	5.5	13	3.6	29	9.2	9.8	7.1	3.6	2.7	4.4
2	2.9	4.6	6.0	9.2	3.5	26	10	11	6.2	3.5	4.7	4.4
3	3.0	4.5	7.0	7.6	3.4	9.2	11	8.0	6.6	3.5	5.4	4.3
4	5.9	4.5	7.5	6.5	3.3	6.6	11	6.9	7.9	3.3	4.0	4.2
5	4.6	4.5	5.0	5.9	3.2	5.0	9.7	9.2	5.8	3.2	3.5	4.0
6	3.9	4.0	6.0	5.4	3.1	4.9	8.8	16	5.0	3.2	3.3	3.9
7	4.1	3.8	7.0	5.8	3.1	9.3	8.0	12	4.4	3.2	9.1	4.2
8	3.8	3.8	8.0	5.1	3.1	11	6.6	14	4.1	3.6	7.0	13
9	3.9	4.0	10	7.2	3.1	5.5	7.1	12	3.9	3.4	6.5	9.1
10	3.9	4.2	13	8.6	3.1	4.9	7.1	10	3.8	3.4	4.5	5.2
11	3.5	3.9	20	7.3	3.1	6.7	7.0	9.5	3.7	3.3	4.1	5.0
12	3.5	3.7	12	6.3	3.8	13	6.8	9.0	4.2	3.2	4.3	6.2
13	3.9	3.7	7.3	6.2	4.0	61	8.7	9.5	5.1	4.7	4.0	13
14	4.4	3.7	6.0	5.1	4.5	53	8.2	15	5.0	6.2	3.7	13
15	3.9	3.7	10	4.4	6.4	19	8.6	45	17	13	3.5	7.0
16	3.6	3.6	50	3.4	5.3	30	65	50	12	8.1	3.4	5.5
17	3.5	3.6	25	3.2	5.0	41	64	25	5.7	4.9	6.2	6.4
18	3.5	3.8	9.0	4.4	4.6	24	19	15	4.7	5.4	4.8	24
19	3.4	4.5	6.8	7.6	4.4	15	15	12	4.2	6.2	16	18
20	3.3	5.4	7.0	7.5	4.3	14	14	10	4.1	4.7	11	9.0
21	3.3	5.6	7.4	7.6	4.2	17	10	9.0	4.0	3.7	5.0	6.8
22	8.5	5.9	5.6	13	4.1	29	12	7.5	4.1	3.3	22	6.1
23	13	5.8	5.0	20	3.9	16	11	6.0	4.3	3.0	130	5.5
24	7.6	5.0	6.1	9.4	3.9	9.9	8.7	5.0	4.7	2.8	70	5.5
25	4.6	4.5	5.6	6.6	3.8	8.6	7.8	4.4	4.5	2.7	25	7.2
26	4.1	4.5	6.1	4.9	3.8	8.0	7.0	4.0	4.5	2.9	16	13
27	3.8	4.8	6.2	3.8	3.9	7.6	6.4	3.8	4.2	4.7	13	10
28	3.4	5.2	6.6	3.8	6.0	7.4	6.1	3.7	3.9	3.9	9.1	6.9
29	3.3	6.0	5.1	3.8	14	7.2	6.1	4.0	3.9	3.3	6.6	11
30	3.5	6.0	32	3.9	-----	7.5	6.3	8.0	3.9	3.0	5.4	9.4
31	3.6	-----	31	3.7	-----	7.9	-----	10	-----	2.7	4.7	-----
TOTAL	134.1	134.4	344.8	210.2	125.5	514.2	386.2	374.3	162.5	129.6	418.5	245.2
MEAN	4.33	4.48	11.1	6.78	4.33	16.6	12.9	12.1	5.42	4.18	13.5	8.17
MAX	13	6.0	50	20	14	61	65	50	17	13	130	24
MIN	2.9	3.6	5.0	3.2	3.1	4.9	6.1	3.7	3.7	2.7	2.7	3.9
CFSM	.57	.59	1.46	.89	.57	2.18	1.70	1.59	.71	.55	1.78	1.08
IN.	.66	.66	1.69	1.03	.61	2.52	1.89	1.83	.80	.63	2.05	1.20

CAL YR 1971 TOTAL 2,402.1 MEAN 6.58 MAX 102 MIN 1.9 CFSM .87 IN 11.76

WTR YR 1972 TOTAL 3,179.5 MEAN 8.69 MAX 130 MIN 2.7 CFSM 1.14 IN 15.56

PEAK DISCHARGE (BASE, 50 CFS)

NOTE.--No gage-height record Nov. 13 to Dec. 18.

DATE	TIME	G.H.	DISCHARGE
12-16	unknown	unknown	75
12-30	2000	3.01	66
03-13	2000	3.79	118
03-16	2400	3.06	70
04-16	2000	4.70	159
05-15	unknown	3.83	120
08-23	0300	5.16	198

STREAMS TRIBUTARY TO LAKE MICHIGAN

04117500 Thornapple River near Hastings, Mich.

LOCATION.--Lat 42°36'57", long 85°14'11", in SE¼ sec.27, T.3 N., R.8 W., Barry County, on downstream side of highway bridge, 0.6 mile downstream from Cedar Creek, 2.0 miles downstream from Thornapple Lake, and 3.2 miles southeast of Hastings.

DRAINAGE AREA.--385 sq mi.

PERIOD OF RECORD.--October 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 786.71 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to Oct. 1, 1965, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--28 years, 291 cfs (10.26 inches per year).

EXTREMES.--Current year: Maximum discharge, 2,420 cfs Apr. 19 (gage height, 6.90 ft); minimum, 117 cfs Aug. 1 (gage height, 3.08 ft).
Period of record: Maximum discharge, 6,810 cfs Apr. 7, 1947 (gage height, 10.20 ft, from graph based on gage readings); minimum, 33 cfs Aug. 10, 1964 (gage height, 2.71 ft).

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	307	168	185	739	240	329	515	494	194	164	117	298
2	234	159	174	895	234	487	494	476	195	161	122	258
3	215	157	167	936	227	558	490	463	192	158	170	234
4	218	158	161	885	224	642	505	441	193	152	188	212
5	218	158	160	738	208	601	551	410	190	147	176	198
6	208	153	166	599	200	489	605	379	184	141	152	185
7	201	150	193	510	212	419	654	389	175	141	158	176
8	199	150	228	478	193	445	656	426	161	141	170	179
9	197	150	278	453	191	474	640	461	152	141	176	192
10	195	147	367	450	199	447	599	483	143	144	173	198
11	192	147	545	453	181	427	553	477	135	141	164	206
12	179	147	710	468	164	441	519	449	133	141	158	216
13	176	147	782	470	171	565	511	410	137	147	150	244
14	167	146	768	377	180	716	552	385	143	188	144	299
15	155	142	784	315	193	908	605	400	202	294	147	321
16	150	141	919	274	203	1,070	738	495	258	358	147	316
17	138	141	1,050	268	206	1,240	1,470	583	294	400	170	294
18	138	141	1,120	278	219	1,540	2,170	624	303	420	170	307
19	139	141	1,080	293	230	1,810	2,390	632	282	381	195	358
20	143	153	988	320	218	1,970	2,330	623	240	344	234	405
21	151	171	862	342	209	1,880	2,170	583	212	307	251	425
22	170	180	709	359	206	1,750	1,830	518	192	266	266	400
23	223	173	579	417	199	1,650	1,530	438	179	226	294	358
24	309	164	498	482	194	1,480	1,300	371	176	198	400	312
25	344	158	450	526	202	1,290	1,110	318	173	176	555	286
26	312	158	412	492	195	1,110	948	275	167	161	626	282
27	248	164	386	414	183	957	822	245	167	179	626	282
28	231	172	367	346	179	826	707	221	167	179	620	286
29	212	185	360	307	200	716	607	203	167	150	590	294
30	182	188	405	272	-----	615	532	199	167	147	490	303
31	172	-----	549	254	-----	555	-----	197	-----	144	390	-----
TOTAL	6,323	4,709	16,402	14,410	5,860	28,407	29,103	13,068	5,673	6,437	8,389	8,324
MEAN	204	157	529	465	202	916	970	422	189	208	271	277
MAX	344	188	1,120	936	240	1,970	2,390	632	303	420	626	425
MIN	138	141	160	254	164	329	490	197	133	141	117	176
CFSM	.53	.41	1.37	1.21	.52	2.38	2.52	1.10	.49	.54	.70	.72
IN.	.61	.45	1.58	1.39	.57	2.74	2.81	1.26	.55	.62	.81	.80

CAL YR 1971 TOTAL 114,808 MEAN 315 MAX 2,100 MIN 76 CFSM .82 IN 11.09
WTR YR 1972 TOTAL 147,105 MEAN 402 MAX 2,390 MIN 117 CFSM 1.04 IN 14.21

04118000. Thornapple River near Caledonia, Mich.

LOCATION.--Lat 42°48'40", long 85°29'00", in NW¼ sec.22, T.5 N., R.10 W., Kent County, 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.

PERIOD OF RECORD.--October 1930 to September 1938, October 1951 to current year. Monthly discharge only for some periods, published in WSP 1307.

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, nonrecording gage at same site and mean sea level datum (unadjusted).

AVERAGE DISCHARGE.--29 years, 518 cfs (9.10 inches per year).

EXTREMES.--Current year: Maximum discharge, 3,420 cfs Apr. 19, 20, 21 (gage height, 7.96 ft); minimum, 196 cfs Oct. 21 (gage height, 2.96 ft); minimum daily, 253 cfs Oct. 21.
Period of record: Maximum discharge, 6,290 cfs May 10, 1956 (gage height, 10.79 ft); minimum, 1.0 cfs May 28, 1968 (gage height, 1.40 ft), result of regulation during bridge construction.

Flood of Apr. 7, 1947 reached a stage of 14.4 ft, from information by powerplant operator.

REMARKS.--Records good except those for the winter period, which are fair. Prior to Dec. 1, 1958, large diurnal fluctuation at low and medium flow caused by powerplant above station; occasional fluctuation since.

REVISIONS (WATER YEARS).--WSP 824: 1931-36. WSP 1307: 1931-37.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	516	333	380	1,170	470	615	1,070	1,050	438	357	305	666
2	437	339	364	1,320	460	883	1,020	1,010	446	355	315	678
3	359	341	354	1,350	450	915	1,000	966	436	322	312	620
4	371	325	340	1,350	430	974	1,020	922	430	306	338	534
5	320	325	334	1,220	420	943	1,050	869	429	308	344	506
6	379	322	350	1,040	410	870	1,120	840	425	279	349	482
7	328	323	385	1,050	400	880	1,190	863	415	307	473	413
8	378	315	414	875	390	964	1,170	933	395	321	486	415
9	327	317	476	827	380	921	1,150	957	341	287	397	426
10	333	322	782	827	360	888	1,100	944	346	309	401	408
11	313	316	1,220	847	350	888	1,050	900	344	299	398	404
12	309	305	1,190	845	350	1,020	990	860	343	294	387	410
13	315	317	1,210	836	360	1,250	1,100	820	345	286	369	486
14	304	323	1,190	654	380	1,350	1,190	818	351	326	354	575
15	284	310	1,520	527	400	1,430	1,360	843	745	520	319	599
16	293	304	1,780	540	412	1,680	1,690	870	751	611	310	590
17	295	298	1,750	560	430	2,020	2,980	935	709	628	321	569
18	277	295	1,730	580	450	2,310	3,360	984	663	703	387	862
19	276	299	1,670	620	450	2,550	3,420	1,000	608	698	408	870
20	273	328	1,560	660	450	2,780	3,420	969	563	625	389	813
21	253	370	1,390	700	440	2,910	3,390	938	518	558	435	770
22	293	369	1,280	774	430	3,040	3,230	872	457	522	447	782
23	347	360	1,060	850	420	2,940	2,910	807	415	444	527	704
24	394	355	936	865	410	2,670	2,550	733	420	426	1,020	648
25	428	343	842	778	410	2,390	2,220	628	422	378	1,150	594
26	446	331	786	760	400	2,120	1,940	574	369	339	1,180	603
27	435	344	729	700	400	1,890	1,670	513	363	339	1,140	589
28	406	357	714	650	425	1,650	1,380	512	363	350	1,060	575
29	381	378	676	600	436	1,400	1,250	428	396	355	973	614
30	363	391	811	550	-----	1,300	1,130	454	377	329	865	621
31	345	-----	1,060	500	-----	1,180	-----	434	-----	313	755	-----
TOTAL	10,778	9,955	29,283	25,425	11,973	49,621	53,120	25,246	13,623	12,494	16,914	17,826
MEAN	348	332	945	820	413	1,601	1,771	814	454	403	546	594
MAX	516	391	1,780	1,350	470	3,040	3,420	1,050	751	703	1,180	870
MIN	253	295	334	500	350	615	990	428	341	279	305	404
CFSM	.45	.43	1.22	1.06	.53	2.07	2.29	1.05	.59	.52	.71	.77
IN.	.52	.48	1.41	1.22	.58	2.39	2.56	1.21	.66	.60	.81	.86

CAL YR 1971 TOTAL 221,302 MEAN 606 MAX 3,030 MIN 174 CFSM .78 IN 10.65
WTR YR 1972 TOTAL 276,258 MEAN 755 MAX 3,420 MIN 253 CFSM .98 IN 13.29

STREAMS TRIBUTARY TO LAKE MICHIGAN

04118500 Rogue River near Rockford, Mich.

LOCATION.--Lat 43°05'00", long 85°35'30", in NE¼ sec.15, T.8 N., R.11 W., Kent County, 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.

PERIOD OF RECORD.--February 1952 to current year.

GAGE.--Water-stage recorder. Datum of gage is 625.2 ft above mean sea level (levels by Blass Survey Co.). Prior to August, 30, 1952, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--20 years, 211 cfs (12.25 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,100 cfs Mar. 24 (gage height, 6.81 ft); minimum, 58 cfs Dec. 3 (gage height, 3.67 ft); minimum daily, 99 cfs Dec. 3.

Period of record: Maximum discharge, 2,640 cfs Mar. 31, 1960 (gage height, 8.59 ft); minimum, 28 cfs Jan. 22, 1967 (gage height, 3.41 ft); minimum daily discharge, 49 cfs Aug. 27, 1955.

REMARKS.--Records good except those for the winter period, which are fair. Some diurnal fluctuation caused by mills above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	122	110	146	205	180	157	365	238	131	122	101	374
2	113	120	137	236	180	162	357	249	134	121	102	316
3	111	130	99	244	170	187	352	290	134	117	116	270
4	109	110	108	243	160	164	348	303	131	113	123	235
5	106	110	135	178	160	142	339	293	121	109	116	210
6	113	110	148	189	150	146	337	294	117	106	110	187
7	113	110	161	178	150	153	332	292	113	105	135	175
8	111	110	167	209	145	168	322	288	113	107	140	190
9	111	110	181	228	140	200	313	282	113	109	140	182
10	111	115	314	237	140	207	303	271	113	113	129	173
11	107	116	371	240	140	193	259	253	113	111	124	164
12	104	117	372	280	140	252	278	230	117	106	126	157
13	130	117	402	241	170	305	304	213	140	107	126	308
14	140	116	413	208	190	277	291	218	154	117	119	336
15	130	114	633	148	200	322	320	260	264	231	111	411
16	125	113	588	170	200	374	383	277	210	233	116	364
17	125	113	626	180	190	389	476	265	207	234	147	300
18	120	114	568	200	180	414	553	261	202	256	150	464
19	110	128	497	210	180	464	507	255	179	228	302	378
20	110	145	426	230	180	517	447	231	165	203	235	433
21	110	153	374	260	170	648	390	204	155	178	229	365
22	115	145	318	273	170	959	377	180	154	152	266	292
23	130	177	290	295	176	965	360	164	149	134	280	243
24	130	128	291	293	166	915	358	153	146	123	358	210
25	120	126	263	280	148	715	336	142	144	115	417	192
26	120	129	251	260	154	599	320	135	138	110	594	188
27	110	141	240	240	139	498	304	130	133	112	622	180
28	110	150	240	230	142	430	280	126	128	118	710	176
29	110	157	223	220	145	403	258	123	126	116	745	233
30	110	154	236	200	-----	386	242	129	124	110	611	214
31	110	-----	237	190	-----	370	-----	128	-----	104	458	-----
TOTAL	3,596	3,788	9,455	6,995	4,755	12,081	10,411	6,877	4,368	4,320	8,058	7,920
MEAN	116	126	305	226	164	390	347	222	146	139	260	264
MAX	140	177	633	295	200	965	553	303	264	256	745	464
MIN	104	110	99	148	139	142	242	123	113	104	101	157
CFSM	.50	.54	1.30	.97	.70	1.67	1.48	.95	.62	.59	1.11	1.13
IN.	.57	.60	1.50	1.11	.76	1.92	1.66	1.09	.69	.69	1.28	1.26

CAL YR 1971 TOTAL 74,694 MEAN 205 MAX 1,180 MIN 70 CFSM .88 IN 11.87
WTR YR 1972 TOTAL 82,624 MEAN 226 MAX 965 MIN 99 CFSM .97 IN 13.14

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04119000 Grand River at Grand Rapids, Mich.

LOCATION.--Lat 42°57'52", long 85°40'35", in NE1/4 sec.25, T.7 N., R.12 W., Kent County, 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.

PERIOD OF RECORD.--March 1901 to December 1905, January 1906 to August 1918 (gage heights only), October 1930 to current year. Monthly discharge only for some periods, published in WSP 1307. 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 (levels by City of Grand Rapids). March 1901 to August 1918, nonrecording 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.--46 years, 3,402 cfs (9.43 inches per year).

EXTREMES.--Current year: Maximum discharge, 17,800 cfs Apr. 21 (gage height, 14.34 ft); minimum, 1,120 cfs Oct. 22; minimum gage height, 2.82 ft Nov. 17.

Period of record: 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 at least 1901, that of Mar. 28, 1904.

REMARKS.--Records good except those for the winter period, which are fair. Moderate diurnal fluctuation at low and medium flow caused by powerplants above station.

REVISIONS (WATER YEARS).--WSP 924: 1938 (M). WSP 1387: 1901-5, 1940.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,960	1,410	1,870	8,000	3,100	2,460	7,390	6,420	2,460	2,160	1,520	3,660
2	1,920	1,250	1,680	7,500	2,900	3,090	7,050	6,170	2,460	1,990	1,670	3,350
3	2,010	1,290	1,810	7,000	2,800	3,760	6,820	5,970	2,580	1,780	1,710	3,300
4	1,750	1,340	1,510	6,000	2,700	4,060	6,630	5,850	2,780	1,800	1,810	3,040
5	1,540	1,400	1,590	5,500	2,600	3,790	6,880	5,740	2,690	1,860	1,870	2,610
6	1,450	1,450	1,600	5,000	2,500	4,140	6,930	5,390	2,520	1,860	1,800	2,470
7	1,530	1,370	1,870	4,700	2,400	3,840	6,820	5,170	2,370	1,670	2,030	2,450
8	1,410	1,310	1,910	4,500	2,300	3,850	6,670	5,200	2,310	1,820	2,340	2,340
9	1,460	1,370	2,210	4,600	2,200	4,620	6,380	5,020	2,210	1,660	2,450	2,340
10	1,430	1,330	3,190	4,780	2,200	4,540	6,260	5,330	2,070	1,670	2,160	2,250
11	1,370	1,460	4,930	4,930	2,200	4,150	5,860	5,100	2,000	1,680	2,180	2,340
12	1,340	1,410	5,620	4,770	2,200	4,360	5,850	4,800	2,120	1,620	2,040	2,460
13	1,350	1,420	5,480	4,750	2,300	5,410	6,160	4,600	2,060	1,730	1,900	2,850
14	1,370	1,400	5,360	3,660	2,400	6,220	6,700	4,580	2,110	1,780	1,760	2,930
15	1,380	1,420	6,410	2,860	2,530	6,670	7,400	4,610	3,440	2,430	1,710	3,190
16	1,370	1,380	7,810	2,900	2,950	7,190	8,290	4,950	4,150	3,230	1,600	3,110
17	1,310	1,330	8,360	3,000	2,860	7,990	10,800	5,620	4,180	3,740	1,730	3,160
18	1,290	1,330	8,420	3,200	2,930	9,270	12,500	5,640	3,480	3,430	1,960	4,070
19	1,390	1,400	7,970	3,500	2,820	10,500	15,000	5,200	2,920	3,400	2,480	4,110
20	1,260	1,570	7,210	3,600	3,100	11,800	17,300	5,020	2,850	3,030	2,860	4,430
21	1,220	1,700	6,690	3,800	2,910	13,400	17,700	4,660	2,800	2,790	2,820	4,250
22	1,190	1,640	6,040	4,430	2,790	14,800	16,800	4,220	2,630	2,680	2,580	4,050
23	1,330	1,580	5,460	4,410	3,100	15,500	15,300	4,030	2,420	2,420	2,550	3,930
24	1,400	1,540	5,200	4,300	2,570	15,800	13,600	3,920	2,370	2,250	4,450	3,810
25	1,820	1,530	5,000	4,200	2,760	15,200	12,200	3,400	2,190	2,170	5,520	3,620
26	1,830	1,580	4,900	4,100	2,450	14,000	10,900	3,290	2,320	1,960	5,870	3,330
27	1,640	1,580	4,800	3,900	2,830	12,500	9,670	2,960	2,130	1,950	5,320	2,970
28	1,790	1,580	4,700	3,700	2,330	11,200	8,570	3,230	2,000	1,960	5,060	2,870
29	1,810	1,650	4,700	3,500	2,380	9,930	7,640	2,720	2,090	1,820	4,830	3,370
30	1,500	1,910	4,600	3,400	-----	8,850	6,880	2,630	2,250	1,750	4,500	3,310
31	1,550	-----	5,500	3,300	-----	8,040	-----	2,520	-----	1,650	4,050	-----
TOTAL	46,970	43,930	144,400	137,790	76,110	250,930	282,950	143,960	76,960	67,740	87,130	95,970
MEAN	1,515	1,464	4,658	4,445	2,624	8,095	9,432	4,644	2,565	2,185	2,811	3,199
MAX	2,010	1,910	8,420	8,000	3,100	15,800	17,700	6,420	4,180	3,740	5,870	4,430
MIN	1,190	1,250	1,510	2,860	2,200	2,460	5,850	2,520	2,000	1,620	1,520	2,250
CFSM	.31	.30	.95	.91	.54	1.65	1.92	.95	.52	.45	.57	.65
IN.	.36	.33	1.10	1.05	.58	1.91	2.15	1.09	.58	.51	.66	.73
CAL YR 1971	TOTAL 1,239,676	MEAN 3,396	MAX 21,600	MIN 747	CFSM .69	IN 9.41						
WTR YR 1972	TOTAL 1,454,840	MEAN 3,975	MAX 17,700	MIN 1,190	CFSM .81	IN 11.04						

STREAMS TRIBUTARY TO LAKE MICHIGAN

04121000 Muskegon River near Merritt, Mich.

LOCATION.—Lat 44°20'08", long 84°53'24", in NW¼ NW¼ sec.2, T.22 N., R.5 W., Missaukee County, on right bank 35 ft upstream from bridge on State Highway 55, 0.7 mile upstream from West Branch, 2.7 miles east of Merritt, 4.3 miles downstream from Reedsburg Dam, and at mile 210.8.

DRAINAGE AREA.—355 sq mi.

PERIOD OF RECORD.—October 1946 to current year.

GAGE.—Water-stage recorder. Datum of gage is 1,117.82 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to July 13, 1949, nonrecording gage at bridge at present datum.

AVERAGE DISCHARGE.—26 years, 228 cfs (8.72 inches per year).

EXTREMES.—Current year: Maximum discharge, 900 cfs Apr. 19 (gage height, 7.62 ft); minimum, 44 cfs Oct. 31.

Period of record: Maximum discharge, 1,340 cfs Apr. 8, 1959 (gage height, 8.16 ft); maximum gage height, 8.25 ft July 11, 1957; minimum discharge, 26 cfs Aug. 17, 18-20, Sept. 2-5, 12-15, 1958.

REMARKS.—Records fair except those for winter periods, which are poor. Occasional regulation by manipulation of stop logs at Reedsburg Dam.

REVISIONS.—WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	47	49	105	80	78	299	653	364	132	133	126
2	77	51	49	110	76	78	302	672	355	128	146	124
3	73	54	48	110	75	78	302	667	347	128	153	118
4	70	59	47	107	74	78	304	675	342	125	147	111
5	70	57	47	105	74	78	306	659	328	130	141	103
6	68	56	46	95	73	80	312	640	309	128	138	96
7	69	58	48	96	73	90	320	638	260	127	129	89
8	70	59	50	92	74	105	310	626	205	128	120	89
9	68	57	54	88	74	120	308	610	199	130	122	84
10	65	57	75	86	75	140	316	587	181	131	111	80
11	64	57	108	85	76	150	373	565	161	131	102	78
12	63	56	137	84	76	170	458	549	159	127	103	76
13	62	55	155	84	77	185	570	535	164	137	99	75
14	61	54	178	82	78	200	656	527	158	144	94	73
15	60	52	229	75	78	230	782	552	164	173	88	69
16	60	51	274	80	78	257	870	567	164	182	84	67
17	58	50	291	84	78	247	865	564	156	175	84	65
18	58	49	284	84	78	240	855	558	150	171	82	65
19	58	49	273	80	78	240	885	550	142	173	79	65
20	59	50	271	76	78	247	892	531	138	164	74	61
21	60	56	250	75	78	253	871	514	144	164	70	59
22	60	53	220	74	78	287	862	497	144	159	73	55
23	60	50	190	74	78	290	831	478	139	151	75	52
24	59	47	170	74	78	300	837	461	135	146	78	49
25	57	47	155	74	78	300	807	452	134	142	78	55
26	56	47	150	74	79	290	773	437	150	138	99	62
27	54	50	140	76	79	284	740	422	150	138	117	66
28	52	51	130	78	79	281	707	408	144	135	127	66
29	53	53	120	81	78	292	682	387	141	132	131	92
30	51	53	115	82	-----	294	656	380	138	128	128	105
31	46	-----	100	81	-----	292	-----	381	-----	128	125	-----
TOTAL	1,321	1,585	4,453	2,651	2,228	6,254	18,051	16,742	5,865	4,425	3,330	2,375
MEAN	52.0	52.8	144	85.5	76.8	202	602	540	196	143	107	79.2
MAX	80	59	291	110	80	300	892	675	364	182	153	126
MIN	46	47	46	74	73	78	299	380	134	125	70	49
CFSM	.17	.15	.41	.24	.22	.57	1.70	1.52	.55	.40	.30	.22
IN.	.20	.17	.47	.28	.23	.66	1.89	1.75	.61	.46	.35	.25
CAL YR 1971	TOTAL 99,946	MEAN 274	MAX 1,130	MIN 43	CFSM .77	IN 10.47						
WTR YR 1972	TOTAL 69,880	MEAN 191	MAX 892	MIN 46	CFSM .54	IN 7.32						

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04121300 Glam River at Vogel Center, Mich.

LOCATION.--Lat 44°12'02", long 85°03'10", in SW¼ NW¼ sec.21, T.21 N., R.6 W., Missaukee County, on left bank 10 ft downstream from bridge on county road, 0.5 mile north of Vogel Center, and 3.5 miles southeast of Palmyra.

DRAINAGE AREA.--243 sq mi.

PERIOD OF RECORD.--June 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,130 ft (from topographic map).

AVERAGE DISCHARGE.--6 years, 129 cfs (7.21 inches per year).

EXTREMES.--Current year: Maximum discharge, 701 cfs Apr. 16 (gage height, 5.38 ft); minimum, 51 cfs Nov. 23 (gage height, 2.46 ft).
Period of record: Maximum discharge, 1,150 cfs Apr. 13, 1971 (gage height, 6.33 ft); minimum, 29 cfs Nov. 3, 1969, result of freeze-up.

REMARKS.--Records good except those for winter periods, which are fair. Some regulation by dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	87	75	70	134	110	93	149	185	82	64	68	70
2	83	91	71	150	105	92	145	222	80	63	74	68
3	78	101	70	155	100	92	141	257	77	62	78	67
4	75	93	70	155	100	92	140	243	75	61	76	65
5	74	87	76	145	100	90	139	213	75	61	74	65
6	78	82	74	120	100	88	139	195	74	63	71	64
7	83	78	77	125	98	90	132	191	72	50	74	65
8	78	76	79	125	98	93	125	188	71	60	82	71
9	77	77	83	125	98	94	126	177	71	62	90	72
10	77	76	112	130	96	95	146	167	70	63	89	65
11	75	78	217	130	96	96	206	159	68	66	83	52
12	75	77	224	130	94	99	279	154	69	66	82	52
13	77	75	160	125	94	101	395	152	74	69	80	62
14	75	74	134	125	94	100	522	151	75	69	77	62
15	77	72	155	110	95	96	529	143	76	78	75	61
16	77	71	241	120	96	103	692	148	74	84	78	65
17	75	71	237	130	97	107	630	136	70	77	79	71
18	77	70	177	135	96	109	473	118	67	68	77	77
19	77	73	167	135	95	105	405	109	66	65	73	80
20	77	76	165	130	95	106	381	98	67	67	70	80
21	75	80	160	125	95	111	339	93	70	66	72	78
22	75	76	157	120	96	138	290	92	73	65	86	75
23	77	66	160	120	96	135	269	86	73	64	84	75
24	77	78	165	120	95	128	258	82	76	65	79	74
25	79	76	167	110	94	126	241	80	73	65	74	87
26	78	75	177	105	95	126	224	79	70	66	102	99
27	77	79	163	105	95	127	208	78	68	68	148	99
28	75	80	158	105	94	133	195	78	65	69	142	97
29	74	81	145	105	94	147	187	79	64	68	103	124
30	74	78	130	110	-----	151	180	79	65	67	82	133
31	75	-----	107	110	-----	151	-----	80	-----	68	73	-----
TOTAL	2,388	2,342	4,348	3,869	2,811	3,414	8,385	4,312	2,150	2,059	2,595	2,295
MEAN	77.0	78.1	140	125	96.9	110	280	139	71.7	66.4	83.7	76.5
MAX	87	101	241	155	110	151	692	257	82	84	148	133
MIN	74	66	70	105	94	88	125	78	64	60	68	61
CFSM	.32	.32	.58	.51	.40	.45	1.15	.57	.30	.27	.34	.31
IN.	.37	.36	.67	.59	.43	.52	1.28	.66	.33	.32	.40	.35

CAL YR 1971 TOTAL 49,269 MEAN 135 MAX 1,060 MIN 64 CFSM .56 IN 7.54
WTR YR 1972 TOTAL 40,968 MEAN 112 MAX 592 MIN 60 CFSM .46 IN 6.27

PEAK DISCHARGE (BASE, 350 CFS).--Apr. 16 (1800) 701 cfs (5.38 ft).

STREAMS TRIBUTARY TO LAKE MICHIGAN

04121500 Muskegon River at Evart, Mich.

LOCATION.--Lat 43°53'57", long 85°15'19", in NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.3, T.17 N., R.8 W., Osceola County, on right bank 500 ft downstream from bridge on U. S. Highway 10 at Evert, 0.4 mile upstream from Twin Creek, and at mile 123.9.

DRAINAGE AREA.—1,450 sq mi, approximately.

PERIOD OF RECORD.—October 1930 to September 1931, October 1933 to current year. 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. Prior to Nov. 7, 1956, nonrecording gages at sites 400 and 500 ft upstream at present datum.

AVERAGE DISCHARGE.—40 years, 970 cfs (9.08 inches per year).

EXTREMES.--Current year: Maximum discharge, 4,670 cfs Apr. 18 (gage height, 11.67 ft); minimum, 297 cfs Jan. 15 (gage height, 6.28 ft).
Period of record: Maximum discharge, 7,750 cfs Apr. 9, 1959 (gage height, 14.42 ft); minimum observed, 164 cfs Dec. 20, 1947,
result of freezeup.

REMARKS.--Records good except those for winter periods, which are fair. Some regulation by dams above station. Records of water temperatures for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1437: 1934, 1947 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	545	430	480	650	580	570	1,420	2,020	893	520	470	823
2	500	470	435	710	582	550	1,420	2,100	865	510	505	760
3	485	490	440	720	582	540	1,390	2,130	844	495	530	690
4	475	505	470	720	582	560	1,350	2,100	816	480	530	648
5	465	500	500	680	580	520	1,320	2,030	788	475	520	612
6	470	495	530	630	560	520	1,290	2,020	774	475	510	582
7	480	480	520	660	570	540	1,230	2,020	767	470	515	560
8	485	470	520	680	580	550	1,170	1,930	760	475	545	560
9	480	470	545	700	580	560	1,180	1,850	746	480	612	540
10	475	480	786	700	570	560	1,310	1,750	711	490	588	530
11	460	480	1,310	700	560	576	1,760	1,640	672	495	565	520
12	450	480	1,260	680	560	588	2,230	1,560	672	495	565	515
13	445	470	1,270	660	560	618	2,730	1,490	672	490	550	515
14	440	470	1,070	600	570	612	3,100	1,470	672	530	530	510
15	440	465	1,400	350	570	630	3,510	1,540	690	666	515	500
16	440	460	1,880	640	570	697	3,820	1,620	666	660	545	485
17	435	455	1,760	700	570	718	4,220	1,590	630	648	606	480
18	445	460	1,620	710	582	746	4,640	1,510	600	648	550	530
19	450	480	1,430	720	570	770	4,550	1,430	576	648	515	535
20	455	485	1,350	700	580	802	4,200	1,410	565	630	490	515
21	445	515	1,300	680	580	865	3,840	1,350	555	600	485	500
22	450	505	1,190	650	580	1,140	3,600	1,290	545	576	618	485
23	455	450	1,050	670	580	1,190	3,370	1,230	535	545	746	480
24	460	475	1,000	660	565	1,200	3,160	1,160	545	535	753	485
25	460	490	960	600	580	1,200	3,090	1,100	545	510	739	490
26	460	495	940	580	570	1,250	2,800	1,050	545	495	1,070	576
27	455	520	900	550	560	1,300	2,600	994	545	495	1,400	630
28	445	520	820	590	555	1,540	2,400	956	535	485	1,260	606
29	445	520	800	600	560	1,600	2,230	935	535	480	1,120	660
30	435	515	750	600	-----	1,600	2,100	949	530	470	1,010	718
31	430	-----	570	590	-----	1,490	-----	921	-----	470	914	-----
TOTAL	14,260	14,500	29,856	20,080	16,588	26,602	77,030	47,145	19,794	16,441	20,871	17,040
MEAN	460	483	963	648	572	858	2,568	1,521	660	530	673	568
MAX	545	520	1,880	720	582	1,600	4,640	2,130	893	666	1,400	823
MIN	430	430	435	350	555	520	1,170	921	530	470	470	480
CFSM	.32	.33	.66	.45	.39	.59	1.77	1.05	.46	.37	.46	.39
IN.	.37	.37	.77	.52	.43	.68	1.98	1.21	.51	.42	.54	.44
CAL YR 1971	TOTAL 413,511		MEAN 1,133	MAX 7,560		MIN 367	CFSM .78	IN 10.61				
WTR YR 1972	TOTAL 320,207		MEAN 875	MAX 4,640		MIN 350	CFSM .60	IN 8.21				

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04121900 Little Muskegon River near Morley, Mich.

LOCATION.--Lat 43°30'09", long 85°20'33", in SW¼ SW¼ sec.24, T.13 N., R.9 W., Mecosta County, on right bank at upstream side of highway bridge on 130th Avenue, 0.5 mile downstream from Rustford Dam, and 5.2 miles east of Morley.

DRAINAGE AREA.--138 sq mi.

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 920 ft (from topographic map).

AVERAGE DISCHARGE.--6 years, 114 cfs (11.22 inches per year).

EXTREMES.--Current year: Maximum discharge, 648 cfs Aug. 26 (gage height, 4.53 ft); minimum, 31 cfs June 3 (gage height, 1.59 ft).
Period of record: Maximum discharge, 698 cfs Dec. 8, 1966 (gage height, 4.73 ft); minimum 31 cfs June 3, 1972 (gage height, 1.59 ft).

REMARKS.--Records good except those for winter periods, which are fair. Some regulation from dams above station. Records of water temperatures for current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	60	70	84	90	78	142	120	66	54	56	174
2	53	65	67	86	91	80	134	150	66	56	78	160
3	53	65	65	85	91	78	134	154	60	56	78	166
4	53	64	64	84	88	80	142	138	62	54	64	136
5	55	60	65	82	82	82	144	126	56	52	58	132
6	57	60	71	82	83	80	148	130	56	52	56	126
7	58	60	80	90	84	82	142	128	54	52	64	124
8	57	60	80	90	82	88	130	124	54	54	74	134
9	57	60	87	92	84	86	138	114	50	58	76	128
10	60	62	166	94	82	84	179	110	48	58	68	114
11	58	62	259	92	85	82	258	106	48	54	66	112
12	55	62	211	90	87	78	290	98	54	50	70	118
13	53	60	145	87	86	81	326	96	58	50	66	128
14	55	60	112	84	84	87	324	98	60	50	62	124
15	55	62	220	78	86	89	324	110	110	120	56	110
16	55	60	295	80	86	92	314	110	88	105	60	110
17	58	60	233	88	88	92	294	108	74	122	58	100
18	60	67	170	91	88	94	264	102	68	118	76	142
19	58	76	139	93	77	90	236	96	64	102	74	154
20	58	81	128	94	80	94	214	94	62	90	58	130
21	58	81	120	95	82	122	186	92	60	82	60	114
22	57	71	112	95	84	262	200	84	62	82	432	114
23	60	70	105	95	82	244	202	82	60	74	410	104
24	60	67	111	92	82	172	184	76	60	70	404	102
25	60	67	109	90	80	158	164	66	62	64	316	102
26	62	67	107	85	78	164	148	70	60	60	446	110
27	60	72	103	87	78	178	138	66	60	66	548	106
28	60	76	99	90	82	220	130	60	58	62	499	102
29	58	76	97	90	78	220	126	66	58	60	379	132
30	60	72	91	90	-----	178	122	66	58	56	264	130
31	60	-----	82	90	-----	150	-----	66	-----	58	200	-----
TOTAL	1,776	1,985	3,863	2,745	2,430	3,765	5,877	3,106	1,856	2,141	5,276	3,738
MEAN	57.3	66.2	125	88.5	83.8	121	196	100	61.9	69.1	170	125
MAX	62	81	295	95	91	262	326	154	110	122	548	174
MIN	53	60	64	78	77	78	122	60	48	50	56	100
CFSM	.42	.48	.91	.64	.61	.88	1.42	.72	.45	.50	1.23	.91
IN.	.48	.54	1.04	.74	.66	1.01	1.58	.84	.50	.58	1.42	1.01

CAL YR 1971 TOTAL 33,952 MEAN 93.0 MAX 381 MIN 36 CFSM .67 IN 9.15
WTR YR 1972 TOTAL 38,558 MEAN 105 MAX 548 MIN 48 CFSM .76 IN 10.39

PEAK DISCHARGE (BASE, 400 CFS).--Aug. 22 (1500) 618 cfs (4.41 ft); Aug. 26 (2100) 648 cfs (4.53 ft).

STREAMS TRIBUTARY TO LAKE MICHIGAN

04122000 Muskegon River at Newaygo, Mich.

LOCATION.—Lat 43°25'20", long 85°48'04", in NE¼ NE¼ sec.24, T.12 N., R.13 W., Newaygo County, on left bank near nonoperative powerplant at Newaygo, 600 ft downstream from Pencoyer Creek and at mile 39.1.

DRAINAGE AREA.—2,350 sq mi, approximately.

PERIOD OF RECORD.—July to December 1906, July 1909 to July 1915, January 1916 to December 1919, October 1930 to current year. 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 625.83 ft above mean sea level. October 1930 to January 1939, nonrecording gage, and Jan. 31, 1939 to Sept. 30, 1963, water-stage recorder at present site at datum 40.0 ft lower.

AVERAGE DISCHARGE.—50 years (1909-14, 1916-19, 1930-72), 1920 cfs (11.10 inches per year).

EXTREMES.—Current year: Maximum discharge, 5,190 cfs Apr. 20 (gage height, 10.59 ft); minimum daily, 600 cfs Aug. 6. Period of record: Maximum daily discharge, 14,950 cfs Mar. 25, 1913; minimum, 52 cfs Oct. 2, 1965 (gage height, 5.31 ft), result of regulation during pipeline repair; minimum daily, 330 cfs Feb. 15, 1914.

REMARKS.—Records good prior to May 15 and fair thereafter. Flow regulated by powerplants above station, the largest of which are at Croton Dam, Hardy Dam (since 1931), and Rogers Dam. Since Dec. 27, 1965, powerplant at Newaygo nonoperative.

REVISIONS (WATER YEARS).—WSP 974: 1933, 1935, 1937-38. WSP 1307: 1940 (M). See also PERIOD OF RECORD.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,310	1,110	1,150	1,140	1,690	1,970	3,110	2,560	1,780	1,050	902	1,730
2	1,310	1,140	1,030	1,150	1,690	1,880	3,110	2,500	1,350	1,000	1,250	1,300
3	1,310	1,130	982	2,010	1,700	1,800	2,630	2,910	1,300	1,000	934	1,200
4	1,330	1,130	983	2,710	1,700	1,610	1,830	2,830	1,300	1,050	1,220	950
5	1,300	1,130	988	1,790	1,510	1,360	2,300	2,480	1,400	1,050	894	1,550
6	1,330	1,030	1,150	2,020	1,070	1,730	2,790	2,480	1,800	1,000	600	1,580
7	1,320	1,010	1,200	1,830	1,170	2,160	2,340	2,460	1,450	1,000	1,170	1,200
8	1,320	1,410	1,200	1,530	1,490	2,150	1,590	2,460	1,300	950	1,380	1,150
9	1,320	1,120	1,230	1,160	1,740	2,290	1,540	2,370	1,350	950	926	1,150
10	1,320	1,100	1,530	1,650	1,590	1,910	2,180	2,160	1,500	1,000	926	1,150
11	1,020	1,100	2,450	2,520	1,380	1,980	3,290	1,870	1,350	1,100	934	1,050
12	1,330	1,090	3,000	2,540	1,260	1,790	3,930	1,750	1,300	1,250	1,160	1,050
13	1,030	989	3,000	2,020	1,150	2,220	4,470	1,750	1,300	1,100	926	1,000
14	1,330	978	2,210	1,620	1,430	2,160	5,070	1,750	1,350	1,300	1,140	1,000
15	1,020	1,080	2,080	1,400	1,800	2,580	5,070	1,900	1,500	1,560	926	1,000
16	1,320	1,090	3,590	1,200	1,810	2,710	5,100	2,290	1,760	1,600	942	1,000
17	1,010	1,090	3,610	1,100	1,820	2,740	5,120	2,330	1,300	1,600	1,540	1,000
18	1,010	1,100	3,070	1,100	1,810	2,290	5,140	2,290	1,050	1,400	1,350	1,050
19	1,310	1,100	2,550	1,210	1,530	2,120	5,160	1,860	1,100	1,250	958	1,050
20	1,310	1,020	2,590	1,520	1,170	2,130	5,060	2,320	1,300	1,660	950	1,050
21	1,310	986	2,240	1,760	1,460	2,160	4,560	1,860	1,400	1,480	1,300	1,370
22	1,320	985	2,320	1,750	1,820	2,630	4,230	1,800	1,300	1,100	1,580	1,610
23	1,310	1,140	2,100	1,740	1,810	3,090	4,000	1,900	1,300	950	1,700	1,200
24	1,300	1,060	2,080	1,900	1,820	3,090	3,890	2,050	1,100	950	2,280	920
25	1,300	984	2,100	2,100	1,600	3,090	3,680	1,730	1,000	942	2,260	920
26	1,310	989	1,760	2,120	1,270	3,090	3,510	1,350	1,050	950	2,450	1,150
27	1,310	997	2,270	2,050	1,170	3,120	3,370	1,250	1,050	950	2,800	1,200
28	1,310	992	2,180	1,880	1,460	3,180	3,140	1,250	1,050	950	2,820	1,200
29	1,310	1,110	1,450	1,560	1,810	3,400	2,830	1,300	1,100	950	2,770	1,410
30	1,310	1,160	2,190	1,290	-----	3,350	2,590	1,400	1,100	942	2,360	1,750
31	1,310	-----	1,480	1,470	-----	3,130	-----	1,980	-----	1,200	1,980	-----
TOTAL	31,460	32,350	61,763	52,840	44,730	74,910	106,730	62,990	39,290	35,234	45,328	35,940
MEAN	1,315	1,078	1,992	1,705	1,542	2,416	3,558	2,332	1,310	1,137	1,462	1,198
MAX	1,330	1,410	3,610	2,710	1,820	3,400	5,160	2,910	1,800	1,660	2,820	1,750
MIN	1,300	978	982	1,100	1,070	1,360	1,540	1,250	1,000	942	600	920
CFSM	.43	.46	.85	.73	.66	1.03	1.51	.86	.56	.48	.62	.51
IV.	.50	.51	.98	.84	.71	1.19	1.69	1.00	.62	.56	.72	.57

CAL YR 1971 TOTAL 727,681 MEAN 1.994 MAX 7,170 MIN 760 CFSM .85 IN 11.52
WTR YR 1972 TOTAL 623,565 MEAN 1.704 MAX 5,160 MIN 600 CFSM .73 IN 9.87

04122100 Bear Creek near Muskegon, Mich.

LOCATION.--Lat 43°17'19", long 86°13'22", in SW¼ NW¼ sec.4, T.10 N., R.16 W., Muskegon County, on left bank at upstream side of bridge on North Getty Street, 1.5 miles upstream from Little Bear Creek, and 3.9 miles northeast of Muskegon.

DRAINAGE AREA.--14.8 sq mi.

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 610 ft (from topographic map).

AVERAGE DISCHARGE.--7 years, 14.0 cfs (12.85 inches per year).

EXTREMES.--Current year: Maximum discharge, 131 cfs Aug. 26 (gage height, 7.29 ft); minimum, 1.6 cfs Oct. 3, 21.

Period of record: Maximum discharge, 274 cfs Feb. 10, 1966 (gage height, 8.43 ft); minimum, 1.0 cfs Aug. 5, 17, 22, 1971.

REMARKS.--Records good except those for the winter periods, which are fair. Some regulation above station at low flows.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	3.4	5.0	11	9.5	11	21	16	4.7	4.4	4.0	10
2	3.4	4.2	5.0	10	9.4	9.5	19	21	4.5	5.6	8.9	9.8
3	2.8	3.9	4.8	9.5	9.3	9.0	16	20	4.5	4.8	7.0	9.5
4	3.6	4.2	4.7	9.5	9.0	8.5	15	16	3.9	3.9	5.3	8.6
5	3.4	3.9	4.8	10	8.6	8.2	15	14	3.2	3.6	4.5	7.7
6	3.7	3.9	6.4	10	8.6	8.2	14	17	3.6	3.7	4.4	7.5
7	3.9	3.7	6.6	10	8.6	8.4	13	19	3.0	3.4	6.4	7.5
8	3.7	3.4	6.6	9.6	8.6	8.5	12	17	2.9	4.7	6.3	8.2
9	4.0	4.0	8.6	9.6	8.6	8.5	11	15	3.2	4.5	6.1	7.3
10	3.7	4.5	28	9.8	8.6	8.5	12	12	3.3	4.5	4.7	7.0
11	3.7	4.5	29	10	8.8	8.2	11	12	3.0	3.6	4.8	6.6
12	2.9	4.5	13	9.8	8.8	8.0	12	11	7.0	3.3	4.8	7.0
13	3.7	4.4	11	9.5	8.6	8.2	12	11	6.0	4.7	5.2	19
14	3.6	4.2	9.7	9.0	8.6	8.5	12	11	10	5.0	4.5	14
15	3.6	4.2	38	9.1	8.6	8.7	13	10	18	24	4.5	10
16	3.3	4.0	36	9.5	8.6	9.0	16	10	9.3	11	4.8	9.1
17	3.0	4.0	17	10	8.5	10	20	9.3	7.5	7.9	56	8.0
18	3.4	4.7	14	10	8.3	14	16	8.2	6.4	12	21	19
19	3.4	5.5	14	10	8.0	20	14	7.7	5.6	9.3	26	16
20	3.3	6.0	14	11	8.0	29	13	7.1	5.8	7.7	13	12
21	2.8	5.8	13	11	8.2	52	13	6.6	5.6	6.0	12	10
22	3.3	5.2	11	11	8.4	78	22	6.0	5.0	5.5	10	8.9
23	3.9	4.0	11	10	8.3	36	20	5.8	4.8	5.2	9.5	8.2
24	4.0	4.7	11	10	8.2	22	18	5.2	5.2	4.7	15	8.0
25	3.7	5.0	11	9.5	8.0	19	16	5.0	4.7	4.0	12	8.0
26	3.7	5.2	11	9.2	7.9	17	15	4.8	4.5	4.8	76	7.9
27	3.7	5.3	11	9.2	7.9	16	13	4.7	4.0	7.0	60	7.1
28	3.0	5.5	10	9.2	8.6	15	13	4.4	4.0	5.0	25	6.8
29	3.4	5.3	9.8	9.2	9.5	15	12	4.4	4.5	4.5	17	13
30	3.4	5.2	12	9.3	-----	15	12	4.5	5.8	3.9	14	11
31	3.4	-----	14	9.4	-----	16	-----	4.8	-----	3.4	11	-----
TOTAL	108.0	136.3	401.0	303.9	248.6	512.9	441	320.5	163.5	185.6	463.7	292.7
MEAN	3.48	4.54	12.9	9.80	8.57	16.5	14.7	10.3	5.45	5.99	15.0	9.76
MAX	4.0	6.0	38	11	9.5	78	22	21	18	24	76	19
MIN	2.8	3.4	4.7	9.0	7.9	8.0	11	4.4	2.9	3.3	4.0	6.6
CFSM	.24	.31	.87	.66	.58	1.11	.99	.70	.37	.40	1.01	.66
IN.	.27	.34	1.01	.76	.62	1.29	1.11	.81	.41	.47	1.17	.74

CAL YR 1971 TOTAL 4,272.6 MEAN 11.7 MAX 159 MIN 1.6 CFSM .79 IN 10.74

WTR YR 1972 TOTAL 3,577.7 MEAN 9.78 MAX 78 MIN 2.8 CFSM .66 IN 8.99

PEAK DISCHARGE (BASE, 100 CFS).--Aug. 26 (1830) 131 cfs (7.29 ft).

04122200 White River near Whitehall, Mich.

LOCATION.--Lat 43°27'51", long 86°13'57", in SE¼ NW¼ sec.4, T.12 N., R.16 W., Muskegon County, on right bank 30 ft downstream from bridge on Fruitvale Road, 6.3 miles downstream from North Branch, 6.9 miles northeast of Whitehall, and 16.4 miles upstream from mouth.

DRAINAGE AREA.--380 sq mi, approximately.

PERIOD OF RECORD.--August 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 594.1 ft above mean sea level, unadjusted. Nov. 18, 1957, to Oct. 22, 1958, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--15 years, 389 cfs (13.90 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,760 cfs Mar. 23 (gage height, 5.67 ft); minimum, 207 cfs Oct. 5.

Period of record: Maximum discharge, 3,740 cfs Apr. 17, 1967 (gage height, 6.76 ft); minimum, 163 cfs Aug. 18, 19, 1958.

REMARKS.--Records good except those for winter periods, which are fair. Some regulation from dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	221	244	296	330	320	330	622	400	280	265	226	323
2	213	252	281	330	320	320	602	451	279	261	244	305
3	208	259	272	330	310	320	588	524	273	261	267	293
4	209	257	268	310	310	350	576	547	265	251	262	283
5	215	257	267	300	310	350	558	514	258	244	253	278
6	214	253	274	300	310	320	547	474	257	239	242	272
7	215	250	288	310	320	330	549	459	254	235	243	268
8	217	253	296	320	320	350	566	470	250	237	252	275
9	220	259	303	320	320	350	543	459	254	249	273	270
10	224	264	353	330	320	330	524	427	248	259	268	266
11	225	265	442	330	320	320	532	394	245	241	265	262
12	225	263	542	320	330	340	572	371	269	236	284	264
13	222	261	561	320	330	350	623	358	297	230	276	277
14	223	259	503	310	330	370	655	363	292	233	270	283
15	224	257	498	290	330	370	674	369	335	320	254	275
16	223	256	534	300	330	370	673	377	351	418	247	265
17	223	255	684	320	330	386	667	376	320	371	296	259
18	226	257	641	330	340	390	639	384	299	346	299	279
19	229	268	569	350	340	401	600	386	278	336	349	310
20	229	281	525	350	340	419	551	358	270	306	335	308
21	230	292	469	340	340	483	500	337	274	283	284	288
22	231	300	420	340	340	666	491	319	276	264	273	268
23	232	283	385	340	340	1,440	521	304	269	250	266	261
24	236	274	384	330	340	1,230	561	295	265	242	284	259
25	242	273	385	320	330	833	552	284	262	239	301	262
26	243	277	382	310	330	699	528	280	257	238	340	269
27	242	292	376	300	330	671	484	274	252	255	445	268
28	239	305	371	320	330	665	442	270	248	253	538	266
29	239	310	361	330	330	693	414	266	252	237	526	289
30	239	306	350	330	-----	702	394	268	272	234	472	327
31	241	-----	340	320	-----	659	-----	278	-----	228	406	-----
TOTAL	7,019	8,082	12,620	9,980	9,490	15,807	16,748	11,636	8,201	8,266	9,540	8,372
MEAN	226	269	407	322	327	510	558	375	273	257	308	279
MAX	243	310	684	350	340	1,440	674	547	351	418	538	327
MIN	208	244	267	290	310	320	394	266	245	228	226	259
CFSM	.59	.71	1.07	.85	.86	1.34	1.47	.99	.72	.70	.81	.73
IV.	.69	.79	1.24	.98	.93	1.55	1.64	1.14	.80	.81	.93	.82

CAL YR 1971 TOTAL 135,411 MEAN 371 MAX 1,590 MIN 194 CFSM .98 IN 13.26
WTR YR 1972 TOTAL 125,761 MEAN 344 MAX 1,440 MIN 208 CFSM .91 IN 12.31

STREAMS TRIBUTARY TO LAKE MICHIGAN

125

04122500 Pere Marquette River at Scottville, Mich.

LOCATION.—Lat 43°56'42", long 86°16'43", in NW¼ NW¼ sec.19, T.18 N., R.16 W., Mason County, on right bank 20 ft upstream from highway bridge on south edge of Scottville, 1.4 miles upstream from India Creek, and 5.6 miles downstream from Big South Branch.

DRAINAGE AREA.—709 sq mi.

PERIOD OF RECORD.—August 1939 to current year. Prior to October 1942, published as "at Custer".

GAGE.—Water-stage recorder. Datum of gage is 597.66 ft above mean sea level. Prior to June 12, 1943, nonrecording gage at bridge 4.5 miles upstream at different datum.

AVERAGE DISCHARGE.—33 years, 632 cfs (12.11 inches per year).

EXTREMES.—Current year: Maximum discharge, 1,240 cfs Mar. 29, April 16 (gage height, 4.00 ft); maximum gage height, 4.46 ft Jan. 19 (backwater from ice); minimum discharge, 404 cfs Oct. 5, 6.
Period of record: Maximum discharge, 2,970 cfs July 1, 1969 (gage height, 6.26 ft); minimum, 209 cfs Dec. 11, 1962 (discharge measurement); minimum daily, 310 cfs Aug. 9, 10, 1941.

REMARKS.—Records good except those for winter periods, which are fair. Some regulation above station. Records of water temperatures for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).—WSP 1437: 1941 (M), 1943 (M), 1949 (M), 1950.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	440	439	516	590	580	565	1,110	752	508	455	423	538
2	442	497	497	590	580	560	1,060	780	505	458	460	515
3	420	489	481	601	570	530	1,020	838	502	455	512	502
4	412	484	473	585	560	560	986	920	485	453	542	495
5	432	469	470	568	540	560	958	940	470	445	495	485
6	413	458	480	580	550	540	936	927	460	439	465	478
7	422	450	495	600	550	560	918	900	455	437	460	472
8	423	445	510	590	540	600	900	909	447	439	478	468
9	426	452	527	600	560	580	878	914	441	455	502	465
10	432	457	570	580	560	540	864	855	437	470	510	455
11	434	459	650	595	540	560	896	791	433	470	515	455
12	425	460	715	590	560	580	981	745	449	462	512	458
13	420	456	785	585	570	598	1,100	710	461	468	512	468
14	417	452	769	580	570	610	1,180	692	481	451	495	468
15	414	448	760	510	570	604	1,230	703	509	465	472	468
16	410	444	790	530	570	601	1,240	734	532	510	472	455
17	407	443	857	600	560	619	1,200	752	525	550	613	449
18	407	447	850	610	570	628	1,170	745	495	570	610	465
19	410	463	830	620	570	625	1,120	706	478	552	637	475
20	413	496	760	620	560	631	1,040	668	485	520	572	488
21	420	525	720	610	560	748	976	634	478	495	535	475
22	415	532	680	610	560	994	958	613	490	472	500	458
23	414	513	669	620	560	1,070	963	586	482	458	490	447
24	413	487	660	620	560	1,140	999	568	475	445	502	443
25	414	480	663	600	560	1,100	1,020	552	470	462	512	451
26	418	491	669	550	560	1,080	976	535	468	435	568	492
27	422	522	654	570	560	1,090	914	522	458	445	637	522
28	419	546	642	580	560	1,150	847	510	453	447	734	522
29	413	542	625	580	560	1,230	791	502	458	441	773	550
30	414	534	610	580	-----	1,230	756	505	460	431	682	535
31	424	-----	580	570	-----	1,170	-----	508	-----	425	580	-----
TOTAL	13,005	14,380	19,957	18,214	16,270	23,653	29,987	22,016	14,250	14,480	16,770	14,417
MEAN	420	479	644	588	561	763	1,000	710	475	467	541	481
MAX	442	546	857	620	580	1,230	1,240	940	532	570	773	550
MIN	407	439	470	510	540	530	756	502	433	425	423	443
CFSM	.59	.68	.91	.83	.79	1.08	1.41	1.00	.67	.66	.76	.68
IN.	.68	.75	1.05	.96	.85	1.24	1.57	1.16	.75	.76	.88	.76

CAL YR 1971 TOTAL 242,390 MEAN 664 MAX 2,150 MIN 349 CFSM .94 IN 12.72
WTR YR 1972 TOTAL 217,399 MEAN 594 MAX 1,240 MIN 407 CFSM .84 IN 11.41

STREAMS TRIBUTARY TO LAKE MICHIGAN

04123000 Big Sable River near Freesoil, Mich.

LOCATION.--Lat 44°07'13", long 86°16'48", in NE¼ NE¼ sec.24, T.20 N., R.17 W., Mason County, near center of span on downstream side of bridge on U.S. Highway 31, 3.4 miles northwest of Freesoil, and 7 miles upstream from Hamlin Lake.

DRAINAGE AREA.--127 sq mi.

PERIOD OF RECORD.--May 1942 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Nonrecording gage. Datum of gage is 615.32 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to Sept. 15, 1959, at site 30 ft downstream at present datum.

AVERAGE DISCHARGE.--30 years, 140 cfs (14.97 inches per year).

EXTREMES.--Current year: Maximum discharge, 298 cfs Apr. 15 (gage height, 2.67 ft); maximum gage height, 2.95 ft Jan. 26 (backwater from ice); minimum discharge, 92 cfs Oct. 19.

Period of record: Maximum discharge, 555 cfs Apr. 7, 1959 (gage height, 3.4 ft, from floodmark); maximum gage height, 3.7 ft Feb. 16, 1967 (backwater from ice); minimum discharge, 65 cfs Dec. 11, 1962 (discharge measurement); minimum daily discharge, 81 cfs Aug. 14, 1944.

REMARKS.--Records good except those for winter periods, which are fair.

REVISIONS (WATER YEARS).--WSP 1437: 1946 (M), 1947. WSP 1727: 1953 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	96	124	114	130	120	187	204	116	106	100	118
2	96	110	121	125	130	120	185	200	114	105	105	114
3	94	118	118	138	125	120	186	199	112	103	111	110
4	94	115	112	135	125	121	184	199	110	100	108	110
5	96	113	110	125	120	115	184	193	110	99	103	110
6	93	110	116	119	120	108	182	199	110	99	105	108
7	95	105	121	128	120	110	179	200	108	98	111	108
8	95	105	124	133	120	123	176	195	106	98	121	108
9	96	107	130	135	125	140	175	184	104	100	120	107
10	96	107	161	140	125	129	178	174	104	101	116	105
11	98	108	177	139	120	127	210	166	105	101	120	104
12	97	109	175	135	125	130	250	160	110	102	123	104
13	96	109	172	134	125	134	284	154	111	107	115	104
14	96	105	167	130	125	134	292	160	113	121	112	104
15	96	105	175	115	125	138	296	170	114	152	110	102
16	96	105	190	120	120	141	285	165	113	130	136	103
17	95	103	205	135	120	140	278	158	111	119	157	105
18	94	107	202	140	120	141	258	158	110	118	156	109
19	93	113	195	140	124	140	249	156	107	114	145	108
20	94	119	190	140	120	145	236	152	113	110	135	107
21	93	125	179	137	122	154	234	145	113	108	129	102
22	93	126	164	134	127	222	261	139	111	106	124	99
23	93	123	145	135	138	240	260	134	108	105	120	98
24	93	121	159	140	130	219	258	130	108	100	119	98
25	93	115	150	135	120	209	249	127	105	99	130	100
26	95	124	145	125	121	200	232	124	103	100	146	106
27	96	126	147	130	120	186	214	121	102	102	155	106
28	96	125	147	135	123	187	205	120	101	101	145	107
29	95	129	145	135	120	191	200	120	104	100	139	133
30	94	128	129	135	-----	200	200	120	107	100	129	145
31	95	-----	117	130	-----	196	-----	119	-----	97	120	-----
TOTAL	2,943	3,411	4,712	4,091	3,585	4,780	6,767	4,945	3,263	3,301	3,865	3,242
MEAN	94.9	114	152	132	124	154	226	160	109	106	125	109
MAX	98	129	205	140	138	240	296	204	116	152	157	145
MIN	93	96	110	114	120	108	175	119	101	97	100	98
CFSM	.75	.90	1.20	1.04	.98	1.21	1.78	1.26	.86	.83	.98	.85
IN.	.96	1.00	1.38	1.20	1.05	1.40	1.98	1.45	.96	.97	1.13	.95

CAL YR 1971 TOTAL 51,192 MEAN 140 MAX 428 MIN 83 CFSM 1.10 IN 14.99
WTR YR 1972 TOTAL 48,905 MEAN 134 MAX 296 MIN 93 CFSM 1.06 IN 14.32

04123500 Manistee River near Grayling, Mich.

LOCATION.--Lat 44°41'35", long 84°50'50", in SW¼ NW¼ sec.31, T.27 N., R.4 W., Crawford County, on right bank 25 ft upstream from bridge on State Highway 72, 3.3 miles downstream from Goose Creek, and 6.8 miles northwest of Grayling.

DRAINAGE AREA.--159 sq mi.

PERIOD OF RECORD.--October 1942 to current year. Monthly discharge only for October 1942, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 1,120.64 ft above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--30 years, 184 cfs (15.72 inches per year).

EXTREMES.--Current year: Maximum discharge, 285 cfs Apr. 19 (gage height, 1.27 ft); minimum, 138 cfs Mar. 2.

Period of record: Maximum discharge, 388 cfs Apr. 18, 1960 (gage height, 1.88 ft); maximum gage height, 2.43 ft Feb. 7, 1967 (backwater from ice); minimum discharge, 114 cfs Jan. 27, 1971, result of freezeup.

REMARKS.--Records good. Records of water temperatures for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	198	183	180	195	175	174	183	232	198	183	191	185
2	190	208	180	200	175	164	183	263	196	180	202	185
3	186	210	183	200	180	170	183	253	193	178	210	183
4	185	200	182	198	170	175	183	241	193	178	196	183
5	183	196	183	185	165	175	183	229	190	178	185	182
6	188	195	186	185	170	165	180	227	190	178	183	183
7	188	193	188	190	175	170	180	229	190	178	190	183
8	183	193	188	185	175	180	180	220	188	178	196	182
9	186	193	190	196	180	175	180	215	188	180	227	178
10	182	193	214	196	180	175	183	212	188	182	219	177
11	185	193	264	195	185	180	193	212	183	191	202	178
12	186	193	251	185	180	183	202	207	190	195	205	180
13	186	195	222	185	180	183	227	205	191	205	193	180
14	183	193	212	175	183	183	236	210	196	193	188	178
15	183	196	232	170	185	180	251	224	203	222	185	175
16	182	195	273	175	183	182	263	237	193	215	185	177
17	182	191	249	180	180	180	266	224	188	193	195	182
18	183	191	229	190	183	178	266	212	186	188	214	177
19	183	191	222	190	180	177	280	210	183	183	202	175
20	182	193	217	190	165	178	275	205	183	186	190	180
21	182	193	214	185	175	188	263	203	186	195	186	180
22	183	185	205	193	170	205	263	200	186	188	195	175
23	188	190	200	193	170	200	271	198	183	182	191	175
24	188	190	210	190	175	191	266	196	186	178	191	177
25	185	186	208	167	175	185	253	195	188	175	188	185
26	185	188	208	160	170	183	244	195	191	177	200	202
27	185	191	205	170	178	183	236	195	188	178	225	193
28	186	191	205	180	180	183	234	193	183	175	217	188
29	185	190	202	185	178	183	230	195	182	175	200	234
30	185	186	188	185	-----	185	229	196	183	182	190	237
31	185	-----	185	175	-----	183	-----	196	-----	205	186	-----
TOTAL	5,741	5,785	6,475	5,748	5,120	5,596	6,766	6,629	5,666	5,774	6,127	5,549
MEAN	185	193	209	185	177	181	226	214	189	186	198	185
MAX	198	210	273	200	185	205	280	263	203	222	227	237
MIN	182	183	180	160	165	164	180	193	182	175	183	175
CFSM	1.16	1.21	1.31	1.16	1.11	1.14	1.42	1.35	1.19	1.17	1.25	1.16
IN.	1.34	1.35	1.51	1.34	1.20	1.31	1.58	1.55	1.33	1.35	1.43	1.30
CAL YR 1971	TOTAL 72,446	MEAN 198	MAX 339	MIN 125	CFSM 1.25	IN 16.95						
WTR YR 1972	TOTAL 70,976	MEAN 194	MAX 280	MIN 160	CFSM 1.22	IN 16.61						

STREAMS TRIBUTARY TO LAKE MICHIGAN

04124000 Manistee River near Sherman, Mich.

LOCATION.--Lat 44°26'11", long 85°41'55", in NE¼ NE¼ sec.36, T.24 N., R.12 W., Wexford County, on downstream side of bridge near right pier on State Highway 37, 250 ft upstream from Wheeler Creek, 0.9 mile north of Sherman, and at mile 60.8.

DRAINAGE AREA.--900 sq mi.

PERIOD OF RECORD.--July 1903 to May 1916, October 1930 to September 1931, October 1933 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Nonrecording gage. Altitude of gage is 804 ft (from river-profile map). Prior to Apr. 13, 1934 at various datums.

AVERAGE DISCHARGE.--52 years (1903-15, 1930-31, 1933-72), 1,056 cfs (15.93 inches per year).

EXTREMES.--Current year: Maximum discharge, 2,240 cfs Apr. 20 (gage height, 13.98 ft); minimum, 790 cfs Sept. 24.

Period of record: Maximum discharge, 3,370 cfs Mar. 25, 1913 (gage height, 7.1 ft, from graph based on gage readings, datum then in use); minimum daily, 540 cfs Feb. 21-23, 1936.

REMARKS.--Records good except those for winter periods, which are fair.

REVISIONS (WATER YEARS).--WSP 1004, 1936 (m). WSP 1307: 1911, 1913-14(M), 1934 (M), 1936 (M), 1937, 1939-40(M), WSP 1437: 1911, 1913 (M), 1937.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,080	834	942	1,040	920	880	1,060	1,370	952	862	898	892
2	998	966	906	1,080	920	870	1,060	1,460	946	856	925	877
3	942	1,040	894	1,100	900	830	1,040	1,490	943	841	937	865
4	906	1,040	912	1,080	900	850	1,030	1,470	940	832	949	859
5	878	1,020	906	1,030	850	860	1,030	1,420	925	823	934	853
6	888	978	912	1,040	860	840	1,030	1,390	916	820	901	853
7	902	954	934	1,100	870	880	1,010	1,340	901	829	895	850
8	888	930	962	1,150	870	900	982	1,290	895	832	916	850
9	867	923	990	1,090	860	900	990	1,240	895	835	955	844
10	850	926	1,130	1,060	850	870	1,030	1,200	895	841	943	835
11	842	930	1,570	1,050	880	880	1,200	1,160	892	980	982	829
12	842	930	1,570	1,030	900	910	1,400	1,120	895	904	976	826
13	870	926	1,470	1,010	910	920	1,700	1,100	898	1,060	940	829
14	874	920	1,400	940	920	920	1,860	1,110	976	1,130	925	835
15	867	916	1,500	850	920	930	1,960	1,150	1,020	1,320	886	829
16	867	916	1,780	880	920	982	2,020	1,250	958	1,370	883	820
17	860	923	1,680	960	920	982	2,130	1,290	925	1,230	907	820
18	860	930	1,620	1,050	910	962	2,170	1,260	901	1,110	898	829
19	864	938	1,500	1,100	900	954	2,200	1,210	889	1,020	889	835
20	867	950	1,390	1,100	870	942	2,200	1,150	883	964	868	823
21	864	950	1,310	1,050	860	990	2,100	1,100	886	934	865	811
22	860	930	1,240	1,000	870	1,130	2,020	1,070	883	919	880	805
23	864	923	1,200	1,000	870	1,200	1,940	1,040	871	907	901	802
24	864	926	1,160	1,000	880	1,140	1,860	1,010	871	889	895	796
25	867	930	1,200	950	880	1,110	1,780	988	868	868	883	862
26	864	930	1,190	900	880	1,080	1,690	970	865	862	922	940
27	864	958	1,160	870	880	1,060	1,580	952	868	853	991	955
28	867	970	1,130	870	880	1,070	1,480	943	868	841	1,060	958
29	864	978	1,110	900	880	1,100	1,410	940	883	835	1,040	1,240
30	867	970	1,090	920	-----	1,100	1,370	943	862	823	991	1,330
31	878	-----	1,060	920	-----	1,070	-----	946	-----	826	925	-----
TOTAL	27,335	28,405	37,808	31,120	25,730	30,112	46,332	36,372	27,170	29,016	28,760	26,352
MEAN	882	947	1,220	1,004	887	971	1,544	1,173	906	936	928	878
MAX	1,080	1,040	1,780	1,150	920	1,200	2,200	1,490	1,020	1,370	1,060	1,330
MIN	842	884	884	850	850	830	982	940	862	820	865	796
CFSM	.98	1.05	1.36	1.12	.99	1.08	1.72	1.30	1.01	1.04	1.03	.98
IN.	1.13	1.17	1.56	1.29	1.06	1.24	1.92	1.50	1.12	1.20	1.19	1.09

CAL YR 1971 TOTAL 396,606 MEAN 1,087 MAX 3,080 MIN 760 CFSM 1.21 IN 16.39
WTR YR 1972 TOTAL 374,512 MEAN 1,023 MAX 2,200 MIN 796 CFSM 1.14 IN 15.48

STREAMS TRIBUTARY TO LAKE MICHIGAN

129

04125500 Pine River near Hoxeyville, Mich.

LOCATION.—Lat 44°12'11", long 85°47'58", in SW¼ NW¼ sec.20, T.21 N., R.12 W., Wexford County, on right bank 500 ft upstream from bridge on State Highway 37, 4.2 miles northwest of Hoxeyville, 8.0 miles east of Wellston, and 8 miles upstream from mouth.

DRAINAGE AREA.—251 sq mi.

PERIOD OF RECORD.—July 1952 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 775 ft (by barometer).

AVERAGE DISCHARGE.—20 years, 281 cfs (15.20 inches per year).

EXTREMES.—Current year: Maximum discharge, 908 cfs Apr. 15 (gage height, 4.47 ft); minimum, 184 cfs Mar. 6.

Period of record: Maximum discharge, 2,440 cfs Aug. 6, 1956 (gage height, 6.82 ft), from rating curve extended above 1,100 cfs; minimum, 161 cfs Feb. 2, 1961.

REMARKS.—Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	263	237	244	240	233	233	310	362	226	210	234	235
2	254	269	235	250	231	215	299	437	226	208	234	230
3	244	291	237	245	235	209	289	476	224	208	255	228
4	246	272	235	240	233	225	287	431	220	204	240	224
5	244	256	233	220	215	220	286	378	216	204	223	224
6	244	256	240	235	220	212	285	370	216	202	221	226
7	244	249	246	254	218	225	279	406	214	206	226	230
8	249	240	256	240	224	240	266	391	212	208	238	236
9	244	242	266	251	226	229	270	337	210	210	270	230
10	244	240	329	254	214	220	295	311	212	214	264	225
11	244	242	497	254	225	225	416	292	210	222	242	226
12	244	244	538	251	225	235	556	286	212	224	244	224
13	240	242	416	246	233	240	789	276	216	256	239	229
14	240	240	320	224	231	244	861	280	220	263	229	232
15	237	240	363	192	233	240	849	304	231	270	225	226
16	235	235	529	206	231	246	885	317	224	284	244	222
17	235	235	495	240	231	246	836	298	220	254	296	220
18	235	235	385	245	233	246	735	271	212	244	284	232
19	237	244	326	251	231	242	724	261	210	231	251	236
20	235	261	305	251	224	242	741	256	210	224	235	229
21	235	269	290	244	231	261	650	246	229	225	242	222
22	233	267	270	246	231	346	596	240	224	219	235	220
23	235	251	258	250	226	359	596	222	218	217	240	218
24	235	242	274	250	229	323	569	224	218	214	251	219
25	235	244	281	230	229	315	495	224	218	211	243	236
26	235	246	275	218	226	308	446	226	216	216	277	316
27	240	258	271	230	226	307	413	222	212	216	354	312
28	244	258	260	235	231	321	391	222	210	215	340	273
29	237	261	255	235	229	358	371	224	214	211	292	315
30	237	254	250	235	-----	364	355	218	212	211	259	367
31	235	-----	230	233	-----	330	-----	226	-----	219	242	-----
TOTAL	7,459	7,520	9,609	7,395	6,604	8,226	15,140	9,234	6,512	6,920	7,869	7,262
MEAN	241	251	310	239	228	265	505	298	217	223	254	242
MAX	263	291	538	254	235	364	885	476	231	284	354	367
MIN	233	235	230	192	214	209	266	218	210	202	221	218
CFSM	.96	1.00	1.24	.95	.91	1.06	2.01	1.19	.86	.89	1.01	.96
IV.	1.11	1.11	1.42	1.10	.98	1.22	2.24	1.37	.97	1.03	1.17	1.08

CAL YR 1971 TOTAL 110,013 MEAN 301 MAX 1,750 MIN 210 CFSM 1.20 IN 16.30

WTR YR 1972 TOTAL 99,750 MEAN 273 MAX 885 MIN 192 CFSM 1.09 IN 14.78

PEAK DISCHARGE (BASE, 650 CFS).—Apr. 15 (2300) 908 cfs (4.47 ft).

STREAMS TRIBUTARY TO LAKE MICHIGAN

04126000 Manistee River near Manistee, Mich.

LOCATION.--Lat 44°16'14", long 86°11'56", in NW¼ NW¼ sec.36, T.22 N., R.16 W., Manistee County, on right bank 6.4 miles northeast of Manistee, 6.4 miles south of Onkama, 7.8 miles upstream from Manistee Lake, and at mile 10.8.

DRAINAGE AREA.--1,780 sq mi, approximately.

PERIOD OF RECORD.--October 1951 to current year. Monthly discharge only for October, November 1951, published in WSP 1727.

GAGE.--Water-stage recorder. Altitude of gage is 585 ft (from river-profile map).

AVERAGE DISCHARGE.--21 years, 1,974 cfs (15.06 inches per year).

EXTREMES.--Current year: Maximum discharge, 4,710 cfs Apr. 16 (gage height, 7.33 ft); maximum gage height, about 8.7 ft Mar. 7 (backwater from ice); minimum discharge, 1,050 cfs Sept. 17 (gage height, 4.00 ft).
Period of record: Maximum discharge, 6,980 cfs Apr. 15, 1971 (gage height, 8.22 ft); maximum gage height, 9.15 ft Feb. 12, 1955 (backwater from ice); minimum daily discharge, 992 cfs Oct. 10, 1966.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated at all stages by powerplant 21 miles above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,790	1,460	1,930	1,980	1,900	2,100	1,880	2,070	1,730	1,590	1,490	1,900
2	2,040	1,820	1,780	1,790	1,900	2,220	2,160	2,630	1,790	1,480	1,680	1,630
3	1,870	1,970	1,810	1,850	2,100	2,020	2,130	2,890	1,880	1,400	1,790	1,470
4	1,620	2,020	1,600	2,150	2,000	1,710	2,200	3,120	1,200	1,420	1,780	1,380
5	1,680	2,030	1,470	2,170	1,900	2,000	2,050	2,920	1,420	1,520	1,650	1,500
6	1,660	1,880	1,560	2,060	1,500	1,500	1,600	2,780	1,560	1,650	1,570	1,660
7	1,720	1,500	1,840	1,720	1,200	1,600	2,000	2,520	1,760	1,690	1,630	1,660
8	1,710	1,660	1,990	1,740	1,850	1,900	2,100	2,320	2,030	1,590	1,890	1,750
9	1,710	1,960	1,950	1,670	1,650	2,100	1,980	2,670	1,700	1,400	1,960	1,680
10	1,540	1,710	1,990	1,960	1,800	2,000	1,800	2,670	1,250	1,170	2,020	1,470
11	1,490	1,820	2,400	2,130	1,900	1,800	1,900	2,130	1,780	1,860	1,900	1,390
12	1,460	1,640	2,680	2,020	1,900	1,500	2,100	2,310	1,250	1,770	1,860	1,570
13	1,740	1,760	2,930	1,980	1,250	1,700	2,990	2,000	2,040	2,020	1,680	1,680
14	1,570	1,490	2,950	2,000	1,600	2,500	3,590	2,090	1,920	2,200	1,510	1,580
15	1,710	1,550	2,880	1,900	1,900	2,500	4,280	2,120	2,130	2,480	1,600	1,450
16	1,600	1,810	3,040	1,200	2,000	1,800	4,500	2,400	2,130	2,260	1,980	1,520
17	1,400	1,640	3,200	1,200	2,000	1,900	4,060	2,480	1,830	2,250	2,170	1,330
18	1,200	1,730	3,330	1,200	2,150	1,900	3,760	2,610	1,520	2,200	1,990	1,320
19	1,700	1,990	3,240	1,600	1,800	2,100	3,730	2,380	1,460	2,010	1,680	1,690
20	1,580	1,830	2,750	2,000	1,400	1,900	3,830	2,440	1,810	2,180	1,470	1,690
21	1,640	1,730	2,550	2,400	1,100	2,400	3,850	2,050	1,900	1,890	1,520	1,600
22	1,720	1,800	2,520	2,200	2,000	2,000	3,820	1,730	1,830	1,660	1,710	1,560
23	1,500	1,750	2,100	2,000	1,800	2,540	3,730	1,920	1,720	1,380	1,750	1,550
24	1,470	1,730	2,240	1,800	2,000	2,610	3,640	1,930	1,630	1,100	1,760	1,210
25	1,370	1,700	2,100	2,200	1,800	2,200	3,450	1,840	1,390	2,100	1,750	1,450
26	1,710	1,710	2,040	2,300	1,800	2,080	3,360	1,820	1,370	1,320	1,970	2,080
27	1,650	1,890	2,080	1,200	2,060	1,900	3,340	1,870	1,620	1,840	1,800	2,030
28	1,640	1,730	2,060	1,500	1,960	2,010	3,170	1,910	1,660	1,570	1,690	1,920
29	1,650	1,740	2,080	1,350	1,950	2,050	2,970	1,880	1,720	1,600	2,100	2,510
30	1,670	1,960	2,060	1,400	-----	2,250	2,570	1,660	1,830	1,340	2,070	2,730
31	1,390	-----	2,200	1,450	-----	2,160	-----	1,800	-----	1,370	1,870	-----
TOTAL	50,200	53,010	71,350	56,120	52,170	62,950	88,540	69,960	50,860	53,310	55,290	49,960
MEAN	1,619	1,767	2,302	1,810	1,799	2,031	2,951	2,257	1,695	1,720	1,784	1,665
MAX	2,040	2,030	3,330	2,400	2,150	2,610	4,500	3,120	2,130	2,480	2,170	2,730
MIN	1,200	1,460	1,470	1,200	1,100	1,500	1,600	1,660	1,200	1,100	1,470	1,210
CFSM	.91	.99	1.29	1.02	1.01	1.14	1.66	1.27	.95	.97	1.00	.94
IN.	1.05	1.11	1.49	1.17	1.09	1.32	1.85	1.46	1.06	1.11	1.16	1.04

CAL YR 1971 TOTAL 755,870 MEAN 2,071 MAX 6,570 MIN 1,160 CFSM 1.16 IN 15.80
WTR YR 1972 TOTAL 713,720 MEAN 1,950 MAX 4,500 MIN 1,100 CFSM 1.10 IN 14.92

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04126200 Little Manistee River near Freesoil, Mich.

LOCATION.--lat 44°11'00", long 86°10'00", in NE¼ NE¼ sec.31, T.21 N., R.15 W., Manistee County, on right bank 25 ft upstream from Sixmile Bridge, 5.8 miles north of Freesoil, 7.4 miles upstream from mouth, and 9.0 miles southeast of Manistee.

DRAINAGE AREA.--200 sq mi.

PERIOD OF RECORD.--October 1956 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 610 ft (from survey line in vicinity).

AVERAGE DISCHARGE.--16 years, 173 cfs (11.75 inches per year).

EXTREMES.--Current year: Maximum discharge, 324 cfs Apr. 16 (gage height, 2.72 ft); minimum, 92 cfs Jan. 15, result of freezeup.
Period of record: Maximum discharge, 575 cfs Apr. 6, 1959 (gage height, 3.70 ft); minimum, 71 cfs Feb. 11, 1958, result of freezeup.

REMARKS.--Records good. Some regulation above station. Records of water temperatures for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	142	139	144	150	143	134	178	205	161	143	128	136
2	140	161	141	157	143	128	174	223	163	144	136	135
3	139	161	139	155	145	125	169	238	161	141	141	133
4	138	156	138	152	139	130	169	230	159	139	137	132
5	138	150	138	143	125	125	169	216	157	136	131	133
6	140	146	142	149	130	121	169	221	158	135	131	133
7	142	142	145	154	130	135	169	222	157	135	135	135
8	142	140	147	148	127	135	166	220	156	136	144	134
9	140	142	148	153	119	130	167	209	156	140	147	132
10	142	143	167	154	122	120	175	197	154	141	144	131
11	141	144	195	153	140	135	197	190	154	144	143	131
12	142	143	206	152	140	141	225	187	159	144	142	132
13	140	141	189	150	142	142	280	184	160	159	139	135
14	139	140	168	138	137	145	296	195	165	169	135	134
15	138	139	191	102	135	143	314	227	165	192	132	132
16	137	138	212	108	133	145	319	229	162	168	143	130
17	137	139	219	134	132	146	303	212	156	157	155	129
18	136	141	202	161	133	145	285	197	152	149	153	136
19	138	145	181	167	133	143	268	188	150	145	142	137
20	138	153	173	158	129	145	254	182	160	142	135	135
21	136	160	169	152	131	158	241	178	155	139	136	132
22	137	156	162	155	131	182	264	174	154	136	135	130
23	137	148	160	156	130	194	272	171	150	134	133	129
24	137	143	164	155	131	190	268	167	149	133	139	130
25	138	142	164	139	130	176	250	164	149	131	141	136
26	138	145	165	131	130	174	234	162	148	133	151	146
27	140	153	161	136	131	173	221	160	145	134	175	160
28	139	155	159	138	133	175	211	159	145	132	171	159
29	137	154	156	140	133	184	204	159	150	130	156	191
30	138	149	150	139	-----	190	199	161	148	129	145	191
31	138	-----	150	140	-----	181	-----	161	-----	127	139	-----
TOTAL	4,304	4,408	5,145	4,519	3,857	4,690	6,810	5,988	4,658	4,417	4,414	4,169
MEAN	139	147	166	146	133	151	227	193	155	142	142	139
MAX	142	161	219	167	145	194	319	238	165	192	175	191
MIN	136	138	131	102	119	120	166	159	145	127	128	129
CFSM	.70	.74	.83	.73	.67	.76	1.14	.97	.78	.71	.71	.70
IN.	.80	.82	.96	.84	.72	.87	1.27	1.11	.87	.82	.82	.78

CAL YR 1971 TOTAL 64,272 MEAN 176 MAX 536 MIN 104 CFSM .88 IN 11.95
WTR YR 1972 TOTAL 57,379 MEAN 157 MAX 319 MIN 102 CFSM .79 IN 10.67

STREAMS TRIBUTARY TO LAKE MICHIGAN

04127000 Boardman River near Mayfield, Mich.

LOCATION.—Lat 44°38'18", Long 85°31'10", in SE¼ NE¼ sec.21, T.26 N., R.10 W., Grand Traverse County, on right bank 25 ft downstream from Brown's Bridge, 300 ft downstream from East Creek, 0.9 mile downstream from Brown's Bridge Dam. 1.0 mile northeast of Mayfield, and 9.6 miles southeast of Traverse City.

DRAINAGE AREA.—223 sq mi.

GAGE.—Water-stage recorder. Altitude of gage is 760 ft (by barometer).

PERIOD OF RECORD.—June 1952 to current year.

AVERAGE DISCHARGE.—20 years, 193 cfs (11.75 inches per year).

EXTREMES.—Current year: Maximum discharge, 506 cfs Apr. 17 (gage height, 4.87 ft); minimum, 47 cfs Feb. 8, minimum daily, 120 cfs Feb. 16.

Period of record: Maximum discharge, 1,220 cfs Sept. 14, 1961 (gage height, 6.90 ft); minimum, 30 cfs Jan. 15, 1965 (gage height, 2.53 ft); minimum daily, 47 cfs Nov. 2, 3, 1963.

REMARKS.—Records good. Flow regulated by powerplant 0.9 mile above station. Records of water temperatures for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	198	178	188	182	166	155	179	295	165	160	152	149
2	192	224	187	180	182	150	178	324	162	167	161	131
3	190	202	179	196	182	145	179	306	168	154	161	128
4	190	199	171	208	177	135	160	295	165	148	162	130
5	189	204	172	191	178	136	132	247	190	149	164	136
6	190	231	175	196	182	133	133	229	205	150	167	138
7	189	264	182	190	137	142	198	249	183	154	177	138
8	175	154	182	185	138	148	183	240	186	160	187	138
9	150	150	185	190	162	144	175	234	205	157	192	136
10	151	165	251	188	153	146	183	220	186	166	187	134
11	155	191	382	183	132	148	214	203	142	189	205	134
12	155	182	325	181	139	148	223	194	150	175	199	133
13	154	168	263	180	170	154	268	216	181	178	190	138
14	154	165	181	163	174	160	264	230	180	181	186	137
15	169	172	326	172	167	159	363	229	161	199	181	139
16	186	185	364	172	120	160	373	234	159	198	169	136
17	186	184	323	161	137	160	479	228	157	189	169	133
18	175	185	312	160	152	158	443	227	225	173	166	130
19	159	187	306	192	152	157	452	222	224	158	166	125
20	154	178	219	187	151	150	444	211	257	155	170	124
21	157	186	188	186	152	147	379	208	262	159	170	124
22	166	194	187	189	158	183	316	201	189	156	165	124
23	175	191	193	192	160	180	387	210	129	163	158	126
24	172	190	204	176	157	223	441	233	130	159	158	126
25	160	190	224	166	157	244	390	244	130	151	153	131
26	144	183	240	153	152	152	275	176	126	156	159	134
27	139	177	199	148	150	140	143	124	127	172	169	135
28	146	177	219	151	152	162	265	124	133	164	183	144
29	149	185	229	154	156	187	360	128	137	154	207	206
30	156	193	208	159	-----	183	285	176	150	154	198	228
31	174	-----	183	159	-----	179	-----	185	-----	152	180	-----
TOTAL	5,199	5,634	7,147	5,490	4,545	4,968	8,464	6,842	5,164	5,100	5,411	4,165
MEAN	163	188	231	177	157	160	282	221	172	165	175	139
MAX	198	264	382	208	182	244	479	324	262	199	207	228
MIN	139	150	171	148	120	133	132	124	126	148	152	124
CFSM	.75	.84	1.04	.79	.70	.72	1.26	.99	.77	.74	.78	.62
IV.	.87	.94	1.19	.92	.76	.83	1.41	1.14	.86	.85	.90	.69

CAL YR 1971 TOTAL 77,819 MEAN 213 MAX 681 MIN 113 CFSM .96 IN 12.98
 ATR YR 1972 TOTAL 68,129 MEAN 186 MAX 479 MIN 120 CFSM .83 IN 11.37

04127800 Jordan River near East Jordan, Mich.

LOCATION.--Lat 45°06'09", long 85°05'53", in NW¼ NW¼ sec.7, T.31 N., R.6 W., Antrim County, on right bank 600 ft downstream from Webster Bridge, 4.2 miles south of East Jordan, and 4.5 miles upstream from mouth.

DRAINAGE AREA.--67.6 sq mi.

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1960-65. October 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 610 ft (from topographic map). Nov. 19, 1959 to Sept. 30, 1966, nonrecording gage at present site and at site 600 ft upstream at same datum.

AVERAGE DISCHARGE.--6 years, 184 cfs (36.96 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,180 cfs Sept. 29 (gage height, 6.07 ft); minimum, 143 cfs Feb. 22.

Period of record: Maximum discharge, 1,180 cfs Sept. 29, 1972 (gage height, 6.07 ft); minimum, 109 cfs Mar. 1, 8, 1967, result of freezeup.

REMARKS.--Records good except those for winter periods, which are fair. Records of water temperatures for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	188	169	169	180	184	173	184	227	183	169	177	173
2	173	259	168	188	184	150	184	285	179	167	208	173
3	173	217	171	186	187	160	182	257	177	166	209	171
4	176	218	169	184	180	160	183	216	175	166	177	171
5	172	197	174	182	165	160	182	203	173	165	171	165
6	191	183	187	183	170	155	180	244	174	165	176	170
7	175	184	187	186	175	160	178	219	171	168	187	170
8	175	182	186	184	175	165	177	202	175	172	218	170
9	173	184	194	193	175	160	179	195	179	172	283	160
10	171	189	271	191	175	160	195	193	175	173	188	150
11	173	193	295	189	181	168	226	190	174	200	201	150
12	176	192	208	185	183	168	246	189	181	185	191	155
13	171	189	193	184	183	171	383	188	180	171	177	170
14	170	180	188	175	183	168	313	220	203	207	175	170
15	168	179	330	163	182	167	419	262	193	374	173	160
16	167	175	276	165	179	170	350	243	178	191	186	155
17	167	175	211	175	179	170	311	205	175	176	427	160
18	167	176	199	180	178	167	320	194	172	173	235	160
19	167	195	198	185	177	166	329	190	171	170	190	155
20	174	193	195	185	160	169	275	186	175	426	179	155
21	170	192	193	187	170	202	249	185	177	236	177	150
22	171	175	186	197	165	243	275	182	174	185	216	150
23	176	168	186	200	160	199	300	183	175	176	214	150
24	171	172	200	189	170	186	268	179	178	171	187	160
25	170	174	195	170	170	184	229	177	175	170	179	190
26	169	182	191	160	172	181	218	175	176	172	196	240
27	179	203	186	170	172	179	212	175	172	171	270	200
28	203	197	180	185	173	182	208	174	170	168	200	231
29	175	184	175	190	172	186	205	177	171	166	181	840
30	173	175	170	190	-----	187	202	192	174	166	176	303
31	172	-----	160	185	-----	182	-----	185	-----	170	174	-----
TOTAL	5,396	5,651	6,191	5,660	5,079	5,398	7,362	6,289	5,305	5,907	6,298	5,877
MEAN	174	188	200	183	175	174	245	203	177	191	203	196
MAX	203	259	330	203	187	243	419	285	203	426	427	840
MIN	157	168	160	160	160	150	177	174	170	165	171	150
CFSM	2.57	2.78	2.96	2.71	2.59	2.57	3.62	3.00	2.62	2.83	3.00	2.90
IN.	2.97	3.11	3.41	3.11	2.79	2.97	4.05	3.46	2.92	3.25	3.47	3.23

CAL YR 1971 TOTAL 68,920 MEAN 189 MAX 406 MIN 130 CFSM 2.80 IN 37.93

WTR YR 1972 TOTAL 70,413 MEAN 192 MAX 840 MIN 150 CFSM 2.84 IN 38.75

PEAK DISCHARGE (BASE, 400 CFS)

DATE	TIME	G.H.	DISCHARGE
12-15	1800	4.90	505
04-13	1100	4.77	460
07-15	0400	4.99	536
07-20	1500	5.00	540
09-29	0600	6.07	1,180

STREAMS TRIBUTARY TO LAKE HURON

04128000 Sturgeon River near Wolverine, Mich.

LOCATION.--Lat 45°17'56", long 84°36'40", in SE¼ NE¼ sec.36, T.34 N., R.3 W., Cheboygan County, on left bank 1.8 miles north of Wolverine, 2.8 miles downstream from West Branch, and 9 miles upstream from mouth.

DRAINAGE AREA.--170 sq mi, approximately.

PERIOD OF RECORD.--April 1942 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 740 ft (from topographic map). Prior to June 15, 1942, nonrecording gage at site 1.0 mile upstream, and June 16, 1942, to Sept. 30, 1958 at site 0.7 mile upstream at different datums.

AVERAGE DISCHARGE.--30 years, 206 cfs (16.46 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,290 cfs Sept. 29 (gage height, 3.72 ft); minimum, 116 cfs Feb. 20, result of freezeup. Period of record: Maximum discharge, 1,290 cfs Sept. 29, 1972 gage height, 3.72 ft; minimum, 94 cfs Jan. 19, 1971, result of freezeup; minimum daily, 113 cfs Aug. 6, 1958.

REMARKS.--Records good except those for winter periods, which are fair. Intermittent regulation at low flows from ponds 2.4 miles above station. Records for water temperatures for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1307: 1944 (M), 1948 (M). WSP 1727: 1951 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	247	208	214	250	240	218	242	400	234	192	242	226
2	223	350	217	262	240	192	238	571	222	186	254	226
3	220	360	214	254	230	200	238	530	218	178	290	218
4	214	297	214	246	225	205	238	410	210	178	234	210
5	208	272	217	250	220	205	230	352	203	178	210	206
6	220	253	226	250	225	195	226	344	218	175	218	214
7	211	244	232	250	230	200	222	339	218	178	270	214
8	208	250	241	254	230	210	218	310	230	182	274	214
9	208	253	256	250	230	205	226	302	242	189	469	200
10	211	253	379	250	230	200	242	282	222	200	318	192
11	214	253	660	246	230	210	282	270	214	196	278	192
12	208	259	458	242	230	214	326	250	222	206	278	196
13	214	272	318	238	230	210	513	250	226	189	238	210
14	214	256	282	234	230	214	508	348	279	196	222	210
15	220	262	465	172	226	214	614	559	290	366	218	200
16	214	241	614	234	222	218	673	535	230	258	366	196
17	214	229	415	240	222	218	614	362	218	218	547	203
18	211	226	330	250	222	214	621	306	206	196	458	200
19	214	247	310	250	218	218	712	282	203	186	302	196
20	214	253	302	254	200	214	608	270	203	755	266	192
21	211	247	290	246	210	238	518	262	203	806	238	186
22	214	232	270	246	205	310	480	254	203	385	425	182
23	238	226	270	250	200	274	491	246	203	298	339	186
24	223	223	282	238	210	250	469	238	222	262	302	189
25	220	220	282	218	210	238	420	226	214	222	274	238
26	220	223	270	215	210	238	400	218	222	218	262	306
27	211	241	262	230	210	234	400	214	210	210	447	254
28	220	244	262	250	214	230	400	210	196	200	352	260
29	211	238	258	255	214	230	400	218	189	192	278	1,080
30	211	229	242	250	-----	234	385	262	203	189	238	811
31	217	-----	230	245	-----	238	-----	246	-----	192	230	-----
TOTAL	6,703	7,570	9,482	7,519	6,413	6,888	12,154	9,866	6,573	7,776	9,337	7,807
MEAN	216	252	306	243	221	222	405	318	219	251	301	260
MAX	247	360	660	262	240	310	712	571	290	806	547	1,080
MIN	208	208	214	172	200	192	218	210	189	175	210	182
CFSM	1.27	1.48	1.80	1.43	1.30	1.31	2.38	1.87	1.29	1.48	1.77	1.53
IN.	1.47	1.66	2.07	1.65	1.40	1.51	2.66	2.16	1.44	1.70	2.04	1.71

CAL YR 1971 TOTAL 93,858 MEAN 257 MAX 660 MIN 155 CFSM 1.51 IN 20.54
WTR YR 1972 TOTAL 98,088 MEAN 268 MAX 1,080 MIN 172 CFSM 1.58 IN 21.46

STREAMS TRIBUTARY TO LAKE HURON

135

04128500 Indian River at Indian River, Mich.

LOCATION.—Lat 45°24'38", long 84°37'12", in NE¼ SW¼ sec.24, T.35 N., R.3 W., Cheboygan County, on left bank at Indian River, 500 ft downstream from Burt Lake, and 2.3 miles upstream from Mullett Lake.

DRAINAGE AREA.—583 sq mi.

PERIOD OF RECORD.—April 1942 to current year.

GAGE.—Water-stage recorder. Datum of gage is 590.21 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to Nov. 12, 1942, nonrecording gage at site 100 ft downstream.

AVERAGE DISCHARGE.—30 years, 555 cfs (12.93 inches per year).

EXTREMES.—Current year: Maximum daily discharge, 1,220 cfs May 7; maximum daily gage height, 5.36 ft May 7; minimum daily discharge, 395 cfs Apr. 12, minimum daily gage height, 3.67 ft Apr. 9-11.

Period of record: Maximum daily discharge, 1,220 cfs May 7, 1972; maximum daily gage height, 5.58 ft May 13, 14, 1960; minimum daily discharge, 212 cfs Sept. 2, 1970; minimum daily gage height, 3.34 ft Oct. 21, 1957.

REMARKS.—Records fair. Seasonal distribution of flow modified by regulation from dam at Cheboygan.

REVISIONS (WATER YEARS).—WSP 1437: 1942 (M), 1945 (M), 1947.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	510	430	465	850	750	620	530	1,090	904	640	655	696
2	520	510	460	860	745	630	520	1,130	882	635	650	685
3	520	560	460	850	756	630	515	1,170	866	620	660	670
4	520	570	445	833	750	640	505	1,180	850	610	635	660
5	510	540	445	816	750	640	495	1,190	828	595	620	650
6	500	530	445	811	734	650	485	1,210	811	585	615	630
7	500	530	445	811	728	665	475	1,220	789	580	630	630
8	490	520	440	789	718	655	455	1,210	784	575	635	620
9	490	520	445	784	712	640	435	1,210	800	565	675	600
10	480	525	500	767	706	635	415	1,200	784	565	665	590
11	480	535	575	762	696	625	405	1,180	745	565	670	580
12	475	540	625	745	690	620	395	1,170	734	570	665	570
13	465	525	670	745	685	615	430	1,150	723	580	660	575
14	460	510	670	740	670	620	445	1,150	728	575	655	570
15	450	510	723	740	680	610	480	1,170	767	605	645	555
16	450	510	784	712	675	605	515	1,200	762	605	665	545
17	450	505	816	701	675	605	560	1,200	745	590	712	570
18	440	495	828	690	665	595	605	1,180	734	590	723	565
19	440	505	833	696	660	585	706	1,170	723	585	728	565
20	440	500	844	696	655	580	772	1,160	723	670	718	550
21	440	490	860	690	645	575	822	1,140	712	750	712	550
22	440	490	860	690	655	585	866	1,120	712	762	723	535
23	450	485	844	696	640	590	910	1,110	690	772	700	525
24	450	475	866	701	640	575	954	1,090	680	762	710	520
25	460	475	882	734	630	575	976	1,070	670	756	700	555
26	460	470	894	740	625	570	998	1,040	665	723	680	585
27	455	485	904	734	625	560	1,010	1,010	660	712	680	585
28	470	475	894	745	625	550	1,030	992	650	696	690	575
29	455	490	882	750	625	545	1,050	970	655	680	718	665
30	450	485	850	762	-----	540	1,060	976	645	675	712	690
31	450	-----	840	756	-----	535	-----	938	-----	660	701	-----
TOTAL	14,570	15,190	21,494	23,396	19,810	13,665	19,819	34,996	22,421	19,853	21,007	17,861
MEAN	470	506	693	755	683	602	661	1,129	747	640	678	595
MAX	520	570	904	860	756	665	1,060	1,220	904	772	728	696
MIN	440	430	440	690	625	535	395	938	645	565	615	520
CFSM	.81	.87	1.19	1.30	1.17	1.03	1.13	1.94	1.28	1.10	1.16	1.02
IN.	.93	.97	1.37	1.49	1.26	1.19	1.26	2.23	1.43	1.27	1.34	1.14
CAL YR 1971	TOTAL 237,958		MEAN 652	MAX 1,150	MIN 430	CFSM 1.12	IN 15.18					
WTR YR 1972	TOTAL 249,082		MEAN 681	MAX 1,220	MIN 395	CFSM 1.17	IN 15.89					

STREAMS TRIBUTARY TO LAKE HURON

04129000 Pigeon River near Vanderbilt, Mich.

LOCATION.--Lat 45°10'15", long 84°26'18", in SE¼ SW¼ sec. 9, T.32 N., R.1 W., Otsego County, on right bank at Pigeon River Fisheries Research Station, 11.1 miles east of Vanderbilt, and 26 miles upstream from Mullett Lake.

DRAINAGE AREA.--63 sq mi, approximately.

PERIOD OF RECORD.--September 1950 to current year.

GAGE.--Water-Stage recorder. Datum of gage is 886.24 ft above mean sea level.

AVERAGE DISCHARGE.--22 years, 76.2 cfs (16.43 inches per year).

EXTREMES.--Current year: Maximum discharge, 538 cfs Sept. 30 (gage height, 5.56 ft); minimum, 26 cfs Aug. 10 (gage height, 1.69 ft).
Period of record: Maximum discharge, 1,500 cfs May 15, 1957 (gage height, 6.80 ft, from floodmark), from rating curve extended above 500 cfs, result of failure of Lansing Club Dam; minimum, 13 cfs Jan. 8, 1957.

REMARKS.--Records good except those for winter periods, which are fair. Prior to May 16, 1957, and since Apr. 22, 1958, occasional regulation by Lansing Club Dam 3.5 miles above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	107	58	81	82	73	70	76	136	76	68	61	75
2	77	128	77	86	74	70	76	240	70	49	83	60
3	77	148	76	84	72	66	76	201	68	64	86	70
4	65	99	75	83	71	66	76	142	74	57	71	68
5	73	86	73	82	70	68	76	116	62	63	69	64
6	72	85	74	79	68	70	75	104	65	59	82	68
7	69	72	75	82	67	68	73	111	64	64	64	62
8	66	84	81	80	68	68	72	105	71	59	87	65
9	66	76	87	79	70	67	74	92	71	61	171	71
10	68	76	139	78	72	66	76	89	70	54	120	60
11	65	80	290	80	72	67	94	93	67	72	103	66
12	66	78	160	81	72	68	99	79	75	65	87	61
13	65	84	108	79	73	72	165	95	67	54	73	71
14	67	85	94	80	72	74	158	77	80	65	73	64
15	65	84	154	75	72	74	189	147	84	136	67	74
16	61	84	265	66	72	71	200	204	69	87	104	55
17	59	83	134	65	71	75	185	127	73	84	147	69
18	56	81	100	75	71	76	188	99	67	50	166	60
19	57	83	90	80	70	77	226	87	60	76	70	57
20	61	76	92	78	66	72	181	84	71	122	76	67
21	61	78	92	76	68	74	186	76	64	198	94	59
22	59	78	87	74	70	108	146	80	68	90	116	57
23	65	75	80	75	68	92	164	73	67	71	87	69
24	65	79	86	74	66	75	171	69	70	68	82	56
25	64	88	85	70	68	70	124	72	72	64	89	95
26	64	84	84	68	69	73	129	68	82	66	90	98
27	62	66	83	72	69	74	150	66	75	58	138	93
28	67	72	81	74	70	76	129	71	75	70	117	74
29	65	77	84	75	70	77	152	72	60	54	76	335
30	62	83	82	75	-----	77	130	80	74	59	78	306
31	64	-----	77	72	-----	76	-----	82	-----	67	69	-----
TOTAL	2,060	2,510	3,246	2,379	2,034	2,277	3,916	3,237	2,111	2,274	2,896	2,549
MEAN	66.5	83.7	105	76.7	70.1	73.5	131	104	70.4	73.4	93.4	85.0
MAX	107	148	290	86	74	108	226	240	84	198	171	335
MIN	56	58	73	65	66	66	72	66	60	49	61	55
CFSM	1.06	1.33	1.67	1.22	1.11	1.17	2.08	1.65	1.12	1.17	1.48	1.35
IV.	1.22	1.48	1.92	1.40	1.20	1.34	2.31	1.91	1.25	1.34	1.71	1.51

CAL YR 1971 TOTAL 31,459 MEAN 86.2 MAX 290 MIN 54 CFSM 1.37 IN 18.58
WTR YR 1972 TOTAL 31,489 MEAN 86.0 MAX 335 MIN 49 CFSM 1.37 IN 18.59

STREAMS TRIBUTARY TO LAKE HURON

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04129500 Pigeon River at Afton, Mich.

LOCATION.—Lat 45°22'26", long 84°30'54", in NW¼ NE¼ sec.2, T.34 N., R.2 W., Cheboygan County, on upstream side of bridge on State Highway 68, 0.9 mile west of Afton, 2.2 miles downstream from Wilkes Creek, and 7 miles upstream from Millett Lake.

DRAINAGE AREA.—159 sq mi.

PERIOD OF RECORD.—April 1942 to current year.

GAGE.—Nonrecording gage. Altitude of gage is 675 ft (by barometer). Prior to Oct. 1, 1961, at various sites upstream at present datum.

AVERAGE DISCHARGE.—30 years, 137 cfs (11.70 inches per year).

EXTREMES.—Current year: Maximum discharge, 821 cfs Sept. 30 (gage height, 6.33 ft); minimum, 80 cfs July 5.

Period of record: Maximum discharge, 1,170 cfs Apr. 17, 1960 (gage height, 6.80 ft, from high-water mark); maximum gage height, about 10.5 ft Mar. 31, 1943, from floodmarks (backwater from ice); minimum discharge, 49 cfs Aug. 8, 1958.

REMARKS.—Records good except those for winter periods, which are fair. Occasional regulation by Lansing Club Dam 22 miles above station.

REVISIONS (WATER YEARS).—WSP 1437: 1945-46, 1950.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	190	124	134	140	135	130	140	272	155	108	118	124
2	173	166	130	150	130	130	145	381	142	104	132	128
3	132	238	130	150	130	125	145	520	132	93	138	108
4	128	260	130	150	130	125	142	413	130	101	136	122
5	118	202	128	145	125	125	138	286	122	88	114	124
6	122	179	130	150	125	125	140	240	116	97	99	112
7	122	164	136	155	125	125	136	225	118	99	136	112
8	118	155	140	165	130	120	134	213	122	91	136	106
9	118	151	153	170	130	120	134	202	138	102	182	108
10	118	149	220	170	130	120	145	186	134	122	251	108
11	116	149	377	160	130	125	173	175	128	118	202	104
12	116	149	480	150	135	125	218	173	136	112	166	106
13	116	153	292	150	135	130	306	157	132	116	145	110
14	114	155	213	145	135	130	438	171	212	116	128	112
15	116	153	278	140	135	130	595	468	213	136	126	110
16	112	149	434	125	135	130	668	632	177	179	164	110
17	110	147	409	130	135	135	615	461	134	140	286	112
18	106	147	210	135	130	140	590	300	130	124	300	101
19	108	147	190	140	130	135	734	230	128	106	260	104
20	108	147	180	140	125	130	674	204	116	263	157	104
21	112	147	170	135	125	170	515	179	120	480	138	108
22	112	140	160	135	125	230	443	164	118	417	171	89
23	120	140	160	135	125	180	409	153	116	228	188	102
24	122	140	165	130	125	150	385	145	120	164	157	102
25	122	138	166	130	125	135	377	136	126	136	147	102
26	122	138	166	125	125	130	282	134	118	120	149	147
27	120	136	164	130	130	140	266	126	132	122	188	153
28	124	130	151	135	130	145	300	122	120	108	238	136
29	122	132	150	140	130	145	282	126	116	128	190	428
30	122	134	140	140	-----	140	296	149	108	122	149	800
31	122	-----	112	135	-----	145	-----	164	-----	99	136	-----
TOTAL	3,781	4,659	6,198	4,430	3,755	4,265	9,965	7,507	4,009	4,539	5,227	4,392
MEAN	122	155	200	143	129	138	332	242	134	146	169	146
MAX	190	260	480	170	135	230	734	632	213	480	300	800
MIN	106	124	112	125	125	120	134	122	108	88	99	89
CFSM	.77	.97	1.26	.90	.81	.87	2.09	1.52	.84	.92	1.06	.92
IN.	.88	1.09	1.45	1.04	.88	1.00	2.33	1.76	.94	1.06	1.22	1.03

CAL YR 1971 TOTAL 62,237 MEAN 171 MAX 764 MIN 89 CFSM 1.08 IN 14.56
WTR YR 1972 TOTAL 62,727 MEAN 171 MAX 800 MIN 88 CFSM 1.08 IN 14.68

STREAMS TRIBUTARY TO LAKE HURON

04130000 Cheboygan River near Cheboygan, Mich.

LOCATION.—Lat 45°34'38", long 84°29'15", in SW¼ sec.19, T.37 N., R.1 W., Cheboygan County, on right bank 300 ft downstream from Mullett Lake, 2.4 miles upstream from Black River, and 4.8 miles south of Cheboygan.

DRAINAGE AREA.—865 sq mi.

PERIOD OF RECORD.—October 1942 to current year. Monthly discharge only for October 1942, published in WSP 1307.

GAGE.—Water-stage recorder. Datum of gage is 591.21 ft above mean sea level. Auxiliary water-stage recorder 5.1 miles downstream from base gage, in Cheboygan, datum of gage is 590.00 ft above mean sea level. Prior to Aug. 30, 1967, nonrecording auxiliary gage in Cheboygan, 5.2 miles downstream at present datum.

AVERAGE DISCHARGE.—30 years, 800 cfs (12.56 inches per year).

EXTREMES.—Current year: Maximum daily discharge, 1,600 cfs May 18; maximum daily gage height, 2.97 ft May 6, 7; minimum daily discharge, 541 cfs Oct. 12; minimum daily gage height, 1.11 ft Apr. 9, 10.

Period of record: Maximum daily discharge, 1,640 cfs May 8, 1959; maximum daily gage height, 3.27 ft May 13, 14, 1960; minimum daily discharge, 90 cfs Mar. 29, 30, 1958; minimum daily gage height, 1.11 ft Apr. 9, 10, 1972.

REMARKS.—Records fair. Flow regulated by dam in Cheboygan; prior to Dec. 31, 1965, flow affected by variable backwater from powerplant in Cheboygan 5.2 miles below station and by Alverno powerplant.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	733	672	920	1,220	1,050	990	1,000	1,500	933	926	951	900
2	755	702	918	1,220	1,040	1,030	993	1,510	948	928	981	930
3	772	873	911	1,230	1,040	1,000	993	1,530	1,090	921	1,020	970
4	741	1,110	917	1,270	1,050	970	984	1,550	1,090	911	959	1,040
5	729	1,110	913	1,260	1,000	977	982	1,550	1,060	847	791	1,010
6	760	1,010	913	1,260	1,000	971	981	1,560	877	800	755	928
7	759	1,000	870	1,260	980	967	989	1,570	756	884	823	895
8	697	1,100	749	1,250	960	968	973	1,560	963	675	831	865
9	618	1,070	720	1,250	940	965	971	1,530	991	616	887	758
10	650	1,150	740	1,240	850	962	965	1,460	1,020	662	1,050	745
11	593	1,160	780	1,240	770	958	955	1,500	980	696	1,060	758
12	541	1,180	897	1,230	914	956	950	1,550	987	652	1,060	806
13	573	1,170	922	1,240	931	950	953	1,550	997	683	1,060	862
14	545	1,160	922	1,150	868	950	964	1,550	1,030	879	1,030	859
15	650	1,160	824	1,100	822	937	990	1,560	1,030	856	996	748
16	721	1,180	877	1,150	810	962	1,050	1,450	867	823	879	711
17	736	1,170	1,170	1,150	798	1,020	1,100	1,550	861	823	890	678
18	720	1,140	1,230	1,200	803	1,020	1,150	1,600	862	823	1,060	700
19	712	1,060	1,170	1,200	851	1,010	1,250	1,590	853	760	1,150	700
20	709	1,040	1,160	1,180	872	1,010	1,320	1,580	887	660	1,150	686
21	709	1,080	1,200	1,100	836	998	1,340	1,570	1,010	610	1,190	675
22	663	1,090	1,190	1,050	836	1,100	1,370	1,550	1,100	961	1,240	670
23	655	1,070	1,400	1,050	829	1,300	1,390	1,540	1,150	989	1,280	670
24	642	1,070	1,490	1,050	845	1,100	1,410	1,530	1,220	1,120	1,330	693
25	628	1,070	1,350	950	838	1,030	1,430	1,400	1,220	1,190	1,200	654
26	644	1,020	1,220	950	838	1,020	1,440	1,300	1,080	1,250	715	678
27	673	918	1,200	940	818	1,020	1,460	1,370	865	1,300	706	860
28	649	899	1,190	940	851	1,020	1,470	1,360	927	1,400	750	900
29	707	917	1,190	1,120	997	1,000	1,480	1,360	1,010	971	800	1,050
30	736	939	1,210	1,120	-----	1,000	1,490	1,370	991	955	830	1,400
31	722	-----	1,220	1,110	-----	1,000	-----	1,300	-----	942	850	-----
TOTAL	21,142	31,290	32,383	35,680	26,037	31,161	34,793	46,450	29,655	27,513	30,274	24,799
MEAN	682	1,043	1,045	1,151	898	1,005	1,160	1,498	989	888	977	827
MAX	772	1,180	1,490	1,270	1,050	1,300	1,490	1,600	1,220	1,400	1,330	1,400
MIN	541	672	720	940	770	937	950	1,300	756	610	706	654
CFSM	.79	1.21	1.21	1.33	1.04	1.16	1.34	1.73	1.14	1.03	1.13	.96
IN.	.91	1.35	1.39	1.53	1.12	1.34	1.50	2.00	1.28	1.18	1.30	1.07

CAL YR 1971 TOTAL 364,978 MEAN 1,000 MAX 1,630 MIN 469 CFSM 1.16 IN 15.70
WTR YR 1972 TOTAL 371,177 MEAN 1,014 MAX 1,600 MIN 541 CFSM 1.17 IN 15.96

04130500 Black River near Tower, Mich.

LOCATION.—Lat 45°23'33", long 84°20'00", in SE¼ NE¼ sec.29, T.35 N., R.1 E., Cheboygan County, on right bank 400 ft downstream from Kleber Dam, 1,000 ft upstream from Milligan Creek, 3.0 miles northwest of Tower, and 10.8 miles upstream from Black Lake.

DRAINAGE AREA.—313 sq mi.

PERIOD OF RECORD.—October 1942 to current year. Monthly discharge only for October 1942, 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.—30 years, 260 cfs (11.28 inches per year).

EXTREMES.—Current year: Maximum discharge, 1,360 cfs Apr. 19 (gage height, 5.43 ft); minimum, 6.2 cfs Feb. 23 (gage height, 1.00 ft); minimum daily, 114 cfs Jan. 1.

Period of record: Maximum discharge, 2,340 cfs Apr. 17, 1960 (gage height, 7.13 ft); minimum, 0.60 cfs Mar. 11, 1950; minimum daily, 4.0 cfs Nov. 27, 1949.

REMARKS.—Records good. Flow regulated by powerplant 400 ft above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	286	236	272	114	235	225	298	639	277	258	185	256
2	322	359	188	313	241	190	291	679	328	219	259	227
3	315	346	249	421	243	170	269	944	278	145	278	279
4	269	450	269	407	238	160	322	987	240	208	252	223
5	240	415	250	342	232	150	297	907	228	204	224	225
6	200	421	225	225	210	200	293	836	225	164	231	237
7	222	271	239	211	234	230	275	668	223	201	221	235
8	231	334	285	262	213	230	254	516	220	173	255	191
9	228	298	300	290	188	230	285	473	275	222	271	222
10	204	297	332	306	208	220	288	473	237	217	381	204
11	198	297	550	261	229	180	350	398	241	247	408	224
12	179	263	610	288	203	240	430	347	284	170	485	190
13	181	276	610	293	205	210	517	177	286	142	372	192
14	250	284	610	260	227	220	779	357	264	246	273	231
15	248	282	646	214	204	160	1,000	493	328	242	282	223
16	207	270	740	134	175	270	1,130	590	282	296	312	184
17	189	249	763	224	234	250	1,090	809	315	367	513	253
18	217	281	653	266	238	230	1,110	868	196	241	512	244
19	223	298	534	241	254	250	1,270	660	251	218	513	211
20	186	295	517	261	221	230	1,270	398	213	357	509	159
21	182	292	517	268	207	240	1,180	492	210	559	509	212
22	206	245	517	295	223	260	1,090	345	257	553	375	132
23	227	184	320	271	214	310	946	323	257	553	203	208
24	234	253	321	277	240	280	826	313	246	545	413	191
25	224	242	446	243	219	270	816	253	237	320	352	220
26	203	256	423	134	215	260	863	259	239	207	416	254
27	227	252	300	151	208	260	807	218	271	239	383	268
28	234	273	273	255	149	255	664	243	262	253	399	305
29	189	274	306	286	186	255	616	246	224	231	412	768
30	255	321	242	252	-----	260	653	229	224	221	327	786
31	241	-----	170	243	-----	270	-----	300	-----	220	344	-----
TOTAL	7,017	8,824	12,677	8,008	6,293	7,165	20,279	15,440	7,618	8,438	10,879	7,754
MEAN	226	294	409	258	217	231	676	498	254	272	351	258
MAX	322	450	763	421	254	310	1,270	987	328	559	513	786
MIN	179	184	170	114	149	150	254	177	196	142	185	132
CFSM	.72	.94	1.31	.82	.69	.74	2.16	1.59	.81	.87	1.12	.82
IN.	.83	1.05	1.51	.95	.75	.85	2.41	1.84	.91	1.00	1.29	.92

CAL YR 1971 TOTAL 127,709 MEAN 350 MAX 1,390 MIN 149 CFSM 1.12 IN 15.18
WTR YR 1972 TOTAL 120,392 MEAN 329 MAX 1,270 MIN 114 CFSM 1.05 IN 14.31

STREAMS TRIBUTARY TO LAKE HURON

04131500 Rainy River near Oqueoc, Mich.

LOCATION.--Lat 45°24'30", long 84°10'45", in NE¼ NW¼ sec.22, T.35 N., R.2 E., Presque Isle County, on upstream side of highway bridge, 4.4 miles west of Oqueoc, and 5 miles upstream from Black Lake.

DRAINAGE AREA.--85 sq mi, approximately.

PERIOD OF RECORD.--October 1952 to current year.

GAGE.--Nonrecording gage. Datum of gage is 674.85 ft above mean sea level, unadjusted.

AVERAGE DISCHARGE.--20 years, 40.2 cfs (6.42 inches per year).

EXTREMES.--Current year: Maximum discharge, 650 cfs Apr. 19 (gage height, 5.65 ft); minimum, 1.9 cfs July 6.

Period of record: Maximum discharge, 946 cfs Apr. 18, 1960 (gage height, 6.33 ft, from floodmark); minimum, 0.4 cfs Sept. 7, 1955.

REMARKS.--Records good except those for winter periods, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.5	9.6	22	55	34	32	33	177	26	5.1	3.7	12
2	7.5	29	22	52	34	32	34	244	22	4.3	4.5	11
3	6.2	38	22	50	33	32	34	351	18	4.0	5.5	9.9
4	5.8	36	22	49	32	31	34	322	17	3.4	5.1	9.5
5	5.5	33	23	48	32	31	34	270	16	2.9	4.3	8.6
6	5.8	29	24	47	32	31	34	228	16	2.4	3.7	7.9
7	5.5	23	29	46	32	31	35	195	15	2.1	5.1	7.2
8	5.1	22	35	46	32	30	36	169	15	2.4	7.2	6.5
9	5.1	21	43	45	32	30	40	148	18	5.1	25	5.5
10	5.5	21	63	44	33	30	50	129	18	5.8	20	4.8
11	5.5	21	122	42	33	30	65	113	16	4.8	17	4.5
12	5.5	22	127	40	33	31	80	99	14	4.0	17	4.5
13	6.2	21	120	39	33	32	113	89	16	3.4	15	5.1
14	5.5	21	106	39	33	32	161	84	20	3.2	11	5.8
15	5.1	20	126	38	33	32	253	122	20	5.8	10	5.5
16	4.5	20	210	36	33	32	383	145	15	5.5	31	5.5
17	4.3	21	219	35	33	33	453	154	13	4.0	48	20
18	4.5	23	208	36	32	33	528	136	12	3.2	36	18
19	4.5	23	197	37	32	32	612	119	9.5	5.1	30	15
20	5.1	23	143	37	31	33	610	106	9.5	22	23	12
21	4.8	25	115	37	31	40	540	92	9.5	39	20	9.9
22	4.8	25	100	36	31	37	453	78	8.6	26	23	7.5
23	8.2	23	90	36	30	35	397	67	9.5	17	25	6.8
24	7.2	17	85	35	30	34	358	58	10	11	22	7.2
25	7.9	17	80	35	31	33	318	49	12	9.1	20	6.8
26	7.5	17	75	34	31	32	278	38	12	8.2	17	11
27	6.8	20	70	34	31	31	246	29	9.5	5.8	22	13
28	7.9	21	69	34	32	29	222	27	7.5	4.8	23	12
29	7.9	23	65	35	32	31	202	26	6.8	4.5	22	114
30	7.9	23	65	35	-----	31	183	28	5.8	3.7	17	161
31	8.6	-----	62	35	-----	33	-----	28	-----	3.2	13	-----
TOTAL	189.7	686.6	2,759	1,247	931	996	6,819	3,920	417.2	230.8	546.1	528.0
MEAN	6.12	22.9	89.0	40.2	32.1	32.1	227	126	13.9	7.45	17.6	17.6
MAX	8.6	38	219	55	34	40	612	351	26	39	48	161
MIN	4.3	8.6	22	34	30	29	33	26	5.8	2.1	3.7	4.5
CFSM	.07	.27	1.05	.47	.38	.38	2.67	1.48	.16	.09	.21	.21
IN.	.08	.30	1.21	.55	.41	.44	2.98	1.72	.18	.10	.24	.23

CAL YR 1971 TOTAL 23,326.3 MEAN 63.9 MAX 669 MIN 3.7 CFSM .75 IN 10.21
WTR YR 1972 TOTAL 19,270.4 MEAN 52.7 MAX 612 MIN 2.1 CFSM .62 IN 8.43

STREAMS TRIBUTARY TO LAKE HURON

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04132000 Black River near Cheboygan, Mich.

LOCATION.—Lat 45°29'59", long 84°19'36", in NW¼ NW¼ sec.21, T.36 N., R.1 E., Cheboygan County, on left bank 0.3 mile downstream from Black Lake, 5.3 miles upstream from Alverno Dam, and 12.6 miles southeast of Cheboygan.

DRAINAGE AREA.—597 sq mi.

PERIOD OF RECORD.—October 1942 to current year. Monthly discharge only for October 1942, published in WSP 1307.

GAGE.—Water-stage recorder. Datum of gage is 609.26 ft above mean sea level. Auxiliary water-stage recorder 3 miles downstream from base gage at same datum.

AVERAGE DISCHARGE.—30 years, 444 cfs (10.10 inches per year).

EXTREMES.—Current year: Maximum daily discharge, 2,700 cfs Apr. 24; maximum daily gage height, 5.00 ft Apr. 24; minimum daily discharge, 215 cfs Sept. 21; minimum daily gage height, 1.28 ft Feb. 19.

Period of record: Maximum daily discharge, 2,700 cfs Apr. 24, 1972; maximum daily gage height, 5.74 ft Apr. 20, 1960; minimum daily discharge, 11 cfs Aug. 14, 1949; minimum daily gage height, about 1.10 ft Mar. 1, 1964.

REMARKS.—Records fair, except those for winter periods and those for periods of no gage-height record, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	342	468	560	691	450	390	451	2,100	370	323	390	350
2	360	672	560	668	440	390	440	2,000	410	367	396	330
3	334	818	560	653	440	400	437	2,000	420	324	409	320
4	348	1,000	560	646	430	410	442	2,200	400	396	312	310
5	345	950	550	643	430	410	466	2,100	340	340	320	300
6	412	900	550	619	430	410	443	2,100	350	340	330	300
7	386	860	550	640	430	410	475	2,000	360	330	330	290
8	337	840	560	592	430	420	462	1,900	380	300	350	280
9	354	820	570	578	422	420	451	1,830	380	280	380	280
10	360	800	580	568	419	420	447	1,680	380	280	420	270
11	371	784	600	575	409	420	460	1,580	380	290	420	270
12	273	773	610	550	390	420	500	1,480	390	300	420	260
13	330	764	620	568	378	410	530	1,420	370	320	410	260
14	349	727	640	540	357	410	570	1,440	350	330	400	260
15	300	716	663	530	376	420	640	1,380	330	330	370	250
16	290	668	713	510	376	430	800	1,380	380	330	356	250
17	280	655	766	511	355	440	1,000	1,360	411	320	656	250
18	270	632	778	487	339	450	1,300	1,380	396	310	628	240
19	270	607	847	505	380	450	1,500	1,330	385	300	634	240
20	270	610	847	486	352	460	1,800	1,340	422	290	656	220
21	270	592	854	480	375	480	2,000	1,280	378	300	657	215
22	280	585	870	470	369	580	2,300	1,220	380	320	674	220
23	290	580	900	470	360	550	2,500	1,110	400	350	517	230
24	290	570	950	460	360	520	2,700	976	400	400	316	250
25	290	570	1,000	460	360	490	2,500	885	380	450	320	270
26	280	560	980	460	360	470	2,400	829	350	480	350	300
27	270	560	800	460	370	460	2,300	693	340	480	377	330
28	394	560	750	450	380	450	2,200	686	360	460	329	370
29	381	560	720	450	380	440	2,200	642	360	430	396	600
30	370	560	710	450	-----	440	2,100	459	350	400	400	900
31	276	-----	700	450	-----	430	-----	360	-----	390	404	-----
TOTAL	9,962	20,761	21,918	16,620	11,347	13,700	36,814	43,140	11,302	10,860	13,327	9,215
MEAN	321	692	707	536	391	442	1,227	1,392	377	350	430	307
MAX	412	1,000	1,000	691	450	580	2,700	2,200	422	480	674	900
MIN	270	468	550	450	339	390	437	360	330	280	312	215
CFSM	.54	1.16	1.18	.90	.65	.74	2.06	2.33	.63	.59	.72	.51
IN.	.62	1.29	1.37	1.04	.71	.85	2.29	2.69	.70	.68	.83	.57

CAL YR 1971 TOTAL 237,263 MEAN 650 MAX 2,530 MIN 200 CFSM 1.09 IN 14.78
WTR YR 1972 TOTAL 218,966 MEAN 598 MAX 2,700 MIN 215 CFSM 1.00 IN 13.64

NOTE.—No gage height record Feb. 23 to Mar. 30, Apr. 11 to May 8.

STREAMS TRIBUTARY TO LAKE HURON

04132500 Thunder Bay River near Hillman, Mich.

LOCATION.—Lat 45°00'30", long 83°58'21", in NE¼ SE¼ sec.8, T.30 N., R.4 E., Montmorency County, on left bank 25 ft upstream from bridge on State Highway 32, 0.4 mile downstream from Miller Creek, and 5.2 miles southwest of Hillman.

DRAINAGE AREA.—232 sq mi.

PERIOD OF RECORD.—June 1945 to Dec. 31, 1972 (discontinued as a continuous-record station, converted to a crest-stage partial-record station).

GAGE.—Water-stage recorder. Altitude of gage is 760 ft (by barometer).

AVERAGE DISCHARGE.—27 years, 215 cfs (12.58 inches per year).

EXTREMES.—Current year: Maximum discharge, 795 cfs Apr. 16 (gage height, 8.15 ft); minimum, 16 cfs Oct. 18, 19, 21, 22.

Period Oct. 1 to Dec. 31, 1972: Maximum discharge, 550 cfs Dec. 31 (gage height, 7.24 ft); maximum gage height, 7.29 ft Oct. 24; minimum discharge, 178 cfs Oct. 17.

Period of record: Maximum discharge, 1,380 cfs Apr. 12, 1947 (gage height, 8.86 ft); maximum gage height, 9.63 ft May 11, 1963 (backwater from bridge repair); minimum daily discharge, 98 cfs Aug. 7, 1949.

REMARKS.—Records good except those for winter periods, which are fair. Prior to May 12, 1950, diurnal fluctuation below about 500 cfs by powerplant at Atlanta. Occasional regulation from dams above station.

REVISIONS (WATER YEARS).—WSP 1307: 1946 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	212	180	221	230	205	200	236	365	219	177	175	242
2	191	243	210	230	200	200	241	568	209	172	184	225
3	180	298	200	230	200	200	244	636	200	168	203	213
4	174	265	206	230	200	195	240	574	192	168	192	203
5	168	230	203	230	195	190	220	494	186	167	182	196
6	180	206	210	230	195	190	230	433	184	166	175	194
7	177	196	227	240	200	190	230	398	180	164	188	192
8	172	192	236	240	200	185	230	361	180	165	192	193
9	170	201	246	240	200	185	235	328	188	167	283	187
10	168	196	321	240	200	185	266	304	188	173	296	183
11	168	201	718	240	205	185	346	284	184	171	260	181
12	166	198	632	240	210	190	474	260	186	174	241	183
13	165	198	508	230	210	190	616	252	190	190	211	184
14	164	195	404	210	210	190	658	251	197	200	196	186
15	164	194	447	210	210	195	744	404	204	354	191	183
16	163	193	722	210	215	200	783	461	196	335	204	182
17	163	192	620	210	215	200	706	425	191	265	274	182
18	162	191	450	210	210	205	701	367	184	221	292	178
19	162	195	400	210	210	210	745	313	178	201	252	177
20	162	200	350	210	205	220	726	276	177	217	220	175
21	161	205	300	205	200	230	643	250	179	294	198	172
22	164	200	270	205	200	240	582	231	180	271	198	171
23	172	185	270	205	195	240	563	217	184	222	466	172
24	173	180	260	205	195	240	551	208	198	198	603	170
25	170	196	250	205	195	245	497	202	203	184	562	178
26	168	198	250	200	195	245	448	197	204	181	440	239
27	168	210	240	200	200	240	433	189	197	175	565	232
28	165	228	240	205	200	239	408	187	188	169	572	206
29	167	233	240	210	200	237	433	190	182	166	436	390
30	170	231	230	210	-----	226	380	207	181	165	336	479
31	177	-----	230	210	-----	226	-----	221	-----	167	277	-----
TOTAL	5,286	6,230	10,311	6,780	5,875	6,513	13,809	10,053	5,709	6,207	9,064	6,248
MEAN	171	208	333	219	203	210	460	324	190	200	292	208
MAX	212	298	722	240	215	245	783	636	219	354	603	479
MIN	161	180	200	200	195	185	220	187	177	164	175	170
CFSM	.74	.90	1.44	.94	.88	.91	1.98	1.40	.82	.86	1.26	.90
IN.	.85	1.00	1.65	1.09	.94	1.04	2.21	1.61	.92	1.00	1.45	1.00

CAL YR 1971 TOTAL 97,818 MEAN 268 MAX 1,120 MIN 160 CFSM 1.16 IN 15.68
WTR-YR 1972 TOTAL 92,085 MEAN 252 MAX 783 MIN 161 CFSM 1.09 IN 14.77

PEAK DISCHARGE (BASE, 600 CFS)

DATE	TIME	G.H.	DISCHARGE
12-11	1400	8.13	789
04-16	0100	8.15	795
05-03	1100	7.63	648
08-27	2400	7.56	630

STREAMS TRIBUTARY TO LAKE HURON

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04132500 Thunder Bay River near Hillman, Mich.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1972												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	396	216	233									
2	322	218	221									
3	268	249	225									
4	234	249	230									
5	215	239	235									
6	209	228	230									
7	209	226	210									
8	201	260	220									
9	193	261	230									
10	189	247	230									
11	186	238	230									
12	185	230	225									
13	182	222	215									
14	183	216	210									
15	181	213	220									
16	182	206	230									
17	179	205	220									
18	181	205	220									
19	182	208	230									
20	182	207	230									
21	185	208	225									
22	196	208	225									
23	321	207	225									
24	499	206	230									
25	449	215	234									
26	380	235	230									
27	316	261	228									
28	278	281	224									
29	258	262	222									
30	236	242	276									
31	222	-----	497									
TOTAL	7,599	6,868	7,310									
MEAN	245	229	236									
MAX	499	281	497									
MIN	179	205	210									
CFSM	1.06	.99	1.02									
IN.	1.22	1.10	1.17									

CAL YR 1972 TOTAL 92,035 MEAN 251 MAX 783 MIN 164 CFSM 1.08 IN 14.76

PEAK DISCHARGE (BASE, 600 CFS).--No peak above base.

STREAMS TRIBUTARY TO LAKE HURON

04133500 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., Alpena County, on left bank 0.5 mile upstream from Orchard Hill Bridge, 4 miles upstream from North Branch, 5 miles southwest of Bolton, and 11 miles northwest of Alpena.

DRAINAGE AREA.—588 sq mi.

PERIOD OF RECORD.—March 1945 to current year.

GAGE.—Water-stage recorder. Datum of gage is 671.96 ft above mean sea level, unadjusted. Prior to Aug. 12, 1945, non-recording gage at site 500 ft downstream at different datum.

AVERAGE DISCHARGE.—27 years, 455 cfs.

EXTREMES.—Current year: Maximum discharge, 3,620 cfs Apr. 16 (gage height, 9.17 ft); minimum, 278 cfs July 15 (gage height, 3.53 ft).
Period of record: Maximum discharge, 4,070 cfs Apr. 13, 1965 (gage height, 9.99 ft); minimum, 92 cfs Sept. 28, 29, 1955.

REMARKS.—Records good except those for winter periods, which are poor. Regulation by Fletcher Pond on the Upper South Branch Thunder Bay River (usable capacity, 40,170 acre-ft).

REVISIONS (WATER YEARS).—WSP 1437: 1946. WSP 1727: 1947 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	444	351	420	500	420	410	520	675	405	333	299	642
2	404	387	400	490	410	410	530	843	399	326	312	562
3	362	464	390	490	400	410	530	1,120	384	318	328	516
4	360	532	390	490	400	410	540	1,320	369	309	345	486
5	357	502	394	490	400	410	540	1,210	354	306	335	462
6	353	462	399	490	400	400	560	990	342	305	321	440
7	328	416	429	490	410	400	570	812	335	302	315	439
8	334	387	464	490	410	400	600	679	345	299	330	428
9	350	383	487	490	420	390	670	603	354	300	372	421
10	345	385	578	490	420	390	750	530	372	303	458	408
11	344	387	936	490	430	390	900	480	369	308	479	403
12	342	394	1,360	480	430	400	1,150	463	363	308	437	395
13	335	389	1,480	480	440	400	1,620	435	363	314	406	399
14	336	385	1,190	470	450	410	2,100	423	369	330	372	401
15	335	382	1,040	460	450	420	2,880	480	384	374	345	398
16	331	381	1,330	450	450	430	3,570	675	390	501	358	392
17	329	376	1,640	450	440	430	3,310	762	375	488	443	391
18	330	376	1,400	450	440	440	2,730	719	360	427	521	385
19	331	378	1,100	440	430	450	2,280	615	345	378	499	379
20	329	383	950	440	420	460	2,120	526	336	384	444	375
21	326	391	800	430	420	480	1,950	463	331	503	398	374
22	323	393	700	430	410	490	1,690	417	331	539	363	365
23	329	375	650	430	410	500	1,500	390	336	502	425	361
24	357	350	630	430	400	520	1,420	366	347	427	672	362
25	351	379	600	430	400	520	1,320	378	369	377	830	370
26	345	372	580	430	400	520	1,160	396	376	346	847	398
27	343	386	560	440	410	520	965	384	374	331	850	459
28	350	419	540	440	410	530	856	366	361	321	920	459
29	339	448	520	440	410	530	758	360	345	312	1,080	597
30	333	430	510	440	-----	520	727	363	336	304	980	769
31	341	-----	500	430	-----	520	-----	387	-----	301	770	-----
TOTAL	10,716	12,043	23,367	14,290	12,140	13,910	40,816	18,630	10,819	11,176	15,854	13,236
MEAN	346	401	754	461	419	449	1,361	601	361	361	511	441
MAX	444	532	1,640	500	450	530	3,570	1,320	405	539	1,080	769
MIN	323	350	390	430	400	390	520	360	331	299	299	361

CAL YR 1971 TOTAL 220,883 MEAN 605 MAX 3,680 MIN 310
WTR YR 1972 TOTAL 196,997 MEAN 538 MAX 3,570 MIN 299

04134000 North Branch Thunder Bay River near Bolton, Mich.

LOCATION.--Lat 45°08'55", long 83°36'35", in SE¼ sec.29, T.32 N., R.7 E., Alpena County, on left bank 1.5 miles upstream from mouth. 2.5 miles south of Bolton, and 9 miles northwest of Alpena.

DRAINAGE AREA.--184 sq mi.

PERIOD OF RECORD.--March 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 675.52 ft above mean sea level, unadjusted. Prior to Aug. 16, 1945, nonrecording gage at site 0.5 mile upstream at different datum.

AVERAGE DISCHARGE.--27 years, 114 cfs (8.41 inches per year).

EXTREMES.--Current year: Maximum discharge, 2,640 cfs Apr. 18 (gage height, 7.18 ft); minimum, 17 cfs July 9-11 (gage height, 2.71 ft).
Period of record: Maximum discharge, 2,920 cfs Apr. 13, 1965 (gage height, 7.85 ft); maximum gage height, 7.98 ft Mar. 31, 1950 (backwater from ice); minimum discharge, 0.40 cfs Oct. 14, 1955.

REMARKS.--Records good except those for winter periods, which are poor. Occasional regulation during low flow from dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	33	65	110	87	80	90	335	56	29	31	183
2	29	38	65	110	86	81	94	384	58	25	32	122
3	28	43	66	110	86	82	96	495	59	23	33	96
4	26	63	67	105	86	82	96	694	56	22	32	79
5	26	75	69	105	87	81	95	682	49	21	31	68
6	24	76	70	105	87	80	94	538	46	20	29	59
7	27	72	74	105	86	81	94	420	41	19	27	55
8	34	67	86	110	87	82	100	343	38	18	26	50
9	34	63	102	110	88	82	110	297	38	17	37	46
10	30	59	132	110	90	82	150	258	39	17	43	42
11	26	54	190	110	90	83	250	234	41	17	52	38
12	27	51	353	110	90	83	300	192	40	18	56	35
13	30	51	603	110	90	82	450	162	39	19	54	36
14	30	49	519	110	88	82	556	140	40	19	50	36
15	30	48	412	105	88	84	862	162	41	23	46	37
16	30	46	446	100	88	85	1,540	213	40	29	48	35
17	28	45	619	97	88	86	2,120	270	41	33	59	33
18	26	45	678	95	88	88	2,530	332	39	35	77	31
19	25	48	553	93	87	90	2,300	324	36	33	92	29
20	24	46	434	92	86	92	2,040	282	34	42	96	27
21	23	47	378	91	85	92	1,730	237	32	62	89	26
22	23	49	329	91	84	94	1,440	195	31	75	80	25
23	24	47	300	91	84	95	1,150	156	31	91	103	23
24	26	42	250	92	85	96	980	126	31	97	167	21
25	26	42	210	92	85	96	897	106	32	86	233	21
26	26	44	180	91	84	95	790	90	34	71	305	23
27	26	46	160	91	82	92	652	78	35	59	291	25
28	27	50	150	90	82	90	526	68	35	48	267	30
29	30	61	140	90	81	88	440	61	33	41	286	68
30	30	64	120	90	-----	89	375	56	31	37	304	166
31	32	-----	110	88	-----	90	-----	55	-----	33	258	-----
TOTAL	853	1,564	7,930	3,099	2,505	2,685	22,947	7,985	1,196	1,179	3,334	1,565
MEAN	27.5	52.1	256	100	86.4	86.6	765	258	39.9	38.0	108	52.2
MAX	34	76	678	110	90	96	2,530	694	59	97	305	183
MIN	23	33	65	88	81	80	90	55	31	17	26	21
CFSM	.15	.28	1.39	.54	.47	.47	4.16	1.40	.22	.21	.59	.28
IN.	.17	.32	1.60	.63	.51	.54	4.64	1.61	.24	.24	.67	.32

CAL YR 1971 TOTAL 71,351 MEAN 195 MAX 2,330 MIN 17 CFSM 1.06 IN 14.43

WTR YR 1972 TOTAL 56,842 MEAN 155 MAX 2,530 MIN 17 CFSM .84 IN 11.49

PEAK DISCHARGE (BASE, 500 CFS).--Dec. 17 (2400) 730 cfs (5.05 ft); Apr. 18 (1900) 2,640 cfs (7.18 ft).

STREAMS TRIBUTARY TO LAKE HURON

04135500 Au Sable River at Grayling, Mich.

LOCATION.--Lat 44°39'35", long 84°42'45", in SE¼ SE¼ sec.7, T.26 N., R.3 W., Crawford County, on right bank 65 ft upstream from bridge on Interstate Highway 75 (Business Loop) at Grayling, 0.7 mile upstream from East Branch, and 114 miles upstream from mouth.

DRAINAGE AREA.--110 sq mi.

PERIOD OF RECORD.--October 1942 to current year. Monthly discharge only for some periods, published in WSP 1307. Prior to October 1954, published as Middle Branch Au Sable River at Grayling.

GAGE.--Water-stage recorder above steel-crested dam. Datum of gage is 1,123.49 ft above mean sea level.

AVERAGE DISCHARGE.--30 years, 74.4 cfs (9.19 inches per year).

EXTREMES.--Current year: Maximum discharge, 180 cfs Apr. 20 (gage height, 2.29 ft); minimum, 56 cfs Jan. 15 (gage height, 1.23 ft).
Period of record: Maximum discharge, 274 cfs June 2, 1943 (gage height, 3.00 ft); minimum, 28 cfs Apr. 21, 1946 (gage height, 0.80 ft).

REMARKS.--Records excellent except those for the winter periods, which are good. Prior to Dec. 31, 1952, diurnal fluctuation caused by powerplant 2.5 miles above station. Records of water temperatures for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	70	72	86	80	73	75	121	88	71	65	75
2	81	82	69	104	80	61	74	137	85	69	73	74
3	74	70	77	102	81	68	74	148	84	68	80	72
4	71	92	75	90	76	70	74	140	82	67	80	71
5	69	88	75	82	68	68	73	130	78	67	75	70
6	70	82	75	82	70	66	72	125	77	66	71	69
7	69	82	76	85	74	69	71	126	76	66	70	69
8	68	81	78	83	76	73	71	120	75	66	73	69
9	68	80	80	85	76	68	72	116	75	66	84	68
10	67	80	92	88	76	67	74	112	75	67	94	67
11	67	81	127	86	75	69	80	108	75	70	94	67
12	67	84	139	82	74	72	89	104	76	72	88	67
13	68	84	130	83	80	75	108	102	78	82	84	67
14	67	82	114	69	82	70	119	102	81	90	78	67
15	67	82	121	59	82	73	131	108	83	104	75	67
16	67	82	142	66	78	74	145	118	83	102	74	66
17	67	81	146	80	77	76	154	120	80	94	74	66
18	66	78	127	85	78	74	160	113	76	84	76	65
19	66	77	116	86	77	72	172	106	74	78	77	65
20	64	78	114	86	67	71	177	102	76	76	75	64
21	67	80	114	82	76	77	160	98	75	75	73	63
22	68	76	101	82	74	89	162	96	75	75	72	63
23	68	68	94	85	71	91	158	92	74	73	73	65
24	69	74	106	86	75	84	158	89	75	69	75	67
25	68	77	104	77	75	81	152	84	76	68	74	71
26	68	77	101	68	74	78	144	84	77	68	82	84
27	68	80	97	76	74	78	137	83	78	68	100	85
28	67	80	95	82	74	76	133	82	75	68	106	83
29	68	80	91	82	73	77	128	81	73	66	100	104
30	69	80	89	81	-----	77	125	84	73	66	89	119
31	69	-----	71	80	-----	75	-----	88	-----	65	80	-----
TOTAL	2,137	2,408	3,108	2,550	2,193	2,292	3,531	3,319	2,328	2,286	2,484	2,169
MEAN	68.9	80.3	100	82.3	75.6	73.9	118	107	77.6	73.7	80.1	72.3
MAX	85	92	146	104	82	91	177	148	88	104	106	119
MIN	64	68	69	59	67	61	71	81	73	65	65	63
CFSM	.63	.73	.91	.75	.69	.67	1.07	.97	.71	.67	.73	.66
IN.	.72	.81	1.05	.86	.74	.78	1.19	1.12	.79	.77	.84	.73

CAL YR 1971 TOTAL 31,373 MEAN 86.0 MAX 216 MIN 62 CFSM .78 IN 10.61
WTR YR 1972 TOTAL 30,805 MEAN 84.2 MAX 177 MIN 59 CFSM .77 IN 10.42

04135600 East Branch Au Sable River at Grayling, Mich.

LOCATION.--Lat 44°40'08", long 84°42'20", in NW¼ NW¼ sec.8, T.26 N., R.3 W., Crawford County, on right bank at south boundary of State Research Center in Grayling and 0.4 mile upstream from mouth.

DRAINAGE AREA.--76.0 sq mi.

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,110 ft (from topographic map). Prior to Sept. 30, 1958, nonrecording gage at site 10 ft downstream at present datum.

AVERAGE DISCHARGE.--14 years, 44.0 cfs (7.86 inches per year).

EXTREMES.--Current year: Maximum discharge, 147 cfs Apr. 19 (gage height, 4.68 ft); minimum, 22 cfs Mar. 1; minimum daily, 31 cfs Mar. 2. Period of record: Maximum discharge, 201 cfs Apr. 13, 1971 (gage height, 5.19 ft); minimum, 7.0 cfs Mar. 27, 1965, result of freezeup; minimum daily, 16 cfs Aug. 20, 1964.

REMARKS.--Records good. Occasional regulation by State Research Center above gage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	45	38	62	44	38	47	92	53	43	40	51
2	52	58	45	58	44	31	47	107	52	42	46	50
3	49	59	45	54	44	43	48	109	51	41	48	50
4	48	56	43	51	42	40	47	100	51	41	45	48
5	46	55	43	48	37	38	48	91	50	40	43	47
6	47	53	44	52	47	37	48	89	49	39	42	47
7	46	52	45	51	44	38	47	87	48	39	44	46
8	45	51	46	47	43	39	46	83	47	40	46	45
9	45	51	47	53	43	35	48	79	47	40	59	44
10	45	51	65	51	41	38	51	76	47	40	58	43
11	45	52	84	50	39	40	58	73	46	45	56	43
12	46	51	85	49	42	41	63	71	49	45	55	43
13	45	51	75	48	44	42	77	69	49	64	51	43
14	45	51	68	35	44	38	82	70	49	56	48	42
15	44	51	83	47	45	43	96	76	49	72	46	41
16	43	50	94	48	43	42	111	79	48	61	47	41
17	43	49	96	49	44	41	119	75	46	54	51	40
18	42	48	77	47	44	40	131	71	45	51	58	40
19	42	50	74	49	42	39	143	68	44	48	54	38
20	42	50	70	47	36	41	145	65	45	48	49	38
21	42	50	66	46	43	46	134	64	46	47	47	37
22	42	47	61	47	38	53	130	62	46	46	46	37
23	44	39	64	48	42	52	128	60	44	45	47	37
24	44	48	65	47	41	49	124	59	45	44	48	37
25	44	45	63	42	41	48	116	57	47	43	48	44
26	44	47	61	39	40	47	108	55	49	43	55	50
27	44	47	59	44	40	47	102	54	47	42	72	45
28	45	47	58	46	41	47	97	54	45	40	71	44
29	45	47	56	45	41	48	93	52	44	39	63	68
30	46	46	50	44	-----	48	89	53	44	39	57	63
31	46	-----	45	44	-----	47	-----	54	-----	39	53	-----
TOTAL	1,401	1,497	1,915	1,488	1,219	1,316	2,623	2,254	1,422	1,416	1,593	1,342
MEAN	45.2	49.9	61.8	48.0	42.0	42.5	87.4	72.7	47.4	45.7	51.4	44.7
MAX	55	59	96	62	47	53	145	109	53	72	72	68
MIN	42	39	38	35	36	31	46	52	44	39	40	37
CFSM	.59	.66	.81	.63	.55	.56	1.15	.96	.62	.60	.68	.59
IV.	.69	.73	.94	.73	.60	.64	1.28	1.10	.70	.69	.78	.66

CAL YR 1971 TOTAL 20,842 MEAN 57.1 MAX 196 MIN 31 CFSM .75 IN 10.20
WTR YR 1972 TOTAL 19,486 MEAN 53.2 MAX 145 MIN 31 CFSM .70 IN 9.54

STREAMS TRIBUTARY TO LAKE HURON

04135700 South Branch Au Sable River near Luzerne, Mich.

LOCATION.—Lat 44°36'53", long 84°27'20", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.29, T.26 N., R.1 W., Crawford County, on right bank 10 ft upstream from Smith Bridge, 400 ft downstream from highway bridge on State Highway 72, 4.6 miles upstream from mouth, and 9.1 miles west of Luzerne.

DRAINAGE AREA.—401 sq mi.

PERIOD OF RECORD.—Occasional low-flow measurements, water years 1951-66. October 1966 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 1070 ft (from topographic map). Apr. 19, 1951, to Nov. 14, 1966, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.—6 years, 216 cfs (7.65 inches per year).

EXTREMES.—Current year: Maximum discharge, 742 cfs Apr. 20 (gage height, 6.32 ft); minimum, 124 cfs July 29, 30 (gage height, 4.29 ft).
Period of record: Maximum discharge, 932 cfs Apr. 14, 1971 (gage height, 6.83 ft); maximum gage height, 7.17 ft Feb. 5, 1970 (backwater from ice); minimum daily discharge, 105 cfs Oct. 7-9, Nov. 3, 1966.

REMARKS.—Records good. Occasional regulation by dams above station. Records for water temperatures for the current year are published in Part 2 of this report.

REVISIONS.—MSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	183	142	179	237	185	173	238	429	188	151	131	203
2	177	171	195	228	182	165	235	482	184	145	137	182
3	164	178	188	233	183	165	236	509	181	140	142	172
4	156	176	182	241	181	166	231	499	175	137	138	167
5	153	166	184	230	180	165	235	471	169	137	129	162
6	153	159	185	232	175	170	230	444	166	135	126	158
7	150	155	189	234	175	170	211	424	164	133	129	157
8	148	150	194	228	175	170	207	403	159	130	139	156
9	145	153	199	234	175	170	216	386	159	132	174	152
10	144	152	259	232	175	170	224	366	156	133	172	147
11	144	156	377	229	175	171	254	348	153	139	167	143
12	145	159	379	226	178	171	290	334	155	139	156	142
13	144	161	388	225	177	165	356	319	156	152	150	143
14	143	159	370	210	176	165	411	313	157	163	142	142
15	143	162	396	205	177	172	529	319	157	238	136	139
16	141	184	462	200	177	174	618	332	157	238	138	136
17	143	192	441	200	177	173	560	335	153	235	149	135
18	145	195	390	210	179	174	588	329	148	232	153	135
19	141	198	350	215	178	177	711	317	145	196	147	135
20	141	200	340	215	175	180	737	306	147	172	136	133
21	138	203	322	210	177	195	719	295	149	160	132	131
22	138	197	305	203	175	227	679	282	150	153	142	129
23	138	183	300	205	170	214	653	272	150	146	151	127
24	138	179	288	206	171	215	629	263	150	141	165	128
25	138	187	282	199	170	222	598	253	157	137	172	147
26	138	189	278	190	170	221	556	235	168	135	206	171
27	139	194	271	195	171	225	514	205	167	133	253	172
28	137	195	265	198	170	236	483	192	158	131	252	166
29	139	198	251	208	170	230	455	190	153	128	251	223
30	141	197	248	193	-----	242	436	191	152	126	251	230
31	144	-----	216	193	-----	224	-----	191	-----	127	231	-----
TOTAL	4,531	5,290	8,873	6,664	5,099	5,857	13,239	10,234	4,783	4,794	5,097	4,663
MEAN	145	176	286	215	176	189	441	330	159	155	164	155
MAX	183	203	462	241	185	242	737	509	188	238	253	230
MIN	137	142	179	190	170	165	207	190	145	126	126	127
CFSM	.36	.44	.71	.54	.44	.47	1.10	.82	.40	.39	.41	.39
IN.	.42	.49	.82	.62	.47	.54	1.23	.95	.44	.44	.47	.43

CAL YR 1971 TOTAL 88,841 MEAN 243 MAX 928 MIN 124 CFSM .61 IN 8.24
WTR YR 1972 TOTAL 79,124 MEAN 216 MAX 737 MIN 126 CFSM .54 IN 7.34

04136500 Au Sable River at Mio, Mich.

LOCATION.—Lat 44°39'36", long 84°07'52", in NW¼ sec.7, T.26 N., R.3 E., Oscoda County, on right bank 150 ft upstream from bridge on State Highway 33 in Mio, 500 ft downstream from Mio powerplant, 9.5 miles downstream from Big Creek, and 73.0 miles upstream from mouth.

DRAINAGE AREA.—1,100 sq mi, approximately.

PERIOD OF RECORD.—July 1952 to current year.

GAGE.—Water-stage recorder. Datum of gage is 929.60 ft above mean sea level.

AVERAGE DISCHARGE.—20 years, 965 cfs (11.91 inches per year).

EXTREMES.—Current year: Maximum discharge, 2,710 cfs Apr. 19 (gage height, 4.79 ft); minimum, 51 cfs May 10; minimum daily, 709 cfs Jan. 16.

Period of record: Maximum discharge, 4,160 cfs Apr. 13, 1971 (gage height, 6.00 ft); minimum, 18 cfs Sept. 18, 19, 20, 21, 28, 1962 (gage height, 0.10 ft); minimum daily, 277 cfs Sept. 24, 1969.

REMARKS.—Records good. Flow regulated at all stages by powerplant 500 ft above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,070	924	954	1,120	1,010	940	1,060	1,640	1,020	945	840	966
2	1,010	942	822	1,340	990	740	1,040	1,820	1,030	900	860	942
3	948	1,260	919	1,210	1,020	800	1,050	2,180	1,030	846	888	942
4	954	1,070	817	1,130	1,020	1,060	1,050	1,990	1,030	853	906	934
5	942	1,040	858	975	920	1,000	1,030	1,720	969	852	880	931
6	924	1,040	861	1,020	934	800	1,080	1,620	935	854	863	930
7	932	1,020	794	1,210	936	920	1,070	1,620	911	865	819	886
8	934	1,060	857	1,140	895	1,050	1,020	1,570	900	870	842	852
9	911	925	799	1,100	939	920	986	1,410	933	864	1,230	852
10	874	1,020	1,070	1,180	971	980	1,080	1,330	938	861	1,160	853
11	875	966	2,010	1,120	563	1,100	1,230	1,370	931	894	1,010	855
12	909	1,010	1,550	1,090	973	1,100	1,500	1,350	944	936	989	879
13	917	883	1,280	1,090	1,010	1,000	1,880	1,330	980	948	991	888
14	900	972	1,610	953	1,020	980	2,000	1,280	1,000	995	976	861
15	906	1,080	1,780	710	1,020	1,000	2,240	1,320	1,000	1,780	949	846
16	906	939	2,310	709	1,010	1,000	2,560	1,490	984	1,470	852	846
17	905	894	1,890	979	987	980	2,540	1,510	960	1,190	907	849
18	908	858	1,720	1,120	992	960	2,480	1,340	944	1,130	1,160	756
19	907	861	1,620	1,180	987	950	2,620	1,260	894	1,060	1,100	888
20	906	1,030	1,640	1,120	854	960	2,700	1,280	909	862	957	844
21	890	954	1,410	1,080	897	1,070	2,690	1,270	954	794	845	832
22	869	930	1,160	1,090	888	1,300	2,550	1,260	946	884	947	820
23	864	758	1,320	1,100	930	1,150	2,400	1,190	930	895	864	817
24	923	882	1,360	1,100	990	1,050	2,320	1,090	924	925	1,010	858
25	934	888	1,240	1,050	996	1,020	2,120	1,100	924	798	1,140	919
26	908	996	1,280	795	948	1,100	1,990	1,100	955	818	1,130	1,050
27	891	1,080	1,240	849	942	1,250	1,850	1,080	994	854	1,300	1,080
28	933	1,080	1,210	1,030	942	1,150	1,680	1,010	1,010	877	1,330	1,050
29	938	1,060	1,220	1,010	942	1,130	1,650	957	985	843	1,210	1,290
30	924	1,030	1,200	983	-----	1,170	1,670	991	960	815	1,190	1,330
31	924	-----	901	1,030	-----	1,130	-----	1,010	-----	793	1,030	-----
TOTAL	28,536	29,452	39,702	32,613	27,926	31,760	53,136	42,488	28,824	29,271	31,175	27,646
MEAN	921	982	1,281	1,052	963	1,025	1,771	1,371	961	944	1,006	922
MAX	1,070	1,260	2,310	1,340	1,020	1,300	2,700	2,180	1,030	1,780	1,330	1,330
MIN	864	758	794	709	854	740	986	957	894	793	819	756
CFSM	.84	.89	1.16	.96	.88	.93	1.61	1.25	.87	.86	.91	.84
IN.	.97	1.00	1.34	1.10	.94	1.07	1.80	1.44	.97	.99	1.05	.93

CAL YR 1971 TOTAL 425,994 MEAN 1,167 MAX 3,870 MIN 686 CFSM 1.06 IN 14.41
WTR YR 1972 TOTAL 402,529 MEAN 1,100 MAX 2,700 MIN 709 CFSM 1.00 IN 13.61

STREAMS TRIBUTARY TO LAKE HURON

04138000 East Branch Au Gres River at McIvor, Mich.

LOCATION.--Lat 44°13'57", long 83°42'03", in NW¼ NW¼ sec.10, T.21 N., R.6 E., Iosco County, on right bank 25 ft downstream from bridge on Whittemore Road at McIvor, 0.9 mile east of National City, 9.3 miles southwest of Tawas City, and 11.5 miles upstream from mouth.

DRAINAGE AREA.--84 sq mi, approximately.

PERIOD OF RECORD.--October 1950 to current year. Monthly discharge only for October, November 1950, published in WSP 1727.

GAGE.--Water-stage recorder. Datum of gage is 646.58 ft above mean sea level. Prior to Aug. 30, 1951, nonrecording gage at bridge at present datum.

AVERAGE DISCHARGE.--22 years, 63.6 cfs (10.28 inches per year).

EXTREMES.--Current year: Maximum discharge, 688 cfs Apr. 13 (gage height, 7.41 ft); minimum, 19 cfs Dec. 30, result of freezeup.

Period of record: Maximum discharge, 1,310 cfs May 20, 1959 (gage height, 8.88 ft); minimum, 12 cfs Mar. 11, 1969 (discharge measurement); minimum daily, 22 cfs June 20, 21, 26-28, July 6, 7, July 30 to Aug. 1, Sept. 7, 1964.

REMARKS.--Records good except those for winter periods, which are poor. Some intermittent regulation during period 1952-66 at low and medium flow by dam 2.5 miles above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	34	33	45	25	28	87	107	48	45	38	61
2	39	46	32	47	25	28	83	145	46	40	43	57
3	38	44	32	47	25	28	86	137	44	38	50	54
4	43	38	32	47	25	28	86	125	46	38	46	50
5	42	35	33	46	25	28	79	112	43	37	42	48
6	41	36	33	45	25	29	68	107	42	37	38	47
7	39	34	35	44	25	29	70	105	40	36	40	47
8	39	35	36	44	26	29	56	94	39	35	52	48
9	40	36	42	44	26	29	49	86	40	37	95	44
10	39	37	94	42	26	30	72	83	40	38	58	42
11	38	38	129	41	26	30	175	79	40	35	49	42
12	37	36	70	40	26	30	389	74	41	35	46	42
13	37	35	53	39	26	31	585	73	43	65	41	44
14	37	34	43	38	26	32	584	74	43	52	39	42
15	36	33	140	36	26	33	515	73	76	138	39	40
16	36	33	167	34	27	34	441	72	55	79	39	39
17	36	32	104	32	27	34	305	70	48	57	62	39
18	36	31	85	33	27	35	251	67	43	49	56	44
19	36	32	75	33	27	35	248	64	42	45	44	43
20	36	33	62	33	28	36	227	61	42	42	40	41
21	36	33	57	32	28	37	190	59	41	39	38	39
22	42	30	55	32	29	38	183	56	44	38	50	39
23	48	31	53	31	29	41	184	55	45	39	113	39
24	43	33	50	29	29	49	166	51	47	36	75	39
25	39	32	46	28	29	50	152	49	47	35	62	40
26	37	29	42	27	28	56	140	48	44	36	113	40
27	36	38	40	27	28	59	130	46	41	38	275	37
28	37	42	39	26	28	66	121	45	39	36	178	38
29	35	37	36	26	28	75	114	44	47	35	108	45
30	34	34	35	25	28	83	109	49	55	35	82	43
31	34	34	41	25	28	80	80	49	55	34	70	43
TOTAL	1,188	1,051	1,824	1,118	775	1,250	5,945	2,359	1,351	1,379	2,121	1,313
MEAN	38.3	35.0	58.8	36.1	26.7	40.3	198	76.1	45.0	44.5	68.4	43.8
MAX	48	46	167	47	29	83	585	145	76	138	275	61
MIN	34	29	32	25	25	28	49	44	39	34	38	37
CFSM	.46	.42	.70	.43	.32	.48	2.36	.91	.54	.53	.81	.52
IN.	.53	.47	.81	.50	.34	.55	2.63	1.04	.60	.61	.94	.58

CAL YR 1971 TOTAL 25,255 MEAN 69.2 MAX 443 MIN 29 CFSM .82 IN 11.18
WTR YR 1972 TOTAL 21,674 MEAN 59.2 MAX 585 MIN 25 CFSM .70 IN 9.60

PEAK DISCHARGE (BASE, 300 CFS).--Apr. 13 (2300) 688 cfs (7.41 ft); Aug. 27 (0700) 311 cfs (5.36 ft).

04138500 Au Gres River near National City, Mich.

LOCATION.—Lat 44°10'26", long 83°44'36", in NE¼ NE¼ sec.31, T.21 N., R.6 E., Iosco County, on left bank 15 ft upstream from highway bridge on Allen Road, 1.7 miles upstream from Elm Creek, 4.4 miles southwest of National City, 12.8 miles southwest of Tawas City, and 13 miles upstream from mouth.

DRAINAGE AREA.—169 sq mi.

PERIOD OF RECORD.—October 1950 to current year. Monthly discharge only for October, November 1950, published in WSP 1727.

GAGE.—Water-stage recorder. Altitude of gage is 710 ft (by barometer). Prior to Oct. 1, 1951, nonrecording gage at site 1.5 miles upstream at different datum. Oct. 1, 1951 to July 24, 1969, water-stage recorder at site 50 ft downstream at present datum.

AVERAGE DISCHARGE.—22 years, 96.9 cfs (7.79 inches per year).

EXTREMES.—Current year: Maximum discharge, 1,700 cfs Apr. 13 (gage height, 6.59 ft); minimum, 15 cfs July 31.

Period of record: Maximum discharge, 2,350 cfs Aug. 16, 1969 (gage height, 8.32 ft); maximum gage height, 10.5 ft Feb. 21, 1953 (backwater from ice); minimum discharge, 5.9 cfs Nov. 3, 1966, result of freezeup.

REMARKS.—Records good except those for winter periods, which are fair.

REVISIONS (WATER YEARS).—WSP 1911, 1959-60.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	23	31	66	39	38	190	186	39	30	17	70
2	22	29	32	64	39	38	170	296	35	22	23	68
3	20	34	33	63	40	38	150	246	31	20	29	67
4	22	25	34	62	41	39	140	214	31	19	19	54
5	24	24	35	58	41	39	140	188	27	19	17	50
6	21	24	37	56	41	38	140	188	24	18	17	43
7	21	24	43	56	41	38	140	188	22	18	19	34
8	21	24	50	56	40	38	145	164	21	18	28	38
9	22	25	64	60	40	38	150	152	21	18	78	31
10	22	27	165	65	40	38	339	114	21	21	39	28
11	21	31	200	67	40	38	838	104	21	18	26	26
12	22	28	90	62	40	39	1,200	100	24	18	27	26
13	21	28	60	54	40	39	1,460	100	27	29	21	26
14	22	27	45	45	40	40	1,340	104	27	31	19	28
15	22	26	313	48	40	40	978	112	62	121	18	23
16	22	27	301	49	40	41	786	112	43	62	18	21
17	22	27	137	50	40	42	560	112	31	36	33	20
18	22	27	100	52	39	42	462	104	26	29	39	26
19	22	27	97	52	39	44	428	97	22	27	24	30
20	22	33	94	52	39	47	382	91	21	22	19	23
21	21	38	80	54	39	60	313	86	22	20	18	21
22	24	33	80	55	38	80	315	80	24	18	35	29
23	35	29	78	56	38	220	335	62	26	18	206	31
24	26	29	76	54	38	210	298	54	28	18	108	28
25	23	30	74	52	38	190	274	46	28	16	68	23
26	21	32	74	48	38	180	243	39	27	16	159	22
27	21	34	72	46	38	170	219	36	23	17	564	20
28	21	35	72	43	38	160	202	34	21	17	254	19
29	21	33	70	41	38	220	193	33	26	16	152	24
30	20	31	68	40	-----	260	186	34	44	16	106	27
31	21	-----	67	39	-----	220	-----	39	-----	16	82	-----
TOTAL	692	864	2,772	1,665	1,142	2,764	12,716	3,515	845	784	2,282	976
MEAN	22.3	28.8	89.4	53.7	39.4	89.2	424	113	28.2	25.3	73.6	32.5
MAX	35	38	313	67	41	260	1,460	296	62	121	564	70
MIN	20	23	31	39	38	38	140	33	21	16	17	19
CFSM	.13	.17	.53	.32	.23	.53	2.51	.67	.17	.15	.44	.19
IN.	.15	.19	.61	.37	.25	.61	2.80	.77	.19	.17	.50	.21

CAL YR 1971 TOTAL 37,820 MEAN 104 MAX 1,310 MIN 16 CFSM .62 IN 8.32
WTR YR 1972 TOTAL 31,017 MEAN 84.7 MAX 1,460 MIN 16 CFSM .50 IN 6.83

PEAK DISCHARGE (BASE, 600 CFS)

DATE	TIME	G.H.	DISCHARGE
12-15	1930	3.89	687
04-13	2200	6.59	1,700
08-27	0400	3.84	680

STREAMS TRIBUTARY TO LAKE HURON

04139000 Houghton Creek near Lupton, Mich.

LOCATION.—Lat 44°23'45", long 84°02'50", in SE¼ SE¼ sec.10, T.23 N., R.3 E., Ogemaw County, on right bank 1700 ft upstream from mouth, 2.7 miles southwest of Lupton, and 3.5 miles downstream from Wilkins Creek.

DRAINAGE AREA.—29.7 sq mi.

PERIOD OF RECORD.—July 1950 to Dec. 31, 1972 (discontinued as a continuous-record station, converted to a crest-stage partial-record station).

GAGE.—Water-stage recorder. Datum of gage is 864.55 ft above mean sea level.

AVERAGE DISCHARGE.—22 years, 51.2 cfs (23.41 inches per year).

EXTREMES.—Current year: Maximum discharge, 310 cfs Dec. 16 (gage height, 5.56 ft); minimum, 29 cfs Mar. 6, result of freezeup.

Period Oct. 1 to Dec. 31, 1972; Maximum discharge, 156 cfs Dec. 31 (gage height, 3.85 ft); minimum, 34 cfs Dec. 7, 17, result of freezeup.

Period of record: Maximum discharge, 955 cfs May 20, 1959 (gage height, 7.15 ft, from rating curve extended above 400 cfs on basis of slope-area measurement of peak flow; minimum, 28 cfs Feb. 1, 1953, Jan. 19, Feb. 16, 1971, result of freezeup.

REMARKS.—Records good. Intermittent regulation at low flow by sawmill on Sandback Creek at Rose City prior to June 1955 and since November 1958.

REVISIONS.—WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	41	39	49	41	43	56	59	42	39	42	38
2	36	56	39	44	41	43	53	120	41	38	44	38
3	38	46	38	43	41	42	53	146	40	37	44	38
4	41	42	38	42	42	42	53	88	39	38	39	37
5	39	41	38	42	42	42	53	65	39	38	38	37
6	40	42	39	41	42	41	51	62	38	37	39	37
7	40	38	42	40	42	41	50	63	38	37	42	37
8	40	37	45	40	43	41	49	55	38	38	47	37
9	40	39	48	40	44	41	51	53	37	42	64	36
10	40	40	83	41	44	42	66	51	38	41	44	36
11	40	41	256	41	44	43	116	49	38	39	40	36
12	40	39	115	40	44	44	177	48	40	38	41	36
13	40	38	64	40	44	45	256	47	40	44	39	37
14	41	38	53	39	44	46	246	51	40	43	38	36
15	40	38	117	37	44	44	271	70	43	93	38	35
16	38	39	253	39	43	45	259	62	39	57	39	36
17	38	38	107	41	43	45	174	53	39	43	50	35
18	37	38	65	42	44	46	154	50	38	41	45	36
19	39	40	55	42	44	44	168	47	38	41	38	35
20	38	40	53	43	47	44	157	45	39	40	37	35
21	38	41	51	42	48	53	106	44	40	39	37	35
22	39	39	49	42	51	89	97	43	39	39	39	35
23	41	39	46	42	46	70	102	42	39	38	39	35
24	41	36	49	42	45	58	89	41	40	38	47	36
25	41	37	50	41	43	54	76	41	40	38	42	51
26	41	37	48	41	43	53	67	40	39	39	73	59
27	40	41	46	41	43	53	62	40	40	39	160	41
28	38	42	46	41	43	56	58	40	40	39	76	39
29	39	41	43	41	43	61	57	39	40	38	46	76
30	41	40	42	41	-----	59	55	46	42	38	41	54
31	44	-----	43	41	-----	55	-----	43	-----	38	39	-----
TOTAL	1,224	1,204	2,100	1,281	1,268	1,525	3,282	1,743	1,183	1,287	1,487	1,189
MEAN	39.5	40.1	67.7	41.3	43.7	49.2	109	56.2	39.4	41.5	48.0	39.6
MAX	44	56	256	49	51	89	271	146	43	93	160	76
MIN	36	36	38	37	41	41	49	39	37	37	37	35
CFSM	1.33	1.35	2.28	1.39	1.47	1.66	3.67	1.89	1.33	1.40	1.62	1.33
IN.	1.53	1.51	2.63	1.60	1.59	1.91	4.11	2.18	1.48	1.61	1.86	1.49
CAL YR 1971	TOTAL 19,894		MEAN 54.5	MAX 336	MIN 35	CFSM 1.84	IN 24.92					
WTR YR 1972	TOTAL 18,773		MEAN 51.3	MAX 271	MIN 35	CFSM 1.73	IN 23.51					

PEAK DISCHARGE (BASE, 180 CFS)

DATE	TIME	G.H.	DISCHARGE
12-11	0900	5.51	303
12-16	0500	5.56	310
04-13	1700	5.31	291
08-27	0800	4.25	184

04139000 Houghton Creek near Lupton, Mich.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	45	45									
2	44	48	44									
3	41	53	44									
4	39	47	43									
5	40	46	43									
6	40	45	46									
7	40	47	45									
8	39	63	45									
9	39	53	45									
10	38	49	45									
11	39	47	45									
12	39	47	45									
13	38	45	46									
14	39	44	46									
15	38	44	46									
16	38	44	46									
17	37	44	47									
18	40	44	47									
19	39	44	47									
20	39	44	47									
21	42	44	47									
22	47	44	47									
23	111	43	47									
24	131	44	47									
25	71	44	47									
26	53	46	48									
27	48	51	48									
28	52	51	47									
29	54	46	47									
30	47	44	62									
31	45	-----	138									
TOTAL	1,492	1,400	1,532									
MEAN	48.1	46.7	49.4									
MAX	131	63	138									
MIN	37	43	43									
CFSM	1.62	1.57	1.66									
IN.	1.87	1.75	1.92									

CAL YR 1972 TOTAL 18,669 MEAN 51.0 MAX 271 MIN 35 CFSM 1.72 IN 23.38

PEAK DISCHARGE (BASE, 180 CFS).--No peak above base.

STREAMS TRIBUTARY TO LAKE HURON

04L40000 Prior Creek near Selkirk, Mich.

LOCATION.--Lat 44°20'06", long 84°04'06", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.33, T.23 N., R.3 E., Ogemaw County, on right bank 20 ft upstream from culverts on Peters Road, 0.2 mile upstream from mouth, 0.6 mile downstream from Ammond Creek, and 1.5 miles north of Selkirk.

DRAINAGE AREA.--21.4 sq mi.

PERIOD OF RECORD.--September 1950 to December 1972 (discontinued as a continuous-record station, converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Altitude of gage is 840 ft (by barometer).

AVERAGE DISCHARGE.--22 years, 17.1 cfs (10.85 inches per year).

EXTREMES.--Current year: Maximum discharge, 170 cfs Apr. 13 (gage height, 5.10 ft); minimum, 4.1 cfs July 30, 31.

October to December 1972: Maximum discharge during period, 141 cfs Oct. 24 (gage height, 4.86 ft); minimum, 8.4 cfs Oct. 13, Nov. 30.

Period of record: Maximum discharge, 584 cfs May 20, 1959 (gage height, 5.64 ft); minimum, 2.4 cfs Nov. 4, 1966, result of freezeup.

REMARKS.--Records good except those for winter periods, which are poor. Some regulation from dams above station.

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	9.2	11	19	10	11	31	24	13	7.5	6.0	11
2	7.7	17	10	19	10	11	26	58	12	8.0	9.0	12
3	7.8	14	10	18	10	11	24	90	11	7.2	9.2	16
4	9.8	11	10	18	10	11	24	44	11	7.0	6.7	11
5	8.9	9.9	11	17	10	11	24	29	9.9	6.3	5.9	8.5
6	9.1	9.4	12	17	10	11	22	28	9.3	6.2	6.1	8.5
7	8.5	8.8	13	17	10	11	24	28	8.8	6.3	8.2	16
8	8.2	10	14	17	10	11	24	23	8.5	6.1	12	11
9	8.5	9.9	18	16	10	11	22	20	8.8	8.4	19	9.3
10	8.3	11	41	16	10	12	40	18	8.8	8.4	12	9.2
11	8.1	12	122	16	10	12	105	17	8.3	7.9	9.6	9.2
12	8.1	11	60	15	10	12	158	16	9.3	7.2	9.9	9.3
13	7.8	10	27	15	10	12	164	15	10	11	8.1	10
14	8.1	9.8	19	15	10	13	142	19	10	9.7	7.8	10
15	8.3	9.7	67	14	10	13	137	39	13	40	7.9	8.8
16	8.1	9.7	140	13	10	13	117	34	10	22	8.3	8.7
17	8.3	9.3	61	13	10	13	72	24	9.5	12	13	8.5
18	8.7	9.3	30	13	11	13	65	19	8.7	11	12	9.0
19	8.7	9.9	25	14	11	14	73	16	8.2	9.2	8.9	9.1
20	8.5	10	23	13	11	14	71	14	8.6	8.7	10	8.6
21	8.3	11	23	13	11	18	44	14	9.1	7.5	7.2	8.7
22	8.8	11	22	12	12	36	42	12	9.2	7.0	7.9	8.6
23	10	11	21	12	11	42	49	12	8.9	6.4	8.4	8.4
24	9.6	9.9	21	11	11	47	42	11	9.9	6.0	12	8.7
25	9.4	10	21	11	11	46	34	10	9.3	5.6	11	16
26	9.3	9.4	21	11	11	38	28	9.8	9.0	5.6	33	24
27	9.4	11	20	10	11	34	25	9.7	8.5	6.0	83	15
28	9.3	13	20	10	11	34	23	9.3	7.6	5.8	37	12
29	9.0	13	20	10	11	38	21	9.5	8.5	5.2	19	30
30	9.3	12	19	10	-----	38	20	13	9.2	4.5	14	23
31	9.7	-----	19	10	-----	31	-----	13	-----	4.8	12	-----
TOTAL	269.9	322.2	951	435	303	642	1,693	698.3	285.9	274.5	434.1	358.1
MEAN	8.71	10.7	30.7	14.0	10.4	20.7	56.4	22.5	9.53	8.85	14.0	11.9
MAX	10	17	140	19	12	47	164	90	13	40	83	30
MIN	7.7	8.8	10	10	10	11	20	9.3	7.6	4.5	5.9	8.4
CFSM	.41	.50	1.43	.65	.49	.97	2.64	1.05	.45	.41	.65	.56
IN.	.47	.56	1.65	.76	.53	1.12	2.94	1.21	.50	.48	.75	.62

CAL YR 1971 TOTAL 7,786.0 MEAN 21.3 MAX 192 MIN 4.5 CFSM 1.00 IN 13.53

WTR YR 1972 TOTAL 6,667.0 MEAN 18.2 MAX 164 MIN 4.5 CFSM .85 IN 11.59

PEAK DISCHARGE (BASE, 100 CFS)

DATE	TIME	G.H.	DISCHARGE
12-11	1000	4.77	138
12-16	0300	4.99	165
04-13	1300	5.10	170
05-03	0900	4.38	108
08-27	1100	4.14	101

04140000 Prior Creek near Selkirk, Mich.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	14	13									
2	15	16	11									
3	13	22	12									
4	12	18	12									
5	11	15	13									
6	11	14	13									
7	12	15	13									
8	11	30	13									
9	10	24	13									
10	10	18	13									
11	10	17	13									
12	11	15	13									
13	9.7	14	14									
14	10	13	14									
15	9.7	13	14									
16	9.9	12	14									
17	9.5	12	14									
18	9.4	13	14									
19	9.1	13	14									
20	9.4	13	14									
21	11	13	14									
22	16	13	14									
23	52	13	15									
24	84	12	15									
25	37	12	15									
26	26	14	15									
27	18	18	15									
28	20	19	15									
29	22	15	15									
30	17	13	25									
31	15	-----	38									
TOTAL	537.7	463	460									
MEAN	17.3	15.4	14.8									
MAX	84	30	38									
MIN	9.1	12	11									
CFSM	.81	.72	.69									
IN.	.93	.80	.80									

CAL YR 1972 TOTAL 6,584.6 MEAN 18.0 MAX 164 MIN 4.5 CFSM .84 IN 11.45

PEAK DISCHARGE (BASE, 100 CFS).--Oct. 24 (1200) 141 cfs (4.86 ft).

STREAMS TRIBUTARY TO LAKE HURON

04140500 Rifle River at Selkirk, Mich.

LOCATION.--Lat 44°18'48", long 84°04'10", in SE¼ NE¼ sec.9, T.22 N., R.3 E., Ogemaw County, on left bank at upstream side of bridge on State Road at Selkirk, 1.0 miles downstream from Klacking Creek.

DRAINAGE AREA.--117 sq mi.

PERIOD OF RECORD.--September 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 828.47 ft above mean sea level.

AVERAGE DISCHARGE.--22 years, 143 cfs (16.60 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,160 cfs Apr. 13 (gage height, 4.17 ft); minimum, 76 cfs July 8.
Period of record: Maximum discharge, 2,760 cfs May 20, 1959 (gage height, 6.76 ft); minimum, 55 cfs Aug. 19, 1958.

REMARKS.--Records good except those for winter periods, which are fair. Some regulation from dams above station. Records of water temperatures for the current year are published in Part 2 of this report.

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	92	125	135	125	105	178	192	103	90	97	131
2	97	131	120	139	120	105	170	330	101	86	103	126
3	97	118	118	133	120	105	170	416	97	82	106	120
4	99	106	115	130	120	104	172	319	95	82	90	108
5	97	103	113	130	120	103	172	231	90	82	86	101
6	95	106	115	128	120	102	172	210	90	80	84	99
7	95	95	123	125	120	102	170	204	86	80	88	106
8	95	95	131	124	120	102	170	184	86	78	108	97
9	95	99	144	122	120	105	181	167	84	86	147	92
10	95	99	241	120	120	105	231	158	86	90	110	90
11	92	106	545	128	120	108	366	150	86	82	99	88
12	90	103	501	125	120	113	605	142	88	84	97	90
13	90	103	249	123	120	118	981	139	90	95	88	92
14	95	103	192	125	120	115	1,040	153	90	92	84	92
15	95	106	360	130	120	115	1,070	222	103	219	84	86
16	92	106	685	130	120	115	1,010	210	95	181	84	86
17	90	106	472	130	120	120	736	184	90	136	109	86
18	92	103	260	130	120	120	565	164	88	120	118	88
19	95	106	195	130	118	115	545	153	84	110	99	88
20	92	106	184	130	115	115	560	142	86	101	101	88
21	90	108	167	135	115	133	424	131	88	95	95	88
22	95	106	160	136	115	210	354	128	88	92	101	88
23	97	108	155	133	115	198	357	118	84	90	101	88
24	95	108	147	130	115	189	316	115	88	97	120	90
25	97	108	153	132	115	184	271	110	92	97	115	123
26	97	110	147	134	115	170	237	106	95	97	201	181
27	95	120	142	135	110	170	213	103	90	97	371	139
28	92	131	142	134	110	175	198	99	86	92	306	126
29	92	131	133	132	106	186	192	97	90	90	198	192
30	95	126	131	130	-----	186	186	110	97	86	156	192
31	101	-----	132	125	-----	170	-----	108	-----	86	142	-----
TOTAL	2,940	3,248	6,597	4,023	3,414	4,163	12,012	5,295	2,716	3,075	3,888	3,261
MEAN	94.8	108	213	130	118	134	400	171	90.5	99.2	125	109
MAX	106	131	685	139	125	210	1,070	416	103	219	371	192
MIN	90	92	113	120	106	102	170	97	84	78	84	86
CFSM	.91	.92	1.82	1.11	1.01	1.15	3.42	1.46	.77	.85	1.07	.93
IN.	.93	1.03	2.10	1.28	1.09	1.32	3.82	1.68	.86	.98	1.24	1.04

CAL YR 1971 TOTAL 57,893 MEAN 159 MAX 1,220 MIN 72 CFSM 1.36 IN 18.41
WTR YR 1972 TOTAL 54,632 MEAN 149 MAX 1,070 MIN 78 CFSM 1.27 IN 17.37

PEAK DISCHARGE (BASE, 500 CFS)

DATE	TIME	G.H.	DISCHARGE
12-11	2330	3.32	660
12-16	0900	3.43	718
04-13	2200	4.17	1,160

04141000 South Branch Shepards Creek near Selkirk, Mich.

LOCATION.—Lat 44°18'28", long 84°05'13", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 8, T. 22 N., R. 3 E., Ogemaw County, on right bank 200 ft upstream from mouth, 600 ft west of bridge on Bedtelyon Road, and 1.1 miles southwest of Selkirk.

DRAINAGE AREA.—1.15 sq mi.

PERIOD OF RECORD.—October 1951 to current year.

GAGE.—Water-stage recorder and V notch sharp-crested weir. Altitude of gage is 845 ft (by barometer).

AVERAGE DISCHARGE.—21 years, 0.53 cfs (6.26 inches per year).

EXTREMES.—Current year: Maximum discharge, 57 cfs Apr. 11 (gage height, 3.54 ft); minimum, 0.02 cfs Jan. 15 (gage height, 1.14 ft result of freezeup).

Period of record: Maximum discharge, 181 cfs Apr. 3, 1956 (gage height, 4.42 ft), from rating curve extended above 40 cfs; no flow at times each year, except 1956, and 1967-72.

REMARKS.—Records fair.

REVISIONS (WATER YEARS).—WSP 1597: 1952 (M), 1954 (M), 1955 (P). WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.10	.15	.19	.10	.14	2.0	.62	.12	.08	.06	.12
2	.09	.26	.14	.20	.11	.14	1.3	3.1	.10	.06	.18	.12
3	.09	.18	.13	.19	.13	.13	1.2	2.4	.09	.05	.13	.11
4	.13	.15	.12	.19	.14	.13	1.1	1.0	.08	.04	.09	.09
5	.10	.14	.14	.18	.14	.12	1.0	.58	.07	.04	.06	.09
6	.10	.13	.18	.16	.14	.12	.76	.50	.07	.04	.07	.09
7	.09	.12	.24	.16	.13	.13	.61	.45	.06	.03	.12	.08
8	.09	.12	.28	.14	.13	.14	.45	.35	.06	.04	.34	.09
9	.10	.13	.38	.18	.13	.14	.86	.29	.06	.06	.37	.07
10	.10	.16	2.7	.19	.12	.13	7.5	.26	.06	.06	.18	.07
11	.09	.16	1.1	.18	.12	.13	20	.23	.06	.06	.15	.08
12	.10	.16	.50	.18	.13	.13	14	.22	.07	.06	.15	.08
13	.09	.13	.35	.16	.12	.16	16	.22	.09	.23	.10	.09
14	.09	.13	.24	.14	.13	.16	9.4	.28	.09	.26	.09	.09
15	.09	.13	5.2	.10	.13	.16	7.5	.64	.18	1.2	.08	.06
16	.09	.13	1.7	.09	.14	.16	4.1	.50	.10	.28	.10	.06
17	.09	.13	.66	.10	.14	.19	2.8	.33	.09	.19	.18	.06
18	.09	.14	.35	.11	.14	.20	2.5	.24	.07	.16	.12	.09
19	.09	.14	.31	.18	.14	.19	3.6	.19	.06	.13	.09	.09
20	.09	.16	.27	.16	.13	.19	1.9	.18	.07	.11	.06	.08
21	.09	.16	.24	.16	.13	.31	1.1	.16	.08	.09	.06	.08
22	.12	.13	.22	.19	.13	2.4	1.5	.14	.08	.06	.13	.08
23	.13	.12	.22	.26	.12	2.6	1.4	.13	.09	.05	.16	.08
24	.13	.13	.26	.20	.12	1.5	1.1	.13	.10	.04	.28	.08
25	.12	.12	.24	.19	.13	1.6	.80	.12	.09	.04	.15	.30
26	.12	.14	.24	.13	.13	1.6	.61	.11	.09	.04	2.6	.26
27	.12	.22	.22	.11	.13	1.5	.50	.10	.07	.05	1.3	.18
28	.11	.24	.22	.11	.13	2.4	.45	.09	.05	.04	.47	.15
29	.10	.22	.19	.10	.13	3.9	.40	.09	.09	.04	.24	.41
30	.12	.19	.19	.10	-----	3.4	.37	.14	.11	.04	.16	.28
31	.12	-----	.20	.09	-----	2.3	-----	.12	-----	.04	.14	-----
TOTAL	3.20	4.57	17.58	4.82	3.74	26.50	106.81	13.91	2.50	3.71	8.41	3.61
MEAN	.10	.15	.57	.16	.13	.85	3.56	.45	.083	.12	.27	.12
MAX	.13	.26	5.2	.26	.14	3.9	20	3.1	.18	1.2	2.6	.41
MIN	.09	.10	.12	.09	.10	.12	.37	.09	.05	.03	.06	.06
CFSM	.09	.13	.50	.14	.11	.74	3.10	.39	.07	.10	.23	.10
IN.	.10	.15	.57	.16	.12	.86	3.46	.45	.08	.12	.27	.12

CAL YR 1971 TOTAL 246.03 MEAN .67 MAX 18 MIN .03 CFSM .58 IN 7.96
WTR YR 1972 TOTAL 199.36 MEAN .54 MAX 20 MIN .03 CFSM .47 IN 6.45

PEAK DISCHARGE (BASE, 20 CFS).—Apr. 11 (1600) 57 cfs (3.54 ft).

STREAMS TRIBUTARY TO LAKE HURON

04142000 Rifle River near Sterling, Mich.
(International hydrological decade station)

LOCATION.—Lat 44°04'21", long 84°01'12", in NE¼ SW¼ sec. 5, T.19 N., R.4 E., Arenac County, on left bank 30 ft downstream from bridge on Old-M70, 2.8 miles north of Sterling, and 20 miles upstream from mouth.

DRAINAGE AREA.—320 sq mi., approximately.

PERIOD OF RECORD.—November 1905 to December 1908 (gage heights and discharge measurements only), October 1936 to current year. Monthly discharge only for some periods, published in WSP 1307. Published as Rifle River at Michigan Highway 70 near Sterling 1936-61.

GAGE.—Water-stage recorder. Datum of gage is 649.48 ft above mean sea level. November 1905 to December 1908, nonrecording gage at site 400 ft downstream at different datum. Jan. 13, 1937, to Jan. 10, 1939, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.—36 years, 305 cfs (12.94 inches per year).

EXTREMES.—Current year: Maximum discharge, 2,370 cfs Apr. 13 (gage height, 8.49 ft); minimum, 84 cfs Nov. 23 (gage height, 1.17 ft), result of freezeup.

Period of record: Maximum discharge, 5,340 cfs Mar. 28, 1950 (gage height, 13.74 ft), from rating curve extended above 3,800 cfs; minimum, 75 cfs Nov. 22, 1964, result of freezeup.

REMARKS.—Records good except those for winter periods, which are fair. Occasional regulation from dams above station. Records of suspended sediment loads for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).—WSP 1437: 1937 (M), 1938, 1939-40 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	180	170	176	250	230	205	380	392	207	174	149	258
2	166	191	175	250	230	200	385	608	208	160	190	235
3	164	237	170	250	230	200	379	848	198	152	205	222
4	175	198	170	240	230	200	383	732	190	148	172	212
5	174	183	170	240	230	200	381	530	180	148	152	194
6	164	180	175	240	225	200	373	462	176	146	149	187
7	163	173	185	240	220	200	336	458	168	143	161	188
8	160	169	195	240	220	200	331	402	163	143	199	197
9	163	175	213	235	220	200	333	356	164	149	298	176
10	161	181	364	230	220	200	473	334	166	175	258	169
11	160	189	942	230	220	210	957	315	165	162	200	172
12	160	187	850	230	220	215	1,570	297	172	148	199	168
13	158	182	483	230	220	220	2,140	285	181	173	183	172
14	159	180	323	230	220	220	2,290	290	184	195	166	173
15	160	178	515	235	220	220	2,320	408	258	450	161	164
16	158	175	1,230	240	220	220	2,190	498	220	460	159	161
17	160	173	969	240	220	225	1,710	399	191	280	181	155
18	163	170	450	240	220	230	1,400	342	178	228	207	180
19	163	173	350	245	220	230	1,330	309	168	204	180	175
20	164	179	310	250	215	240	1,290	288	167	186	165	163
21	159	183	300	250	215	270	1,050	274	172	171	166	158
22	170	168	290	250	210	400	880	258	184	161	251	155
23	178	125	285	250	210	460	860	238	184	153	371	153
24	175	200	280	250	210	430	771	223	180	152	313	156
25	174	184	280	250	210	410	656	212	184	151	294	161
26	172	174	283	250	210	390	572	200	183	148	439	255
27	171	182	272	250	210	380	510	192	174	143	1,060	241
28	168	199	264	250	210	370	462	187	165	141	788	205
29	161	198	255	250	210	380	426	184	164	143	482	231
30	163	190	250	245	-----	380	395	205	188	143	339	315
31	169	-----	250	240	-----	370	-----	212	-----	136	289	-----
TOTAL	5,135	5,446	11,424	7,520	6,345	8,475	27,533	10,938	5,482	5,666	8,526	5,751
MEAN	166	182	369	243	219	273	918	353	183	183	275	192
MAX	180	237	1,230	250	230	460	2,320	848	258	460	1,060	315
MIN	158	125	170	230	210	200	331	184	163	136	149	153
CFSM	.52	.57	1.15	.76	.68	.85	2.87	1.10	.57	.57	.86	.60
IN.	.60	.63	1.33	.87	.74	.99	3.20	1.27	.64	.66	.99	.67

CAL YR 1971 TOTAL 123,642 MEAN 339 MAX 2,340 MIN 125 CFSM 1.06 IN 14.37
WTR YR 1972 TOTAL 108,241 MEAN 296 MAX 2,320 MIN 125 CFSM .93 IN 12.58

PEAK DISCHARGE (BASE, 1600 CFS).—Apr. 13 (2400) 2,370 cfs (8.49 ft).

04143500 North Branch Kawkawlin River near Kawkawlin, Mich.

LOCATION.--Lat 43°40'05", long 83°58'13", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.27, T.15 N., R.4 E., Bay County, on left bank 50 ft upstream from bridge on Beaver Road, 1.7 miles northwest of Kawkawlin, and 2.4 miles upstream from mouth.

DRAINAGE AREA.--101 sq mi.

PERIOD OF RECORD.--March 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 584.00 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to Sept. 26, 1951, nonrecording gage at site 70 ft downstream, and Sept 27, 1951, to Sept. 30, 1960, water-stage recorder at present site, at datum 2.00 ft higher.

AVERAGE DISCHARGE.--21 years, 54.1 cfs (7.27 inches per year).

EXTREMES.--Current year: Maximum discharge, 540 cfs Apr. 14; no flow at times.

Period of record: Maximum discharge, 1,540 cfs Apr. 1, 1960, Apr. 13, 1965; maximum gage height, 10.33 ft Apr. 13, 1965; no flow at times in each year.

REMARKS.--Records fair except those for winter periods, which are poor. Some diversion above station for irrigation. Some regulation from dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1			0	4.6	7.2	9.4	78	74	2.3	.38	12	172
2			0	4.7	7.4	8.6	72	102	1.8	0	16	136
3			0	4.8	7.7	7.0	70	74	1.2	0	13	99
4			0	5.1	8.0	6.0	68	67	.60	0	8.9	68
5			0	5.8	8.4	5.4	68	94	.10	0	6.2	46
6			0	6.2	8.6	5.8	68	125	0	0	4.5	31
7			0	6.8	8.6	6.2	68	118	0	0	5.1	22
8			0	7.4	8.0	6.8	68	96	0	0	8.9	17
9			0	8.0	7.8	7.4	70	76	0	0	11	14
10			1.3	8.7	5.6	10	80	63	0	0	7.8	9.2
11			6.8	9.3	4.5	14	150	61	0	0	3.6	7.1
12			3.5	9.4	4.1	22	300	57	0	0	2.5	6.3
13			1.6	9.0	4.6	30	400	50	0	0	1.9	5.9
14			.64	8.4	6.0	40	490	44	.01	0	1.7	5.3
15			37	8.0	8.0	100	480	40	12	83	1.7	6.1
16			42	8.0	9.4	110	440	36	9.5	104	1.7	7.1
17			20	8.0	9.6	110	380	32	4.9	176	2.1	9.1
18			8.6	8.2	9.8	120	330	28	2.5	175	1.7	8.0
19			5.1	8.2	10	130	262	31	5.0	165	1.2	6.2
20			4.0	8.3	10	140	206	52	13	145	.74	4.9
21			3.0	8.4	10	160	164	70	15	117	.22	3.8
22			2.5	8.4	9.8	200	135	69	15	98	1.3	2.9
23			2.8	8.4	9.8	240	117	56	13	70	4.4	2.3
24			3.2	8.4	9.8	270	103	45	11	45	14	1.8
25			3.5	8.2	9.8	200	97	34	8.7	30	37	1.3
26			3.7	8.0	9.6	170	104	26	6.7	25	78	.71
27			3.8	7.4	9.6	140	105	18	5.0	34	155	.11
28			4.0	7.0	9.6	120	94	12	2.5	36	207	0
29			4.3	6.8	9.6	110	81	7.3	1.7	31	211	0
30			4.5	6.8		96	68	5.0	2.0	24	212	0
31			4.6	7.0		84		3.5		17	203	
TOTAL	0	0	170.44	231.7	240.9	2,678.6	5,216	1,665.8	133.51	1,375.38	1,235.16	693.12
MEAN	0	0	5.50	7.47	8.31	86.4	174	53.7	4.45	44.4	39.8	23.1
MAX	0	0	42	9.4	10	270	490	125	15	176	212	172
MIN	0	0	0	4.6	4.1	5.4	68	3.5	0	0	.22	0
CFSM	0	0	.05	.07	.08	.86	1.72	.53	.04	.44	.39	.23
IN.	0	0	.06	.09	.09	.99	1.92	.61	.05	.51	.45	.26

CAL YR 1971 TOTAL 14,999.24 MEAN 41.1 MAX 732 MIN 0 CFSM .41 IN 5.52

WTR YR 1972 TOTAL 13,640.61 MEAN 37.3 MAX 490 MIN 0 CFSM .37 IN 5.02

NOTE.--No gage-height record Mar. 28 to Apr. 18.

STREAMS TRIBUTARY TO LAKE HURON

04143900 Shiawassee River at Linden, Mich.

LOCATION.--Lat 42°48'56", long 83°48'08", in SW1/4 sec.19, T.5 N., R.6 E., Genesee County, on right bank at upstream side of bridge on Hogan Road, 1.0 mile west of Linden.

DRAINAGE AREA.--81.2 sq mi.

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 850 ft (from topographic map).

AVERAGE DISCHARGE.--5 years, 51.2 cfs (8.56 inches per year).

EXTREMES.--Current year: Maximum discharge, 172 cfs Mar. 23 (gage height, 5.42 ft); minimum, 4.1 cfs Aug. 8, 9, 10 (gage height, 2.88 ft).

Period of record: Maximum discharge, 262 cfs Feb. 7, 1968 (gage height, 6.16 ft); maximum gage height, 6.31 ft Feb. 10, 1968 (backwater from ice); minimum discharge, 0.74 cfs May 22, 23, 1971; minimum gage height, 2.82 ft Aug. 2, 1971.

REMARKS.--Records good except those for the winter period, which are poor. Low flow regulated at times by lakes above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	34	29	60	29	29	88	105	8.5	33	26	33
2	18	35	29	55	27	32	97	95	10	32	27	33
3	26	35	29	58	26	34	97	91	12	32	27	33
4	31	35	29	70	25	35	95	84	14	31	26	33
5	32	35	29	70	24	35	87	63	14	28	26	26
6	31	35	30	70	23	35	85	60	15	28	26	14
7	31	35	30	68	23	35	81	61	15	27	23	14
8	30	35	30	66	23	36	70	61	15	28	4.8	19
9	30	33	30	63	23	37	71	58	16	27	4.2	20
10	29	28	32	54	23	38	71	56	16	27	4.6	21
11	29	28	32	36	24	39	68	44	15	27	6.0	22
12	29	27	31	34	25	42	59	17	15	27	7.5	23
13	29	27	31	30	26	45	61	18	16	27	8.7	28
14	25	27	31	28	27	60	60	25	16	29	9.7	30
15	17	27	40	28	28	67	64	37	18	46	11	41
16	17	22	48	28	28	103	79	46	18	40	12	42
17	17	9.8	54	28	28	116	119	52	18	35	18	47
18	17	16	54	29	27	126	116	64	17	34	18	52
19	17	16	55	30	26	150	118	69	16	34	20	55
20	18	16	55	31	25	160	129	74	17	34	20	40
21	18	16	55	33	25	157	122	75	20	33	21	48
22	19	16	55	36	25	162	139	80	25	33	26	55
23	20	16	55	39	25	169	145	75	33	31	27	49
24	19	19	56	41	25	159	149	57	36	31	30	45
25	19	27	56	42	25	147	148	45	35	30	35	40
26	20	28	56	41	25	145	145	44	35	29	39	54
27	21	30	56	39	25	143	140	36	34	29	38	51
28	21	30	56	37	25	139	116	24	33	28	38	36
29	27	30	56	35	25	129	106	17	34	27	37	39
30	34	30	59	33	-----	126	109	5.6	34	27	36	39
31	34	-----	66	30	-----	114	-----	6.8	-----	27	34	-----
TOTAL	745	797.8	1,354	1,342	735	2,844	3,034	1,645.4	620.5	951	686.5	1,082
MEAN	24.0	26.6	43.7	43.3	25.3	91.7	101	53.1	20.7	30.7	22.1	36.1
MAX	34	35	66	70	29	169	149	105	36	46	39	55
MIN	17	9.8	29	28	23	29	59	5.6	8.5	27	4.2	14
CFSM	.30	.33	.54	.53	.31	1.13	1.24	.65	.25	.38	.27	.44
IN.	.34	.37	.62	.61	.34	1.30	1.39	.75	.28	.44	.31	.50

CAL YR 1971 TOTAL 15,992.61 MEAN 43.8 MAX 196 MIN .91 CFSM .54 IN 7.33
WTR YR 1972 TOTAL 15,837.20 MEAN 43.3 MAX 169 MIN 4.2 CFSM .53 IN 7.26

STREAMS TRIBUTARY TO LAKE HURON

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04144000 Shiawassee River at Byron, Mich.

LOCATION.--Lat 42°49'25", long 83°56'45", in NE1/4NE1/4 sec.23, T.5 N., R.4 E., Shiawassee County, on upstream side of highway bridge at Byron, 0.3 mile downstream from milldam which is just upstream from South Branch Shiawassee River.

DRAINAGE AREA.--368 sq mi.

PERIOD OF RECORD.--October 1947 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 811.54 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to Oct. 17, 1960, nonrecording gage and crest-stage gage at same site and datum.

AVERAGE DISCHARGE.--25 years, 235 cfs (8.67 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,210 cfs Apr. 21 (gage height, 9.09 ft); minimum, 28 cfs Oct. 12 (gage height, 3.91 ft).

Period of record: Maximum discharge, 2,900 cfs Apr. 1, 1960; maximum gage height, 12.58 ft May 15, 1956, Apr. 1, 1960; minimum discharge, 19 cfs Aug. 16, 1965; minimum gage height, 3.55 ft Sept. 16, 1960.

REMARKS.--Records good except those for the winter period, which are poor. Low flow slightly regulated at times by mills above station. Records of water temperature for the current year are published in Part 2 of this report.

REVISIONS.--WSP 1144: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	97	168	198	110	120	465	292	124	93	69	88
2	47	104	161	214	105	150	426	319	121	94	76	84
3	50	106	166	187	100	210	385	368	114	96	77	77
4	44	102	132	190	95	220	331	401	106	86	75	74
5	51	87	105	190	90	200	286	389	95	80	75	67
6	58	85	100	210	85	190	274	372	91	80	72	69
7	56	91	111	230	83	180	268	371	83	75	72	69
8	61	84	110	260	80	180	258	371	80	75	77	82
9	63	86	111	260	78	180	243	344	80	73	78	101
10	64	91	126	224	76	180	228	310	79	68	76	116
11	64	91	140	211	76	190	223	279	78	69	70	120
12	74	89	148	199	78	220	224	247	76	80	65	125
13	54	86	138	183	80	256	248	218	86	97	64	125
14	62	85	132	150	90	388	252	215	77	95	56	124
15	63	79	191	130	100	492	272	227	92	215	52	122
16	59	81	254	125	120	584	356	274	88	267	54	123
17	57	86	287	125	125	679	531	322	84	341	61	145
18	50	77	294	130	120	713	554	331	75	319	64	212
19	55	76	286	135	115	689	702	311	70	207	73	235
20	56	76	271	140	110	648	941	294	71	153	76	243
21	58	78	226	149	100	579	1,160	280	78	135	71	204
22	64	73	169	150	96	661	1,120	261	88	121	71	145
23	85	70	148	161	93	665	1,010	249	91	110	74	124
24	95	78	150	157	92	703	868	257	96	99	86	118
25	92	81	147	183	92	713	640	263	97	101	110	112
26	96	79	140	165	92	664	488	246	93	98	144	148
27	94	122	137	139	92	588	437	202	93	99	149	168
28	91	151	141	128	92	538	396	163	92	100	149	174
29	89	162	138	128	94	509	362	124	85	91	133	173
30	92	168	156	124	-----	488	322	115	86	78	100	153
31	96	-----	164	115	-----	473	-----	122	-----	68	100	-----
TOTAL	2,087	2,821	5,147	5,290	2,759	13,250	14,270	8,537	2,669	3,763	2,569	3,920
MEAN	67.3	94.0	166	171	95.1	427	476	275	89.0	121	82.9	131
MAX	96	168	294	260	125	713	1,160	401	124	341	149	243
MIN	44	70	100	115	76	120	223	115	70	68	52	67
CFSM	.18	.26	.45	.46	.26	1.16	1.29	.75	.24	.33	.23	.36
IN.	.21	.29	.52	.53	.28	1.34	1.44	.86	.27	.38	.26	.40

CAL YR 1971 TOTAL 67,414 MEAN 185 MAX 1,190 MIN 26 CFSM .50 IN 6.81
WTR YR 1972 TOTAL 67,082 MEAN 183 MAX 1,160 MIN 44 CFSM .50 IN 6.78

STREAMS TRIBUTARY TO LAKE HURON

04144500 Shiawassee River at Owosso, Mich.
(International hydrological decade station)

LOCATION.--Lat 43°00'54", long 84°10'52", in SW1/4 sec.12, T.7 N., R.2 E., Shiawassee County, on right bank on grounds of sewage-treatment plant, 1.5 miles north of Owosso.

DRAINAGE AREA.--538 sq mi.

PERIOD OF RECORD.--March 1931 to current year. Monthly discharge only for some periods, published in WSP 1307. Gage-height records for flood seasons collected in this vicinity 1904, 1910-30 are contained in reports of U.S. Weather Bureau.

GAGE.--Water-stage recorder. Datum of gage is 707.25 ft above mean sea level. Prior to Oct. 15, 1933, at site 1.5 miles upstream at datum 5.46 ft higher.

AVERAGE DISCHARGE.--41 years, 310 cfs (7.82 inches per year).

EXTREMES.--Current year: Maximum discharge, 3,240 cfs Apr. 17 (gage height, 7.44 ft); minimum, 48 cfs Nov. 23 (gage height, 1.88 ft).

Period of record: 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 the winter period, which are poor. Flow regulated below about 800 cfs by powerplant at Shiawassee town prior to February 1953. Records of suspended sediment loads for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1307: 1949 (M). WSP 1337: 1932, 1934, 1936-38, 1944.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	94	172	283	170	250	628	421	135	147	92	144
2	68	106	150	338	160	400	619	398	138	140	106	141
3	64	101	168	329	150	450	611	409	139	143	97	118
4	63	101	190	283	150	350	572	441	128	143	94	107
5	62	101	183	220	140	300	503	454	120	136	91	99
6	64	94	138	240	130	290	448	441	116	123	91	92
7	68	81	123	280	130	270	415	444	106	116	127	86
8	72	81	120	350	120	260	381	479	82	116	108	90
9	75	85	129	370	120	250	367	474	87	111	106	97
10	74	85	169	400	120	250	349	422	95	106	106	115
11	76	85	194	360	110	300	334	373	93	159	105	143
12	76	87	194	320	110	500	325	332	104	197	101	156
13	81	87	193	280	120	800	681	298	103	122	93	262
14	63	87	179	250	130	1,100	761	286	119	143	95	213
15	63	89	295	220	150	1,270	681	324	182	1,080	85	187
16	68	83	448	190	170	1,460	1,210	428	146	720	90	173
17	68	78	451	190	180	1,660	2,680	436	137	501	95	167
18	76	78	418	200	190	1,380	1,730	438	126	456	95	211
19	132	78	391	210	190	1,190	1,420	411	116	444	115	270
20	74	76	382	220	190	1,030	1,340	379	108	319	105	277
21	57	78	354	230	180	946	1,360	355	105	236	110	274
22	74	74	286	240	170	1,290	1,440	295	120	175	113	243
23	83	64	218	250	170	1,260	1,350	260	123	164	150	194
24	85	68	228	250	160	1,050	1,180	277	133	144	314	164
25	101	74	206	250	160	976	1,020	276	138	119	304	153
26	106	74	205	250	150	915	773	297	143	116	237	164
27	103	81	196	230	140	836	630	272	140	122	238	203
28	101	103	192	210	136	742	556	223	135	117	235	234
29	101	153	153	200	136	681	498	188	143	111	217	231
30	96	172	224	190	-----	649	453	163	143	98	199	225
31	94	-----	223	180	-----	625	-----	127	-----	90	156	-----
TOTAL	2,459	2,698	7,172	8,013	4,332	23,730	25,315	10,821	3,703	6,914	4,270	5,233
MEAN	79.3	89.9	231	258	149	765	844	349	123	223	138	174
MAX	132	172	451	400	190	1,660	2,680	479	182	1,080	314	277
MIN	57	64	120	180	110	250	325	127	82	90	85	86
CFSM	.15	.17	.43	.48	.28	1.42	1.57	.65	.23	.41	.26	.32
IN.	.17	.19	.50	.55	.30	1.64	1.75	.75	.26	.48	.30	.36

CAL YR 1971 TOTAL 98,325 MEAN 269 MAX 2,750 MIN 16 CFSM .50 IN 6.80
WTR YR 1972 TOTAL 104,660 MEAN 286 MAX 2,680 MIN 57 CFSM .53 IN 7.24

PEAK DISCHARGE, BASE, 1,500 CFS

DATE	TIME	G.H.	DISCHARGE
03-17	1200	6.02	1,980
04-17	0500	7.44	3,240
07-15	1100	5.80	1,500

STREAMS TRIBUTARY TO LAKE HURON

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04145000 Shiawassee River near Fergus, Mich.

LOCATION.--Lat 43°15'17", long 84°06'20", in sec.22, T.10 N., R.3 E., Saginaw County, on right bank at downstream side of county highway bridge, 1.2 miles east of Fergus, 1.8 miles upstream from Bear Creek, and 14 miles above mouth.

DRAINAGE AREA.--637 sq mi.

PERIOD OF RECORD.--October 1939 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 585.80 ft above mean sea level. Prior to Aug. 22, 1968, non-recording gage at same site and datum. Prior to Oct. 1, 1970, at datum 2.00 ft higher.

AVERAGE DISCHARGE.--33 years, 391 cfs (8.34 inches per year). 32 years, 391 cfs (8.34 inches per year); figure published in WRD Mich. 1971, in error.

EXTREMES.--Current year: Maximum discharge, 4,730 cfs Apr. 17 (gage height, 12.30 ft); minimum, 67 cfs Oct. 5 (gage height, 2.24 ft).

Period of record: Maximum discharge, 7,500 cfs Apr. 6, 1947 (includes overflow bypassing gage); maximum gage height, 15.44 ft, present datum, Mar. 29, 1960; minimum discharge, 27 cfs Aug. 8, 1966; minimum gage height, 1.83 ft Sept. 13, 14, 1971.

CORRECTION.--The maximum gage height given above for period of record supersedes that published in WRD Mich. 1971.

REMARKS.--Records fair except those for the winter period, which are poor. Some regulation at low stages by powerplant above Owosso prior to February 1953; occasional regulation at low stages since.

REVISIONS (WATER YEARS).--WSP 1337: 1940 (M), 1941-42, 1943 (M), 1944, 1945 (M), 1946, 1947 (M), 1948, 1950. WSP 1627: 1952, 1954 (M), 1957.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	110	170	330	200	250	860	605	188	137	124	157
2	77	120	201	400	190	400	888	571	195	140	132	165
3	74	120	203	350	180	500	968	546	195	141	138	149
4	71	120	211	300	170	450	996	563	190	141	123	131
5	69	116	237	260	160	400	904	596	171	134	119	119
6	69	116	193	300	160	360	756	594	161	128	113	113
7	69	107	154	350	150	340	645	588	149	118	125	107
8	70	98	131	400	150	320	560	608	132	115	148	107
9	71	100	132	450	140	310	521	630	111	114	128	104
10	72	104	154	500	140	310	508	599	110	113	122	107
11	74	100	201	470	134	350	494	535	111	109	119	119
12	75	101	201	430	140	500	465	489	114	168	115	140
13	75	106	193	370	140	800	980	444	127	173	107	174
14	75	103	190	300	150	1,300	1,260	414	119	136	100	263
15	75	100	257	250	170	1,700	1,120	437	366	604	104	211
16	75	102	461	220	200	2,000	1,390	481	344	1,380	98	185
17	75	98	467	220	210	2,300	4,100	557	209	770	105	174
18	80	91	418	230	220	2,000	3,290	557	168	596	101	176
19	100	94	459	240	220	1,700	2,270	540	144	613	100	233
20	160	97	383	250	220	1,500	1,980	508	131	527	110	281
21	100	93	347	260	210	1,300	1,850	468	123	397	101	285
22	80	89	301	280	200	1,600	1,880	437	122	303	115	287
23	100	81	310	290	200	1,890	1,880	349	129	249	127	263
24	100	85	254	300	190	1,580	1,700	366	128	221	169	221
25	110	85	242	300	180	1,400	1,480	359	140	193	361	186
26	120	89	211	280	180	1,310	1,240	361	142	165	300	185
27	120	93	207	260	170	1,230	940	388	142	168	249	196
28	120	99	203	240	170	1,090	824	335	136	161	249	245
29	120	122	214	230	170	936	734	285	136	152	237	277
30	110	170	240	220	-----	900	663	253	145	145	219	273
31	110	-----	270	210	-----	860	-----	229	-----	136	191	-----
TOTAL	2,773	3,109	7,815	9,490	5,114	31,886	38,146	14,692	4,778	8,647	4,649	5,633
MEAN	89.5	104	252	306	176	1,029	1,272	474	159	279	150	188
MAX	160	170	467	500	220	2,300	4,100	630	366	1,380	361	287
MIN	69	81	131	210	134	250	465	229	110	109	98	104
CFSM	.14	.16	.40	.48	.28	1.62	2.00	.74	.25	.44	.24	.30
IN.	.16	.18	.46	.55	.30	1.86	2.23	.86	.28	.50	.27	.33

CAL YR 1971 TOTAL 112,696 MEAN 309 MAX 3,390 MIN 39 CFSM .49 IN 6.58
WTR YR 1972 TOTAL 136,732 MEAN 374 MAX 4,100 MIN 69 CFSM .59 IN 7.98

STREAMS TRIBUTARY TO LAKE HURON

04146000 Farmers Creek near Lapeer, Mich.

LOCATION.—Lat 43°02'41", long 83°20'14", in sec.6, T.7 N., R.10 E., Lapeer County, on left bank at sewage-treatment plant at Michigan Home and Training School, 2.0 miles west of Lapeer.

DRAINAGE AREA.—55.2 sq mi.

PERIOD OF RECORD.—October 1932 to current year. 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. Prior to May 25, 1954, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.—40 years, 28.0 cfs (6.89 inches per year).

EXTREMES.—Current year: Maximum discharge, 229 cfs Apr. 19 (gage height, 16.82 ft); minimum, 2.6 cfs Aug. 14 (gage height, 15.05 ft).
Period of record: 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 the winter period, which are poor. 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), 1948-51 (M). WSP 1727: 1952 (M). WRD Mich. 1971: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	7.6	9.6	20	14	17	46	51	14	11	8.7	12
2	6.6	7.0	9.0	20	13	25	42	51	14	10	9.4	8.0
3	6.6	6.6	9.4	21	12	35	41	45	13	10	8.4	6.2
4	6.6	6.2	9.0	18	11	33	39	42	13	9.9	7.0	5.1
5	6.6	5.9	8.0	17	10	29	39	41	12	9.4	5.4	4.3
6	6.2	5.4	10	17	10	26	38	41	11	8.7	4.8	3.7
7	5.9	5.1	11	19	9.5	24	35	45	9.9	8.4	4.3	3.2
8	5.9	5.1	11	20	9.0	25	33	47	9.0	8.0	4.3	4.8
9	5.6	4.8	12	18	8.5	28	32	45	8.7	7.6	4.0	5.1
10	5.9	5.1	15	17	8.0	26	31	42	8.0	7.6	3.7	4.3
11	5.6	5.1	15	16	8.0	26	29	39	7.3	7.3	3.5	3.7
12	5.6	5.1	16	16	9.9	27	29	37	7.6	7.0	3.2	3.7
13	5.4	5.4	18	15	11	35	37	34	8.0	7.3	2.8	5.6
14	5.9	5.4	17	15	12	77	45	33	7.6	7.3	6.5	7.6
15	5.9	5.4	25	15	14	93	74	33	8.4	12	10	7.0
16	5.9	5.6	24	15	15	119	125	34	8.4	12	12	5.9
17	5.9	5.6	24	14	16	137	169	35	8.0	13	14	5.4
18	5.9	5.9	26	14	16	121	185	35	7.3	14	13	5.4
19	5.6	6.2	26	14	15	110	223	34	6.6	17	11	5.9
20	5.4	7.3	26	14	15	112	213	32	7.0	19	11	6.2
21	5.4	7.3	24	14	14	95	183	30	6.6	20	13	6.6
22	5.6	7.3	20	17	14	108	157	27	6.6	21	22	6.6
23	7.0	7.3	19	20	13	101	137	25	7.3	18	35	6.6
24	7.6	7.6	18	21	12	114	119	23	8.0	16	32	6.6
25	8.7	8.0	17	20	12	123	104	20	8.7	14	32	7.3
26	9.4	8.0	16	19	11	97	90	18	8.7	13	30	10
27	9.4	8.7	16	18	11	83	78	16	9.0	13	29	12
28	9.0	9.0	12	17	12	72	66	15	10	13	27	13
29	9.0	9.9	16	16	13	61	59	13	11	12	24	14
30	8.7	9.9	12	15	-----	54	53	13	11	11	19	14
31	8.4	-----	19	14	-----	50	-----	14	-----	9.4	16	-----
TOTAL	207.8	198.8	510.0	526	348.9	2,083	2,551	1,010	275.7	366.9	426.0	209.8
MEAN	6.70	6.63	16.5	17.0	12.0	67.2	85.0	32.6	9.19	11.8	13.7	6.99
MAX	9.4	9.9	26	21	16	137	223	51	14	21	35	14
MIN	5.4	4.8	8.0	14	8.0	17	29	13	6.6	7.0	2.8	3.2
CFSM	.12	.12	.30	.31	.22	1.22	1.54	.59	.17	.21	.25	.13
IN.	.14	.13	.34	.35	.24	1.40	1.72	.68	.19	.25	.29	.14

CAL YR 1971 TOTAL 8,989.2 MEAN 24.6 MAX 304 MIN 1.0 CFSM .45 IN 6.06
WTR YR 1972 TOTAL 8,713.9 MEAN 23.8 MAX 223 MIN 2.8 CFSM .43 IN 5.87

PEAK DISCHARGE (BASE, 160 CFS).—Apr. 19 (0900) 229 cfs (16.82 ft).

04147000 Holloway Reservoir near Otisville, Mich.

LOCATION.--Lat 43°07'15", long 83°29'45", in NW1/4 sec.11, T.8 N., R.8 E., Genesee County, in gatehouse on right side of Holloway Dam on Flint River, 3.5 miles southeast of Otisville.

DRAINAGE AREA.--526 sq mi.

PERIOD OF RECORD.--March 1954 to current year.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (levels by city of Flint).

EXTREMES.--Current year: Maximum contents, 772,000,000 cu ft June 4 (elevation, 755.02 ft); minimum, reservoir empty at times during October.

Period of record: Maximum contents, 996,000,000 cu ft Mar. 8, 1956 (elevation, 757.4 ft); minimum, reservoir empty at times during October, November, 1954, January, February, 1955, October, 1971.

REMARKS.--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 at 755 ft, three 20-foot radial gates with sill elevation of 745 ft, and 2 sluices (each 4 by 6 ft), one on each side with valve controls. Entrance elevation of sluiceways is 724 ft. Reservoir is used to regulate flow for sewage dilution for city of Flint.

COOPERATION.--Reservoir elevations furnished by city of Flint.

REVISIONS.--WSP 2111: Drainage area.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

Date	Elevation (feet)	Contents (millions of cubic feet)	Change in contents during month	
			Millions of cubic feet	Equivalent in cfs
Sept. 30	740.39	65.1	--	--
Oct. 31	738.26	32.9	-32.2	-12.0
Nov. 30	742.15	102	+69.1	+26.7
Dec. 31	750.09	418	+316	+120
Calendar year 1971	--	--	-71	-2.3
Jan. 31	751.20	485	+67	+25.0
Feb. 29	751.21	486	+1	+4
Mar. 31	749.04	357	-129	-48.2
Apr. 30	751.95	534	+177	+68.3
May 31	754.87	758	+224	+83.6
June 30	754.80	752	-6	-2.3
July 31	754.57	733	-19	-7.1
Aug. 31	754.79	751	+18	+6.7
Sept. 30	751.47	501	-250	-96.5
Water year 1971-72	--	--	+435.9	+13.8

STREAMS TRIBUTARY TO LAKE HURON

04147500 Flint River near Otisville, Mich.

LOCATION.--Lat 43°06'40", long 83°31'10", in SE1/4 sec.9, T.8 N., R.8 E., Genesee County, on left bank 20 ft downstream from bridge on State Highway 15, 1.5 miles downstream from Holloway Reservoir, 3.5 miles upstream from Power-Cullen drain, and 3.8 miles south of Otisville.

DRAINAGE AREA.--531 sq mi.

PERIOD OF RECORD.--October 1952 to current year.

GAGE.--Water-stage recorder. Datum of gage is 721.39 ft above mean sea level.

AVERAGE DISCHARGE.--20 years, 258 cfs (6.60 inches per year), adjusted for storage since 1954.

EXTREMES.--Current year: Maximum discharge, 2,180 cfs Apr. 20 (gage height, 11.15 ft); minimum, 2.1 cfs Oct. 11, 12 (gage height, 1.57 ft).

Period of record: Maximum discharge, 6,150 cfs Apr. 1, 1960 (gage height, 14.97 ft); minimum, 2.1 cfs Oct. 11, 12, 1971 (gage height, 1.57 ft).

REMARKS.--Records good. Flow regulated by Holloway Reservoir 1.5 miles above station (see preceding page).

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	53	3.7	21	121	557	671	496	65	100	117	226
2	52	49	3.6	21	114	551	658	170	90	98	117	246
3	52	49	3.6	21	115	542	561	170	100	100	117	239
4	188	49	3.5	22	111	535	497	170	112	97	117	235
5	286	49	3.6	46	104	528	496	172	129	95	117	235
6	345	50	3.8	79	102	410	438	132	134	83	114	233
7	441	50	3.7	99	99	241	346	97	99	61	112	233
8	62	39	3.7	110	94	240	347	96	92	61	109	231
9	2.8	22	3.9	116	90	237	267	97	99	59	107	232
10	2.3	22	4.4	120	88	235	175	97	89	60	104	230
11	2.1	22	5.4	130	86	236	175	135	78	73	105	229
12	2.2	12	6.3	138	83	242	135	248	77	87	104	228
13	2.4	11	10	153	83	245	89	318	78	86	104	230
14	20	7.8	19	143	85	278	87	322	75	97	106	230
15	50	7.5	23	128	96	457	89	260	89	110	106	228
16	49	7.5	22	121	104	631	219	200	92	105	107	229
17	47	7.4	21	108	112	765	597	201	93	105	108	230
18	47	7.4	21	98	119	1,140	905	203	89	105	107	232
19	47	7.5	20	98	123	1,250	1,440	205	82	106	106	230
20	47	7.0	20	110	124	1,310	2,130	207	80	107	106	205
21	48	6.7	20	118	124	1,470	1,780	208	93	111	115	170
22	49	5.7	20	131	126	1,610	1,490	174	111	117	151	167
23	49	4.6	21	150	132	1,520	1,440	117	102	115	196	165
24	48	4.1	20	179	136	1,410	900	89	100	112	306	163
25	48	3.7	21	200	137	1,310	501	71	101	111	409	161
26	49	3.8	21	197	137	1,290	721	83	103	112	401	163
27	49	4.2	22	192	139	1,320	716	86	105	114	366	161
28	49	4.2	22	182	140	1,360	712	87	109	113	338	158
29	49	4.1	21	160	324	1,220	709	78	108	114	306	157
30	52	4.0	21	144	-----	985	705	52	102	114	274	155
31	54	-----	21	131	-----	849	-----	55	-----	115	241	-----
TOTAL	2,340.8	574.2	435.2	3,666	3,448	24,974	19,996	5,096	2,876	3,043	5,293	6,231
MEAN	75.5	19.1	14.0	118	119	806	667	164	95.9	98.2	171	208
MAX	441	53	23	200	324	1,610	2,130	496	134	117	409	246
MIN	2.1	3.7	3.5	21	83	235	87	52	65	59	104	155
MEAN+	63.5	45.8	134	143	119	758	735	248	93.6	91.1	178	112
CFSM+	.12	.09	.25	.27	.22	1.43	1.38	.47	.18	.17	.34	.21
IN+	.14	.10	.29	.31	.24	1.65	1.54	.54	.20	.20	.39	.24

CAL YR 1971 TOTAL 88,349.2 MEAN 242 MAX 2,650 MIN 2.1 MEAN+ 240 CFSM+ .45 IN+ 6.14
WTR YR 1972 TOTAL 77,973.2 MEAN 213 MAX 2,130 MIN 2.1 MEAN+ 227 CFSM+ .43 IN+ 5.84

+Adjusted for change in contents in Holloway Reservoir.

STREAMS TRIBUTARY TO LAKE HURON

167

04147990 Butternut Creek near Genesee, Mich.

LOCATION.--Lat 43°08'09", long 83°35'57", in NE¼ NE¼ sec.2, T.8 N., R.7 E., Genesee County, on right bank 10 ft downstream from bridge on Frances Road, 2.3 miles upstream from mouth, and 2.0 miles northeast of Genesee.

DRAINAGE AREA.--34.5 sq mi.

PERIOD OF RECORD.--January 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 738 ft (from topographic map). Prior to June 11, 1970, nonrecording gage at same site and datum.

EXTREMES.--Maximum discharge, 248 cfs Apr. 16 (gage height, 7.99 ft); maximum gage height, 8.06 ft Mar. 14 (backwater from ice); minimum discharge, 1.2 cfs Dec. 1, result of freezeup; minimum gage height, 1.60 ft July 30, 31, Aug. 1.

Period of record: Maximum discharge, 248 cfs Apr. 16, 1972 (gage height, 7.99 ft); maximum gage height, 8.39 ft Mar. 15, 1971; minimum discharge, 1.2 cfs Dec. 1, 1971, result of freezeup; minimum gage height, 1.56 ft Aug. 8, 9, 1971.

REMARKS.--Records good except those for the winter period, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	2.2	4.3	7.5	9.0	12	34	18	6.0	4.0	2.5	18
2	1.9	2.3	4.2	7.2	8.5	17	35	24	6.9	3.6	3.1	14
3	1.9	2.2	3.6	6.7	8.0	15	34	23	6.3	3.5	3.4	13
4	2.1	2.2	3.5	6.5	7.5	13	34	21	5.4	3.3	3.1	11
5	2.2	2.1	3.6	6.0	7.4	11	31	18	4.8	3.5	2.9	9.7
6	2.3	2.0	4.6	6.0	7.2	14	29	18	4.5	3.2	2.9	8.8
7	2.5	1.9	5.7	6.3	7.0	20	24	20	4.2	3.0	3.9	8.1
8	2.8	2.1	5.3	6.7	6.8	30	23	24	3.9	3.1	4.2	7.9
9	2.8	2.2	5.4	8.4	6.6	20	19	22	3.9	3.3	3.9	7.7
10	2.8	2.3	10	15	6.5	14	19	18	3.7	3.9	3.5	7.5
11	2.6	2.4	12	10	6.6	16	19	16	3.7	3.4	3.2	7.4
12	2.4	3.3	7.7	7.0	7.0	25	20	14	3.9	3.2	3.1	7.4
13	2.8	2.9	5.8	5.3	8.0	45	77	13	4.3	3.3	2.9	7.4
14	2.8	2.4	5.0	5.6	9.0	150	47	14	4.2	4.0	4.3	7.5
15	2.7	2.3	35	6.0	11	110	38	20	8.3	21	5.0	7.4
16	2.6	2.2	29	6.2	10	80	73	22	7.2	13	5.8	7.0
17	2.5	2.3	14	6.6	9.0	69	185	18	5.5	8.6	15	6.7
18	2.3	2.3	9.0	7.8	8.5	67	95	15	4.6	6.3	9.7	7.5
19	2.2	2.6	6.0	12	8.5	67	82	12	4.2	5.5	7.2	9.2
20	2.2	2.8	5.0	10	8.0	66	72	11	4.1	4.8	6.0	7.9
21	2.2	2.8	5.5	9.0	8.0	80	57	9.2	4.3	4.1	5.2	7.0
22	3.2	2.7	6.0	13	8.0	203	50	8.1	5.4	3.7	7.5	6.3
23	4.3	2.5	5.5	18	8.0	87	45	7.5	6.3	3.3	35	5.9
24	3.8	2.5	5.5	16	8.0	81	38	7.2	6.4	3.0	110	5.7
25	3.3	2.6	5.5	15	8.0	66	33	6.6	6.4	2.9	138	5.7
26	2.8	2.7	6.0	14	8.0	53	29	6.1	5.8	2.8	69	7.0
27	2.7	3.0	6.0	13	8.5	43	25	5.5	5.1	2.9	60	8.2
28	2.7	3.4	6.0	12	9.0	38	23	5.2	4.3	2.9	52	7.3
29	2.6	3.6	7.0	11	10	34	20	5.0	4.1	2.7	43	6.9
30	2.2	4.0	8.3	10	-----	32	19	5.3	4.1	2.6	33	6.8
31	2.2	-----	9.0	9.5	-----	32	-----	6.1	-----	2.5	24	-----
TOTAL	80.5	76.8	249.0	293.3	235.6	1,610	1,329	432.8	151.8	140.9	672.3	247.9
MEAN	2.60	2.56	8.03	9.46	8.12	51.9	44.3	14.0	5.06	4.55	21.7	8.26
MAX	4.3	4.0	35	18	11	203	185	24	8.3	21	138	18
MIN	1.9	1.9	3.5	5.3	6.5	11	19	5.0	3.7	2.5	2.5	5.7
CFSM	.08	.07	.23	.27	.24	1.50	1.28	.41	.15	.13	.63	.24
IN.	.09	.08	.27	.32	.25	1.74	1.43	.47	.16	.15	.72	.27

CAL YR 1971 TOTAL 5,009.4 MEAN 13.7 MAX 215 MIN 1.9 CFSM .40 IN 5.40

WTR YR 1972 TOTAL 5,519.9 MEAN 15.1 MAX 203 MIN 1.9 CFSM .44 IN 5.95

PEAK DISCHARGE (BASE, 120 CFS)

DATE	TIME	G.H.	DISCHARGE
03-14	---	---	about 180
03-22	0300	7.78	237
04-16	2400	7.99	248
08-25	0200	7.22	209

STREAMS TRIBUTARY TO LAKE HURON

04148140 Kearsley Creek near Davison, Mich.

LOCATION.—Lat 43°02'01", long 83°34'53", in NE¼ sec.12, T.7 N., R.7 E., Genesee County, on right bank 10 ft upstream from bridge on State Highway 21, 1.4 miles downstream from Black Creek, and 3.3 miles west of Davison.

DRAINAGE AREA.—99.6 sq mi.

PERIOD OF RECORD.—October 1965 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 760 ft (from topographic map).

AVERAGE DISCHARGE.—7 years, 56.0 cfs (7.64 inches per year).

EXTREMES.—Current year: Maximum discharge, 635 cfs Apr. 17 (gage height, 9.87 ft); minimum, 3.6 cfs Oct. 2 (gage height 2.80 ft).

Period of record: Maximum discharge, 707 cfs Feb. 2, 1968 (gage height, 10.29 ft); minimum, 2.7 cfs July 9, 1966; minimum gage height, 2.69 ft Sept. 12, 1969.

REMARKS.—Records good except those for the winter period, which are poor. Some diurnal fluctuation caused by small dams, and occasional diversion for sprinkler irrigation above station.

REVISIONS.—WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	22	19	50	28	70	88	88	20	10	7.9	11
2	4.1	17	19	43	26	80	86	84	24	10	13	9.4
3	7.4	12	22	40	25	72	86	65	24	15	14	9.3
4	7.8	15	17	35	24	68	81	91	22	14	13	9.5
5	8.1	18	18	29	23	66	85	96	20	13	13	11
6	8.9	18	21	30	22	62	83	83	18	11	12	10
7	10	17	23	33	21	60	76	83	15	10	16	9.6
8	9.3	16	24	29	21	57	63	94	13	11	13	17
9	9.8	13	31	32	20	50	58	92	12	12	14	15
10	10	13	50	41	20	45	56	94	11	11	14	29
11	9.3	12	43	42	20	40	57	86	10	11	14	36
12	10	14	39	38	21	45	56	62	12	10	14	29
13	11	15	42	35	23	80	195	47	12	11	12	34
14	12	15	42	27	27	230	175	47	12	14	12	31
15	11	16	94	25	33	230	235	66	22	87	12	29
16	13	16	65	25	30	210	299	70	16	78	12	29
17	13	16	48	25	28	200	583	79	15	91	21	26
18	12	16	48	28	26	200	463	73	13	89	16	41
19	12	18	52	40	24	200	433	57	12	58	18	33
20	12	19	43	35	23	200	337	55	10	44	17	28
21	12	21	36	30	27	187	229	51	13	41	14	29
22	18	20	29	45	26	349	215	47	20	34	20	27
23	17	19	29	60	25	237	232	29	28	23	39	23
24	14	23	30	50	24	225	197	18	29	17	25	17
25	16	19	31	45	23	236	173	16	30	13	34	13
26	19	18	32	42	23	220	165	16	29	13	27	38
27	21	20	32	39	25	172	139	15	27	14	27	35
28	21	20	33	36	30	144	112	15	26	11	18	34
29	20	19	36	34	35	133	91	14	23	8.6	14	38
30	19	23	32	32	-----	125	89	17	15	8.7	13	34
31	23	-----	59	30	-----	96	-----	18	-----	8.7	11	-----
TOTAL	394.7	520	1,139	1,125	723	4,389	5,237	1,768	553	802.0	519.9	734.8
MEAN	12.7	17.3	36.7	36.3	24.9	142	175	57.0	18.4	25.9	16.8	24.5
MAX	23	23	94	60	35	349	583	96	30	91	39	41
MIN	4.0	12	17	25	20	40	56	14	10	8.6	7.9	9.3
CFSM	.13	.17	.37	.36	.25	1.43	1.76	.57	.18	.26	.17	.25
IN.	.15	.19	.43	.42	.27	1.64	1.96	.66	.21	.30	.19	.27

CAL YR 1971 TOTAL 18,525.0 MEAN 50.8 MAX 568 MIN 3.6 CFSM .51 IN 6.92

WTR YR 1972 TOTAL 17,905.4 MEAN 48.9 MAX 583 MIN 4.0 CFSM .49 IN 6.69

PEAK DISCHARGE (BASE, 250 CFS).—Mar. 22 (0900) 398 cfs (7.97 ft); Apr. 17 (0400) 635 cfs (9.87 ft).

STREAMS TRIBUTARY TO LAKE HURON

169

04148160 Gilkey Creek near Flint, Mich.

LOCATION.--Lat 43°01'27", long 83°37'32", in NE¼ SW¼ sec.10, T.7 N., R.7 E., Genesee County, on right bank 25 ft downstream from bridge on extension of Arapaho Street, 5.1 miles upstream from mouth, and 3.5 miles east of Flint.

DRAINAGE AREA.--6.29 sq mi.

PERIOD OF RECORD.--January 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 750 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 162 cfs Apr. 16 (gage height, 6.55 ft); minimum, 0.02 cfs Oct. 3, Aug. 12, 13, 14, 16, 21, 22, minimum gage height, 0.65 ft Aug. 22.

Period of record: Maximum discharge, 162 cfs Apr. 16, 1972 (gage height, 6.55 ft); no flow on many days during 1970.

REMARKS.--Records fair except those for the winter period, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	.08	.25	1.8	.47	1.0	6.7	4.4	.62	1.5	.05	.09
2	.03	.18	.08	1.7	.45	4.5	6.4	5.7	.73	1.0	.54	.09
3	.03	.18	.05	1.1	.43	2.5	5.1	3.4	.48	.50	.39	.12
4	.08	.10	.04	.70	.42	1.5	5.4	2.6	.33	.25	.19	.12
5	.05	.08	.15	.70	.41	1.2	4.5	2.1	.27	1.3	.05	.10
6	.80	.05	1.4	.70	.40	1.0	4.2	2.3	.26	.08	.03	.09
7	.52	.04	1.1	.70	.40	2.0	3.3	5.6	.23	.08	.39	.15
8	.15	.04	.42	.62	.40	5.5	2.8	8.4	.19	.07	.29	1.3
9	.05	.24	1.1	3.6	.42	3.5	2.4	5.0	.17	.14	.18	1.2
10	.04	.20	11	6.4	.45	2.0	2.7	3.2	.15	.09	.07	.34
11	.04	.12	3.4	5.0	.52	1.8	2.8	2.4	.15	.07	.03	.21
12	.04	.08	.70	2.2	.80	2.1	2.6	2.0	.47	.05	.03	.20
13	.46	.04	.42	1.4	1.5	15	35	1.7	.31	.19	.03	13
14	.43	.04	.25	1.1	1.3	81	19	5.1	.96	.46	.02	3.9
15	.12	.04	30	.80	1.1	44	35	9.7	4.8	30	.03	1.0
16	.05	.04	7.1	.60	1.0	23	70	5.9	.74	6.3	.85	.53
17	.08	.04	2.2	.40	.85	18	86	3.9	.37	1.3	2.2	1.3
18	.04	.04	1.1	.80	.75	12	24	2.8	.29	.70	.66	23
19	.04	.46	.88	6.0	.70	9.0	18	2.0	.24	.74	.17	4.9
20	.04	.23	.88	4.5	.65	7.0	16	1.6	.43	.45	.04	1.3
21	.09	.22	.76	3.5	.62	11	10	1.3	.33	.26	.03	.72
22	3.9	.05	.54	15	.58	42	9.9	1.1	1.1	.18	4.8	.55
23	5.8	.04	.50	13	.56	14	7.8	.90	.73	.15	3.9	.42
24	.67	.06	.58	5.6	.54	8.4	6.3	.80	.49	.08	11	.36
25	.25	.04	.54	4.5	.54	6.2	5.1	.70	.40	.05	8.6	.49
26	.18	.04	.82	1.2	.54	5.0	4.3	.61	.35	.04	2.0	14
27	.15	.78	.70	.90	.54	4.3	3.5	.51	.30	.11	.77	6.3
28	.10	.68	.76	.70	.54	3.8	3.1	.48	.30	.05	.49	1.7
29	.08	.40	.54	.60	.54	3.9	2.7	.50	.70	.04	.30	1.0
30	.08	.66	1.7	.55	-----	4.6	2.4	2.0	3.5	.03	.19	1.1
31	.08	-----	3.8	.50	-----	4.9	-----	.81	-----	.03	.12	-----
TOTAL	14.51	5.29	73.76	86.87	18.42	345.7	407.0	89.51	20.39	46.29	38.44	79.58
MEAN	.47	.18	2.38	2.80	.64	11.2	13.6	2.89	.68	1.49	1.24	2.65
MAX	5.8	.78	30	15	1.5	81	86	9.7	4.8	30	11	23
MIN	.03	.04	.04	.40	.40	1.0	2.4	.48	.15	.03	.02	.09
CFSM	.07	.03	.38	.45	.10	1.78	2.16	.46	.11	.24	.20	.42
IN.	.09	.03	.44	.51	.11	2.04	2.41	.53	.12	.27	.23	.47

CAL YR 1971 TOTAL 1,037.11 MEAN 2.84 MAX 87 MIN .02 CFSM .45 IN 6.13
WTR YR 1972 TOTAL 1,225.76 MEAN 3.35 MAX 86 MIN .02 CFSM .53 IN 7.25

PEAK DISCHARGE (BASE, 40 CFS)

DATE	TIME	G.H.	DISCHARGE
12-15	0700	3.32	62
03-14	1700	4.21	90
03-22	0700	3.18	60
04-13	1500	2.80	50
04-15	0600	2.99	56
04-16	2400	6.55	162
07-15	1000	2.79	46
08-24	1600	2.96	52

04148200 Swartz Creek near Holly, Mich.

LOCATION.--Lat 42°49'39", long 83°37'42", in SW¼ sec.15, T.5 N., R.7 E., Oakland County, on right bank 25 ft downstream from bridge on Elliott Road and 2.4 miles north of Holly.

DRAINAGE AREA.--12.0 sq mi.

PERIOD OF RECORD.--January 1956 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 905 ft (from topographic map).

AVERAGE DISCHARGE.--16 years, 6.80 cfs (7.70 inches per year).

EXTREMES.--Current year: Maximum discharge, 50 cfs Apr. 17 (gage height, 2.99 ft); minimum, 1.3 cfs Oct. 13, Nov. 7, Aug. 19; minimum gage height, 1.69 ft June 11, 12.

Period of record: Maximum discharge, 91 cfs Feb. 4, 1968 (gage height, 3.69 ft); minimum, 0.10 cfs on many days in 1963, 1964, and 1965.

REMARKS.--Records good except those for the winter period and those for period of no gage-height record, which are poor.

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	1.6	2.4	7.9	3.3	3.5	13	9.1	3.1	31	3.1	1.7
2	1.5	1.7	2.1	7.6	3.2	5.6	12	9.7	3.0	25	4.4	1.8
3	1.5	1.7	2.0	7.1	3.0	6.0	11	9.4	2.9	17	4.1	3.4
4	2.0	1.7	1.9	6.6	2.9	5.0	10	9.5	2.5	12	3.5	2.7
5	1.8	1.7	1.8	6.0	2.8	4.3	9.5	9.5	2.3	8.9	2.5	2.3
6	1.7	1.6	2.3	5.6	2.7	4.0	9.0	9.3	2.2	6.8	2.0	2.1
7	1.7	1.4	3.2	5.4	2.6	5.0	8.5	10	1.9	5.5	2.7	2.0
8	1.6	1.4	3.2	5.3	2.4	7.0	8.3	11	1.8	4.8	3.2	5.9
9	1.6	1.4	3.4	5.1	2.4	6.5	8.2	11	1.7	4.2	3.1	6.3
10	1.7	1.4	4.7	5.2	2.4	5.5	8.2	9.5	1.7	3.8	2.6	5.3
11	1.5	1.5	6.2	5.2	2.4	5.0	7.8	8.4	1.7	3.3	2.4	4.5
12	1.4	1.5	5.5	5.0	2.5	7.0	7.9	7.9	1.7	2.9	2.2	4.0
13	1.4	1.5	4.5	4.7	2.6	12	12	7.2	1.7	3.1	2.1	5.2
14	1.5	1.5	4.1	4.2	2.9	18	14	9.7	1.9	3.9	1.7	6.1
15	1.5	1.5	6.6	3.8	3.2	35	18	16	2.3	20	1.7	5.4
16	1.5	1.4	8.5	3.6	3.5	35	29	15	2.3	23	1.7	4.7
17	1.5	1.5	7.8	3.7	3.8	30	49	13	2.4	19	2.7	4.0
18	1.5	1.4	6.5	3.8	3.7	25	47	12	2.4	13	2.8	4.9
19	1.5	1.6	5.8	4.0	3.6	23	46	10	2.7	11	2.0	5.0
20	1.5	1.8	5.4	4.3	3.4	21	43	9.2	3.4	8.1	1.7	4.8
21	1.5	1.8	5.1	4.7	3.1	25	37	7.7	4.1	6.5	1.6	4.2
22	2.3	1.8	4.8	5.4	2.9	40	32	6.7	5.0	5.4	1.6	3.6
23	2.9	1.7	4.5	7.0	2.8	40	28	6.0	5.7	4.5	2.3	3.2
24	3.2	1.5	4.4	6.0	2.6	30	24	5.4	6.2	3.7	2.9	3.0
25	3.1	1.5	4.6	5.5	2.5	25	21	4.8	6.4	3.1	3.3	2.8
26	2.8	1.5	4.8	5.0	2.5	22	18	4.3	6.0	2.4	2.9	5.7
27	2.8	1.8	4.9	4.5	2.4	19	15	4.4	5.4	2.7	2.8	7.4
28	2.7	2.1	4.9	4.2	2.4	17	13	2.3	5.3	2.4	2.6	6.5
29	2.5	2.3	5.2	4.0	2.4	16	11	2.5	12	2.8	2.3	5.8
30	2.1	2.5	6.4	3.7	-----	15	9.2	2.7	32	4.4	2.1	5.4
31	1.8	-----	9.4	3.5	-----	14	-----	3.0	-----	3.3	1.9	-----
TOTAL	59.3	49.3	146.9	157.6	82.9	526.4	579.6	256.2	133.7	267.5	78.5	129.7
MEAN	1.91	1.64	4.74	5.08	2.86	17.0	19.3	8.26	4.46	8.63	2.53	4.32
MAX	3.2	2.5	9.4	7.9	3.8	40	49	16	32	31	4.4	7.4
MIN	1.4	1.4	1.8	3.5	2.4	3.5	7.8	2.3	1.7	2.4	1.6	1.7
CFSM	.16	.14	.40	.42	.24	1.42	1.61	.69	.37	.72	.21	.36
IN.	.18	.15	.46	.49	.26	1.63	1.80	.79	.41	.83	.24	.40

CAL YR 1971 TOTAL 2,552.61 MEAN 6.99 MAX 63 MIN .22 CFSM .58 IN 7.91
 WTR YR 1972 TOTAL 2,467.60 MEAN 6.74 MAX 49 MIN 1.4 CFSM .56 IN 7.65

NOTE.--No gage-height record Jan. 20 to Apr. 9.

STREAMS TRIBUTARY TO LAKE HURON

171

04148300 Swartz Creek at Flint, Mich.

LOCATION.—Lat 42°59'16", long 83°43'57", in NW¼ NW¼ sec.26, T.7 N., R.6 E., Genesee County, on right bank 6 feet downstream from bridge on south Ballenger Highway, in Flint, 3.6 miles upstream from mouth.

DRAINAGE AREA.—115 sq mi.

PERIOD OF RECORD.—January 1970 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 730 ft (from topographic map). Prior to Sept. 4, 1970, nonrecording gage at same site and datum.

EXTREMES.—Current year: Maximum discharge, 860 cfs Apr. 17 (gage height, 7.45 ft); minimum, 2.5 cfs Oct. 3 (gage height, 1.32 ft).
Period of record: Maximum discharge, 860 cfs Apr. 17, 1972; maximum gage height, 8.40 ft Feb. 20, 1971 (backwater from ice); minimum discharge, 1.2 cfs Aug. 19, 1971 (gage height, 1.16 ft).

REMARKS.—Records good except those for the winter period, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	5.6	10	55	25	35	117	101	32	37	13	10
2	3.4	8.5	9.0	47	24	75	119	109	28	23	24	16
3	2.9	6.2	9.0	43	23	80	111	98	25	19	18	9.5
4	5.3	6.4	8.5	39	22	55	108	88	23	19	14	7.0
5	3.6	6.2	11	37	21	45	101	80	20	17	11	6.2
6	6.7	5.6	23	38	20	40	96	76	18	16	9.5	6.2
7	4.8	5.3	19	39	20	60	88	90	14	15	19	6.4
8	5.0	5.3	16	40	19	100	79	105	13	19	14	24
9	4.5	7.0	23	39	18	70	73	99	12	19	12	16
10	4.0	6.2	78	39	18	45	70	84	11	17	9.5	10
11	4.0	5.6	50	38	18	55	70	74	10	16	8.5	9.0
12	4.0	5.3	30	37	19	60	67	67	14	14	8.0	9.0
13	11	5.3	22	35	20	119	377	63	13	21	7.0	67
14	6.2	5.0	20	33	22	424	332	79	20	36	6.7	31
15	4.8	5.3	201	31	24	483	248	161	65	333	6.2	22
16	4.5	5.0	109	30	26	406	383	148	28	268	15	17
17	4.0	5.0	63	30	28	345	812	104	17	114	19	23
18	4.2	5.6	45	30	28	258	593	86	12	74	12	90
19	4.5	12	40	31	27	203	368	75	9.5	65	9.5	55
20	4.5	11	37	33	25	187	312	67	17	54	6.4	34
21	6.2	9.0	34	36	23	213	267	62	22	46	5.6	27
22	43	6.7	35	42	22	555	241	57	22	39	25	22
23	31	6.4	34	56	21	374	217	54	19	34	25	19
24	14	6.7	32	52	20	236	194	49	18	30	70	17
25	9.0	6.7	37	45	19	194	172	44	17	27	51	19
26	6.7	6.2	35	40	19	161	152	42	14	25	32	87
27	6.2	17	31	37	18	144	134	37	12	24	23	78
28	5.9	11	32	34	18	131	119	34	12	21	19	52
29	6.2	16	33	31	18	122	107	31	14	18	16	42
30	6.4	13	70	28	-----	117	98	40	59	16	13	38
31	6.2	-----	66	26	-----	114	-----	35	-----	12	11	-----
TOTAL	236.3	226.1	1,262.5	1,171	625	5,506	6,225	2,339	610.5	1,488	532.9	869.3
MEAN	7.62	7.54	40.7	37.8	21.6	178	208	75.5	20.4	48.0	17.2	29.0
MAX	43	17	201	56	28	555	812	161	65	333	70	90
MIN	2.9	5.0	8.5	26	18	35	67	31	9.5	12	5.6	6.2
CFSM	.07	.07	.35	.33	.19	1.55	1.81	.66	.18	.42	.15	.25
IN.	.08	.07	.41	.38	.20	1.78	2.01	.76	.20	.48	.17	.28

CAL YR 1971 TOTAL 20,101.4 MEAN 55.1 MAX 729 MIN 1.3 CFSM .48 IN 6.50
WTR YR 1972 TOTAL 21,091.6 MEAN 57.6 MAX 812 MIN 2.9 CFSM .50 IN 6.82

PEAK DISCHARGE (BASE, 450 CFS)

DATE	TIME	G.H.	DISCHARGE
03-14	2100	6.07	595
03-22	1300	6.07	595
04-13	1600	5.53	497
04-17	0500	7.45	860

STREAMS TRIBUTARY TO LAKE HURON

041484400 Thread Creek near Flint, Mich.

LOCATION.—Lat 42°58'30", long 83°38'09", in SE¼ SE¼ sec.28, T.7 N., R.7 E., Genesee County, on left bank 20 ft downstream from bridge on Bristol Road, 6.0 miles upstream from mouth, and 4.0 miles southeast of Flint.

DRAINAGE AREA.—55.6 sq mi.

PERIOD OF RECORD.—January 1970 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 770 ft (from topographic map). Prior to May 13, 1970, nonrecording gage at same site and datum.

EXTREMES.—Current year: Maximum discharge, 505 cfs Apr. 16 (gage height, 5.95 ft); minimum daily, 2.8 cfs Oct. 3, 6.
Period of record: Maximum discharge, 601 cfs Mar. 14, 1971 (gage height, 6.27 ft); no flow Aug. 7, 8, 10, 1971; minimum gage height, 0.45 ft Aug. 8, 10, 1971.

REMARKS.—Records poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	4.1	5.6	27	12	15	42	36	11	11	7.0	6.0
2	3.4	5.3	5.4	23	12	40	43	42	11	8.0	10	9.5
3	2.8	4.9	5.4	20	11	30	41	37	10	6.5	8.0	6.0
4	4.2	4.2	5.5	19	11	25	41	36	8.8	5.8	6.5	4.5
5	3.0	4.2	7.0	18	10	20	38	34	7.8	5.4	5.0	3.6
6	2.8	4.4	10	18	10	22	37	32	7.0	5.2	4.5	3.7
7	4.1	4.2	8.5	18	9.5	30	34	38	5.7	5.0	8.0	3.9
8	3.2	4.2	8.0	19	9.0	50	31	40	5.3	5.4	7.0	14
9	3.5	6.0	13	19	8.8	30	29	38	4.7	5.6	6.4	11
10	3.2	5.8	40	19	8.5	22	27	37	4.7	5.4	5.2	7.0
11	2.9	6.0	30	19	8.6	27	26	33	4.4	5.0	4.5	5.6
12	3.8	5.3	18	19	9.0	40	26	28	4.7	4.8	4.0	5.5
13	4.3	5.0	13	18	9.5	50	151	24	6.3	7.0	3.7	30
14	5.2	4.7	12	17	10	170	118	31	4.9	20	3.5	15
15	3.2	4.9	100	16	11	200	131	56	13	140	3.5	10
16	3.0	4.9	60	15	13	170	219	46	6.8	80	6.0	8.0
17	3.2	4.9	35	15	14	140	328	48	6.0	50	9.0	15
18	3.1	4.9	25	15	14	110	297	35	5.0	35	6.0	35
19	3.2	6.3	20	16	13	85	214	26	4.6	27	5.0	19
20	3.2	6.1	18	17	12	80	166	22	5.2	24	4.0	15
21	3.2	7.2	17	18	11	90	132	20	7.3	21	3.5	12
22	9.7	6.0	16	21	11	230	117	17	12	17	6.0	9.5
23	12	6.1	15	27	10	150	98	15	9.0	15	15	9.0
24	6.1	6.1	15	25	9.5	100	87	14	7.5	13	35	8.0
25	4.9	6.5	15	22	9.0	80	75	12	6.5	12	25	10
26	5.5	6.0	15	20	8.8	65	64	11	5.5	11	15	45
27	5.3	8.7	15	18	8.5	57	54	9.4	5.0	9.5	11	35
28	4.9	8.5	15	16	8.5	50	46	8.3	4.7	8.0	8.0	25
29	4.7	7.5	17	15	8.5	45	41	7.5	6.0	7.0	7.0	18
30	4.4	6.0	25	14	-----	44	36	11	18	6.5	6.0	16
31	4.4	-----	35	13	-----	41	-----	11	-----	5.5	5.0	-----
TOTAL	134.2	168.9	639.4	576	300.7	2,308	2,789	855.2	218.4	581.6	253.3	414.8
MEAN	4.33	5.63	20.6	18.6	10.4	74.5	93.0	27.6	7.28	18.8	8.17	13.8
MAX	12	8.7	100	27	14	230	328	56	18	140	35	45
MIN	2.8	4.1	5.4	13	8.5	15	26	7.5	4.4	4.8	3.5	3.6
CFSM	.08	.10	.37	.33	.19	1.34	1.67	.50	.13	.34	.15	.25
IN.	.09	.11	.43	.39	.20	1.54	1.87	.57	.15	.39	.17	.28

CAL YR 1971 TOTAL 8,563.03 MEAN 23.5 MAX 388 MIN 0 CFSM .42 IN 5.73

WTR YR 1972 TOTAL 9,239.50 MEAN 25.2 MAX 328 MIN 2.8 CFSM .45 IN 6.18

PEAK DISCHARGE (BASE, 200 CFS).

NOTE.—No gage-height record Dec. 9 to Jan. 9, Jan. 15 to Feb. 24, June 23 to Sept. 30.

DATE	TIME	G.H.	DISCHARGE
03-14	—	—	about 300
03-22	unknown	unknown	about 350
04-13	1100	4.97	236
04-16	2300	5.95	505

STREAMS TRIBUTARY TO LAKE HURON

173

04148500 Flint River near Flint, Mich.

LOCATION.--Lat 43°02'20", long 83°46'10", in SW1/4 sec.4, T.7 N., R.6 E., Genesee County, on left bank on grounds of sewage treatment plant, 1.2 miles upstream from Pirnie Creek, 1.8 miles downstream from Flint, and 5.0 miles downstream from Swartz Creek

DRAINAGE AREA.--954 sq mi.

PERIOD OF RECORD.--September 1903 to March 1904 (gage heights only), August 1932 to current year. Gage-height records for flood seasons collected in this vicinity 1911-32, 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.--40 years, 532 cfs (7.57 inches per year), adjusted for storage since 1954.

EXTREMES.--Current year: Maximum discharge, 5,240 cfs Apr. 16 (gage height, 10.25 ft); minimum, 88 cfs Oct. 19 (gage height, 2.53 ft).

Period of record: 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 (see sta 04147000). Occasional diversion for industrial use. Since Dec. 17, 1967, flow contains up to 50 cfs as sewage effluent which originates outside the basin.

REVISIONS (WATER YEARS).--WSP 954: 1941. WSP 1337: 1933-34 (M), 1935-37. WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	133	160	135	238	287	678	1,190	1,080	203	238	207	328
2	128	175	119	250	273	760	1,120	689	206	204	338	378
3	118	129	112	228	284	682	974	632	211	259	258	350
4	174	160	107	216	261	649	861	607	221	220	235	334
5	427	156	102	190	211	623	856	541	220	208	218	339
6	357	154	118	192	237	545	938	521	251	206	231	348
7	339	147	146	223	231	639	809	566	238	192	332	343
8	343	150	137	234	225	583	650	614	209	177	245	413
9	191	164	139	311	216	463	655	530	205	178	235	355
10	164	157	444	381	206	392	544	447	199	183	217	332
11	223	139	324	393	207	362	466	432	163	166	211	357
12	257	131	208	375	240	422	461	486	198	165	207	376
13	209	125	166	394	237	821	1,310	561	217	206	197	740
14	189	114	133	348	274	2,240	1,140	716	205	348	211	589
15	165	111	1,080	295	357	2,240	1,110	949	550	1,690	220	658
16	148	113	627	271	308	1,990	2,200	783	267	787	285	560
17	174	113	329	270	295	1,840	4,800	620	211	486	351	522
18	189	115	226	286	289	1,970	3,170	553	193	428	278	1,150
19	110	136	171	421	276	1,960	2,800	506	192	433	242	655
20	170	135	174	346	240	2,000	3,070	434	205	370	212	580
21	153	131	185	303	300	2,230	3,000	424	231	339	213	356
22	318	115	172	506	298	3,780	2,520	439	299	316	416	156
23	382	112	166	632	285	3,070	2,160	361	256	278	528	202
24	233	113	176	522	256	2,570	2,170	319	228	261	982	208
25	176	113	160	470	284	2,200	1,200	268	230	235	1,040	187
26	173	105	187	403	277	1,950	1,240	233	257	221	792	383
27	171	128	174	419	263	1,930	1,110	214	239	239	675	277
28	169	140	180	395	289	1,930	1,080	203	220	226	538	208
29	166	126	156	362	316	1,930	1,040	198	239	213	488	195
30	161	151	254	325	-----	1,610	1,020	297	275	199	441	253
31	159	-----	243	299	-----	1,440	-----	232	-----	201	411	-----
TOTAL	6,469	4,018	7,050	10,498	7,762	46,499	45,664	15,455	7,038	9,872	11,454	12,132
MEAN	209	134	227	339	268	1,500	1,522	499	235	318	369	404
MAX	427	175	1,080	632	357	3,780	4,800	1,080	550	1,690	1,040	1,150
MIN	110	105	102	190	206	362	461	198	163	165	197	156
MEAN+	197	161	347	364	268	1,452	1,590	583	233	311	376	308
CFSM+	.21	.17	.36	.38	.28	1.52	1.67	.61	.24	.33	.39	.32
IN+	.24	.19	.42	.44	.30	1.75	1.86	.70	.27	.38	.45	.36

CAL YR 1971 TOTAL 172,298 MEAN 472 MAX 4,340 MIN 82 MEAN+ 470 CFSM+ .49 IN+ 6.70
WTR YR 1972 TOTAL 183,911 MEAN 502 MAX 4,800 MIN 102 MEAN+ 516 CFSM+ .54 IN+ 7.36

+Adjusted for change in contents in Holloway Reservoir.

STREAMS TRIBUTARY TO LAKE HURON

04148720 Brent Run near Montrose, Mich.

LOCATION.--Lat 43°10'12", long 83°50'03", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.23, T.9 N., R.5 E., Genesee County, on right bank 10 ft downstream from bridge on Morrish Road, 0.8 mile upstream from Central-Stadler Drain, 3.0 miles upstream from mouth, and 3.1 miles east of Montrose.

DRAINAGE AREA.--18.3 sq mi.

PERIOD OF RECORD.--January 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 655 ft (from topographic map). Prior to Aug. 26, 1970, nonrecording gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 534 cfs Apr. 17 (gage height, 5.64 ft); maximum gage height, 6.38 ft Mar. 15 (backwater from ice); minimum discharge, 3.2 cfs July 6; minimum gage height, 1.13 ft Oct. 4.

Period of record: Maximum discharge, 698 cfs Mar. 15, 1971 (gage height, 6.15 ft); maximum gage height, 7.08 ft Mar. 15, 1971 (backwater from ice); minimum discharge, 2.6 cfs Aug. 9, 17, 1971 (gage height, 1.01 ft).

REMARKS.--Records fair except those for the winter period, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	4.3	9.4	10	5.8	15	15	6.9	12	5.5	3.5	5.6
2	5.3	5.1	6.7	7.2	5.6	25	17	10	11	4.7	4.5	5.6
3	5.3	6.7	4.8	8.0	5.5	16	15	9.4	9.4	4.1	9.9	5.6
4	4.1	6.2	4.5	7.7	5.4	13	15	8.0	8.0	3.9	5.2	4.5
5	5.3	5.6	4.5	7.5	5.3	13	15	7.9	5.6	4.1	4.4	4.3
6	5.8	6.0	4.1	7.5	5.2	14	12	8.3	5.5	3.6	4.3	4.1
7	8.1	6.4	12	7.5	5.2	20	11	11	6.5	3.9	5.8	4.9
8	7.3	5.0	9.2	8.0	5.3	35	9.7	14	5.8	4.1	13	6.3
9	5.6	5.0	6.9	9.0	5.4	30	9.0	13	5.9	4.7	6.9	6.1
10	6.2	6.2	21	11	5.6	17	8.4	9.0	5.6	6.0	5.8	5.3
11	4.7	7.5	41	14	5.8	20	8.9	8.9	4.4	5.9	5.0	4.3
12	4.3	6.5	8.9	11	6.0	25	9.4	8.8	5.1	4.5	5.4	4.3
13	4.7	6.4	5.3	9.0	6.3	55	43	9.0	10	4.5	4.7	6.4
14	7.7	6.2	4.6	8.0	6.8	120	76	10	8.7	8.7	3.9	18
15	6.9	5.0	15	7.0	8.0	200	18	21	28	29	3.8	9.3
16	5.3	4.4	98	6.7	7.6	100	38	20	24	82	4.8	6.5
17	5.3	5.0	13	6.6	7.2	80	315	12	7.9	11	13	5.8
18	5.5	5.8	7.9	6.6	7.0	70	80	10	6.5	7.6	8.8	16
19	4.4	6.5	6.7	10	6.6	60	22	9.5	5.1	13	5.6	31
20	5.6	7.7	5.2	14	6.4	60	29	9.3	4.9	9.4	4.9	8.7
21	6.0	7.7	5.4	11	6.2	60	16	9.0	6.0	6.6	3.8	7.4
22	8.6	6.7	5.4	15	6.0	123	11	7.8	6.5	6.2	7.3	6.7
23	34	4.7	5.4	29	5.8	59	13	7.6	12	5.6	46	6.3
24	21	4.7	5.2	20	5.8	14	8.7	8.5	8.2	4.6	40	5.5
25	7.1	5.3	5.2	12	5.7	11	8.2	8.8	7.1	4.2	45	4.9
26	5.1	5.8	5.0	9.5	5.7	8.6	8.6	8.4	6.0	3.8	12	6.8
27	5.8	5.5	6.2	8.5	5.7	7.4	7.6	7.9	5.3	4.2	7.6	14
28	5.0	8.8	5.3	7.5	5.7	7.7	7.1	6.8	5.7	5.1	6.4	6.7
29	4.7	8.4	6.6	7.0	5.7	9.1	6.9	5.4	5.2	3.9	6.0	6.2
30	5.0	7.1	8.6	6.5	-----	14	6.8	9.3	5.6	3.6	5.8	6.4
31	4.8	-----	8.9	6.0	-----	17	-----	20	-----	3.5	5.5	-----
TOTAL	220.0	182.2	355.9	308.3	174.3	1,318.8	860.3	315.5	247.5	271.5	308.6	233.5
MEAN	7.10	6.07	11.5	9.95	6.01	42.5	28.7	10.2	8.25	8.76	9.95	7.78
MAX	34	8.8	98	29	8.0	200	315	21	28	82	46	31
MIN	4.1	4.3	4.1	6.0	5.2	7.4	6.8	5.4	4.4	3.5	3.5	4.1
CFSM	.39	.33	.63	.54	.33	2.32	1.57	.56	.45	.48	.54	.43
IN.	.45	.37	.72	.63	.35	2.68	1.75	.64	.50	.55	.63	.47

CAL YR 1971 TOTAL 4,874.6 MEAN 13.4 MAX 500 MIN 3.0 CFSM .73 IN 9.91
WTR YR 1972 TOTAL 4,796.4 MEAN 13.1 MAX 315 MIN 3.5 CFSM .72 IN 9.75

PEAK DISCHARGE (BASE, 80 CFS)

DATE	TIME	G.H.	DISCHARGE
12-16	1100	3.35	150
03-15	---	---	about 300
03-22	1700	3.64	216
04-14	0200	3.28	153
04-17	0900	5.64	534
07-16	0700	3.37	153

STREAMS TRIBUTARY TO LAKE HURON

175

04149000 Flint River near Fosters, Mich.

LOCATION.--Lat 43°18'30", long 83°57'13", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 35, T.11 N., R.4 E., Saginaw County, on left bank 20 ft downstream from bridge on State Highway 13, 2 miles west of Fosters and 6.5 miles downstream from Silver Creek. Records include flow of Birch Run.

DRAINAGE AREA.--1,189 sq mi, includes that of Birch Run above State Highway 13.

PERIOD OF RECORD.--October 1939 to current year. 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.--Water-stage recorder. Altitude of gage is 600 ft (from topographic map). Prior to Oct. 1, 1969, nonrecording gage at site 2.2 miles upstream at datum 582.22 ft above mean sea level.

AVERAGE DISCHARGE.--33 years, 670 cfs (7.65 inches per year).

EXTREMES.--Current year: Maximum discharge, 6,750 cfs Apr. 17 (gage height, 15.0 ft); minimum daily, 101 cfs Nov. 18.
Period of record: Maximum discharge, 19,000 cfs Apr. 7, 1947 (including flow bypassing gage); maximum gage height, 18.6 ft Feb. 2, 1968, site and datum then in use; minimum discharge observed, 27 cfs Aug. 6, 1941.
Flood of March 1904 reached a stage of 18.4 ft (from U. S. Weather Bureau data), site and datum then in use.

REMARKS.--Records poor. 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. WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	160	160	189	350	410	500	1,430	1,040	290	250	260	489
2	155	162	155	350	390	900	1,170	984	250	250	400	407
3	146	210	136	340	370	850	1,130	858	250	220	300	439
4	139	138	130	320	350	800	1,020	696	250	270	270	416
5	251	157	120	292	330	750	971	647	250	290	260	394
6	405	154	132	271	320	700	971	611	250	211	280	391
7	391	154	232	300	310	700	971	611	260	211	380	391
8	362	147	215	334	300	680	796	683	270	202	300	403
9	360	175	192	351	300	600	683	683	220	192	270	458
10	213	175	292	500	290	500	635	587	220	192	250	412
11	180	162	873	540	290	450	587	515	211	211	242	387
12	249	163	464	540	300	500	539	503	182	192	252	398
13	255	144	351	540	320	800	1,760	551	230	192	260	453
14	244	138	261	405	350	2,000	1,860	635	270	400	260	718
15	179	124	328	396	450	2,500	1,390	846	376	2,000	260	558
16	177	124	1,130	380	500	2,500	1,340	896	808	900	268	618
17	165	127	773	370	450	2,300	5,300	786	343	650	352	592
18	206	101	398	370	400	2,190	6,150	647	250	550	430	750
19	217	141	320	380	370	2,080	4,550	551	230	500	350	961
20	253	163	286	400	350	1,990	4,040	515	220	450	317	686
21	177	147	263	450	370	2,000	3,980	432	220	400	286	539
22	177	154	283	600	390	3,160	3,870	444	260	350	326	421
23	257	120	286	850	390	4,530	3,170	444	343	330	1,490	260
24	398	136	247	750	390	3,140	2,710	365	280	310	1,190	270
25	230	130	246	650	390	2,550	2,080	332	250	290	1,960	311
26	187	132	253	600	390	2,050	1,350	290	250	270	1,310	300
27	187	135	271	580	400	1,860	1,200	270	240	260	910	479
28	182	199	271	540	400	1,840	1,080	250	240	250	783	376
29	179	179	263	500	400	2,050	1,040	230	230	240	647	311
30	162	172	271	450	-----	2,020	1,040	230	230	240	575	300
31	160	-----	300	430	-----	1,560	-----	387	-----	240	537	-----
TOTAL	7,003	4,523	9,931	14,129	10,670	51,050	58,813	17,519	8,173	11,513	15,975	13,888
MEAN	226	151	320	456	368	1,647	1,960	565	272	371	515	463
MAX	405	210	1,130	850	500	4,530	6,150	1,040	808	2,000	1,960	961
MIN	139	101	120	271	290	450	539	230	182	192	242	260
CAL YR 1971	TOTAL	209,384	MEAN	574	MAX	5,580	MIN	75				
WTR YR 1972	TOTAL	223,187	MEAN	610	MAX	6,150	MIN	101				

STREAMS TRIBUTARY TO LAKE HURON

04149500 Flint River near Alicia, Mich.

LOCATION.--Lat 43°18'40", long 84°02'00", in SE1/4 sec.31, T.11 N., R.4 E., Saginaw County, on left bank 100 ft downstream from the Prairie Farms Association flood-pumping station, 2.8 miles north of Alicia, and 4 miles upstream from mouth.

PERIOD OF RECORD.--November 1948 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 577.00 ft above mean sea level.

EXTREMES.--Current year: Maximum gage height, 9.34 ft Apr. 18; minimum, 1.95 ft Dec. 11.

Period of record: Maximum gage height, 13.70 ft Apr. 3, 1960; minimum, less than 1.5 ft during many days in 1949, 1958, 1959, 1963, 1964, 1966-69.

REMARKS.--Records represent stages in the Shiawassee Flats area.

MEAN GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.93	4.01	3.90	3.53		4.16	5.63	4.58	4.26	4.40	4.70	5.05
2	4.14	3.28	3.52	3.89		4.05	5.36	4.74	4.31	4.51	4.48	5.51
3	3.92	3.48	3.60	3.80	3.67	3.83	5.33	4.56	4.21	4.97	4.77	5.35
4	3.73	3.79	3.73	4.20	3.60	3.76	5.33	5.02	4.60	4.60	5.12	5.01
5	4.02	3.11	3.52	3.96	3.48	3.63	5.32	4.83	4.44	4.48	4.52	4.80
6	4.24	3.12	3.48	3.35	3.42	3.87	5.48	4.42	4.41	4.40	4.70	4.83
7	4.39	3.57	3.83	3.49		3.57	5.61	4.97	4.32	4.29	5.01	4.55
8	3.88	3.87	3.60	4.18		3.85	5.19	5.02	4.07	4.30	4.69	5.14
9	4.00	3.17	3.54	3.23		4.27	4.49	5.18	4.74	4.31	4.83	5.30
10	4.01	3.77	3.60	3.76		4.17	4.28	4.64	4.96	4.21	4.90	4.80
11	3.81	3.88	2.75	3.73	3.46	3.99	4.35	4.52	4.28	4.43	4.38	4.68
12	4.15	3.83	3.87	4.03	3.41	4.11	4.61	4.55	4.13	4.18	4.68	4.95
13	4.02	4.13	3.82	3.82	3.52	4.94	4.94	4.27	4.45	4.54	4.73	4.67
14	3.84	3.72	4.09	3.89	3.49	5.80	5.88	4.19	4.08	4.39	4.85	5.18
15	4.00	3.42	4.02	3.81	3.60	7.62	6.14	4.54	4.50	4.37	5.10	4.72
16	4.51	3.86	4.01		3.82	9.02	6.29	4.84	5.16	5.20	4.55	4.98
17	4.15	3.64	4.61	4.07	3.62	8.87	8.19	4.89	4.91	4.97	4.75	4.54
18	3.95	3.42	4.70	4.06	3.40	8.35	9.26	4.85	4.72	4.76	4.82	4.95
19	3.83	3.36	4.18	4.03	3.75	7.92	9.02	4.86	4.50	4.90	4.87	5.40
20	3.92	3.30	4.11	3.59	4.02	7.77	8.41	4.55	4.27	4.61	4.76	4.80
21	3.86	4.28	4.06	3.74	3.48	7.80	7.79	4.60	4.93	4.72	4.43	4.63
22	4.00	4.30	4.69	4.12	3.79	8.18	7.23	4.75	5.49	4.58	4.66	5.04
23	4.64	3.70	3.68	4.01	3.61	8.84	6.63	4.52	5.58	4.54	5.22	4.83
24	4.16	3.62	3.55	3.67	3.54	8.89	6.39	4.46	4.86	4.58	5.66	4.67
25	3.99	3.40	4.19	3.91	3.58	8.53	6.20	4.62	4.67	4.88	5.87	4.57
26	3.81	3.55	3.79	4.44	3.48	7.74	5.66	4.52	4.53	4.90	5.96	4.54
27	3.48	3.60	4.05	3.94	3.32	7.04	5.43	4.39	4.44	4.76	5.78	5.34
28	3.63	3.75	3.60	4.27	3.57	6.69	5.01	4.26	4.44	4.78	5.80	4.72
29	4.10	4.70	3.49		3.59	6.54	4.86	4.09	4.64	4.68	5.90	4.69
30	3.93	4.62	5.16		-----	6.20	4.58	4.30	4.71	4.59	5.72	5.05
31	3.14	-----	4.59		-----	5.84	-----	4.61	-----	4.46	5.30	-----

04150000 South Branch Cass River near Cass City, Mich.

LOCATION.--Lat 43°34'01", long 83°06'43", in SW¼ NW¼ sec.7, T.13 N., R.12 E., Sanilac County, on left bank 1.5 miles downstream from bridge on State Highway 53, 3.9 miles southeast of Cass City, 4.2 miles upstream from confluence with North Branch.

DRAINAGE AREA.--251 sq mi.

PERIOD OF RECORD.--October 1948 to current year. Monthly discharge only for some periods, published in WSP 1307. Prior to October 1963, published as East Branch Cass River near Cass City.

GAGE.--Water-stage recorder. Datum of gage is 719.5 ft above mean sea level. Prior to Nov. 8, 1952, nonrecording gage at site 1.5 miles upstream at different datum.

AVERAGE DISCHARGE.--24 years, 115 cfs (6.22 inches per year).

EXTREMES.--Current year: Maximum discharge, 3,800 cfs Mar. 22 (gage height, 12.69 ft); minimum, 4.2 cfs Oct. 5-8, 12, 13, 21.

Period of record: Maximum discharge, 6,400 cfs Mar. 28, 1967 (gage height, 14.86 ft); minimum, 0.2 cfs Sept. 20-23, 1955, Aug. 19, 20, 1958.

REMARKS.--Records good except those for winter periods, which are poor.

REVISIONS (WATER YEARS).--WSP 1337: 1949-50. WSP 1707: 1951-53, 1959.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	4.9	9.3	26	23	21	196	66	27	33	7.6	13
2	5.3	6.7	9.0	25	22	21	187	97	24	35	8.8	12
3	4.9	6.4	7.7	24	22	21	224	123	21	39	10	11
4	4.6	5.6	7.2	24	21	21	234	103	22	34	9.4	11
5	4.4	5.2	6.9	23	21	21	229	84	20	29	8.9	12
6	4.4	5.2	8.1	23	21	20	199	72	17	24	9.4	11
7	4.4	5.0	10	22	20	23	127	71	14	20	10	10
8	4.4	5.0	12	22	20	24	106	68	12	16	11	10
9	4.8	5.5	14	21	19	26	105	61	11	15	11	9.3
10	5.0	5.8	23	20	17	33	112	55	11	16	11	7.9
11	4.9	5.8	55	21	16	50	147	49	11	16	11	7.3
12	4.5	6.1	52	21	15	80	159	45	12	15	11	7.4
13	4.6	6.3	32	21	15	140	264	42	13	14	10	8.1
14	5.1	6.1	22	21	18	200	369	43	13	13	9.1	7.9
15	5.2	5.8	69	21	23	300	314	45	45	22	8.6	7.3
16	4.8	5.4	248	21	24	450	349	68	70	76	8.5	7.0
17	4.8	5.2	133	22	25	540	2,180	58	60	92	10	7.6
18	4.8	5.5	80	22	26	560	974	52	50	70	11	7.4
19	4.8	6.0	60	22	26	540	401	47	42	58	9.5	7.5
20	4.5	6.5	47	23	26	520	284	45	35	41	8.7	6.7
21	4.3	7.6	40	23	26	600	213	46	28	29	8.2	6.7
22	5.1	8.0	35	23	26	3,500	177	45	25	22	9.0	6.3
23	6.5	6.6	31	23	25	2,300	214	44	26	17	10	6.1
24	6.7	6.8	31	23	24	1,500	176	43	27	14	12	5.8
25	7.0	6.4	35	23	23	700	142	37	28	11	16	5.9
26	7.0	6.6	34	24	23	460	116	31	29	10	17	7.2
27	6.5	7.9	35	24	22	380	99	27	28	10	25	7.7
28	5.7	9.7	39	24	22	330	86	24	25	9.8	27	7.3
29	5.2	10	38	23	21	300	77	21	28	9.0	24	9.5
30	4.8	11	35	23	-----	270	69	23	32	9.1	20	10
31	4.8	-----	28	23	-----	240	-----	33	-----	8.7	17	-----
TOTAL	159.6	194.6	1,286.2	701	632	14,191	8,529	1,668	806	827.6	379.7	253.9
MEAN	5.15	6.49	41.5	22.6	21.8	458	284	53.8	26.9	26.7	12.2	8.46
MAX	7.0	11	248	26	26	3,500	2,180	123	70	92	27	13
MIN	4.3	4.9	6.9	20	15	20	69	21	11	8.7	7.6	5.8
CFSM	.02	.03	.17	.09	.09	1.82	1.13	.21	.11	.11	.05	.03
IN.	.02	.03	.19	.10	.09	2.10	1.26	.25	.12	.12	.06	.04

CAL YR 1971 TOTAL 38,480.5 MEAN 105 MAX 4,460 MIN 3.2 CFSM .42 IN 5.70
WTR YR 1972 TOTAL 29,628.6 MEAN 81.0 MAX 3,500 MIN 4.3 CFSM .32 IN 4.39

PEAK DISCHARGE (BASE, 1,100 CFS).--Mar. 22 (1400) 3,800 cfs (12.69 ft); Apr. 17 (1300) 3,140 cfs (10.48 ft).

STREAMS TRIBUTARY TO LAKE HURON

04150500 Cass River at Cass City, Mich.

LOCATION.--Lat 43°35'03", long 83°10'34", in NE¼ NE¼ sec.4, T.13 N., R.11 E., Tuscola County, on left bank 600 ft downstream from bridge on Cemetery Road, 0.3 mile downstream from confluence of North and South Branches, and 1.1 miles south of Cass City.

DRAINAGE AREA.--370 sq mi, approximately.

PERIOD OF RECORD.--October 1947 to current year. 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. Prior to Nov. 14, 1952, nonrecording gage at site 600 ft upstream at present datum.

AVERAGE DISCHARGE.--25 years, 188 cfs (6.90 inches per year).

EXTREMES.--Current year: Maximum discharge, 5,480 cfs Mar. 22 (gage height, 13.18 ft); minimum, 5.2 cfs Oct. 8.

Period of record: Maximum discharge, 8,460 cfs Mar. 20, 1948 (gage height, 15.80 ft, from graph based on gage readings); minimum, 0.50 cfs Sept. 26, 1948.

REMARKS.--Records good except those for winter periods, which are poor.

REVISIONS (WATER YEARS).--WSP 1337: 1949-50. WSP 1727: 1948 (M), 1950.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.4	8.1	21	70	62	62	485	139	44	60	13	19
2	7.9	9.6	19	66	62	61	419	180	41	62	14	17
3	7.1	10	18	64	61	62	481	210	41	69	16	16
4	6.5	9.7	17	64	60	62	495	195	37	60	16	15
5	5.9	9.0	17	64	60	64	516	177	34	46	15	15
6	5.8	8.8	19	62	58	65	502	158	30	38	15	15
7	5.8	9.1	24	62	58	66	353	151	26	32	16	15
8	5.8	9.1	28	60	56	70	323	140	22	27	17	16
9	6.4	9.4	34	60	54	75	278	128	19	27	19	16
10	6.5	10	51	60	50	130	285	117	17	30	19	15
11	6.7	10	90	60	47	170	337	106	17	31	18	14
12	6.7	11	103	60	45	180	382	97	17	27	18	13
13	7.8	11	100	60	45	300	521	90	18	27	17	13
14	8.1	11	90	62	47	600	703	89	18	28	16	13
15	8.5	11	126	62	51	900	689	87	55	39	15	12
16	8.8	10	331	62	58	1,100	774	108	112	67	14	12
17	8.6	10	259	62	64	1,200	2,510	114	80	94	16	12
18	8.9	11	200	62	70	1,200	1,470	148	69	80	16	11
19	8.7	11	180	62	72	1,150	790	122	56	74	14	11
20	8.3	12	154	62	74	1,200	586	98	43	62	13	10
21	7.9	14	129	63	74	1,860	442	84	36	47	12	9.8
22	9.6	15	115	64	72	4,520	371	74	35	37	13	9.0
23	10	14	105	65	70	3,000	403	65	36	29	14	8.7
24	11	13	98	65	68	1,770	350	57	39	24	18	8.2
25	12	13	100	66	65	1,370	308	51	44	20	24	8.2
26	13	12	105	66	63	1,070	263	45	44	18	26	9.4
27	12	16	102	66	63	866	220	40	41	18	29	10
28	10	19	95	65	63	809	186	37	35	17	32	10
29	9.6	22	85	64	62	711	164	32	36	15	29	11
30	8.9	24	78	64	64	621	148	35	48	14	25	13
31	8.5		74	63		520		42		14	22	
TOTAL	260.7	362.8	2,967	1,957	1,754	25,834	15,754	3,216	1,190	1,233	561	377.3
MEAN	8.41	12.1	95.7	63.1	60.5	833	525	104	39.7	39.8	18.1	12.6
MAX	13	24	331	70	74	4,520	2,510	210	112	94	32	19
MIN	5.8	8.1	17	60	45	61	148	32	17	14	12	8.2
CFSM	.02	.03	.26	.17	.16	2.25	1.42	.28	.11	.11	.05	.03
IN.	.03	.04	.30	.20	.18	2.60	1.58	.32	.12	.12	.06	.04

CAL YR 1971 TOTAL 67,728.9 MEAN 186 MAX 5,010 MIN 3.6 CFSM .50 IN 6.81
WTR YR 1972 TOTAL 55,466.8 MEAN 152 MAX 4,520 MIN 5.8 CFSM .41 IN 5.58

PEAK DISCHARGE (BASE, 1,400 CFS).--Mar. 22 (1700) 5,480 cfs (13.18 ft); Apr. 17 (1400) 3,430 cfs (11.06 ft).

STREAMS TRIBUTARY TO LAKE HURON

179

04150800 Cass River at Wahjamega, Mich.

LOCATION.—Lat 43°27'02", long 83°26'29", in NW¼ NW¼ sec.20, T.12 N., R.9 E., Tuscola County, on right bank 90 ft upstream from bridge on Chambers Road, on grounds of Caro State Hospital at Wahjamega, 1.9 miles downstream from Michigan Sugar Co. dam, and 40 miles upstream from mouth.

DRAINAGE AREA.—637 sq mi.

PERIOD OF RECORD.—October 1968 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 650 ft (from topographic map). Prior to June 19, 1969, nonrecording gage at bridge 90 ft downstream at present datum.

EXTREMES.—Current year: Maximum discharge, 7,150 cfs Mar. 23 (gage height, 16.45 ft); minimum, 25 cfs Oct. 5 (gage height, 2.95 ft).
Period of record: Maximum discharge, 7,610 cfs Mar. 16, 1971 (gage height, 16.91 ft); minimum, 22 cfs Sept. 22, 1969, Aug. 9, 10, 16, 17, 18, 19, 20, 21, 22, 1971.

REMARKS.—Records good except those for winter periods, which are fair. Some regulation by dam at Michigan Sugar Co., 1.9 miles above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	38	60	162	120	120	882	295	130	142	42	78
2	33	40	49	170	120	120	787	380	120	140	100	70
3	30	41	59	148	120	120	854	446	108	138	98	62
4	28	41	49	148	120	120	906	402	106	130	74	54
5	26	39	49	132	115	120	927	355	92	114	57	52
6	27	36	53	128	110	125	899	322	86	98	53	52
7	30	34	64	136	110	125	720	315	76	86	66	54
8	27	34	74	128	105	130	581	295	64	78	78	66
9	30	36	84	134	100	145	536	268	68	92	78	57
10	30	39	120	152	100	250	518	242	56	100	70	52
11	29	40	178	174	85	310	596	224	52	122	62	50
12	30	40	206	180	82	352	662	206	56	212	62	50
13	33	41	194	160	86	564	783	194	64	116	57	53
14	41	40	174	140	92	963	1,200	190	70	122	64	56
15	38	40	258	130	112	1,290	1,080	194	305	174	59	50
16	35	40	506	125	122	2,110	1,260	210	476	224	52	47
17	32	40	556	125	130	2,280	2,590	220	292	268	53	45
18	33	39	357	125	140	2,300	3,300	224	214	234	56	44
19	34	40	300	124	142	2,220	1,610	220	174	196	53	44
20	33	42	250	148	140	2,070	1,130	190	154	170	49	40
21	33	46	200	160	140	2,480	864	172	154	150	42	39
22	44	45	170	178	140	4,790	714	154	140	120	50	39
23	52	39	172	165	135	6,040	773	142	146	100	83	38
24	47	44	190	150	132	3,300	707	132	170	82	258	36
25	46	41	146	140	130	2,340	605	120	194	70	311	38
26	45	44	178	140	125	1,770	527	108	182	60	204	44
27	45	50	172	135	120	1,420	449	98	156	66	166	44
28	45	56	176	130	118	1,310	385	92	134	57	146	39
29	41	66	142	130	114	1,200	340	82	122	53	128	41
30	39	70	130	125	-----	1,060	310	86	132	47	104	46
31	38	-----	118	125	-----	941	-----	130	-----	44	92	-----
TOTAL	1,109	1,281	5,434	4,447	3,405	42,485	27,495	6,708	4,293	3,805	2,867	1,480
MEAN	35.8	42.7	175	143	117	1,370	917	216	143	123	92.5	49.3
MAX	52	70	556	180	142	6,040	3,300	446	476	268	311	78
MIN	26	34	49	124	82	120	310	82	52	44	42	36
CFSM	.06	.07	.27	.22	.18	2.15	1.44	.34	.22	.19	.15	.08
IN.	.06	.07	.32	.26	.20	2.48	1.61	.39	.25	.22	.17	.09

CAL YR 1971 TOTAL 127,494 MEAN 349 MAX 6,590 MIN 22 CFSM .55 IN 7.45
WTR YR 1972 TOTAL 104,809 MEAN 286 MAX 6,040 MIN 26 CFSM .45 IN 6.12

PEAK DISCHARGE (BASE, 2,400 CFS).—Mar. 23 (0500) 7,150 cfs (16.45 ft); Apr. 18 (0200) 4,200 cfs (12.84 ft).

STREAMS TRIBUTARY TO LAKE HURON

04151500 Cass River at Frankenmuth, Mich.
(International hydrological decade station)

LOCATION.—Lat 43°19'40", long 83°44'53", in NW¼ SE¼ sec.27, T.11 N., R.6 E., Saginaw County, on right bank 2,000 ft below dam in Frankenmuth, 3,600 ft above highway bridge on Dehmel Road, 3.4 miles upstream from Dead Creek, and 17 miles upstream from mouth.

DRAINAGE AREA.—848 sq mi.

PERIOD OF RECORD.—February 1908 to March 1909, July 1935 to September 1936, June 1939 to current year.

GAGE.—Water-stage recorder. Datum of gage is 583.96 ft above mean sea level (levels by Michigan Department of Natural Resources). February 1908 to March 1909, nonrecording gage at site 2,000 ft upstream at datum 1.81 ft lower. July 18 to Sept. 11, 1935, nonrecording gage, Sept. 12, 1935, to Sept. 30, 1936, and June 20, 1939, to Sept. 30, 1949, water-stage recorder, at site 3,600 ft downstream at datum 0.04 ft higher.

AVERAGE DISCHARGE.—34 years (1935-36, 1939-72), 451 cfs (7.22 inches per year).

EXTREMES.—Current year: Maximum discharge, 7,510 cfs Mar. 23 (gage height, 18.50 ft); minimum, 15 cfs Oct. 13 (gage height, 2.89 ft), regulation by stop logs in dam.

Period of record: Maximum discharge, 17,700 cfs Mar. 18, 1942 (gage height, 20.88 ft), site and datum then in use; maximum gage height, 23.37 ft Feb. 3, 1968 (backwater from ice); minimum daily discharge, about 1.5 cfs Aug. 6, 1944.

REMARKS.—Records good except those for winter periods, which are fair. Occasional regulation by dams above station. Prior to 1950, regulation at low and medium flows by mill above station. Records of suspended sediment loads for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).—WSP 1307: 1936 (M), 1940 (M). WSP 1727: 1952. WSP 1911: 1952.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	53	108	226	195	180	1,130	405	203	188	68	175
2	55	57	84	276	190	180	1,070	477	196	184	95	155
3	54	64	92	253	190	185	1,060	580	176	179	152	140
4	48	65	93	231	190	190	1,150	569	151	170	128	126
5	43	61	88	214	185	190	1,170	494	134	158	103	115
6	43	57	91	200	185	195	1,140	446	121	140	90	107
7	47	54	104	200	185	200	1,020	438	111	125	98	104
8	52	53	114	200	180	210	763	415	100	115	122	119
9	51	53	123	200	175	220	681	383	102	110	125	123
10	52	57	157	200	160	300	651	344	103	130	118	107
11	52	60	236	200	140	500	699	312	88	130	106	98
12	104	63	269	200	130	580	774	284	86	206	100	99
13	18	62	268	200	130	700	925	260	96	217	95	110
14	37	62	239	200	130	1,300	1,280	251	107	168	110	124
15	61	62	326	200	150	1,800	1,340	259	643	229	193	115
16	59	63	588	200	190	2,800	1,420	287	1,020	313	136	100
17	54	64	734	200	210	2,900	2,610	297	601	314	172	92
18	50	64	568	200	215	2,800	4,310	280	381	301	152	99
19	51	66	415	205	220	2,800	2,590	281	280	262	128	98
20	49	68	428	210	220	2,800	1,680	254	230	224	109	91
21	48	72	362	210	220	3,000	1,290	220	220	199	96	81
22	58	76	277	210	220	4,980	1,040	196	213	184	154	77
23	68	69	211	210	210	7,110	1,000	175	225	154	574	75
24	76	71	270	215	210	5,460	998	162	262	128	1,030	74
25	72	71	245	220	200	2,990	860	147	324	111	1,600	73
26	70	71	226	220	195	2,250	735	135	314	100	1,020	80
27	68	80	252	215	190	1,830	640	125	261	97	587	87
28	66	94	254	210	185	1,570	553	114	212	98	425	87
29	62	107	230	205	185	1,470	484	106	180	89	322	83
30	59	114	224	200	-----	1,330	432	104	179	80	252	84
31	54	-----	195	200	-----	1,220	-----	183	-----	72	206	-----
TOTAL	1,732	2,033	7,871	6,530	5,385	54,240	35,495	8,983	7,319	5,175	8,666	3,098
MEAN	55.9	67.8	254	211	186	1,750	1,183	290	244	167	280	103
MAX	104	114	734	276	220	7,110	4,310	580	1,020	314	1,600	175
MIN	18	53	84	200	130	180	432	104	86	72	68	73
CFSM	.07	.08	.30	.25	.22	2.06	1.40	.34	.29	.20	.33	.12
IN.	.08	.09	.35	.29	.24	2.38	1.56	.39	.32	.23	.38	.14

CAL YR 1971 TOTAL 162,180 MEAN 444 MAX 7,990 MIN 18 CFSM .52 IN 7.11
WTR YR 1972 TOTAL 146,527 MEAN 400 MAX 7,110 MIN 18 CFSM .47 IN 6.43

PEAK DISCHARGE (BASE, 3,500 CFS).—Mar. 23 (1800) 7,510 cfs (18.50 ft); Apr. 18 (1200) 4700 cfs (15.62 ft).

04152500 Tobacco River at Beaverton, Mich.

LOCATION.—Lat 43°52'43", long 84°28'18", in NW¼ SE¼ sec.7, T.17 N., R.1 W., Gladwin County, on left bank 15 ft downstream from bridge on Glidden Road, 1 mile downstream from dam at Beaverton, and 2 miles upstream from Venison Creek.

DRAINAGE AREA.—487 sq mi.

PERIOD OF RECORD.—July 1948 to current year.

GAGE.—Water-stage recorder. Datum of gage is 683.27 ft above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.—24 years, 365 cfs (10.18 inches per year).

EXTREMES.—Current year: Maximum discharge, 5,120 cfs Aug. 27 (gage height, 10.53 ft); minimum, 147 cfs June 26, July 3, 25 (gage height, 2.13 ft).

Period of record: Maximum discharge, 7,680 cfs July 9, 1957 (gage height, 12.95 ft); minimum, 5.6 cfs July 12, 13, 14, 1959, Aug. 21, 1961; minimum daily, 5.9 cfs July 12, 13, 1959.

REMARKS.—Records good except those for winter periods, which are poor. Prior to Feb. 21, 1961, regulation at all stages by powerplant 1 mile above station; occasional regulation since.

REVISIONS (WATER YEARS).—WSP 1307: 1948 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	326	200	232	279	225	210	771	500	232	204	154	509
2	295	204	203	373	220	205	693	700	234	194	551	357
3	213	214	224	330	215	205	718	800	230	163	350	309
4	212	226	227	290	215	200	687	720	222	157	211	316
5	209	367	222	260	215	200	649	520	215	166	222	296
6	182	423	220	250	215	200	644	460	207	168	216	270
7	178	246	220	250	210	200	493	400	199	165	215	268
8	185	188	240	245	210	205	468	350	192	164	237	345
9	191	173	290	240	210	210	474	300	191	169	515	370
10	192	180	450	240	215	220	689	328	189	219	386	310
11	190	191	900	240	215	229	1,230	318	189	226	257	225
12	187	207	810	240	215	243	1,660	310	189	215	253	195
13	186	215	680	240	215	260	1,940	304	193	193	256	219
14	186	218	780	240	215	265	1,980	320	200	184	243	269
15	188	227	900	240	215	262	1,750	827	331	420	232	268
16	187	226	1,350	240	215	287	1,410	1,400	272	594	225	252
17	186	217	1,100	240	215	350	1,200	701	208	391	243	240
18	188	190	680	235	210	374	904	564	212	269	310	239
19	191	164	560	235	205	352	802	392	210	189	289	261
20	196	156	480	240	200	310	822	361	209	200	250	276
21	214	167	440	240	190	388	673	355	213	277	190	263
22	217	197	420	245	200	1,170	641	332	266	305	225	231
23	213	188	410	245	210	1,000	743	305	205	249	480	214
24	213	203	430	245	215	796	685	267	185	165	908	219
25	214	212	410	250	220	748	548	228	195	148	1,680	223
26	214	214	380	245	215	888	465	218	217	149	1,800	256
27	214	224	350	240	215	1,080	450	212	240	150	3,330	257
28	202	237	332	235	215	1,550	440	214	246	152	2,820	243
29	196	248	314	230	210	1,530	440	212	215	155	1,390	239
30	199	254	282	230	-----	1,180	450	214	204	156	847	255
31	201	-----	202	230	-----	869	-----	224	-----	156	629	-----
TOTAL	6,365	6,576	14,738	7,782	6,160	16,186	25,519	13,356	6,510	6,712	19,914	8,194
MEAN	205	219	475	251	212	522	851	431	217	217	642	273
MAX	326	423	1,350	373	225	1,550	1,980	1,400	331	594	3,330	509
MIN	178	156	202	230	190	200	440	212	185	148	154	195
CFSM	.42	.45	.98	.52	.44	1.07	1.75	.89	.45	.45	1.32	.56
IN.	.49	.50	1.13	.59	.47	1.24	1.95	1.02	.50	.51	1.52	.63
CAL YR 1971	TOTAL 145,195	MEAN 398	MAX 2,500	MIN 125	CFSM .82	IN 11.09						
WTR YR 1972	TOTAL 138,012	MEAN 377	MAX 3,330	MIN 148	CFSM .77	IN 10.54						

STREAMS TRIBUTARY TO LAKE HURON

04154000 Chippewa River near Mount Pleasant, Mich.

LOCATION.--Lat 43°37'32", long 84°42'28", in NW¼ NW¼ sec.8, T.14 N., R.3 W., Isabella County, on right bank 12 ft downstream from bridge on South Leaton Road, 3.8 miles northeast of Mount Pleasant, and 36 miles upstream from mouth.

DRAINAGE AREA.--416 sq mi.

PERIOD OF RECORD.--October 1930 to September 1931, October 1932 to current year. 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 (levels by Michigan Department of Natural Resources). Prior to Oct. 21, 1938, nonrecording gage at site 30 ft upstream at present datum.

AVERAGE DISCHARGE.--41 years, 291 cfs (9.50 inches per year).

EXTREMES.--Current year: Maximum discharge, 2,300 cfs Aug. 27 (gage height, 9.15 ft); minimum, 123 cfs Aug. 1.

Period of record: 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, 2.70 ft Oct. 8, 1966.

REMARKS.--Records good except those for winter periods, which are fair. Diurnal fluctuation below 750 cfs caused by powerplant at Mount Pleasant prior to 1962, occasional regulation at low flow since. Since July 30, 1968 occasional regulation from control structures on lake outlet.

REVISIONS (WATER YEARS).--WSP 744: Drainage area. WSP 1337: 1931, 1933-40, 1945, 1948-49.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	184	149	187	260	205	200	673	386	167	152	128	744
2	180	148	185	260	205	200	620	471	167	153	148	614
3	178	153	185	250	205	200	601	478	164	153	157	528
4	180	152	186	240	205	200	619	457	159	148	149	470
5	166	147	175	230	200	205	566	433	151	147	143	422
6	159	150	183	220	200	210	550	414	148	147	144	386
7	153	150	191	215	200	220	495	402	146	145	150	358
8	152	149	193	210	200	230	454	381	145	145	160	365
9	146	148	212	210	200	240	459	361	143	147	171	378
10	146	150	299	210	195	245	539	341	136	157	171	352
11	146	150	524	210	195	250	706	321	132	155	169	329
12	140	151	571	210	190	260	808	287	137	152	176	301
13	135	152	537	210	190	280	911	280	140	154	177	303
14	138	154	460	210	190	305	1,030	284	149	154	197	309
15	135	155	533	210	195	310	1,060	301	228	428	216	292
16	130	156	832	210	200	310	1,070	335	206	445	217	281
17	130	156	778	210	200	310	1,030	338	186	492	287	276
18	132	154	697	210	205	307	928	325	170	346	258	303
19	132	157	571	215	210	317	827	305	162	290	232	343
20	134	161	469	215	200	310	742	284	163	243	214	326
21	132	169	413	220	210	375	657	268	159	215	206	305
22	140	166	373	220	210	1,040	626	249	156	191	477	282
23	143	164	350	220	210	875	637	229	154	178	1,060	267
24	145	165	325	220	210	667	587	216	155	165	1,270	260
25	146	165	329	220	205	676	552	202	157	151	1,540	255
26	143	165	323	220	200	794	512	191	176	141	1,510	280
27	143	174	314	220	200	827	461	177	168	141	2,070	284
28	143	181	308	215	200	930	430	167	159	139	2,180	261
29	142	188	291	210	200	955	404	166	155	135	1,840	264
30	142	193	280	210	-----	818	384	168	153	135	1,340	290
31	145	-----	260	210	-----	698	-----	169	-----	131	973	-----
TOTAL	4,560	4,772	11,534	6,800	5,835	13,764	19,938	9,386	4,791	6,075	18,130	10,428
MEAN	147	159	372	219	201	444	665	303	160	196	585	348
MAX	184	193	832	260	210	1,040	1,070	478	228	492	2,180	744
MIN	130	147	175	210	190	200	384	166	132	131	128	255
CFSM	.35	.38	.89	.53	.48	1.07	1.60	.73	.38	.47	1.41	.84
IN.	.41	.43	1.03	.61	.52	1.23	1.78	.84	.43	.54	1.62	.93

CAL YR 1971 TOTAL 105,911 MEAN 290 MAX 1,450 MIN 83 CFSM .70 IN 9.47
WTR YR 1972 TOTAL 116,013 MEAN 317 MAX 2,180 MIN 128 CFSM .76 IN 10.37

PEAK DISCHARGE (BASE, 1,000 CFS)

DATE	TIME	G.H.	DISCHARGE
03-22	1800	6.15	1,200
04-16	0100	5.86	1,090
08-27	2200	9.15	2,300

04154500 Chippewa River near Midland, Mich.

LOCATION.—Lat 43°35'40", long 84°22'10", in NE¼ NE¼ sec.24, T.14 N., R.1 W., Midland County, on upstream side of bridge on Meridian Road, 5.3 miles upstream from Pine River, 6.5 miles southwest of Midland, and 8.6 miles upstream from mouth.

DRAINAGE AREA.—597 sq mi.

PERIOD OF RECORD.—October 1947 to Dec. 31, 1972 (discontinued as a continuous record station, converted to a crest-stage partial-record station). Monthly discharge only for some periods, published in WSP 1307.

GAGE.—Nonrecording gage and crest-stage gage. Datum of gage is 612.35 ft above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.—25 years, 425 cfs (9.67 inches per year).

EXTREMES.—Current year: Maximum discharge, 3,570 cfs Aug. 28 (gage height 5.66 ft); maximum gage height, 7.34 ft Mar. 23 (backwater from ice); minimum discharge, 122 cfs Oct. 31.
 Period Oct. 1 to Dec. 31, 1972: Maximum discharge, 1,960 cfs Oct. 24 (gage height, 4.12 ft); maximum gage height, 5.23 ft Dec. 31 (backwater from ice); minimum discharge, 318 cfs Oct. 19.
 Period of record: Maximum discharge, 8,510 cfs Mar. 20, 1948 (gage height, 9.85 ft, from graph based on gage readings); maximum gage height observed, 12.43 ft Mar. 19, 1948 (backwater from ice); minimum daily discharge, 44 cfs Aug. 16, 1948.
 Maximum stage known since at least 1904, 15.65 ft in March 1904, from information from Michigan State Highway Department (discharge 16,000 cfs, from rating curve extended above 9,000 cfs).

REMARKS.—Records good except those for the winter periods, which are poor. Diurnal fluctuation below 750 cfs caused by powerplant at Mount Pleasant prior to 1962, occasional regulation at low flow since. Since July 30, 1968, occasional regulation from control structures on lake outlets.

REVISIONS (WATER YEARS).—WSP 1307: 1949 (M). WSP 1337: 1950.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	186	146	210	320	260	250	1,020	498	184	230	152	1,130
2	182	154	210	330	260	250	1,000	803	180	188	205	920
3	182	150	205	320	260	250	974	785	184	184	285	785
4	182	154	210	310	260	260	940	830	176	172	275	677
5	178	158	210	300	250	260	890	695	168	160	235	578
6	166	146	215	290	250	270	820	610	160	160	210	506
7	154	150	225	280	250	270	780	594	164	152	205	434
8	146	158	240	270	250	280	740	538	156	148	215	448
9	154	162	260	270	240	290	731	490	160	144	245	455
10	150	158	296	270	240	300	839	462	168	152	255	434
11	146	162	610	260	240	310	1,140	434	160	164	245	408
12	150	162	817	260	230	320	1,350	402	160	152	240	402
13	150	162	754	270	230	340	1,520	378	176	152	235	360
14	142	174	673	270	230	360	1,570	366	188	184	240	378
15	138	174	655	270	230	380	1,610	476	250	672	295	360
16	142	170	1,040	270	240	400	1,650	634	360	1,660	312	336
17	142	174	1,320	270	240	410	1,650	610	354	1,950	554	318
18	138	170	1,120	270	250	440	1,570	546	290	1,690	650	324
19	138	170	898	270	250	460	1,310	490	265	1,220	483	378
20	134	178	727	270	250	500	1,120	441	260	857	378	402
21	134	182	594	270	250	800	974	402	255	594	318	384
22	146	182	520	280	250	1,700	893	366	245	448	354	354
23	158	180	490	280	250	1,500	900	330	225	354	378	318
24	150	180	460	280	250	1,200	902	300	215	290	2,000	300
25	154	180	430	280	250	1,050	821	265	210	245	2,490	290
26	154	182	410	280	250	1,200	749	235	235	210	3,260	285
27	154	194	390	280	250	1,300	668	215	250	192	3,000	330
28	146	206	380	280	250	1,400	602	188	240	192	3,470	306
29	150	214	360	280	250	1,400	538	172	215	176	3,040	290
30	142	210	350	270	-----	1,300	490	180	220	168	2,310	295
31	130	-----	330	260	-----	1,050	-----	184	-----	160	1,590	-----
TOTAL	4,718	5,142	15,609	8,680	7,160	20,500	30,761	13,919	6,473	13,420	28,124	13,185
MEAN	152	171	504	280	247	661	1,025	449	216	433	907	440
MAX	186	214	1,320	330	260	1,700	1,650	830	360	1,950	3,470	1,130
MIN	130	146	205	260	230	250	490	172	156	144	152	285
CFSM	.25	.29	.84	.47	.41	1.11	1.72	.75	.36	.73	1.52	.74
IN.	.29	.32	.97	.54	.45	1.28	1.92	.87	.40	.84	1.75	.82

CAL YR 1971 TOTAL 142,929 MEAN 392 MAX 2,320 MIN 78 CFSM .66 IN 8.91
 WTR YR 1972 TOTAL 167,691 MEAN 458 MAX 3,470 MIN 130 CFSM .77 IN 10.45

STREAMS TRIBUTARY TO LAKE HURON

.04154500 Chippewa River near Midland, Mich.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	348	713	441									
2	354	821	427									
3	372	758	427									
4	408	749	420									
5	408	695	410									
6	414	634	410									
7	408	618	410									
8	402	875	410									
9	396	1,210	410									
10	384	1,020	400									
11	378	848	400									
12	378	740	400									
13	372	677	400									
14	360	618	400									
15	354	570	400									
16	342	546	400									
17	336	506	400									
18	330	498	400									
19	324	476	400									
20	324	476	400									
21	342	462	400									
22	434	455	400									
23	1,010	448	400									
24	1,750	441	400									
25	1,720	441	400									
26	1,260	448	400									
27	983	483	400									
28	857	498	400									
29	830	476	420									
30	830	462	540									
31	749	-----	1,500									
TOTAL	18,157	18,662	13,825									
MEAN	586	622	446									
MAX	1,750	1,210	1,500									
MIN	324	441	400									
CFSM	.98	1.04	.75									
IN.	1.13	1.16	.86									

CAL YR 1972 TOTAL 192,866 MEAN 527 MAX 3,470 MIN 144 CFSM .88 IN 12.02

04155000 Pine River at Alma, Mich.

LOCATION.--Lat 43°22'46", long 84°39'20", in SW 1/4 Sec. 34, T.12 N., R.3 W., Gratiot County, on right bank 270 ft downstream from Superior Street Bridge on grounds of Municipal Water Works in Alma, 0.6 mile downstream from municipal reservoir, and 38 miles upstream from mouth.

DRAINAGE AREA.--288 sq mi.

PERIOD OF RECORD.--October 1930 to current year. Gage-height records for flood seasons collected in this vicinity 1910-28 are continued in reports of U.S. Weather Bureau.

GAGE.--Water-stage recorder. Datum of gage is 718.37 ft above mean sea level. Prior to Dec. 10, 1930, nonrecording gage at Superior Street Bridge at different datum. Dec. 10, 1930, to June 15, 1938, nonrecording gage at site 70 ft downstream from bridge and June 16 to October 25, 1938, nonrecording gage at bridge at present datum.

AVERAGE DISCHARGE.--42 years, 202 cfs (9.52 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,680 cfs Mar. 22 (gage height, 7.15 ft); minimum, 56 cfs July 12, 13 (gage height, 1.13 ft).

Period of record: Maximum discharge, 4,400 cfs Mar. 19, 1948 (gage height, 10.81 ft); minimum daily, 0.40 cfs Sept. 6, 1964, caused by closing of dam during construction of waterworks.

REMARKS --Records good except those for winter periods, which are fair. Occasional regulation caused by dam 0.6 mile above station and by variable backwater from powerplant at St. Louis 5.2 miles below station. Since July 1965, about 2.5 cfs diverted above station for municipal and industrial use; sewage effluent is returned below station.

REVISIONS (WATER YEARS).--WSP 744: Drainage area. WSP 1307: 1945(M). WSP 1337: 1931, 1932-34(M), 1936, 1939, 1945, 1949.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	94	88	123	160	145	140	614	284	129	94	86	511
2	85	99	76	180	140	140	569	337	128	89	124	429
3	80	100	84	200	140	125	555	331	129	76	106	354
4	81	103	111	190	140	105	549	376	117	74	136	294
5	71	109	118	180	135	130	512	417	109	70	136	251
6	71	109	122	175	135	135	503	398	97	72	139	214
7	72	100	131	165	135	140	497	356	103	72	119	204
8	74	99	147	160	130	155	472	315	82	69	139	223
9	82	100	163	160	130	160	454	296	75	70	123	215
10	86	97	249	160	130	165	447	276	78	69	135	187
11	89	100	357	155	130	165	453	247	72	79	135	167
12	83	103	353	155	130	170	481	226	71	71	126	156
13	100	107	410	155	130	190	582	208	79	63	126	180
14	104	114	457	155	130	200	653	209	111	65	145	198
15	116	111	632	155	135	220	700	222	199	102	144	212
16	116	109	689	155	135	236	733	245	208	128	146	198
17	109	106	576	150	140	277	870	272	230	197	162	171
18	104	106	521	150	140	374	755	285	238	256	181	161
19	98	114	528	150	140	502	671	274	202	331	191	156
20	95	116	501	150	140	569	611	237	144	366	204	185
21	97	120	436	150	140	777	533	197	135	331	164	191
22	102	128	369	150	140	1,460	504	169	136	280	166	172
23	93	123	300	155	140	885	471	172	141	197	179	169
24	111	114	279	155	140	823	444	143	129	127	304	141
25	120	105	255	155	140	853	442	139	130	109	371	147
26	121	106	263	155	140	887	419	133	130	95	502	134
27	118	112	261	155	140	832	386	124	124	88	572	154
28	113	117	253	150	135	834	356	111	123	87	585	136
29	112	135	235	150	135	749	317	112	112	86	540	157
30	104	141	200	145	-----	698	284	112	98	78	570	135
31	98	-----	150	145	-----	668	-----	116	-----	74	569	-----
TOTAL	2,999	3,291	9,349	4,925	3,960	13,764	15,837	7,339	3,859	3,965	7,325	6,202
MEAN	96.7	110	302	159	137	444	528	237	129	128	236	207
MAX	121	141	689	200	145	1,460	870	417	238	366	585	511
MIN	71	88	76	145	130	105	284	111	71	63	86	134
CFSM	.34	.38	1.05	.55	.48	1.54	1.83	.82	.45	.44	.82	.72
IN.	.39	.43	1.21	.64	.51	1.78	2.05	.95	.50	.51	.95	.80

CAL YR 1971 TOTAL 80,531 MEAN 221 MAX 1,220 MIN 43 CFSM .77 IN 10.40
WTR YR 1972 TOTAL 82,815 MEAN 226 MAX 1,460 MIN 63 CFSM .78 IN 10.70

STREAMS TRIBUTARY TO LAKE HURON

04155500 Pine River near Midland, Mich.

LOCATION.--Lat 43°33'52", Long 84°22'09", in SW 1/4 NW 1/4 sec. 4, T.13 N., R.1 E., Midland County, on left bank at downstream side of bridge on Meridian Road, 7.2 miles southwest of Midland, and 7.8 miles upstream from Chippewa River.

DRAINAGE AREA.--390 sq mi, approximately.

PERIOD OF RECORD.--May 1934 to September 1938, February 1948 to current year.

GAGE.--Water-stage recorder. Datum of gage is 623.94 ft above mean sea level. Prior to Sept. 30, 1938, nonrecording gages at same site at datum 5.55 ft lower. Feb. 3, 1948, to Dec. 13, 1951, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--28 years, 278 cfs (9.68 inches per year).

EXTREMES.--Current year: Maximum discharge, 2,300 cfs Mar. 22 (gage height, 9.14 ft); minimum, 42 cfs June 8.

Period of record: Maximum discharge, 6,360 cfs Mar. 20, 1948 (gage height, 10.00 ft, from graph based on gage readings); maximum gage height, 12.08 ft Feb. 2, 1968 (backwater from ice); minimum discharge not determined.

REMARKS.--Records fair except those for winter periods, which are poor. Regulation at low and medium stages by powerplant at St. Louis. Some diversion above station for irrigation.

REVISIONS (WATER YEARS).--WSP 1207: Drainage area. WSP 1307: 1935 (M). WSP 1337: 1936-38, 1948-49.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	116	132	130	260	200	190	840	345	113	227	89	1,020
2	114	126	110	270	195	190	800	443	151	164	85	945
3	110	127	115	280	190	180	777	528	136	195	138	786
4	103	131	120	270	190	180	897	451	141	156	276	675
5	105	133	130	260	185	185	858	461	133	127	192	562
6	97	141	140	240	185	190	770	481	133	130	274	494
7	95	133	145	230	185	200	712	450	88	112	238	404
8	92	129	150	230	185	210	655	393	119	88	356	414
9	93	123	221	220	180	220	635	326	120	110	196	409
10	93	149	241	220	180	230	638	299	73	116	266	414
11	90	130	527	220	180	240	671	278	96	120	204	404
12	101	133	612	220	180	250	674	230	104	94	203	352
13	109	146	498	210	180	270	783	213	108	90	236	276
14	118	122	534	210	180	290	891	220	107	135	177	340
15	118	144	731	210	185	330	946	277	251	114	179	414
16	127	138	1,380	210	185	370	991	325	357	196	396	409
17	130	142	1,040	210	190	450	1,320	283	373	242	364	396
18	120	144	760	210	190	600	1,150	293	351	302	368	364
19	122	126	640	210	190	750	1,010	297	353	432	308	304
20	120	147	600	210	190	920	844	287	382	542	324	284
21	105	144	520	210	190	1,300	786	264	277	623	217	220
22	111	142	450	210	190	2,100	720	247	255	538	304	380
23	172	177	400	210	190	1,600	710	163	234	483	224	414
24	120	167	350	210	190	1,300	644	221	274	400	380	265
25	107	156	350	210	190	1,200	580	165	248	344	655	384
26	145	149	350	210	190	1,200	551	154	245	173	796	246
27	140	161	340	210	190	1,150	530	153	264	132	1,020	352
28	139	149	330	205	190	1,100	447	154	228	139	1,250	164
29	117	155	320	205	190	1,000	431	113	216	117	1,220	388
30	140	150	300	205	-----	900	377	115	235	82	1,100	213
31	134	-----	250	200	-----	850	-----	139	-----	101	1,030	-----
TOTAL	3,603	4,246	12,784	6,885	5,435	20,145	22,638	8,768	6,165	6,824	13,065	12,692
MEAN	116	142	412	222	187	650	755	283	206	220	421	423
MAX	172	177	1,380	280	200	2,100	1,320	528	382	623	1,250	1,020
MIN	90	122	110	200	180	180	377	113	73	82	85	164
CFSM	.30	.36	1.06	.57	.48	1.67	1.94	.73	.53	.56	1.08	1.08
IN.	.34	.41	1.22	.66	.52	1.92	2.16	.84	.59	.65	1.25	1.21

CAL YR 1971 TOTAL 103,656 MEAN 284 MAX 1,550 MIN 31 CFSM .73 IN 9.89
WTR YR 1972 TOTAL 123,250 MEAN 337 MAX 2,100 MIN 73 CFSM .86 IN 11.76

PEAK DISCHARGE (BASE, 1,200 CFS)

DATE	TIME	G.H.	DISCHARGE
12-16	1200	5.50	1,500
03-22	2100	9.14	2,300
04-17	1400	5.14	1,450
08-28	1500	6.84	1,330

04156000 Tittabawassee River at Midland, Mich.

LOCATION.—Lat 43°35'43", long 84°14'08", in NW¼ NE¼ sec.28, T.14 N., R.2 E., Midland County, on right bank 2,000 ft downstream from dam at Dow Chemical Co. powerplant in Midland, 0.7 miles upstream from Bullock Creek, 1.4 miles downstream from Chippewa River, and 23 miles upstream from mouth.

DRAINAGE AREA.—2,400 sq mi, approximately.

PERIOD OF RECORD.—March 1936 to current year. 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. Prior to Sept. 30, 1955, at datum 10.00 ft higher.

AVERAGE DISCHARGE.—36 years, 1,571 cfs (8.89 inches per year), adjusted for diversion.

EXTREMES.—Current year: Maximum discharge, 9,970 cfs Aug. 28 (gage height, 20.46 ft); minimum, 245 cfs Nov. 23 (gage height, 9.65 ft); minimum daily, 282 cfs Oct. 10, June 11.

Period of record: Maximum discharge, 34,000 cfs Mar. 21, 1948 (gage height, 29.50 ft); minimum, 39 cfs Oct. 12, 1942; minimum daily, 111 cfs Aug. 21, 1949; minimum gage height, 9.04 ft Aug. 19, 1954, caused by bridge construction above station.

Maximum stage known since at least 1907, 29.7 ft Mar. 28, 1916, from information by U.S. Weather Bureau (discharge, 34,800 cfs).

REMARKS.—Records good. Water is diverted from river a short distance above station for industrial use. Small part returned to river at gage; small part returned to river a quarter of a mile below station; remainder returned 1 mile below. Extremes and daily discharges not adjusted for diversion. Prior to May 20, 1970, discharge below 4,000 cfs regulated by dam 2,000 ft above station; fixed-crest dam since.

REVISIONS (WATER YEARS).—WSP 1045: 1945. WSP 1144: 1948.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	966	546	652	575	830	979	4,720	2,040	621	443	485	2,760
2	618	521	602	681	804	936	4,700	3,130	766	364	809	1,890
3	329	564	795	703	819	1,090	4,600	4,520	572	611	1,180	1,360
4	581	573	504	615	787	706	4,830	4,050	410	398	1,000	1,170
5	592	579	354	703	620	352	4,860	3,490	673	443	563	1,410
6	457	431	617	1,260	386	766	4,680	2,880	784	459	490	1,740
7	538	313	763	1,090	561	1,430	4,320	1,800	537	458	756	1,440
8	562	464	750	737	716	1,490	2,410	2,170	453	346	663	1,280
9	335	570	854	590	731	1,030	1,970	2,240	489	331	792	930
10	282	570	1,150	1,120	722	964	3,070	2,110	345	596	1,120	841
11	525	770	1,500	1,190	718	771	5,110	2,020	282	477	1,010	1,050
12	414	619	2,150	1,220	583	590	5,470	1,460	455	458	591	1,030
13	555	418	1,920	1,110	403	1,410	6,340	1,050	603	431	460	974
14	435	303	2,150	949	559	1,870	8,630	941	670	481	567	980
15	558	453	2,520	630	784	2,010	8,750	2,090	1,260	1,700	715	1,000
16	346	575	4,320	332	820	1,960	7,940	4,950	1,720	2,760	815	746
17	293	570	4,710	681	875	1,700	6,840	4,330	999	2,710	921	688
18	417	572	4,090	825	1,040	1,400	6,240	3,460	646	2,620	1,270	943
19	405	552	3,290	862	790	1,450	5,390	3,050	731	2,190	809	989
20	549	435	2,380	848	420	2,310	4,790	1,540	663	2,020	668	1,160
21	591	326	2,160	887	401	3,740	4,460	1,030	647	1,380	700	1,120
22	746	443	1,730	754	626	6,170	4,180	1,040	705	920	902	953
23	407	480	1,780	603	1,050	8,530	4,250	983	877	739	1,750	705
24	342	548	1,210	919	1,030	7,270	3,860	847	494	743	3,190	618
25	558	481	835	1,170	1,010	5,380	4,000	834	440	646	5,090	831
26	608	733	807	1,140	708	4,670	3,800	781	558	562	5,770	861
27	483	553	1,400	1,120	407	5,570	3,390	594	742	515	7,900	873
28	449	370	1,620	972	729	7,160	3,160	482	737	637	9,860	736
29	577	499	1,320	760	985	7,830	1,760	450	701	419	8,230	817
30	351	632	1,330	478	-----	6,560	1,330	616	831	376	5,750	627
31	296	-----	634	609	-----	5,190	-----	658	-----	476	4,490	-----
TOTAL	15,165	15,463	50,897	26,133	20,914	93,284	139,850	61,636	20,411	27,709	69,316	32,522
MEAN	489	515	1,642	843	721	3,009	4,662	1,988	680	894	2,236	1,084
MAX	966	770	4,710	1,260	1,050	8,530	8,750	4,950	1,720	2,760	9,860	2,760
MIN	282	303	354	332	386	352	1,330	450	282	331	460	618
+	83.8	76.7	67.2	63.4	68.0	74.1	70.5	71.2	73.0	75.8	71.2	63.1
MEAN±	573	592	1,709	906	789	3,083	4,732	2,059	753	970	2,307	1,147
CFSM±	.24	.25	.71	.38	.33	1.28	1.97	.86	.31	.40	.96	.48
IN±	.28	.28	.82	.44	.35	1.48	2.20	.99	.35	.47	1.11	.53

CAL YR 1971 TOTAL 565,850 MEAN 1,550 MAX 10,400 MIN 214 MEAN± 1,633 CFSM± .68 IN± 9.24
WTR YR 1972 TOTAL 573,300 MEAN 1,566 MAX 9,860 MIN 282 MEAN± 1,638 CFSM± .68 IN± 9.29

PEAK DISCHARGE (BASE, 7,000 CFS)

DATE	TIME	G.H.	DISCHARGE
03-23	1400	18.95	8,650
03-29	0930	18.30	7,950
04-15	0830	19.27	9,070
08-28	1100	20.46	9,970

+ Diversion in cubic feet per second, for industrial use; furnished by Dow Chemical Co.

± Adjusted for diversion made by Dow Chemical Co.

STREAMS TRIBUTARY TO LAKE HURON

04157000 Saginaw River at Saginaw, Mich.

LOCATION.--Lat 43°26'00", long 83°56'30", in sec.24, T.12 N., R.4 E., Saginaw County, on upstream side of Genesee Street Bridge in Saginaw, 3.8 miles downstream from Tittabawassee River and 18.1 miles upstream from mouth.

DRAINAGE AREA.--6,060 sq mi, approximately.

PERIOD OF RECORD.--1904, 1908-9, 1912-13, 1916, 1918-19, 1929-30, and 1942 (flood discharge for certain periods only) in WSP 1084; December 1942 to current year (high-water periods only); no high water 1944, 1949, 1953, 1955, 1958, 1961, 1963, 1964, 1966. Gage-height records for flood seasons collected in this vicinity 1910-20, and for entire years since 1921 are contained in reports of U.S. Weather Bureau.

GAGE.--Nonrecording gage. Datum of gage is 565.11 ft above mean sea level, International Great Lakes datum. Auxiliary water-stage recorder on right bank at Essexville 15 miles downstream.

EXTREMES.--Current year: Maximum discharge, 16,900 cfs Mar. 23 (gage height, 16.15 ft).
Period of record: Maximum discharge, 68,000 cfs Mar. 29, 1904 (gage height, 24.9 ft).

REMARKS.--Records fair. Considerable diversion through metropolitan area of Saginaw.

COOPERATION.--Gage readings at base gage furnished by U.S. Weather Bureau. Auxiliary gage-height record furnished by U.S. Lake Survey.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

[illegible]

04158500 Pigeon River near Owendale, Mich.

LOCATION.—Lat 43°45'49", long 83°14'46", in SW¼ SE¼ sec.36, T.16 N., R.10 E., Huron County, on left bank 600 ft downstream from bridge on Kilmanagh Road, 2.5 miles downstream from confluence of East and West Branches, and 2.5 miles northeast of Owendale.

DRAINAGE AREA.—55 sq mi, approximately.

PERIOD OF RECORD.—October 1952 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 645 ft (from topographic map). Prior to June 10, 1954, nonrecording gage at site 600 ft upstream at same datum.

AVERAGE DISCHARGE.—20 years, 27.9 cfs (6.89 inches per year).

EXTREMES.—Current year: Maximum discharge, 650 cfs Mar. 23; maximum gage height, 10.20 ft Mar. 22 (backwater from ice); minimum discharge, 0.2 cfs Oct. 21.

Period of record: Maximum discharge, 2,550 cfs Mar. 25, 1954 (gage height, 10.75 ft), from rating curve extended above 1,200 cfs; minimum, 0.1 cfs July 31, Aug. 1, 1964.

REMARKS.—Records good except those for winter periods, and those for period of no gage-height record, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	2.9	7.0	15	13	11	75	28	15	43	3.6	9.0
2	1.5	4.1	6.1	15	13	11	65	40	13	27	6.0	8.5
3	1.5	4.1	6.5	15	13	11	144	58	11	20	8.0	7.5
4	2.5	2.9	5.7	15	12	11	140	45	9.2	17	6.0	6.5
5	2.9	2.5	6.5	14	12	11	100	33	9.5	14	5.2	6.0
6	2.2	2.5	7.4	14	12	11	78	26	8.5	11	4.4	6.0
7	2.0	2.5	12	13	11	12	52	24	7.2	10	6.5	7.0
8	2.2	2.5	13	13	11	13	40	23	6.0	9.0	8.0	10
9	3.7	3.3	12	13	11	15	39	21	5.8	15	9.5	11
10	4.9	4.5	13	12	10	17	53	20	5.2	76	10	8.5
11	4.5	4.5	14	12	9.2	21	82	17	5.2	43	8.0	7.5
12	4.9	4.5	11	12	9.6	30	88	16	5.6	24	8.0	6.5
13	7.0	4.5	4.9	12	10	50	152	15	5.6	18	7.0	6.5
14	7.4	4.5	1.5	12	11	70	156	16	5.6	16	5.6	7.0
15	3.7	4.5	26	12	13	100	104	20	43	32	5.2	6.0
16	2.0	4.9	183	13	13	180	107	30	65	81	4.4	4.8
17	1.2	4.5	51	13	14	200	104	26	25	41	5.2	5.2
18	1.2	4.5	24	13	14	200	72	21	17	24	5.2	5.2
19	1.2	4.9	12	13	14	200	56	19	13	19	4.0	4.8
20	1.0	4.9	11	13	14	190	50	17	12	15	3.2	4.0
21	1.0	5.3	11	13	14	210	44	17	18	12	2.8	3.2
22	2.2	3.7	10	13	13	270	46	16	16	10	4.0	3.2
23	5.3	2.9	9.2	13	13	530	62	15	16	8.0	7.5	3.2
24	4.9	2.9	10	14	12	300	53	14	19	7.5	22	3.2
25	4.1	2.5	11	14	12	230	44	13	19	6.0	66	3.2
26	3.3	2.9	14	14	12	200	38	12	17	5.6	35	4.0
27	2.5	4.5	15	14	11	160	33	10	14	5.6	38	4.0
28	2.5	6.1	15	14	11	130	30	9.0	12	5.2	36	3.6
29	3.3	7.0	14	13	11	100	28	8.4	13	4.4	20	3.2
30	3.3	7.8	13	13	-----	85	24	11	38	4.4	14	3.6
31	3.7	-----	14	13	-----	75	-----	17	-----	3.6	10	-----
TOTAL	94.6	123.6	563.8	412	348.8	3,654	2,159	657.4	469.4	627.3	378.3	171.9
MEAN	3.05	4.12	18.2	13.3	12.0	118	72.0	21.2	15.6	20.2	12.2	5.73
MAX	7.4	7.8	183	15	14	530	156	58	65	81	66	11
MIN	1.0	2.5	1.5	12	9.2	11	24	8.4	5.2	3.6	2.8	3.2
CFSM	.06	.07	.33	.24	.22	2.15	1.31	.39	.28	.37	.22	.10
IN.	.06	.08	.38	.28	.24	2.47	1.46	.44	.32	.42	.26	.12

CAL YR 1971 TOTAL 10,668.20 MEAN 29.2 MAX 520 MIN .50 CFSM .53 IN 7.22
 WTR YR 1972 TOTAL 9,660.10 MEAN 26.4 MAX 530 MIN 1.0 CFSM .48 IN 6.53

PEAK DISCHARGE (BASE, 500 CFS).—Mar. 23 (time and gage-height unknown) about 650 cfs.

NOTE.—No gage-height record May 2 to June 12.

STREAMS TRIBUTARY TO ST. CLAIR RIVER

04159500 Black River near Fargo, Mich.

LOCATION.--Lat 43°05'32", long 82°37'05", in NW¼ sec. 32, T.8 N., R.16 E., St. Clair County, on left bank 20 ft downstream from bridge on Norman Road, 2.1 miles east of Fargo, 5.3 miles upstream from Mill Creek, and 12 miles northwest of Port Huron.

DRAINAGE AREA.--480 sq mi.

PERIOD OF RECORD.--February 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 613.75 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to July 9, 1954, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--28 years, 264 cfs (7.47 inches per year).

EXTREMES.--Current year: Maximum discharge, 3,740 cfs Apr. 17 (gage height, 9.70 ft); maximum gage height, 9.73 ft Mar. 15 (backwater from ice); minimum discharge, 9.3 cfs Oct. 20, 21 (gage height, 1.68 ft).

Period of record: 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 (backwater from ice); minimum discharge observed, 1.8 cfs Sept. 18, 19, 1946.

REMARKS.--Records good except those for the winter period, which are poor.

REVISIONS (WATER YEARS).--WSP 1307: 1950 (M). WSP 1627: 1956-58. WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	14	23	72	65	40	378	132	42	90	22	22
2	13	15	23	62	60	50	359	177	43	93	23	21
3	11	14	20	66	58	66	329	244	41	77	23	18
4	11	13	18	53	56	75	331	222	38	61	21	16
5	9.9	11	18	60	53	62	337	187	34	49	18	14
6	11	11	19	83	50	62	314	156	33	46	18	12
7	11	13	20	67	50	80	274	142	32	42	20	13
8	11	14	20	60	48	130	202	136	29	35	19	19
9	14	14	22	47	48	250	183	130	28	32	19	15
10	13	14	32	46	48	200	163	118	26	35	19	13
11	12	14	48	46	48	250	183	106	26	38	19	14
12	11	14	84	46	49	350	227	95	25	40	20	15
13	12	14	89	45	52	700	485	88	29	47	20	16
14	12	14	66	44	54	1,500	774	88	30	74	23	16
15	15	15	65	43	65	2,600	675	94	31	111	22	15
16	14	15	136	42	80	2,500	892	105	32	225	20	15
17	13	15	285	41	110	2,300	3,180	113	32	173	20	15
18	14	15	205	41	100	2,000	2,940	106	33	119	21	15
19	11	15	105	42	90	1,700	1,530	96	30	89	22	15
20	10	15	97	47	70	1,500	791	86	28	75	21	14
21	16	15	78	60	52	1,700	543	81	29	57	18	13
22	14	16	63	85	58	2,360	441	75	32	45	18	13
23	14	16	65	150	66	2,800	482	69	54	36	21	13
24	13	16	57	200	72	1,800	392	64	53	31	16	13
25	12	16	58	230	60	1,140	314	59	54	34	22	14
26	13	17	49	200	50	763	256	53	52	31	45	15
27	13	18	55	160	43	660	212	48	52	30	54	17
28	15	20	58	120	40	619	178	43	49	28	40	16
29	16	21	57	90	40	570	155	39	50	25	41	16
30	14	22	63	80	-----	481	140	39	60	23	34	16
31	14	-----	72	70	-----	420	-----	45	-----	20	26	-----
TOTAL	395.9	456	2,070	2,498	1,735	29,728	17,660	3,236	1,127	1,911	745	459
MEAN	12.8	15.2	66.8	80.6	59.8	959	589	104	37.6	61.6	24.0	15.3
MAX	16	22	285	230	110	2,800	3,180	244	60	225	54	22
MIN	9.9	11	18	41	40	40	140	39	25	20	16	12
CFSM	.03	.03	.14	.17	.12	2.00	1.23	.22	.08	.13	.05	.03
IN.	.03	.04	.16	.19	.13	2.30	1.37	.25	.09	.15	.06	.04

CAL YR 1971 TOTAL 91,529.9 MEAN 251 MAX 4,780 MIN 9.9 CFSM .52 IN 7.09

WTR YR 1972 TOTAL 62,020.9 MEAN 169 MAX 3,180 MIN 9.9 CFSM .35 IN 4.81

PEAK DISCHARGE (BASE, 3,500 CFS).--Apr. 17 (1800) 3,740 cfs (9.70 ft).

STREAMS TRIBUTARY TO ST. CLAIR RIVER

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04159900 Mill Creek near Avoca, Mich.

LOCATION.--Lat 43°03'16", long 82°44'05", in NW 1/4 sec. 8, T. 7 N., R. 15 E., St. Clair County, on left bank at downstream side of bridge on Bricker Road, 0.2 mile upstream from Gleason Drain, and 2.3 miles west of Avoca.

DRAINAGE AREA.--169 sq mi.

PERIOD OF RECORD.--April 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 711.31 ft above mean sea level.

AVERAGE DISCHARGE.--9 years, 74.8 cfs (6.01 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,560 cfs Apr. 17 (gage height, 6.55 ft); minimum, 3.7 cfs Oct. 5, 6, 8; minimum gage height, 0.71 ft Oct. 5, 6.

Period of record: Maximum discharge, 3,540 cfs Feb. 2, 1968; maximum gage height, 8.36 ft Feb. 2, 1968 (backwater from ice); minimum discharge, 0.8 cfs Aug. 9, 10, 11, 1964; minimum gage height, 0.56 ft July 28, 1965.

REMARKS.--Records good except those for the winter period, which are poor.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	5.9	8.4	35	17	17	94	72	16	11	7.6	7.1
2	4.7	7.1	8.4	32	17	20	95	90	17	10	8.6	6.8
3	4.7	6.3	8.4	28	16	23	90	97	16	8.8	9.0	6.5
4	4.8	6.7	8.4	26	15	28	84	83	15	8.4	7.9	5.9
5	4.3	6.8	9.0	24	15	35	80	71	15	9.1	6.3	5.6
6	4.4	6.7	10	21	14	42	70	63	13	9.5	6.5	5.6
7	4.3	6.7	11	19	14	50	64	60	12	8.9	8.6	5.3
8	4.1	6.7	13	16	14	65	60	66	11	8.0	8.4	14
9	4.9	6.7	16	15	14	80	60	74	10	8.6	7.6	8.1
10	5.0	6.8	21	18	14	100	55	70	8.6	8.9	8.2	5.3
11	5.2	6.8	30	21	14	120	53	60	8.0	7.7	7.6	5.3
12	5.4	6.8	36	23	14	150	55	51	7.7	6.7	7.3	5.6
13	5.6	6.8	25	21	15	300	306	44	8.3	16	7.1	6.8
14	6.0	6.8	20	19	17	450	467	42	11	14	7.4	7.7
15	6.2	6.8	30	17	20	860	426	47	13	26	7.4	7.4
16	6.4	7.0	65	15	25	750	635	64	11	23	7.1	7.1
17	6.6	7.0	60	14	29	600	1,420	57	8.6	22	8.1	6.8
18	6.8	7.0	45	14	25	540	1,140	50	8.3	24	7.7	6.8
19	7.0	7.0	33	15	21	450	757	46	8.8	27	7.4	7.1
20	7.2	7.0	24	18	18	420	615	42	8.8	23	7.1	7.1
21	7.4	7.2	19	22	15	420	483	39	10	21	6.5	6.6
22	7.8	7.2	17	30	16	540	383	37	9.8	18	7.7	6.5
23	8.0	7.4	16	55	18	400	333	35	11	15	11	6.2
24	8.6	7.5	15	74	20	320	263	32	12	12	8.6	6.2
25	8.8	7.6	15	70	17	250	202	25	13	12	12	6.2
26	8.6	7.8	16	50	15	232	156	19	15	11	7.4	8.1
27	8.2	8.0	18	35	15	174	124	16	14	12	7.1	12
28	7.6	8.2	20	25	16	140	103	13	14	11	8.1	8.6
29	7.4	8.4	24	21	16	120	91	14	15	9.1	8.6	6.8
30	6.8	8.5	20	20	-----	108	80	12	13	8.6	7.1	7.1
31	6.8	-----	17	18	-----	98	-----	16	-----	8.4	7.4	-----
TOTAL	194.8	213.2	678.6	831	496	7,902	8,844	1,507	353.9	418.7	244.4	212.2
MEAN	6.28	7.11	21.9	26.8	17.1	255	295	48.6	11.8	13.5	7.88	7.07
MAX	8.8	8.5	65	74	29	860	1,420	97	17	27	12	14
MIN	4.1	5.9	8.4	14	14	17	53	12	7.7	6.7	6.3	5.3
CFSM	.04	.04	.13	.16	.10	1.51	1.75	.29	.07	.08	.05	.04
IN.	.04	.05	.15	.18	.11	1.74	1.95	.33	.08	.09	.05	.05

CAL YR 1971 TOTAL 30,111.7 MEAN 82.5 MAX 1,670 MIN 1.5 CFSM .49 IN 6.63
WTR YR 1972 TOTAL 21,895.8 MEAN 59.8 MAX 1,420 MIN 4.1 CFSM .35 IN 4.82

PEAK DISCHARGE (BASE, 900 CRS).--Mar. 15 (time unknown) about 950 cfs; Apr. 17 (1600) 1,560 cfs (6.55 ft).

STREAMS TRIBUTARY TO ST. CLAIR RIVER

04160570 North Branch Belle River at Inlay City, Mich.

LOCATION.--Lat 43°01'49", long 83°04'02", in SW 1/4 NW 1/4 sec.16, T.7 N., R.12 E., Lapeer County, on left bank 12 ft upstream from bridge on State Highway 21, and 0.6 mile northeast of Inlay City.

DRAINAGE AREA.--18.0 sq mi.

PERIOD OF RECORD.--August 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 800 ft (from topographic map).

AVERAGE DISCHARGE.--7 years, 9.80 cfs (7.39 inches per year).

EXTREMES.--Current year: Maximum discharge, 144 cfs Apr. 17 (gage height, 6.38 ft); minimum, 0.96 cfs July 9, 10, 12; minimum gage height, 3.24 ft Sept. 6, 7.

Period of record: Maximum discharge, 212 cfs Feb. 2, 1968 (gage height, 8.12 ft); minimum, 0.06 cfs July 25, 26, 27, 1966, Aug. 15, 1967; minimum gage height, 2.96 ft July 25, 26, 27, 1966.

REMARKS.--Records good except those for the winter period and those for periods of indefinite stage-discharge relation, which are poor. Somediversion by pumping for sprinkler irrigation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	2.4	2.8	7.5	3.8	2.5	15	11	3.5	2.6	1.8	2.4
2	2.0	2.4	2.4	7.0	3.5	3.5	14	16	3.7	2.8	4.4	2.4
3	1.9	2.4	2.3	6.4	3.4	5.0	13	14	3.5	2.6	4.5	2.3
4	2.0	2.4	2.3	5.6	3.2	4.3	14	12	3.2	2.1	3.3	2.1
5	2.0	2.4	2.3	5.0	3.1	4.0	13	9.5	2.7	1.5	2.7	2.0
6	2.0	2.4	2.5	4.5	3.0	4.0	13	9.6	2.3	1.4	2.6	1.8
7	2.5	2.4	2.8	4.0	3.0	6.0	11	12	2.0	1.2	3.1	1.8
8	2.2	2.4	3.3	3.7	2.9	15	10	15	1.8	1.2	3.3	12
9	2.5	2.4	4.0	3.5	2.8	13	8.5	13	1.8	1.2	3.5	6.2
10	2.4	2.4	5.0	3.5	2.8	12	9.0	9.8	1.9	1.4	3.1	4.3
11	2.3	2.4	12	4.3	2.8	14	10	8.2	2.1	1.2	2.8	3.8
12	2.4	2.4	9.0	4.4	2.8	25	11	6.7	2.4	4.2	2.7	3.9
13	2.9	2.4	7.0	4.3	2.9	45	89	6.1	3.0	36	2.3	12
14	4.2	2.5	6.0	5.0	3.1	90	68	7.1	3.5	29	5.7	11
15	3.6	2.5	8.0	4.0	3.6	80	60	8.3	4.0	57	5.9	8.0
16	3.3	2.5	17	3.5	5.0	70	75	8.3	3.5	42	8.2	5.9
17	3.2	2.6	17	3.0	6.0	60	131	7.7	3.5	26	12	4.4
18	3.2	2.8	10	3.0	5.4	45	80	6.3	3.0	18	8.6	4.6
19	3.1	2.6	7.0	3.4	4.5	40	64	5.2	2.7	16	6.2	4.2
20	2.9	2.7	6.5	3.6	3.7	32	58	4.4	2.5	9.4	4.5	3.5
21	2.8	2.7	5.5	4.5	3.0	43	43	3.8	2.4	9.4	3.8	2.9
22	3.0	2.8	5.0	6.5	3.2	96	41	3.5	2.7	27	6.0	2.4
23	4.0	2.8	4.5	11	3.5	60	37	3.1	3.0	14	17	2.2
24	5.0	2.9	4.0	17	3.8	40	29	2.6	3.4	7.4	11	2.1
25	4.0	3.0	3.8	20	3.3	30	23	2.5	4.0	4.5	8.0	2.8
26	3.5	3.1	3.8	17	2.9	24	18	2.5	3.7	3.5	6.1	8.8
27	3.0	3.3	3.8	12	2.5	20	15	2.1	3.5	4.2	5.1	6.3
28	2.7	3.4	4.3	8.0	2.3	18	12	2.1	3.2	3.2	4.5	3.6
29	2.5	3.4	5.2	6.0	2.4	16	11	2.1	2.9	2.5	3.7	2.8
30	2.4	3.3	6.2	4.5	-----	15	11	2.7	2.7	2.2	3.0	3.1
31	2.4	-----	7.0	4.0	-----	15	-----	3.3	-----	2.0	2.6	-----
TOTAL	88.1	79.9	182.3	199.7	98.2	947.3	1,006.5	220.5	88.1	336.7	162.0	135.6
MEAN	2.84	2.66	5.88	6.44	3.39	30.6	33.6	7.11	2.94	10.9	5.23	4.52
MAX	5.0	3.4	17	20	6.0	96	131	16	4.0	57	17	12
MIN	1.9	2.4	2.3	3.0	2.3	2.5	8.5	2.1	1.8	1.2	1.8	1.8
CFSM	.16	.15	.33	.36	.19	1.70	1.87	.40	.16	.61	.29	.25
IN.	.18	.17	.38	.41	.20	1.96	2.08	.46	.18	.70	.33	.28

CAL YR 1971 TOTAL 4,185.70 MEAN 11.5 MAX 156 MIN .21 CFSM .64 IN 8.65

WTR YR 1972 TOTAL 3,544.90 MEAN 9.69 MAX 131 MIN 1.2 CFSM .54 IN 7.33

PEAK DISCHARGE (BASE, 60 CRS)

NOTE.--Stage-discharge relation indefinite Oct. 22 to Nov. 30, May 30 to July 1.

DATE	TIME	G.H.	DISCHARGE
03-14	---	---	about 100
03-22	0800	5.53	108
04-13	1400	5.66	114
04-17	0500	6.38	144
07-15	0800	4.67	64

STREAMS TRIBUTARY TO ST. CLAIR RIVER

193

04160600 Belle River at Memphis, Mich.

LOCATION.—Lat 42°54'03", long 82°46'09", in NW¼ SE¼ sec.35, T.6 N., R.14 E., St. Clair County, on right bank at downstream side of bridge on State Highway 19 at Memphis.

DRAINAGE AREA.—151 sq mi.

PERIOD OF RECORD.—October 1962 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 720 ft (from topographic map).

AVERAGE DISCHARGE.—10 years, 67.9 cfs (6.11 inches per year).

EXTREMES.—Current year: Maximum discharge, 1,600 cfs Apr. 17 (gage height, 7.31 ft); minimum, 8.2 cfs Oct. 3, 5, 6; minimum gage height, 1.34 ft July 12.

Period of record: Maximum discharge, 4,070 cfs Feb. 2, 1968; maximum gage height, 8.88 ft Feb. 1, 1968 (backwater from ice); minimum discharge, 3.1 cfs Mar. 10, 1964 (gage height, 1.19 ft).

Flood of April 1947 reached a stage of about 9 ft, from information by local residents.

REMARKS.—Records good except those for the winter period, which are poor.

REVISIONS.—WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	12	17	66	33	20	92	78	21	15	13	14
2	9.9	13	16	62	31	25	92	177	21	16	15	14
3	9.3	13	17	56	30	40	82	146	20	13	15	13
4	9.4	13	16	43	28	40	79	107	20	12	17	13
5	9.1	13	16	46	27	30	79	85	17	12	16	13
6	8.7	13	17	37	26	30	83	71	16	12	14	12
7	8.9	12	19	39	26	45	81	70	15	11	15	12
8	9.3	12	25	27	25	80	66	87	14	11	16	17
9	11	13	27	24	25	130	58	100	16	11	16	55
10	11	13	36	30	24	100	52	83	15	11	16	57
11	11	13	57	38	24	120	52	65	15	11	15	33
12	11	14	67	41	24	170	58	54	15	11	14	24
13	11	14	48	40	25	300	227	47	15	13	14	21
14	12	14	33	36	27	590	763	45	15	37	14	21
15	12	13	46	32	32	718	633	50	17	72	14	28
16	13	13	119	28	50	624	692	108	18	112	16	24
17	13	13	122	25	55	495	1,340	111	19	103	17	20
18	13	13	75	25	50	400	950	74	16	75	20	19
19	13	13	55	26	40	337	694	55	15	100	20	17
20	13	14	47	29	35	271	457	44	14	94	17	16
21	14	15	36	40	27	243	334	38	14	66	15	15
22	14	15	32	55	30	348	256	33	15	78	15	14
23	16	14	28	90	35	504	261	29	16	81	70	14
24	19	15	30	140	36	345	210	26	18	53	118	14
25	19	14	26	140	31	202	167	25	22	33	87	14
26	17	15	31	120	26	153	139	22	22	24	53	15
27	15	17	31	90	22	130	113	20	18	20	34	18
28	13	17	38	60	20	114	97	19	17	18	26	25
29	13	19	45	45	19	100	83	18	17	17	21	21
30	12	20	45	38	-----	93	74	18	16	15	18	19
31	12	-----	30	35	-----	91	-----	19	-----	14	16	-----
TOTAL	383.6	422	1,247	1,603	883	6,888	8,364	1,924	509	1,171	787	612
MEAN	12.4	14.1	40.2	51.7	30.4	222	279	62.1	17.0	37.8	25.4	20.4
MAX	19	20	122	140	55	718	1,340	177	22	112	118	57
MIN	8.7	12	16	24	19	20	52	18	14	11	13	12
CFSM	.08	.09	.27	.34	.20	1.47	1.85	.41	.11	.25	.17	.14
IN.	.09	.10	.31	.39	.22	1.70	2.06	.47	.13	.29	.19	.15

CAL YR 1971 TOTAL 28,754.2 MEAN 78.8 MAX 1,080 MIN 4.0 CFSM .52 IN 7.08

WTR YR 1972 TOTAL 24,793.6 MEAN 67.7 MAX 1,340 MIN 8.7 CFSM .45 IN 6.11

PEAK DISCHARGE (BASE, 600 CFS)

DATE	TIME	G.H.	DISCHARGE
03-15	1200	5.38	774
04-14	0900	5.59	837
04-17	1000	7.31	1600

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04160800 Sashabaw Creek near Drayton Plains, Mich.

LOCATION.--Lat 42°43'12", long 83°21'13", in SE¼ sec.26, T.4 N., R.9 E., Oakland County, on right bank 25 ft upstream from bridge on Maybee Road, 1.1 miles upstream from mouth, and 2.5 miles northeast of Drayton Plains.

DRAINAGE AREA.--20.9 sq mi.

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Metal V-notch weir Aug. 30, 1961 to Mar. 6, 1968. Altitude of gage is 970 ft (from topographic map).

AVERAGE DISCHARGE.--13 years, 10.0 cfs (6.50 inches per year).

EXTREMES.--Current year: Maximum discharge, 51 cfs Mar. 22 (gage height, 3.49 ft); minimum, 1.4 cfs Nov. 24, Dec. 1; minimum gage height, 1.93 ft Nov. 24.

Period of record: Maximum discharge, 138 cfs June 26, 1968 (gage height, 4.22 ft); maximum gage height, 4.23 ft Feb. 2, 1968; minimum discharge, 0.2 cfs on many days during 1961, 1963, 1964, 1965, 1966; minimum gage height, 1.59 ft Aug. 1, 2, 1960.

REMARKS.--Records fair except those for the winter period, which are poor.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	3.3	1.6	6.5	2.7	7.7	15	15	11	3.4	2.3	2.5
2	3.4	4.3	3.8	6.0	2.5	8.2	14	24	12	3.5	3.3	2.4
3	3.4	4.9	4.8	5.1	2.4	8.2	13	21	11	2.7	5.6	2.4
4	3.8	4.5	4.4	4.8	2.3	7.8	15	19	11	2.3	5.8	2.4
5	3.7	3.9	4.2	4.6	2.2	7.4	16	18	10	2.4	5.0	2.2
6	2.1	3.7	5.3	4.3	2.2	7.2	17	17	9.6	2.8	4.2	2.1
7	3.3	3.6	3.9	4.3	2.2	7.5	15	20	8.6	2.3	4.4	2.5
8	3.3	3.5	2.9	4.0	2.2	7.7	15	21	8.4	2.0	5.5	11
9	4.0	3.6	5.6	3.8	2.3	8.0	12	20	7.8	1.9	5.7	9.6
10	4.0	3.5	9.1	3.6	2.4	8.0	13	18	6.7	1.9	5.0	6.8
11	3.9	2.6	9.8	3.5	2.5	9.0	13	16	6.5	1.7	4.4	6.1
12	3.7	2.7	6.7	3.3	2.8	9.9	13	14	6.7	1.8	4.1	6.2
13	4.0	2.5	4.9	3.2	3.3	12	16	14	7.2	2.3	3.5	7.8
14	4.4	2.3	4.5	3.1	3.5	35	15	19	6.3	3.6	3.2	8.9
15	4.3	2.3	10	3.0	3.5	28	17	27	5.5	4.7	2.8	7.4
16	4.2	2.1	9.4	2.9	3.3	29	25	23	5.2	5.7	3.0	6.4
17	4.2	2.2	6.3	2.9	3.0	28	40	19	5.0	5.6	5.4	5.6
18	4.3	2.5	5.0	2.9	2.9	21	31	17	4.6	5.6	5.9	5.6
19	4.2	2.5	4.0	3.0	2.8	17	30	15	4.2	6.7	5.4	5.8
20	4.4	2.5	3.8	3.3	2.6	18	33	13	4.6	6.6	4.6	4.7
21	4.4	2.6	3.5	3.7	2.4	22	29	11	5.5	5.8	3.9	4.2
22	4.1	2.1	3.2	4.5	2.3	46	31	10	5.8	5.3	3.5	3.4
23	6.4	1.9	3.0	6.5	2.3	33	32	9.1	6.5	4.2	4.5	3.1
24	5.6	2.2	4.1	8.5	2.3	26	29	8.1	6.5	3.5	4.1	3.2
25	5.2	2.9	4.0	7.0	2.3	21	26	7.3	5.9	3.0	3.8	3.6
26	5.6	3.1	4.9	5.4	2.4	18	24	6.7	4.9	2.5	3.5	5.4
27	3.9	3.5	5.2	4.5	3.0	16	21	6.3	4.7	2.5	3.7	5.8
28	3.6	3.0	5.9	3.7	4.0	15	19	5.7	4.3	2.7	3.3	4.5
29	3.4	2.9	4.8	3.3	5.0	15	18	5.4	4.2	2.6	3.1	4.2
30	3.7	1.9	8.1	3.0	-----	14	18	7.9	4.0	2.2	2.9	4.3
31	3.4	-----	15	2.8	-----	14	-----	11	-----	2.1	2.7	-----
TOTAL	125.0	89.1	171.7	131.0	79.6	524.6	625	462.5	204.2	105.9	128.1	150.1
MEAN	4.03	2.97	5.54	4.23	2.74	16.9	20.8	14.9	6.81	3.42	4.13	5.00
MAX	6.4	4.9	15	8.5	5.0	46	40	27	12	6.7	5.9	11
MIN	2.1	1.9	1.6	2.8	2.2	7.2	12	5.4	4.0	1.7	2.3	2.1
CFSM	.19	.14	.27	.20	.13	.81	1.00	.71	.33	.16	.20	.24
IN.	.22	.16	.31	.23	.14	.93	1.11	.82	.36	.19	.23	.27

CAL YR 1971 TOTAL 4,267.99 MEAN 11.7 MAX 59 MIN .89 CFSM .56 IN 7.60
WTR YR 1972 TOTAL 2,796.80 MEAN 7.64 MAX 46 MIN 1.6 CFSM .37 IN 4.98

PEAK DISCHARGE (BASE, 45 CFS).--Mar. 22 (1200) 51 cfs (3.49 ft).

04160900 Clinton River near Drayton Plains, Mich.

LOCATION.—Lat 42°39'37", long 83°23'25", in NE¼ sec.21, T.3 N., R.9 E., Oakland County, on left bank 14 ft downstream from bridge on State Highway 59, 1.0 mile downstream from State fish hatchery, and 2.0 miles south of Drayton Plains.

DRAINAGE AREA.—79.2 sq mi.

PERIOD OF RECORD.—October 1959 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 940 ft (from topographic map). Jan. 29 to July 9, 1964, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.—13 years, 43.4 cfs (7.44 inches per year).

EXTREMES.—Current year: Maximum discharge, 102 cfs Apr. 24 (gage height, 3.27 ft); minimum, 11 cfs Oct. 1, 2, 3 (gage height, 1.80 ft).
Period of record: Maximum discharge, 175 cfs June 30, 1968 (gage height, 4.65 ft); minimum, 2.4 cfs May 31, 1961; minimum gage height, 1.23 ft Jan. 4, 1961.

REMARKS.—Records good except those for the winter period, which are fair. Some regulation and occasional diversion for lake level control at many lakes above station. Records of water temperatures for the current year are published in Part 2 of this report.

REVISIONS.—WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	25	16	60	34	30	86	84	26	38	24	31
2	12	25	16	58	33	30	83	83	24	36	28	30
3	11	24	15	56	33	31	80	80	24	36	28	27
4	13	22	14	54	33	31	79	78	27	36	29	23
5	15	22	14	52	33	32	78	70	30	35	28	19
6	17	22	16	50	32	34	77	71	28	36	27	17
7	17	22	16	48	33	35	76	74	26	36	28	17
8	17	23	15	47	34	33	72	70	25	39	28	35
9	18	23	16	45	34	34	70	65	24	32	27	31
10	18	23	23	44	35	34	69	59	21	25	26	31
11	18	25	24	43	34	34	68	54	20	26	26	30
12	18	25	26	42	32	35	66	49	21	31	25	32
13	19	25	27	42	30	40	62	47	22	40	25	38
14	19	25	29	41	30	58	59	49	26	38	25	40
15	19	24	39	40	29	56	58	50	25	42	25	41
16	19	24	42	39	28	62	66	51	22	46	25	41
17	19	25	46	38	28	68	65	55	22	42	29	41
18	19	24	50	37	28	75	64	58	21	43	27	46
19	19	24	52	36	27	79	68	62	22	46	29	44
20	18	24	55	36	27	81	75	60	25	39	31	42
21	19	23	58	36	27	83	83	56	29	40	33	41
22	23	21	60	38	27	89	92	55	28	43	35	39
23	24	20	58	39	26	92	97	55	28	40	53	37
24	23	19	56	41	25	96	99	54	27	38	47	34
25	22	18	57	42	25	98	92	53	26	34	46	33
26	22	17	56	41	25	99	90	51	23	33	44	36
27	22	17	55	39	27	97	87	45	28	33	41	39
28	22	17	52	38	28	95	86	38	33	32	38	36
29	22	17	52	37	28	94	89	33	37	29	36	35
30	23	17	62	36	-----	91	85	32	36	27	35	34
31	24	-----	63	35	-----	89	-----	31	-----	26	33	-----
TOTAL	582	662	1,180	1,330	865	1,935	2,321	1,772	776	1,117	981	1,020
MEAN	18.8	22.1	38.1	42.9	29.8	62.4	77.4	57.2	25.9	36.0	31.6	34.0
MAX	24	25	63	60	35	99	99	84	37	46	53	46
MIN	11	17	14	35	25	30	58	31	20	25	24	17
CFSM	.24	.28	.48	.54	.38	.79	.98	.72	.33	.45	.40	.43
IN.	.27	.31	.55	.62	.41	.91	1.09	.83	.36	.52	.46	.48

CAL YR 1971 TOTAL 15,859.1 MEAN 43.4 MAX 148 MIN 8.0 CFSM .55 IN 7.45
WTR YR 1972 TOTAL 14,541.0 MEAN 39.7 MAX 99 MIN 11 CFSM .50 IN 6.83

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04161000 Clinton River at Auburn Heights, Mich.

LOCATION.--Lat 42°38'00", long 83°13'28", in NW¼ sec.36, T.3 N., R.10 E., Oakland County, 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.

PERIOD OF RECORD.--May 1935 to June 1939 and February to September 1940 (published as "at Pontiac"), October 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 846.50 ft above mean sea level. Prior to October 1940, nonrecording gage at site 3.3 miles upstream at datum 876.01 feet above mean sea level.

AVERAGE DISCHARGE.--19 years (1935-38, 1956-72), 86.3 cfs (9.53 inches per year).

EXTREMES.--Current year: Maximum discharge, 970 cfs Aug. 23 (gage height, 4.12 ft); minimum, 30 cfs Oct. 17 (gage height, 1.00 ft).

Period of record: Maximum discharge, 1,400 cfs June 25, 1968 (gage height, 4.88 ft); 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 obtained from sources outside the basin.

REVISIONS (WATER YEARS).--WSP 1307: 1937 (M). WSP 1507: Drainage area at former site.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	86	51	122	75	82	144	207	101	46	63	69
2	42	102	51	118	80	112	142	199	74	43	115	50
3	37	108	51	120	90	135	148	180	54	50	69	41
4	46	102	48	121	80	135	176	169	44	43	53	38
5	44	96	50	137	70	123	172	145	47	44	47	41
6	43	86	94	141	70	123	165	149	52	46	44	43
7	42	69	76	141	70	141	160	149	50	45	64	46
8	43	72	68	133	75	108	153	160	52	48	58	249
9	50	67	88	140	80	96	147	147	52	45	55	106
10	37	58	186	134	86	97	148	142	48	48	72	96
11	40	51	104	104	82	94	147	141	43	47	86	98
12	42	51	86	92	85	85	144	125	55	111	83	97
13	47	46	83	88	86	131	146	77	55	89	79	185
14	44	41	84	86	98	324	132	63	53	64	78	124
15	42	47	150	85	98	166	159	56	71	90	56	110
16	40	56	101	85	85	174	248	51	59	59	52	105
17	34	59	88	90	83	166	180	49	66	54	137	107
18	38	62	79	110	86	156	162	48	66	114	53	161
19	41	69	77	120	76	146	175	57	71	127	51	116
20	41	68	84	100	66	142	168	71	141	117	41	107
21	41	60	74	90	85	150	159	58	109	108	48	103
22	100	60	68	100	74	198	207	63	129	100	130	98
23	78	64	67	140	49	154	168	138	103	93	445	93
24	47	66	63	140	42	149	165	176	84	90	164	88
25	45	59	61	150	40	137	164	162	72	60	175	94
26	45	60	64	250	39	130	162	122	69	50	144	118
27	45	69	65	200	35	138	161	96	54	58	117	98
28	44	54	73	100	42	148	161	68	50	48	113	92
29	47	62	71	80	50	154	150	48	58	44	108	102
30	78	65	241	75	-----	162	152	103	50	40	106	109
31	87	-----	134	70	-----	148	-----	88	-----	44	101	-----
TOTAL	1,495	2,015	2,680	3,662	2,077	4,404	4,865	3,507	2,032	2,065	3,007	2,984
MEAN	48.2	67.2	86.5	118	71.6	142	162	113	67.7	66.6	97.0	99.5
MAX	100	108	241	250	98	324	248	207	141	127	445	249
MIN	34	41	48	70	35	82	132	48	43	40	41	38
CFSM	.39	.55	.70	.96	.58	1.15	1.32	.92	.55	.54	.79	.81
IN.	.45	.61	.81	1.11	.63	1.33	1.47	1.06	.61	.62	.91	.90

CAL YR 1971 TOTAL 34,485 MEAN 94.5 MAX 378 MIN 31 CFSM .77 IN 10.43
WTR YR 1972 TOTAL 34,793 MEAN 95.1 MAX 445 MIN 34 CFSM .77 IN 10.52

PEAK DISCHARGE (BASE, 350 CFS)

DATE	TIME	G.H.	DISCHARGE
12-10	1300	2.99	438
12-30	1100	2.79	366
01-26	unknown	unknown	about 350
03-14	0500	3.25	550
04-16	1700	3.20	546
06-20	1800	3.04	486
08-23	0400	4.12	970
09-08	0800	3.53	675
09-13	1000	2.81	374

STREAMS TRIBUTARY TO LAKE ST. CLAIR

197

04161100 Galloway Creek near Auburn Heights, Mich.

LOCATION.—Lat 42°40'02", long 83°12'02", in SE¼ sec.18, T.3 N., R.11 E., Oakland County, on right bank 12 ft downstream from wooden bridge on Oakland University property, and 2.7 miles northeast of Auburn Heights.

DRAINAGE AREA.—17.9 sq mi.

PERIOD OF RECORD.—October 1959 to current year.

GAGE.—Water-stage recorder. Concrete control since Aug. 20, 1960. Altitude of gage is 830 ft (from topographic map).

AVERAGE DISCHARGE.—13 years, 8.12 cfs (6.16 inches per year).

EXTREMES.—Current year: Maximum discharge, 131 cfs Aug. 23 (gage height, 5.06 ft); minimum, 0.56 cfs Oct. 20, July 12; minimum gage height, 1.74 ft Oct. 12, 20.

Period of record: Maximum discharge, 368 cfs June 25, 1968 (gage height, 6.27 ft); minimum, 0.01 cfs on several days during July and August, 1964; minimum gage height, 0.82 ft Aug. 1, 1960.

REMARKS.—Records poor.

REVISIONS.—WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.93	.70	2.6	18	4.6	6.0	13	15	5.0	4.0	1.9	2.8
2	.92	.87	2.5	15	4.4	8.0	12	18	5.1	4.1	5.1	2.5
3	.92	.78	2.5	12	4.2	7.0	11	14	4.4	4.0	5.0	2.3
4	1.3	1.2	2.4	11	4.2	5.5	13	12	3.9	2.9	4.3	1.7
5	.84	1.8	2.6	11	4.2	5.0	14	11	3.3	2.5	3.8	1.4
6	.95	1.7	5.1	10	4.2	5.5	15	12	3.2	2.1	3.5	.97
7	.99	1.7	4.5	9.5	4.2	6.5	14	13	3.4	1.9	4.2	.87
8	.90	1.8	3.9	9.0	4.2	9.0	14	16	2.5	1.9	4.0	33
9	1.6	2.4	4.5	8.6	4.3	8.0	11	14	2.5	1.5	3.8	23
10	1.0	2.2	26	8.2	4.5	7.0	11	11	2.1	1.3	3.0	15
11	.78	1.5	18	8.0	4.6	10	11	9.5	1.9	.88	2.7	9.6
12	.68	1.3	13	7.8	4.8	13	11	7.9	2.1	3.9	2.5	7.5
13	1.0	1.7	9.0	7.6	5.0	17	14	7.3	1.7	7.8	2.3	20
14	1.0	1.8	7.1	7.5	5.5	60	13	9.4	1.4	5.9	2.2	14
15	.72	2.1	23	7.4	5.2	56	18	11	2.7	8.2	1.6	8.5
16	.70	2.0	16	7.4	5.0	49	39	11	2.4	5.4	1.6	6.4
17	.72	2.1	12	7.3	4.8	44	56	9.5	2.1	3.9	5.4	5.0
18	.67	2.1	11	7.2	4.7	36	46	8.3	1.7	4.9	4.9	5.8
19	.64	2.5	7.3	7.1	4.6	30	42	7.0	1.8	6.4	5.0	4.5
20	.62	2.5	6.6	7.0	4.5	20	41	6.1	5.9	5.2	3.9	3.7
21	.66	2.6	6.4	7.1	4.3	20	35	5.2	8.0	4.3	3.0	3.1
22	4.4	2.0	5.5	7.8	4.1	41	40	4.6	9.3	3.5	6.5	2.7
23	5.3	1.7	5.8	9.0	3.9	34	37	4.2	7.9	2.7	68	2.4
24	2.3	2.1	4.9	11	3.8	25	29	4.0	6.6	2.1	44	2.3
25	1.6	2.2	4.5	9.5	3.8	19	22	3.5	5.9	2.5	33	2.6
26	1.3	2.4	5.5	8.0	3.8	16	17	3.1	5.1	2.8	17	4.8
27	1.1	2.9	5.3	7.0	4.0	14	15	2.8	4.5	3.2	12	3.4
28	.90	2.8	5.6	6.0	4.3	13	13	2.4	4.2	2.5	7.3	2.8
29	.78	2.9	5.2	5.5	4.5	12	12	2.2	4.5	2.1	5.6	3.2
30	.78	3.3	27	5.0	-----	13	11	6.6	4.5	1.8	4.4	5.3
31	.70	-----	33	4.8	-----	12	-----	6.0	-----	1.6	3.5	-----
TOTAL	37.70	59.65	288.3	267.3	128.2	621.5	650	267.6	119.6	107.78	275.0	201.14
MEAN	1.22	1.99	9.30	8.62	4.42	20.0	21.7	8.63	3.99	3.48	8.87	6.78
MAX	5.3	3.3	33	18	5.5	60	56	18	9.3	8.2	68	33
MIN	.62	.70	2.4	4.8	3.8	5.0	11	2.2	1.4	.88	1.6	.87
CFSM	.07	.11	.52	.48	.25	1.12	1.21	.48	.22	.19	.50	.37
IN.	.08	.12	.60	.56	.27	1.29	1.35	.56	.25	.22	.57	.42

CAL YR 1971 TOTAL 2,733.91 MEAN 7.49 MAX 66 MIN .48 CFSM .42 IN 5.68

WTR YR 1972 TOTAL 3,023.77 MEAN 8.26 MAX 68 MIN .62 CFSM .46 IN 6.28

PEAK DISCHARGE (BASE, 90 CFS).—Aug. 23 (0300) 131 cfs (5.06 ft).

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04161500 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., Oakland County, 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.—38.5 sq mi.

PERIOD OF RECORD.—September 1955 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 940 ft (from topographic map).

AVERAGE DISCHARGE.—17 years, 22.0 cfs (7.76 inches per year).

EXTREMES.—Current year: Maximum discharge, 150 cfs Apr. 17; minimum daily, 2.3 cfs June 7; minimum gage height, 1.52 ft June 7.

Period of record: Maximum discharge, 359 cfs Feb. 4, 1968 (gage height, 3.50 ft); maximum gage height, 4.43 ft Sept. 22, 1971, caused by construction downstream; minimum discharge 1.2 cfs June 28, July 13, 14, 15, 1959.

REMARKS.—Records poor. Occasional regulation by Lake Orion.

REVISIONS.—WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	36	15	36	24	16	39	44	3.1	11	10	5.6
2	11	23	15	33	22	17	36	44	2.7	8.6	21	4.6
3	11	12	15	31	20	18	35	42	2.6	7.2	18	4.4
4	17	10	15	29	19	17	36	40	2.4	5.9	15	4.0
5	29	8.3	15	27	18	17	40	38	2.5	5.0	12	3.8
6	10	7.5	17	26	17	17	42	38	6.1	4.6	10	3.8
7	17	10	20	24	16	19	40	39	2.3	4.4	19	4.5
8	23	10	20	23	16	22	37	38	2.5	4.6	15	25
9	21	14	20	23	15	19	43	37	2.7	5.0	13	20
10	20	15	37	22	15	19	42	35	2.7	6.2	12	16
11	19	15	33	22	16	19	42	32	2.7	5.3	11	14
12	28	15	29	22	17	25	18	32	3.5	5.0	10	13
13	39	14	26	21	17	35	25	30	5.0	5.9	9.0	19
14	30	14	25	21	17	58	35	37	7.2	8.6	9.0	18
15	22	14	35	21	16	54	55	42	11	14	9.0	16
16	8.6	14	37	21	16	50	90	45	12	12	10	13
17	8.1	14	30	21	16	47	120	40	9.6	11	13	12
18	8.1	14	27	21	16	51	80	36	8.6	9.6	11	12
19	8.1	17	25	21	15	52	75	35	8.6	18	13	11
20	7.2	19	24	21	15	54	70	32	9.1	16	11	9.6
21	8.1	18	23	21	15	60	65	31	9.1	15	10	8.6
22	12	17	23	21	15	68	60	29	9.1	13	9.1	6.7
23	12	16	22	22	15	76	55	26	10	12	16	5.9
24	12	16	22	22	15	82	50	24	11	11	15	5.9
25	12	16	23	25	15	80	40	22	12	10	12	7.6
26	15	16	24	33	15	72	35	13	12	9.0	10	14
27	26	16	25	33	15	66	30	3.5	12	8.0	11	14
28	26	16	26	32	15	55	23	4.1	11	7.5	10	12
29	38	15	28	30	15	51	40	15	11	7.0	9.1	11
30	37	15	40	28	-----	48	42	22	11	6.5	7.6	12
31	36	-----	40	26	-----	43	-----	15	-----	6.5	6.2	-----
TOTAL	582.2	456.8	776	779	478	1,327	1,440	960.6	215.1	273.4	367.0	327.0
MEAN	18.8	15.2	25.0	25.1	16.5	42.8	48.0	31.0	7.17	8.82	11.8	10.9
MAX	39	36	40	36	24	82	120	45	12	18	21	25
MIN	7.2	7.5	15	21	15	16	18	3.5	2.3	4.4	6.2	3.8
CFSM	.49	.39	.65	.65	.43	1.11	1.25	.81	.19	.23	.31	.28
IN.	.56	.44	.75	.75	.46	1.28	1.39	.93	.21	.26	.35	.32

CAL YR 1971 TOTAL 9,801.4 MEAN 26.9 MAX 169 MIN 2.6 CFSM .70 IN 9.47

WTR YR 1972 TOTAL 7,982.1 MEAN 21.8 MAX 120 MIN 2.3 CFSM .57 IN 7.71

PEAK DISCHARGE (BASE, 90 CFS).—Apr. 17 (time and gage height unknown) 150 cfs.

NOTE.—No gage-height record Nov. 21 to Mar. 16, Apr. 13-30.

STREAMS TRIBUTARY TO LAKE ST. CLAIR

199

04161540 Paint Creek at Rochester, Mich.

LOCATION.—Lat 42°41'18", long 83°08'35", in NW¼ Sec. 10, T.3 N., R.11 E., Oakland County, on right bank at upstream side of bridge on Ludlow Street in Rochester, and 1.5 miles upstream from mouth.

DRAINAGE AREA.—70.9 sq mi.

PERIOD OF RECORD.—October 1959 to current year.

GAGE.—Water-stage recorder. Datum of gage is 755.11 ft above mean sea level.

AVERAGE DISCHARGE.—13 years, 42.6 cfs (8.16 inches per year).

EXTREMES.—Current year: Maximum discharge, 290 cfs Aug. 23 (gage height, 3.97 ft); maximum gage height, 4.18 ft Mar. 14 (backwater from ice); minimum daily discharge, 10 cfs June 4, 11, 12; minimum gage height, 1.56 ft June 5.

Period of record: Maximum discharge, 918 cfs Feb. 1, 1968; maximum gage height, 5.95 ft Feb. 10, 1965 (backwater from ice); minimum discharge, 3.9 cfs Aug. 3, 1966; minimum gage height, 1.26 ft Sept. 16, 1960.

REMARKS.—Records poor. Occasional regulation by Lake Orion.

REVISIONS.—WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	38	27	57	43	28	88	93	30	17	13	13
2	19	39	27	53	41	32	86	94	28	15	34	12
3	16	29	26	48	36	30	83	81	23	13	27	12
4	19	27	26	44	34	29	86	73	10	12	23	12
5	19	26	27	43	33	29	86	67	11	11	20	13
6	19	24	34	43	31	31	92	68	15	11	18	15
7	19	23	34	42	29	35	87	72	18	11	32	25
8	26	23	33	41	28	42	83	78	15	11	25	64
9	26	24	34	40	27	35	82	71	14	11	21	39
10	25	25	62	39	27	35	90	63	13	12	19	28
11	25	25	56	38	28	35	86	56	10	13	18	23
12	25	24	44	38	29	45	82	53	10	16	17	22
13	34	27	41	38	30	50	60	51	11	18	16	36
14	35	27	39	38	30	170	58	56	16	18	16	30
15	34	27	61	37	30	139	99	71	21	27	16	25
16	25	27	64	37	29	124	165	73	21	20	17	23
17	23	27	51	37	29	122	218	67	16	16	22	22
18	23	28	45	37	28	105	136	57	15	28	19	23
19	23	29	43	37	27	95	107	49	16	44	22	21
20	23	31	43	37	27	94	135	42	17	32	18	19
21	22	31	41	37	27	98	117	39	17	22	16	18
22	33	29	39	37	27	150	133	35	18	20	20	16
23	36	27	38	39	27	131	120	29	20	18	103	13
24	31	29	37	41	27	118	102	19	21	16	50	14
25	29	30	38	50	27	111	94	15	22	15	35	17
26	28	29	40	60	27	105	99	14	22	14	25	24
27	33	28	41	60	27	101	64	18	21	13	21	25
28	33	28	45	56	27	97	43	19	21	12	18	23
29	38	28	42	50	27	92	76	25	20	12	16	23
30	40	28	69	47	-----	92	79	49	19	11	15	26
31	40	-----	67	45	-----	88	-----	47	-----	11	14	-----
TOTAL	841	837	1,314	1,346	859	2,488	2,936	1,644	531	520	746	676
MEAN	27.1	27.9	42.4	43.4	29.6	80.3	97.9	53.0	17.7	16.8	24.1	22.5
MAX	40	39	69	60	43	170	218	94	30	44	103	64
MIN	16	23	26	37	27	28	43	14	10	11	13	12
CFSM	.38	.39	.60	.61	.42	1.13	1.38	.75	.25	.24	.34	.32
IN.	.44	.44	.69	.71	.45	1.31	1.54	.86	.28	.27	.39	.35

CAL YR 1971 TOTAL 16,889.6 MEAN 46.3 MAX 291 MIN 7.8 CFSM .65 IN 8.86
WTR YR 1972 TOTAL 14,738.0 MEAN 40.3 MAX 218 MIN 10 CFSM .57 IN 7.73

PEAK DISCHARGE (BASE, 200 CFS)

DATE	TIME	G.H.	DISCHARGE
03-14	---	---	about 250
04-17	0300	3.82	280
08-23	0200	3.97	290

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04161580 Stony Creek near Romeo, Mich.

LOCATION.—Lat 42°48'03", long 83°05'25", in SW $\frac{1}{4}$ sec. 31, T. 5 N., R. 12 E., Macomb County, on right bank, at upstream side of bridge on Romeo Road, and 4.0 miles west of Romeo.

DRAINAGE AREA.—25.6 sq mi.

PERIOD OF RECORD.—October 1964 to current year.

GAGE.—Water-stage recorder. Datum of gage is 861.64 ft above mean sea level.

AVERAGE DISCHARGE.—8 years, 13.9 cfs (7.37 inches per year).

EXTREMES.—Current year: Maximum discharge, 86 cfs Mar. 14 (gage height, 3.13 ft); minimum, 1.6 cfs Feb. 27 (gage height, 1.37 ft), result of freezeup.

Period of record: Maximum discharge, 229 cfs Feb. 1, 1968 (gage height, 4.53 ft); maximum gage height, 4.56 ft Feb. 10, 1965; minimum discharge, 0.92 cfs Oct. 5, 9, 1967; minimum gage height, 1.28 ft July 27, 28, 1965.

REMARKS.—Records good except those for the winter period, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	7.8	8.0	21	8.7	7.9	23	27	6.9	5.6	3.1	10
2	3.6	8.2	7.5	18	8.5	7.9	22	32	9.4	5.4	5.6	8.0
3	3.5	8.2	7.3	16	8.3	7.8	20	28	9.0	5.4	6.6	7.7
4	3.7	7.8	7.2	15	8.1	7.5	21	25	7.2	3.9	5.3	5.9
5	3.7	10	7.4	14	8.0	7.1	21	18	5.7	3.5	4.1	3.9
6	3.7	9.6	11	13	8.0	7.0	20	17	5.4	3.2	3.6	3.4
7	4.7	8.7	13	12	8.0	13	16	20	4.8	3.1	5.5	3.4
8	4.2	7.7	11	11	8.0	10	12	22	4.4	3.3	6.1	17
9	4.8	7.5	10	11	8.1	9.8	11	19	4.1	3.3	5.4	12
10	4.6	8.2	18	11	8.2	9.8	12	16	3.6	4.0	4.6	11
11	4.1	8.2	22	11	8.5	8.9	13	11	3.3	3.6	3.8	9.6
12	3.7	7.2	14	11	9.0	14	12	9.1	3.5	3.7	3.5	8.6
13	4.0	6.8	10	11	9.5	15	20	8.6	4.0	4.9	3.2	12
14	6.1	6.2	8.9	10	10	59	19	12	4.0	6.0	4.4	14
15	7.4	6.1	18	9.5	9.8	43	22	14	4.9	8.9	8.2	9.8
16	6.9	5.9	22	8.5	8.9	41	37	15	4.7	7.8	6.4	7.9
17	5.3	5.6	15	8.0	8.5	42	66	13	4.0	8.3	11	7.1
18	4.7	5.7	11	7.5	8.2	37	56	12	3.7	11	9.2	5.4
19	4.4	5.9	9.7	8.0	8.4	32	51	9.7	3.5	20	5.6	4.5
20	4.7	6.3	9.7	8.0	8.2	32	53	8.6	4.1	14	4.3	4.6
21	7.3	7.2	9.7	8.5	8.2	37	56	7.7	5.1	10	3.6	6.7
22	12	5.4	8.5	9.5	8.5	61	59	6.9	5.6	8.9	4.9	6.3
23	17	4.6	11	11	7.4	57	56	6.2	6.9	7.6	20	5.6
24	14	5.0	11	12	6.9	53	49	5.8	6.5	6.7	12	5.3
25	9.7	7.4	10	14	6.6	40	43	5.3	6.1	5.9	14	5.5
26	8.0	7.8	11	14	6.6	34	37	4.7	5.2	5.3	13	7.3
27	7.7	9.0	11	11	6.5	31	32	4.2	4.3	5.5	12	7.7
28	10	9.6	12	10	6.3	28	31	3.8	3.9	5.0	11	6.7
29	9.6	8.9	14	10	6.7	26	28	4.1	5.3	4.2	9.0	6.3
30	8.8	9.2	20	9.5	-----	24	26	6.7	6.1	3.2	6.9	7.1
31	8.2	-----	23	9.0	-----	23	-----	8.1	-----	2.9	10	-----
TOTAL	202.9	221.7	381.9	353.0	234.6	825.7	944	400.5	155.2	194.1	225.9	230.3
MEAN	6.55	7.39	12.3	11.4	8.09	26.6	31.5	12.9	5.17	6.26	7.29	7.68
MAX	17	10	23	21	10	61	66	32	9.4	20	20	17
MIN	2.8	4.6	7.2	7.5	6.3	7.0	11	3.8	3.3	2.9	3.1	3.4
CFSM	.26	.29	.48	.45	.32	1.04	1.23	.50	.20	.24	.28	.30
IN.	.29	.32	.55	.51	.34	1.20	1.37	.58	.23	.28	.33	.33

CAL YR 1971 TOTAL 5,242.9 MEAN 14.4 MAX 109 MIN 1.5 CFSM .56 IN 7.62
WTR YR 1972 TOTAL 4,369.8 MEAN 11.9 MAX 66 MIN 2.8 CFSM .46 IN 6.35

PEAK DISCHARGE (BASE, 100 CFS).—No peak above base.

STREAMS TRIBUTARY TO LAKE ST. CLAIR

201

04161790 Stony Lake near Washington, Mich.

LOCATION.--Lat 42°42'58", long 83°05'58", in SE1/4 sec.31, T.4 N., R.12 E., Macomb County, on left bank 1,000 ft east of bridge over dam on Stony Creek, and 2.7 miles west of Washington.

DRAINAGE AREA.--68.0 sq mi.

PERIOD OF RECORD.--February 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 790.00 ft above mean sea level (levels by Huron-Clinton Metropolitan Authority). Gage readings have been converted to elevations above mean sea level.

EXTREMES.--Current year: Maximum contents, 5,298 acre-ft Apr. 19 (elevation, 802.8 ft); minimum, 2,093 acre-ft Sept. 25 (elevation 795.7 ft).

Period of record: Maximum contents, 5,349 acre-ft Apr. 19, 1967, June 26, 1968 (elevation, 802.9 ft); minimum recorded, 1,758 acre-ft Nov. 21, 1967 (elevation, 794.7 ft).

REMARKS.--Reservoir is formed by an earth-fill dam with concrete spillway completed in 1962. The spillway section includes a drum gage with minimum crest elevation of 796 ft, maximum of 802 ft, and 2 sluices, one on each side with valve controls (capable of draining lake). The reservoir began filling February 1963. Lake is used for recreational purposes.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

Date	Elevation (feet)	Contents (Acre-feet)	Change in contents during month	
			(Acre-feet)	Equivalent in cfs
Sept. 30	802.1	4,941	-	-
Oct. 31	800.0	3,900	-1,041	-16.9
Nov. 30	800.1	3,949	+49	+8
Dec. 31	800.2	3,998	+49	+8
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Calendar year 1971	-	-	-98	+1
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Jan. 31	800.1	3,949	-49	-8
Feb. 29	800.1	3,949	0	0
Mar. 31	802.4	5,094	+1,145	+18.6
Apr. 30	802.4	5,094	0	0
May 31	802.2	4,992	-102	-1.7
June 30	802.1	4,941	-51	-9
July 31	802.0	4,890	-51	-8
Aug. 31	799.8	3,804	-1,086	-17.7
Sept. 30	795.9	2,164	-1,640	-27.6
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Water year 1971-72	-	-	-2,777	-3.8

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04161800 Stony Creek near Washington, Mich.

LOCATION.--Lat 42°42'55", long 83°05'31", in SW1/4 sec.31, T.4 N., R.12 E., Macomb County, on left bank 15 ft downstream from bridge on Mt. Vernon Road, 500 ft downstream from Stony Lake Dam, and 2.9 miles west of Washington.

DRAINAGE AREA.--68.2 sq mi.

PERIOD OF RECORD.--July 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 772.59 ft above mean sea level (levels by Huron-Clinton Metropolitan Authority).

AVERAGE DISCHARGE.--14 years, 33.9 cfs (6.75 inches per year), adjusted for storage since 1963.

EXTREMES.--Current year: Maximum discharge, 235 cfs Sept. 6 (gage height, 4.88 ft); minimum, 7.5 cfs Mar. 7 (gage height, 2.12 ft).

Period of record: Maximum discharge, 427 cfs Feb. 2, 1968 (gage height, 5.86 ft); maximum gage height, 6.71 ft Mar. 6, 1959 (backwater from ice); minimum discharge, 0.9 cfs July 10, 1963; minimum gage height, 1.84 ft July 31, 1964; minimum daily discharge, 1.3 cfs July 31, Aug. 1, 1964.

REMARKS.--Records good except those for period of no gage-height record, which are poor. Occasional diurnal fluctuation caused by mills above station prior to February 1963; occasional regulation by Stony Lake since (see sta 04161790).

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	21	28	53	24	26	65	73	27	20	13	39
2	15	20	24	49	23	31	62	92	34	20	20	32
3	13	17	23	43	26	30	60	86	34	15	25	27
4	53	16	22	41	26	29	64	83	36	14	20	24
5	59	15	21	37	23	27	62	69	26	12	16	24
6	60	15	27	33	24	25	64	64	26	12	14	103
7	59	15	33	31	25	20	65	66	21	12	19	73
8	82	16	33	30	24	26	52	69	19	13	22	71
9	54	17	34	30	22	32	46	71	22	16	19	61
10	31	18	51	31	22	32	44	57	17	14	17	45
11	35	18	71	31	22	31	46	53	10	14	15	46
12	38	18	64	30	23	37	46	47	12	15	13	57
13	42	19	51	31	25	29	53	44	16	19	12	63
14	44	17	41	30	26	15	57	47	17	25	15	62
15	45	17	46	26	29	15	67	48	24	29	22	62
16	45	17	55	24	29	16	97	48	24	32	30	62
17	45	16	55	21	29	57	155	47	16	33	40	61
18	45	17	47	20	30	93	168	48	15	33	30	61
19	45	18	42	22	28	100	169	44	14	33	22	61
20	45	18	39	25	25	100	166	38	27	33	16	61
21	46	24	38	27	24	97	142	35	35	32	14	60
22	47	18	34	30	25	116	150	33	40	31	47	59
23	54	15	32	38	25	125	151	27	26	28	48	57
24	50	17	34	41	25	122	143	24	21	24	48	57
25	40	17	35	42	23	114	126	22	24	22	76	27
26	30	18	39	35	23	103	110	19	24	20	107	17
27	27	24	38	31	23	93	96	18	22	18	116	19
28	26	27	39	30	24	84	79	17	20	16	118	19
29	25	35	36	27	24	77	71	17	22	15	118	19
30	24	34	57	26	-----	72	69	24	21	13	129	20
31	23	-----	64	25	-----	67	-----	27	-----	11	68	-----
TOTAL	1,264	574	1,253	990	721	1,841	2,745	1,457	692	644	1,289	1,449
MEAN	40.8	19.1	40.4	31.9	24.9	59.4	91.5	47.0	23.1	20.8	41.6	48.3
MAX	82	35	71	53	30	125	169	92	40	33	129	103
MIN	13	15	21	20	22	15	44	17	10	11	12	17
MEAN+	23.9	19.9	41.2	31.1	24.9	78.0	91.5	45.3	22.2	20.0	23.9	20.7
CFSM+	.35	.29	.60	.46	.37	1.14	1.34	.66	.33	.29	.35	.30
IN+	.40	.33	.70	.53	.39	1.32	1.50	.77	.36	.34	.40	.34

CAL YR 1971 TOTAL 12,644.7 MEAN 34.6 MAX 197 MIN 4.1 MEAN+ 34.7 CFSM+ .51 IN+ 6.91
WTR YR 1972 TOTAL 14,919.0 MEAN 40.8 MAX 169 MIN 10 MEAN+ 37.0 CFSM+ .54 IN+ 7.38

+ Adjusted for change in contents in Stony Lake.
NOTE.--No gage-height record July 10 to Aug. 21.

STREAMS TRIBUTARY TO LAKE ST. CLAIR

203

04162900 Big Beaver Creek near Warren, Mich.

LOCATION.—Lat 42°32'31", long 83°02'52", in NW¼ SW¼ sec.33, T.2 N., R.12 E., Macomb County, on left bank between bridges on Mound Road, 1.0 mile north of Warren, and 2.0 miles upstream from mouth.

DRAINAGE AREA.—23.5 sq mi.

PERIOD OF RECORD.—October 1958 to current year.

GAGE.—Water-stage recorder. Datum of gage is 598.80 ft above mean sea level (Macomb County benchmark). Prior to Aug. 26, 1960, nonrecording gage and crest-stage gage at same site and datum.

AVERAGE DISCHARGE.—14 years, 12.6 cfs (7.28 inches per year).

EXTREMES.—Current year: Maximum discharge, 390 cfs Apr. 16 (gage height, 10.04 ft); maximum gage height, 11.03 ft Mar. 14 (backwater from ice); minimum discharge, 0.45 cfs Oct. 19, 20; minimum gage height, 4.59 ft Oct. 4, 19, 20.

Period of record: Maximum discharge, 1,240 cfs June 26, 1968 (gage height, 14.45 ft); minimum, no flow on several days in June and July 1962, caused by unusual regulation above gage; minimum natural discharge, 0.1 cfs several days each year in 1959-62.

REMARKS.—Records poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	1.2	3.5	14	3.7	15	13	10	6.7	2.1	4.1	8.5
2	5.0	4.6	2.9	10	3.6	20	13	24	9.9	1.5	70	7.5
3	.86	1.5	3.0	8.0	3.5	13	13	13	4.1	2.5	80	7.0
4	.58	.78	3.5	7.0	3.5	6.0	17	11	3.3	2.0	35	6.2
5	1.3	.73	4.0	6.0	3.4	4.0	18	8.7	2.6	1.3	15	6.0
6	.95	1.4	8.5	5.2	3.3	3.8	16	11	2.4	1.4	8.0	6.0
7	2.0	.71	12	4.7	3.2	10	14	14	2.4	1.5	10	8.0
8	.86	.65	9.0	4.5	3.1	17	12	28	1.8	2.8	12	40
9	1.1	.75	8.5	6.0	3.1	8.0	11	24	1.6	3.4	10	23
10	1.3	1.3	35	6.5	3.1	5.0	11	13	1.5	2.7	7.5	13
11	.78	1.1	15	5.8	3.1	5.5	12	9.5	1.5	1.9	6.5	11
12	.62	.88	6.0	5.2	3.8	8.0	11	8.0	1.5	1.9	6.0	12
13	1.0	1.2	5.0	4.8	5.0	20	12	8.6	2.7	5.8	5.5	72
14	2.4	.83	4.8	4.5	7.0	170	11	7.6	2.0	5.9	5.2	30
15	1.1	.79	17	4.0	9.0	53	22	12	7.6	15	5.5	15
16	1.3	.85	15	3.5	8.0	35	104	8.0	5.9	12	7.0	11
17	.62	.95	8.0	3.1	6.5	32	128	6.8	2.5	15	11	9.1
18	.53	.82	6.0	4.0	5.5	22	31	5.6	2.1	21	8.0	16
19	.48	1.3	4.8	5.0	5.0	17	28	5.0	2.0	62	7.0	12
20	.59	1.5	5.0	5.5	4.3	18	49	4.4	2.2	17	6.0	8.2
21	1.8	2.0	5.4	5.2	3.9	18	27	3.8	29	9.2	7.0	7.2
22	16	1.4	5.6	9.0	3.7	28	70	3.4	17	5.3	43	7.1
23	32	1.0	4.4	16	3.5	20	38	3.6	12	6.0	256	5.8
24	9.9	1.3	2.9	8.0	3.4	18	22	3.3	5.1	3.2	80	5.4
25	3.2	2.0	2.2	7.5	3.4	15	21	2.9	3.7	3.0	42	8.6
26	1.9	3.0	3.7	6.0	3.4	13	14	2.8	2.9	2.7	30	15
27	1.8	3.5	3.3	5.0	3.4	14	12	2.6	2.5	3.9	20	11
28	1.4	4.2	5.1	4.6	3.4	14	10	2.4	2.2	3.1	15	6.7
29	5.2	4.5	3.7	4.3	4.0	14	9.2	2.5	4.2	2.4	13	7.1
30	5.6	5.5	101	4.1	-----	17	8.4	11	3.5	2.2	11	13
31	1.0	-----	53	3.9	-----	14	-----	21	-----	1.8	9.5	-----
TOTAL	107.67	52.24	366.8	190.9	122.8	667.3	777.6	291.5	148.4	221.5	845.8	408.4
MEAN	3.47	1.74	11.8	6.16	4.23	21.5	25.9	9.40	4.95	7.15	27.3	13.6
MAX	32	5.5	101	16	9.0	170	128	28	29	62	256	72
MIN	.48	.65	2.2	3.1	3.1	3.8	8.4	2.4	1.5	1.3	4.1	5.4
CFSM	.15	.07	.50	.26	.18	.91	1.10	.40	.21	.30	1.16	.58
IN.	.17	.08	.58	.30	.19	1.06	1.23	.46	.23	.35	1.34	.65

CAL YR 1971 TOTAL 3,174.91 MEAN 8.70 MAX 250 MIN .45 CFSM .37 IN 5.03

WTR YR 1972 TOTAL 4,200.91 MEAN 11.5 MAX 256 MIN .48 CFSM .49 IN 6.65

PEAK DISCHARGE (BASE, 300 CFS)

DATE	TIME	G.H.	DISCHARGE
03-14	---	---	about 350
04-16	2400	10.04	390
08-23	0500	9.06	309

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04163400 Plum Brook at Utica, Mich.

LOCATION.—Lat 42°36'05", long 83°04'27", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 7, T.2 N., R.12 E., Macomb County, on left bank at upstream side of bridge on Ryan Road, 1.0 miles southwest of Utica.

DRAINAGE AREA.—16.5 sq mi.

PERIOD OF RECORD.—July 1965 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 625 ft (from topographic map).

AVERAGE DISCHARGE.—7 years, 10.9 cfs (8.97 inches per year).

EXTREMES.—Current year: Maximum discharge, 205 cfs Aug. 23 (gage height, 6.41 ft); maximum gage height, 7.81 ft Mar. 14 (backwater from ice); minimum daily discharge, 0.40 cfs Oct. 18, 19; minimum gage height, 1.30 ft Oct. 4.

Period of record: Maximum discharge, 1,160 cfs June 26, 1968 (gage height, 10.36 ft); no flow part of each day July 19, 28, 1966, Aug. 22-28, Sept. 3, 11, 1969; minimum gage height, 1.23 ft Sept. 16, 1967.

REMARKS.—Records poor.

REVISIONS.—WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.90	1.3	3.0	10	2.2	10	13	8.4	5.5	2.0	2.5	5.8
2	.90	2.0	2.3	8.0	2.1	15	12	27	5.6	1.3	47	5.8
3	.85	1.0	2.4	6.0	1.9	7.0	11	19	4.4	1.2	38	5.6
4	.80	.60	3.0	5.0	1.9	4.0	15	10	2.9	1.1	10	4.7
5	1.2	.55	3.0	4.2	1.8	3.0	18	7.9	1.9	1.1	11	4.2
6	2.0	.95	7.4	3.6	1.8	2.7	17	8.8	1.7	1.1	4.2	3.8
7	1.4	.65	9.9	3.3	1.7	6.0	14	11	1.4	1.1	7.8	3.8
8	1.0	.50	7.0	3.2	1.7	12	13	21	1.3	1.7	7.8	29
9	.80	.62	6.8	4.0	1.7	6.0	9.2	19	1.2	2.5	8.5	16
10	1.1	.99	28	4.5	1.6	4.0	9.4	11	1.2	2.0	5.5	8.7
11	.74	.60	14	4.0	1.6	2.5	9.4	7.6	.99	1.4	4.6	6.6
12	.50	.90	5.2	3.5	1.6	5.0	9.1	6.2	1.3	1.2	4.1	6.6
13	.60	.90	3.8	3.1	2.0	10	10	5.4	1.3	2.2	3.8	35
14	1.5	.69	3.8	2.8	4.0	120	10	5.7	1.5	2.9	3.4	26
15	1.3	.95	14	2.6	6.5	60	21	8.7	3.0	5.2	4.6	11
16	.90	1.3	13	2.4	6.0	40	68	7.6	2.8	3.0	3.5	8.1
17	.50	.94	6.2	2.2	4.5	30	95	6.9	1.7	2.9	6.8	6.6
18	.40	.68	4.9	2.7	4.0	23	41	4.0	1.8	18	5.2	9.2
19	.40	1.1	3.8	3.5	3.5	19	31	4.3	1.6	19	5.0	7.6
20	.45	1.5	4.6	4.0	3.1	16	44	3.7	7.7	3.8	4.2	5.4
21	1.0	2.0	4.8	3.8	2.8	18	27	3.2	32	2.3	4.1	4.6
22	5.0	1.3	3.6	5.0	2.6	41	56	2.8	14	1.6	10	4.4
23	20	2.1	3.1	10	2.5	25	42	2.0	12	1.5	147	4.1
24	10	2.4	3.8	6.0	2.4	18	23	2.0	7.0	1.5	43	4.2
25	3.0	2.6	3.4	4.6	2.4	15	20	1.6	5.1	1.2	28	5.2
26	1.5	2.4	4.4	4.0	2.4	13	14	1.5	4.3	1.1	22	8.3
27	1.3	2.9	4.6	3.6	2.4	12	11	1.3	3.1	1.9	18	8.1
28	1.3	3.5	4.8	3.2	2.4	12	8.9	1.3	2.3	1.3	13	5.7
29	3.0	3.6	4.6	2.9	2.5	12	7.7	1.2	2.8	.74	9.9	5.5
30	3.5	4.7	40	2.7	-----	13	6.9	6.1	2.9	.66	7.3	8.3
31	1.0	-----	30	2.4	-----	13	-----	11	-----	.50	7.4	-----
TOTAL	68.84	46.22	253.2	130.8	77.6	587.2	686.6	237.2	136.29	89.00	497.2	267.9
MEAN	2.22	1.54	8.17	4.22	2.68	18.9	22.9	7.65	4.54	2.87	16.0	8.93
MAX	20	4.7	40	10	6.5	120	95	27	32	19	147	35
MIN	.40	.50	2.3	2.2	1.6	2.5	6.9	1.2	.99	.50	2.5	3.8
CFSM	.13	.09	.50	.26	.16	1.15	1.39	.46	.28	.17	.97	.54
IN.	.16	.10	.57	.29	.17	1.32	1.55	.53	.31	.20	1.12	.60

CAL YR 1971 TOTAL 2,692.03 MEAN 7.38 MAX 190 MIN .40 CFSM .45 IN 6.07

WTR YR 1972 TOTAL 3,078.05 MEAN 8.41 MAX 147 MIN .40 CFSM .51 IN 6.94

PEAK DISCHARGE (BASE, 200 CFS).—Aug. 23 (0900) 205 cfs (6.41 ft).

STREAMS TRIBUTARY TO LAKE ST. CLAIR

205

04164000 Clinton River near Fraser, Mich.
(International hydrological decade river station)

LOCATION.--Lat 42°34'40", long 82°57'00", in NW¼ sec.20 T.2 N., R.13 E., Macomb County, on left bank 800 ft downstream from bridge on Garfield Road, 2.8 miles north of Fraser, and 4 miles upstream from North Branch.

DRAINAGE AREA.--444 sq mi.

PERIOD OF RECORD.--May 1947 to current year.

GAGE.--Water-stage recorder. Datum of gage is 577.71 ft above mean sea level. Prior to Nov. 17, 1949, nonrecording gage at site 800 ft upstream at same datum.

AVERAGE DISCHARGE.--25 years, 338 cfs (10.34 inches per year).

EXTREMES.--Current year: Maximum discharge, 2,700 cfs Mar. 14; minimum, 99 cfs July 31 (gage height, 5.31 ft).

Period of record: 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 April 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.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	170	213	206	600	268	350	441	476	311	191	158	259
2	160	241	173	470	275	600	426	853	354	159	775	225
3	150	223	163	420	317	350	417	601	263	188	790	199
4	140	210	160	380	287	300	514	521	218	158	314	140
5	180	196	151	350	230	250	513	474	192	150	209	135
6	160	185	278	330	236	280	492	459	190	159	158	147
7	190	168	341	320	230	350	481	499	188	157	289	249
8	190	161	245	320	247	600	438	630	181	180	244	564
9	200	178	237	320	260	450	409	607	176	161	273	588
10	170	198	716	350	244	370	403	476	172	160	189	326
11	130	178	727	370	233	300	421	420	157	158	187	276
12	170	165	355	340	258	300	418	392	149	156	186	292
13	180	157	298	300	287	600	414	355	191	288	170	942
14	190	151	281	270	325	2,000	394	324	183	280	185	654
15	190	143	514	270	391	1,450	570	389	313	345	245	394
16	160	158	526	290	326	811	1,080	343	248	325	170	320
17	150	166	352	320	285	751	1,800	316	182	350	659	290
18	150	170	307	370	296	644	996	307	173	678	308	429
19	140	206	269	430	280	563	842	285	167	1,270	217	364
20	140	191	280	370	250	544	1,020	272	217	394	161	301
21	140	185	297	320	230	553	834	260	745	331	138	284
22	246	171	264	350	210	704	1,070	241	441	271	327	280
23	502	180	241	520	200	719	993	250	411	244	1,620	254
24	286	171	229	500	200	592	722	308	329	208	1,180	259
25	220	168	212	550	200	545	655	323	275	194	594	284
26	214	149	232	900	200	531	584	299	239	168	512	406
27	214	189	231	400	200	508	528	254	238	237	448	330
28	209	191	253	312	200	489	463	215	199	159	379	269
29	195	171	244	281	230	487	434	186	246	132	373	317
30	212	262	1,150	268	-----	522	423	247	223	113	339	394
31	224	-----	920	249	-----	470	-----	479	-----	108	328	-----
TOTAL	5,972	5,495	10,852	11,840	7,395	17,983	19,195	12,061	7,571	8,072	12,125	10,171
MEAN	193	183	350	382	255	580	640	389	252	260	391	339
MAX	502	262	1,150	900	391	2,000	1,800	853	745	1,270	1,620	942
MTN	130	143	151	249	200	250	394	186	149	108	138	135
CFSM	.43	.41	.79	.86	.57	1.31	1.44	.88	.57	.59	.88	.76
IN.	.50	.46	.91	.99	.62	1.51	1.61	1.01	.63	.68	1.02	.85

CAL YR 1971 TOTAL 999,982 MEAN 2,740 MAX 2,400 MIN 99 CFSM 6.17 IN 83.78
WTR YR 1972 TOTAL 128,732 MEAN 352 MAX 2,000 MIN 108 CFSM .79 IN 10.79

PEAK DISCHARGE (BASE, 2,000 CFS)

NOTE.--No gage-height record Feb. 20 to Mar. 14.

DATE	TIME	G.H.	DISCHARGE
12-30	1500	13.10	2,020
03-14	--	--	2,700
04-16	2100	14.08	2,520
07-18	2300	14.24	2,580
08-23	0800	13.22	2,000

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04164100 East Pond Creek at Romeo, Mich.

LOCATION.--Lat 42°49'21", long 83°01'13", in NE¼ SE¼ sec.27, T.5 N., R.12 E., Macomb County, on right bank 10 ft upstream from bridge on State Highway 53, and 1.4 miles north of Romeo.

DRAINAGE AREA.--21.8 sq mi.

PERIOD OF RECORD.--September 1958 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 780 ft (from topographic map).

AVERAGE DISCHARGE.--14 years 12.4 cfs (7.72 inches per year).

EXTREMES.--Current year: Maximum discharge, 86 cfs Apr. 16 (gage height, 2.48 ft); minimum, 1.9 cfs July 11, 12 (gage height, 1.03 ft).

Period of record: Maximum discharge, 358 cfs Feb. 10, 1965 (gage height, 4.48 ft); maximum gage height, 4.56 ft Mar. 12, 1962 (backwater from ice); minimum discharge, 0.8 cfs July 30, 31, 1964, Aug. 6, 7, 1965; minimum gage height, 0.71 ft July 21, 1959.

REMARKS.--Records fair except those for the winter period and those for period of no gage-height record, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	5.9	7.0	22	9.2	8.0	19	25	9.6	6.3	3.7	7.4
2	4.9	6.1	6.2	19	9.0	8.5	17	43	11	5.2	12	7.3
3	4.3	6.2	5.8	17	8.8	8.3	16	26	8.5	4.6	11	7.1
4	4.7	5.5	5.5	16	8.5	8.0	17	20	7.2	4.4	7.7	6.2
5	3.9	4.9	5.6	15	8.5	7.8	18	18	6.4	4.1	6.4	3.8
6	3.9	3.9	9.0	14	8.5	7.5	17	18	7.2	4.0	5.5	3.1
7	4.4	5.8	10	13	8.5	13	16	20	7.6	3.7	9.2	3.0
8	4.2	5.6	9.6	12	8.5	11	14	22	6.9	3.7	8.5	22
9	5.5	8.5	10	12	8.5	11	13	19	6.6	3.4	7.5	19
10	5.6	8.8	21	12	8.8	10	13	16	5.9	3.1	7.0	11
11	4.7	8.5	30	12	9.0	10	14	15	3.9	2.3	6.4	9.0
12	4.2	7.7	20	11	9.5	14	14	14	4.3	2.2	5.7	9.2
13	4.4	7.0	17	11	10	20	20	14	5.0	3.5	4.9	15
14	7.0	6.9	15	11	11	60	19	15	5.0	3.3	5.0	16
15	6.0	6.6	25	10	10	47	24	16	6.4	8.8	5.0	12
16	6.1	6.4	30	10	9.5	45	42	16	6.3	9.3	5.3	9.6
17	10	6.1	23	10	9.0	43	78	18	10	6.6	7.6	8.3
18	8.1	5.8	27	10	9.0	40	57	20	8.1	11	6.7	7.2
19	7.0	5.8	19	10	9.0	35	58	23	6.5	27	5.9	6.8
20	5.9	5.7	14	10	9.0	34	59	23	6.1	15	5.7	5.8
21	5.0	6.5	12	10	9.0	35	51	21	7.2	13	5.1	5.4
22	7.6	6.0	11	10	9.0	47	53	18	7.3	14	6.9	5.0
23	14	6.0	11	13	8.0	40	49	18	8.2	8.2	37	4.6
24	13	6.0	11	17	7.5	37	40	16	8.3	5.6	30	4.8
25	11	5.9	11	17	7.0	36	35	13	8.8	4.9	22	4.5
26	9.9	6.2	11	15	7.0	34	31	10	7.7	4.4	20	7.1
27	9.1	7.4	11	12	7.0	31	27	8.3	6.9	4.8	19	7.7
28	7.9	7.8	13	11	7.0	28	24	7.1	6.4	4.4	17	6.9
29	7.4	7.3	15	11	7.0	23	22	6.7	6.7	4.0	14	6.2
30	7.3	7.5	20	10	-----	21	20	9.2	6.4	3.5	11	8.4
31	6.9	-----	24	9.5	-----	20	-----	11	-----	3.7	9.0	-----
TOTAL	209.3	194.3	459.7	392.5	250.3	793.1	897	539.3	212.4	202.0	327.7	249.4
MEAN	6.75	6.48	14.8	12.7	8.63	25.6	29.9	17.4	7.08	6.52	10.6	8.31
MAX	14	8.8	30	22	11	60	78	43	11	27	37	22
MIN	3.9	3.9	5.5	9.5	7.0	7.5	13	6.7	3.9	2.2	3.7	3.0
CFSM	.31	.30	.68	.58	.40	1.17	1.37	.80	.32	.30	.49	.38
IN.	.36	.33	.78	.67	.43	1.35	1.53	.92	.36	.34	.56	.43

CAL YR 1971 TOTAL 4,811.1 MEAN 13.2 MAX 94 MIN 1.6 CFSM .61 IN 8.21
WTR YR 1972 TOTAL 4,727.0 MEAN 12.9 MAX 78 MIN 2.2 CFSM .59 IN 8.07

PEAK DISCHARGE (BASE, 80 CFS).--Apr. 16 (2400) 86 cfs (2.48 ft).

NOTE.--No gage-height record Dec. 23 to Mar. 19.

STREAMS TRIBUTARY TO LAKE ST. CLAIR

207

04164150 North Branch Clinton River near Meade, Mich.

LOCATION.--Lat 42°43'50", long 82°54'23", in NE¼ sec.34, T.4 N., R.13 E., Macomb County, on left bank at downstream side of bridge on 27-Mile Road, 1.9 miles northwest of Meade.

DRAINAGE AREA.--89.6 sq mi.

PERIOD OF RECORD.--Water year 1959-67 (annual maximum), October 1967 to September 1972 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Altitude of gage is 615 ft (from topographic map). Nov. 6, 1958, to Oct. 12, 1967, crest-stage gage at same site and datum.

AVERAGE DISCHARGE.--5 years, 66.0 cfs (10.00 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,050 cfs Apr. 17 (gage height, 5.96 ft); maximum gage height, 6.35 ft Mar. 15 (backwater from ice); minimum discharge, 7.4 cfs Aug. 6 (gage height, 0.78 ft).

Period of record: Maximum discharge, 4,380 cfs Feb. 2, 1968 (gage height, 7.53 ft); maximum gage height, 7.85 ft Mar. 13, 1962 (backwater from ice); minimum discharge, 0.2 cfs Aug. 27, 1968; minimum gage height, 0.43 ft Aug. 19, 22, 1971.

REMARKS.--Records good except those for the winter period and those for periods of no gage-height record, which are poor. Occasional regulation at low flow by mill pond above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	13	17	190	30	23	75	64	35	21	10	15
2	10	13	15	180	28	80	69	215	33	18	18	14
3	9.8	13	15	150	27	55	65	158	34	17	31	14
4	9.8	16	15	100	26	45	76	102	27	14	24	13
5	10	15	16	60	25	32	84	81	22	14	16	13
6	9.2	13	18	50	23	27	82	71	19	13	11	11
7	9.8	12	23	45	23	40	66	74	18	12	14	9.5
8	10	12	28	42	22	70	57	95	17	13	22	18
9	12	14	30	40	22	110	51	102	16	11	21	32
10	13	16	46	45	22	80	54	80	16	12	18	44
11	12	19	120	56	22	76	60	64	15	11	16	30
12	11	19	180	54	22	80	64	54	14	9.2	14	25
13	10	17	110	45	23	170	115	48	16	13	12	27
14	12	16	65	40	28	350	127	48	16	19	12	31
15	14	14	50	35	38	800	162	57	20	33	13	30
16	13	13	130	30	48	552	446	57	21	47	14	25
17	13	13	180	25	45	415	980	68	20	34	16	21
18	14	12	130	23	40	294	494	65	19	24	19	18
19	14	12	80	23	35	198	272	54	16	63	14	16
20	13	12	68	28	30	138	288	49	16	53	12	14
21	12	12	58	40	27	147	207	48	23	35	10	13
22	13	12	52	65	30	248	195	43	24	30	11	12
23	32	13	47	100	33	234	227	38	27	23	69	11
24	36	13	43	130	30	128	160	35	30	17	122	11
25	27	14	38	140	25	107	126	32	30	13	94	12
26	22	15	38	100	22	97	106	28	28	12	48	13
27	20	16	44	80	20	90	90	25	24	13	38	14
28	17	17	50	60	19	84	77	22	20	14	32	16
29	14	19	55	45	19	78	71	20	22	12	26	17
30	13	18	65	38	-----	76	65	24	24	10	22	18
31	13	-----	130	34	-----	74	-----	35	-----	10	19	-----
TOTAL	450.6	433	1,956	2,093	804	4,998	5,011	1,956	662	640.2	818	557.5
MEAN	14.5	14.4	63.1	67.5	27.7	161	167	63.1	22.1	20.7	26.4	18.6
MAX	36	19	180	190	48	800	980	215	35	63	122	44
MIN	9.2	12	15	23	19	23	51	20	14	9.2	10	9.5
CFSM	.16	.16	.70	.75	.31	1.80	1.86	.70	.25	.23	.29	.21
IN.	.19	.18	.81	.87	.33	2.08	2.08	.81	.27	.27	.34	.23

CAL YR 1971 TOTAL 22,074.5 MEAN 60.5 MAX 936 MIN 1.7 CFSM .68 IN 9.16

WTR YR 1972 TOTAL 20,379.3 MEAN 55.7 MAX 980 MIN 9.2 CFSM .62 IN 8.46

PEAK DISCHARGE (BASE, 600 CFS)

NOTE.--No gage-height record Nov. 16 to Feb. 3, Aug. 28 to Sept. 30.

DATE	TIME	G.H.	DISCHARGE
03-15	--	--	about 850
04-17	0800	5.96	1,050

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04164300 East Branch Coon Creek at Armada, Mich.

LOCATION.—Lat 42°50'45", long 82°53'06", in NE¼ sec.23, T.5 N., R.13 E., Macomb County, on right bank 10 ft downstream from bridge on Prospect Street in Armada.

DRAINAGE AREA.—13.0 sq mi.

PERIOD OF RECORD.—October 1958 to current year.

GAGE.—Water-stage recorder and concrete control. Altitude of gage is 735 ft (from topographic map).

AVERAGE DISCHARGE.—14 years, 5.10 cfs (5.33 inches per year).

EXTREMES.—Current year: Maximum discharge, 366 cfs Apr. 16 (gage height, 4.50 ft); minimum, 0.14 cfs July 11, 12, Aug. 21, 22; minimum gage height, 1.23 ft July 11, 12.

Period of record: Maximum discharge, 751 cfs Apr. 17, 1967 (gage height, 6.14 ft); no flow Jan. 25 to Feb. 10, 1961, result of freezeup.

REMARKS.—Records good except those for the winter period, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.31	.33	.36	3.3	1.6	3.5	5.7	6.0	.85	.40	.33	.50
2	.30	.34	.32	3.1	1.3	4.2	5.3	38	.80	.33	.94	.42
3	.25	.35	.29	2.7	1.3	3.2	4.6	17	.73	.30	1.0	.41
4	.26	.36	.29	2.2	1.3	2.4	5.3	8.4	.59	.26	.65	.35
5	.27	.36	.33	1.7	1.2	1.8	6.1	5.5	.48	.22	.48	.30
6	.30	.36	.74	1.4	1.2	1.6	5.6	4.6	.46	.18	.39	.27
7	.28	.34	.80	1.1	1.2	4.5	4.5	5.1	.37	.17	.52	.28
8	.26	.34	.68	.82	1.2	8.0	3.6	7.8	.33	.18	.44	2.7
9	.33	.44	.76	1.1	1.2	6.0	3.4	6.8	.31	.22	.44	2.3
10	.28	.45	4.5	1.8	1.2	5.2	3.0	4.5	.26	.20	.41	1.7
11	.27	.50	5.1	2.7	1.2	8.0	3.3	3.5	.26	.16	.33	1.7
12	.29	.51	3.6	2.6	1.2	20	3.7	2.9	.32	.23	.30	1.3
13	.34	.54	2.6	2.4	1.3	40	13	2.6	.34	.34	.26	1.3
14	.33	.41	1.9	2.0	1.4	80	17	2.7	.37	.30	.65	1.1
15	.28	.27	5.7	1.5	2.1	65	33	3.0	.61	1.2	.41	.87
16	.28	.27	8.2	1.0	2.7	50	109	3.0	.49	1.5	.40	.66
17	.29	.26	6.2	.58	2.5	40	164	2.5	.46	2.8	.43	.52
18	.20	.25	3.3	.59	2.2	30	45	2.2	.38	3.4	.36	.47
19	.20	.28	2.6	1.3	1.8	23	26	1.9	.29	3.6	.27	.40
20	.17	.31	1.5	2.3	1.7	22	26	1.7	.49	4.1	.22	.32
21	.20	.35	1.4	2.3	1.7	27	15	1.3	.42	3.6	.17	.29
22	.54	.30	1.5	5.8	1.8	51	21	1.1	.59	2.4	.29	.28
23	1.0	.27	1.3	17	1.9	21	21	.95	.66	1.5	2.9	.24
24	.67	.28	1.4	11	1.5	9.7	11	.84	.71	1.0	5.3	.24
25	.49	.26	1.4	12	1.3	7.0	7.8	.77	.68	.81	4.4	.27
26	.40	.29	1.8	8.8	1.2	6.6	5.7	.65	.61	.64	2.7	.41
27	.35	.44	1.9	5.0	1.2	6.3	4.5	.56	.52	.66	2.2	.33
28	.33	.40	2.7	3.0	1.3	6.2	3.9	.50	.41	.50	1.5	.34
29	.31	.40	2.4	2.3	1.4	6.0	3.4	.48	.49	.38	.99	.43
30	.31	.43	3.3	2.0	-----	5.8	3.0	.68	.44	.30	.73	.48
31	.30	-----	3.8	1.8	-----	5.8	-----	.74	-----	.23	.58	-----
TOTAL	10.39	10.69	72.67	107.19	44.1	570.8	583.4	138.27	14.72	32.11	30.99	21.18
MEAN	.34	.36	2.34	3.46	1.52	18.4	19.4	4.46	.49	1.04	1.00	.71
MAX	1.0	.54	8.2	17	2.7	80	164	38	.85	4.1	5.3	2.7
MIN	.17	.25	.29	.58	1.2	1.6	3.0	.48	.26	.16	.17	.24
CFSM	.03	.03	.18	.27	.12	1.42	1.49	.34	.04	.08	.08	.05
IN.	.03	.03	.21	.31	.13	1.63	1.67	.40	.04	.09	.09	.06

CAL YR 1971 TOTAL 1.184.63 MEAN 3.25 MAX 90 MIN .06 CFSM .25 IN 3.39
WTR YR 1972 TOTAL 1.636.51 MEAN 4.47 MAX 164 MIN .16 CFSM .34 IN 4.68

PEAK DISCHARGE (BASE, 100 CFS).—Mar. 14 (time and gage height unknown) about 160 cfs; Apr. 16 (2200) 366 cfs (4.50 ft).

04164360 East Branch Coon Creek near New Haven, Mich.

LOCATION.--Lat 42°45'46", long 82°50'57", in NW¼ sec.19, T.4 N., R.14 E., Macomb County, on left bank at downstream side of bridge on 29-Mile Road, 3.4 miles northwest of New Haven.

DRAINAGE AREA.--36.1 sq mi.

PERIOD OF RECORD.--Water years 1959-67 (annual maximum and occasional low flow measurements), October 1967 to September 1972 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Altitude of gage is 630 ft (from topographic map). Nov. 6, 1958, to Nov. 10, 1967, crest-stage gage at same site and datum.

AVERAGE DISCHARGE.--5 years, 15.6 cfs (5.87 inches per year).

EXTREMES.--Current year: Maximum discharge, 554 cfs Apr. 16 (gage height, 7.64 ft); maximum gage height, 7.84 ft Mar. 14 (backwater from ice); no flow for part of July 13, Aug. 1; minimum gage height, 1.90 ft Oct. 6.
Period of record: Maximum discharge, 2,360 cfs Feb. 1, 1968 (gage height, 8.46 ft); no flow at times most years.

REMARKS.--Records fair except those for the winter period and those for period of no gage-height record, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.74	.62	1.3	6.0	3.3	4.5	18	10	1.2	.74	.01	.70
2	.49	.62	.98	5.0	3.1	8.2	18	36	1.4	.53	.08	.56
3	.41	.53	.70	4.5	3.0	6.5	17	36	1.5	.38	.79	.48
4	.30	.49	.62	4.0	2.8	5.0	18	22	1.4	.23	1.1	.41
5	.26	.53	.66	3.5	2.7	3.8	21	16	1.3	.17	.70	.36
6	.23	.45	1.0	2.8	2.6	3.2	21	13	1.1	.10	.41	.33
7	.23	.38	2.7	2.3	2.5	7.5	18	13	1.1	.04	.62	.31
8	.26	.38	3.4	2.1	2.5	15	13	19	.84	.02	.79	.30
9	.58	.45	2.5	2.1	2.4	12	13	22	.62	.02	.98	1.0
10	.45	.53	6.0	3.0	2.4	10	12	16	.49	.08	.70	3.0
11	.53	.66	10	5.5	2.4	14	12	12	.45	.08	.58	2.3
12	.45	.66	8.0	5.0	2.5	35	13	9.5	.45	.06	.49	1.9
13	.38	.58	5.0	4.5	2.6	65	23	8.2	.45	.01	.41	1.7
14	.41	.53	4.0	4.0	3.0	250	34	7.8	.62	.14	.41	1.5
15	.70	.53	11	3.0	3.6	135	49	6.7	.74	.88	.88	1.3
16	.62	.45	16	2.0	5.3	110	157	6.0	.88	2.5	1.1	1.1
17	.45	.41	11	1.2	5.0	85	300	5.3	.98	1.8	.88	.90
18	.45	.41	7.0	1.2	4.3	65	76	4.7	.49	2.1	1.0	.70
19	.45	.45	5.0	2.0	3.7	50	56	4.1	.34	4.4	.70	.60
20	.45	.49	3.0	3.5	3.2	45	48	3.6	.34	5.1	.41	.50
21	.45	.53	2.7	5.0	3.1	51	43	3.2	.70	4.7	.26	.40
22	.58	.66	2.7	14	3.2	98	44	2.8	1.5	4.3	.30	.35
23	1.2	.62	2.7	35	3.7	57	51	2.5	1.7	2.4	1.9	.32
24	3.1	.58	2.7	23	3.2	36	32	2.1	2.4	1.1	3.7	.29
25	2.1	.53	2.7	24	2.8	21	23	1.9	2.4	.49	7.9	.26
26	1.7	.53	3.5	18	2.5	19	18	1.6	2.0	.26	8.3	.28
27	1.4	.70	3.8	9.0	2.4	18	15	1.4	1.4	.26	5.9	.35
28	1.0	.88	4.5	6.0	2.5	17	13	1.2	.93	.23	4.1	.45
29	.79	1.2	4.5	4.5	2.7	16	11	1.1	.84	.17	2.8	.40
30	.74	1.3	6.0	4.0	-----	17	10	1.0	.84	.08	1.7	.40
31	.70	-----	7.0	3.5	-----	17	-----	1.1	-----	.02	1.1	-----
TOTAL	22.60	17.68	142.66	213.2	89.0	1,296.7	1,197	290.8	31.40	33.39	51.00	23.45
MEAN	.73	.59	4.60	6.88	3.07	41.8	39.9	9.38	1.05	1.08	1.65	.78
MAX	3.1	1.3	16	35	5.3	250	300	36	2.4	5.1	8.3	3.0
MIN	.23	.38	.62	1.2	2.4	3.2	10	1.0	.34	.01	.01	.26
CFSM	.02	.02	.13	.19	.09	1.16	1.11	.26	.03	.03	.05	.02
IN.	.02	.02	.15	.22	.09	1.34	1.23	.30	.03	.03	.05	.02

CAL YR 1971 TOTAL 2,982.45 MEAN 8.17 MAX 250 MIN 0 CFSM .23 IN 3.07
WTR YR 1972 TOTAL 3,408.88 MEAN 9.31 MAX 300 MIN .01 CFSM .26 IN 3.51

PEAK DISCHARGE (BASE, 400 CFS).--Apr. 16 (2400) 554 cfs (7.64 ft).

NOTE.--No gage-height record Dec. 10 to Jan. 23, Feb. 11 to Mar. 20, Sept. 1-30.

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04164500 North Branch Clinton River near Mount Clemens, Mich.

LOCATION.--Lat 42°37'45", long 82°53'25", in SW¼ sec.35, T.3 N., R.13 E., Macomb County, on left bank 30 ft upstream from bridge on State Highway 59, 2 miles north of Mount Clemens, and 3.6 miles upstream from mouth.

DRAINAGE AREA.--199 sq mi.

PERIOD OF RECORD.--May 1947 to current year.

GAGE.--Water-stage recorder. Concrete control since September 1961. Datum of gage is 576.38 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to Nov. 15, 1949, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--25 years, 109 cfs (7.44 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,720 cfs Apr. 17 (gage height, 13.59 ft); minimum, 10 cfs Aug. 1 (gage height, 4.19 ft).
Period of record: Maximum discharge, 6,700 cfs Feb. 2, 1968 (gage height, 18.62 ft); minimum, 0.2 cfs Sept. 13, 14, 1954, July 30, 1965; minimum gage height, 3.12 ft Sept. 13, 14, 1954.
Flood of April 5 or 6, 1947, reached a stage of 20.0 ft, from floodmark.

REMARKS.--Records good except those for the winter period, which are fair. Some regulation at times by mill above station.

REVISIONS (WATER YEARS).--WSP 1437: 1948. WSP 1557: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	17	26	301	42	35	112	90	42	34	11	22
2	15	16	18	227	41	120	114	187	42	51	12	20
3	13	15	22	205	40	90	108	360	40	91	25	20
4	12	15	21	121	39	70	104	276	37	44	35	20
5	11	17	21	80	37	50	131	156	29	27	22	19
6	11	17	22	63	33	42	155	116	26	22	15	16
7	11	16	29	68	32	60	148	108	22	18	19	14
8	11	14	43	58	33	100	106	139	20	17	25	28
9	11	14	44	53	33	170	88	202	18	17	30	53
10	12	15	44	60	32	130	81	162	17	16	25	64
11	13	17	163	80	31	110	82	106	17	16	21	44
12	14	18	245	80	31	110	87	84	17	15	18	34
13	13	19	136	70	32	200	100	73	17	15	17	39
14	12	18	77	60	33	500	242	68	18	19	17	46
15	12	17	64	50	46	1,200	276	70	18	31	18	45
16	15	16	207	40	60	1,040	409	77	19	51	19	37
17	15	16	292	35	70	840	1,130	82	20	53	19	30
18	14	16	163	33	65	683	1,400	81	19	57	19	27
19	14	16	100	34	60	555	810	68	19	125	19	23
20	13	17	83	40	50	359	601	62	22	93	18	20
21	12	18	71	60	40	309	617	56	46	63	15	19
22	13	19	69	90	40	359	461	53	35	47	14	18
23	16	16	72	130	45	491	463	44	35	39	78	16
24	30	18	66	170	50	411	439	41	38	30	125	16
25	36	18	53	200	40	226	298	38	35	23	116	17
26	31	19	53	160	35	168	209	34	37	19	82	18
27	25	21	61	108	32	142	157	30	35	18	56	20
28	22	22	71	80	30	128	125	27	28	18	47	24
29	21	26	85	60	30	118	107	24	29	18	40	24
30	19	28	83	52	-----	114	96	23	44	15	33	25
31	17	-----	167	46	-----	114	-----	34	-----	13	27	-----
TOTAL	502	531	2,671	2,914	1,182	9,044	9,256	2,971	841	1,115	1,037	818
MEAN	16.2	17.7	86.2	94.0	40.8	292	309	95.8	28.0	36.0	33.5	27.3
MAX	36	28	292	301	70	1,200	1,400	360	46	125	125	64
MIN	11	14	18	33	30	35	81	23	17	13	11	14
CFSM	.08	.09	.43	.47	.21	1.47	1.55	.48	.14	.18	.17	.14
IN.	.09	.10	.50	.54	.22	1.69	1.73	.56	.16	.21	.19	.15

CAL YR 1971 TOTAL 31,424.7 MEAN 86.1 MAX 1,370 MIN 1.7 CFSM .43 IN 5.87

WTR YR 1972 TOTAL 32,882.0 MEAN 89.8 MAX 1,400 MIN 11 CFSM .45 IN 6.15

PEAK DISCHARGE (BASE, 1,200 CFS)

DATE	TIME	G.H.	DISCHARGE
03-15	--	--	1,400
04-17	2300	13.59	1,720

04164800 Middle Branch Clinton River at Macomb, Mich.

LOCATION.—Lat 42°42'23", long 82°57'33", in SW $\frac{1}{4}$ sec. 5, T. 3 N., R. 13 E., Macomb County, on left bank at downstream side of bridge on Romeo Plank Road, 0.4 miles north of Macomb.

DRAINAGE AREA.—41.0 sq mi.

PERIOD OF RECORD.—Water years 1959-62, 1969 (annual maximum and occasional low-flow measurements), October 1962 to September 1968, October 1969 to current year.

GAGE.—Water-stage recorder. Datum of gage is 603.23 ft above mean sea level (levels by Corps of Engineers). Oct. 28, 1958, to Nov. 14, 1962, and Oct. 12, 1968, to Dec. 17, 1969, crest-stage gage at same site and datum.

AVERAGE DISCHARGE.—9 years, 20.3 cfs (6.72 inches per year).

EXTREMES.—Current year: Maximum discharge, 840 cfs Apr. 16 (gage height, 11.97 ft); maximum gage height, 13.58 ft Mar. 14 (backwater from ice); minimum discharge, 2.2 cfs Oct. 3-6 (gage height, 4.88 ft).
Period of record: Maximum discharge, 1,580 cfs June 26, 1968; maximum gage height, 16.16 ft Mar. 12, 1962 (backwater from ice); minimum discharge, 0.10 cfs July 22, 1971; minimum gage height, 4.68 ft July 11, 1964.

REMARKS.—Records good except those for the winter period which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	3.2	4.5	38	9.0	25	21	27	11	11	3.8	4.5
2	2.5	3.2	4.5	22	9.0	30	21	57	18	9.0	8.5	5.1
3	2.3	3.2	4.4	19	8.7	15	20	37	10	8.5	7.6	5.5
4	2.2	3.2	4.4	14	8.5	10	25	28	8.5	8.5	5.1	4.5
5	2.2	3.5	4.5	13	8.0	9.5	30	23	6.7	7.6	4.5	4.2
6	2.2	3.5	9.0	12	7.5	15	31	25	6.7	7.2	4.2	3.8
7	2.3	2.8	12	12	7.0	25	24	28	6.2	6.7	7.2	3.8
8	2.5	3.2	8.0	13	7.0	35	22	41	5.1	8.0	7.2	35
9	2.8	3.5	8.0	14	7.0	30	18	36	4.8	8.0	6.2	16
10	2.8	4.2	47	18	7.0	24	20	27	4.8	9.4	5.1	9.0
11	2.5	3.8	34	16	7.2	25	21	21	4.8	7.6	4.5	8.0
12	2.5	3.8	16	14	7.5	45	22	17	5.5	6.7	4.8	8.0
13	2.5	3.8	12	12	8.0	110	35	16	7.6	9.8	4.2	22
14	3.2	3.8	12	10	10	300	28	19	6.2	12	3.8	16
15	2.8	3.5	34	8.5	15	250	47	23	7.6	16	4.8	10
16	2.5	3.2	30	7.5	15	200	248	20	7.2	14	4.2	8.5
17	2.5	3.2	17	7.0	14	122	302	18	5.5	9.8	5.5	7.6
18	2.5	3.5	15	7.5	12	40	78	14	5.5	9.8	4.8	8.5
19	2.5	3.5	13	10	10	30	81	12	5.8	16	5.8	8.0
20	2.5	3.6	12	15	9.0	28	100	11	22	9.8	4.2	6.2
21	2.5	3.8	12	25	9.0	33	59	9.4	42	6.7	3.5	5.8
22	5.0	4.0	11	35	11	75	96	8.5	23	6.2	5.1	5.5
23	21	3.5	10	45	10	37	73	8.0	23	6.7	117	5.5
24	8.5	3.8	9.4	40	9.0	29	46	7.2	18	5.1	25	6.7
25	6.2	4.0	9.4	30	8.0	23	36	6.2	16	4.2	16	8.0
26	5.1	4.2	12	22	7.0	20	30	5.8	14	4.2	16	12
27	4.8	5.1	12	17	7.0	19	27	5.5	11	4.8	16	9.8
28	3.8	5.8	15	13	9.0	18	25	5.5	9.0	4.2	11	7.6
29	3.5	4.8	14	11	13	18	23	5.5	12	3.8	7.2	8.5
30	3.5	4.6	48	10	-----	22	22	14	15	3.8	5.8	13
31	3.5	-----	56	9.5	-----	20	-----	18	-----	3.8	5.1	-----
TOTAL	117.7	112.8	510.1	540.0	269.4	1,682.5	1,631	593.6	342.5	248.9	333.7	276.6
MEAN	3.80	3.76	16.5	17.4	9.29	54.3	54.4	19.1	11.4	8.03	10.8	9.22
MAX	21	5.8	56	45	15	300	302	57	42	16	117	35
MIN	2.2	2.8	4.4	7.0	7.0	9.5	18	5.5	4.8	3.8	3.5	3.8
CFSM	.09	.09	.40	.42	.23	1.32	1.33	.47	.28	.20	.26	.22
IN.	.11	.10	.46	.49	.24	1.53	1.48	.54	.31	.23	.30	.25

CAL YR 1971 TOTAL 6,228.64 MEAN 17.1 MAX 280 MIN .26 CFSM .42 IN 5.65

WTR YR 1972 TOTAL 6,658.80 MEAN 18.2 MAX 302 MIN 2.2 CFSM .44 IN 6.04

PEAK DISCHARGE (BASE, 300 CFS).—Mar. 14 (time unknown) about 550 cfs; Apr. 16 (2200) 840 cfs (11.97 ft).

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04165500 Clinton River at Mount Clemens, Mich.

LOCATION.—Lat 42°35'45", long 82°54'35", Macomb County, on left bank 20 ft downstream from bridge on Moravian Drive, 0.2 mile downstream from North Branch, and 0.5 mile west of Mount Clemens.

DRAINAGE AREA.—734 sq mi.

PERIOD OF RECORD.—May 1934 to current year.

GAGE.—Water-stage recorder. Datum of gage is 570.43 ft above mean sea level. May 10, 1934, to Jan. 11, 1939, nonrecording gage at same site and datum. Auxiliary gage is a water-stage recorder on right bank 2.0 miles downstream from base gage at same datum. Mar. 15, 1938, to Jan. 3, 1952, auxiliary nonrecording gage 1.6 miles downstream from base gage at same datum.

AVERAGE DISCHARGE.—38 years, 485 cfs (8.97 inches per year).

EXTREMES.—Current year: Maximum discharge, 3,880 cfs Apr. 17 (gage height, 10.26 ft); minimum not determined; minimum daily, 130 cfs July 31; minimum gage height, 4.51 ft Nov. 21.
Period of record: Maximum discharge, 21,200 cfs Apr. 6, 1947 (gage height, 23.55 ft, from floodmark); minimum not determined; minimum gage height, 2.72 ft Nov. 29, 1963.

REMARKS.—Records fair.

REVISIONS (WATER YEARS).—WSP 1084: 1943, 1945-46. WSP 1437: 1935, 1936 (M), 1937-39, 1949 (M), 1950. WSP 1557: Drainage area. WSP 1727: 1952 (M), 1954 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	200	250	250	1,000	340	450	600	630	400	250	170	300
2	190	270	205	750	340	731	590	1,100	430	240	719	250
3	180	250	200	660	380	405	580	1,000	350	300	834	235
4	160	240	190	530	350	361	660	850	280	220	336	167
5	200	230	190	450	300	330	700	700	240	200	217	160
6	180	220	300	440	310	350	700	640	240	200	180	176
7	200	200	400	420	296	450	680	680	230	200	340	186
8	210	190	310	420	301	750	600	850	220	210	300	602
9	220	200	300	410	310	660	550	880	210	200	330	650
10	200	230	713	450	293	540	540	700	200	190	256	406
11	160	210	945	480	290	450	550	580	190	190	230	350
12	190	200	517	450	310	480	550	500	190	190	220	350
13	200	190	400	400	350	1,000	580	460	220	330	210	932
14	210	180	351	310	400	2,870	700	440	220	350	230	788
15	210	170	573	300	470	3,330	900	500	350	400	280	434
16	190	180	677	310	400	2,200	1,800	460	270	410	200	354
17	180	190	534	383	390	1,800	3,560	440	220	430	624	350
18	170	200	433	441	390	1,500	3,040	420	210	526	297	453
19	160	230	338	501	350	1,200	1,940	380	200	1,550	225	371
20	160	230	400	440	310	1,000	1,900	360	228	447	174	339
21	170	220	400	430	280	950	1,630	340	837	450	159	320
22	300	210	360	520	270	1,100	1,670	320	520	350	334	300
23	550	210	330	720	270	1,300	1,680	320	517	300	1,950	287
24	350	200	310	740	270	1,100	1,220	380	403	260	1,540	280
25	280	200	290	800	260	850	955	380	350	230	791	330
26	260	191	300	1,030	250	780	860	350	320	210	660	450
27	260	220	320	580	250	720	740	300	300	270	499	350
28	250	230	350	456	250	680	640	250	250	200	452	320
29	230	210	350	343	300	660	600	230	300	170	410	370
30	240	300	1,100	315	-----	680	580	300	300	140	400	440
31	250	-----	1,140	342	-----	640	-----	550	-----	130	370	-----
TOTAL	6,910	6,451	13,476	15,821	9,280	30,317	32,295	16,290	9,195	9,743	13,937	11,300
MEAN	223	215	435	510	320	978	1,077	525	307	314	450	377
MAX	550	300	1,140	1,030	470	3,330	3,560	1,100	837	1,550	1,950	932
MIN	160	170	190	300	250	330	540	230	190	130	159	160
CFSM	.30	.29	.59	.69	.44	1.33	1.47	.72	.42	.43	.61	.51
IN.	.35	.33	.68	.80	.47	1.54	1.64	.83	.47	.49	.71	.57

CAL YR 1971 TOTAL 159,486 MEAN 437 MAX 3,260 MIN 110 CFSM .60 IN 8.08

WTR YR 1972 TOTAL 175,015 MEAN 478 MAX 3,560 MIN 130 CFSM .65 IN 8.87

PEAK DISCHARGE (BASE, 3,000 CFS).—Mar. 15 (0100) 3,750 cfs (10.14 ft); Apr. 17 (2100) 3,880 cfs (10.26 ft).

04166000 River Rouge at Birmingham, Mich.

LOCATION.--Lat 42°32'45", long 83°13'25", in NW¼ sec.36, T.2 N., R.10 E., Oakland County, 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.--33.3 sq mi; (36.9 sq mi prior to water year 1971; 3.6 sq mi noncontributing since 1970).

PERIOD OF RECORD.--June 1950 to current year.

GAGE.--Water-stage recorder. Concrete control since July 27, 1962. Datum of gage is 715.94 ft above mean sea level.

AVERAGE DISCHARGE.--20 years (1951-70) 15.3 cfs (5.63 inches per year); figure published in Water Resources Data for Michigan, 1971, is in error.

EXTREMES.--Current year: Maximum discharge, 357 cfs Mar. 14 (gage height, 4.22 ft); minimum, 1.6 cfs Oct. 6 (gage height, 1.47 ft).
Period of record: Maximum discharge, 1,390 cfs June 26, 1968 (gage height, 8.70 ft); minimum, 0.10 cfs Aug. 8, 9, 1963; minimum gage height, 1.02 ft Oct. 12, 1961.

REMARKS.--Records good. Occasional regulation by Quarton Lake above station.

REVISIONS (WATER YEARS).--WSP 1387: 1951-52 (M), WSP 1557: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	2.6	4.5	21	5.1	30	11	22	12	5.6	6.1	6.3
2	2.9	3.2	3.9	17	5.3	26	9.9	64	12	4.9	24	7.2
3	2.6	3.1	3.3	11	6.4	12	12	32	9.1	4.7	31	6.6
4	2.1	2.7	3.3	9.9	6.0	11	14	21	8.0	4.6	11	6.2
5	2.9	2.0	4.0	8.8	5.4	6.4	12	17	7.6	4.3	7.2	5.7
6	4.8	3.5	12	8.0	5.5	5.7	12	22	7.2	4.9	6.0	5.3
7	2.7	2.9	11	7.4	5.5	24	11	24	5.1	4.3	10	4.9
8	2.2	3.0	6.9	6.8	5.4	19	9.1	33	3.4	5.1	12	28
9	3.9	3.4	7.5	8.9	5.2	8.7	8.8	27	3.6	4.9	13	15
10	2.7	3.7	52	10	5.0	7.3	9.2	19	4.1	3.9	8.8	9.1
11	2.7	3.5	30	9.0	4.8	7.3	9.9	16	3.7	3.8	6.5	7.6
12	2.6	4.0	12	7.9	5.1	10	9.5	14	4.6	8.4	6.3	7.2
13	3.4	3.3	8.8	7.6	6.6	29	11	13	4.6	11	5.5	39
14	3.2	3.2	7.5	7.0	11	259	10	19	4.3	10	6.5	19
15	7.7	3.4	19	5.7	12	76	22	21	8.0	14	5.0	11
16	5.2	3.5	18	5.1	9.3	51	73	17	5.9	12	6.7	9.1
17	7.2	3.3	10	4.6	7.7	41	83	14	4.6	7.5	42	12
18	3.5	3.4	7.7	5.5	8.1	25	37	13	4.1	35	14	79
19	2.7	4.2	7.5	8.3	7.2	16	36	11	3.7	25	9.9	24
20	2.4	4.3	8.3	8.7	5.8	14	43	9.0	12	11	7.7	15
21	2.4	4.9	8.7	8.0	6.4	12	28	6.6	18	8.2	6.3	11
22	11	3.8	6.8	14	6.5	34	69	7.4	17	6.0	8.8	10
23	14	3.5	6.6	17	5.7	22	49	6.4	15	4.7	91	9.1
24	7.5	3.6	6.6	11	5.5	14	30	5.9	9.8	3.9	40	9.7
25	5.1	3.8	6.5	12	5.3	12	21	6.0	8.5	3.6	30	13
26	4.1	3.9	7.4	8.0	5.4	11	17	4.4	7.2	3.7	15	18
27	3.8	5.1	7.2	6.3	5.2	11	15	4.5	6.7	6.5	14	16
28	3.0	4.8	7.6	6.1	5.9	9.9	13	4.3	6.5	5.3	11	11
29	3.2	5.1	6.5	5.8	9.5	10	11	4.2	7.3	4.6	9.2	12
30	3.2	6.1	60	5.6	-----	11	12	25	6.7	3.8	8.1	16
31	3.2	-----	43	5.3	-----	11	-----	22	-----	3.4	7.0	-----
TOTAL	131.0	110.8	404.1	277.3	187.8	836.3	708.4	524.7	230.3	238.6	479.6	443.0
MEAN	4.23	3.69	13.0	8.95	6.48	27.0	23.6	16.9	7.68	7.70	15.5	14.8
MAX	14	6.1	60	21	12	259	83	64	18	35	91	79
MIN	2.1	2.0	3.3	4.6	4.8	5.7	8.8	4.2	3.4	3.4	5.0	4.9
CFSM	.13	.11	.39	.27	.19	.81	.71	.51	.23	.23	.47	.44
IN	.15	.12	.45	.31	.21	.93	.79	.59	.26	.27	.54	.49

CAL YR 1971 TOTAL 3,867.56 MEAN 10.6 MAX 130 MIN .50 CFSM .32 IN 4.32
WTR YR 1972 TOTAL 4,571.90 MEAN 12.5 MAX 259 MIN 2.0 CFSM .38 IN 5.11

PEAK DISCHARGE (BASE, 180 CFS).--Mar. 14 (1200) 357 cfs (4.22 ft); July 18 (1700) 184 cfs (3.24 ft).

STREAMS TRIBUTARY TO DETROIT RIVER

04166100 River Rouge at Southfield, Mich.

LOCATION.--Lat 42°26'52", long 83°17'52", in SW¼ sec.32, T.1 N., R.10 E., Oakland County, on right bank at downstream side of bridge on Beech Road at Southfield, 4.2 miles east of Farmington.

DRAINAGE AREA.--87.9 sq mi.

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 609.62 ft above mean sea level (city of Southfield benchmark).
Prior to Sept. 30, 1958, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--14 years, 47.2 cfs (7.29 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,420 cfs Mar.14 (gage height, 11.77 ft); minimum, 4.0 cfs Oct. 13; minimum gage height, 2.43 ft Oct. 3.

Period of record: Maximum discharge, 4,900 cfs June 26, 1968 (gage height, 19.04 ft); minimum, 0.1 cfs Aug. 2, 1964 (gage height, 1.15 ft).

REMARKS.--Records fair except those for the winter period, which are poor.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2	7.4	21	73	17	75	51	81	46	20	12	21
2	5.4	7.4	14	63	17	100	47	243	37	15	32	28
3	4.9	7.4	13	40	17	45	44	101	33	17	78	28
4	4.7	8.2	12	34	18	37	70	70	27	14	34	21
5	4.6	8.2	13	30	18	23	63	55	23	13	22	19
6	5.2	7.6	47	27	18	20	56	68	21	12	17	18
7	13	8.8	51	25	17	57	52	95	19	12	27	17
8	5.4	9.2	23	23	17	105	42	182	15	13	34	63
9	11	10	19	28	17	43	42	149	14	14	54	46
10	10	12	204	32	16	35	42	88	13	14	32	28
11	6.8	12	141	29	16	35	44	66	14	12	24	24
12	5.0	11	53	27	18	48	43	53	14	47	20	23
13	4.7	12	38	25	27	153	50	50	19	66	18	173
14	7.6	11	32	22	35	967	47	78	17	43	29	78
15	6.0	11	81	20	38	409	98	108	33	78	30	41
16	11	11	82	17	31	172	305	87	24	53	17	32
17	8.0	11	45	15	25	126	544	63	15	66	97	32
18	11	11	33	18	26	86	134	53	13	133	49	484
19	7.4	13	32	25	23	62	134	46	12	362	49	100
20	7.8	14	34	27	19	55	191	37	13	58	29	55
21	8.2	17	38	26	21	56	105	32	70	37	22	43
22	36	13	31	45	21	122	316	28	59	30	30	36
23	51	11	29	54	19	90	204	27	54	25	123	32
24	27	11	27	40	18	65	110	25	35	21	106	32
25	14	12	26	38	17	57	80	23	31	18	75	50
26	10	13	29	30	17	51	65	21	27	17	49	86
27	9.2	16	29	22	17	48	55	17	18	32	39	60
28	8.6	20	32	20	20	46	49	17	16	25	36	42
29	7.6	17	28	19	25	46	45	16	35	19	30	48
30	7.2	27	323	18	-----	56	44	95	32	15	26	61
31	8.6	-----	195	18	-----	54	-----	128	-----	14	23	-----
TOTAL	333.1	360.2	1,775	930	605	3,344	3,172	2,202	799	1,315	1,263	1,821
MEAN	10.7	12.0	57.3	30.0	20.9	108	106	71.0	26.6	42.4	40.7	60.7
MAX	51	27	323	73	38	967	544	243	70	362	123	484
MIN	4.6	7.4	12	15	16	20	42	16	12	12	12	17
CFSM	.12	.14	.65	.34	.24	1.23	1.21	.81	.30	.48	.46	.69
IN.	.14	.15	.75	.39	.26	1.42	1.34	.93	.34	.56	.53	.77

CAL YR 1971 TOTAL 12,110.1 MEAN 33.2 MAX 540 MIN 1.8 CFSM .38 IN 5.13
WTR YR 1972 TOTAL 17,919.3 MEAN 49.0 MAX 967 MIN 4.6 CFSM .56 IN 7.58

PEAK DISCHARGE (BASE, 500 CFS)

DATE	TIME	G.H.	DISCHARGE
12-10	1700	8.64	506
12-30	1800	8.97	604
03-14	1200	11.77	1,420
04-16	2400	10.31	895
07-19	0200	9.85	792
09-18	0900	9.54	735

STREAMS TRIBUTARY TO DETROIT RIVER

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04166200 Evans Ditch at Southfield, Mich.

LOCATION.--Lat 42°27'28", long 83°16'03", in SE¼ sec.28, T.1 N., R.10 E., Oakland County, on right bank at Southfield, 20 ft upstream from bridge on Nine-Mile Road, 1.6 miles upstream from mouth, and 5.5 miles east of Farmington.

DRAINAGE AREA.--9.49 sq mi.

PERIOD OF RECORD.--September 1958 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 615.07 ft above mean sea level (city of Southfield bench mark).

AVERAGE DISCHARGE.--14 years, 7.07 cfs (10.12 inches per year).

EXTREMES.--Current year: Maximum discharge, 463 cfs Mar. 14 (gage height, 9.70 ft); minimum, 0.37 cfs Nov. 23, Mar. 11; minimum gage height, 5.22 ft Nov. 23.

Period of record: Maximum discharge, 903 cfs June 25, 1968 (gage height, 12.95 ft), from rating curve extended above 410 cfs; minimum, 0.01 cfs Oct. 3, 1967; minimum gage height, 5.08 ft Sept. 13, 1966.

REMARKS.--Records good except those for the winter period and those for period of no gage-height record, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	1.0	1.8	7.0	2.0	19	3.8	20	5.0	2.2	1.5	1.8
2	1.6	1.6	1.1	5.5	2.0	8.7	3.5	13	4.0	1.7	4.0	2.0
3	1.4	1.4	.94	4.5	2.0	2.6	3.6	4.5	3.5	1.9	8.5	2.0
4	1.4	1.1	.80	3.5	2.0	2.1	12	4.1	3.0	1.5	4.0	1.6
5	1.3	.84	1.3	3.1	2.0	1.6	5.9	3.4	2.6	1.4	2.5	1.5
6	2.7	.72	22	2.9	2.0	2.2	3.8	7.0	2.3	1.4	2.0	1.4
7	2.6	.63	7.3	2.7	2.0	15	3.5	13	2.0	1.4	3.0	1.3
8	1.1	.62	2.9	2.6	2.0	3.5	2.9	24	1.8	1.5	4.5	7.0
9	5.8	1.3	6.7	3.3	1.9	1.7	2.8	9.5	1.6	1.5	6.0	4.5
10	1.4	1.5	76	3.5	1.9	1.6	2.9	5.0	1.5	1.5	3.5	3.0
11	1.2	.85	11	3.1	2.0	1.1	2.8	3.7	1.5	1.5	2.5	2.7
12	1.1	.70	4.3	2.9	2.5	2.2	2.8	3.4	1.6	5.5	2.2	2.5
13	1.8	.84	3.2	2.6	3.5	40	6.0	4.5	2.1	7.5	2.0	19
14	2.0	.90	3.3	2.3	4.0	157	3.0	21	1.8	5.0	3.0	8.0
15	1.2	.70	34	2.1	3.5	7.7	24	32	3.5	8.5	3.3	4.5
16	1.1	.97	11	1.8	2.5	15	117	5.5	2.5	6.0	2.0	3.5
17	1.1	.75	5.5	1.7	1.8	6.8	36	4.1	1.7	8.0	11	6.0
18	1.1	.61	4.1	2.5	1.8	4.6	8.8	4.5	1.5	110	6.0	120
19	1.4	2.9	3.4	3.0	1.8	3.3	20	4.5	1.4	20	4.5	20
20	1.1	1.3	5.7	3.0	1.8	3.1	25	3.4	1.7	5.1	3.0	4.5
21	.98	2.4	4.7	4.0	1.7	4.0	8.2	3.1	8.0	4.5	2.5	3.0
22	26	.68	2.9	5.0	1.6	13	63	2.8	6.5	3.3	3.5	2.6
23	13	.48	3.2	6.0	1.4	3.9	13	2.8	6.0	2.8	10	2.4
24	3.5	.68	3.9	5.0	1.1	3.4	7.8	2.2	4.0	2.3	4.0	2.8
25	2.1	.90	2.9	4.0	1.1	2.9	6.0	2.1	3.0	2.0	3.5	4.0
26	1.7	.72	4.1	3.0	1.2	2.9	4.9	2.0	2.5	2.0	3.0	5.5
27	1.4	3.9	3.4	2.5	1.4	3.4	4.1	2.0	2.0	3.5	2.6	4.0
28	1.2	1.5	4.2	2.3	2.6	2.8	3.7	1.9	1.8	2.7	2.2	3.0
29	1.1	1.6	2.2	2.2	9.5	5.3	3.4	1.9	4.0	2.0	2.0	3.5
30	1.1	6.9	113	2.1	-----	7.4	3.4	10	3.5	1.7	1.8	4.5
31	1.0	-----	13	2.0	-----	4.3	-----	14	-----	1.5	1.7	-----
TOTAL	87.48	40.99	363.84	101.7	66.6	352.1	407.6	234.9	87.9	221.4	115.8	252.1
MEAN	2.82	1.37	11.7	3.28	2.30	11.4	13.6	7.58	2.93	7.14	3.74	8.40
MAX	26	6.9	113	7.0	9.5	157	117	32	8.0	110	11	120
MIN	.98	.48	.80	1.7	1.1	1.1	2.8	1.9	1.4	1.4	1.5	1.3
CFSM	.30	.14	1.23	.35	.24	1.20	1.43	.80	.31	.75	.39	.89
IN.	.34	.16	1.43	.40	.26	1.38	1.60	.92	.34	.87	.45	.99

CAL YR 1971 TOTAL 2,398.18 MEAN 6.57 MAX 243 MIN .48 CFSM .69 IN 9.40
WTR YR 1972 TOTAL 2,332.41 MEAN 6.37 MAX 157 MIN .48 CFSM .67 IN 9.14

PEAK DISCHARGE (BASE, 200 CFS)

NOTE.--No gage-height record May 24 to Sept. 30.

DATE	TIME	G.H.	DISCHARGE
12-10	1500	8.59	334
12-30	1200	8.80	359
03-14	0400	9.70	463
04-16	1700	9.46	436
07-18	unknown	unknown	about 380
09-18	unknown	unknown	about 400

STREAMS TRIBUTARY TO DETROIT RIVER

04166300 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., Oakland County, on left bank 800 ft downstream from bridge on Shiawassee Road at Farmington.

DRAINAGE AREA.--17.5 sq mi.

PERIOD OF RECORD.--March 1958 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 690.4 ft above mean sea level.

AVERAGE DISCHARGE.--14 years, 9.40 cfs (7.29 inches per year).

EXTREMES.--Current year: Maximum discharge, 220 cfs Mar. 14 (gage height, 5.74 ft, backwater from ice); minimum, 1.3 cfs

Dec. 22; minimum gage height, 2.80 ft Nov. 23, Aug. 15, 16, Sept. 7.

Period of record: Maximum discharge, 1,500 cfs June 25, 1968 (gage height, 8.70 ft); minimum, 0.07 cfs Aug. 30, 1966, result of regulation; minimum daily, 0.32 cfs Aug. 10, 1964, Aug. 29, 1966.

REMARKS.--Records good except those for the winter period, which are fair.

REVISIONS (WATER YEARS).--WSP 1912: 1959 (M), 1960 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	2.1	2.5	13	4.3	25	9.0	26	8.0	4.3	2.0	2.5
2	1.9	2.2	2.2	8.5	4.8	25	8.6	25	6.5	3.0	3.1	2.9
3	1.7	2.2	1.9	6.8	5.3	11	7.9	16	5.3	3.5	3.6	3.0
4	1.6	2.3	1.9	5.9	4.7	8.0	10	13	4.5	2.8	2.7	2.1
5	1.6	2.3	2.3	5.8	4.3	5.5	10	10	3.9	2.6	2.3	2.1
6	2.1	2.2	6.8	5.7	4.5	5.0	10	11	3.4	2.3	2.3	1.9
7	1.9	2.1	6.3	5.6	7.0	20	9.3	15	3.1	2.1	3.4	1.9
8	1.7	2.1	4.0	5.6	5.5	10	8.0	28	3.1	2.6	4.0	5.7
9	3.2	2.3	4.2	7.1	5.0	8.0	7.6	23	2.9	3.5	5.7	3.4
10	2.5	2.4	36	6.8	4.3	6.0	7.6	16	2.7	6.0	3.4	2.4
11	2.0	3.6	15	5.7	4.0	7.0	8.1	12	2.7	2.4	2.8	2.3
12	1.8	2.5	7.6	4.8	4.5	15	8.3	10	3.1	3.1	2.7	2.7
13	1.8	2.3	5.4	4.0	6.0	70	9.7	9.6	3.3	5.4	2.3	25
14	2.2	2.1	4.5	3.9	9.0	140	9.6	14	2.8	5.6	2.1	8.6
15	2.0	2.1	14	3.7	9.5	68	17	17	4.6	9.7	1.9	5.2
16	1.8	2.0	9.9	3.7	7.5	39	61	13	3.3	6.2	2.4	4.0
17	1.8	2.1	6.6	4.0	6.5	29	76	11	2.5	7.5	9.9	5.0
18	1.7	2.1	5.0	5.0	5.8	19	36	9.1	2.2	39	4.2	37
19	1.7	2.2	4.6	7.0	5.2	14	31	8.1	2.2	26	7.1	9.6
20	1.8	2.4	4.6	7.0	5.0	13	35	6.8	2.5	9.9	4.1	6.3
21	2.0	2.5	4.8	8.0	4.8	14	25	6.0	6.8	6.0	3.0	4.4
22	5.7	2.1	3.7	12	4.7	30	43	5.3	7.8	5.0	5.8	3.8
23	7.6	2.1	3.5	13	4.5	19	35	4.8	6.0	3.4	17	3.4
24	4.3	2.0	3.6	9.5	4.4	13	24	4.3	4.9	2.9	8.0	3.9
25	3.3	2.0	3.6	9.5	4.3	11	19	3.8	4.6	2.5	7.0	5.5
26	3.1	2.3	4.1	6.0	4.3	9.6	15	3.5	3.7	2.6	5.3	8.1
27	2.7	2.5	4.0	5.0	4.5	9.0	13	3.2	3.1	5.0	4.7	5.5
28	2.3	2.5	4.4	4.8	4.5	8.5	11	3.0	2.8	3.3	4.3	4.3
29	2.2	2.6	3.5	4.6	5.0	8.5	10	2.7	5.7	2.6	3.2	4.7
30	2.3	3.0	44	4.5	-----	9.0	9.9	25	7.3	2.3	2.8	6.3
31	2.3	-----	22	4.3	-----	9.1	-----	13	-----	2.1	2.4	-----
TOTAL	76.7	69.2	246.5	201.0	153.7	678.2	584.6	368.2	125.3	185.2	135.5	183.5
MEAN	2.47	2.31	7.95	6.48	5.30	21.9	19.5	11.9	4.18	5.97	4.37	6.12
MAX	7.6	3.6	44	13	9.5	140	76	28	8.0	39	17	37
MIN	1.6	2.0	1.9	3.7	4.0	5.0	7.6	2.7	2.2	2.1	1.9	1.9
CFSM	.14	.13	.45	.37	.30	1.25	1.11	.68	.24	.34	.25	.35
IN.	.16	.15	.52	.43	.33	1.44	1.24	.78	.27	.39	.29	.39

CAL YR 1971 TOTAL 2,697.93 MEAN 7.39 MAX 150 MIN .50 CFSM .42 IN 5.74

WTR YR 1972 TOTAL 3,007.60 MEAN 8.22 MAX 140 MIN 1.6 CFSM .47 IN 6.39

PEAK DISCHARGE (BASE, 80 CFS)

DATE	TIME	G.H.	DISCHARGE
12-10	1700	3.99	106
12-30	1400	3.89	88
03-14	--	--	220
04-16	2000	4.33	170
07-18	2200	4.15	140
09-18	0400	3.88	93

STREAMS TRIBUTARY TO DETROIT RIVER

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04166500 River Rouge at Detroit, Mich.

LOCATION.--Lat 42°22'20", long 83°15'20", in SW $\frac{1}{4}$ sec.27, T.1 S., R.10 E., Wayne County, on right bank 500 ft upstream from bridge on Plymouth Road in Detroit, and 4 miles upstream from Middle River Rouge.

DRAINAGE AREA.--187 sq mi.

PERIOD OF RECORD.--October 1930 to current year. 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. Prior to Oct. 16, 1948, nonrecording gage at site 1 mile downstream at datum 4.6 ft lower.

AVERAGE DISCHARGE.--42 years, 106 cfs (7.70 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,620 cfs Mar. 14 (gage height, 12.83 ft); minimum daily, 12 cfs Oct. 3, 5, 6.

Period of record: 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, 1.8 cfs Aug. 1, 2, 1964 (gage height, 3.00 ft).

REMARKS.--Records good except those for the winter period, 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. WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	21	40	148	32	150	87	141	96	44	24	39
2	13	22	27	100	31	200	83	438	76	30	55	86
3	12	22	25	75	31	100	79	192	67	55	103	75
4	13	20	22	65	32	70	135	131	60	31	61	42
5	12	20	22	60	32	45	116	106	51	22	40	35
6	12	18	116	55	33	40	98	116	47	20	33	32
7	20	17	145	50	34	88	91	163	41	19	120	29
8	17	19	57	48	34	195	74	258	39	33	64	105
9	30	21	48	55	34	128	71	245	41	27	98	86
10	27	24	351	65	34	74	71	145	40	30	59	49
11	18	23	410	60	34	57	71	110	41	25	45	39
12	16	29	109	55	35	64	70	89	37	22	37	42
13	13	20	70	50	50	265	80	81	53	95	35	460
14	19	19	57	45	70	1,220	81	140	47	83	37	199
15	18	18	189	40	80	874	192	169	131	121	116	77
16	13	17	190	35	60	319	561	125	82	106	45	56
17	17	18	89	32	52	246	1,100	94	45	131	265	49
18	17	18	60	40	55	174	320	78	37	165	103	528
19	18	28	52	55	45	130	287	70	34	644	112	191
20	31	27	60	55	40	106	398	62	46	132	66	84
21	31	33	65	60	43	108	236	56	210	78	45	62
22	139	26	54	100	45	201	516	54	112	62	77	52
23	121	20	42	110	40	172	389	50	108	49	171	44
24	62	19	45	80	37	115	223	49	66	39	215	43
25	38	20	42	80	36	101	158	45	60	31	135	66
26	28	21	47	55	36	91	127	44	49	29	88	188
27	23	32	46	45	37	85	110	40	38	72	65	99
28	20	36	50	41	40	80	95	39	30	49	60	58
29	20	32	44	39	45	88	86	40	99	34	52	72
30	20	61	565	36	-----	112	81	146	150	27	45	101
31	21	-----	514	34	-----	95	-----	273	-----	25	41	-----
TOTAL	875	721	3,653	1,868	1,207	5,793	6,086	3,789	2,033	2,330	2,512	3,088
MEAN	28.2	24.0	118	60.3	41.6	187	203	122	67.8	75.2	81.0	103
MAX	139	61	565	148	80	1,220	1,100	438	210	644	265	528
MIN	12	17	22	32	31	40	70	39	30	19	24	29
CFSM	.15	.13	.63	.32	.22	1.00	1.09	.65	.36	.40	.43	.55
IN.	.17	.14	.73	.37	.24	1.15	1.21	.75	.40	.46	.50	.61

CAL YR 1971 TOTAL 27,496.6 MEAN 75.3 MAX 1,460 MIN 3.2 CFSM .40 IN 5.47

WTR YR 1972 TOTAL 33,955.0 MEAN 92.8 MAX 1,220 MIN 12 CFSM .50 IN 6.75

PEAK DISCHARGE (BASE, 1,200 CFS).--Mar. 14 (2300) 1,620 cfs (12.83 ft); Apr. 17 (0500) 1,420 cfs (12.15 ft).

STREAMS TRIBUTARY TO DETROIT RIVER

04167000 Middle River Rouge near Garden City, Mich.

LOCATION.--Lat 42°20'55", long 83°18'45", in W $\frac{1}{2}$ sec. 6, T.2 S., R.10 E., Wayne County, on right bank 200 ft downstream from bridge on Inkster Road, 1.8 miles northeast of Garden City, and 6.0 miles upstream from mouth.

DRAINAGE AREA.--99.9 sq mi.

PERIOD OF RECORD.--October 1930 to September 1933 (published as "at Detroit"), June 1947 to current year. Monthly discharge only for October, November 1930, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 600.95 ft above mean sea level. Nov. 21, 1930 to Sept. 30, 1933, nonrecording gage at site 4.8 miles downstream at datum 17.48 ft lower. June 6, 1947 to Oct. 18, 1948, nonrecording gage at site 200 ft upstream at present datum.

AVERAGE DISCHARGE.--28 years, 63.3 cfs (8.60 inches per year).

EXTREMES.--Current year: Maximum discharge, 742 cfs Apr. 16 (gage height, 7.77 ft); minimum, 4.8 cfs Aug. 4; minimum gage height, 1.58 ft Sept. 17.

Period of record: Maximum discharge, 2,330 cfs June 26, 1968; maximum gage height, 10.50 ft May 10, 1948; minimum discharge, 0.9 cfs Aug. 16, 1956.

REMARKS.--Records good except those for the winter period, which are fair. Occasional regulation by reservoirs above station since 1956.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	11	19	73	16	65	42	102	58	32	7.2	11
2	11	15	13	58	16	132	36	246	47	26	6.4	45
3	9.5	14	12	44	16	66	35	130	43	49	6.1	32
4	9.2	11	12	36	17	39	73	90	37	26	6.5	13
5	9.2	11	14	31	17	25	52	72	32	21	5.9	11
6	12	11	67	28	17	27	45	90	32	20	58	11
7	12	10	43	27	18	29	44	100	29	19	108	11
8	9.5	11	24	24	18	34	34	130	28	29	26	17
9	19	12	24	29	18	37	30	100	27	21	30	15
10	13	14	166	30	18	29	30	80	26	20	11	11
11	11	13	105	29	18	21	30	70	24	20	8.0	11
12	10	13	50	28	20	23	28	59	24	22	33	20
13	10	13	32	26	25	147	34	56	28	20	37	174
14	13	11	30	23	29	492	30	71	28	24	29	99
15	11	12	103	21	36	353	101	72	72	49	25	102
16	10	12	58	19	38	214	331	74	35	27	13	13
17	10	13	38	17	35	150	430	64	25	21	80	28
18	10	13	29	23	27	106	266	55	22	36	31	131
19	10	22	25	29	23	75	225	48	21	55	33	12
20	10	20	30	29	21	62	251	43	38	45	13	11
21	12	23	28	33	22	60	164	42	53	28	20	18
22	78	13	23	50	22	88	292	37	48	18	50	18
23	41	11	22	58	20	75	211	35	39	14	64	17
24	25	11	21	45	19	68	148	33	30	11	54	17
25	19	12	20	40	17	56	104	31	27	9.0	37	29
26	16	11	23	30	18	49	84	29	28	8.7	24	111
27	14	20	22	25	17	43	69	28	25	31	17	41
28	14	17	23	22	22	40	60	29	24	22	14	23
29	12	23	20	20	25	47	53	27	63	24	12	41
30	12	33	293	18	-----	55	49	95	51	16	11	50
31	11	-----	128	17	-----	43	-----	92	-----	8.8	10	-----
TOTAL	474.4	436	1,517	982	625	2,750	3,381	2,230	1,064	772.5	880.1	1,143
MEAN	15.3	14.5	48.9	31.7	21.6	88.7	113	71.9	35.5	24.9	28.4	38.1
MAX	78	33	293	73	38	492	430	246	72	55	108	174
MIN	9.2	10	12	17	16	21	28	27	21	8.7	5.9	11
CFSM	.15	.15	.49	.32	.22	.89	1.13	.72	.36	.25	.28	.38
IN.	.18	.16	.56	.37	.23	1.02	1.26	.83	.40	.29	.33	.43

CAL YR 1971 TOTAL 16,395.5 MEAN 44.9 MAX 770 MIN 6.7 CFSM .45 IN 6.10
WTR YR 1972 TOTAL 16,255.0 MEAN 44.4 MAX 492 MIN 5.9 CFSM .44 IN 6.05

PEAK DISCHARGE (BASE, 700 CFS).--Apr. 16 (1500) 742 cfs (7.77 ft).

STREAMS TRIBUTARY TO DETROIT RIVER

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04168000 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., Wayne County, on right bank 10 ft downstream from bridge on John Daly Road, 0.6 mile northeast of Inkster, and 4.8 miles upstream from mouth.

DRAINAGE AREA.--83.2 sq mi.

PERIOD OF RECORD.--June 1947 to current year.

GAGE.--Water-stage recorder. Datum of gage is 593.14 ft above mean sea level. Prior to Oct. 20, 1948, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--25 years, 46.9 cfs (7.66 inches per year).

EXTREMES.--Current year: Maximum discharge, 838 cfs Apr. 17 (gage height, 8.46 ft); minimum, 0.89 cfs Nov. 15; minimum gage height, 2.76 ft Aug. 4, 5.

Period of record: Maximum discharge, 3,600 cfs June 26, 1968 (gage height, 13.62 ft); minimum, 0.2 cfs Sept. 13, 1955, Jan. 23, 1961.

REMARKS.--Records good except those for the winter period, which are fair.

REVISIONS (WATER YEARS).--WSP 1174: 1948 (M), WSP 1437: 1949. WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	1.5	5.7	52	6.1	35	45	61	21	10	1.5	3.8
2	2.2	3.9	3.7	43	6.2	103	42	231	18	6.2	2.6	14
3	1.7	2.7	2.6	30	6.4	53	39	107	14	14	1.8	12
4	1.5	1.8	2.0	16	6.6	48	68	65	11	5.7	1.6	9.9
5	1.7	1.6	2.9	17	6.7	26	69	50	8.8	4.9	1.5	7.3
6	1.9	2.2	42	30	6.8	18	53	49	7.5	3.6	1.7	5.0
7	2.1	2.2	22	15	6.9	22	46	52	6.6	3.2	23	4.5
8	1.5	1.4	13	13	7.0	22	34	91	6.2	4.3	8.8	6.0
9	5.0	2.3	12	18	7.2	35	33	104	6.0	2.8	6.1	3.7
10	2.2	3.0	87	19	7.2	22	32	67	5.3	2.7	3.1	3.8
11	1.4	1.6	60	21	8.0	14	31	47	4.8	2.5	2.7	3.5
12	1.4	1.3	26	18	13	16	30	37	4.4	2.3	2.5	5.1
13	1.6	1.3	16	15	21	149	36	36	5.6	8.7	2.4	30
14	1.7	1.3	15	13	31	572	31	73	5.6	19	3.8	12
15	1.7	1.5	53	11	39	356	122	57	37	21	3.0	7.1
16	1.6	2.0	43	6.5	35	181	353	50	11	7.0	7.3	4.0
17	1.5	2.5	28	6.9	34	157	725	39	8.0	3.8	98	13
18	1.7	2.9	15	13	27	100	252	31	5.7	5.3	13	87
19	1.6	7.3	13	18	17	69	160	27	4.4	4.4	68	21
20	1.7	6.7	16	38	16	63	251	23	108	3.6	17	8.1
21	1.4	7.4	13	29	13	64	178	21	47	3.3	7.7	5.0
22	34	2.1	9.9	47	9.6	118	308	18	18	2.7	7.8	3.6
23	18	1.5	10	61	9.3	96	261	16	14	2.1	8.7	3.2
24	7.5	1.4	9.1	45	9.5	59	123	14	9.5	2.0	9.3	3.6
25	4.7	1.6	8.4	35	8.4	54	81	12	13	1.9	8.0	5.4
26	3.6	1.4	12	20	11	47	63	11	9.0	2.9	8.3	51
27	2.9	6.6	9.7	14	9.4	44	51	9.9	9.7	8.5	5.6	18
28	2.7	3.5	11	10	14	42	43	9.1	8.1	3.5	4.6	12
29	2.7	8.6	8.7	8.0	16	46	36	8.5	16	2.8	3.6	24
30	2.1	15	193	7.0	-----	51	32	38	6.6	2.2	4.2	21
31	2.1	-----	176	6.2	-----	49	-----	33	-----	1.6	3.7	-----
TOTAL	120.4	100.1	938.7	695.6	408.3	2,731	3,628	1,487.5	449.8	168.5	340.9	407.6
MEAN	3.88	3.34	30.3	22.4	14.1	88.1	121	48.0	15.0	5.44	11.0	13.6
MAX	34	15	193	61	39	572	725	231	108	21	98	87
MIN	1.4	1.3	2.0	6.2	6.1	14	30	8.5	4.4	1.6	1.5	3.2
CFSM	.05	.04	.36	.27	.17	1.06	1.45	.58	.18	.07	.13	.16
IN.	.05	.04	.42	.31	.18	1.22	1.62	.67	.20	.08	.15	.18

CAL. YR 1971 TOTAL 10,304.1 MEAN 28.2 MAX 888 MIN 1.1 CFSM .34 IN 4.61
WTR YR 1972 TOTAL 11,476.4 MEAN 31.4 MAX 725 MIN 1.3 CFSM .38 IN 5.13

PEAK DISCHARGE (BASE, 900 CFS).--No peak above base.

STREAMS TRIBUTARY TO LAKE ERIE

04169500 Huron River at Commerce, Mich.

LOCATION.--Lat 42°35'25", long 83°29'05", in NE¼ SE¼ sec.10, T.2 N., R.8 E., Oakland County, on downstream left abutment of bridge on Commerce Road, 10 ft upstream from Hayes Creek, and 0.2 miles east of Commerce. Records include flow of Hayes Creek.

DRAINAGE AREA.--57.3 sq mi, includes that of Hayes Creek.

PERIOD OF RECORD.--March 1946 to current year.

GAGE.--Nonrecording gage. Datum of gage is 910.00 ft above mean sea level.

AVERAGE DISCHARGE.--26 years, 35.6 cfs (8.44 inches per year).

EXTREMES.--Current year: Maximum discharge, 63 cfs Apr. 23 (gage height, 1.71 ft); minimum, 3.3 cfs Nov. 1 (gage height, 0.70 ft).
Period of record: Maximum discharge, 266 cfs Apr. 7, 1947 (gage height, 2.96 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, 3.3 cfs Nov. 1, 1971; minimum gage height, 0.52 ft July 16, 1962.

REMARKS.--Records fair. Some regulation by dams operated for lake-level control at outlets of Pontiac, Oxbow, and Union Lakes.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	3.4	22	40	24	24	54	56	24	22	9.2	20
2	9.9	3.7	20	37	21	24	45	53	22	20	15	22
3	11	4.2	18	35	19	25	43	51	20	18	15	22
4	13	4.6	18	35	18	24	42	49	17	17	14	20
5	12	4.7	18	35	16	24	38	48	15	16	13	20
6	12	4.8	20	35	16	22	34	45	15	15	12	20
7	12	5.3	20	35	15	21	30	44	13	15	12	20
8	11	5.8	21	37	15	21	27	44	12	15	12	41
9	8.5	6.2	24	37	15	22	26	40	12	14	13	38
10	6.4	6.7	32	37	15	23	24	35	12	14	13	35
11	5.8	7.2	32	37	17	24	24	35	12	14	18	35
12	5.4	7.5	32	36	20	24	25	30	13	14	18	36
13	5.3	8.0	28	37	21	42	25	30	14	18	16	36
14	5.2	8.0	30	38	22	46	26	40	15	18	14	36
15	5.0	8.5	36	37	21	43	26	49	16	18	12	36
16	4.8	8.8	35	34	22	40	42	48	12	18	12	36
17	4.8	8.8	32	32	22	39	46	48	11	17	15	34
18	4.8	9.6	28	29	21	40	46	48	12	20	17	35
19	4.8	11	25	29	21	40	54	49	12	21	17	35
20	4.8	11	24	30	21	46	59	49	12	21	16	35
21	4.8	13	22	31	22	44	56	49	20	20	15	35
22	6.9	13	21	33	22	47	61	49	23	19	14	34
23	7.2	13	24	32	15	47	62	47	19	18	29	36
24	6.7	13	22	32	20	49	60	44	19	16	24	36
25	6.4	15	24	32	20	49	60	41	18	12	23	36
26	5.6	16	22	31	20	49	58	36	17	11	23	35
27	4.7	22	24	29	21	49	57	31	16	10	23	34
28	3.9	20	22	29	21	50	53	28	16	10	23	34
29	3.4	24	22	29	21	51	55	26	22	9.6	22	34
30	3.4	23	39	27	-----	51	55	26	26	9.6	22	32
31	3.4	-----	44	25	-----	53	-----	26	-----	9.2	20	-----
TOTAL	213.9	309.8	801	1,032	564	1,153	1,313	1,294	487	489.4	521.2	958
MEAN	6.90	10.3	25.8	33.3	19.4	37.2	43.8	41.7	16.2	15.8	16.8	31.9
MAX	13	24	44	40	24	53	62	56	26	22	29	41
MIN	3.4	3.4	18	25	15	21	24	26	11	9.2	9.2	20
CFSM	.12	.18	.45	.58	.34	.65	.76	.73	.28	.28	.29	.56
IN.	.14	.20	.52	.67	.37	.75	.85	.84	.32	.32	.34	.62

CAL YR 1971 TOTAL 9,968.1 MEAN 27.3 MAX 96 MIN 3.4 CFSM .48 IN 6.47
WTR YR 1972 TOTAL 9,136.3 MEAN 25.0 MAX 62 MIN 3.4 CFSM .44 IN 5.93

04170000 Huron River at Milford, Mich.

LOCATION.—Lat 42°34'44", long 83°37'36", in NE¼ sec.16, T.2 N., R.7 E., Oakland County, on left bank 40 ft downstream from bridge on General Motors Road, 0.5 mile downstream from Sherwood Creek, and 0.5 mile west of Milford.

DRAINAGE AREA.—132 sq mi.

PERIOD OF RECORD.—September 1948 to current year.

GAGE.—Water-stage recorder. Datum of gage is 880.00 ft above mean sea level. Prior to Apr. 1, 1970, at site 240 ft upstream at same datum.

AVERAGE DISCHARGE.—24 years, 91.5 cfs (9.41 inches per year).

EXTREMES.—Current year: Maximum discharge, 276 cfs Oct. 26 (gage height, 6.72 ft); minimum, 4.5 cfs Oct. 21; minimum gage height, 3.80 ft Dec. 5.

Period of record: Maximum discharge, 645 cfs Apr. 5, 1950; maximum gage height, 8.26 ft June 28, 1968; minimum daily discharge, 5.2 cfs Oct. 21, 1971.

REMARKS.—Records good except those for period of no gage-height record, which are fair. Flow below about 300 cfs regulated by power-plant 1.5 miles above station prior to May 20, 1957; occasional regulation for lake level control since.

REVISIONS (WATER YEARS).—WSP 1337: 1952 (m). WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	42	97	95	54	77	114	103	75	95	41	47
2	39	47	121	93	54	82	111	108	69	87	56	51
3	35	49	47	90	54	71	109	107	66	82	57	50
4	36	47	6.2	86	54	66	105	102	66	63	52	46
5	35	46	5.5	83	54	59	104	97	57	55	41	38
6	34	45	16	80	53	57	103	90	44	53	38	36
7	34	45	64	76	52	68	101	97	36	50	43	38
8	35	45	67	74	50	70	91	106	36	52	49	76
9	36	45	60	73	48	63	86	108	39	45	53	71
10	37	45	75	72	46	62	83	97	33	39	51	67
11	34	45	98	72	45	60	82	86	30	38	56	62
12	34	45	96	72	45	71	80	77	34	43	53	63
13	35	45	88	72	48	99	84	71	40	55	41	87
14	65	45	80	72	50	153	87	87	40	56	38	93
15	130	45	87	67	55	173	100	140	39	63	35	97
16	170	45	87	62	58	164	122	160	43	59	29	101
17	79	45	87	57	58	147	175	149	47	55	43	99
18	48	49	84	55	57	133	209	135	42	105	45	104
19	38	49	80	55	55	130	189	129	35	111	55	96
20	5.8	51	77	56	53	122	181	109	37	40	54	88
21	5.2	53	74	58	54	119	169	93	54	45	49	80
22	5.7	32	70	61	52	147	160	78	61	51	50	74
23	5.4	65	68	64	53	161	164	77	64	49	76	73
24	5.3	37	66	66	53	153	159	83	58	44	105	71
25	13	5.5	65	64	46	141	150	81	57	32	116	76
26	134	8.8	65	62	52	125	141	71	58	32	103	88
27	104	9.4	65	60	54	119	131	60	59	40	92	94
28	110	5.5	65	58	55	117	126	56	53	44	82	92
29	89	8.8	70	56	56	116	110	56	49	41	73	91
30	43	16	88	56	-----	116	105	71	82	37	66	88
31	42	-----	94	56	-----	116	-----	76	-----	41	56	-----
TOTAL	1,560.4	1,161.0	2,212.7	2,123	1,518	3,357	3,731	2,960	1,503	1,702	1,798	2,237
MEAN	50.3	38.7	71.4	68.5	52.3	108	124	95.5	50.1	54.9	58.0	74.6
MAX	170	65	121	95	58	173	209	160	82	111	116	104
MIN	5.2	5.5	5.5	55	45	57	80	56	30	32	29	36
CFSM	.38	.29	.54	.52	.40	.82	.94	.72	.38	.42	.44	.57
IN.	.44	.33	.62	.60	.43	.95	1.05	.83	.42	.48	.51	.63
CAL YR 1971	TOTAL 26,619.1	MEAN 72.9	MAX 253	MIN 5.2	CFSM .55	IN 7.50						
WTR YR 1972	TOTAL 25,863.1	MEAN 70.7	MAX 209	MIN 5.2	CFSM .54	IN 7.29						

NOTE.—No gage-height record Dec. 17 to Feb. 9.

STREAMS TRIBUTARY TO LAKE ERIE

04170500 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., Livingston County, 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.--148 sq mi.

PERIOD OF RECORD.--August 1948 to current year.

GAGE.--Water-stage recorder. Datum of gage is 868.00 ft above mean sea level.

AVERAGE DISCHARGE.--24 years, 104 cfs (9.54 inches per year).

EXTREMES.--Current year: Maximum discharge, 173 cfs Oct. 30 (gage height, 2.08 ft); maximum gage height recorded, 2.45 ft Aug. 25, 26, Sept. 14; minimum discharge, 20 cfs Apr. 14, 15, 16, 17, 18 (gage height, 0.72 ft).
Period of record: Maximum discharge, 1,080 cfs Dec. 29, 1950 (gage height, 5.05 ft), from rating curve extended above 600 cfs by logarithmic plotting; minimum, 2.6 cfs May 27, 1963 (gage height, 0.53 ft).

REMARKS.--Records good except those for period of no gage-height record, which are fair. Occasional regulation by Kent Lake.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	90	70	124	71	80	125	111	78	68	42	80
2	61	73	100	121	69	90	123	66	77	74	58	76
3	57	69	90	117	70	83	121	55	75	75	75	73
4	56	64	79	112	70	75	122	75	76	65	70	64
5	52	62	77	109	69	68	119	81	67	54	58	58
6	51	58	76	105	69	66	121	85	62	47	47	53
7	50	58	77	100	70	77	123	100	52	42	50	47
8	50	61	80	94	67	80	107	106	47	43	52	85
9	55	111	90	94	66	70	73	104	48	36	61	100
10	55	93	96	95	62	70	24	94	41	35	56	96
11	53	79	116	95	60	70	25	92	35	31	52	91
12	52	70	123	94	60	80	26	87	38	33	55	93
13	55	80	118	97	60	110	26	83	44	43	54	135
14	61	131	115	94	64	150	25	96	42	49	47	147
15	78	101	111	89	66	170	20	124	48	59	42	129
16	125	91	122	80	67	170	22	144	49	61	27	123
17	128	142	115	74	67	166	22	149	48	55	56	122
18	101	114	110	71	65	156	22	140	46	72	51	136
19	82	96	105	72	63	145	65	127	44	117	51	127
20	63	87	102	74	61	138	116	118	48	96	45	111
21	51	94	97	75	61	135	136	105	59	76	37	98
22	55	139	92	78	60	154	144	94	63	68	40	88
23	53	103	88	82	60	160	150	84	60	56	95	79
24	44	103	85	86	61	160	157	85	55	48	105	74
25	37	115	84	84	62	154	152	84	58	41	126	79
26	55	91	85	80	63	144	145	79	57	30	126	96
27	86	77	85	77	65	135	137	72	55	41	120	100
28	95	114	84	77	67	130	131	68	54	41	116	90
29	107	91	87	74	70	128	124	63	55	45	108	90
30	128	68	116	72	-----	125	118	78	58	41	97	88
31	120	-----	124	72	-----	126	-----	82	-----	39	89	-----
TOTAL	2,180	2,725	2,999	2,768	1,885	3,665	2,821	2,931	1,639	1,681	2,108	2,828
MEAN	70.3	90.8	96.7	89.3	65.0	118	94.0	94.5	54.6	54.2	68.0	94.3
MAX	128	142	124	124	71	170	157	149	78	117	126	147
MIN	37	58	70	71	60	66	20	55	35	30	27	47
CFSM	.48	.61	.65	.60	.44	.80	.64	.64	.37	.37	.46	.64
IN.	.55	.68	.75	.70	.47	.92	.71	.74	.41	.42	.53	.71

CAL YR 1971 TOTAL 31,981.0 MEAN 87.6 MAX 280 MIN 7.0 CFSM .59 IN 8.04

WTR YR 1972 TOTAL 30,230.0 MEAN 82.6 MAX 170 MIN 20 CFSM .56 IN 7.60

NOTE.--No gage-height record Feb. 11 to Mar. 15.

04172000 Huron River near Hamburg, Mich.

LOCATION.--Lat 42°27'55", long 83°48'00", in sec.24, T.1 N., R.5 E., Livingston County, 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.--308 sq mi.

PERIOD OF RECORD.--October 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 850.00 ft above mean sea level (levels by Michigan Department of Natural Resources). Prior to Aug. 12, 1953, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--21 years, 193 cfs (8.51 inches per year).

EXTREMES.--Current year: Maximum discharge, 352 cfs Apr. 23, 24 (gage height, 4.70 ft); maximum gage height, 5.20 ft Aug. 26; minimum discharge, 64 cfs Oct. 7, 8; minimum gage height, 3.28 ft Oct. 26, 27.

Period of record: Maximum discharge, 1,560 cfs May 15, 1956; maximum gage height, 8.46 ft June 30, 1968; minimum discharge, 32 cfs July 2, 3, 1965; minimum gage height, 3.16 ft Aug. 1-3, 1964.

REMARKS.--Records good except those for the winter period, which are fair. Occasional regulation by Kent Lake, 11 miles above station.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	132	119	222	120	118	238	255	127	103	86	130
2	84	119	110	211	120	139	231	251	126	109	89	120
3	78	104	150	196	120	140	225	215	127	116	97	112
4	74	97	137	186	120	130	226	189	128	115	107	104
5	69	90	120	202	120	130	225	185	124	111	110	98
6	68	86	111	198	120	130	225	186	117	102	107	93
7	65	84	111	191	120	130	222	194	110	95	103	89
8	66	82	115	180	120	130	221	212	101	90	103	92
9	69	106	122	161	110	140	207	220	95	88	108	103
10	71	132	142	153	110	146	187	212	89	86	108	114
11	71	125	171	145	110	139	147	202	84	87	108	118
12	68	114	184	140	110	141	135	188	81	84	109	117
13	66	106	187	138	110	158	128	178	86	90	108	135
14	68	132	181	140	110	219	130	179	89	96	105	166
15	71	156	188	140	110	284	134	223	94	106	100	176
16	83	140	199	130	110	329	144	270	94	112	96	171
17	105	151	201	130	111	347	208	313	94	114	110	164
18	116	177	191	130	111	345	229	328	93	112	120	173
19	108	159	179	130	110	329	243	315	95	125	123	178
20	94	138	170	130	110	308	274	285	93	140	119	173
21	80	130	163	130	110	298	303	251	98	143	111	160
22	78	154	150	130	110	320	334	214	105	135	106	146
23	80	171	144	130	110	331	349	183	108	125	131	133
24	79	151	140	140	110	333	351	158	105	115	160	127
25	74	162	135	140	110	329	347	145	105	107	192	124
26	68	167	134	140	110	315	339	131	106	96	204	132
27	75	144	133	130	108	291	321	116	106	96	199	145
28	93	152	132	130	110	270	301	107	102	95	188	148
29	105	161	130	130	114	259	283	99	99	95	172	146
30	116	141	178	120	-----	251	266	107	99	91	157	145
31	128	-----	208	120	-----	245	-----	125	-----	88	142	-----
TOTAL	2,561	3,963	4,735	4,693	3,274	7,174	7,173	6,236	3,080	3,267	3,878	4,032
MEAN	82.6	132	153	151	113	231	239	201	103	105	125	134
MAX	128	177	208	222	120	347	351	328	128	143	204	178
MIN	65	82	110	120	108	118	128	99	81	84	86	89
CFSM	.27	.43	.50	.49	.37	.75	.78	.65	.33	.34	.41	.44
IN.	.31	.48	.57	.57	.40	.87	.87	.75	.37	.39	.47	.49
CAL YR 1971	TOTAL 57,638	MEAN 158	MAX 606	MIN 42	CFSM .51	IN 6.96						
WTR YR 1972	TOTAL 54,066	MEAN 148	MAX 351	MIN 65	CFSM .48	IN 6.53						

STREAMS TRIBUTARY TO LAKE ERIE

04173000 Huron River near Dexter, Mich.

LOCATION.--Lat 42°23'10", long 83°54'40", in S½ sec.13, T.1 S., R.4 E., Washtenaw County, on right bank 20 ft downstream from highway bridge on North Territorial Road, 0.5 mile east of Hudson Mills, 2 miles downstream from Portage Lake Outlet, and 4 miles north of Dexter.

DRAINAGE AREA.--522 sq mi.

PERIOD OF RECORD.--August to December 1904 (gage height only), March 1946 to September 1972 (discontinued as a continuous-record station; converted to a crest-stage partial-record station). Published as "at Dover" 1904.

GAGE.--Water-stage recorder. Datum of gage is 837.11 ft above mean sea level (levels by Michigan Department of Natural Resources). August to December 1904, nonrecording gage at site 1 mile upstream at different datum. Mar. 5, 1946 to July 30, 1953, non-recording gage at present site and datum.

AVERAGE DISCHARGE.--26 years, 345 cfs (8.98 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,030 cfs May 14 (gage height, 4.79 ft); minimum, 33 cfs Apr. 12 (gage height, 2.05 ft).

Period of record: Maximum discharge, 3,120 cfs Apr. 9, 1947 (gage height, 8.17 ft, from graph based on gage readings); minimum, 33 cfs Apr. 12, 1972 (gage height, 2.05 ft).

REMARKS.--Records good except those for period of no gage-height record, which are fair. Occasional regulation by lake level control operations above station. Records of chemical analyses for the current year are published in Part 2 of this report.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	132	204	369	209	172	377	461	166	190	102	218
2	136	144	206	440	200	194	437	483	191	180	126	338
3	150	247	200	541	201	199	437	504	243	170	137	124
4	145	267	225	480	192	206	441	418	283	160	89	166
5	131	126	235	385	194	186	379	353	231	150	94	134
6	94	73	220	355	188	204	336	324	266	150	99	101
7	72	87	217	333	204	202	338	482	235	140	109	109
8	72	97	185	296	185	203	373	561	111	140	116	153
9	119	102	172	271	171	198	395	438	136	130	122	126
10	96	148	207	286	193	195	339	308	140	130	119	128
11	77	172	286	262	174	194	213	350	137	130	118	133
12	82	174	333	248	148	191	100	369	140	130	124	161
13	85	168	317	277	150	217	269	381	158	130	123	223
14	91	162	324	265	144	283	366	688	165	130	128	284
15	102	141	349	257	151	342	315	493	171	140	132	121
16	106	139	371	248	159	406	338	498	110	140	129	156
17	124	148	367	274	162	476	431	523	130	150	191	214
18	176	163	364	216	171	688	451	555	100	150	147	347
19	170	187	364	221	178	643	619	654	95	150	125	318
20	166	220	352	221	232	517	755	633	110	150	134	174
21	162	210	349	207	161	492	464	410	150	161	140	220
22	168	229	347	233	159	537	597	364	200	173	150	306
23	168	241	314	252	151	552	655	442	150	174	388	172
24	166	230	306	256	166	533	649	445	100	166	166	168
25	161	218	272	257	168	664	616	320	130	154	139	209
26	150	210	255	241	168	644	581	182	160	139	205	240
27	144	219	240	221	166	575	578	207	170	141	394	252
28	139	212	283	225	164	537	503	227	180	162	252	206
29	100	203	277	223	163	429	508	229	200	140	133	134
30	84	220	327	220	-----	346	537	457	210	105	169	168
31	112	-----	355	215	-----	339	-----	297	-----	104	182	-----
TOTAL	3,839	5,289	8,823	8,795	5,072	11,564	13,397	13,056	4,968	4,559	4,782	5,803
MEAN	124	176	285	284	175	373	447	421	166	147	154	193
MAX	176	267	371	541	232	688	755	688	283	190	394	347
MIN	72	73	172	207	144	172	100	182	95	104	89	101
CFSM	.24	.34	.55	.54	.34	.71	.86	.81	.32	.28	.30	.37
IN.	.27	.38	.63	.63	.36	.82	.95	.93	.35	.32	.34	.41

CAL YR 1971 TOTAL 98,374 MEAN 270 MAX 1,130 MIN 45 CFSM .52 IN 7.01
WTR YR 1972 TOTAL 89,947 MEAN 246 MAX 755 MIN 72 CFSM .47 IN 6.41

NOTE.--No gage-height record June 16 to July 19.

04173500 Mill Creek near Dexter, Mich.

LOCATION.—Lat 42°18'00", long 83°53'55", in SW¼ sec.18, T.2 S., R.5 E., Washtenaw County, on left bank 12 ft downstream from bridge on Parker Road, 2.5 miles south of Dexter, and 4 miles upstream from mouth.

DRAINAGE AREA.—128 sq mi.

PERIOD OF RECORD.—February 1952 to current year.

GAGE.—Water-stage recorder. Altitude of gage is 850 ft (from topographic map). Prior to May 23, 1958, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.—20 years, 70.5 cfs (7.48 inches per year).

EXTREMES.—Current year: Maximum discharge, 562 cfs Mar. 14 (gage height, 9.76 ft); minimum, 15 cfs Aug. 5, 13; minimum gage height, 5.46 ft Aug. 5.
Period of record: Maximum discharge, 1,500 cfs June 26, 1968 (gage height, 12.95 ft); minimum, 7.3 cfs Dec. 13, 1963; minimum gage height, 4.94 ft Dec. 13, 1963, Feb. 22, 1964.

REMARKS.—Records good except those for the winter period, which are fair.

REVISIONS.—WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	24	31	169	43	96	106	103	61	44	17	19
2	26	23	32	135	41	140	100	130	54	37	18	24
3	24	22	30	117	40	123	95	109	49	32	19	24
4	28	24	29	104	39	117	112	95	47	29	17	21
5	26	23	32	95	38	73	118	85	43	27	16	20
6	25	22	47	85	37	56	110	85	39	26	16	19
7	26	22	71	75	37	52	105	105	35	25	18	18
8	25	22	67	70	36	51	103	183	33	24	20	19
9	30	23	63	65	36	50	87	218	32	23	21	19
10	29	24	97	60	36	50	88	145	30	23	18	19
11	26	24	142	57	37	49	88	112	30	22	17	19
12	23	24	109	54	38	61	87	96	30	21	17	21
13	23	23	90	50	39	186	101	86	33	21	17	31
14	24	22	76	49	40	513	99	126	31	22	17	35
15	24	22	106	48	41	339	138	305	32	25	28	29
16	23	22	142	47	42	282	245	267	33	25	20	25
17	22	22	116	47	42	237	496	188	30	22	27	23
18	23	22	99	50	44	178	321	133	30	23	31	36
19	23	23	76	55	44	137	235	106	28	30	63	39
20	23	25	74	60	44	125	285	90	28	25	52	32
21	24	29	76	70	44	127	241	77	31	22	36	27
22	39	26	69	74	43	313	224	67	33	20	27	25
23	53	28	63	75	41	236	199	59	34	19	33	23
24	50	26	64	75	40	160	159	53	33	19	37	23
25	43	24	64	70	38	134	137	48	33	19	37	24
26	37	24	65	60	37	118	119	44	33	19	29	36
27	32	28	68	53	36	110	104	40	33	22	26	39
28	29	31	70	52	38	103	96	38	32	20	24	33
29	27	36	64	49	40	99	89	36	35	19	21	35
30	26	39	194	46	-----	102	88	52	51	17	20	37
31	25	-----	252	44	-----	109	-----	73	-----	17	19	-----
TOTAL	886	749	2,578	2,160	1,151	4,526	4,575	3,354	1,076	739	778	794
MEAN	28.6	25.0	83.2	69.7	39.7	146	153	108	35.9	23.8	25.1	26.5
MAX	53	39	252	169	44	513	496	305	61	44	63	39
MIN	22	22	29	44	36	49	87	36	28	17	16	18
CFSM	.22	.20	.65	.54	.31	1.14	1.20	.84	.28	.19	.20	.21
IN.	.26	.22	.75	.63	.33	1.32	1.33	.97	.31	.21	.23	.23

CAL YR 1971 TOTAL 24,458 MEAN 67.0 MAX 730 MIN 13 CFSM .52 IN 7.11
WTR YR 1972 TOTAL 23,366 MEAN 63.8 MAX 513 MIN 16 CFSM .50 IN 6.79

PEAK DISCHARGE (BASE, 500 CFS).—Mar. 14 (1200) 562 cfs (9.76 ft); Apr. 17 (0700) 534 cfs (9.62 ft).

STREAMS TRIBUTARY TO LAKE ERIE

04174500 Huron River at Ann Arbor, Mich.

LOCATION.--Lat 42°17'10", long 83°44'00", in NW1/4 sec.28, T.2 S., R.6 E., Washtenaw County, on left bank 100 ft upstream from bridge on Wall Street in Ann Arbor, 0.7 mile downstream from Argo Dam, and 4.2 miles upstream from Geddes Dam.

DRAINAGE AREA.--729 sq mi.

PERIOD OF RECORD.--February 1904 to current year. 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 (levels by Michigan Department of Natural Resources). February 1904 to December 1914 at Geddes Dam, 4.2 miles downstream, and January 1914 to September 1947, at Barton Dam, 2.6 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.--68 years, 438 cfs (8.16 inches per year) adjusted for diversion since 1955.

EXTREMES.--Current year: Maximum discharge, 1,350 cfs Apr. 16 (gage height, 13.99 ft); minimum, 8.0 cfs July 21 (gage height, 11.41 ft); minimum daily, 22 cfs July 21.

Period of record: 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 the winter period, 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 prior to May 1962, and since by occasional lake-level control operations above station. Records of chemical analyses for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 874: 1938. WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	237	128	249	576	280	235	489	675	314	294	142	191
2	161	142	240	515	273	253	517	596	221	278	107	202
3	159	163	232	657	265	310	563	663	241	242	99	233
4	183	218	222	735	271	273	588	599	213	210	141	273
5	177	227	235	685	270	286	583	528	258	223	181	253
6	161	187	263	577	270	351	523	416	226	218	173	173
7	130	154	254	425	270	262	490	457	268	198	151	193
8	97	150	260	429	290	274	457	707	248	199	180	70
9	105	139	248	363	260	298	473	791	126	205	170	63
10	132	130	304	348	250	265	462	661	100	210	167	87
11	103	153	293	384	270	287	452	493	153	211	166	226
12	138	171	379	326	240	247	260	470	142	204	167	167
13	115	195	302	317	210	319	233	469	158	170	168	286
14	109	198	298	325	210	550	403	545	195	194	171	300
15	112	194	359	340	210	973	529	921	207	303	164	384
16	115	182	344	340	220	932	584	938	145	368	165	341
17	122	169	313	330	230	864	736	848	134	287	175	288
18	146	178	384	320	226	819	968	852	180	156	163	362
19	176	192	386	310	239	909	936	780	136	29	195	396
20	186	217	399	281	327	809	1,120	763	124	156	159	390
21	187	234	374	278	225	723	1,060	706	163	22	162	366
22	227	236	331	294	242	734	845	567	211	228	163	364
23	216	249	336	301	245	800	906	461	347	230	193	379
24	227	271	332	356	196	817	894	446	240	232	407	308
25	219	264	325	336	204	797	831	448	95	231	348	284
26	207	252	319	380	207	827	780	331	151	235	256	222
27	198	256	307	360	248	809	837	243	243	228	231	350
28	181	250	318	340	199	759	831	219	215	207	344	380
29	175	256	331	330	204	714	728	239	252	223	386	345
30	147	252	434	320	-----	603	660	331	256	221	296	233
31	120	-----	400	300	-----	513	-----	534	-----	205	210	-----
TOTAL	4,968	6,007	9,771	12,178	7,051	17,612	19,738	17,697	5,962	6,617	6,200	8,109
MEAN	160	200	315	393	243	568	658	571	199	213	200	270
MAX	237	271	434	735	327	973	1,120	938	347	368	407	396
MIN	97	128	222	278	196	235	233	219	95	22	99	63
MEAN+	180	218	330	409	259	584	675	592	220	238	221	293
CFSM+	.25	.30	.45	.56	.36	.80	.93	.81	.30	.33	.30	.40
IN+	.28	.33	.52	.65	.38	.92	1.03	.94	.34	.38	.35	.45

CAL YR 1971 TOTAL 128,144 MEAN 351 MAX 2,590 MIN 25 MEAN+ 366 CFSM+ .50 IN+ 6.80
WTR YR 1972 TOTAL 121,910 MEAN 333 MAX 1,120 MIN 22 MEAN+ 352 CFSM+ .48 IN+ 6.57

+ Adjusted for diversion for municipal supply; record furnished by City of Ann Arbor.

04175550 Story Creek at Oakville Mich.

LOCATION.--Lat 42°05'05", long 83°34'43", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.34, T.4 S., R.7 E., Washtenaw County, at left downstream side of bridge on Tuttle Hill Road, 300 feet downstream from Paint Creek, and 0.2 mile northeast of Oakville.

DRAINAGE AREA.--68.0 sq mi.

PERIOD OF RECORD.--January 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 650 ft (from topographic map). Prior to July 31, 1970, nonrecording gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 440 cfs Apr. 17 (gage height, 7.26 ft); minimum, 4.8 cfs Nov. 22, result of freezeup; minimum gage height, 1.16 ft July 26, Aug. 6.

Period of record: Maximum discharge, 450 cfs May 24, 1970 (gage height, 7.30 ft); maximum gage height, 8.31 ft Feb. 20, 1971 (backwater from ice); minimum discharge, 2.7 cfs Aug. 24, 1971 (gage height, 1.00 ft).

REMARKS.--Records good except those for the winter period and those for period of no gage-height record, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	7.0	12	55	11	40	45	99	20	17	5.9	6.9
2	10	6.9	11	44	11	90	41	181	18	14	6.5	7.8
3	8.6	7.0	9.7	40	11	45	39	93	16	15	7.2	10
4	8.2	7.3	10	33	11	35	59	64	15	14	6.9	8.6
5	8.2	7.3	10	27	11	26	60	51	13	13	6.5	7.3
6	8.2	7.0	14	24	10	22	49	49	13	11	6.2	6.7
7	8.0	6.9	26	22	10	19	43	55	12	10	8.1	6.2
8	8.0	6.9	19	20	10	17	36	79	11	11	9.8	6.5
9	8.0	7.3	15	18	10	16	34	91	11	11	11	6.7
10	7.6	8.0	21	17	10	16	36	59	10	11	9.0	6.4
11	7.5	8.3	55	16	10	20	34	45	10	9.5	8.3	6.1
12	7.2	8.1	27	15	10	36	32	36	9.8	9.8	8.0	6.7
13	7.0	7.8	20	14	10	102	39	33	11	13	7.7	9.5
14	7.0	7.7	18	14	11	382	38	42	11	15	7.2	13
15	7.0	7.5	23	14	11	348	144	84	14	15	7.7	9.8
16	7.0	7.3	40	13	12	126	204	67	15	16	7.3	8.3
17	7.0	7.3	27	13	12	96	408	50	11	13	9.3	8.0
18	7.0	7.3	22	14	12	69	187	40	11	10	11	24
19	7.5	7.7	23	16	12	54	108	30	9.7	14	21	24
20	10	7.8	19	17	12	51	180	27	32	11	18	16
21	13	9.0	21	19	12	56	135	24	118	9.3	11	12
22	16	7.8	19	20	11	89	200	21	48	8.3	9.3	9.8
23	15	7.7	24	20	11	71	207	19	35	7.2	10	9.2
24	14	7.8	18	20	10	52	99	18	27	7.3	11	9.2
25	12	7.5	18	19	10	48	72	17	23	7.0	12	9.3
26	10	7.5	19	17	10	45	59	15	24	6.1	10	16
27	9.0	8.1	20	15	10	44	50	14	23	8.6	9.0	26
28	8.5	9.8	20	14	11	42	44	14	20	8.6	8.5	25
29	8.0	10	19	13	11	42	40	13	20	7.8	7.8	24
30	7.6	13	74	12	-----	51	37	15	20	6.5	7.0	24
31	7.2	-----	146	11	-----	48	-----	27	-----	5.9	6.9	-----
TOTAL	281.3	236.6	819.7	626	313	2,198	2,759	1,472	631.5	335.9	285.1	363.0
MEAN	9.07	7.89	26.4	20.2	10.8	70.9	92.0	47.5	21.1	10.8	9.20	12.1
MAX	16	13	146	55	12	382	408	181	118	17	21	26
MIN	7.0	6.9	9.7	11	10	16	32	13	9.7	5.9	5.9	6.1
CFSM	.13	.12	.39	.30	.16	1.04	1.35	.70	.31	.16	.14	.18
IN.	.15	.13	.45	.34	.17	1.20	1.51	.81	.35	.18	.16	.20

CAL YR 1971 TOTAL 8,759.6 MEAN 24.0 MAX 370 MIN 3.2 CFSM .35 IN 4.79

WTR YR 1972 TOTAL 10,321.1 MEAN 28.2 MAX 408 MIN 5.9 CFSM .41 IN 5.65

PEAK DISCHARGE (BASE, 300 CFS)

NOTE.--No gage height record Oct. 1 to Nov. 3.

DATE	TIME	G.H.	DISCHARGE
03-14	1900	7.24	435
04-17	0800	7.26	440
04-22	2400	6.84	342

STREAMS TRIBUTARY TO LAKE ERIE

04175600 River Raisin near Manchester, Mich.

LOCATION.--Lat 42°10'05", long 84°04'34", in NE1/4SE1/4 sec.33, T.3 S., R.3 E., Washtenaw County, on left bank 8 ft downstream from bridge on Sharon Valley Road, and 2.5 miles northwest of Manchester.

DRAINAGE AREA.--132 sq mi.

PERIOD OF RECORD.--January 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 900 ft (from topographic map). Prior to July 30, 1970, non-recording gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 290 cfs Sept. 18 (based on correlation with nearby stations); minimum, 4.5 cfs Nov. 29 (gage height, 1.35 ft).

Period of record: Maximum discharge, about 350 cfs Feb. 20, 1971 (gage height, 6.1 ft, from floodmark, backwater from ice); minimum discharge, 4.5 cfs Nov. 29, 1971; minimum gage height, 1.33 ft Sept. 13, 1971.

REMARKS.--Records good except those for the winter period, which are fair. Occasional regulation by many dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	25	36	177	52	60	134	146	58	39	21	26
2	26	24	30	148	50	90	128	162	60	39	21	28
3	26	24	28	149	48	82	120	162	58	38	20	24
4	24	23	26	132	46	70	127	154	62	37	19	25
5	26	21	26	115	45	68	133	140	54	34	21	24
6	20	24	30	110	44	64	126	138	49	33	19	24
7	19	22	55	100	43	59	118	146	45	31	18	23
8	18	19	63	99	42	62	110	159	43	30	29	23
9	26	19	65	94	41	62	109	165	41	29	20	23
10	26	22	72	95	41	60	106	155	39	28	19	23
11	22	24	140	90	41	53	102	146	34	27	19	23
12	22	22	131	83	42	71	97	127	34	25	20	35
13	20	24	99	81	44	122	108	126	29	25	20	70
14	22	20	83	78	46	192	116	125	31	27	20	100
15	21	26	88	77	48	176	129	171	33	25	20	70
16	20	26	113	76	50	186	170	175	33	24	18	50
17	20	24	99	75	50	186	218	163	31	23	19	45
18	18	23	86	74	50	171	209	151	29	25	19	200
19	19	26	68	75	50	159	209	139	28	33	45	270
20	19	28	67	75	48	152	224	127	28	35	58	150
21	20	30	67	74	47	164	220	115	32	33	47	130
22	35	27	56	74	45	191	216	104	31	31	39	110
23	51	32	49	76	43	186	220	95	35	29	39	90
24	54	34	43	80	41	173	208	85	33	27	43	80
25	53	28	44	76	41	163	193	68	27	25	46	80
26	48	37	45	72	40	155	178	63	32	23	46	100
27	38	30	58	66	40	147	167	58	34	26	45	100
28	34	23	59	62	40	141	156	56	35	26	44	95
29	28	18	58	58	46	134	146	46	36	24	38	90
30	28	28	98	56	-----	137	139	57	38	23	32	90
31	26	-----	174	55	-----	140	-----	73	-----	21	29	-----
TOTAL	857	753	2,156	2,752	1,304	3,876	4,636	3,797	1,152	895	913	2,221
MEAN	27.6	25.1	69.5	88.8	45.0	125	155	122	38.4	28.9	29.5	74.0
MAX	54	37	174	177	52	192	224	175	62	39	58	270
MIN	18	18	26	55	40	53	97	46	27	21	18	23
CFSM	.21	.19	.53	.67	.34	.95	1.17	.92	.29	.22	.22	.56
IN.	.24	.21	.61	.78	.37	1.09	1.31	1.07	.32	.25	.26	.63

CAL YR 1971 TOTAL 25,402.9 MEAN 69.6 MAX 340 MIN 8.0 CFSM .53 IN 7.16
WTR YR 1972 TOTAL 25,312.0 MEAN 69.2 MAX 270 MIN 18 CFSM .52 IN 7.13

PEAK DISCHARGE (BASE, 280 CFS).--Sept. 18 (time unknown) 290 cfs.

04175700 River Raisin near Tecumseh, Mich.

LOCATION.--Lat 41°56'35", long 83°56'45", in NE1/4 sec.21, T.6 S., R.4 E., Lenawee County, 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.--267 sq mi.

RECORDS AVAILABLE.--September 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 707.0 ft above mean sea level.

AVERAGE DISCHARGE.--16 years, 161 cfs (8.19 inches per year).

EXTREMES.--Current year: Maximum discharge, 977 cfs Sept. 19 (gage height, 9.40 ft); minimum, 39 cfs Oct. 14, 15; minimum gage height, 3.84 ft Aug. 6.

Period of record: Maximum discharge, 2,920 cfs June 26, 1968 (gage height, 12.66 ft); minimum, 6.4 cfs Aug. 26, 1964 (gage height, 2.57 ft); minimum daily, 8.3 cfs Oct. 30, 1965.

REMARKS.--Records good except those for the winter period, which are fair. Diurnal fluctuation caused by power-plant 5.5 miles above station prior to June 27, 1968.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	59	65	244	93	137	209	312	133	111	58	69
2	41	71	56	233	88	238	200	500	126	88	58	71
3	42	58	54	217	84	187	188	415	116	83	60	76
4	46	55	69	196	80	145	199	338	118	77	59	71
5	47	68	74	173	78	125	203	294	109	74	57	67
6	47	75	81	165	76	117	203	267	106	71	57	65
7	47	66	75	157	75	109	201	270	99	69	65	65
8	44	53	75	150	74	117	183	312	93	69	66	65
9	48	51	92	135	74	101	171	357	89	69	68	65
10	52	71	112	130	74	100	166	338	86	68	68	63
11	60	75	146	125	74	96	164	295	81	66	63	62
12	47	72	148	120	76	100	159	258	79	61	61	64
13	41	63	155	110	78	190	157	231	80	61	61	150
14	40	55	134	105	84	549	165	225	79	69	60	278
15	40	53	132	105	90	625	255	292	87	75	63	192
16	42	54	143	105	100	498	402	412	84	73	63	126
17	44	65	144	110	102	428	597	366	77	67	64	111
18	44	72	127	110	103	360	588	323	75	68	65	491
19	45	61	129	115	97	303	479	281	74	71	121	691
20	44	62	110	120	81	268	441	246	79	68	133	386
21	45	80	104	130	90	249	442	216	113	69	101	360
22	58	78	98	135	83	332	441	194	90	66	107	270
23	63	61	95	140	81	410	458	175	67	64	101	220
24	75	56	90	140	82	339	391	160	74	62	92	200
25	81	55	86	140	79	285	358	125	80	61	89	200
26	79	64	85	130	78	254	318	110	79	59	87	250
27	71	67	85	120	73	234	283	118	81	64	86	250
28	67	80	87	115	81	217	257	113	70	65	85	240
29	76	84	91	110	96	206	240	107	75	62	82	230
30	62	85	137	105	-----	209	224	115	122	61	77	230
31	54	-----	250	100	-----	207	-----	141	-----	59	73	-----
TOTAL	1,639	1,969	3,329	4,290	2,424	7,735	8,742	7,906	2,721	2,150	2,350	5,678
MEAN	52.9	65.6	107	138	83.6	250	291	255	90.7	69.4	75.8	189
MAX	81	85	250	244	103	625	597	500	133	111	133	691
MIN	40	51	54	100	73	96	157	107	67	59	57	62
CFSM	.20	.25	.40	.52	.31	.94	1.09	.96	.34	.26	.28	.71
IN.	.23	.27	.46	.60	.34	1.08	1.22	1.10	.38	.30	.33	.79

CAL YR 1971 TOTAL 51,081 MEAN 140 MAX 1,200 MIN 20 CFSM .52 IN 7.12
WTR YR 1972 TOTAL 50,933 MEAN 139 MAX 691 MIN 40 CFSM .52 IN 7.10

PEAK DISCHARGE (BASE, 700 CFS).--Sept. 19 (0200) 977 cfs (9.40 ft).

STREAMS TRIBUTARY TO LAKE ERIE

04176000 River Raisin near Adrian, Mich.

LOCATION.--Lat 41°54'15", long 83°58'50", in NW¼ sec. 5, T.7 S., R.4 E., Lenawee County, 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.--463 sq mi.

PERIOD OF RECORD.--October 1953 to current year. Records for October 1930 to August 1931, October 1932 to April 1938, published as "Raisin River" in WSP 714, 744, 799, 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.

AVERAGE DISCHARGE.--19 years, 284 cfs (8.33 inches per year).

EXTREMES.--Current year: Maximum discharge, 1,310 cfs Mar. 16, Apr. 18 (gage height, 10.01 ft); minimum, 60 cfs Aug. 6; minimum gage height, 2.29 ft Oct. 3; minimum daily discharge, 62 cfs Aug. 6.

Period of record: Maximum discharge, 5,580 cfs Apr. 30, 1956 (gage height, 14.87 ft), from rating curve extended above 4,000 cfs by logarithmic plotting; minimum, 18 cfs Aug. 10, 1964 (gage height, 1.33 ft); minimum daily, 25 cfs Oct. 26, 1965.

REMARKS.--Records good except those for the winter period, which are fair. Diurnal fluctuation caused by powerplant at Tecumseh, 11 miles above station, prior to June 27, 1968.

REVISIONS.--See PERIOD OF RECORD. WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	89	146	593	160	223	393	543	191	151	66	92
2	71	123	120	563	150	396	377	916	184	117	66	96
3	67	110	123	471	150	403	353	1,150	165	110	69	105
4	74	88	141	405	145	373	368	895	172	102	69	95
5	78	93	156	347	145	301	377	598	155	97	65	89
6	79	111	195	336	140	248	388	505	154	94	62	87
7	80	104	201	320	140	191	373	469	143	92	77	87
8	77	81	187	280	135	197	340	505	133	92	84	86
9	86	72	205	260	135	182	316	587	125	90	85	86
10	83	77	268	240	135	183	304	598	119	89	83	81
11	98	119	318	220	135	167	298	512	112	89	80	80
12	86	97	334	210	135	165	288	433	110	89	74	87
13	72	96	356	190	140	321	286	389	110	90	72	153
14	69	85	321	180	145	851	289	375	110	120	71	306
15	67	76	331	180	155	1,200	382	453	128	111	86	323
16	67	76	330	180	160	1,290	639	612	121	105	79	268
17	68	74	353	180	174	1,140	1,010	590	108	92	81	233
18	70	107	342	190	178	976	1,270	498	102	98	83	835
19	74	110	306	200	176	713	1,170	426	100	120	165	1,020
20	74	105	271	210	187	551	925	374	102	99	166	739
21	74	113	254	220	177	497	873	331	153	96	141	533
22	111	117	233	240	153	585	874	296	128	89	134	413
23	113	101	213	260	152	797	858	266	110	79	140	309
24	130	74	196	270	145	855	764	241	104	75	133	273
25	143	80	195	280	141	608	635	215	111	73	124	263
26	138	102	192	270	138	497	491	164	117	69	115	343
27	134	128	188	250	128	442	451	178	114	85	112	348
28	115	145	189	220	138	407	425	169	105	79	109	320
29	130	156	190	200	161	389	394	160	104	74	105	309
30	115	168	318	180	-----	393	369	170	148	69	100	319
31	90	-----	461	170	-----	386	-----	199	-----	66	95	-----
TOTAL	2,818	3,077	7,633	8,315	4,353	15,927	16,280	13,817	3,838	2,901	2,991	8,378
MEAN	90.9	103	246	268	150	514	543	446	128	93.6	96.5	279
MAX	143	168	461	593	187	1,290	1,270	1,150	191	151	166	1,020
MIN	67	72	120	170	128	165	286	160	100	66	62	80
CFSM	.20	.22	.53	.58	.32	1.11	1.17	.96	.28	.20	.21	.60
IN _s	.23	.25	.61	.67	.35	1.28	1.31	1.11	.31	.23	.24	.67

CAL YR 1971 TOTAL 88,952 MEAN 244 MAX 2,500 MIN 41 CFSM .53 IN 7.15
WTR YR 1972 TOTAL 90,328 MEAN 247 MAX 1,290 MIN 62 CFSM .53 IN 7.26

PEAK DISCHARGE (BASE, 1400 CFS).--No peak above base.

04176400 Saline River near Saline, Mich.

LOCATION.--Lat 42°07'50", long 83°46'35", in SE¼ sec.13, T.4 S., R.5 E., Washtenaw County, on right bank 20 ft downstream from bridge on Maple Road, and 2.8 miles south of Saline.

DRAINAGE AREA.--94.6 sq mi.

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 720 ft (from topographic map).

AVERAGE DISCHARGE.--7 years, 56.9 cfs (8.17 inches per year).

EXTREMES.--Current year: Maximum discharge, 690 cfs Apr. 17 (gage height, 9.92 ft); minimum daily, 6.6 cfs July 31, Aug. 1, 2, 3; minimum gage height, 3.55 ft Nov. 22, Dec. 29.

Period of record: Maximum discharge, 3,990 cfs June 26, 1968 (gage height, 13.37 ft); minimum, 5.4 cfs Oct. 9, 12, 1966; minimum gage height, 3.26 ft July 24, 1966.

REMARKS.--Records fair except those for winter period, which are poor. Slight regulation for lake level control. Pumpage for irrigation diverts an indeterminate amount of water. Flow contain City of Saline sewage effluent which originates as ground water.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	12	14	79	19	68	53	114	24	32	6.6	12
2	11	14	14	61	19	160	47	218	18	25	6.6	15
3	11	13	13	51	18	79	43	120	16	31	6.6	11
4	12	12	13	44	18	56	65	79	14	24	7.0	9.2
5	11	12	13	33	18	37	70	59	13	23	7.5	9.1
6	12	12	24	32	17	32	59	56	12	21	9.0	8.5
7	12	12	20	30	17	28	54	61	12	21	12	9.1
8	13	12	16	28	17	25	41	96	11	21	11	8.9
9	16	14	16	27	17	23	37	112	11	18	10	8.6
10	13	15	49	26	17	22	36	71	11	19	9.0	8.1
11	14	14	46	24	17	21	36	50	11	15	8.5	9.7
12	14	14	29	23	17	28	32	37	11	17	8.0	11
13	14	13	24	21	18	180	44	31	11	19	8.0	20
14	15	15	22	20	18	502	40	37	13	24	8.0	14
15	15	13	30	20	19	279	137	91	16	24	8.1	12
16	13	13	33	21	20	253	280	78	10	15	7.3	11
17	13	12	28	22	20	184	530	53	9.2	12	19	32
18	14	13	22	23	19	119	246	40	8.7	12	14	124
19	14	14	22	24	18	87	170	34	9.1	11	29	97
20	13	14	22	27	17	76	220	29	20	9.4	20	58
21	13	14	21	29	17	77	170	25	34	8.5	15	41
22	27	12	18	31	17	216	250	23	28	7.6	14	31
23	17	12	19	33	16	142	211	21	23	7.0	17	26
24	16	12	19	34	15	88	131	20	21	7.0	24	26
25	14	13	18	33	15	70	98	19	19	7.0	19	26
26	14	13	19	32	14	61	76	17	19	7.4	14	34
27	13	17	20	30	14	56	63	16	18	9.6	14	32
28	13	15	19	27	16	50	53	15	16	7.8	12	28
29	13	17	17	24	22	49	45	16	17	7.0	11	30
30	13	18	109	22	-----	53	41	22	31	6.8	9.9	31
31	12	-----	157	20	-----	57	-----	35	-----	6.6	9.2	-----
TOTAL	427	406	906	951	506	3,178	3,378	1,695	487.0	475.7	374.3	793.2
MEAN	13.8	13.5	29.2	30.7	17.4	103	113	54.7	16.2	15.3	12.1	26.4
MAX	27	18	157	79	22	502	530	218	34	32	29	124
MIN	11	12	13	20	14	21	32	15	8.7	6.6	6.6	8.1
CFSM	.15	.14	.31	.32	.18	1.09	1.19	.58	.17	.16	.13	.28
IN.	.17	.16	.36	.37	.20	1.25	1.33	.67	.19	.19	.15	.31

CAL YR 1971 TOTAL 14,129.2 MEAN 38.7 MAX 500 MIN 6.8 CFSM .41 IN 5.56

WTR YR 1972 TOTAL 13,577.2 MEAN 37.1 MAX 530 MIN 6.6 CFSM .39 IN 5.34

PEAK DISCHARGE (BASE, 380 CFS).--Mar. 14 (1600) 626 cfs (9.60 ft); Apr. 17 (0600) 690 cfs (9.92 ft).

STREAMS TRIBUTARY TO LAKE ERIE

04176500 River Raisin near Monroe, Mich.
(International hydrological decade station)

LOCATION.--Lat 41°57'40", long 83°31'55", Monroe County, 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.

DRAINAGE AREA.--1,042 sq mi.

PERIOD OF RECORD.--September 1937 to current year. 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. Prior to Oct. 1, 1953, at site 9 miles downstream at datum 46.26 ft lower.

AVERAGE DISCHARGE.--35 years, 669 cfs (8.72 inches per year).

EXTREMES.--Current year: Maximum discharge, 4,000 cfs Sept. 19 (gage height, 7.82 ft); minimum, 62 cfs Oct. 7 (gage height, 2.01 ft).

Period of record: Maximum discharge, 12,900 cfs May 19, 1945, Mar. 29, 1950; maximum gage height, 10.7 ft Feb. 1, 1949 (backwater from ice), site and datum then in use; minimum discharge, about 2 cfs Sept. 4, 1938, Sept. 19, 20, 1941, site then in use.

REMARKS.--Records fair. Diurnal fluctuation caused by powerplants above station prior to June 27, 1968. Records of suspended sediment loads for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 954: 1938-40 (m), 1941. WSP 1437: 1939, 1948. WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	121	188	811	280	242	769	825	326	187	110	160
2	107	124	192	871	270	493	737	1,350	361	200	110	160
3	96	104	192	831	250	657	688	1,510	376	235	110	160
4	81	97	164	746	250	747	668	1,570	349	201	110	150
5	73	111	154	618	240	679	707	1,460	308	172	110	150
6	73	115	174	612	230	640	729	1,230	307	155	110	150
7	68	102	203	566	230	437	718	1,020	283	142	110	150
8	68	97	251	498	220	370	658	1,000	262	135	120	140
9	74	114	283	440	220	330	611	1,140	239	131	140	140
10	77	120	295	400	220	300	569	1,110	217	127	140	140
11	78	107	342	380	220	290	556	1,030	199	123	140	140
12	77	100	395	360	230	280	535	889	187	126	130	140
13	80	97	415	340	230	485	529	783	186	128	130	360
14	95	114	400	320	230	1,440	512	718	184	168	120	717
15	93	116	434	300	240	1,740	711	861	208	171	120	429
16	82	112	438	300	250	2,390	1,250	905	209	179	130	436
17	76	118	452	300	270	2,570	2,410	945	246	181	130	431
18	74	104	430	310	280	2,280	2,320	954	305	181	140	2,570
19	70	104	430	320	290	2,020	2,430	825	262	246	250	3,580
20	69	103	405	330	300	1,700	2,490	718	244	204	384	2,860
21	78	121	376	350	294	1,340	2,340	630	519	189	318	2,250
22	81	134	339	380	259	1,340	2,530	562	549	158	426	1,720
23	90	134	310	400	250	1,370	2,570	549	485	140	346	1,110
24	105	147	297	440	233	1,370	2,260	479	404	130	246	813
25	119	147	270	460	225	1,340	1,940	433	307	130	319	638
26	126	131	261	460	218	1,200	1,470	396	256	120	263	713
27	139	125	253	450	210	978	1,100	350	235	120	200	1,020
28	144	117	243	400	195	852	870	295	229	120	190	885
29	142	141	235	350	201	781	765	266	222	120	180	796
30	130	174	394	320	-----	753	698	263	210	120	170	893
31	119	-----	785	300	-----	758	-----	301	-----	120	170	-----
TOTAL	2,882	3,551	10,000	13,963	7,035	32,172	37,140	25,367	8,674	4,859	5,672	24,001
MEAN	93.0	118	323	450	243	1,038	1,238	818	289	157	183	800
MAX	144	174	785	871	300	2,570	2,570	1,570	549	246	426	3,580
MIN	68	97	154	300	195	242	512	263	184	120	110	140
CFSM	.09	.11	.31	.43	.23	1.00	1.19	.79	.28	.15	.18	.77
IN.	.10	.13	.36	.50	.25	1.15	1.33	.91	.31	.17	.20	.86

CAL YR 1971 TOTAL 158,985 MEAN 436 MAX 5,440 MIN 35 CFSM .42 IN 5.68
WTR YR 1972 TOTAL 175,316 MEAN 479 MAX 3,580 MIN 68 CFSM .46 IN 6.26

PEAK DISCHARGE (BASE, 3,500 CFS).--Sept. 19 (0500) 4,000 cfs (7.82 ft).

STREAMS TRIBUTARY TO LAKE ERIE

233

04184500 Bean Creek at Powers, Ohio

LOCATION.—Lat 41°40'39", long 84°13'56", in NE¼ sec.24, T.9 S., R.1 E., Fulton County, on right bank at downstream side of bridge on U.S. Highway 20, 1 mile east of Powers, 2.2 miles upstream from Iron Creek, 3 miles downstream from Silver Creek, and 5.2 miles east of Fayette.

DRAINAGE AREA.—206 sq mi.

PERIOD OF RECORD.—October 1940 to current year.

GAGE.—Water-stage recorder. Datum of gage is 722.57 ft above mean sea level. Prior to Jan. 18, 1941, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.—32 years, 157 cfs (10.35 inches per year).

EXTREMES.—Current year: Maximum discharge, 972 cfs Apr. 17 (gage height 7.01 ft); minimum daily, 12 cfs Oct. 4.
Period of record: Maximum discharge, 4,250 cfs Apr. 29, 1956 (gage height, 13.82 ft); minimum, 5.0 cfs Aug. 9, 1964.

REMARKS.—Records poor prior to March, good thereafter. Water-quality records for current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).—WSP 1307: 1948(M). WSP 1912: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	23	25	290	80	70	188	276	76	52	21	20
2	14	25	23	234	72	220	176	653	67	44	20	22
3	13	26	23	187	66	190	164	489	93	40	20	25
4	12	27	23	130	62	170	182	351	89	37	21	25
5	13	25	23	110	58	150	213	278	71	35	20	21
6	14	23	26	96	56	140	195	231	61	33	21	21
7	15	21	43	90	54	120	180	212	53	31	28	20
8	15	20	49	86	52	100	158	248	46	32	32	20
9	16	20	52	84	50	90	148	339	42	32	32	19
10	15	20	60	90	49	78	149	319	38	31	31	19
11	14	21	86	96	48	66	146	259	36	29	29	20
12	14	22	95	94	47	72	138	216	34	27	28	24
13	14	21	80	90	48	70	140	184	36	28	27	21
14	15	20	74	84	50	811	139	175	40	34	26	55
15	14	19	79	76	60	680	195	225	51	45	28	133
16	14	19	102	68	74	752	429	255	52	58	23	115
17	13	19	110	64	90	704	901	238	43	49	24	85
18	13	19	94	60	100	526	750	198	38	42	27	142
19	13	21	74	94	92	384	640	164	36	45	32	276
20	15	23	66	120	84	309	792	140	34	48	33	230
21	20	24	60	150	76	282	678	122	39	39	31	181
22	32	23	56	184	70	582	620	107	49	35	30	135
23	44	22	52	284	66	627	583	93	52	32	26	101
24	48	20	54	302	62	421	449	84	46	29	27	83
25	49	18	52	291	58	314	348	76	44	27	27	72
26	46	18	50	226	54	261	290	68	56	26	25	118
27	40	20	48	190	52	232	247	61	63	29	25	205
28	36	26	48	160	50	213	212	56	50	29	23	135
29	32	34	55	130	48	192	187	53	47	28	22	112
30	28	38	90	110	-----	194	166	61	64	25	21	155
31	25	-----	361	92	-----	193	-----	86	-----	23	24	-----
TOTAL	681	677	2,133	4,362	1,828	9,213	9,803	6,317	1,546	1,094	804	2,610
MEAN	22.0	22.6	68.8	141	63.0	297	327	204	51.5	35.3	25.9	87.0
MAX	49	38	361	302	100	811	901	653	93	58	33	276
MIN	12	18	23	60	47	66	138	53	34	23	20	19
CFSM	.11	.11	.33	.68	.31	1.44	1.59	.99	.25	.17	.13	.42
IN.	.12	.12	.39	.79	.33	1.66	1.77	1.14	.28	.20	.15	.47

CAL YR 1971 TOTAL 46,071.4 MEAN 126 MAX 2,700 MIN 6.0 CFSM .61 IN 8.32
WTR YR 1972 TOTAL 41,068.0 MEAN 112 MAX 901 MIN 12 CFSM .54 IN 7.42

PEAK DISCHARGE (BASE, 1,200 CFS).—No peak above base.

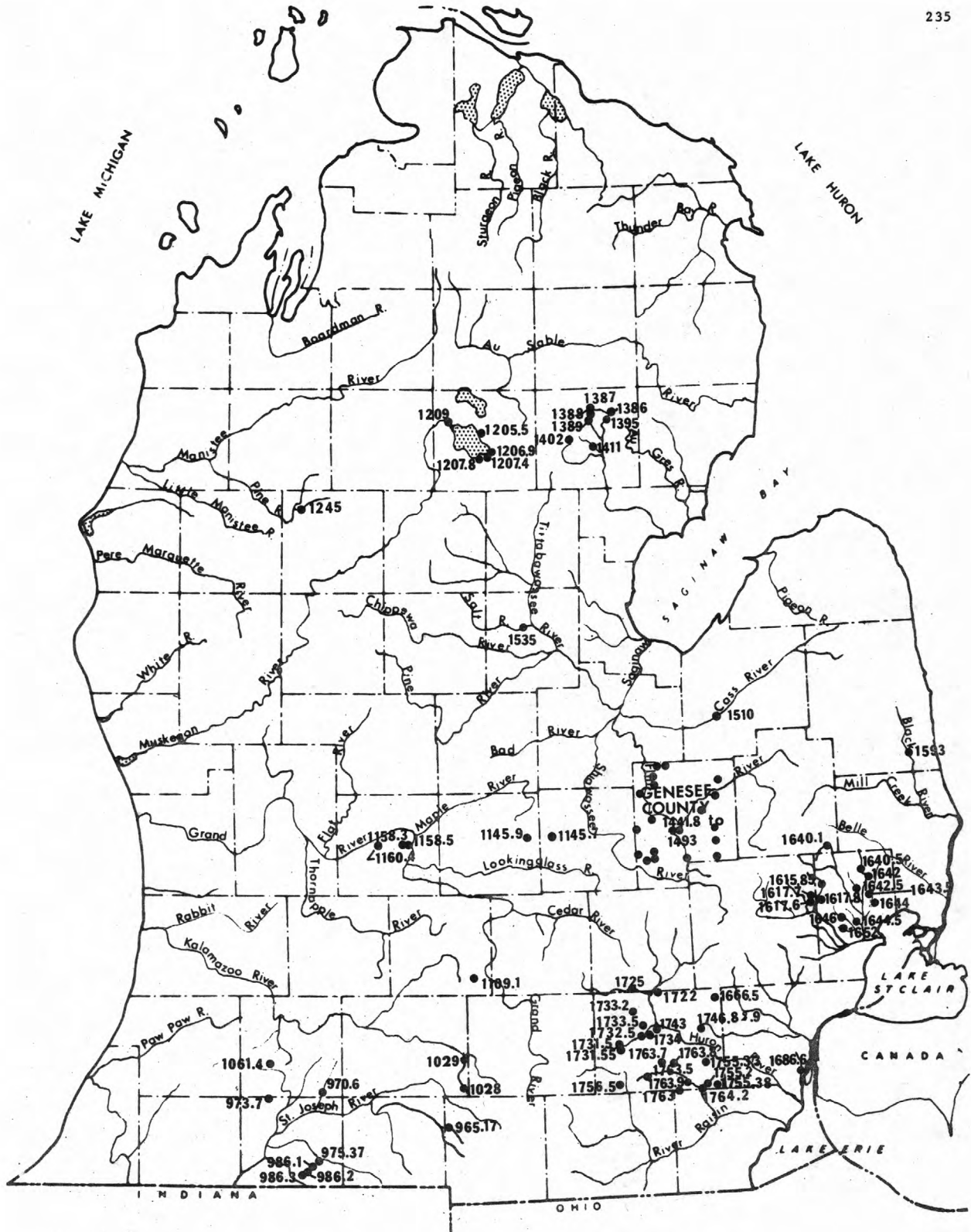


Figure 5.—Map showing identification number and location of partial—record stations in Lower Peninsula of Michigan

As the number of streams in 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 on these partial-record stations are usable in low-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 time 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 is 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 the 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 1972

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Superior						
*04032150	Presque Isle River near Connorville, Mich.	Lat 46°41'46", long 89°58'26", in SE¼ sec.30, T.50 N., R.45 W., Gogebic County, 1.0 mile above mouth, 10.0 miles north of Connorville.	358	1972	05-03-72 05-04-72 06-01-72 09-12-72	a3,190 a2,530 a548 249
04044545	Mud Creek near Kawbawgam Village, Mich.	Lat 46°28'42", long 87°12'57", in NW¼ sec.17, T.47 N., R.23 W., Marquette County, at dam on outlet of Lake LeVasseur, 1.3 miles east of Kawbawgam Village.	16.2	1971-72	12-09-71 05-08-72	b4.95 a103
04044583	Cherry Creek near Harvey, Mich.	Lat 46°28'07", long 87°21'53", in NE¼ SE¼ sec.13, T.47 N., R.25 W., Marquette County, 0.5 mile above County Highway 551, 2.0 miles south of Harvey.	4.53	1966-70+ 1971-72	06-26-72 06-26-72	19.3 19.4
*04044813	Two Hearted River near Paradise, Mich.	Lat 46°41'57", long 85°25'19", in NW¼ SW¼ sec.27, T.50 N., R.9 W., Luce County, at foot bridge in state forest camp ground, 0.4 mile upstream from mouth, 18 miles northwest of Paradise.	201	1972	07-05-72 07-25-72 09-06-72 09-20-72	155 a225 180 173
04045538	West Branch Waiksa River near Brimley, Mich.	Lat 46°21'18", long 84°35'35", in SW¼ NW¼ sec.29, T.46 N., R.2 W., Chippewa County, at bridge on county road, 2 miles upstream from mouth, 3.5 miles south of Brimley.	53.5	1972	09-07-72	16.4
04045559	East Branch Waiksa River near Brimley, Mich.	Lat 46°25'07", long 84°28'24", in NW¼ NE¼ sec.6, T.46 N., R.1 W., Chippewa County, at bridge on county road, 3 miles upstream from mouth, 4.7 miles east of Brimley.	30.1	1972	09-07-72	4.19
Streams tributary to Lake Michigan						
04056700	Blue Lake Outlet near Steuben, Mich.	Lat 46°09'58", long 86°37'34", in SE¼ NW¼ sec.36, T.44 N., R.19 W., Alger County, at bridge on Federal Highway 13, 8.5 miles west of Steuben.	5.11	1969-72	11-09-71 02-08-72 05-15-72 07-26-72	7.25 6.60 9.35 7.40
04056900	Big Spring near Manistique, Mich.	Lat 47°00'17", long 86°22'56", in S¼ sec.25, T.42 N., R.17 W., Schoolcraft County, at Palms Book State Park, 7 miles northwest of Manistique.		1950-72	10-27-71	29.6
04057690	Middle Branch Escanaba River near Martins Landing, Mich.	Lat 46°31'57", long 87°56'12", in NW¼ NE¼ sec.28, T.48 N., R.29 W., Marquette County, at bridge on abandoned Chicago and North Western Railroad grade, 2.4 miles east of Martins Landing and 1.7 miles northeast of Champion.	16.7	1970-72	01-27-72 05-23-72 07-06-72	2.29 25.6 4.39
*04057820	Middle Branch Escanaba River near Greenwood, Mich.	Lat 46°25'12", long 87°47'50", in NW¼ sec.3, T.46 N., R.28 W., Marquette County, at bridge on county highway, 100 ft downstream from Bell Creek, 5 miles southwest of Greenwood.	73.3	1961-72	03-02-72 05-24-72 07-20-72 08-10-72	24.9 102 a39.8 30.7

See footnotes at end of table, p. 241.

Discharge measurements made at low-flow partial-record stations during water year 1972--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan.--Continued						
04058120	Green Creek near Palmer, Mich.	Lat 46°22'22", long 87°36'21", in NW¼ sec.19, T.46 N., R.26 W., Marquette County, at bridge on County Highway 565, 4.5 miles south of Palmer.	8.42	1961-65 1970-72	11-02-71 12-13-71 02-02-72 03-22-72 05-24-72 07-21-72 08-09-72 09-28-72	a7.05 a2.56 a2.15 a2.97 a25.6 a22.0 a15.1 a31.5
04058250	Warner Creek tributary near Palmer, Mich.	Lat 46°25'20", long 87°36'09", in NW¼ SE¼ sec.31, T.47 N., R.26 W., Marquette County, at double culvert on County Road 565, 0.3 mile upstream from mouth and 0.8 mile south of Palmer.	4.05	1972	08-31-72 09-25-72 09-28-72	2.46 2.11 a11.5
04062095	Dishno Creek near Champion, Mich.	Lat 46°35'30", long 87°59'04", in NW¼ sec.6, T.48 N., R.29 W., Marquette County, at bridge on logging road, 1.2 miles upstream from mouth, 5 miles north of Champion.	18.8	1963-72	02-03-72 05-23-72 07-06-72	6.15 28.4 3.79
04062210	Spurr River at Three Lakes, Mich.	Lat 46°32'47", long 88°11'11", in NE¼ sec.21, T.48 N., R.31 W., Baraga County, at outlet of Beaufort Lake, 0.8 mile southeast of Three Lakes	18.8	1971-72	12-03-71 03-24-72 06-23-72 09-15-72	17.2 10.7 a22.2 a12.3
04065393	East Branch Sturgeon River below Skunk Creek, near Felch, Mich.	Lat 46°01'34", long 87°49'56", in NW¼ NE¼ sec.20, T.42 N., R.28 W., Dickinson County, 50 ft downstream from Skunk Creek, 2.2 miles north of Felch.	61.8	1972	09-20-72	11.8
04065397	East Branch Sturgeon River at Hardwood, Mich.	Lat 45°58'35", long 87°41'21", in NW¼ SE¼ sec.4, T.41 N., R.27 W., Dickinson County, 1.0 mile north of Hardwood.	89.8	1972	09-20-72	23.4
04065550	Pine Creek near Randville, Mich.	Lat 45°58'02", long 88°00'28", in SW¼ NW¼ sec.12, T.41 N., R.30 W., Dickinson County, 0.4 mile upstream from Groveland Mine Outlet, 2.7 miles southeast of Randville	1.53	1971-72	02-02-72 03-15-72 04-20-72 04-26-72 05-17-72 06-23-72 07-06-72 09-08-72	b.9 b.6 a18.7 a12.2 2.32 .74 0 .48
04065560	Groveland Mine Outlet near Randville, Mich.	Lat 45°58'27", long 88°00'10", in SW¼ SE¼ sec.1, T.41 N., R.30 W., Dickinson County, at overflow weir, 0.5 mile upstream from mouth, 2.9 miles southeast of Randville.	3.40	1971-72	10-15-71 01-11-72 02-02-72 03-15-72 03-30-72 04-20-72 05-17-72 06-23-72 07-06-72 09-08-72	b3.35 a5.06 a3.58 a9.54 a26.7 a31.3 a5.88 0 0 a4.34
04065570	Pine Creek near Merriman, Mich.	Lat 45°56'42", long 87°59'13", in SW¼ SW¼ sec.18, T.41 N., R.29 W., Dickinson County, 500 feet upstream from Mounty's Creek, 3.7 miles northeast of Merriman.	8.79	1971-72	10-15-71 01-11-72 02-01-72 03-15-72 04-21-72 04-26-72 05-17-72 06-23-72 07-06-72 09-08-72	a9.85 a5.90 a5.06 a6.87 a26.0 a58.0 a13.8 2.56 1.41 a8.31
04065580	Mounty's Creek near Merriman, Mich.	Lat 45°56'41", long 87°59'23", in SW¼ SW¼ sec.18, T.41 N., R.29 W., Dickinson County, 400 feet upstream from mouth and 3.6 miles northeast of Merriman.	2.96	1971-72	10-15-71 01-11-72 02-01-72 03-15-72 04-21-72 04-26-72 05-17-72 06-23-72 07-06-72 09-08-72	1.49 .97 .85 1.28 a23.8 a17.6 3.48 .33 .11 2.43

DISCHARGE AT PARTIAL-RECORD STATION AND MISCELLANEOUS SITES

Discharge measurements made at low-flow partial record station during water year 1972--Continued

Discharge measurements made at low-flow partial record station during water year 1972--Continued						
Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan.--Continued						
04065590	Steel Creek near Merri- man, Mich.	Lat 45°56'31", long 87°59'33", in NE¼ NE¼ sec.24, T.41 N., R.30 W., Dickinson County, 200 feet upstream from mouth, 3.6 miles north- east of Merriman.	3.52	1971-72	10-15-71 01-11-72 02-01-72 04-21-72 04-26-72 05-17-72 06-23-72 07-06-72 09-08-72	2.08 2.07 1.22 a60.4 a24.7 3.47 1.35 .93 1.88
04065700	Hamilton Creek near Loretto, Mich.	Lat 45°44'51", long 87°49'00", in NW¼ sec.30, T.39 N., R.28 W., Dickinson County, at out- let of Lake Mary, 2.0 miles south of Loretto.	0.15	1964-72	01-10-72 06-07-72	6.30 18.2
04096517	Hog Creek tributary near Allen, Mich.	Lat 41°57'33", long 84°49'33", in SW¼ SW¼ sec.7, T.6 S., R.4 W., Hillsdale County, at Squires Rd., 0.3 mile upstream from mouth, 3.0 miles west of Allen.	2.61	1969-72	10-04-71 11-04-71 12-01-71 02-22-72 06-08-72 07-05-72	0 0 b.02 .56 .19 0
04097537	Perrin Lake Outlet near Sturgis, Mich.	Lat 41°52'14", long 85°25'34", in SW¼ sec.12, T.7 S., R.10 W., St. Joseph County, at Perrin Rd. (Banker St. Rd), 5.0 miles north of Sturgis.	2.91	1963-72	11-06-71	.32
04098610	Sherman Mill Creek near Sturgis, Mich.d/	Lat 41°49'40", long 85°28'42", in SW¼ sec.28, T.7 S., R.10 W., St. Joseph County, at Sherman Rd., 3.7 miles northwest of Sturgis.	3.62	1963-72	11-06-71	5.92
04098620	Sherman Mill Creek near Centerville, Mich.e/	Lat 41°49'17", long 85°30'18", in NW¼ sec.32, T.7 S., R.10 W., St. Joseph County, at Shimmel Rd., 4.8 miles northwest of Sturgis.	5.31	1963-72	11-06-71	9.56
04098630	Sherman Mill Creek near White Pigeon, Mich.f/	Lat 41°47'52", long 85°32'10", in S¼ sec.36, T.7 S., R.11 W., St. Joseph County, at Klinger Lake Rd., 5.7 miles east of White Pigeon.	9.00	1963-72	11-06-71	10.2
04102800	South Branch Kalamazoo River at Homer, Mich.	Lat 42°08'50", long 84°48'11", in SW¼ sec.5, T.4 S., R.4 W., Calhoun County, at State Highway 60 and 99, at Homer.	139	1971-72	10-02-71 10-20-71 11-13-71 11-24-71 12-13-71 01-08-72 03-02-72 04-17-72 06-13-72 07-28-72 08-29-72	37.8 34.8 38.8 40.8 73.4 80.7 108 237 62.2 47.5 45.9
04102900	South Branch Kalamazoo River at Albion, Mich.	Lat 42°14'25", long 84°44'55", in NW¼ sec.2, T.3 S., R.4 W., Calhoun County, at mouth, at Albion.	151	1971-72	10-02-71 10-20-71 11-13-71 11-24-71 12-13-71 01-08-72 03-02-72 04-17-72 06-14-72 07-28-72 08-29-72	53.5 53.4 53.6 55.9 97.3 94.4 127 245 72.8 67.5 64.2
04106140	Portage Creek tributary near Portage, Mich.	Lat 42°11'12", long 85°37'52", in SE¼ sec.19, T.3 S., R.11 W., Kalamazoo County, at R Ave., 2.2 miles southwest of Portage.	2.63	1960-64 1966-72	11-20-71	2.96

Discharge measurements made at low-flow partial-record stations during water year 1972--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan.--Continued						
04110910	Hobart Drain near Eaton Rapids, Mich.	Lat 42°29'27", long 84°39'35", in NW¼ sec.10, T.1 N., R.3 W., Eaton County, at State Hwy. 99, 1.2 miles south of Eaton Rapids.	3.11	1965-72	11-13-71 08-03-72	.63 .91
04114570	Bear Creek near Ovid, Mich.	Lat 42°59'05", long 84°19'07", in SW¼ sec.23, T.7 N., R.1 E., Shiawassee County, at Krause Rd., 2.5 miles southeast of Ovid.	29.5	1965-69, 1971-72	08-03-72	6.96
04114590	Little Maple River near Laingsburg, Mich.	Lat 42°56'51", long 84°25'31", in SW¼ sec.34, T.7 N., R.1 W., Clinton County, at Shepardville Rd., 5.5 miles northwest of Laingsburg.	11.4	1965-69, 1971-72	08-03-72	3.08
04115830	Libhart Creek near Lyons, Mich.	Lat 42°56'38", long 84°57'45", in NE¼ sec.1, T.6 N., R.6 W., Ionia County, at Reeder Rd., 2.8 miles south of Lyons.	33.0	1965-72	10-30-71 08-02-72	8.09 12.8
04115850	Little Libhart Creek near Lyons, Mich.	Lat 42°56'38", long 84°57'01", in NW¼ sec.6, T.6 N., R.5 W., Ionia County, at Reeder Rd., 2.8 miles south of Lyons.	14.1	1965-72	10-30-71 08-02-72	2.76 2.97
04116040	Sessions Creek near Ionia, Mich.	Lat 42°57'21", long 85°07'38", in NW¼ sec.34, T.7 N., R.7 W., Ionia County, at Riverside Drive, 3.5 miles southwest of Ionia.	16.8	1965-72	10-30-71 08-02-72	1.87 4.10
04120550	"The Cut" near Prudenville, Mich.	Lat 44°21'47", long 84°40'48", in NW¼ NE¼ sec.28, T.23 N., R.3 W., Roscommon County, 1.4 miles downstream from Higgins Lake, 4.7 miles north of Prudenville.	90.0	1971-72	10-27-71 11-11-71 04-19-71 05-17-72 06-15-72 07-19-72 08-16-72 09-18-72	59.0 52.6 306 150 51.4 42.7 33.3 43.5
04120690	Spring Brook near Prudenville, Mich.	Lat 44°18'37", long 84°38'12", in NE¼ SE¼ sec.11, T.22 N., R.3 W., Roscommon County, 1.1 miles northeast of Prudenville.	1.31	1971-72	10-27-71 11-11-71 04-19-72 05-17-72 06-15-72 07-19-72 08-16-72 09-18-72	.43 .52 5.32 1.47 1.04 .46 .37 .24
04120740	Denton Creek at Prudenville, Mich.	Lat 44°17'08", long 84°38'07", in SE¼ NE¼ sec.14, T.22 N., R.3 W., Roscommon County, 200 ft downstream from Lake James control structure and 0.5 mile east of Prudenville.	47.3	1971-72	10-27-71 11-11-71 04-19-72 05-17-72 06-15-72 07-19-72 08-16-72 09-18-72	3.84 .81 140 27.2 3.92 7.11 3.21 2.97
04120780	Knapen Creek at Prudenville, Mich.	Lat 44°17'58", long 84°39'02", in SW¼ NW¼ sec.14, T.22 N., R.3 W., Roscommon County, at M55 highway culvert, 150 ft upstream from mouth, at Prudenville.	4.60	1971-72	10-27-71 11-11-71 04-19-72 05-17-72 06-15-72 07-19-72 08-16-72 09-18-72	1.03 2.07 31.9 7.06 2.28 4.32 2.97 1.34
04120900	Muskegon River near Houghton Lake Heights, Mich.	Lat 44°24'16", long 84°47'27", in NW¼ NW¼ sec.10, T.23 N., R.4 W., Roscommon County, on right bank at upstream side of bridge on Old 27, 5.4 miles north of Houghton Lake Heights.	222	1971-72	10-27-71 11-11-71 04-19-72 05-17-72 06-15-72 07-19-72 08-16-72 09-18-72	2.68 4.76 323 370 115 141 16.2 37.1

DISCHARGE AT PARTIAL-RECORD STATION AND MISCELLANEOUS SITES

Discharge measurements made at low-flow partial-record stations during water year 1972--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Huron						
04127900	Caribou Creek near Detour Village, Mich.	Lat 45°59'05", long 83°58'56", in SE¼ SW¼ sec.31, T.42 N., R.4 E., Chippewa County, at bridge on South Rd., 4.7 miles west of Detour Village.	c4	1967-72	05-09-72	a20.6
Streams tributary to St. Clair River						
04159300	Black River near Croswell, Mich.	Lat 43°13'24", long 82°36'49", in SE¼ sec.8, T.9 N., R.16 E., Sanilac County, 3.5 miles south of Croswell.	376	1956-72	10-06-71 11-03-71 12-01-71 08-10-72 09-21-72	5.56 5.49 16.2 15.6 9.62
Streams tributary to Lake St. Clair						
04161585	Stony Creek near Goodison, Mich.	Lat 42°45'49", long 83°04'28", in SW¼ sec.17, T.4 N., R.12 E., at Inwood Rd., Macomb County, 5.2 miles northeast of Goodison.	34.6	1972	08-21-72	10.7
04161770	Twin Lakes Outlet near Washington, Mich.	Lat 42°43'57", long 83°05'54", in SE¼ sec.25, T.4 N., R.11 E., Oakland County, on Huron-Clinton Metropolitan Park Rd., 3.2 miles west of Washington.	3.63	1965-72	11-17-71	.59
04161780	Mount Vernon Drain near Washington, Mich.	Lat 42°44'01", long 83°05'29", in SW¼ sec.30, T.4 N., R.12 E., Macomb County, on Huron-Clinton Metropolitan Rd., 3.0 miles west of Washington.	1.87	1965-72	11-17-71	.34
Streams tributary to Detroit River						
04166650	Johnson Drain near Brookville, Mich.	Lat 42°22'52", long 83°33'18", in SE¼ sec.24, T.1 S., R.7 E., Washtenaw County, at Napier Rd., 1.2 miles east of Brookville.	11.5	1970-72	11-01-71 7-10-72	.14 .32
Streams tributary to Lake Erie						
04172200	Arms Creek near Hamburg, Mich.	Lat 42°25'16", long 83°52'30", in NE¼ sec.5, T.1 S., R.5 E., Washtenaw County, at Mast Rd., 4.4 miles southwest of Hamburg.	20.9	1967-72	11-01-71 11-26-11	2.33 2.39
04173150	Mill Creek near Sylvan, Mich.	Lat 42°15'06", long 84°02'02", in SW¼ sec.36, T.2 S., R.3 E., Washtenaw County, at Manchester Rd., 3.3 miles southeast of Sylvan.	11.1	1970-72	11-01-71 07-10-72	3.46 8.49
04173155	Mill Creek tributary near Sylvan, Mich.	Lat 42°14'51", long 84°01'46", in NW¼ sec.1, T.3 S., R.3 E., Washtenaw County, at Waldo Rd., 3.7 miles southeast of Sylvan.	23.8	1970-72	11-01-71 07-10-72	3.81 2.99
04173250	Mill Creek near Lima Center, Mich.	Lat 42°15'56", long 83°56'45", in NE¼ sec.34, T.2 S., R.4 E., Washtenaw County, at Guenther Rd., 2.2 miles south of Lima Center.	47.3	1967-72	11-01-71 08-25-72	10.8 13.2
04173320	Letts Creek at Chelsea, Mich.	Lat 42°19'29", long 84°01'15", in NE¼ sec.12, T.2 S., R.3 E., Washtenaw County, at Manchester Rd. (M.52), at Chelsea.	18.8	1970-72	11-01-71 07-10-72	4.44 3.37
04173350	North Fork Mill Creek near Lima Center, Mich.	Lat 42°17'15", long 83°56'14", in SW¼ sec.23, T.2 S., R.4 E., Washtenaw County, at Dancer Rd., 1.2 miles southeast of Lima Center.	59.0	1970-72	11-01-71 07-10-72	8.32 7.83

DISCHARGE AT PARTIAL-RECORD STATION AND MISCELLANEOUS SITES

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Discharge measurements made at low-flow partial-record stations during water year 1972--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Erie.--Continued						
04173400	Mill Creek tributary No. 2 near Lima Center, Mich.	Lat 42°16'56", long 83°54'24", in NE¼ sec.25, T.2 S., R.4 E., Washtenaw County, at Jerusalem Rd., 2.8 miles southeast of Lima Center.	8.46	1970-72	11-01-71 07-10-72	.80 1.19
04174300	Honey Creek near Foster, Mich.	Lat 42°18'34", long 83°48'28", in NE¼ sec.14, T.2 S., R.5 E., Washtenaw County, at Miller Rd., 1.4 miles west of Foster.	22.4	1970-72	11-01-71 07-11-72	2.91 2.79
04174680	Fleming Creek at Dixboro, Mich.	Lat 42°19'05", long 83°38'16", in NW¼ sec.17, T.2 S., R.7 E., Washtenaw County, at Ford Rd. (M-153), 1.0 mile east of Dixboro.	15.0	1970-72	11-01-71 07-10-72	.91 1.87
04174690	Fleming Creek tributary at Dixboro, Mich.	Lat 42°19'02", long 83°38'46", in NE¼ sec.18, T.2 S., R.7 E., Washtenaw County, at Ford Rd. (M-153), 0.6 mile northeast of Dixboro.	8.08	1970-72	11-01-71 07-10-72	1.01 .40
04175520	Sugar Creek near Oakville, Mich.	Lat 42°05'54", long 83°36'31", in NE¼ sec.33, T.4 S., R.7 E., Washtenaw County, at Fuller Rd., 1.7 miles northwest of Oakville.	13.5	1970-72	11-02-71 07-11-72	.49 .56
04175533	Paint Creek near Lincoln, Mich.	Lat 42°11'18", long 83°36'25", in NE¼ sec.33, T.3 S., R.7 E., Washtenaw County, at Merritt Rd., 2.2 miles north of Lincoln.	17.5	1970-72	11-01-71 07-11-72	4.02 3.93
04175538	Paint Creek at Oakville, Mich.	Lat 42°05'44", long 83°35'18", in NE¼ sec.34, T.4 S., R.7 E., Washtenaw County, at Liss Rd., 1.0 mile north of Oakville.	34.9	1970-72	11-02-71 07-11-72	4.35 4.19
04175650	Iron Creek near Clinton, Mich.	Lat 42°05'37", long 83°59'17", in SW¼ sec.29, T.4 S., R.4 E., Washtenaw County, at Bartlett Rd., 1.7 miles north of Clinton.	28.8	1970-72	11-01-71 07-11-72	7.38 3.96
04176300	North Macon Creek near Mooreville, Mich.	Lat 42°04'58", long 83°45'06", in NW¼ sec.5, T.5 S., R.6 E., Monroe County, at Hack Rd., 1.7 miles southwest of Mooreville.	14.5	1970-72	11-01-71 07-11-72	.09 .42
04176350	Saline River at Benton, Mich.	Lat 42°08'19", long 83°52'07", in NW¼ sec.17, T.4 S., R.5 E., Washtenaw County, at Feld-Kamp Rd., 0.7 mile northwest of Benton.	28.8	1970-72	11-2-71 07-11-72	1.94 4.21
04176370	Saline River tributary near Saline, Mich.	Lat 42°10'34", long 83°49'17", in SE¼ sec.34, T.3 S., R.5 E., Washtenaw County, at Saline Waterworks Rd., 2.2 miles northwest of Saline.	13.2	1970-72	11-02-71 07-11-72	.54 .56
04176380	Saline River tributary No. 2 at Saline, Mich.	Lat 42°10'37", long 83°47'17", in NW¼ sec.36, T.3 S., R.5 E., Washtenaw County, at Saline Waterworks Rd., 0.8 mile north of Saline.	13.7	1970-72	11-02-71 07-11-72	.97 1.76
04176390	Saline River at Saline, Mich.	Lat 42°09'35", long 83°47'01", in SE¼ sec.1, T.4 S., R.5 E., Washtenaw County, at Monroe St., in Saline.	77.6	1965-72	11-01-71 08-25-72	6.71 11.7
04176420	Saline River at Milan, Mich.	Lat 42°04'38", long 83°40'37", in SW¼ sec.1, T.5 S., R.6 E., Washtenaw County, at U.S. Highway 23, at southeast edge of Milan.	113	1966-72	11-02-71 08-25-72	13.4 27.0

* Also a crest-stage station

† Operated as a continuous record station.

a Not base flow.

b Field estimate.

c Approximately.

d Published as Thompson Lake Inlet 1963.

e Published as Thompson Lake Outlet 1963.

f Published as Klinger Lake Inlet 1963.

Crest-stage partial-record stations

The following table contains annual maximum discharge 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.

Annual maximum discharge at crest-stage partial-record stations during water year 1972

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							
*04032150	Presque Isle River near Connorville, Mich.	Lat 46°41'46", long 89°58'26", in SE¼ sec.30, T.50 N., R.45 W., Gogebic County, at bridge on South Boundary Road, 1.0 mile upstream from mouth and 10 miles north of Connorville.	358	1972	08-17-72	9.62	6,750
04039500	South Branch Ontonagon River at Ewen, Mich.	Lat 46°31'58", long 89°16'37", in NW¼ sec.26, T.48 N., R.40 W., Ontonagon County, on piers of Old State Highway 28 bridge in Ewen.	348	1939-41, 1942-71, 1972	08-17-72	17.23	5,520
04041000	Perch River near Sidnaw, Mich.	Lat 46°31'06", long 88°39'48", in NE¼ sec.34, T.48 N., R.35 W., Baraga County, at State Highway 28, 2.5 miles east of Sidnaw.	63.1	1913-15, 1957-72	05-02-72	10.09	615
04044200	Carp Creek at Ishpeming, Mich.	Lat 46°29'11", long 87°41'21", in NW¼ sec.9, T.46 N., R.27 W., Marquette County, at bridge on Highway 41A at Ishpeming.	16.5	1970-72	05-05-72	6.71	169
Streams tributary to Lake Michigan							
04049500	Manistique River at Germfask, Mich.	Lat 46°14'00", long 85°55'40", SE¼ sec. 4, T.44 N., R.13 W., Schoolcraft County, 600 ft upstream from bridge on Highway 77, 1.0 mile south of Germfask.	341	1938-70, 1971-72	04-30-72	6.94	1,720
04055000	Manistique River near Blaney, Mich.	Lat 46°05'05", long 86°03'35", in SE¼ sec. 28, T.43 N., R.14 W., Schoolcraft County, 40 ft downstream from logging bridge, 0.5 mile downstream from Duck Creek, 7 miles southwest of Blaney.	704	1938-70, 1971-72	04-30-72	18.03	5,100
04057000	Indian River near Manistique, Mich.	Lat 45°59'30", long 86°17'15", in NE¼ sec. 34, T.42 N., R.16 W., Schoolcraft County, near outlet of Indian Lake, 2.4 miles northwest of Manistique.	302	1938-71, 1972	05-06-72	5.85	1,000
*04057820	Middle Branch Escanaba River near Greenwood, Mich.	Lat 46°25'12", long 87°47'50", in NW¼ sec. 3, T.46 N., R.28 W., Marquette County, at bridge on County highway, 100 ft downstream from Bell Creek and 5 miles southwest of Greenwood.	73.3	1970-72	05-05-72	13.35	1,060
04057900	Black River near Republic, Mich.	Lat 46°25'08", long 87°53'21", in NW¼ sec. 2, T.46 N., R.29 W., Marquette County, at bridge on county road, 2.2 miles downstream from Bruce Creek, 4.4 miles east of Republic.	34.4	1961-68, 1970-72	05-05-72	4.78	554
04058300	Warner Creek near Palmer, Mich.	Lat 46°24'09", long 87°32'39", in NW¼ sec.10, T.46 N., R.26 W., Marquette County, at bridge on county road, 0.1 mile upstream from confluence with Schweitzer Creek, 3.5 miles southeast of Palmer.	14.2	1961-68, 1970-72	04-30-72	5.24	201
04097060	Little Portage Creek near Fulton, Mich.	Lat 42°05'19", long 85°23'29", in SW¼ sec.29, T.4 S., R.9 W., Kalamazoo County, at bridge on 38th St., 2.8 miles southwest of Fulton.	27.0	1965-67, 1972	04-18-72	4.98	172
04097370	Flowerfield Creek at Flowerfield, Mich.	Lat 42°03'50", long 85°39'44", in SW¼ sec.1, T.5 S., R.12 W., St. Joseph County, at Flowerfield Rd., at Flowerfield.	42.6	1964-72	04-18-72	a	b54
04124500	East Branch Pine River near Tustin, Mich.	Lat 44°06'09", long 85°31'02", in NE¼ NW¼ sec.28, T.20 N., R.10 W., Osceola County, 75 ft downstream from highway bridge, 3.0 miles west of Tustin.	63	1953-63, 1964-72	04-15-72	4.88	492

See footnotes at end of table, p. 245.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Annual maximum discharge at crest-stage partial-record stations during water year 1972--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis-charge (cfs)
Streams tributary to Lake Huron							
04138600	Gamble Creek at Lupton, Mich.	Lat 44°25'25", long 84°01'30", in SW¼ SW¼ sec.36, T.24 N., R.3 E., Ogemaw County, at culvert on Lupton Rd., 0.5 mile south of Lupton.	9.47	1953-56, 1959-72	12-15-71	4.11	88
04138700	Bixby Creek near Rose City, Mich.	Lat 44°26'00", long 84°07'10", in NE¼ NW¼ sec.31, T.24 N., R.3 E., Ogemaw County, at bridge on State Highway 33, 0.9 mile north of Rose City.	2.68	1953-72	12-15-71	3.91	80
04138800	Houghton Creek at Rose City, Mich.	Lat 44°25'15", long 84°06'25", in NE¼ NE¼ sec.6, T.23 N., R.3 E., Ogemaw County, at bridge on Rose City Rd., 0.3 mile east of Rose City.	13.3	1953-72	12-15-71	2.79	280
04138900	Wilkins Creek near Rose City, Mich.	Lat 44°24'15", long 84°06'50", in NE¼ NW¼ sec.7, T.23 N., R.3 E., Ogemaw County, at bridge on State Highway 33, 1.1 miles south of Rose City.	9.15	1953-72	12-15-71	3.18	160
04139500	Rifle River at "The Ranch" near Lupton, Mich.	Lat 44°23'06", long 84°02'18", in SE¼ SW¼ sec.11, T.23 N., R.3 E., Ogemaw County, at bridge 2.7 miles south of Lupton.	56.8	1951-71, 1972	04-16-72	9.61	508
04140200	Klacking Creek near Selkirk, Mich.	Lat 44°20'00", long 84°08'40", in NE¼ NE¼ sec.2, T.22 N., R.2 E., Ogemaw County, at bridge on Campbell Rd., 4.0 miles north-west of Selkirk.	7.51	1953-72	04-13-72	2.27	112
04141100	Shepards Creek near Selkirk, Mich.	Lat 44°18'20", long 84°05'00", in SE¼ SE¼ sec.8, T.22 N., R.3 E., Ogemaw County, at bridge on Bettelton Rd., 1.1 miles south-west of Selkirk.	4.44	1953-72	04-11-72	3.64	99
04144180	Jones Creek near Gaines, Mich.	Lat 42°53'02", long 83°52'27", in SE¼ sec.28, T.6 N., R.5 E., Genesee County, at bridge on Baldwin Rd., 1.7 miles northeast of Gaines.	7.60	1970-72	04-16-72	7.70	147
04144200	Porter Drain near Gaines, Mich.	Lat 42°53'26", long 83°50'59", in SE¼ sec.27, T.6 N., R.5 E., Genesee County, at bridge on Seymour Rd., 3.2 miles east of Gaines.	4.68	1970-72	04-16-72	4.43	63
04144220	Jones Creek at Duffield, Mich.	Lat 42°54'45", long 83°54'27", in SW¼ sec.17, T.6 N., R.5 E., Genesee County, at bridge on Grand Blanc Rd., 1.0 mile south of Duffield.	23.4	1970-72	04-16-72	8.68	540
04147800	Powers-Cullen Drain near Genesee, Mich.	Lat 43°05'33", long 83°33'31", in SE¼ sec.18, T.8 N., R.8 E., Genesee County, at bridge on Coldwater Rd., 3.3 miles southeast of Genesee.	9.17	1970-72	04-16-72	3.73	170
04147900	Lefler-Soothan Drain near Otisville, Mich.	Lat 43°08'11", long 83°32'27", in NE¼ sec.5, T.8 N., R.8 E., Genesee County, at bridge on Frances Rd., 2.2 miles south of Otisville.	4.90	1970-72	04-16-72	3.83	66
04148120	Kearsley Creek near Atlas, Mich.	Lat 42°57'15", long 83°32'42", in NE¼ sec.5, T.6 N., R.8 E., Genesee County, at bridge on Jordan Rd., 1.2 miles north of Atlas.	55.7	1970-72	04-16-72	6.81	230
04148139	Black Creek near Davison, Mich.	Lat 43°01'28", long 83°33'24", in SE¼ sec.7, T.7 N., R.8 E., Genesee County, at bridge on Irish Rd., 2.0 miles west of Davison.	22.8	1970-72	04-16-72	6.67	330
04148144	Chipmunk Creek near Genesee, Mich.	Lat 43°04'01", long 83°36'59", in SE¼ sec.27, T.8 N., R.7 E., Genesee County, at bridge on Genesee Rd., 3.1 miles south of Genesee.	5.50	1970-72	04-17-72	4.44	270
04148255	Swartz Creek near Grand Blanc, Mich.	Lat 42°53'09", long 83°41'29", in SE¼ sec.25, T.6 N., R.6 E., Genesee County, at bridge on Baldwin Rd., 4.1 miles southwest of Grand Blanc.	36.0	1970-72	04-17-72	4.54	98

Annual maximum discharge at crest-stage partial-record stations during water year 1972--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis-charge (cfs)
Streams tributary to Lake Huron.--Continued							
04148260	Swartz Creek near Swartz Creek, Mich.	Lat 42°58'22", long 83°45'43", in SW¼ sec.28, T.7 N., R.6 E., Genesee County, at bridge on Bristol Rd., 3.9 miles east of Swartz Creek.	67.2	1970-72	04-17-72	d	b450
04148265	Kimball Drain near Swartz Creek, Mich.	Lat 42°55'15", long 83°49'51", in NE¼ sec.14, T.6 N., R.5 E., Genesee County, at bridge on Morrish Rd., 2.4 miles south of Swartz Creek.	10.6	1970-72	04-16-72	7.94	270
04148270	West Branch Swartz Creek near Swartz Creek, Mich.	Lat 42°58'22", long 83°46'08", in SW¼ sec.28, T.7 N., R.6 E., Genesee County, at bridge on Bristol Rd., 3.2 miles east of Swartz Creek.	40.8	1970-72	04-17-72	9.98	540
04148410	Thread Creek near Goodrich, Mich.	Lat 42°53'19", long 83°32'10", in SE¼ sec.29, T.6 N., R.8 E., Genesee County, at bridge on Baldwin Rd., 2.4 miles southwest of Goodrich.	28.5	1970-72	04-16-72	5.38	178
04148610	Cole Creek near Flushing, Mich.	Lat 43°02'44", long 83°51'06", in SW¼ sec.35, T.8 N., R.5 E., Genesee County, at bridge on Potter Rd., 1.2 miles south of Flushing.	8.51	1970-72	04-16-72	6.34	183
04148620	Freeman Drain near Montrose, Mich.	Lat 43°07'04", long 83°53'37", in SE¼ sec.5, T.8 N., R.5 E., Genesee County, at bridge on Mt. Morris Rd., 4.0 miles south of Montrose.	8.21	1970-72	04-16-72	6.25	197
04148640	Armstrong Creek near Montrose, Mich.	Lat 43°08'04", long 83°50'03", in SE¼ sec.35, T.9 N., R.5 E., Genesee County, at bridge on Morrish Rd., 4.1 miles southeast of Montrose.	11.0	1970-72	04-16-72	5.96	240
04148740	Central-Stadler Drain near Montrose, Mich.	Lat 43°09'46", long 83°50'14", in SE¼ sec.23, T.9 N., R.5 E., Genesee County, at bridge on Wilson Rd., 3.1 miles east of Montrose.	14.2	1970-72	04-16-72	6.41	193
04148800	Pine Run near Montrose, Mich.	Lat 43°12'42", long 83°48'54", in SE¼ sec.1, T.9 N., R.5 E., Genesee County, at bridge on Elms Rd., 4.7 miles northeast of Montrose.	27.8	1970-72	04-17-72	8.71	570
04148900	Silver Creek near Clio, Mich.	Lat 43°12'54", long 83°45'55", in NW¼ sec.4, T.9 N., R.6 E., Genesee County, at bridge on Weir Rd., 3.0 miles northwest of Clio.	4.01	1970-72	04-16-72	3.93	76
04149300	Mistequay Creek near Flushing, Mich.	Lat 43°01'31", long 83°54'41", in NE¼ sec.7, T.7 N., R.5 E., Genesee County, at bridge on Duffield Rd., 3.7 miles southwest of Flushing.	17.4	1970-72	04-16-72	9.44	720
04151000	Cass River at Vassar, Mich.	Lat 43°22'15", long 83°34'52", in NW¼ SW¼ sec.7, T.11 N., R.8 E., Tuscola County, at bridge on State Highway 15, in Vassar.	700	1949-70†, 1971-72	03-23-72	13.75	7,400
04153500	Salt River near North Bradley, Mich.	Lat 43°42'10", long 84°28'14", in NE¼ SE¼ sec.7, T.15 N., R.1 W., Midland County, at bridge on North Saginaw Rd., 1.1 miles south-east of North Bradley, and 7 miles upstream from mouth.	138	1935-71†, 1972	08-27-72	13.85	2,040
Streams tributary to Lake St. Clair							
04161760	West Branch Stony Creek near Washington, Mich.	Lat 42°43'53", long 83°06'02", in SE¼ sec.25, T.4 N., R.11 E., Oakland County, at bridge on Huron-Clinton Metropolitan Park Rd., and 3.4 miles west of Washington.	22.5	1965-72	03-14-72	e3.63	b85
04164010	North Branch Clinton River at Almont, Mich.	Lat 42°54'59", long 83°02'42", in NE¼ sec.28, T.6 N., R.12 E., Lapeer County, at bridge on State Highway 53, at Almont.	9.56	1959-62, 1963-68†, 1969-72	04-16-72	4.88	268
04164050	North Branch Clinton River near Romeo, Mich.	Lat 42°49'11", long 82°58'35", in NW¼ sec.31, T.5 N., R.13 E., Macomb County, at bridge on 33-Mile Rd., 2.2 miles northeast of Romeo.	49.7	1959-64, 1965-69†, 1970-72	04-17-72	3.34	542

Annual maximum discharge at crest-stage partial-record stations during water year 1972--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 St. Clair.--Continued							
04164200	Coon Creek near Armada, Mich.	Lat 42°47'41", long 82°52'58", in SW $\frac{1}{4}$ sec.1, T.4 N., R.13 E., Macomb County, at bridge on North Rd., 3.4 miles south of Armada.	10.0	1959-65, 1966-70†, 1971-72	04-16-72	5.40	260
04164250	Tupper Brook at Ray Center, Mich.	Lat 42°45'42", long 82°54'04", in NW $\frac{1}{4}$ sec.23, T.4 N., R.13 E., Macomb County, at bridge on 29-Mile Rd., at Ray Center.	8.62	1959, 1960-64†, 1965-72	04-16-72	14.73	86
04164350	Highbank Creek near Armada, Mich.	Lat 42°48'24", long 82°51'08", in NW $\frac{1}{4}$ sec.6, T.4 N., R.14 E., Macomb County, at bridge on 32-Mile Rd., 3.0 miles southeast of Armada.	14.9	1959-65, 1966-70†, 1971-72	04-16-72	15.22	460
04164400	Deer Creek near Meade, Mich.	Lat 42°42'39", long 82°51'32", in NW $\frac{1}{4}$ sec.6, T.3 N., R.14 E., Macomb County, at bridge on 25 $\frac{1}{2}$ Mile Rd., 0.9 mile southeast of Meade.	12.7	1959-60, 1961-65†, 1966-72	04-16-72	7.61	500
04164450	McBride Drain near Macomb, Mich.	Lat 42°41'14", long 82°55'14", in NE $\frac{1}{4}$ sec.16, T.3 N., R.13 E., Macomb County, at bridge on 24-Mile Rd., 2.2 miles southeast of Macomb.	5.79	1960-64†, 1965-72	04-16-72	7.14	105
04164600	Middle Branch Clinton River near Macomb, Mich.	Lat 42°42'03", long 82°59'44", in SE $\frac{1}{4}$ sec.2, T.3 N., R.12 E., Macomb County, at bridge on Schoenherr Rd., 2.0 miles west of Macomb.	22.2	1959-64, 1965-69†, 1971-72	04-16-72	18.74	390
04165200	Gloede Ditch near Waldenburg, Mich.	Lat 42°37'39", long 82°57'10", in SW $\frac{1}{4}$ sec.32, T.3 N., R.13 E., Macomb County, 2.2 miles south of Waldenburg.	16.0	1959, 1960-64†, 1965-72	08-23-72	15.29	244
Streams tributary to Detroit River							
04168660	Frank and Poet Drain at Trenton, Mich.	Lat 42°09'19", long 83°12'22", in NW $\frac{1}{4}$ sec.13, T.4 S., R.10 E., Wayne County, at bridge on King Rd., at Trenton.	18.6	1972	04-17-72	7.80	222
Streams tributary to Lake Erie							
04172500	Portage River near Pinckney, Mich.	Lat 42°25'40", long 83°57'35", in SW $\frac{1}{4}$ sec.34, T.1 N., R.4 E., Livingston County, at bridge on Tiplady Rd., 2 miles upstream from Little Portage Lake, and 2.2 miles southwest of Pinckney.	79.1	1945-71†, 1972	04-17-72	3.35	108

* Also a low-flow partial-record station.

† Operated as a continuous-record gaging station.

a Peak stage did not reach bottom of gage.

b Computed on basis of correlation with other stations.

c Approximately.

d Maximum gage height, 7.70 ft Mar. 15, 1972 (backwater from ice).

e Backwater from ice.

f Maximum gage height, 5.54 ft Mar. 14, 1972 (backwater from ice).

g Maximum gage height, 7.96 ft Mar. 14, 1972 (backwater from ice).

h Maximum gage height, 9.72 ft Mar. 14, 1972 (backwater from ice).

i Maximum gage height, 15.89 ft Mar. 14, 1972 (backwater from ice).

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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 (*).

Discharge measurements made at miscellaneous sites during water year 1972

Discharge measurements made at miscellaneous sites during water year 1972						
Stream	Tributary to	Location	Drainage area (sq.mi.)	Measured previously (water year)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Superior						
Bear Creek	Sevenmile Creek	Lat 47°14'22", long 88°34'58", in NE1/4 sec.23, T.56 N., R.34 W., Houghton County, at bridge on State Highway 203, 6 miles west of Calumet, Mich.	a1.5		5- 2-72	b60
Sevenmile Creek	Lake Superior	Lat 47°14'24", long 88°34'25", in NW1/4 sec.24, T.56 N., R.34 W., Houghton County, at bridge on State Highway 203, 5.6 miles west of Calumet, Mich.	a5		5- 2-72	b150
do	do	Lat 47°14'36", long 88°34'40", in SE1/4 sec.14, T.56 N., R.34 W., Houghton County, 500 ft upstream from Smith's Creek, 5.8 miles west of Calumet, Mich.	a7		5- 2-72	b250
Smith's Creek	Sevenmile Creek	Lat 47°14'36", long 88°33'54", in N1/2 sec.24, T.56 N., R.34 W., Houghton County, at bridge on State Highway 203, 5.2 miles west of Calumet, Mich.	a2		5- 2-72	b40
Mud Creek	Chocolay River	Lat 46°27'50", long 87°11'46", in SW1/4 sec.16, T.47 N., R.23 W., Marquette County, at bridge on County Road 480, 2.8 miles east of Mangum, Mich.	a13		5- 8-72 8- 3-72	72.8 8.22
Rock River	Shelter Bay	Lat 46°27'49", long 88°54'56", in SE1/4 sec.15, T.47 N., R.21 W., Alger County, at bridge on State Highway 28, 4.2 miles northwest of AuTrain, Mich.	a45	1960	5- 4-72 5-23-72 8-30-72	333 *49.8 *22.0
Wagner Creek	Anna River	Lat 46°23'23", long 86°38'57", in NW1/4 sec.14, T.46 N., R.19 W., Alger County, at mouth, 1.2 miles south of Munising, Mich.	a5		3-28-72	*4.55
Tannery Creek	South Bay	Lat 46°25'02", long 86°37'47", in NW1/4 sec.1, T.46 N., R.19 W., Alger County, 500 ft upstream from mouth, 1 mile northeast of Munising, Mich.	a1		3-28-72	*.44
Munising Falls Creek	do	Lat 46°25'28", long 86°37'27", in SE1/4 sec.36, T.47 N., R.19 W., Alger County, 0.2 mile upstream from mouth, 1.3 miles northeast of Munising, Mich.	a3		3-28-72	*1.59
Mosquito River	Lake Superior	Lat 46°29'16", long 86°28'05", in NW1/4 sec.8, T.47 N., R.17 W., Alger County, 3 miles northwest of Melstrand at culvert on County Road 639, 4.8 miles north of Van Meer, Mich.	a6		3-28-72	*6.08
West Branch Two Hearted River	Two Hearted River	Lat 46°35'25", long 85°37'47", in NE1/4NW1/4 sec.1, T.48 N., R.11 W., Luce County, 200 ft upstream from North Branch Two Hearted River, 6 miles south of Deer Park, Mich.			9-19-72	*83.3
North Branch Two Hearted River	do	Lat 46°35'28", long 85°37'47", in NW1/4NW1/4 sec.1, T.48 N., R.11 W., Luce County, 100 ft upstream from confluence with West Branch Two Hearted River, 6 miles south of Deer Park, Mich.			9-19-72	*9.27

See footnotes at end of table, p. 257.

Discharge measurements made at miscellaneous sites during water year 1972--Continued

Discharge measurements made at miscellaneous sites during water year 1972--Continued						
Stream	Tributary to	Location	Drainage area (sq.mi.)	Measured previously (water year)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Superior--Continued						
Two Hearted River	Lake Superior	Lat 46°36'23", long 85°36'06", in NW1/4NE1/4 sec.31, T.49 N., R.10 W., Luce County, at County Road 407 at High Bridge, 5 miles south of Deer Park, Mich.		1967,1971	2- 7-72 9- 5-72 9-19-72	*82.7 *87.5 *90.8
Dawson Creek	Two Hearted River	Lat 46°34'43", long 85°35'02", in SW1/4SE1/4 sec.5, T.48 N., R.10 W., Luce County, at bridge on County Road 412, 0.7 mile northeast of Pine Stump Junction, Mich.			9-19-72	*11.5
East Branch Two Hearted River	do	Lat 46°38'32", long 85°28'44", in NW1/4SE1/4 sec.18, T.49 N., R.9 W., Luce County, at bridge on County Road 412, 6.5 miles southeast of Deer Park, Mich.		1971	9-20-72	*44.6
Tahquamenon River	Whitefish Bay	Lat 46°22'25", long 85°47'00", in NW1/4NW1/4 sec.23, T.46 N., R.12 W., Luce County, at bridge on County Road 442, 2.0 miles north of Donaher, Mich.		1971	9- 5-72	*80.0
Waiska River	Waiska Bay	Lat 46°24'40", long 84°34'18", in NW1/4SW1/4 sec.4, T.46 N., R.2 W., Chippewa County, at bridge on county road, 1,000 ft upstream from mouth, 0.3 mile north of Brimley, Mich.	142		6-14-72	666

Streams tributary to Lake Michigan

Rock River	Lake Michigan	Lat 46°05'37", long 85°35'30", in NW1/4SW1/4 sec.29, T.43 N., R.10 W., Mackinac County, at culverts on Price Road, 1.8 miles southwest of Engadine, Mich.		1971	2- 8-72	*4.23
East Branch Fox River	Fox River	Lat 46°27'55", long 85°56'40", in NW1/4SW1/4 sec.16, T.47 N., R.13 W., Schoolcraft County, at old trout rearing ponds, 8.5 miles north of Seney, Mich.		1971	2- 7-72	*24.4
Dufour Creek	Indian Lake	Lat 45°56'24", long 86°20'28", in NW1/4NW1/4 sec.20, T.41 N., R.16 W., Schoolcraft County, at culvert on County Road 442, 2.5 miles northwest of Thompson, Mich.	a8.5		5-16-72	*6.18
Thompson Creek	Lake Michigan	Lat 45°55'36", long 86°20'39", in SW1/4SW1/4 sec.20, T.41 N., R.16 W., Schoolcraft County, at culvert on State Highway M-149, 1.6 miles northwest of Thompson, Mich.	a3		5-16-72	*1.21
Thompson Spring	Thompson Creek	Lat 45°55'10", long 86°20'22", in SW1/4NW1/4 sec.29, T.41 N., R.16 W., Schoolcraft County, at Thompson Fish Hatchery, 40 ft upstream from Thompson Creek, 1.2 miles northwest of Thompson, Mich.		1957,1966, 1969	10-27-71 5-16-72	*3.19 *3.39
Thompson Creek	Lake Michigan	Lat 45°54'59", long 86°20'20", in NE1/4SW1/4 sec.29, T.41 N., R.16 W., Schoolcraft County, at Thompson Fish Hatchery, 0.3 mile downstream from Thompson Spring, 0.5 mile upstream from Williams Creek and 0.9 mile northwest of Thompson, Mich.	4.36	1966,1969, 1970	5-16-72	*8.05

Discharge measurements made at miscellaneous sites during water year 1972--Continued

Discharge measurements made at miscellaneous sites during water year 1972--Continued						
Stream	Tributary to	Location	Drainage area (sq.mi.)	Measured previously (water year)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
Bell Creek	Middle Branch Escanaba River	Lat 46°25'14", long 87°47'54", in NW1/4NW1/4 sec.3, T.46 N., R.28 W., Marquette County, at mouth, 6.5 miles southeast of Humboldt, Mich.	3.49	1971	7-20-72	2.20
Schweitzer Creek	East Branch Escanaba River	Lat 46°24'07", long 87°32'44", in SE1/4NW1/4 sec.10, T.46 N., R.26 W., Marquette County, 15 ft upstream from confluence with Warner Creek, 0.8 mile east of Soumi, Mich.	28.2		9-25-72	*8.12
Warner Creek	do	Lat 46°26'39", long 87°35'35", in SW1/4NW1/4 sec.29, T.47 N., R.26 W., Marquette County, at bridge on State Highway M-35, 0.2 mile north of Palmer, Mich.	a3		9-25-72	*1.95
do	do	Lat 46°25'47", long 87°35'56", in SW1/4NE1/4 sec.31, T.47 N., R.26 W., Marquette County, 50 ft upstream from Warner Creek Tributary, 1.1 miles southwest of Palmer, Mich.	a7		9-25-72	*4.13
Warner Creek tributary	Warner Creek	Lat 46°25'46", long 87°35'56", in SW1/4 NE1/4 sec.31, T.47 N., R.26 W., Marquette County, 100 ft upstream from the mouth, 1.1 miles southwest of Palmer, Mich.	a4		9-25-72	*3.62
Fifteen Creek	East Branch Escanaba River	Lat 46°23'10", long 87°31'23", in SE1/4NW1/4 sec.14, T.46 N., R.26 W., Marquette County, at mouth, 2.0 miles southeast of Soumi, Mich.	a4		9-25-72	*1.31
East Branch Escanaba River	Escanaba River	Lat 46°22'54", long 87°29'38", in NE1/4SE1/4 sec.13, T.46 N., R.26 W., Marquette County, 350 ft upstream from Goose Lake outlet, 3.3 miles southeast of Soumi, Mich.	49.2		9-25-72	*20.1
Goose Lake outlet	East Branch Escanaba River	Lat 46°27'28", long 87°30'00", in NW1/4 sec.24, T.47 N., R.26 W., Marquette County, at outlet of Goose Lake, 4.5 miles east of Palmer, Mich.	14.6	1962-70c	9-25-72	*9.71
do	do	Lat 46°22'54", long 87°29'33", in NE1/4SE1/4 sec.13, T.46 N., R.26 W., Marquette County, at mouth, 3.3 miles southeast of Soumi, Mich.	37.8		9-25-72	*15.0
Beaver Lake Inlet	Beaver Lake	Lat 46°22'34", long 87°56'05", in NW1/4NE1/4 sec.21, T.46 N., R.29 W., Marquette County, 50 ft upstream from Beaver Lake, 3.0 miles southeast of Republic, Mich.			2-28-72	*.68
Beaver Lake outlet	Horseshoe Lake	Lat 46°22'22", long 87°56'08", in SW1/4NE1/4 sec.21, T.46 N., R.29 W., Marquette County, 200 ft downstream from Beaver Lake, 3.2 miles southeast of Republic, Mich.			1-18-72 2-28-72	*.81 *.73
Horseshoe Lake outlet	Gambles Creek	Lat 46°21'56", long 87°56'20", in SW1/4SE1/4 sec.21, T.46 N., R.29 W., Marquette County, at bridge, 0.2 mile downstream from Horseshoe Lake, 3.4 miles southeast of Republic, Mich.			1-18-72 2-28-72	*1.36 *1.38
West Branch Fence River	Fence River	Lat 46°20'33", long 88°16'12", in SW1/4NE1/4 sec.35, T.46 N., R.32 W., Iron County, at culverts 2.8 miles upstream from confluence with East Branch Fence River, 11 miles northeast of Amasa, Mich.	a37		9-15-72	24.0

Discharge measurements made at miscellaneous sites during water year 1972--Continued

Stream	Tributary to	Location	Drainage area (sq.mi.)	Measured previously (water year)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
East Branch Fence River	Fence River	Lat 46°21'07", long 88°13'54", in NE1/4SW1/4 sec.30, T.46 N., R.31 W., Iron County, 3 miles upstream from confluence with West Branch Fence River, 13 miles northeast of Amasa, Mich.	a28		9-15-72	28.4
Fence River	Michigamme River	Lat 46°16'46", long 88°09'14", in SW1/4 sec.23, T.45 N., R.31 W., Iron County, 6.5 miles west of Witch Lake, Mich.	148	1963,1970	9-15-72	128
East Branch Sturgeon River	Sturgeon River	Lat 46°00'06", long 87°41'26", in S1/2 sec.28, T.42 N., R.27 W., Dickinson County, at bridge on county road, 2.5 miles north of Hardwood, Mich.	a80	1970	7-13-72	19.4
do	do	Lat 45°57'57", long 87°44'30", in NW1/4 sec.7, T.41 N., R.27 W., Dickinson County, at bridge on County Road 569, at Foster City, Mich.	106	1969-71	9-20-72	*29.5
Pine Creek	do	Lat 45°49'38", long 87°53'50", in SW1/4 sec.28, T.40 N., R.29 W., Dickinson County, at bridge on county road, 1.2 miles upstream from Fern Creek, 3 miles north of Norway, Mich.	a54		3-15-72	*23.9
St. Joseph River	Lake Michigan	Lat 41°56'04", long 84°38'27", in SW1/4NE1/4 sec.22, T.6 S., R.3 W., 300 ft upstream from the waste water treatment plant at Hillsdale, Mich.		1970	8-22-72	5.49
South Branch Kalamazoo River	Kalamazoo River	Lat 42°09'34", long 84°48'19", in NW1/4NW1/4 sec.5, T.4 S., R.4 W., Calhoun County, at L Drive, 1.0 mile north of Homer, Mich.			6-13-72	*61.2
North Branch Kalamazoo River	do	Lat 42°14'06", long 84°41'41", in SW1/4SW1/4 sec.5, T.3 S., R.3 W., Jackson County, at Bath-Mills Rd., 3.1 miles southeast of Albion, Mich.			10-20-71 12-13-71	*41.8 68.5
Portage Creek	do	Lat 42°17'40", long 85°34'52", in SE1/4 sec.15, T.2 S., R.11 W., Kalamazoo County, at Michigan Ave., at Kalamazoo, Mich.		1970	8-22-72	39.1
Unnamed tributary	Black River	Lat 42°48'12", long 86°05'05", in NW1/4SE1/4 sec.21, T.5 N., R.15 W., Ottawa County, at U.S. Highway 31, at Holland, Mich.			6- 7-72 6-14-72	*2.07 *2.11
do	Unnamed tributary to Black River	Lat 42°48'15", long 86°04'58", in NE1/4SE1/4 sec.21, T.5 N., R.15 W., Ottawa County, at Lakewood Blvd., at Holland, Mich.			6- 7-72 6-14-72	*.23 *.25
Red Cedar River	Grand River	Lat 42°39'26", long 84°04'43", in SE1/4 sec.10, T.3 N., R.3 E., Livingston County, at railroad bridge, at Fowlerville, Mich.			11- 1-71 11- 5-71	*6.84 *8.81
Silver Creek	do	Lat 42°38'33", long 84°39'42", in SE1/4SE1/4 sec.16, T.3 N., R.3 W., Eaton County, at Canal Road, 0.7 mile southwest of Dimondale, Mich.			5- 3-72	*2.68
Whaley Drain	Silver Creek	Lat 42°38'56", long 84°39'42", in SE1/4NE1/4 sec.16, T.3 N., R.3 W., Eaton County, at Canal Road, 0.6 mile west of Dimondale, Mich.			5- 3-72	*4.55

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1972--Continued

Discharge measurements made at miscellaneous sites during water year 1972--Continued						
Stream	Tributary to	Location	Drainage area (sq.mi.)	Measured previously (water year)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
Little Maple River	Maple River	Lat 42°53'35", long 84°25'16", in SW1/4 sec.22, T.6 N., R.1 W., Clinton County, at Alward Road, 2.8 miles west of Laingsburg, Mich.	a2.43	1966-1968, 1969,1971	8- 3-72	*1.55
do	do	Lat 42°55'35", long 84°25'01", in NW1/4 sec.10, T.6 N., R.1 W., Clinton County, at Price Road, 4.8 miles northwest of Laingsburg, Mich.	7.90	1965-66, 1968,1969, 1971	8- 3-72	*3.88
do	do	Lat 42°57'27", long 84°25'39", in SE1/4 sec.28, T.7 N., R.1 W., Clinton County, at Taft Road, 3.0 miles south of Shepardsville, Mich.	a15.4	1966,1968, 1969,1971	8- 3-72	*5.12
Unnamed tributary	Fish Creek	Lat 43°16'05", long 85°00'50", in NW1/4SW1/4 sec.10, T.10 N., R.6 W., Montcalm County, at bridge on Townhall Road, 3.8 miles southeast of Stanton, Mich.			5-12-72 5-30-72	3.16 2.29
Fish Creek	Maple River	Lat 43°15'52", long 84°58'52", in SW1/4SE1/4 sec.11, T.10 N., R.6 W., Montcalm County, at highway bridge on Colby Road, 3.4 miles west of Crystal, Mich.			5-12-72 5-30-72	20.8 17.6
do	do	Lat 43°13'50", long 84°53'44", in SW1/4NW1/4 sec.27, T.10 N., R.5 W., Montcalm County, at highway bridge on Miner Road, 24 miles southeast of Crystal, Mich.			5-12-72	92.9
do	do	Lat 43°13'03", long 84°53'09", in NW1/4NE1/4 sec.34, T.10 N., R.5 W., Montcalm County, at highway bridge on Bollinger Road, 2.7 miles northwest of Carson City, Mich.			5-30-72	52.8
do	do	Lat 43°10'38", long 84°51'23", in SE1/4SE1/4 sec.11, T.9 N., R.5 W., Montcalm County, at highway bridge on State Highway 57, at Carson City, Mich.			5-12-72 5-30-72	115 56.0
Dickerson Creek	Flat River	Lat 43°10'05", long 85°07'30", in sec.36, T.10 N., R.8 W., Montcalm County, at highway bridge on Peck Road, 3.8 miles northeast of Greenville, Mich.			5-30-72	10.9
do	do	Lat 43°12'16", long 85°12'04", in SW1/4NE1/4 sec.15, T.9 N., R.7 W., Montcalm County, at bridge on State Highway 57, 3.7 miles southwest of Sheridan, Mich.			5-30-72	24.1
do	do	Lat 43°06'34", long 85°13'03", in SW1/4 sec.1, T.8 N., R.8 W., Ionia County, at highway bridge on Long Lake Road, at Belding, Mich.			5-30-72	52.5
Unnamed tributary	Bear Creek	Lat 42°51'37", long 85°14'33", in SE1/4 sec.34, T.6 N., R.8 W., Ionia County, at Nash Highway, 1.2 miles north of Clarksville, Mich.			10- 6-71	*.49
Rogue River	Grand River	Lat 43°15'50", long 85°42'04", in NW1/4NE1/4 sec.14, T.10 N., R.12 W., Kent County, at 20-Mile Road, 4.0 miles northeast of Kent City, Mich.		1970	7-25-72	*20.7
do	do	Lat 43°14'05", long 85°41'52", SW1/4 SE1/4 sec.23, T.10 N., R.12 W., Kent County, at 18-Mile Road, 2.9 miles northeast of Kent City, Mich.		1970	7-25-72	*33.2

Discharge measurements made at miscellaneous sites during water year 1972--Continued

Discharge measurements made at miscellaneous sites during water year 1972--Continued						
Stream	Tributary to	Location	Drainage area (sq.mi.)	Measured previously (water year)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
Rogue River	Grand River	Lat 43°13'12", long 85°41'17", in SW1/4SW1/4 sec.25, T.10 N., R.12 W., Kent County, at State Highway 57, 3.1 miles east of Kent City, Mich.			6-25-72	*35.8
Unnamed tributary	Houghton Lake	Lat 44°22'24", long 84°41'49", in SE1/4NE1/4 sec.30, T.23 N., R.3 W., Roscommon County, at culverts on County Road 100, 450 ft from mouth, and 5.7 miles north of Prudenville, Mich.	1971		4-19-72	*15.5
					5-17-72	*1.24
do	do	Lat 44°20'19", long 84°39'45", in NW1/4SE1/4 sec.34, T.23 N., R.3 W., Roscommon County, at public fishing site, 20 ft upstream from mouth, and 2.8 miles north of Prudenville, Mich.	1971		4-19-72 5-17-72 6-15-72	*6.50 *.99 *.05
do	do	Lat 44°19'33", long 84°38'08", in NE1/4SE1/4 sec.2, T.22 N., R.3 W., Roscommon County, at culvert on County Road 100, at Harvey Marine, 2.1 miles north of Prudenville, Mich.	1971		4-19-72 5-17-72 6-15-72	*30.0 *5.0 *3.0
do	do	Lat 44°19'15", long 84°38'00", in SE1/4SE1/4 sec.2, T.22 N., R.3 W., Roscommon County, just above mouth, 300 ft below culvert on County Road 100, 1.8 miles north of Prudenville, Mich.	1971		4-19-72 5-17-72 7-19-72	*3.97 *.61 *.07
do	do	Lat 44°17'54", long 84°39'33", in SW1/4NE1/4 sec.15, T.22 N., R.3 W., Roscommon County, at culvert on State Highway M-55, at 7th Street in Prudenville, Mich.			4-19-72 5-17-72 6-15-72 7-19-72 8-16-72 9-18-72	*.93 *.38 *.15 *.06 *.37 *.06
do	do	Lat 44°17'55", long 84°40'23", in SE1/4NE1/4 sec.16, T.22 N., R.3 W., Roscommon County, at culvert on State Highway M-55, 1.1 miles west of Prudenville, Mich.	1971		4-19-72 5-17-72 6-15-72 7-19-72 8-16-72 9-18-72	*13.3 *1.64 *.25 *.20 *.17 *.01
do	do	Lat 44°17'56", long 84°40'48", in SW1/4NE1/4 sec.16, T.22 N., R.3 W., Roscommon County, at culvert on State Highway M-55, 1.4 miles west of Prudenville, Mich.	1971		4-19-72 5-17-72 6-15-72 7-19-72 8-16-72	*.1 *.1 *.02 *.01 *.20
do	do	Lat 44°17'56", long 84°41'02", in SE1/4NW1/4 sec.16, T.22 N., R.3 W., Roscommon County, at culvert on State Highway M-55, 1.6 miles west of Prudenville, Mich.	1971		4-19-72 5-17-72 6-15-72 7-19-72 8-16-72	*.5 *.36 *.01 *.01 *.05
do	do	Lat 44°17'56", long 84°41'20", in SW1/4NW1/4 sec.16, T.22 N., R.3 W., Roscommon County, at culvert on State Highway M-55, 1.9 miles west of Prudenville, Mich.	1971		4-19-72 5-17-72 6-15-72 7-19-72 8-16-72 9-18-72	*.8 *.32 *.17 *.05 *.96 *.02
do	do	Lat 44°17'56", long 84°41'31", in SW1/4NW1/4 sec.16, T.22 N., R.3 W., Roscommon County, at culvert on State Highway M-55, 1,200 ft west of Chippewa Trail, and 2.0 miles west of Prudenville, Mich.			5-17-72 6-15-72 7-19-72 8-16-72 9-18-72	*.2 *.005 *.01 *.005 *.005
do	do	Lat 44°17'54", long 84°42'44", in NW1/4SW1/4 sec.17, T.22 N., R.3 W., Roscommon County, at culvert on State Highway M-55 at Spartan Plaza, 3.0 miles west of Prudenville, Mich.			4-19-72 5-17-72 6-15-72 7-19-72 8-16-72	*.1 *.1 *.01 *.01 *.03

Discharge measurements made at miscellaneous sites during water year 1972--Continued

Discharge measurements taken at miscellaneous sites during water year 1972--Continued						
Stream	Tributary to	Location	Drainage area (sq.mi.)	Measured previously (water year)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
Unnamed tributary	Houghton Lake	Lat 44°17'59", long 84°44'26", in SW1/4NE1/4 sec.13, T.22 N., R.4 W., Roscommon County, at culvert on State Highway M-55, 1.6 miles southeast of Houghton Lake, Mich.		1971	4-19-72	*.07
					5-17-72	*.01
					6-15-72	*.005
					7-19-72	*.005
					8-16-72	*.01
do	do	Lat 44°22'28", long 84°43'04", in NE1/4NE1/4 sec.19, T.23 N., R.3 W., Roscommon County, 20 ft upstream from mouth, 300 ft downstream from culverts on County Road 300, and 6.2 miles north of Prudenville, Mich.		1971	4-19-72	*3.71
					5-17-72	*.55
					7-19-72	*.04
do	do	Lat 44°22'28", long 84°43'32", in NE1/4NW1/4 sec.19, T.23 N., R.3 W., Roscommon County, 10 ft upstream from mouth, 300 ft downstream from culvert on County Road 300, 6.4 miles north of Prudenville, Mich.		1971	4-19-72	*8.05
					5-17-72	*.86
do	do	Lat 44°22'33", long 84°44'08", in NW1/4NW1/4 sec.19, T.23 N., R.3 W., Roscommon County, at culverts on County Road 300, 5.2 miles north-east of Houghton Lake Heights, Mich.		1971	4-19-72	*12.5
					5-17-72	*1.72
					6-15-72	*.12
					7-19-72	*.07
					8-16-72	*.03
do	do	Lat 44°23'18", long 84°45'08", in SW1/4NW1/4 sec.13, T.23 N., R.4 W., Roscommon County, 10 ft upstream from mouth, 4.4 miles north of Houghton Lake Heights, Mich.		1971	4-19-72	*7.28
					5-17-72	*.05
					6-15-72	*.11
					7-19-72	*.01
					8-16-72	*.01
					9-18-72	*.04
do	do	Lat 44°23'19", long 84°45'08", in SW1/4NW1/4 sec.13, T.23 N., R.4 W., Roscommon County, 10 ft upstream from mouth, 4.4 miles north of Houghton Lake Heights, Mich.		1971	4-19-72	*9.79
do	do	Lat 44°23'37", long 84°45'12", in SW1/4SW1/4 sec.12, T.23 N., R.4 W., Roscommon County, at culvert on county road, 4.7 miles north of Houghton Lake Heights, Mich.		1971	4-19-72	*9.10
					5-17-72	*1.07
					6-15-72	*.03
					7-19-72	*.01
					8-16-72	*.005
Sucker Creek	do	Lat 44°24'06", long 84°45'47", in SW1/4NE1/4 sec.11, T.23 N., R.4 W., Roscommon County, at culvert on county road, 5.1 miles north of Houghton Lake Heights, Mich.		1971	4-19-72	*15.0
					5-17-72	*4.91
					7-19-72	*.46
					8-16-72	*.06
Unnamed tributary	do	Lat 44°24'07", long 84°45'56", in SE1/4NW1/4 sec.11, T.23 N., R.4 W., Roscommon County, at culverts on county road, 0.1 mile east of DNR campground, 700 ft upstream from mouth, 5.2 miles north of Houghton Lake Heights, Mich.		1971	4-19-72	*2.55
					5-17-72	*.08
					8-16-72	*.005
do	do	Lat 44°24'06", long 84°46'11", in SE1/4NW1/4 sec.11, T.23 N., R.4 W., Roscommon County, at culvert on county road, at campground, 600 ft upstream from mouth, 5.2 miles north of Houghton Lake Heights, Mich.		1971	4-19-72	*10.6
					5-17-72	*1.98
					6-15-72	*.01
do	do	Lat 44°24'04", long 84°46'28", in SW1/4NW1/4 sec.11, T.23 N., R.4 W., Roscommon County, at culvert on county road at west end of campground, 5.1 miles north of Houghton Lake Heights, Mich.			4-19-72	*.01
					6-15-72	*.01
					7-19-72	*.01

Discharge measurements made at miscellaneous sites during water year 1972--Continued

Discharge measurements made at miscellaneous sites during water year 1972--Continued						
Stream	Tributary to	Location	Drainage area (sq.mi.)	Measured previously (water year)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
Unnamed tributary	Muskegon River	Lat 44°24'11", long 84°47'09", in SE1/4NW1/4 sec.10, T.23 N., R.4 W., Roscommon County, at three culverts on county road, 700 ft upstream from mouth, 5.3 miles north of Houghton Lake Heights, Mich.		1971	4-21-72	*12.1
					5-17-72	*3.36
					7-19-72	*.24
					8-16-72	*.03
					9-18-72	*.02
do	do	Lat 44°24'15", long 84°47'11", in NE1/4NW1/4 sec.10, T.23 N., R.4 W., Roscommon County, at culvert on county road, 600 ft upstream from mouth, 5.4 miles north of Houghton Lake Heights, Mich.			4-21-72	*3.90
					5-17-72	.89
do	do	Lat 44°23'35", long 84°47'49", in NE1/4NE1/4 sec.16, T.23 N., R.4 W., Roscommon County, at culvert at DNR pumping station, on Old 27, 4.8 miles north of Houghton Lake Heights, Mich.			3-22-72	16.0
do	do	Lat 44°22'17", long 84°48'25", in NE1/4SW1/4 sec.21, T.23 N., R.4 W., Roscommon County, at upstream side of culvert of north lane of U.S. 27, 3.5 miles north of Houghton Lake Heights, Mich.		1971	4-19-72	*4.42
					5-17-72	*2.49
					6-15-72	*.69
					7-19-72	*.29
					8-16-72	*.2
					9-18-72	*.2
do	do	Lat 44°21'54", long 84°47'59", in NW1/4NE1/4 sec.28, T.23 N., R.4 W., Roscommon County, at DNR pumping station on Old 27, 2.8 miles north of Houghton Lake Heights, Mich.			3-22-72	14.2
					6-15-72	10.4
Butterfield Creek	do	Lat 44°17'40", long 85°07'27", in NW1/4NE1/4 sec.23, T.22 N., R.7 W., Missaukee County, at bridge on Kelly Road, 5.2 miles southeast of Lake City, Mich.	a17		8- 1-72	.15
					8-23-72	.56
do	do	Lat 44°15'20", long 85°03'14", in NE1/4SE1/4 sec.32, T.22 N., R.6 W., Missaukee County, at bridge on 8-Mile Road, 1.9 miles northeast of Falmouth, Mich.	a24		8-23-72	4.43
do	do	Lat 44°15'22", long 85°02'02", in NE1/4SE1/4 sec.33, T.22 N., R.6 W., Missaukee County, at bridge on 9-Mile Road, 2.9 miles northeast of Falmouth, Mich.			8- 1-72	3.66
do	do	Lat 44°16'12", long 84°57'12", in SE1/4NE1/4 sec.30, T.22 N., R.5 W., Missaukee County, at bridge on Merritt Road, 4.3 miles south of Merritt, Mich.			8- 1-72	10.2
					8-23-72	16.5
Hersey River	Muskegon River	Lat 43°52'21", long 85°29'56", in NW1/4NW1/4 sec.15, T.17 N., R.10 W., Osceola County, 200 ft upstream from WWTP in Reed City, Mich.			6-29-72	42.1
do	do	Lat 43°52'15", long 85°29'39", in NE1/4NW1/4 sec.15, T.17 N., R.10 W., Osceola County, at highway bridge in Reed City, Mich.			6-27-72	43.2
do	do	Lat 43°50'58", long 85°26'17", in NW1/4SW1/4 sec.19, T.17 N., R.9 W., Osceola County, 0.4 mile upstream from mouth in Hersey, Mich.			6-29-72	52.6
Baldwin River	Pere Marquette River	Lat 43°53'47", long 85°50'39", in SE1/4NE1/4 sec.3, T.17 N., R.13 W., Lake County, at bridge on 8th Street, at Baldwin State Fish Hatchery in Baldwin, Mich.			6-13-72	47.8

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1972--Continued

Discharge measurements made at miscellaneous sites during water year 1972--Continued						
Stream	Tributary to	Location	Drainage area (sq.mi.)	Measured previously (water year)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
Slagle Creek	Manistee River	Lat 44°18'28", long 85°42'45", in NE1/4NW1/4 sec.13, T.22 N., R.12 W., Wexford County, at east boundary of Harrietta State Fish Hatchery, 0.7 mile west of Harrietta, Mich.	c22	1953-54 1966	6-13-72	6.79
Monroe Creek	Lake Charlevoix	Lat 45°12'20", long 85°12'24", in NE1/4NE1/4 sec.6, T.32 N., R.7 W., Charlevoix County, at culvert on Flag Road, 5.3 miles northwest of East Jordan, Mich.			2- 3-72	3.41
do	do	Lat 45°11'25", long 85°11'09", in SE1/4SE1/4 sec.5, T.32 N., R.7 W., Charlevoix County, at culvert on Metz Road, 3.8 miles northwest of East Jordan, Mich.			2- 3-72	6.66
Streams tributary to Lake Huron						
Sturgeon River	Burt Lake	Lat 45°04'14", long 84°38'27", in SW1/4SE1/4 sec.14, T.31 N., R.3 W., Otsego County, at bridge on Poquette Road, 5.2 miles south of Vanderbilt, Mich.	a8.5	1966,1971	10- 4-71	*28.8
do	do	Lat 45°06'46", long 84°35'50", in SW1/4SE1/4 sec.31, T.32 N., R.2 W., Otsego County, at bridge on Whitmarsh Road, 3.9 miles south-east of Vanderbilt, Mich.	a50	1966,1971	10- 4-71	*44.9
do	do	Lat 45°08'46", long 84°33'41", in NE1/4SW1/4 sec.21, T.32 N., R.2 W., Otsego County, at bridge on Sturgeon Valley Road, 5.0 miles east of Vanderbilt, Mich.	a65	1966,1971	10- 4-71	*52.2
do	do	Lat 45°13'02", long 84°34'11", in SW1/4SW1/4 sec.28, T.33 N., R.2 W., at bridge, 4.2 miles southeast of Wolverine, Mich.	a80	-	10- 4-71	*91.2
do	do	Lat 44°16'17", long 84°36'02", in NE1/4NW1/4 sec.7, T.33 N., R.2 W., Cheboygan County, 1,000 ft upstream from West Branch, in Wolverine, Mich.	a125	1966,1971	10- 4-71	*120
West Branch Sturgeon River	Sturgeon River	Lat 45°15'19", long 84°37'58", in NE1/4NE1/4 sec.14, T.33 N., R.3 W., Cheboygan County, at bridge on old U.S. 27, 1.9 miles southwest of Wolverine, Mich.	a70	1971	10- 5-71	*69.4
do	do	Lat 45°16'19", long 84°36'04", in NE1/4NW1/4 sec.7, T.33 N., R.2 W., Cheboygan County, 1,000 ft upstream from mouth, in Wolverine, Mich.	a80	1966,1971	10- 5-71	*74.8
Sturgeon River	Burt Lake	Lat 45°17'27", long 84°36'20", in SW1/4SW1/4 sec.31, T.34 N., R.2 W., Cheboygan County, at highway bridge, 1.2 miles north of Wolverine, Mich.	a165	-	10- 5-71	*185
do	do	Lat 45°20'19", long 84°37'38", in SW1/4NW1/4 sec.13, T.34 N., R.3 W., Cheboygan County, at highway bridge, 4.7 miles north of Wolverine, Mich.	a205	-	10- 5-71	*201

Discharge measurements made at miscellaneous sites during water year 1972--Continued

Stream	Tributary to	Location	Drainage area (sq.mi.)	Measured previously (water year)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Huron--Continued						
Sturgeon River	Burt Lake	Lat 45°22'20", long 84°37'27", in NW1/4NW1/4 sec.1, T.34 N., R.3 W., Cheboygan County, at highway bridge, 2.8 miles south of Indian River, Mich. and 4 miles upstream from mouth.	a210	1966,1971	10- 5-71	*214
Pigeon River	do	Lat 45°07'42", long 84°30'24", in SW1/4 SW1/4 sec.25, T.32 N., R.2 W., Otsego County, at bridge on Old Vanderbilt Road, 7.8 miles east of Vanderbilt, Mich.	a55	1966,1971	10- 7-71	*60.4
do	do	Lat 45°08'51", long 84°28'22", in NE1/4 SE1/4 sec.19, T.32 N., R.1 W., Otsego County, 200 ft below Lansing Club Dam, 9.2 miles east of Vanderbilt, Mich.	a59	-	10- 7-71	*66.4
do	do	Lat 45°09'24", long 84°28'00", in SW1/4 SW1/4 sec.17, T.32 N., R.1 W., Otsego County, at bridge on Sturgeon Valley Road, 1 mile below Lansing Club Dam, 9.7 miles east of Vanderbilt, Mich.	a60	1966,1971	10- 7-71	*74.2
do	do	Lat 45°10'40", long 84°25'32", in NW1/4 SW1/4 sec.10, T.32 N., R.1 W., Otsego County, at State Forest Campground, 11.9 miles east of Vanderbilt, Mich.	a65	1971	10- 7-71	*74.6
do	do	Lat 45°13'27", long 84°25'44", in NE1/4NE1/4 sec.28, T.33 N., R.1 W., Cheboygan County, at Tin Bridge, 9.3 miles southeast of Wolverine, Mich.	a75	1966,1971	10- 7-71	*85.7
do	do	Lat 45°16'20", long 84°27'36", in SE1/4SW1/4 sec.5, T.33 N., R.1 W., Cheboygan County, at Red Bridge, 7.1 miles east of Wolverine, Mich.	a90	1966,1971	10- 6-71	*84.7
Little Pigeon River	Pigeon River	Lat 45°16'34", long 84°29'55", in NE1/4SW1/4 sec.1, T.33 N., R.2 W., Cheboygan County, at bridge on Wolverine Road, 5.2 miles east of Wolverine, Mich.	a18	1966,1971	10- 6-71	*16.9
Pigeon River	Burt Lake	Lat 45°19'50", long 84°29'42", in NW1/4NE1/4 sec.24, T.39 N., R.2 W., Cheboygan County, at bridge on Pigeon River Road, 3.0 miles south of Afton, Mich.	a125	1966,1971	10- 6-71	*114
Black River	Cheboygan River	Lat 45°07'37", long 84°24'28", in NW1/4NW1/4 sec.35, T.32 N., R.1 W., Otsego County, at Tin Shanty Bridge, 12.5 miles east of Vanderbilt, Mich.	a50	1966,1971	10- 8-71	*38.5
do	do	Lat 45°07'35", long 84°23'28", in NE1/4NE1/4 sec.35, T.32 N., R.1 W., Otsego County, 400 ft downstream from Beaver Dam Club, 13.4 miles east of Vanderbilt, Mich.	a52	1971	10- 8-71	*41.6
do	do	Lat 45°09'11", long 84°19'24", in NW1/4NW1/4 sec.21, T.32 N., R.1 E., Montmorency County, at Main River Bridge, 14.0 miles south of Tower, Mich.	a80	1966,1971	10- 8-71	*66.4
Tawas River	Lake Huron	Lat 44°17'00", long 83°30'17", in SE1/4SE1/4 sec.19, T.22 N., R.8 E., Iosco County, at highway bridge on Monument Road at East Tawas, Mich.			10-28-71	44.9

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1972--Continued

Discharge measurements made at miscellaneous sites during water year 1972--Continued						
Stream	Tributary to	Location	Drainage area (sq.mi.)	Measured previously (water year)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Huron--Continued						
East Branch AuGres River	Lake Huron	Lat 44°16'03", long 83°42'32", in SE1/4 sec.28, T.22 N., R.6 E., Iosco County, 300 ft upstream from highway bridge, and 400 ft downstream from dam, 2 miles north of National City, Mich.			10-12-71	*34.3
Eddy Creek	West Branch Rifle River	Lat 44°15'16", long 84°12'57", in NE1/4SW1/4 sec.32, T.22 N., R.2 E., Ogemaw County, at highway bridge just above Osceola Refinery, 1.9 miles southeast of West Branch, Mich.			5-17-72	2.79
do	do	Lat 44°15'09", long 84°12'35", in NE1/4SE1/4 sec.32, T.22 N., R.2 E., Ogemaw County, at bridge on State Highway M-76, 2.2 miles southeast of West Branch, Mich.			5-17-72	4.30
Carson Drain	Shiawassee River	Lat 43°14'30", long 84°07'45", in NW1/4 sec.28, T.10 N., R.3 E., Saginaw County, at McKeighan Road, 1.0 mile south of Fergus, Mich.			2-17-72 4-14-72	*2.87 *10.6
Williams Creek	Swan Creek	Lat 43°24'28", long 84°07'53", in NW1/4NW1/4 sec.33, T.12 N., R.3 E., Saginaw County, at State Highway 52, 2.8 miles northwest of Swan Creek, Mich.			4-26-72	5.76
North Branch Flint River	Flint River	Lat 43°13'43", long 83°12'54", in NW1/4SW1/4 sec.5, T.9 N., R.11 E., Lapeer County, at State Highway 90, 0.9 mile west of North Branch, Mich.			10- 4-71	*6.72
do	do	Lat 43°14'12", long 83°17'35", in SW1/4SW1/4 sec.34, T.10 N., R.10 E., Lapeer County, at State Highway 90, 5.5 miles northwest of North Branch, Mich.			10- 4-71	*10.4
South Branch Flint River	do	Lat 43°00'03", long 83°15'10", in NE1/4NW1/4 sec.26, T.7 N., R.10 E., Lapeer County, at Newark Road, 2.0 miles north of Hunters Creek, Mich.			10- 4-71	*7.83
Pine Creek	South Branch Flint River	Lat 43°02'28", long 83°14'43", in NE1/4 sec.11, T.7 N., R.10 E., Lapeer County, at Wilder Road, 3.5 miles east of Lapeer, Mich.			4-26-72	18.8
South Branch Flint River	Flint River	Lat 43°03'30", long 83°18'25", in SE1/4SE1/4 sec.32, T.8 N., R.10 E., Lapeer County, at Oregon Road at Lapeer, Mich.		1941	10- 4-71	*21.3
do	do	Lat 43°06'52", long 83°22'17", in SE1/4 sec.11, T.8 N., R.9 E., Lapeer County, at Stanley Road, 5.2 miles northwest of Lapeer, Mich.			10- 4-71	*25.8
do	do	Lat 43°09'35", long 83°21'04", in SE1/4SE1/4 sec.25, T.9 N., R.9 E., Lapeer County, at Columbiaville Road, 2.9 miles east of Columbiaville, Mich.		1955, 63	10- 4-71	*23.3
Cummings Drain	Kearsley Creek	Lat 42°57'31", long 83°30'21", in NW1/4 sec.3, T.6 N., R.8 E., Genesee County, at State Highway 15, 2.0 miles northeast of Atlas, Mich.			4-26-72	2.18
Mistequay Creek	Flint River	Lat 43°02'40", long 83°57'23", in SE1/4 sec.35, T.8 N., R.4 E., Shiawassee County, at Cronk Road, 1.9 mile southeast of Juddville, Mich.			4-14-72	*26.3

Discharge measurements made at miscellaneous sites during water year 1972--Continued

Discharge measurements made at miscellaneous sites during water year 1972--Continued						
Stream	Tributary to	Location	Drainage area (sq.mi.)	Measured previously (water year)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Huron--Continued						
Mistequay Creek	Flint River	Lat 43°03'32", long 83°58'22", in SE1/4 sec.27, T.8 N., R.4 E., Shiawassee County, at Juddville Road, 0.8 mile east of Juddville, Mich.			4-14-72	*87.3
Peart Drain	Mistequay Creek	Lat 43°15'47", long 83°58'20", in NE1/4NE1/4 sec.22, T.10 N., R.4 E., Saginaw County, near Bueche Road, 3.8 miles southwest of Fosters, Mich.			4-14-72	*4.56
Pine River	Tittabawassee River	Lat 43°27'59", long 84°56'50", in SE1/4SE1/4 sec.31, T.13 N., R.5 W., Isabella County, 5.1 miles northwest of Vestaburg, Mich.			6-20-72	40.4
do	do	Lat 43°26'15", long 84°56'04", in SW1/4SE1/4 sec.8, T.12 N., R.5 W., Montcalm County, at highway bridge on Tamarack Road, 3.0 miles northwest of Vestaburg, Mich.		1967	6-20-72	43.2
do	do	Lat 43°26'00", long 84°54'21", in SE1/4NE1/4 sec.16, T.12 N., R.5 W., Montcalm County, at highway bridge on Crystal Road, 2.4 miles north of Vestaburg, Mich.			6-20-72	65.1
do	do	Lat 43°25'57", long 84°51'57", in SW1/4NW1/4 sec.13, T.12 N., R.5 W., Montcalm County, at highway bridge on Douglas Road, 3.0 miles northeast of Vestaburg, Mich.			6-20-72	67.7
Kocheville Drain	Saginaw River	Lat 43°30'04", long 83°57'06", in SW1/4NW1/4 sec.25, T.13 N., R.4 E., Saginaw County, at bridge on Liberty Road, 2.4 miles northwest of Zilwaukee, Mich.			4-14-72 4-26-72	4.40 1.20
Schram Branch	Pinneboy River	Lat 43°57'08", long 82°00'20", in NW1/4NW1/4 sec.31, T.18 N., R.13 E., Huron County, at highway bridge on State Highway M-53, 0.9 mile north of Kinde, Mich.			2-16-72	.21
Streams tributary to Lake St. Clair						
Stony Creek	Clinton River	Lat 42°45'49", long 83°04'28", in SW1/4 sec.17, T.4 N., R.12 E., Macomb County, at Inwood Road, 5.2 miles northeast of Goodison, Mich.			8-21-72	*10.7
Streams tributary to Lake Erie						
Huron River	Lake Erie	Lat 42°41'35", long 82°29'56", in NW1/4SE1/4 sec.3, T.3 N., R.8 E., Oakland County, at White Lake Road, 2.5 miles south of Andersonville, Mich.	13.9	1966-68c, 1970-71	11-24-71	*1.20
South Branch River Raisin	River Raisin	Lat 41°55'04", long 84°00'35", in SE1/4 sec.25, T.6 S., R.3 E., Lenawee County, at Howell Highway, 2.0 miles northeast of Adrian, Mich.	165	1970	7-11-72	*18.6
Bean Creek	Tiffin River	Lat 41°51'02", long 84°21'03", in SE1/4 SW1/4 sec.19, T.7 S., R.1 E., Lenawee County, 150 ft upstream of the waste water treatment plant, at Hudson, Mich.			5-18-72	102

* Base flow.

a Approximately.

b Field estimate.

c Operated as a low-flow partial-record station.

Low-flow investigations in Washtenaw County, Mich.

On Nov. 1, 2, 1971 a series of discharge measurements were made at many selected locations in Washtenaw County as part of a water resources investigation carried on in cooperation with the Washtenaw County Board of Supervisors. The purpose of the measurements is to determine the occurrence, distribution, and magnitude of dry-weather streamflow. The results, together with continuous streamflow records, ground-water records, and geologic studies are intended as a ground-water reconnaissance aid and an indication of the water-supply potential of the area with particular reference to sustained flow. The measurements are believed to be unaffected by surface runoff due to antecedent precipitation, and thus represent base flow. Records of chemical analyses and water temperatures obtained at the time of this investigation are published in Part 2 of this report.

The drainage areas shown were determined from U.S. Geological Survey topographic maps having scales of 1:24,000 or 1:62,500 and a contour interval of 5, 10 or 20 feet.

Discharge measurements made in Washtenaw County, Mich., Nov. 1, 2, 1971

Stream	Location	Drainage area (sq mi)	Discharge (cfs)	Cfs per square mile
Winnewanna Lake Outlet	NW $\frac{1}{4}$ sec.32, T.1 S., R.3 E., at Waterloo Rd., 5.0 miles northwest of Chelsea.	2.13	0.39	0.18
Johnson Drain	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.15, T.1 S., R.7 E., at Currie Rd., 1.0 mile southwest of Salem.	7.98	0	0
do	SE $\frac{1}{4}$ sec.24, T.1 S., R.7 E., at Napier Rd., 1.2 miles east of Brookville a/.	11.5	.14	.01
Lower River Rouge	SE $\frac{1}{4}$ sec.13, T.2 S., R.7 E., at Napier Rd., 0.6 mile northwest of Cherry Hill.	1.74	.04	.02
Fowler Creek	NW $\frac{1}{4}$ sec.36, T.2 S., R.7 E., at Ridge Rd., 1.0 mile northeast of Willow Run.	7.45	.08	.01
Tobin Lake Outlet	NE $\frac{1}{4}$ sec.3, T.1 S., R.6 E., at 8-Mile Rd., 2.8 miles east of Whitmore Lake.	7.84	0	0
O'Connor Drain	NE $\frac{1}{4}$ sec.17, T.1 S., R.6 E., at 6-Mile Rd., 1.9 miles southeast of Whitmore Lake.	9.72	0	0
Horseshoe Lake Outlet	NW $\frac{1}{4}$ sec.8, T.1 S., R.6 E., at Whitmore Lake Rd., at Whitmore Lake.	21.2	.03	.001
Arms Creek	NE $\frac{1}{4}$ sec.5, T.1 S., R.5 E., at Mast Rd., 4.4 miles southwest of Hamburg a/.	20.9	2.33	.11
Portage Creek	NE $\frac{1}{4}$ sec.6, T.1 S., R.3 E., at Bowish Rd., 1.5 miles southwest of Williamsville.	16.4	2.77	.17
South Lake Outlet	NE $\frac{1}{4}$ sec.9, T.1 S., R.3 E., at Boyce Rd., 2.0 miles southwest of Unadilla.	13.6	2.36	.17
Portage River	SE $\frac{1}{4}$ sec.31, T.1 N., R.4 E., at Glenbrook Rd., 2.8 miles east of Unadilla.	71.6	16.4	.23
do	SW $\frac{1}{4}$ sec.34, T.1 N., R.4 E., at Tiplady Rd., 2.2 miles southwest of Pinckney.	79.1	18.2	.23
Huron River	Gaging station near Dexter (04173000).	527	132	.25
Mill Creek	SW $\frac{1}{4}$ sec.36, T.2 S., R.3 E., at Manchester Rd., 3.3 miles southeast of Sylvan a/.	11.1	3.46	.31
Mill Creek tributary	NW $\frac{1}{4}$ sec.1, T.3 S., R.3 E., at Waldo Rd., 3.7 miles southeast of Sylvan a/.	23.8	3.81	.16
Mill Creek tributary	NE $\frac{1}{4}$ sec.35, T.2 S., R.4 E., at Liberty Rd., 2.8 miles southeast of Lima Center.	9.70	.56	.06
Mill Creek	NE $\frac{1}{4}$ sec.26, T.2 S., R.4 E., at Jerusalem Rd., 2.0 miles southeast of Lima Center.	59.8	10.8	.18
North Fork Mill Creek	SE $\frac{1}{4}$ sec.1, T.2 S., R.3 E., at McKinley Rd., 0.5 mile north of Chelsea.	14.6	2.78	.19
Letts Creek	NE $\frac{1}{4}$ sec.12, T.2 S., R.3 E., at State Highway 52, at Chelsea a/.	18.8	4.44	.24
Fourmile Lake Outlet	NE $\frac{1}{4}$ sec.9, T.2 S., R.4 E., at Dexter-Chelsea Rd., 2.5 miles east of Chelsea.	9.89	.06	.006
North Fork Mill Creek	SW $\frac{1}{4}$ sec.23, T.2 S., R.4 E., at Dancer Rd., 1.2 miles southeast of Lima Center a/.	59.0	8.32	.14
Mill Creek tributary	NE $\frac{1}{4}$ sec.25, T.2 S., R.4 E., at Jerusalem Rd., 2.8 miles southeast of Lima Center a/.	8.46	.80	.09

Low-flow investigations in Washtenaw County, Mich.

Discharge measurements made in Washtenaw County, Mich. Nov. 1, 2, 1971--Continued

Stream	Location	Drainage area (sq mi)	Discharge (cfs)	Cfs per square mile
Mill Creek	Gaging station near Dexter (04173500).	130	22.9	0.18
do	NW $\frac{1}{4}$ sec.6, T.2 S., R.5 E., at Island Lake Rd., at Dexter.	143	25.2	.18
Huron River	SW $\frac{1}{4}$ sec.32, T.1 S., R.5 E., at Mast Rd., at Dexter.	686	174	.25
Huron River tributary	SW $\frac{1}{4}$ sec.2, T.2 S., R.5 E., at Huron River Drive, at Delhi Mills.	8.02	1.04	.13
Honey Creek	SE $\frac{1}{4}$ sec.21, T.2 S., R.5 E., at Zeeb Rd., 2.2 miles south of Scio.	8.99	.39	.04
do	NE $\frac{1}{4}$ sec.14, T.2 S., R.5 E., at Miller Rd., 1.4 miles west of Foster a/.	22.4	2.91	.13
Huron River	Gaging station at Ann Arbor (04174500).	736	137	.19
Allen Creek	SW $\frac{1}{4}$ sec.21, T.2 S., R.6 E., at Plymouth Rd., at Ann Arbor.	6.99	.41	.06
Pittsfield Drain	SE $\frac{1}{4}$ sec.35, T.2 S., R.6 E., at Huron River Drive, 3.0 miles east of Ann Arbor.	11.0	2.34	.21
Fleming Creek	NW $\frac{1}{4}$ sec.17, T.2 S., R.7 E., at Ford Rd., 1.0 mile east of Dixboro a/.	15.0	.91	.06
Fleming Creek tributary	NE $\frac{1}{4}$ sec.18, T.2 S., R.7 E., at Ford Rd., 0.6 mile northeast of Dixboro a/.	8.08	1.01	.12
Fleming Creek	SE $\frac{1}{4}$ sec.25, T.2 S., R.6 E., at Geddes Rd. 0.5 mile north of Geddes.	30.6	6.11	.20
Huron River	NE $\frac{1}{4}$ sec.9, T.3 S., R.7 E., at Michigan Ave., at Ypsilanti.	808	149	.18
Stony Creek	SE $\frac{1}{4}$ sec.21, T.4 S., R.7 E., at Willow Rd., 2.7 miles northwest of Oakville.	6.32	1.68	.27
Sugar Creek	NE $\frac{1}{4}$ sec.23, T.4 S., R.7 E., at Fuller Rd. 1.7 miles northwest of Oakville a/.	13.5	.49	.04
Paint Creek	NE $\frac{1}{4}$ sec.33, T.3 S., R.7 E., at Merritt Rd., 2.2 miles north of Lincoln a/.	17.5	4.02	.23
do	NE $\frac{1}{4}$ sec.34, T.4 S., R.7 E., at Liss Rd. 1.0 mile north of Oakville a/.	34.9	4.35	.12
Stony Creek	Gaging station near Oakville (04175550).	68.3	6.92	.10
Polzin Drain	SE $\frac{1}{4}$ sec.35, T.4 S., R.7 E., at Torrey Rd., 1.0 mile northeast of Oakville.	7.14	0	0
River Raisin	SW $\frac{1}{4}$ sec.31, T.3 S., R.3 E., at Sharon Valley Rd., 2.0 miles southwest of Sharonville.	121	20.7	.17
River Raisin tributary	SW $\frac{1}{4}$ sec.29, T.3 S., R.3 E., at private road, at Sharonville.	6.13	.66	.11
River Raisin	Gaging station near Manchester (04175600).	132	26.0	.20
do	SW $\frac{1}{4}$ sec.1, T.4 S., R.3 E., at Austin Rd., at Manchester.	148	17.8	.12
River Raisin tributary	SW $\frac{1}{4}$ sec.8, T.4 S., R.4 E., at Austin Rd., 2.0 miles east of Manchester.	5.54	.57	.10
River Raisin	SE $\frac{1}{4}$ sec.29, T.4 S., R.4 E., at Allen Rd. 1.0 mile north of Clinton.	167	49.7	.30
Iron Creek	NW $\frac{1}{4}$ sec.28, T.4 S., R.3 E., at Sharon Hollow Rd., 4.0 miles southwest of Manchester.	16.2	4.06	.25
do	SW $\frac{1}{4}$ sec.29, T.4 S., R.4 E., at Bartlett Rd., 1.7 miles north of Clinton a/.	28.8	7.38	.26
River Raisin	Gaging station near Tecumseh (04175700).	267	60.9	.23

LOW-FLOW INVESTIGATIONS

Low-flow investigations in Washtenaw County, Mich.

Discharge measurements made in Washtenaw County, Mich., Nov. 1, 2, 1971--Continued

Stream	Location	Drainage area (sq mi)	Discharge (cfs)	Cfs per square mile
North Macon Creek	NW $\frac{1}{4}$ sec.5, T.5 S., R.6 E., at Hack Rd., 1.7 miles southwest of Mooreville <u>a</u> /.	14.5	0.09	0.006
Saline River	SE $\frac{1}{4}$ sec.14, T.4 S., R.4 E., at McCollum Rd., 2.7 miles east of Raisin Basin.	11.4	.46	.04
do	NW $\frac{1}{4}$ sec.17, T.4 S., R.5 E., at Feldkamp Rd., 0.7 mile northwest of Benton <u>a</u> /.	28.8	1.94	.07
Saline River tributary	NW $\frac{1}{4}$ sec.4, T.4 S., R.5 E., at Austin Rd., 3.5 miles west of Saline.	7.30	.47	.06
Saline River tributary	SE $\frac{1}{4}$ sec.34, T.3 S., R.5 E., at Saline Waterworks Rd., 2.2 miles northwest of Saline <u>a</u> /.	13.2	.54	.04
Saline River tributary	NW $\frac{1}{4}$ sec.36, T.3 S., R.5 E., at Saline Waterworks Rd., 0.8 mile north of Saline <u>a</u> /.	13.7	.97	.07
Saline River	SE $\frac{1}{4}$ sec.1, T.4 S., R.5 E., at Monroe St., at Saline <u>a</u> /.	77.6	6.71	.09
Koch-Warner Drain	SW $\frac{1}{4}$ sec.6, T.4 S., R.6 E., at Saline- Milan Rd., at Saline.	12.1	2.41	.20
Saline River	Gaging station near Saline (04176400).	94.6	11.1	.12
Saline River tributary	SW $\frac{1}{4}$ sec.17, T.4 S., R.6 E., at Saline Milan Rd., 3.0 miles southeast of Saline.	5.44	1.15	.21
Saline River	SW $\frac{1}{4}$ sec.1, T.5 S., R.6 E., at U.S. Highway 23, at Milen <u>a</u> /.	113	13.4	.12

a At low-flow partial-record station.

Low-flow investigations in southeastern Michigan

On May 4, and May 23, 24, 1972 a series of discharge measurements were made on many incidental streams in southeastern Michigan that flow directly into either the St. Clair River, Lake St. Clair, Detroit River or Lake Erie. The measurements are part of a water resources investigation carried on in cooperation with U.S. Army Engineers District, Detroit, Corps of Engineers, Detroit, Mich. The purpose of the measurements is to determine the occurrence, distribution, and magnitude of dry-weather streamflow. The results, together with continuous streamflow records, ground-water records, and geologic studies are intended as a ground-water reconnaissance aid and an indication of the water-supply potential of the area with particular reference to sustained flow. The measurements are believed to be unaffected by surface runoff due to antecedent precipitation, and thus represent base flow. Records of chemical analyses and water temperatures obtained at the time of this investigation are published in Part 2 of this report.

The drainage areas shown were determined from U.S. Geological Survey topographic maps having scales of 1:24000 or 1:62,500 and a contour interval of 5, 10 or 20 feet.

Discharge measurements made in southeastern Michigan May 4, 1972

Stream	Location	Drainage area (sq mi)	Discharge (cfs)	Cfs per square mile
Marsh Drain	Private claim 186, T.3 N., R.16 E., St. Clair County, at Broadbridge Rd., 3.2 miles southeast of Marine City.	4.94	41.0	.20
Beaubien Creek	NW $\frac{1}{4}$ sec.20, T.3 N., R.16 E., St. Clair County, at Starville Rd., 1.0 mile south of Starville.	11.8	5.15	.44
Swan Creek	SW $\frac{1}{4}$ sec.24, T.4 N., R.15 E., St. Clair County, at Meisner Rd., 0.7 mile north-east of Peters.	5.30	5.75	1.08
do	SE $\frac{1}{4}$ sec.3, T.3 N., R.15 E., St. Clair County, at Arnold Rd., 2.1 miles northeast of Fairhaven.	14.3	13.5	.94
Swan Creek tributary	SW $\frac{1}{4}$ sec.10, T.3 N., R.15 E., St. Clair County, at Shortcut Rd., 1.1 miles east of Anchorville.	11.2	4.91	.44
Marsac Creek	SW $\frac{1}{4}$ sec.8, T.3 N., R.15 E., St. Clair County, at Bethuy Rd., at New Baltimore.	5.68	2.68	.47
Salt River	SW $\frac{1}{4}$ sec.27, T.4 N., R.14 E., Macomb County, at 27-Mile Rd., 0.9 miles northeast of New Haven.	10.2	10.1	.99
do	NE $\frac{1}{4}$ sec.11, T.3 N., R.14 E., Macomb County, at New Haven Rd., 1.0 mile west of New Baltimore.	23.5	26.3	1.12
Fish Creek	SE $\frac{1}{4}$ sec.15, T.3 N., R.14 E., Macomb County, at 23-Mile Rd., 2.9 miles west of New Baltimore.	7.10	5.76	.81
Ecorse River	SE $\frac{1}{4}$ sec.36, T.2 S., R.9 E., Wayne County, at Inkster Rd., 1.3 miles south of Inkster.	7.32	1.67	.23
do	Private Claim 51, T.3 S., R.11 E., Wayne County, at Dix Rd., at Lincoln Park.	16.5	4.72	.29
South Branch Ecorse River	NE $\frac{1}{4}$ sec.24, T.3 S., R.10 E., Wayne County at Hazel Rd., at Lincoln Park.	11.7	5.13	.44
Frank and Post Drain	NE $\frac{1}{4}$ sec.34, T.3 S., R.10 E., Wayne County at Allen Rd., at Southgate.	9.65	19.3	2.00
do	SW $\frac{1}{4}$ sec.24, T.4 S., R.10 E., Wayne County at Van Horn Rd., at Trenton.	17.4	20.7	1.19
Elakely Drain	NE $\frac{1}{4}$ sec.2, T.4 S., R.9 E., Wayne County, at Middle Belt Rd., 3.5 miles southeast of Romulus.	11.6	6.78	.58
Marsh Creek	SW $\frac{1}{4}$ sec.26, T.4 S., R.10 E., Wayne County, at Vreeland Rd., 1.5 miles northwest of Gibraltar.	26.4	17.1	.65
Brownstown Creek	NE $\frac{1}{4}$ sec.34, T.4 S., R.10 E., Wayne County, at Allen Rd., 1.5 miles east of Gibraltar.	7.39	4.42	.60

a Field estimate.

Low-flow investigations in southeastern Michigan--Continued

Discharge measurements made in southeastern Michigan May 23, 24, 1972

Stream	Location	Drainage area (sq mi)	Discharge (cfs)	Cfs per square mile
Bradshaw Drain	SW $\frac{1}{4}$ sec. 32, T.4 S., R.8 E., Wayne County, at Oakville-Waltz Rd., 3.5 miles east of Oakville.	10.5	3.89	.37
Swan Creek	SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 1, T.5 S., R.8 E., Monroe County, at Carleton-West Rd., 2.3 miles northwest of Carleton.	17.4	4.38	.25
Disbrow Drain	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 1, T.5 S., R.8 E., Monroe County, at Carleton-West Rd., 2.5 miles northwest of Carleton.	9.64	1.97	.20
Swan Creek	NE $\frac{1}{4}$ sec. 8, T.5 S., R.9 E., Monroe County, at Grafton Rd., 1.0 miles northeast of Carleton.	35.0	7.38	.21
North Branch Swan Creek	SW $\frac{1}{4}$ sec. 24, T.4 S., R.8 E., Wayne County, at Carleton-West Rd., 2.6 miles north- west of Waltz.	13.5	3.18	.24
do	SE $\frac{1}{4}$ sec. 4, T.5 S., R.9 E., Monroe County, at Newburg Rd., 1.7 miles northeast of Carleton.	21.1	3.62	.17
Little Swan Creek	SE $\frac{1}{4}$ sec. 22, T.5 S., R.9 E., Monroe County, at Sweitzer Rd., 2.6 miles southeast of Carleton.	11.8	1.22	.10
Swan Creek	NE $\frac{1}{4}$ sec. 1, T.6 S., R.9 E., Monroe County, at Brandon Rd., at Newport.	88.4	18.5	.21
Little Swan Creek	SW $\frac{1}{4}$ sec. 1, T.6 S., R.9 E., Monroe County, at Newport South Rd., 0.7 mile southwest of Newport.	4.08	.22	.05
Sugar Creek	NE $\frac{1}{4}$ sec. 33, T.4 S., R.7 E., Washtenaw County, at Fuller Rd., 1.8 miles northwest of Oakville.	13.5	2.49	.18
Paint Creek	NE $\frac{1}{4}$ sec. 33, T.3 S., R.7 E., Washtenaw County, at Merritt Rd., 3.3 miles northwest of Willis.	17.5	5.92	.34
do	NE $\frac{1}{4}$ sec. 34, T.4 S., R.7 E., Washtenaw County, at Liss Rd., 1.0 miles north of Oakville.	34.9	9.25	.27
Stony Creek	Gaging station at Oakville (04175550).	68.0	18.3	.27
Polzin Drain	SE $\frac{1}{4}$ sec. 35, T.4 S., R.7 E., Washtenaw County, at Torrey Rd., 1.2 miles northeast of Oakville.	7.14	1.84	.26
Stoney Creek	SW $\frac{1}{4}$ sec. 17, T.5 S., R.8 E., Monroe County, at Timbers Rd., 2.8 miles north of Maybee.	90.0	23.7	.26
do	NE $\frac{1}{4}$ sec. 25, T.5 S., R.8 E., Monroe County, at Exeter Rd., 2.9 miles southwest of Carleton.	105	28.1	.27
Robert Drain	NW $\frac{1}{4}$ sec. 5, T.6 S., R.9 E., Monroe County, at South Stony Creek Rd., 4.0 miles south of Carleton.	8.71	1.10	.13
Stony Creek	NE $\frac{1}{4}$ sec. 22, T.6 S., R.9 E., Monroe County, at Mentel Rd., 3.2 miles southwest of Newport.	121	36.8	.30
Sandy Creek	Private claim 646, T.6 S., R.9 E., Monroe County, at Telegraph Rd., 3.4 miles north of Monroe.	12.9	2.01	.16
Little Sandy Creek	Private claim 353, T.6 S., R.9 E., Monroe County, at North Monroe St., 3.0 miles north of Monroe.	10.8	1.87	.17

Low-flow investigations in southeastern Michigan—Continued

Discharge measurements made in southeastern Michigan May 23, 24, 1972

Stream	Location	Drainage area (sq mi)	Discharge (cfs)	Cfs per square mile
Sandy Creek	Private Claim 476, T.6 S., R.9 E., Monroe County, at North Dixie Hwy., 3.2 miles northeast of Monroe.	29.6	6.12	.21
Plum Brook	Private claim 521, T.6 S., R.7 E., Monroe County, at Gelger Rd., 2.3 miles north- east of Ida.	10.9	.95	.09
Pitts Creek	Private claim 517, T.7 S., R.8 E., Monroe County, at Raisinville Rd., 1.5 miles east of Strasburg.	11.4	2.23	.20
Plum Creek	Private claim 500, T.7 S., R.9 E., Monroe County, at Kentucky Ave., at Monroe.	32.1	5.54	.17
North Branch Otter Creek	NE $\frac{1}{4}$ sec.11, T.7 S., R.7 E., Monroe County, at Gelger Rd., 1.5 miles southeast of Ida.	8.83	1.16	.13
Peters Drain	SE $\frac{1}{4}$ sec.12, T.7 S., R.7 E., Monroe County, at Minx Rd., 2.7 miles southwest of Strasburg.	7.75	1.82	.23
South Branch Otter Creek	NE $\frac{1}{4}$ sec.19, T.7 S., R.8 E., Monroe County, at Strasburg Rd., 3.2 miles west of LaSalle.	8.80	1.94	.22
Otter Creek	Private claim 47, T.7 S., R.8 E., Monroe County, at State Hwy. 25, at LaSalle.	51.0	17.1	.34
Muddy Creek	Private claim 384, T.7 S., R.8 E., Monroe County, at Belleterre Rd., 2.1 miles west of Columbus Grove.	5.48	1.59	.29
Bay Creek	NE $\frac{1}{4}$ sec.16, T.8 S., R.8 E., Monroe County, at Detroit-Toledo R.R., 1.2 miles east of Erie.	11.7	2.36	.20
Little Lake Creek	NE $\frac{1}{4}$ sec.20, T.8 S., R.8 E., Monroe County, at Suder Rd., 1.4 miles south of Erie.	11.5	2.51	.22
Flat Creek	SW $\frac{1}{4}$ sec.20, T.8 S., R.8 E., Monroe County, at Dean Rd., 2.0 miles south of Erie.	5.39	1.35	.25
Hoegle Drain	NE $\frac{1}{4}$ sec.2, T.8 S., R.6 E., Monroe County, at School Rd., 4.1 miles west of Samaria.	14.1	a.02	.001
Halfway Creek	SW $\frac{1}{4}$ sec.1, T.8 S., R.6 E., Monroe County, at Cummins (Samaria) Rd., 4.0 miles west of Samaria.	22.2	0	0
do	NW $\frac{1}{4}$ sec.13, T.8 S., R.6 E., Monroe County, at Piehl Rd., 2.0 miles northwest of Lambertville.	23.0	.23	.01
do	SW $\frac{1}{4}$ sec.33, T.8 S., R.7 E., Monroe County, at Smith Rd., 2.3 miles south- east of Lambertville.	34.2	4.55	.13
Indian Creek	SW $\frac{1}{4}$ sec.36, T.8 S., R.7 E., Monroe County, at LaVoy Rd., 3.2 miles south east of Temperance.	8.26	1.61	.19
Big Ravine Drain	SE $\frac{1}{4}$ sec.19, T.8 S., R.6 E., Monroe County, at Lansing Rd., at Ottawa Lake.	17.0	1.78	.10
Ottawa Lake Outlet	SE $\frac{1}{4}$ sec.27, T.8 S., R.6 E., Monroe County, at Sterns Rd., 3.1 miles southwest of Lambertville.	24.7	2.52	.10
North Branch Tenmile Creek	SE $\frac{1}{4}$ sec.34, T.8 S., R.6 E., Monroe County, at Hicker Rd., 3.6 miles southwest of Lambertville.	33.5	2.70	.08

a Field estimate.

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