Surface Water Supply of the United States 1947

Part 4. St. Lawrence River Basin

Prepared under the direction of C. G. PAULSEN, *Chief Hydraulic Engineer*

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1084

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

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PREFACE

This report was prepared by the Geological Survey in cooperation with the States of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Vermont, and Wisconsin and other agencies, by personnel of the Water Resources Division under the direction of:

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SCOPE OF WORK

This volume is one of a series of 14 reports presenting results of measurements of stage and flow made on streams, lakes, and reservoirs in the United States during the water year ending September 30, 1947. The work was begun in 1888 in connection with special studies relating to irrigation. Measurements of the flow of streams and of the stage and contents of lakes and reservoirs have been made at about 11,100 gaging stations in the 48 States and also at many in the Territories of Alaska and Hawaii. In July 1947, 5,810 gaging stations, including those in Hawaii, were being maintained by the Geological Survey and cooperating organizations. Miscellaneous discharge measurements were made during the water year at many other points.

In the execution of the work many State and private organizations have cooperated, either by furnishing data or by assisting in collecting data. Cooperation of the first kind is acknowledged in connection with the description of each station affected; cooperation of the second kind is acknowledged, under the heading "Cooperation," in the introductory matter that precedes the gaging-station records in each volume. In the present volume, the section on cooperation of the second kind appears on page 12.

DEFINITION OF TERMS

The units in which stream-flow data are presented in this report and other terms used herein are defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second." A second-foot is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

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

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

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

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

"Stage-discharge relation" is an abbreviation for the term "relation between gage height and discharge."

"Control" is a term used to designate a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural section, a reach of the channel, or an artificial structure.

"Contents" is a term applied to the volume of water in a reservoir. It is computed on the basis of a level pool and does not include bank storage unless otherwise indicated.

EXPLANATION OF DATA

The base data collected at gaging stations consist of records of stage, measurements of discharge, and general information used to supplement the records of stage and discharge measurements in determining the daily flow. The records of stage are obtained either from direct readings on a nonrecording gage or from a water-stage recorder that gives a continuous record of the fluctuations. Measurements of discharge are made with a current meter by the general methods outlined in standard textbooks on the measurement of river discharge. Typical structures in use at gaging stations are shown in figure 1.

Rating tables giving the discharge for any stage are prepared from the discharge measurements. The application of the daily mean gage height to those rating tables gives the daily mean discharge, from which the monthly and the yearly mean discharge are computed. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the "shifting-control method," in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. At times the stage-discharge relation for a station may be temporarily changed by the presence of aquatic growth or debris on the control. For such times the daily mean discharge is computed by what is essentially the "shifting-control" method, described above.

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

At most gaging stations in the northern part of the United States and at some in the mountainous regions of other parts the stage-discharge relation is affected by ice during the winter, which makes it impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements, consideration being given to the available information on temperature and precipitation, notes by gage observers and engineers, and comparable records of discharge for stations in the same or nearby basins. For those stations at which the stage-discharge relation is affected by ice, the days included in the periods of ice effect either are indicated in the table by symbols referring to a footnote that states this fact or are given in a general note following the table. The days on which discharge measurements were made during or between periods of ice effect, shortly before the first period, or shortly after the last period are similarly indicated by a footnote.

For most of the gaging stations on streams in the area covered by this report the data presented comprise a description of the station, a table showing the daily discharge of

A. LITTLE WOLF RIVER AT ROYALTON, WIS.

B. BLACK RIVER NEAR BOONVILLE, N. Y.

FIGURE 1.—GAGING-STATION STRUCTURES.

the stream, and a table of monthly and yearly discharge and runoff. Skeleton rating tables are published for all stations except those at which the daily discharge for the greater part of the year was determined by the shifting-control method, the slope method, or other special methods.

The description of the station gives the type of gage, its latitude and longitude as determined from the best available maps, and information in regard to diversions that decrease the flow at the gage, artificial regulation from pondage or storage, and the accuracy of the records. Under "Average discharge" is given the average discharge for the number of years indicated. It is given only for stations for which there are 10 or more complete years of record. Under "Extremes" are given the maximum discharge and gage height; the minimum discharge if there is little or no regulation; the minimum daily discharge if there is extensive regulation (also the minimum discharge if useful); and the minimum gage height (unless it is of no importance). Unless otherwise qualified, the maximum discharge corresponds to the crest stage, obtained by use of a water-stage recorder or a nonrecording gage read at the time of the crest. Likewise the minimum discharge represents the lowest stage, unless otherwise qualified. Selected peak discharges with the times of their occurrence are given, below the table of monthly discharge, for some stations. This supplementary information is generally omitted for a station at which the drainage area of the stream is less than 10 or more than 10,000 square miles or at which, on most days, the peak discharge exceeds the mean discharge by less than 10 percent

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

In the table of monthly discharge the column headed "Second-foot-days" gives the sum for each month of the figures given in the table of daily discharge. The column headed "Maximum" gives the maximum daily discharge, not the momentary discharge when the water surface was at crest stage. Likewise, in the column headed "Minimum" the quantity given is the minimum daily discharge. The column headed "Mean" gives the average flow in cubic feet per second during the month.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents is given. A skeleton table of capacity at given stages is usually given in the first report in which data for a station are published but is omitted from succeeding reports.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream-flow data depends primarily on (1) the permanency 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 flow, and interpretation of records.

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

Yield at some stations as indicated by monthly means may vary widely from natural yield, owing to diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or other factors. For such stations figures of "second-feet per square mile" and "runoff in inches" are not published unless storage or diversion records are included indicating the extent of the regulation or diversion or unless satisfactory adjustments can be made for changes in contents or reservoirs or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless its inclusion is indicated. Even at those stations where adjustments are made, in some instances large errors in computed yields may occur when relatively large negative adjustments are applied or when evaporation is large in comparison with the observed discharge. Figures of second-feet per square mile and runoff in inches are also omitted if the drainage area includes large noncontributing areas or if the average annual rainfall over the drainage area is less than 20 inches.

Many gaging stations on streams in the irrigated areas of the United States are situated above most of the diversions from those streams, and therefore the discharge recorded does not show the water supply available for further development, as prior appropriations below the station must first be satisfied.

The table of monthly discharge presents in summary the distribution of the flow past the station. The table of daily discharge affords opportunity for more detailed studies of the variation in flow. As further observations in each succeeding year may be expected to throw new light on data previously published, it should be borne in mind that such data are subject to revision in succeeding water-supply papers.

PUBLICATIONS

The results of stream-flow measurements are now published annually in 14 parts, each part covering an area whose boundaries coincide with natural drainage features as indicated below:

Part 1. North Atlantic slope basins (St. John River to York River).
2. South Atlantic slope and eastern Gulf of Mexico basins (James River to Mississippi River).
3. Ohio River Basin.
4. St. Lawrence River Basin.
5. Hudson Bay and upper Mississippi River Basins.
6. Missouri River Basin.
7. Lower Mississippi River Basin.
8. Western Gulf of Mexico basins.
9. Colorado River Basin.
10. The Great Basin.
11. Pacific slope basins in California.
12. Pacific slope basins in Washington and upper Columbia River Basin.
13. Snake River Basin.
14. Pacific slope basins in Oregon and lower Columbia River Basin.

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

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

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

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

East of the Mississippi River:
Albany, N. Y., 526 Federal Building.
Asheville, N. C., 220 Post Office Building.
Atlanta, Ga., 411 Grand Theater Building.
Augusta, Maine, 420 Statehouse.
Baton Rouge, La., 538 Florida Street.
Boston, Mass., 939 Post Office Building.
Champaign, Ill., 605 South Neil Street.
Charleston, W. Va., 408 Union Building.
Charlottesville, Va., Cabell Hall, University of Virginia.
Chattanooga, Tenn., 442 Post Office Building.
College Park, Md., 105 Engineering Building, University of Maryland.
Columbia, S. C., 207 Creason Building.
Columbus, Ohio, 404 Engineering Experiment Station, Ohio State University.
Harrisburg, Pa., 490 Education Building.
Hartford, Conn., 203 Federal Building.
Indianapolis, Ind., 205 Underwriters Building.
Jackson, Miss., 208 Millsaps Building.
Knoxville, Tenn., 337 Post Office Building.
Louisville, Ky., 531 Federal Building.
Madison, Wis., 666 State Office Building.
Montgomery, Ala., 507 Post Office Building.
Morgantown, W. Va., 407 Mineral Industries Building.
New Philadelphia, Ohio, Muskingum Watershed Conservancy District Building.
Ocala, Fla., 302 Post Office Building.
Pittsburgh, Pa., 515 Plaza Building.
Raleigh, N. C., 244 Educational Building.
St. Paul, Minn., 1427 New Post Office Building.
Trenton, N. J., 228 Federal Building.
Washington, D. C., General Services Building.
Williamsburg, Ky., State Highway Building.

West of the Mississippi River:
Albuquerque, N. Mex., 723 North Second Street.
Austin, Tex., 302 West Fifteenth Street.
Bismarck, N. Dak., 7 Eltinge Building.
Boise, Idaho, 429 Federal Building.
Denver, Colo., 126 New Customhouse.
Fort Smith, Ark., 6 Post Office Building.
Helena, Mont., 408 Federal Building.
Honolulu, Hawaii, 225 Federal Building.
Idaho Falls, Idaho, 204 Federal Building.
Iowa City, Iowa, 508 Hydraulic Laboratory, University of Iowa.
Lincoln, Nebr., 510 Rudge-Guenzel Building.
Los Angeles, Calif., 429-F United States Post Office and Courthouse.
Oklahoma City, Okla., 203 Council Building.
Pierre, S. Dak., 301 Federal Building.
Portland, Oreg., 606 Post Office Building.
Rolla, Mo., 211 Ramsey Building.
St. Louis, Mo., 1004 New Federal Building.
Salt Lake City, Utah, 303 Federal Building.
San Francisco, Calif., 702 Appraisers Building.
Santa Fe, N. Mex., 204 United States Courthouse.
Tacoma, Wash., 207 Federal Building.
Topeka, Kans., 305 Federal Building.
Tucson, Ariz., 210 Post Office Building.

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

Prior to publication, records of discharge in provisional form for individual stations may usually be obtained from the district offices listed above.

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

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

(A = Annual Report; B = Bulletin; W = Water-Supply Paper)

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

Papers on surface water supply containing records from 1899 to date, grouped by years and drainage basins, are listed by number on page 8. The data for any particular gaging station will, in general, be found in the reports covering the years during which the station was maintained. For example, the data for 1910 to 1920 for any station in the area covered by part 3 are published in Water-Supply Papers 283, 303, 323, 353, 403, 433, 453, 473, and 503, which contain records for the Ohio River Basin for those years.

The records at most of the stations discussed in these reports extend over a series of years. Miscellaneous measurements at many points other than regular gaging stations have been made each year and are published under "Miscellaneous discharge measurements" at the end of each report, the streams and points of measurement listed appearing in the same relative order as the streams and gaging stations in the body of the report. An index of the records obtained prior to 1904 has been published in Water-Supply Paper 119.

Each of the reports on surface water supply for the year 1939, issued as Water-Supply Papers 871 to 884 (see table on p. 8), contains, for the area covered by that report, a summary of yearly discharge at gaging stations at which 10 or more complete years of record have been collected. These summaries are available also as separate reprints.

Numbers of water-supply papers containing results of stream measurements, 1899-1947 (for basins included see p. 5).

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1899 a...	35	b35, 36	36	36	36	c36, 37	37	37	d37, 38	38, e39	38, f39	38	38	38
1900 g...	47, h48	48	48, 149	49	49	49, j50	50	50	50	51	51	51	51	51
1901.....	65, 75	65, 75	65, 75	65, 75	k65, 66, 75	66, 75	k65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902.....	82	b82, 83	83	m82, 83	k83, 85	84	k83, 84	84	85	85	85	85	85	85
1903.....	97	b97, 98	98	97	k98, 99, n100	99	k98, 99	99	100	100	100	100	100	100
1904.....	o124, p125, q126	q126, 127	128	129	k128, 130	130, r131	k128, 131	132	133	133, s134	134	135	135	135
1905.....	o165, p166, q167	q167, 168	169	170	171	172	k169, 173	174	175, t177	176, s177	177	178	178	u177, 178
1906.....	o201, p202, q203	q203, 204	205	206	207	208	k205, 209	210	211, t213	212, s213	213	214	214	214
1907-8...	241	242	243	244	245	246	247	248	249	250, s251	251	252	252	252
1909.....	261	262	263	264	265	266	267	268	269	270, s271	271	272	272	272
1910.....	281	282	283	284	285	286	287	288	289	290	291	292	292	292
1911.....	301	302	303	304	305	306	307	308	309	310	311	312	312	312
1912.....	321	322	323	324	325	326	327	328	329	330	331	332-A	332-B	332-C
1913.....	351	352	353	354	355	356	357	358	359	360	361	362-A	362-B	362-C
1914.....	381	382	383	384	385	386	387	388	389	390	391	392	393	394
1915.....	401	402	403	404	405	406	407	408	409	410	411	412	413	414
1916.....	431	432	433	434	435	436	437	438	439	440	441	442	443	444
1917.....	451	452	453	454	455	456	457	458	459	460	461	462	463	464
1918.....	471	472	473	474	475	476	477	478	479	480	481	482	483	484
1919-20..	501	502	503	504	505	506	507	508	509	510	511	512	513	514
1921.....	521	522	523	524	525	526	527	528	529	530	531	532	533	534
1922.....	541	542	543	544	545	546	547	548	549	550	551	552	553	554
1923.....	561	562	563	564	565	566	567	568	569	570	571	572	573	574
1924.....	581	582	583	584	585	586	587	588	589	590	591	592	593	594
1925.....	601	602	603	604	605	606	607	608	609	610	611	612	613	614
1926.....	621	622	623	624	625	626	627	628	629	630	631	632	633	634
1927.....	641	642	643	644	645	646	647	648	649	650	651	652	653	654
1928.....	661	662	663	664	665	666	667	668	669	670	671	672	673	674
1929.....	681	682	683	684	685	686	687	688	689	690	691	692	693	694
1930.....	696	697	698	699	700	701	702	703	704	705	706	707	708	709
1931.....	711	712	713	714	715	716	717	718	719	720	721	722	723	724
1932.....	726	727	728	729	730	731	732	733	734	735	736	737	738	739
1933.....	741	742	743	744	745	746	747	748	749	750	751	752	753	754
1934.....	756	757	758	759	760	761	762	763	764	765	766	767	768	769
1935.....	781	782	783	784	785	786	787	788	789	790	791	792	793	794
1936.....	801	802	803	804	805	806	807	808	809	810	811	812	813	814
1937.....	821	822	823	824	825	826	827	828	829	830	831	832	833	834
1938.....	851	852	853	854	855	856	857	858	859	860	861	862	863	864
1939.....	871	872	873	874	875	876	877	878	879	880	881	882	883	884
1940.....	891	892	893	894	895	896	897	898	899	900	901	902	903	904
1941.....	921	922	923	924	925	926	927	928	929	930	931	932	933	934
1942.....	951	952	953	954	955	956	957	958	959	960	961	962	963	964
1943.....	971	972	973	974	975	976	977	978	979	980	981	982	983	984
1944.....	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014
1945.....	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044
1946.....	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064
1947.....	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094

a Rating tables and index to Water-Supply Papers 35-39 contained in Water-Supply Paper 39. Monthly discharge for 1899 in 21st Annual Report, part 4.
b James River only.
c Gallatin River.
d Green and Gunnison Rivers and Colorado River above Gunnison River.
e Mojave River only.
f Kings and Kern Rivers and south Pacific slope basins.
g Rating tables and index to Water-Supply Papers 47-52 contained in Water-Supply Paper 52. Monthly discharge for 1900 in 22d Annual Report, part 4.
h Wissahickon and Schuylkill Rivers to James River.
i Scioto River.
j Loup, Platte, and Elkhorn Rivers and tributaries below Platte River.
k Tributaries of Mississippi River from east.
m Lake Ontario and tributaries to St. Lawrence River proper.
n Hudson Bay only.
o New England rivers only.
p Hudson River to Delaware River, inclusive.
q Susquehanna River to Yadkin River.
r Platte and Kansas Rivers.
s The Great Basin in California, except Truckee and Carson River Basins.
t Below mouth of Gila River.
u Rogue, Umpqua, and Siletz Rivers only.

Reports have been published that are compilations of records for various areas, usually a single State or drainage basin. These reports contain records previously published (some of which have been revised), as well as some records not contained in the annual series of water-supply papers. The following table gives the numbers and titles of these reports, arranged alphabetically, some by States and some by drainage basins.

Reports containing compilations of records of discharge by States and drainage basins

Report	Period	Water-Supply Paper
STATE		
Alabama, Water powers of, with an appendix on stream measurements in Mississippi.	1895-1903	107
California, Water resources of, part 1, Stream measurements in Sacramento River Basin.	1887-1912	298
California, Water resources of, part 2, Stream measurements in San Joaquin River Basin.	1878-1912	299
California, Water resources of, part 3, Stream measurements in the Great Basin and Pacific Coast river basins.	1891-1912	300
California, southern, Surface water supply of Pacific slope of	1890-1918	447
California, Surface water supply of Sacramento River Basin	1895-1927	597-E
California, Surface water supply of San Joaquin River Basin	1895-1927	636-D
California, southern, Surface water supply of Pacific slope basins in	1894-1927	636-E
California, Surface water supply of minor San Francisco Bay, northern Pacific, and Great basins in.	1895-1927	637-A
Colorado, Water resources of	1884-1900	74
Georgia, Water resources of	1895-1905	197
Massachusetts, Surface waters of	1845-1915	415
Nebraska, Surface water supply of	1894-1906	230
Oregon, Surface water supply of	1878-1910	370
Texas, Summary of records of surface waters of	1898-1937	850
Vermont, Surface waters of	1875-1916	424
Washington, Summary of hydrometric data in	1378-1919	492
Washington, Summary of records of surface waters of	1919-35	870
Wisconsin, northern, Water power of	1895-1905	156
Wyoming, Surface waters of, and their utilization	1894-1921	469
DRAINAGE BASIN		
Colorado River (Ariz., Colo., N. Mex., Utah, Wyo.) and its utilization	1888-1914	395
Colorado River, upper (Colo., Utah), and its utilization	1897-1927	617
Colorado River Basin (Ariz., Calif., Colo., Utah, Wyo.), Surface waters at base stations in.	1891-1938	918
Colorado River Basin (Ariz., Calif., Nev., N. Mex., Utah), Surface waters at stations on tributaries in lower.	1888-1938	1049
Columbia River Basin, upper (Mont., Idaho), Surface waters of	1898-1938	916
Great Salt Lake Basin, Water powers of	1889-1920	517
Green River (Colo., Utah, Wyo.) and its utilization	1894-1926	618
Kennebec River Basin (Maine), Water resources of	1890-1906	198
Milk River. See St. Mary and Milk Rivers		
Missouri and St. Mary River Basins (Mont.), Surface waters of	1881-1938	917
New-Kanawha River Basin (N. C., Va., W. Va.), Surface water supply of	1895-1920	536
Penobscot River Basin (Maine), Water resources of	1904-9	279
Potomac River Basin (D. C., Md., W. Va.)	1895-1906	192
Rio Grande Basin (Colo., N. Mex., Tex.), Water resources of	1888-1913	358
St. Mary and Milk Rivers (Mont., Canada), Water supply of	1898-1917	491
St. Mary River. See St. Mary and Milk Rivers; Missouri and St. Mary River Basin.		
Sevier Lake Basin (Utah), Utilization of surface water resources of	1889-1937	920
Susquehanna River Basin (Pa., Md.) Hydrography of	1890-1904	109

Records of discharge have been published also in State reports. Some of these are not contained in the publications of the Geological Survey or are revisions of records previously published in its water-supply papers. The following table contains a list of these reports.

State reports containing compilations of records of discharge

State	Period	Report	Issued by
Alabama	1895-1915	Bull. 17, Water powers of Alabama	Geological Survey of Alabama.
Arkansas	1857-1928	Stream-gaging Rept. 1	Arkansas Geological Survey.
Colorado	1881-1935	Water resources of Colorado, Appendix 2, Data on stream-gaging stations of Colorado.[1]	State Planning Commission, Water Conservation Board, State engineer.
Do	1881-1938	Water resources of Colorado, Appendix 3, vols. 1 and 2, Stream-flow data of Colorado.	Do.
Connecticut	1900-1927	Bull. 44, Water resources of Connecticut	State Geological and Natural History Survey.
Do	1912-33	5th biennial report	State Water Commission.
Florida	1898-1946	Bull. 31, Springs of Florida	Florida Geological Survey.
Georgia	1895-1906	Bull. 16, Water powers of Georgia	Geological Survey of Georgia.
Do	1907-19	Bull. 38, Water powers of Georgia	Do.
Illinois	1908-11	Water resources of Illinois	Rivers and Lakes Commission.
Do	1900-1934	Stream-flow data of Illinois	Division of Waterways.
Indiana	1923-27	Pub. 72, Surface water supply of Indiana	Department of Conservation.
Do	1927-30	Pub. 112, Surface water supply of Indiana	Do.
Iowa	1873-1932	Stream-flow records of Iowa	State Planning Board.
Do	1873-1940	Water-Supply Bull. 1, Summaries of yearly and flood flow relating to Iowa streams	Iowa Geological Survey.
Do	1941-42	Water-Supply Bull. 2, Surface water resources of Iowa.	Do.

[1] Contains records of yearly discharge only.

State reports containing compilations of records of discharge--Continued

State	Period	Report	Issued by
Kansas.....	1895-1919	Surface waters of Kansas.....	Kansas Water Commission.
Do.....	1919-24	...do.....	Do.
Do.....	1924-28	Report of Division of Water Resources.....	State Board of Agriculture.
Do.....	1928-35	Stream-flow data of Kansas.....	Do.
Do.....	1935-39	...do.....	Do.
Kentucky.....	1910-20	Surface waters of Kentucky.....	Kentucky Geological Survey.
Louisiana.....	1903-38	Geol. Bull. 16, Surface water supply of Louisiana.	Department of Conservation.
Maine.....	1887-1920	1st annual report.....	Maine Water Power Commission.
Maryland.....	1929-37	Flow data and draft storage curves for major streams in Maryland.	State Planning Commission and Water Resources Commission.
Do.....	1892-1943	Bull. 1, Summary of records of surface waters of Maryland and the Potomac River Basin.	Department of Geology, Mines, and Water Resources.
Minnesota.....	1909-12	Water-resources investigation of Minnesota.	State Drainage Commission.
Missouri.....	1857-1926	Vol. 20, 2d series, Water resources of Missouri.	Missouri Bureau of Geology and Mines.
Do.....	1927-39	Vol. 26, 2d series, Surface waters of Missouri.	Missouri Geological Survey and Water Resources.
Montana.....	1889-1911	5th biennial report.....	Office of the State Engineer.
Do.....	1881-1938	Special Rept. 10, vols. 1-4, Water resources of Montana.	Montana Agricultural Experiment Station.
Nebraska.....	1894-1914	1st hydrographic report.....	Bureau of Water Power, Irrigation, and Drainage.
Do.....	1914-28	2d hydrographic report.....	Do.
New Hampshire.	1889-1922	Annual and statistical report, vol. 12.....	Public Service Commission.
New Jersey....	1892-1928	Bull. 33, Surface water supply of New Jersey.	Department of Conservation and Development.
Do.....	1928-34	Special Rept. 5, Surface water supply of New Jersey.	State Water Policy Commission.
Do.....	1934-40	Special Rept. 9, Surface water supply of New Jersey.	Do.
New Mexico....	1888-1925	Surface water supply of New Mexico.....	Office of the State Engineer.
North Carolina	1889-1923	Bull. 34, Discharge records of North Carolina streams.	Department of Conservation and Development.
Do.....	1889-1936	Bull. 39, Discharge records of North Carolina streams.[2]	Do.
Do.....	1866-1945	Hydrologic Data on the Neuse River Basin.	Do.
Do.....	1820-1945	Hydrologic Data on the Cape Fear River Basin.	Do.
Do.....	1866-1945	Hydrologic Data on the Yadkin-Pee Dee River Basin.	Do.
North Dakota..	1919-21	Report to Governor of North Dakota on flood control.	State chief engineer.
Do.....	1882-1938	Surface water in North Dakota.....	State Planning Board.
Do.....	1882-1944	Supplement B, 4th biennial report.....	State Water Conservation Commission.
Ohio.....	1898-1921	Bull. 73, Ohio stream flow, Part 1.....	Engineering Experiment Station, Ohio State University.
Do.....	1898-1944	Bull. 127, Ohio stream flow, Part 2.....	Do.
Do.....	1902-39	Bull. 200, Compilation of stream-flow records of Ohio.	Department of Agriculture, Division of Conservation and Natural Resources.
Do.....	1898-1939	Bull. 111, Ohio stream-drainage areas and flow-duration tables.	Engineering Experiment Station, Ohio State University.
Oregon.....	1878-1914	Bull. 4, Water resources of the State of Oregon.	Office of the State Engineer.
Do.....	1914-24	Bull. 7, Water resources of the State of Oregon.	Do.
Do.....	1924-30	Bull. 8, Water resources of the State of Oregon.	Do.
Do.....	1930-36	Bull. 9, Water resources of the State of Oregon.	Do.
Pennsylvania..	1890-1911	Report of the Water Supply Commission of Pennsylvania.	Water Supply Commission of Pennsylvania.
Do.....	1928-32	Stream-flow records of Pennsylvania.....	Department of Forests and Waters.
Rhode Island..	1929-41	7th annual report.....	Department of Public Works.
South Carolina	1884-1946	Bull. 17, Summary of records of surface water supply of South Carolina.	South Carolina Research, Planning and Development Board.
Tennessee.....	1874-1924	Bull. 34, Water resources of Tennessee[3]....	Department of Education.
Do.....	1920-30	Bull. 40, Surface waters of Tennessee.....	Do.
Utah.....	1889-1905	5th biennial report.....	Office of the State Engineer.
Do.....	1906-10	7th biennial report.....	Do.
Do.....	1911-16	10th biennial report.....	Do.
Virginia.....	1895-1927	Bull. 31, Water resources of Virginia.....	Virginia Geological Survey.
Do.....	1927-42	Bull. 4, Surface water supply of Virginia (Potomac, Rappahannock, and York River Basins).	Virginia Conservation Commission.
Do.....	1927-42	Bull. 5, Surface water supply of Virginia (James River Basin).	Do.
Do.....	1927-42	Bull. 6, Surface water supply of Virginia (Roanoke and Chowan River Basins).	Do.
Do.....	1927-42	Bull. 7, Surface water supply of Virginia (New, Tennessee, and Big Sandy River Basins).	Do.
Washington....	1878-1933	Bull. 5, Monthly and yearly summaries of hydrometric data.	Department of Conservation and Development.
Wisconsin.....	1888-1914	1st report of Railroad Commission of Wisconsin to Legislature on water powers.	Railroad Commission of Wisconsin.
Do.....	1914-23	2d report of Railroad Commission of Wisconsin to Legislature on water powers.	Do.

2 Contains records of maximum and minimum daily, weekly, and monthly discharge and yearly mean discharge.

3 Includes records of discharge for all stations in North Carolina in the Tennessee River Basin.

Note.- In addition to the records contained in the reports listed above, the following States have issued annual or biennial reports in which are contained records of discharge: California, Colorado, Connecticut, Idaho, Indiana, Kansas, Maine, Missouri, Montana, Nebraska, Nevada, New Mexico, New York (also New York City Board of Water Supply and city of Rochester), North Dakota, Oregon, Pennsylvania, Rhode Island, Washington, and Wyoming.

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

Water-Supply Paper	Title
88	The Passaic flood of 1902.
92	The Passaic flood of 1903.
96	Destructive floods in the United States in 1903.
147	Destructive floods in the United States in 1904.
162	Destructive floods in the United States in 1905.
334	The Ohio Valley flood of March-April 1913.
426	Southern California floods of January 1916.
487	The Arkansas River flood of June 3-5, 1921.
488	The floods in central Texas in September 1921.
520-G	Some floods in the Rocky Mountain region.
636-C	The New England flood of November 1927.
771	Floods in the United States, magnitude and frequency.
773-E	The New York State flood of July 1935.
796-B	Flood on Republican and Kansas Rivers, May and June 1935.
796-C	Flood in La Canada Valley, Calif., January 1, 1934.
796-G	Major Texas floods of 1935.
798	The floods of March 1936, part 1, New England rivers.
799	The floods of March 1936, part 2, Hudson River to Susquehanna River region.
800	The floods of March 1936, part 3, Potomac, James, and upper Ohio Rivers.
816	Major Texas floods of 1936.
836-A	Stages and flood discharges of the Connecticut River at Hartford, Conn.
838	Floods of Ohio and Mississippi Rivers, January-February, 1937.
842	Floods in Canadian and Pecos River Basins of New Mexico, May and June 1937.
843	Floods of December 1937 in northern California.
844	Floods of March 1938 in southern California.
847	Maximum discharges at stream-measurement stations through September 1938.
867	Hurricane floods of September 1938.
869	Flood of August 1935 in Muskingum River Basin, Ohio.
914	Texas floods of 1938 and 1939.
966	Minor floods of 1938 in North Atlantic States.
967-A	Floods of September 1939 in Colorado River Basin below Boulder (Hoover) Dam.
967-B	Flood of July 5, 1939, in eastern Kentucky.
967-C	Flood of August 21, 1939, in town of Baldwin, Maine.
994	Cloudburst floods in Utah, 1850 to 1938.
997	Floods in Colorado.
1046	Texas floods of 1940.
1066	Floods of 1940 in southeastern States.
1080	Floods of May-June 1948 in Columbia River Basin.

RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE GEOLOGICAL SURVEY

The following table contains a list of gaging stations for the area covered by this report at which records of discharge were collected during the water year October 1946 to September 1947 by agencies other than the Geological Survey. The records for these stations are not contained in publications of the Geological Survey.

Records of discharge collected by agencies other than the Geological Survey

Stream	Location	Period	Collected by
Cayuga Lake Outlet.....	Lock 1 (Mud lock), N. Y.....	1926-47	State Department of Public Works, Albany, N. Y.
Clyde River.....	Clyde, N. Y.....	1924-47	Do.
Indian River.....	Theresa, N. Y.....	1934-47	Central New York Power Corporation, Syracuse, N. Y.
New York Barge Canal†..	Brewerton, N. Y.....	1925-47	State Department of Public Works, Albany, N. Y.
Oneida River.....	Caughdenoy, N. Y.....	1929-47	Oswego River Watershed Corporation, Fulton, N. Y.
Oswegatchie River, East Branch.	Browns Falls, N. Y.....	1934-47	Central New York Power Corporation, Syracuse, N. Y.
Oswego River.....	Lower Dam, Fulton, N. Y.....	1928-47	Oswego River Watershed Corporation, Fulton, N. Y.
Do.....	High Dam, Oswego, N. Y.....	1940-47	Central New York Power Corporation, Syracuse, N. Y.
Raquette River.....	Colton, N. Y.....	1934-47	Do.
St. Regis River, West Branch.	Parishville, N. Y.....	1934-47	Do.
Salmon River.....	Bennetts Bridge, near Altmar, N. Y.	1934-47	Do.
Saranac River.....	Kents Falls, N. Y.....	1934-47	System Properties, Inc., New York, N. Y.
Seneca River.....	Baldwinsville, N. Y.....	1928-47	Oswego River Watershed Corporation, Fulton, N. Y.
Do.....	Jacks Reef, near Baldwinsville, N. Y.	1933-47	State Department of Public Works, Albany, N. Y.

† Diversion around station on Oneida River at Caughdenoy, N. Y.

Note.- Records for the stations given in the above table are unpublished but are available at the office of the organization by which the station was operated. In addition to the records listed in the above table, the Soil Conservation Service of the U. S. Department of Agriculture (beginning in 1940) has collected records of runoff from 3 areas of less than 5 acres each near East Lansing, Mich.

COOPERATION

The work in the several States was done under cooperative agreements with the organizations listed below.

Illinois: State Department of Public Works and Buildings, W. A. Rosenfield, director, through Division of Waterways, T. B. Casey, chief engineer.

Indiana: State Department of Conservation, J. H. Nigh, director, through Division of Water Resources, C. H. Bechert, director; State Highway Commission, J. H. Lauer, chairman, and C. E. Vogelgesang, chief engineer, Construction; State Board of Health, Dr. L. E. Burney, commissioner, and B. A. Poole, director, Bureau of Sanitary Engineering; and city of Fort Wayne Filtration Plant, L. R. Matthews, superintendent.

Michigan: State Department of Conservation, P. J. Hoffmaster, director, through Geological Survey Division, G. E. Eddy, State geologist, Fish Division, F. A. Westerman, head, Game Division, H. D. Ruhl, head, and Parks Division, A. C. Elmer, head; State Stream Control Commission, M. P. Adams, executive secretary-engineer; and State Highway Department, C. M. Ziegler, commissioner.

Minnesota: State Department of Conservation, Division of Water Resources and Engineering, W. S. Olson, director; and Minnesota State Iron Range Resources and Rehabilitation Commission, R. E. Wilson, commissioner.

New York: State Law Department, N. L. Goldstein, attorney-general; State Department of Public Works, C. H. Sells, superintendent; Board of Black River Regulating District, E. S. Cullings, chief engineer; Commission for the Improvement of Oswegatchie River and the Hydraulic Power Thereon, C. H. Lord, chairman; Water Department, city of Auburn, G. F. Train, city manager; and Department of Public Works, village of Lancaster, H. J. Huber, superintendent.

Ohio: State Cooperative Topographic Survey, P. L. Runkle, inspector-director; State Department of Highways, P. T. Ford, director, succeeded by Murray Shaffer; Ohio Water Resources Board, C. E MacQuinn, chairman; Scioto-Sandusky Conservancy District, C. C. Chambers, chief engineer; Lucas County, E. E. Evans, Reuben Hilty and L. H. Sanzerbacher, commissioners; and City of Van Wert, Department of Public Service, R. H. Gleason, director.

Vermont: State Development Commission, W. H. Smith, chairman; after June 30, Water Conservation Board, Philip Shutler, commissioner.

Wisconsin: Public Service Commission of Wisconsin, G. P. Steinmetz, chief engineer.

Financial assistance was furnished by the Corps of Engineers in the operation of 53 gaging stations, of which 9 were in Michigan, 5 in Indiana, 12 in New York, 16 in Ohio, 5 in Vermont, and 6 in Wisconsin.

Financial assistance was furnished also by the Fish and Wildlife Service, United States Department of the Interior, and by the United States Department of State.

Full cooperation exists between the Geological Survey, United States Department of the Interior, and the Dominion Water and Power Bureau, Department of Mines and Resources, Canada. On waters adjacent to the international boundary certain stations are maintained jointly by the United States and Canada under the terms of the Boundary Waters Treaty of

1909, and others are maintained under a subsequent agreement between the two Governments. The records from all these stations are obtained in such a manner as to be equally acceptable and available in both countries. These stations are designated international gaging stations.

Assistance in collecting records was rendered by the following organizations:

Michigan: Presque Isle County Board of Supervisors; cities of Allegan, Battle Creek, Niles, and Saginaw; Alpena Power Co.; Copper District Power Co.; Dow Chemical Co.; Michigan Gas & Electric Co.; Michigan Public Service Co.; and Wisconsin-Michigan Power Co.

New York: City of Syracuse, N. F. Pitts, Jr., city engineer; Cornell University; Central New York Power Corporation; International Paper Co.; New York & Pennsylvania Co.; New York State Electric & Gas Corporation; Imperial Paper & Color Corporation; and Deer River Power Co.

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

DIVISION OF WORK

The stream-gaging work was conducted by the water-resources division of the Geological Survey, Carl G. Paulsen, chief hydraulic engineer, and Joseph V. B. Wells, chief of the surface-water branch. The data for the stations in the several States were collected and prepared for publication under the supervision of district engineers as follows: In Illinois, J. H. Morgan; in Indiana and Michigan, D. M. Corbett; in Minnesota, P. R. Speer; in New York, A. W. Harrington; in Ohio, O. H. Jeffers (acting); in Vermont, H. B. Kinnison; in Wisconsin, F. C. Christopherson.

The records were reviewed and the manuscript prepared for publication under the direction of B. J. Peterson, chief, annual reports section.

ST. LAWRENCE RIVER MAIN STEM

Niagara River at Buffalo, N. Y.

Location.- Lat. 42°52'40", long. 78°53'25", at head of Niagara River at Buffalo. Flow computed by means of several U. S. Lake Survey gages on river.

Drainage area.- 263,500 square miles.

Records available.- January 1905 to September 1947 (prior to October 1935, monthly discharge only).

Average discharge.- 43 years (October 1904 to September 1947), 193,000 second-feet (not including diversions from Lakes Michigan and Erie).

Extremes.- Maximum daily discharge during year, 252,000 second-feet June 14; minimum daily, 142,000 second-feet Apr. 21.
1905-47: Maximum monthly mean discharge, 242,000 second-feet May 1929; minimum monthly, 117,000 second-feet February 1936.

Remarks.- Records do not include flow diverted from Lake Michigan by Chicago Sanitary & Ship Canal and from Lake Erie by Welland Canal in Ontario, and Black Rock and New York State Barge (old Erie) Canals at Buffalo. Daily discharge of Niagara River computed from gage height at Buffalo and fall from Buffalo to Black Rock. As this reach is occasionally partly blocked by ice, all winter flows have been compared with daily flows computed from the Canadian gage at Morrison Street, corrected for diversion through Queenston power plant. The latter figures have been used whenever comparison indicated obstruction by ice in upper river.

Cooperation.- Records of daily discharge furnished by Corps of Engineers.

Discharge, in second-feet, water year October 1946 to September 1947.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	207	186	197	177	181	176	183	181	233	243	228	224
2	206	196	185	181	198	180	180	185	231	240	228	237
3	200	192	198	175	190	197	185	200	234	241	230	227
4	197	200	191	204	207	190	184	202	233	236	228	228
5	196	193	192	222	181	181	191	194	239	235	227	226
6	196	200	183	195	179	178	213	209	238	237	227	225
7	202	193	189	214	175	178	205	211	239	231	227	226
8	181	221	189	202	169	178	198	218	238	229	229	220
9	195	201	192	195	181	180	200	221	238	227	226	224
10	193	193	193	192	175	179	194	217	239	231	225	225
11	198	198	186	204	172	178	190	218	243	232	226	227
12	206	201	199	174	171	177	184	220	239	236	228	227
13	196	214	225	170	173	176	179	213	234	235	228	228
14	196	193	214	180	175	188	189	208	252	231	233	225
15	195	188	209	181	178	190	194	218	250	234	229	230
16	199	196	182	188	177	185	188	223	245	233	221	225
17	189	201	229	193	177	183	189	223	243	233	225	220
18	202	187	194	183	181	181	181	231	241	238	226	225
19	198	192	189	178	178	180	160	226	240	237	226	217
20	190	192	180	195	162	181	155	230	238	235	224	214
21	195	188	191	229	165	181	142	225	234	236	226	224
22	195	236	204	209	177	184	168	229	238	232	223	225
23	195	207	205	188	185	182	181	229	240	243	225	227
24	194	199	209	188	187	182	180	226	242	237	225	220
25	199	199	205	179	175	210	183	236	242	234	226	213
26	197	190	193	181	180	191	204	236	239	235	220	216
27	194	211	182	181	183	183	179	231	237	239	221	211
28	193	198	199	186	173	185	189	229	237	234	227	217
29	198	188	190	162	-	188	202	240	238	236	220	222
30	202	187	184	166	-	191	203	238	238	239	235	211
31	199	-	186	206	-	183	-	235	-	234	227	-

Month	Thousands of second-foot-days	Thousands of second-feet			Per square mile †	Runoff in inches
		Maximum	Minimum	Mean		
October	6,103	207	181	197	0.748	0.86
November	5,940	236	186	198	.751	.84
December	6,064	229	180	196	.744	.86
Calendar year 1946	74,714	236	180	205	.778	10.56
January	5,878	229	162	190	.721	.83
February	5,005	207	162	179	.679	.71
March	5,696	210	176	184	.698	.80
April	5,573	213	142	186	.706	.79
May	6,802	240	181	219	.831	.96
June	7,172	252	231	239	.907	1.01
July	7,293	243	227	235	.892	1.03
August	7,016	235	220	226	.858	.99
September	6,686	237	211	223	.846	.94
Water year 1946-47	75,228	252	142	206	.782	10.62

† Expressed in second-feet.

St. Lawrence River at Ogdensburg, N. Y.

Location (revised).- Lat. 44°42'25", long. 75°28'35". Flow computed by means of several U. S. Lake Survey gages on river. Discharge measurements made downstream from Galops Rapids and include flow of Oswegatchie River.

Drainage area.- 298,100 square miles, including that of Oswegatchie River.

Records available.- January 1919 to September 1947 (prior to October 1935, monthly discharge only).

Average discharge.- 29 years (October 1918 to September 1947), 225,000 second-feet (does not include diversion from Lake Michigan).

Extremes.- Maximum daily discharge during year, 308,000 second-feet July 30; minimum daily, 203,000 second-feet Dec. 28.
1919-47: Maximum monthly mean discharge, 300,000 second-feet July 1947; minimum monthly, 152,000 second-feet February 1936.

Remarks.- Records do not include flow diverted from Lake Michigan by Chicago Sanitary & Ship Canal. Water diverted from Lake Erie and Niagara River by Black Rock and New York State Barge (old Erie) Canals, except that lost by seepage and evaporation, is discharged into Lake Ontario at Oswego and at several points between Niagara River and Irondequoit Bay.

Cooperation.- Records of daily discharge furnished by Corps of Engineers.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	246	236	231	221	228	228	240	256	287	302	301	283
2	239	234	229	224	235	227	239	254	280	303	300	288
3	240	235	235	221	231	235	240	264	285	301	299	288
4	239	240	233	229	239	238	242	264	290	300	298	287
5	237	239	229	239	234	234	244	265	293	300	297	284
6	237	242	225	233	231	232	254	271	295	299	297	284
7	237	236	232	237	231	231	260	270	289	292	297	284
8	223	241	228	229	236	229	255	273	292	293	295	275
9	232	241	233	226	240	230	257	272	296	297	291	281
10	233	234	235	226	240	230	257	273	296	297	293	283
11	234	237	233	230	232	229	261	274	302	299	295	285
12	238	241	235	224	231	228	263	275	301	300	296	285
13	239	240	252	221	232	227	261	266	295	300	295	279
14	236	236	245	222	234	229	260	256	300	297	295	283
15	237	233	235	230	232	233	261	269	306	297	294	283
16	241	235	227	226	232	229	252	272	304	297	286	284
17	231	243	245	230	227	230	265	269	304	298	289	282
18	231	233	234	228	233	232	269	271	301	300	293	284
19	237	236	232	227	227	230	262	270	303	300	292	275
20	234	235	227	233	226	231	261	273	300	299	288	275
21	236	230	228	234	216	231	246	269	301	298	290	288
22	236	250	237	220	222	233	257	277	302	295	289	277
23	235	238	235	214	229	233	262	275	302	304	292	280
24	234	233	243	231	234	234	269	275	301	304	293	283
25	237	234	232	230	234	240	262	276	303	302	292	271
26	238	229	231	230	234	244	267	287	303	303	285	273
27	236	239	219	232	234	236	266	283	301	301	286	272
28	233	235	203	236	233	237	268	280	300	303	289	272
29	241	235	223	231	-	239	266	280	300	304	282	279
30	241	232	228	222	-	248	264	289	300	308	289	269
31	243	-	231	235	-	242	-	285	-	303	286	-

Month	Thousands of second-foot-days	Thousands of second-feet			Per square mile†	Runoff in inches
		Maximum	Minimum	Mean		
October	7,331	246	223	236	0.792	0.91
November	7,102	250	229	237	.795	.89
December	7,185	252	203	232	.778	.90
Calendar year 1946	91,630	272	203	251	.842	11.43
January	7,071	237	214	228	.765	.88
February	6,487	240	216	232	.778	.81
March	7,229	248	227	233	.782	.90
April	7,730	269	239	258	.865	.96
May	8,433	289	254	272	.912	1.05
June	8,932	306	280	298	1.00	1.11
July	9,296	308	292	300	1.01	1.16
August	9,064	301	282	292	.980	1.13
September	8,416	288	269	281	.943	1.05
Water year 1946-47	94,276	308	203	258	.865	11.75

† Expressed in second-feet.

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

(International gaging station)

Location.- Water-stage recorder, lat. 48°00'44", long. 89°36'58", in NE¼ sec. 24, T. 64 N., R. 6 E., 400 feet upstream from Middle Falls, 3½ miles upstream from mouth, and 5¢ miles downstream from International Bridge. Datum of gage is 789.58 feet above mean sea level, datum of 1929.

Drainage area.- 600 square miles at present site.

Records available.- October 1940 to September 1947. April 1924 to September 1940 at site at International Bridge 5¢ miles upstream, published as Pigeon River at International Bridge. October 1923 to September 1932 in House Document 92, 73d Congress, 1st session. June 1921 to September 1947 in reports of Dominion Water and Power Bureau, Department of Mines and Resources of Canada.

Average discharge.- 24 years (1923-47), 493 second-feet.

Extremes.- Maximum daily discharge during year, 3,420 second-feet May 16; maximum gage height not determined; minimum daily discharge, 75 second-feet Feb. 28, Mar. 1; minimum gage height, 0.88 foot Sept. 10.

1923-47: Maximum discharge observed, 11,000 second-feet May 5, 1934 (gage height, 7.6 feet, site and datum then in use), from rating curve extended above 7,000 second-feet; minimum, 27 second-feet Nov. 4, 1945 (gage height, -0.08 foot).

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

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

0.5	69	1.6	317	3.5	1,050
.6	81	1.8	379	4.0	1,320
.8	113	2.0	423	4.8	1,850
1.0	152	2.3	539	5.7	2,620
1.2	200	2.6	642	6.5	3,420
1.4	257	3.0	810		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	681	856	360	130	130	75	150	2,200		1,500	507	211
2	624	662	360	130	130	80	160	f3,120	1,900	1,410	491	208
3	556	572	400	130	130	80	170	3,150		1,290	475	190
4	491	507	400	140	120	80	180	3,200		1,210	443	164
5	507	459	400	140	120	80	180	3,250	f1,930	1,180	427	148
6	1,260	411	320	150	120	85	180	3,300	f1,770	1,160	411	140
7	1,410	405	280	150	120	85	180	*3,320	f1,660	1,080	401	136
8	1,050	*589	260	150	110	85	*180	2,920	2,720	1,000	398	132
9	833	662	300	150	120	90	190	2,620	2,170	951	392	130
10	810	572	400	150	120	95	220	2,620	2,200	903	376	134
11	2,820	491	400		120	95	240	3,320	2,300	837	360	154
12	2,440	443	*340	150	120	100	280	3,320	2,400	765	347	168
13	1,700	411	240		120	100	320	3,350	2,500	744	341	157
14	1,290	385	160		120	100	320	3,350	2,700	722	335	144
15	1,080	360	120	150	120	100	300	3,400	2,900	722	323	138
16	951	401	120	150	110	100	340	3,420	3,100	681	308	136
17	833	380	130	150	100	100	360	3,020	3,220	642	296	132
18	744	360	120	150	95	100	360	2,820	2,820	642	290	136
19	662	360	130	160	90	100	360	2,720	2,530	624	284	146
20	606	360	140	150	90	100	400	2,530	2,350	606	275	164
21	556	360	150	150	80	110	400	2,350	2,220	589	278	180
22	523	340	150	150	80	110	400	2,260	1,970	556	287	178
23	491	340	140	150	80	120	400	2,260	1,850	523	287	168
24	491	340	140	160	80	120	*400	2,130	1,770	507	272	161
25	556	340	130	150	80	120	420	2,010	1,700	491	260	160
26	539	340	130	150	80	110	500	1,930	1,700	606	248	150
27	427	340	130	150	80	110	550		1,850	642	236	140
28	353	340	130	*150	*75	*110	600		1,700	624	233	130
29	398	320	130	140	-	120	1,000	1,930	1,560	589	224	110
30	976	340	130	140	-	120	1,700		1,440	572	214	100
31	1,130	-	130	130	-	140	-		-	539	205	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	27,788	2,820	353	896	1.49	1.72
November	13,046	856	320	435	.725	.81
December	6,870	400	120	222	.370	.43
Calendar year 1946	172,171	2,820	44	472	.787	10.67
January	4,550	160	130	147	.245	.28
February	2,940	130	75	105	.175	.18
March	3,120	140	75	101	.168	.19
April	11,440	1,700	150	381	.635	.71
May	83,540	3,420	-	2,690	4.48	5.18
June	64,630	3,220	1,440	2,150	3.58	4.01
July	24,903	1,500	491	803	1.34	1.54
August	10,224	507	205	330	.550	.63
September	4,545	211	100	152	.253	.28
Water year 1946-47	257,596	3,420	75	706	1.18	15.96

* Winter discharge measurement made on this day.
f Computed on basis of partly estimated gage-height record.
Note.- No gage-height record Dec. 30 to Jan. 1, Jan. 11-14, May 3-6, 10-16, Sept. 25-30; discharge interpolated. Stage-discharge relation affected by ice Nov. 17 to Dec. 7, Dec. 9 to May 1.

Poplar River at Lutsen, Minn.

Location.- Water-stage recorder and concrete control, lat. 47°38', long. 90°42', in sec. 33, T. 60 N., R. 3 W., 350 feet upstream from concrete bridge on U. S. Highway 61 at Lutsen, and 1,650 feet upstream from mouth. Datum of gage is 697.87 feet above mean sea level.

Drainage area.- 114 square miles.

Records available.- May to November 1911 (gage heights only), August 1912 to September 1917, July 1928 to February 1929, March 1930 to September 1947 (discontinued).

Average discharge.- 20 years (1913-17, 1930-32, 1933-47), 112 second-feet.

Extremes.- Maximum daily discharge during year, 1,060 second-feet May 3, 4; minimum discharge, 19 second-feet Sept. 17 (gage height, 2.34 feet).
1912-17, 1928-47: Maximum discharge observed, 1,390 second-feet Apr. 25, 1916, from rating curve extended above 1,100 second-feet; minimum discharge, 2.3 second-feet Dec. 3, 1939 (gage height, 1.73 feet).

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	170	225	92		60	42	39	190	267	204	46	29
2	150	211	94		55	42	43	450	253	195	49	26
3	140	190	94	64	55	40	46	1,060	232	150	48	26
4	133	170	94		55	40	49	1,060	232	98	44	25
5	211	161	94		50	40	50	700	309	200	43	25
6	449	154	88		50	41	55	h540	337	205	40	24
7	337	176	82		50	41	58	491	302	190	39	22
8	260	*220	86	58	48	40	56	463	274	130	43	21
9	218	220	92		46	40	57	449	267	100	69	21
10	218	180	94		42	39	68	442	512	90	63	22
11	330	170	92		42	39	92	491	834	100	55	26
12	330	160	*h80		44	40	103	617	666	120	46	26
13	267	150	64		50	42	92	834	498	120	50	24
14	246	140	68		52	42	81	764	519	120	56	23
15	232	f140	68		52	41	83	673	568	120	45	22
16	218	148	74		52	41	85	687	442	120	41	20
17	204	146	74		52	39	90	603	400	118	39	19
18	197	144	74		51	38	92	491	400	h118	45	20
19	190	138	78	54	49	38	98	477	337	110	68	22
20	176	132	78		48	38	96	463	295	100	58	30
21	170	120			48	38	92	512	274	90	54	30
22	164	118			46	38	67	631	253	79	57	26
23	157	96	74		44	39	112	596	239	75	51	25
24	157	94			46	42		491	246	72	43	23
25	154	88			f45	46		477	225	68	36	21
26	144	84			42	48	112	449	232	65	33	20
27	137	80		f55	f40	38		400	253	62	32	20
28	140	74		*65	39	38		365	f218	57	32	23
29	164	76	68	60	-	41	190	330	190	56	30	26
30	267	88		60	-	43		316	180	57	30	25
31	281	-		60	-	38	-	295	-	50	28	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	6,611	449	133	213	1.87	2.16
November	4,293	225	74	143	1.25	1.40
December	2,438	94	64	78.6	.689	.80
Calendar year 1946	44,166	480	15	121	1.06	14.43
January	1,774	-	-	57.2	.502	.58
February	1,353	60	39	48.3	.424	.44
March	1,252	48	38	40.4	.354	.41
April	2,742	-	39	91.4	.802	.89
May	16,807	1,060	190	542	4.75	5.48
June	10,254	834	180	342	3.00	3.35
July	3,439	205	50	111	.974	1.12
August	1,413	69	28	45.8	.400	.48
September	714	30	19	23.8	.209	.23
Water year 1946-47	53,090	1,080	19	145	1.27	17.32

* Winter discharge measurement made on this day.
f Computed on basis of partly estimated gage height.
h Computed on basis of staff-gage reading.
Note.- No gage-height record Nov. 16 to Dec. 11, Dec. 13 to Jan. 28, Feb. 26, Apr. 24 to May 5, June 29 to July 17, July 19-21; discharge computed on basis of records for Baptism River near Beaver Bay and Pigeon River at Middle Falls, below International Bridge. Stage-discharge relation affected by ice Nov. 8-15, Dec. 12, Jan. 27 to Feb. 13, Mar. 25-27. Shifting-control method used June 12-28, July 18, July 22 to Sept. 30.

Baptism River near Beaver Bay, Minn.

Location.- Water-stage recorder, lat. 47°20', long. 91°12', in sec. 15, T. 56 N., R. 7 W., 260 feet upstream from highway bridge and 6 miles northeast of village of Beaver Bay. Datum of gage is 609.97 feet above mean sea level.

Drainage area.- 140 square miles.

Records available.- July 1928 to January 1929, March 1930 to September 1947 (discontinued).

Average discharge.- 17 years (1930-47), 159 second-feet.

Extremes.- Maximum discharge during year, 3,960 second-feet May 3 (gage height, 5.96 feet); minimum, 8.0 second-feet Sept. 9-11 (gage height, 2.05 feet).
1928-29, 1930-47: Maximum discharge, 9,350 second-feet Aug. 9, 1939 (gage height, 8.11 feet), from rating curve extended above 2,600 second-feet; minimum daily, 0.3 second-foot Jan. 5, 6, 1940.

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

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 11						Apr. 12 to Sept. 30					
2.2	20	2.9	96	4.0	725	2.0	6.0	2.6	45	3.6	414
2.3	27	3.1	146	4.2	916	2.1	10	2.8	72	3.9	680
2.4	34	3.3	230	4.4	1,120	2.2	15	3.0	112	4.3	1,120
2.6	54	3.6	412			2.3	21	3.2	177	4.8	1,830
						2.4	28	3.4	277	5.4	2,870

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	303	399	100	42	28	22	40	1,730	177	126	16	24
2	236	346	110	42	28	22	46	2,870	166	112	28	22
3	192	274	110	40	28	22	55	2,870	155	94	28	19
4	176	225	100	38	28	22	65	1,830	173	83	23	16
5	582	192	100	36	26	20	70	1,480	290	121	21	14
6	1,030	176	95	36	26	20	70	1,210	385	126	17	12
7	762	225	95	36	24	22	*70	945	378	108	15	10
8	560	372	95	34	24	22	70	730	303	88	15	8.4
9	448	359	100	34	22	22	85	594	283	69	30	8.8
10	379	322	110	34	22	22	130	558	1,610	53	33	8.0
11	470	268	100	34	22	22	280	585	2,510	44	28	9.2
12	441	225	80	34	22	22	244	740	1,550	38	22	9.6
13	372	202	*55	34	22	24	208	1,130	956	58	30	9.2
14	328	183	60	34	22	24	195	978	1,020	81	37	10
15	303	176	60	36	22	24	204	700	1,020	76	31	10
16	263	197	65	36	22	24	200	594	780	57	26	9.2
17	221	188	65	34	22	26	208	531	585	46	29	8.8
18	197	183	65	32	22	26	233	454	479	46	48	8.8
19	179	176	70	32	22	26	250	378	356	43	186	21
20	168	168	70	32	22	26	260	328	277	63	208	74
21	164	161	65	30	22	26	244	585	233	70	182	94
22	157	150	65		22	26	222	740	195	62	222	85
23	143	130	60	30	20	30	303	661	177	51	190	72
24	138	120	55		20	34	370	567	177	43	132	58
25	130	95	55	32	20	40	422	495	163	43	90	47
26	119	90	50	32	20	40	495	392	141	40	66	40
27	112	80	50	32	*22	36	430	309	135	33	49	35
28	127	85	50	32	22	34	513	266	129	28	40	37
29	176	85	50	*32	-	*32	964	238	108	24	34	40
30	508	95	50	30	-	32	1,390	218	101	22	30	39
31	515	-	46	30	-	32	-	200	-	18	25	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	9,899	1,030	112	319	2.28	2.63
November	5,947	399	80	198	1.41	1.58
December	2,301	110	46	74.2	.530	.61
Calendar year 1946	62,429.1	1,100	7.1	171	1.22	16.57
January	1,050	42	-	33.9	.242	.28
February	644	28	20	23.0	.164	.17
March	822	40	20	26.5	.189	.22
April	8,336	1,390	40	278	1.99	2.21
May	25,906	2,870	200	836	5.97	6.88
June	15,012	2,510	101	500	3.57	3.99
July	1,966	126	18	63.4	.453	.52
August	1,931	222	15	62.3	.445	.51
September	859.0	94	8.0	28.6	.204	.23
Water year 1946-47	74,673.0	2,870	8.0	205	1.46	19.83

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 22 to Apr. 11 (no gage-height record Jan. 22-24).

St. Louis River near Aurora, Minn.

Location.- Water-stage recorder, lat. 47°29'30", long. 92°14'20", in SW¼ sec. 22, T. 58 N., R. 15 W., at highway bridge, three-quarters of a mile downstream from Partridge River and 1½ miles south of Aurora.

Drainage area.- 312 square miles.

Records available.- August 1942 to September 1947.

Extremes.- Maximum discharge during year, 2,510 second-feet May 4 (gage height, 5.70 feet); minimum discharge, 20 second-feet Sept. 8, 9 (gage height, 0.72 foot).
1942-47: Maximum discharge observed, 3,960 second-feet June 6, 1944 (gage height, 7.30 feet); minimum daily, 7.5 second-feet Feb. 29, Mar. 1, 1944; minimum gage height observed, that of Sept. 8, 9, 1947.

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

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 19						Apr. 20 to Sept. 30					
0.8	24	1.4	86	3.0	605	0.7	18	1.9	197	3.7	980
.9	32	1.7	142	3.4	802	1.0	44	2.2	288	4.3	1,390
1.0	42	2.0	220	4.0	1,160	1.3	76	2.5	399	5.7	2,510
1.1	52	2.3	316			1.6	125	3.0	617		
1.2	62	2.6	428								

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	483	449	180	70	40	30	40	1,310	380	272	52	35
2	462	449	160	70	40	30	50	1,910	360	258	54	33
3	428	441	150	65	38	28	60	2,350	342	249	51	32
4	389	416	150	65	36	28	75	2,510	334	246	50	30
5	541	389	150	60	34	28	100	2,270	387	255	46	28
6	886	366	150	60	32	28	130	1,990	440	240	42	25
7	1,040	385	160	60	32	28	140	1,710	479	225	41	23
8	1,100	492	160	60	32	30	150	1,470	509	205	48	20
9	1,100	541	*170	55	32	30	150	1,280	514	184	62	21
10	1,100	564	180	55	32	30	*160	1,140	617	164	57	82
11	1,160	559	180	55	34	30	180	1,010	842	147	52	159
12	1,160	532	180	50	34	32	240	925	1,040	132	46	189
13	1,100	496	160	50	38	32	355	898	1,140	123	46	192
14	1,040	453	140	50	38	32	401	870	1,170	123	47	203
15	975	420	120	48	36	30	440	842	1,170	117	42	200
16	886	400	120	48	36	28	480	815	1,070	117	40	181
17	802	360	110	48	34	28	500	765	952	119	40	164
18	725	340	110	50	32	28	500	715	870	116	44	149
19	652	359	110	50	32	30	480	665	765	110	43	145
20	605	340	100	50	32	32	501	641	665	112	43	152
21	546	326	100	48	30	32	501	594	572	104	45	171
22	501	296	100	48	30	34	*509	572	509	100	54	181
23	466	260	100	50	30	36	536	558	462	95	53	176
24	436	240	95	*50	32	38	563	532	415	89	51	164
25	416	220	90	50	*32	36	594	509	387	83	47	152
26	385	240	85	55	32	*32	665	496	360	79	43	136
27	362	240	85	55	32	30	740	483	334	72	43	125
28	355	220	80	50	30	30	790	466	312	68	41	125
29	355	220	80	48	-	30	898	453	288	64	39	116
30	397	200	75	44	-	30	1,010	432	275	60	38	110
31	432	-	75	42	-	32	-	407	-	55	35	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	21,285	1,160	355	687	2.20	2.54
November	11,213	564	200	374	1.20	1.34
December	3,905	180	75	126	.404	.47
Calendar year 1946	107,059	1,160	19	293	.939	12.78
January	1,659	70	42	53.5	.171	.20
February	942	40	30	33.6	.108	.11
March	952	38	28	30.7	.098	.11
April	11,938	1,010	40	398	1.28	1.42
May	31,588	2,510	407	1,019	3.27	3.77
June	17,960	1,170	275	599	1.92	2.14
July	4,383	272	55	141	.452	.52
August	1,435	62	35	46.3	.148	.17
September	3,519	203	20	117	.375	.42
Water year 1946-47	110,779	2,510	20	304	.974	13.21

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 16-18, Nov. 23 to Apr. 12, Apr. 15-19 (no gage-height record Jan. 22, 23).

Partridge River near Aurora, Minn.

Location.- Water-stage recorder, lat. 47°31'00", long. 92°11'20", on line between secs. 12 and 13, T. 58 N., R. 15 W., at highway bridge, 1 mile downstream from unnamed tributary, 1½ miles east of Aurora, and 2½ miles upstream from mouth.

Drainage area.- 156 square miles.

Records available.- August 1942 to September 1947.

Extremes.- Maximum discharge during year, 1,980 second-feet May 4 (gage height, 6.36 feet); minimum discharge, 8.2 second-feet Sept. 8 (gage height, 1.17 feet).
1942-47: Maximum discharge observed, 2,930 second-feet June 6, 1944 (gage height, 7.51 feet); minimum daily, 6.5 second-feet Feb. 26 to Apr. 5, 1944.

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

Rating tables, water year 1946-47, except periods of ice effect and backwater from debris (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 14						Apr. 15 to Sept. 30					
1.1	10	1.7	37	3.3	235	1.1	6.8	2.7	95	4.3	590
1.2	13	2.1	70	3.6	325	1.5	15	3.0	142	5.0	1,040
1.3	16	2.5	107	3.9	435	1.8	24	3.3	205	6.0	1,700
1.4	20	2.8	141	4.1	530	2.1	38	3.6	287	6.3	1,910
1.6	31	3.1	190	4.6	835	2.4	60	3.9	397		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	350	170	75	20	13	12	20	1,170	152	78	15	14
2	332	180	65	20	13	11	24	1,530	142	78	16	13
3	284	180	70	20	13	11	28	1,840	130	81	15	13
4	242	170	70	20	12	12	33	1,910	134	83	14	12
5	297	160	70	20	12	12	39	1,740	167	94	13	10
6	480	150	70	19	13	12	47	1,430	205	94	11	9.8
7	639	150	70	19	16	12	47	1,200	254	90	10	9.0
8	783	200	70	18	18	12	48	1,010	297	82	13	8.4
9	835	240	*70	18	18	13	53	838	307	71	16	9.4
10	835	290	75	18	18	13	64	682	365	61	14	64
11	835	308	70	18	18	13	77	557	505	54	14	139
12	802	294	65	18	18	14	83	480	676	47	12	165
13	750	263	60	18	20	14	88	444	832	39	14	165
14	699	238	50	18	20	14	101	414	910	41	14	174
15	651	215	48	18	19	13	114	397	878	40	13	169
16	574	190	46	17	18	13	148	389	793	38	13	153
17	490	170	42	17	16	12	182	369	682	38	14	135
18	407	160	38	17	14	11	222	338	568	36	16	123
19	346	150	36	17	13	12	263	310	458	36	17	119
20	284	140	32	}	12	12	310	290	361	35	17	122
21	242	130	30	} 17	13	12	335	260	281	34	20	135
22	212	120	30	}	14	14	350	246	222	32	23	135
23	192	120	30	}	15	15	361	235	184	31	22	128
24	173	110	28	*17	16	17	377	222	153	29	20	123
25	159	100	26	18	*16	18	373	210	135	28	18	115
26	147	95	24	19	15	*19	500	203	122	27	17	102
27	136	90	24	19	14	20	590	198	108	25	18	92
28	133	90	22	18	13	20	676	191	96	22	17	90
29	131	85	22	16	-	20	800	184	86	21	16	81
30	140	80	22	15	-	20	942	174	81	18	16	75
31	150	-	22	14	-	20	-	161	-	16	14	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	12,730	835	131	411	2.63	3.03
November	5,038	308	80	168	1.08	1.20
December	1,472	75	22	47.5	.304	.35
Calendar year 1946	60,280.5	835	9.5	165	1.06	14.36
January	554	20	14	17.9	.115	.13
February	430	20	12	15.4	.099	.10
March	443	20	11	14.3	.092	.11
April	7,295	942	20	243	1.56	1.74
May	19,622	1,910	161	633	4.06	4.68
June	10,284	910	81	343	2.20	2.45
July	1,499	94	16	48.4	.310	.36
August	482	23	10	15.5	.099	.11
September	2,702.6	174	8.4	90.1	.578	.64
Water year 1946-47	62,551.6	1,910	8.4	171	1.10	14.90

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 16 to Mar. 31 (no gage-height record Jan. 20-23). Backwater from debris Oct. 30 to Nov. 9.

Embarrass River at Embarrass, Minn.

Location.- Water-stage recorder, lat. 47°39'30", long. 92°11'50", in NW¼ sec. 25, T. 60 N., R. 15 W., at Embarrass, 30 feet upstream from highway bridge and 100 feet upstream from railway bridge.

Drainage area.- 93.8 square miles.

Records available.- August 1942 to September 1947.

Extremes.- Maximum discharge during year, 957 second-feet May 3 (gage height, 9.66 feet); minimum daily, 4.0 second-feet Mar. 9, 10; minimum gage height recorded, 0.72 foot Aug. 7.

1942-47: Maximum discharge observed, 1,160 second-feet June 6, 1944; minimum daily, 2.0 second-feet Feb. 12, 16-18, Mar. 19, 1944; minimum gage height observed, 0.68 foot on several days in winters of 1943 and 1944.

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	194	114	40	9.0	8.5	6.0	28	606	83	58	5.4	6.4
2	178	108	34	9.5	8.5	6.0	34	873	76	57	5.9	6.6
3	154	99	30	9.0	8.0	5.5	46	936	70	51	6.1	6.4
4	134	91	30	9.5	7.5	5.5	90	852	68	44	5.6	6.1
5	206	82	32	10	7.0	5.0	100	726	96	48	5.0	5.6
6	316	77	32	10	6.5	5.0	95	606	142	52	4.6	5.4
7	390	83	32	9.5	6.5	4.6	85	500	164	44	4.3	5.0
8	453	144	40	9.5	7.0	4.4	65	422	164	34	5.0	4.8
9	442	166	50	9.5	7.0	4.0	50	370	153	27	14	22
10	400	160	*50	9.0	7.0	4.0	*60	323	179	22	21	346
11	390	154	50	9.0	7.5	4.4	130	289	235	18	19	526
12	400	144	50	9.0	7.5	4.4	179	259	253	14	16	789
13	400	130	40	9.0	8.0	4.6	186	247	265	14	13	789
14	380	118	30	9.0	7.5	5.0	207	247	265	18	14	684
15	352	107	16	8.5	6.5	5.0	241	235	253	20	12	540
16	316	110	11	8.0	6.0	5.5	253	221	228	18	11	451
17	276	95	10	8.5	6.0	5.5	259	207	207	17	9.8	343
18	236	90	10	8.5	6.0	6.0	265	186	176	25	8.9	284
19	211	80	9.5	8.5	6.0	6.5	283	168	142	25	8.9	233
20	189	75	10	8.0	6.0	7.0	295	153	112	24	8.9	221
21	166	75	11	8.0	6.0	7.5	265	142	91	27	8.9	227
22	148	70	11	7.5	6.0	8.0	235	134	76	25	10	221
23	134	70	10	8.0	6.0	9.5	247	130	65	20	9.8	204
24	120	65	9.5	8.5	6.0	12	253	124	59	16	9.2	186
25	110	60	9.5	*10	*6.5	12	259	116	57	12	7.9	165
26	98	55	9.0	9.5	6.5	*11	283	120	59	10	7.7	138
27	87	46	9.5	9.0	6.5	12	309	116	70	10	7.7	114
28	86	44	11	8.5	6.0	12	330	112	68	8.2	7.7	121
29	91	42	11	8.5	-	12	362	104	58	7.4	7.2	121
30	108	42	10	8.5	-	14	395	96	49	6.9	6.6	114
31	120	-	9.0	8.5	-	16	-	90	-	5.9	6.4	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	7,285	453	86	235	2.51	2.89
November	2,796	166	42	93.2	.994	1.11
December	717.0	50	9.0	23.1	.246	.28
Calendar year 1946	32,597.7	453	-	88.8	.947	12.84
January	275.0	10	7.5	8.87	.095	.11
February	190.0	8.5	6.0	6.79	.072	.08
March	229.9	16	4.0	7.42	.079	.09
April	5,889	395	28	196	2.09	2.33
May	9,710	936	90	313	3.34	3.85
June	3,983	265	49	133	1.42	1.58
July	778.4	58	5.9	25.1	.268	.31
August	287.5	21	4.3	9.27	.099	.11
September	6,863.3	789	4.8	229	2.44	2.72
Water year 1946-47	39,004.1	936	4.0	107	1.14	15.46

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Nov. 16 to Apr. 11 (no gage-height record Dec. 8, 9, Jan. 24).

Amnicon Lake near South Range, Wis.

Location.- Staff gage, lat. 46°29', long. 92°04', in sec. 12, T. 46 N., R. 14 W., in northwest corner of lake, 15 miles southwest of South Range. Datum of gage is 1,188.00 feet above mean sea level (State Highway Commission levels). Gage readings have been reduced to elevation above mean sea level.

Drainage area.- 5 square miles.

Records available.- August 1936 to September 1947 (fragmentary).

Extremes.- Maximum elevation observed during year, 1,197.53 feet May 3; minimum, 1,196.10 feet Sept. 30.
1936-47: Maximum elevation observed, 1,199.23 feet June 5, 1944; minimum, 1,196.04 feet Aug. 24, Oct. 3, 1936.

Remarks.- Lake has natural outlet.

Elevation, in feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-	-				6.83	-	-	-	-	-
2	6.48	7.06	-				-	-	-	-	6.42	6.22
3	-	-	-				-	7.53	-	-	-	-
4	-	-	-				-	-	6.99	-	-	-
5	6.56	-	-				6.95	-	-	6.80	-	-
6	-	7.02	-				-	-	-	-	-	6.20
7	-	-	6.98				-	7.45	6.93	-	-	-
8	-	-	-				7.09	-	-	-	-	-
9	6.88	7.12	-				7.13	-	-	6.70	6.34	6.18
10	-	-	-				-	-	6.95	-	-	-
11	6.88	7.14	-				-	-	-	-	-	6.22
12	6.88	-	-				7.27	-	-	6.68	-	-
13	-	-	-				-	-	-	-	6.28	6.18
14	-	7.10	6.98				7.33	-	7.11	-	-	-
15	-	-	-				-	-	-	-	-	6.16
16	-	7.10	-				7.35	-	-	-	6.24	-
17	-	-	-				-	-	-	-	-	6.16
18	-	-	-				-	-	7.11	-	-	-
19	-	-	-				7.41	-	-	6.58	-	-
20	-	7.06	-				-	-	-	-	6.26	6.16
21	-	-	6.98				-	7.19	7.03	-	-	-
22	-	-	-				-	-	-	-	-	-
23	-	7.06	-				7.49	-	-	-	6.24	-
24	-	-	-				-	7.17	-	-	-	-
25	-	-	-				-	-	7.11	-	-	-
26	6.92	-	-				7.51	-	-	6.50	-	-
27	-	-	6.98				-	-	-	-	6.24	6.12
28	-	-	-				-	7.13	6.90	-	-	-
29	-	-	-				-	-	-	-	-	-
30	7.06	7.02	-			6.79	7.47	-	-	6.46	6.24	6.10
31	-	-	-				-	7.07	6.90	-	-	-

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

Bois Brule River at Brule, Wis.

Location.- Cantilevered chain gage, lat. 46°32', long. 91°36', in NW¼SW¼ sec. 23, T. 47 N., R. 10 W., 1¼ miles southwest of Brule Post Office, 1½ miles downstream from Nebagamon Creek, and 1½ miles upstream from Little Brule River.

Drainage area.- 130 square miles.

Records available.- January 1943 to September 1947.

Extremes.- Maximum discharge observed during year, 360 second-feet Apr. 23; maximum gage height observed, 4.24 feet Feb. 4 (backwater from ice); minimum daily discharge, 110 second-feet July 31, Aug. 1, 5-8, 11-17, 25, 26, Sept. 10.
1943-47: Maximum discharge observed, 1,130 second-feet June 5, 1944 (gage height, 5.14 feet), from rating curve extended above 350 second-feet; minimum observed, 67 second-feet Mar. 13, 1943 (gage height, 1.39 feet).

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

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

1.4	110	2.0	204
1.6	135	2.3	280
1.8	165	2.6	360

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	135	204	140	140	150	128	135	280	149	142	110	122
2	128	194	140	140	149	128	142	306	149	135	116	122
3	128	174	140	139	148	128	149	293	149	135	116	116
4	128	165	142	140	147	128	165	293	149	128	116	116
5	135	157	142	142	145	127	174	280	149	128	110	116
6	149	149	142	144	144	125	254	149	149	128	110	116
7	149	157	142	144	143	122	228	241	149	128	110	116
8	149	194	142	141	140	122	254	228	142	122	110	116
9	142	194	149	140	140	122	267	216	149	122	122	116
10	142	183	149	140	140	122	280	204	174	122	116	110
11	165	204	149	138	139	122	333	204	174	122	110	116
12	165	194	149	138	137	128	280	194	165	116	110	128
13	165	194	148	*134	135	128	280	194	165	116	110	135
14	157	183	147	140	133	122	320	194	204	135	110	128
15	157	174	146	142	130	128	320	194	216	128	110	122
16	149	183	146	143	128	128	306	183	194	122	110	122
17	149	183	146	143	128	128	320	183	183	122	110	116
18	149	165	146	142	129	128	306	174	165	122	128	116
19	142	165	146	142	130	122	280	183	165	122	122	116
20	142	165	146	142	130	122	293	174	157	128	122	122
21	142	157	146	142	130	122	293	194	149	122	122	122
22	142	149	148	144	130	122	306	204	149	122	122	116
23	142	165	148	144	130	128	360	204	142	122	116	116
24	142	165	150	144	130	135	333	204	142	122	116	116
25	149	165	150	144	130	135	333	194	142	116	110	116
26	142	160	150	144	*128	122	333	194	142	116	110	116
27	135	157	150	142	128	122	320	183	135	116	116	116
28	135	154	150	142	128	128	293	204	135	116	135	116
29	149	148	150	165	-	128	293	174	128	116	128	116
30	228	142	145	157	-	128	293	165	-	116	122	116
31	204	-	142	152	-	128	-	165	-	110	122	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	4,635	228	128	150	1.15	1.33
November	5,143	204	142	171	1.32	1.47
December	4,526	150	140	146	1.12	1.29
Calendar year 1946	57,696	387	115	158	1.22	16.51
January	4,434	165	134	143	1.10	1.27
February	3,799	150	128	136	1.05	1.09
March	3,906	135	122	126	.969	1.12
April	8,183	360	135	273	2.10	2.34
May	6,557	306	165	212	1.63	1.88
June	4,688	216	128	156	1.20	1.34
July	3,817	142	110	123	.946	1.09
August	3,597	135	110	116	.892	1.03
September	3,553	135	110	118	.908	1.01
Water year 1946-47	56,838	360	110	156	1.20	16.26

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 25 to Dec. 4, Dec. 13 to Jan. 26, Jan. 31 to Feb. 15, Feb. 18-25, Feb. 27 to Mar. 2, Mar. 5, 6.

Montreal River near Saxon, Wis.

Location.- Water-stage recorder, lat. 46°32'45", long. 90°24'05", in NW¼ sec. 23, T. 48 N., R. 49 W., 2 miles upstream from mouth and 3½ miles north of Saxon.

Drainage area.- 281 square miles.

Records available.- September 1938 to September 1947.

Extremes (regulated).- Maximum discharge during year, 2,140 second-feet Apr. 23; maximum gage height, 4.85 feet Dec. 28, 29 (backwater from ice); minimum discharge, 5 second-feet Sept. 29 (gage height, 1.17 feet).
1938-47: Maximum discharge, 5,700 second-feet July 18, 1942 (gage height, 6.93 feet); minimum, 2 second-feet Sept. 21, Oct. 8, 1939.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Diurnal fluctuation caused by Saxon Falls power plant, 1½ miles upstream. Flow regulated by Gile Reservoir on West Branch Montreal River (capacity, 1.29 billion cubic feet).

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

1.6	40	2.3	226	3.5	990
1.8	73	2.6	357	4.0	1,520
2.0	121	3.0	593	4.3	1,880

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	100	326	180	200	190	170	185	1,140	393	214	203	180
2	113	272	175	212	180	155	210	1,230	372	203	203	180
3	84	264	160	225	185	162	270	1,100	312	184	199	180
4	84	199	190	230	165	163	500	990	272	187	199	170
5	103	184	210	230	155	165	784	963	277	184	195	162
6	40	180	212	225	160	168	1,050	769	255	180	195	159
7	77	210	200	205	173	170	841	621	251	195	206	170
8	100	753	210	210	173	165	824	477	226	218	206	173
9	84	784	215	212	165	155	841	408	214	218	206	166
10	68	635	225	215	185	148	1,100	344	737	218	203	159
11	176	527	215	200	182	165	1,700	316	1,390	218	195	162
12	326	442	208	180	180	165	1,180	255	990	214	199	162
13	234	348	190	190	195	163	1,130	321	700	214	199	162
14	226	312	200	195	192	160	1,400	348	a600	210	195	152
15	176	286	207	*202	188	160	1,330	326	a900	210	191	132
16	166	255	207	200	180	140	1,300	312	a800	210	191	135
17	150	239	190	210	180	160	1,360	299	a500	214	206	135
18	124	218	197	220	170	160	1,260	284	a370	243	251	140
19	91	173	210	220	160	160	1,130	281	a320	234	184	141
20	86	210	220	210	158	160	1,200	294	290	234	206	159
21	103	173	222	180	155	150	1,360	308	260	191	206	133
22	93	166	218	180	153	160	1,270	573	226	206	199	142
23	82	165	205	210	135	145	1,880	945	206	195	195	a140
24	152	167	190	210	150	160	1,940	621	226	187	187	a130
25	600	168	170	195	*155	170	1,760	477	222	180	187	a128
26	534	170	180	188	160	165	1,640	521	214	176	184	a140
27	408	180	195	180	162	158	1,450	508	206	176	184	136
28	308	195	210	170	165	160	1,220	448	230	203	191	93
29	303	185	220	175	-	160	1,230	382	230	203	187	96
30	321	182	230	185	-	125	1,280	352	222	203	187	133
31	377	-	225	190	-	150	-	339	-	203	184	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	5,869	600	40	189	0.673	0.78
November	8,568	784	165	286	1.02	1.14
December	6,286	230	160	203	.722	.83
Calendar year 1946	113,511	4,870	40	311	1.11	15.02
January	6,254	230	170	202	.719	.83
February	4,751	195	135	170	.605	.63
March	4,917	170	125	159	.566	.65
April	34,825	1,940	185	1,154	4.11	4.59
May	16,532	1,230	264	533	1.90	2.19
June	12,411	1,390	206	414	1.47	1.64
July	6,325	243	176	204	.726	.84
August	6,123	251	184	198	.705	.81
September	4,450	180	93	148	.527	.59
Water year 1946-47	117,111	1,940	40	321	1.14	15.52

Peak discharge.- Nov. 8 (6 p.m.) 918 sec.-ft.; Apr. 6 (6:45 a.m.) 1,190 sec.-ft.; Apr. 11 (4 p.m.) 1,880 sec.-ft.; Apr. 23 (10:30 p.m.) 2,140 sec.-ft.; May 23 (8 p.m.) 981 sec.-ft.; June 11 (2 to 3 p.m.) 1,520 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of Superior Falls power-plant records and records of release from Gile Reservoir.

Note.- Stage-discharge relation affected by ice Nov. 22 to Apr. 4 (no gage-height record Dec. 15-20, Jan. 1, 2, 22, 23, Feb. 4-6, 20).

West Branch Montreal River at Gile, Wis.

Location.- Staff gage, lat. 46°25'35", long. 90°13'35", in sec. 34, T. 46 N., R. 2 E., immediately below outlet structure of Gile Reservoir at Gile and 4 miles upstream from mouth.

Drainage area.- 78 square miles.

Records available.- October 1942 to September 1947 (discontinued). April 1918 to November 1925 at site 1,600 feet downstream.

Average discharge.- 12 years (1918-25, 1942-47), 79.4 second-feet.

Extremes (regulated).- Maximum discharge during year, 553 second-feet June 14, 15 (computed from gate openings); minimum daily, 5.3 second-feet Apr. 5.
1918-25, 1942-47: Maximum discharge observed, 1,480 second-feet Apr. 21, 1923 (gage height, 7.20 feet, site and datum then in use); minimum daily, 1.2 second-feet Mar. 31, 1945, reservoir gates closed.

Remarks.- Records fair. Flow regulated by Gile Reservoir. Gage read about five times weekly and record kept of gate openings at dam.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	a12	96	149	107	103	a35	11	152	111	171	a149
2	20	a12	98	a145	a111	105	20	11	130	a111	171	a149
3	20	12	112	141	115	105	a10	11	117	111	171	149
4	a20	a12	117	127	115	a105	9.1	a11	102	111	171	a144
5	19	12	91	123	a115	105	5.3	11	84	111	171	138
6	a19	12	a70	115	115	a102	a5.6	a11	76	126	171	138
7	39	12	48	118	a116	a100	a6.0	11	76	159	182	138
8	a24	12	a36	123	a117	98	6.3	10	60	171	182	138
9	a24	a12	24	123	a119	a101	a6.6	a10	63	171	171	123
10	24	12	a22	116	a120	104	6.8	a9.8	78	171	171	123
11	a24	12	19	108	121	127	8.5	a9.6	87	171	171	119
12	22	12	32	106	a119	113	7.9	9.4	98	171	171	a117
13	20	12	107	119	117	108	a8.2	9.4	105	171	171	115
14	14	a12	131	171	a116	a94	8.5	9.4	382	171	171	111
15	14	11	a125	122	a116	a94	a8.5	a9.6	465	171	171	111
16	12	8.2	119	a130	a115	151	8.5	9.7	177	171	171	111
17	a12	12	117	a134	a114	160	a8.6	a9.4	55	171	168	107
18	12	16	145	138	a113	84	a8.7	9.1	53	160	111	107
19	a12	a25	a150	127	113	81	a8.8	10	53	152	160	111
20	12	25	156	a125	a113	77	8.8	12	61	133	160	111
21	12	25	135	123	113	a76	a8.7	102	58	127	160	107
22	13	35	109	127	a113	75	a8.6	248	58	127	160	107
23	13	84	96	120	113	a72	8.5	236	99	127	160	107
24	19	85	114	110	a112	69	a8.5	87	127	127	160	103
25	13	93	138	a108	a110	52	8.5	81	127	127	160	103
26	a12	115	138	107	109	42	9.7	171	111	127	160	103
27	12	109	138	108	109	a40	a10	171	111	160	138	93
28	12	a95	a138	120	a106	38	10	171	a111	171	149	84
29	12	81	a138	123	-	a37	10	119	a111	171	149	89
30	12	a81	139	123	-	a36	10	119	a111	171	149	86
31	12	-	a144	107	-	36	-	119	-	171	149	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	525	39	12	16.9	0.217	0.25
November	1,068.2	115	8.2	35.6	.456	.51
December	3,242	156	19	105	1.35	1.58
Calendar year 1946	30,087.2	446	8.2	82.4	1.06	14.36
January	3,836	171	106	124	1.59	1.83
February	3,192	121	106	114	1.46	1.52
March	2,690	160	36	86.8	1.11	1.28
April	288.2	35	5.3	9.61	.123	.14
May	1,828.4	248	9.1	59.0	.756	.87
June	3,498	485	53	117	1.50	1.67
July	4,601	171	111	148	1.90	2.19
August	5,051	182	111	163	2.09	2.41
September	3,491	149	84	116	1.49	1.66
Water year 1946-47	33,310.8	485	5.3	91.3	1.17	15.89

a No gage-height record; discharge computed on basis of records of gate openings and reservoir stages.

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Presque Isle River at Marenisco, Mich.

Location.- Wire-weight gage, lat. 46°23', long. 89°41', on line between secs. 16 and 21, T. 46 N., R. 43 W., at county highway bridge in Marenisco and 2½ miles downstream from confluence of East and West Branches of Presque Isle River.

Drainage area.- 175 square miles.

Records available.- February 1945 to September 1947.

Extremes.- Maximum discharge observed during year, 1,030 second-feet Apr. 13 (gage height, 7.27 feet, backwater from ice); minimum, 31 second-feet Sept. 4-7, 10, 19; minimum gage height, 2.62 feet Sept. 4-7, from graph based on gage readings.
1945-47: Maximum discharge, 1,860 second-feet June 26, 1946 (gage height, 9.4 feet, from floodmark); minimum, that of Sept. 4-7, 10, 19, 1947; minimum gage height, that of Sept. 4-7, 1947.

Remarks.- Records good above 60 second-feet and fair below except those for periods of ice effect or no gage-height record, which are poor.

Rating tables, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1-25				Oct. 26 to Sept. 30			
3.1	63	4.4	255	2.7	37	3.9	189
3.3	82	5.3	443	2.9	54	5.9	568
3.5	103	5.7	531	3.2	84	6.2	643
3.9	161			3.5	123	7.0	958

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	94	328	160	90	70	73	95	678	252	124	57	35
2	83	290	150	90	70	73	95	678	252	120	57	35
3	76	262	145	90	70	75	110	660	225	113	56	35
4	71	234	140	90	70	75	130	660	205	109	56	31
5	68	202	140	90	70	75	160	643	262	104	56	31
6	68	173	*140	92	70	75	250	588	310	99	59	31
7	68	*252	140	*92	70	75	610	538	272	90	66	31
8	62	452	145	90	70	75	560	480	243	81	62	37
9	79	480	165	75	70	80	540	424	328	75	56	32
10	338	490	215	73	70	80	660	366	818	71	50	31
11	542	452	235	73	*70	80	790	348	979	68	47	43
12	542	348	225	73	70	*80	940	328	938	88	47	62
13	520	262	170	73	70	80	990	357	758	68	48	65
14	476	243	135	73	70	80	990	442	628	67	48	61
15	380	243	115	73	70	80	910	480	548	67	48	56
16	255	255	105	73	70	80	471	518	518	69	48	52
17	164	280	100	73	70	80	750	424	471	70	49	45
18	120	280	100	73	70	80	680	386	357	69	55	38
19	106	250	105	73	70	75	643	386	290	105	58	31
20	93	230	105	73	70	80	613	386	262	143	58	41
21	90	190	105	73	70	85	613	386	225	119	49	62
22	88	150	105	73	67	85	*600	424	198	92	41	65
23	85	140	100	73	67	85	758	509	168	85	38	63
24	163	170	95	73	70	90	918	471	146	80	37	50
25	401	195	90	73	73	95	918	442	134	74	37	39
26	433	200	85	73	73	100	898	404	126	70	35	37
27	328	190	85	70	70	100	838	348	135	68	35	36
28	262	180	85	65	70	95	778	310	157	68	43	47
29	262	175	85	65	-	95	698	310	149	68	49	62
30	328	170	85	70	-	95	698	300	126	65	46	65
31	366	-	85	70	-	95	-	272	-	60	39	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	7,011	542	62	226	1.29	1.49
November	7,766	490	140	259	1.48	1.65
December	3,940	235	85	127	.726	.84
Calendar year 1946	67,834	1,760	50	186	1.06	14.41
January	2,380	92	65	76.8	.439	.51
February	1,960	73	67	70.0	.400	.42
March	2,571	100	73	82.9	.474	.55
April	19,063	990	95	635	3.63	4.05
May	13,899	678	272	448	2.56	2.95
June	10,480	979	126	349	1.99	2.23
July	2,629	143	60	84.8	.485	.56
August	1,530	66	35	49.4	.282	.33
September	1,349	65	31	45.0	.257	.29
Water year 1946-47	74,578	990	31	204	1.17	15.87

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 23 to Apr. 18. No gage-height record Nov. 16 to Dec. 5, Dec. 10-19, Feb. 5-10, Aug. 26-29; discharge computed on basis of weather records, records for adjacent periods, and records for nearby stations.

Presque Isle River near Tula, Mich.

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

Drainage area.- 260 square miles.

Records available.- February 1945 to September 1947.

Extremes.- Maximum discharge during year, 1,940 second-feet Apr. 25; maximum gage height, 10.45 feet Apr. 18 (backwater from ice), from graph based on gage readings; minimum discharge, 30 second-feet Sept. 9 (gage height, 4.44 feet).
1945-47: Maximum discharge, 3,170 second-feet June 25, 1946 (gage height, 12.45 feet, from graph based on gage readings); minimum, that of Sept. 9, 1947.

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	151	539	195	92	85	88	110	1,650	375	242	71	42
2	135	483	183	90	85	90	110	1,420	388	232	71	35
3	122	428	177	90	85	90	120	1,420	362	195	70	33
4	107	362	177	90	85	90	140	1,250	324	181	69	32
5	101	321	179	95	85	90	175	1,130	316	168	69	32
6	93	296	180	95	85	90	260	1,020	362	151	67	31
7	90	*306	185	105	90	90	400	905	388	138	69	32
8	86	511	190	*105	85	90	530	815	375	132	69	32
9	82	696	205	90	90	90	650	696	375	124	66	30
10	145	755	260	85	90	90	800	609	667	115	62	31
11	375	696	265	82	95	90	950	539	1,380	108	60	39
12	567	609	250	82	*90	*90	1,100	497	1,560	102	56	54
13	595	511	190	80	88	90	1,220	553	1,380	100	55	65
14	497	442	150	82	88	90	1,310	667	1,170	99	54	65
15	388	415	125	82	88	90	1,400	696	1,100	96	54	58
16	281	402	110	82	88	90	1,500	696	1,020	91	52	52
17	223	442	100	82	88	90	1,600	652	875	90	55	49
18	190	442	100	82	88	90	1,700	595	725	91	66	46
19	162	388	115	82	88	90	1,600	553	581	105	80	49
20	143	362	120	82	88	90	1,400	539	442	123	78	54
21	131	331	115	88	88	90	1,250	539	375	130	72	64
22	123	249	120	88	88	90	*1,170	525	316	115	65	67
23	118	213	*120	88	88	90	1,340	609	306	104	58	61
24	172	268	110	88	88	95	1,700	696	254	96	50	53
25	483	306	100	86	88	110	1,890	696	237	91	47	48
26	667	271	92	84	88	120	1,840	624	220	90	43	46
27	609	244	95	88	88	115	1,700	553	211	86	43	44
28	511	227	95	88	88	115	1,560	497	301	84	50	50
29	442	215	90	88	-	110	1,560	428	336	80	61	64
30	456	213	90	88	-	110	1,740	388	264	79	60	67
31	525	-	92	85	-	110	-	362	-	75	50	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	8,770	667	82	283	1.09	1.25
November	11,943	755	213	398	1.53	1.71
December	4,575	265	90	148	.569	.65
Calendar year 1946	-	3,050	59	273	1.05	14.22
January	2,714	105	80	87.5	.337	.39
February	2,458	95	85	87.8	.338	.35
March	2,953	120	88	95.3	.367	.42
April	32,825	1,890	110	1,094	4.21	4.69
May	22,819	1,650	362	736	2.83	3.26
June	16,985	1,560	211	566	2.18	2.43
July	3,713	242	75	120	.462	.53
August	1,892	80	43	61.0	.235	.27
September	1,425	67	30	47.5	.183	.20
Water year 1946-47	113,072	1,890	30	310	1.19	16.15

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 6 to Apr. 20. Shifting-control method used Oct. 14-25, Aug. 20 to Sept. 30.

Middle Branch Ontonagon River near Paulding, Mich.

Location.- Water-stage recorder, lat. 46°21'30", long. 89°04'40", in sec. 29, T. 46 N., R. 38 W., 25 feet downstream from highway bridge, 2½ miles upstream from Bond Falls Reservoir, and 5½ miles southeast of Paulding.

Drainage area.- About 175 square miles.

Records available.- June 1942 to September 1947.

Extremes.- Maximum discharge during year, 728 second-feet Apr. 24 (gage height, 6.56 feet); minimum, 27 second-feet Nov. 22 (gage height, 3.15 feet).
1942-47: Maximum discharge, 1,320 second-feet June 6, 1944 (gage height, 9.15 feet); minimum, that of Nov. 22, 1946; minimum gage height, 2.96 feet Nov. 26, 1943.

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

Rating table, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge in second-feet)
(Shifting-control method used Oct. 25 to Nov. 22)

3.7	89	5.0	340
3.9	119	5.6	474
4.3	194	6.5	700

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	119	190	140	110	100	115	140	534	240	173	86	95
2	116	180	135	110	100	115	140	558	238	160	86	97
3	113	165	130	110	100	110	143	570	216	149	88	90
4	111	155	130	110	92	115	146	558	202	139	86	86
5	108	150	*130	110	100	115	158	534	230	143	86	86
6	103	145	130	110	105	115	308	486	297	162	85	85
7	102	173	140	*110	105	110	272	428	270	149	85	84
8	100	268	150	110	105	105	244	384	242	133	84	85
9	102	253	165	110	105	110	247	340	290	128	82	86
10	123	224	160	110	110	110	276	308	546	119	81	85
11	154	210	150	115	110	*120	318	286	596	114	79	103
12	152	198	145	110	115	125	318	276	546	111	77	123
13	133	188	110	110	115	120	297	340	474	111	82	117
14	124	183	140	110	115	120	351	373	486	116	89	116
15	123	173	145	110	115	120	340	351	486	114	85	108
16	128	186	140	110	110	120	362	384	439	103	80	99
17	128	183	135	110	100	125	384	373	384	103	81	97
18	123	179	130	110	110	120	417	329	329	113	93	96
19	119	162	125	110	115	120	395	318	286	113	108	97
20	116	150	120	110	115	120	384	318	253	133	108	102
21	116	150	120	100	110	125	406	286	228	130	109	103
22	116	*77	115	110	105	115	439	286	210	114	121	100
23	113	130	115	110	110	120	558	318	190	103	106	100
24	137	140	110	110	115	130	700	308	188	103	95	95
25	228	145	110	110	115	120	674	276	179	103	92	90
26	198	145	110	115	115	110	635	272	177	100	92	90
27	180	145	110	*110	115	120	596	259	175	100	88	90
28	160	145	110	100	115	130	558	238	222	96	106	100
29	180	140	110	105	-	125	534	228	208	95	111	114
30	230	140	110	100	-	120	546	218	177	95	100	109
31	210	-	110	100	-	135	-	210	-	89	92	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	4,265	230	100	138	0.789	0.91
November	5,072	268	77	169	.966	1.08
December	3,980	165	110	128	.731	.85
Calendar year 1946	63,397	1,100	77	174	.994	13.48
January	3,375	115	100	109	.623	.72
February	3,042	115	92	109	.623	.65
March	3,680	135	105	119	.680	.78
April	11,286	700	140	376	2.15	2.40
May	10,947	570	210	353	2.02	2.33
June	9,004	596	175	300	1.71	1.91
July	3,724	173	89	120	.686	.79
August	2,843	121	77	91.7	.524	.60
September	2,928	123	84	97.6	.558	.62
Water year 1946-47	64,146	700	77	176	1.01	13.64

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 23 to Apr. 2. No gage-height record Oct. 27 to Nov. 5; discharge computed on basis of recorded range in stage and records for nearby stations.

Middle Branch Ontonagon River near Trout Creek, Mich.

Location.- Water-stage recorder, lat. 46°28'45", long. 89°05'25", in sec. 8, T. 47 N., R. 38 W., an eighth of a mile upstream from State Highway 28, 3¼ miles west of town of Trout Creek, and 6½ miles downstream from Bond Falls Dam.

Drainage area.- About 225 square miles.

Records available.- June 1942 to September 1947.

Extremes (regulated).- Maximum discharge during year, 815 second-feet June 9 (gage height, 3.85 feet); minimum, 14 second-feet sometime during period Jan. 23 to Feb. 13, caused by ice jam upstream (gage height, 1.14 feet).
1942-47: Maximum discharge, 1,170 second-feet June 7, 1944 (gage height, 4.53 feet), minimum, that during period of no gage-height record Jan. 23 to Feb. 13, 1947.

Remarks.- Records excellent except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by Bond Falls Reservoir. Diversion to South Branch Ontonagon River by Bond Falls Canal (see p. 32).

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge in second-feet)

Oct. 1 to Dec. 2		Dec. 3 to Sept. 30			
1.6	45	1.6	44	2.4	216
1.7	56	1.7	58	2.8	350
		1.9	92	3.4	600
		2.1	134	3.7	740

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46	47	44	42	43	40	42	442	100	94	58	52
2	46	47	44	42	43	39	43	490	96	94	58	48
3	46	47	44	42	43	39	46	555	96	90	58	48
4	45	46	44	42	42	39	46	560	133	89	58	48
5	45	*46	*44	43	42	40	60	555	162	89	57	48
6	45	46	45	43	42	40	72	555	162	89	57	48
7	45	54	47	43	42	40	60	550	162	87	57	48
8	45	56	48	43	42	39	57	482	210	87	57	48
9	45	52	48	*43	42	39	62	430	444	85	57	48
10	46	50	47	42	42	39	65	314	740	80	55	48
11	46	50	45	42	41	39	75	175	604	68	54	51
12	45	49	44	42	42	*40	65	254	528	70	54	54
13	45	49	44	42	*43	40	65	267	532	75	58	52
14	45	49	44	43	42	39	63	264	542	73	55	50
15	45	48	44	43	42	39	65	264	532	68	55	50
16	45	48	43	43	42	39	67	267	430	67	54	50
17	45	47	43	44	42	39	68	264	340	67	55	50
18	45	47	43	43	41	40	65	264	340	65	60	50
19	45	46	43	43	41	40	58	267	284	62	57	49
20	45	46	43	43	41	40	62	261	201	63	57	49
21	45	46	43	43	41	40	62	258	154	62	57	49
22	45	45	43	43	41	40	*72	267	94	60	57	49
23	45	45	43	43	41	41	108	264	94	60	55	49
24	53	47	43	44	41	42	85	258	92	58	55	49
25	49	45	43	44	41	40	80	192	94	58	55	48
26	47	45	43	44	40	40	92	290	92	58	54	48
27	46	44	43	44	40	41	90	251	94	58	58	48
28	46	45	43	43	40	42	87	210	94	58	62	49
29	46	47	43	43	-	42	418	192	94	58	60	50
30	49	46	43	43	-	40	442	207	94	58	58	49
31	48	-	43	43	-	42	-	189	-	58	58	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,424	53	45	45.9		
November	1,425	56	44	47.5		
December	1,364	48	43	44.0		
Calendar year 1946	33,611	1,060	43	92.1		
January	1,330	44	42	42.9		
February	1,165	43	40	41.6		
March	1,239	42	39	40.0		
April	2,742	442	42	91.4		
May	10,058	560	175	324		
June	7,634	740	92	254		
July	2,208	94	58	71.2		
August	1,760	62	54	56.8		
September	1,477	54	48	49.2		
Water year 1946-47	33,826	740	39	92.7		

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 2, Jan. 15, 16, 20-23, Mar. 16-20, 27. No gage-height record Dec. 6 to Jan. 8, Jan. 24 to Feb. 12, Feb. 18 to Mar. 11, Sept. 4-30; discharge computed on basis of records for bypass weirs at Bond Falls and weather records.

Middle Branch Ontonagon River near Rockland, Mich.

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

Drainage area.- 670 square miles.

Records available.- July 1942 to September 1947.

Extremes (regulated).- Maximum discharge during year, 5,850 second-feet Apr. 6 (gage height, 10.39 feet, backwater from ice); minimum, 195 second-feet Oct. 7; minimum gage height observed, 4.66 feet Aug. 12.

1942-47: Maximum discharge, 27,000 second-feet Aug. 22, 1942 (gage height, 21.2 feet, from floodmarks), from rating curve extended above 4,500 second-feet, on basis of slope-area and contracted-opening determinations at gage height 21.2 feet; minimum observed, 183 second-feet Aug. 18, 1944; minimum gage height observed, 4.39 feet Aug. 13, 1942.

Remarks.- Records good except those for periods of ice effect or fragmentary gage-height record, which are fair, and those for periods of no gage-height record, which are poor. Gage read once or twice daily five or six days a week; discharge computed from graph based on gage readings. Flow regulated by Bond Falls Reservoir. Diversion to South Branch Ontonaton River by Bond Falls Canal (see p. 32).

Rating tables, water year 1946-47, except period of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 5				Apr. 6 to Sept. 30					
4.9	210	5.5	470	4.7	204	5.3	420	7.0	1,860
5.0	245	5.8	660	4.8	228	5.7	655	8.0	3,080
5.2	320	6.7	1,440	5.0	291	6.3	1,160	9.2	4,730

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	415	470	280	270	245	250	400	1,750	452	330	216	218
2	266	f426	280	270	240	255	550	2,090	415	326	216	211
3	248	f390	280	280	240	260	900	1,860	382	307	214	211
4	238	f347	290	280	240	250	1,600	1,750	364	318	214	209
5	207	320	*310	280	240	255	2,600	1,590	415	364	209	204
6	201	*304	300	280	240	250	*4,900	1,390	462	330	211	f204
7	198	542	310	270	240	250	2,850	1,200	441	303	214	f214
8	220	1,440	330	260	240	250	1,970	1,080	473	284	211	223
9	228	1,130	380	*260	240	250	*1,800	904	1,440	264	211	211
10	270	936	410	260	240	240	2,330	802	3,080	264	204	204
11	415	764	400	250	250	250	3,080	578	2,570	251	204	226
12	370	611	340	250	255	250	2,210	610	1,540	249	198	248
13	312	506	280	240	*265	*250	f2,030	1,040	1,300	352	200	257
14	273	442	270	250	265	250	2,210	1,120	2,450	655	214	257
15	252	400	280	230	260	250	1,750	938	2,330	530	206	245
16	256	f380	300	240	260	250	1,750	1,030	1,440	392	204	242
17	248	f360	300	240	250	250	1,920	878	980	310	214	228
18	242	360	290	240	250	260	1,860	715	786	310	251	228
19	234	338	290	250	230	260	1,540	730	648	291	245	271
20	234	324	290	250	245	260	1,750	754	548	281	242	352
21	234	320	290	240	245	260	1,860	670	462	271	271	431
22	231	300	290	230	245	260	2,090	708	373	257	352	330
23	231	315	270	230	245	300	4,730	1,300	330	251	314	277
24	288	310	270	260	245	370	3,610	980	314	234	264	257
25	892	305	270	280	250	390	2,390	852	318	231	234	248
26	f708	300	270	280	250	390	2,030	827	334	231	221	231
27	f536	300	270	260	250	370	1,700	722	352	231	234	223
28	400	290	270	250	260	350	1,540	622	473	231	267	240
29	432	290	270	230	-	340	2,270	572	387	226	245	257
30	724	280	260	250	-	340	2,210	542	356	223	240	260
31	f700	-	260	240	-	340	-	496	-	216	228	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	10,703	892	198	345		
November	13,800	1,440	280	460		
December	9,200	410	260	297		
Calendar year 1946	190,034	9,280	192	521		
January	7,900	280	230	255		
February	6,925	265	230	247		
March	8,750	390	240	282		
April	64,430	4,900	400	2,148		
May	31,100	2,090	496	1,003		
June	26,215	3,080	314	874		
July	9,306	655	216	300		
August	7,168	352	198	231		
September	7,417	431	204	247		
Water year 1946-47	202,914	4,900	198	556		

* Winter discharge measurement made on this day.

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

Note.- Stage-discharge relation affected by ice Nov. 23 to Apr. 7 (no gage-height record Nov. 22-24, Nov. 28 to Dec. 1, Dec. 24-29, Feb. 22, 23).

Ontonagon River near Rockland, Mich.

Location.- Water-stage recorder, lat. 46°43'15", long. 89°12'25", in sec. 20, T. 50 N., R. 39 W., at bridge on county road between Rockland and Victoria, 1¾ miles southwest of Rockland and 2 miles downstream from confluence of Middle and South Branches.
Drainage area.- 1,290 square miles.
Records available.- June 1942 to September 1947.
Extremes.- Maximum discharge during year, 9,900 second-feet Apr. 23; maximum gage height, 20.84 feet Apr. 6 (ice jam); minimum daily discharge, 524 second-feet (regulated) Sept. 26.

1942-47: Maximum discharge, 42,000 second-feet Aug. 22, 1942 (gage height, 28.6 feet, from floodmark), from rating curve extended above 9,500 second-feet on basis of slope-area determination; minimum daily, 456 second-feet (regulated) Dec. 3, 1944.
Remarks.- Records excellent except those for periods of ice effect or fragmentary gage-height record, which are fair, and those for periods of no gage-height record, which are poor. Flow regulated by Victoria Power Plant on South Branch, 5 miles above station, and by Bond Falls Reservoir and Gogebic and Cisco Lakes.

Rating tables, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 6		Apr. 7 to Sept. 30			
6.1	580	5.9	545	8.9	2,910
6.3	680	6.3	735	10.5	4,770
6.9	1,080	6.9	1,090	11.7	6,450
7.9	1,960	7.7	1,730	13.2	8,700
8.9	3,010				

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	722	*1,410	a720	750	680	a800	f850	4,770	1,090	960	762	f554
2	710	a1,200	a740	f820	620	a650	1,000	5,040	1,090	900	735	f709
3	698	1,080	f780	a830	f640	a800	1,400	5,180	990	a860	660	790
4	686	1,120	f800	f840	660	a800	2,500	4,640	990	a800	f760	735
5	a680	940	780	730	f640	a780	4,300	4,510	1,020	a700	790	735
6	a580	807	f780	f810	f660	760	*8,800	3,900	960	a740	790	735
7	680	1,120	800	850	760	760	7,000	3,350	1,040	735	735	735
8	688	3,020	860	850	760	760	*5,180	3,020	1,230	735	762	710
9	680	3,010	1,030	820	740	a610	4,380	2,540	1,870	735	735	735
10	788	2,260	1,200	*820	800	a760	5,040	2,390	4,770	762	f580	710
11	933	1,820	1,000	820	820	a790	6,450	2,140	5,600	762	713	710
12	842	1,640	650	710	800	a800	5,880	1,960	4,640	710	790	735
13	680	1,500	a690	790	820	a800	f4,640	2,340	3,460	762	762	735
14	720	1,280	f710	780	*820	790	5,320	2,740	5,180	1,120	762	628
15	740	1,010	a670	780	820	800	4,900	2,490	5,040	1,060	762	635
16	728	1,070	f830	750	*780	a650	4,900	2,390	4,020	930	710	710
17	716	1,010	a850	770	760	*a800	5,740	2,340	3,020	872	612	710
18	716	1,040	*f870	740	820	f810	5,460	2,040	2,390	845	f701	635
19	675	1,040	f830	660	820	f810	4,900	1,780	2,140	818	818	735
20	580	814	f760	f730	800	f810	4,900	1,680	1,730	685	762	790
21	679	776	740	770	800	f810	5,320	1,680	1,390	a760	845	818
22	722	552	a700	730	800	f790	5,320	1,860	1,350	845	930	762
23	710	a660	f760	730	700	a630	8,700	2,490	1,230	710	845	685
24	1,090	a720	f730	730	800	f820	8,400	2,590	1,060	762	f661	660
25	2,360	a660	a680	730	a800	f860	7,350	2,140	990	735	710	550
26	1,960	a680	f790	650	a800	f840	6,600	2,000	930	735	762	524
27	1,410	a670	f860	710	a800	f820	5,600	1,730	930	685	790	532
28	1,010	a660	880	710	a800	f840	5,040	1,550	1,120	722	845	532
29	835	a660	830	670	-	f810	5,740	1,510	1,230	f790	818	860
30	1,360	a700	900	690	-	a650	5,740	1,200	1,090	790	735	590
31	1,590	-	860	f670	-	f810	-	1,120	-	762	660	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	27,968	2,360	580	902		
November	34,929	3,020	552	1,164		
December	25,080	1,200	650	809		
Calendar year 1946	482,629	13,800	490	1,322		
January	23,440	850	650	756		
February	21,320	820	620	761		
March	24,020	860	610	775		
April	157,350	8,800	850	5,245		
May	81,110	5,180	1,120	2,616		
June	63,590	5,600	930	2,120		
July	24,787	1,120	685	800		
August	23,302	930	580	752		
September	20,484	818	524	683		
Water year 1946-47	527,380	8,800	524	1,445		

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for nearby stations.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.
Note.- Stage-discharge relation affected by ice Nov. 23 to Apr. 7.

Bond Falls Canal near Paulding, Mich.

Location.- Staff gage and concrete control, lat. 46°24'10", long. 89°09'00", in sec. 11, T. 46 N., R. 39 W., 40 feet upstream from intake to pipe line No. 2, 1.4 miles southeast of Paulding, and 1½ miles downstream from Bond Falls Reservoir.

Records available.- July 1942 to September 1947.

Extremes (regulated).- Maximum discharge during year, 362 second-feet Aug. 27 (gage height, 3.13 feet, from graph based on gage readings); minimum, 7.0 second-feet Apr. 8-12, July 9-13 (gage height, 0.28 foot).
1942-47: Maximum discharge, that of Aug. 27, 1947; minimum, 2.5 second-feet Nov. 3, 4, 11, 12, 1943; minimum gage height, -1.25 feet May 29, 1943 (two drain holes in weir open and canal gate closed).

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	64	8.7	172	216	175	133	48	11	51	86	326	345
2	64	8.7	172	216	175	133	50	11	51	86	324	345
3	91	8.7	196	216	199	133	52	11	51	86	322	341
4	165	8.7	241	216	219	133	51	12	52	86	320	337
5	201	8.7	234	216	219	133	33	12	52	86	328	333
6	201	8.7	158	205	219	133	9.2	12	52	86	346	342
7	201	8.7	91	182	219	133	7.8	12	52	86	350	352
8	237	8.7	11	179	219	133	7.0	12	42	86	294	348
9	258	8.7	11	*178	219	133	7.0	12	27	30	292	345
10	258	8.7	11	175	*219	133	7.0	12	26	7.0	295	343
11	240	9.2	11	172	219	133	7.0	12	27	7.0	295	328
12	103	9.2	10	169	219	*133	7.0	12	27	7.0	293	300
13	12	9.2	10	168	194	133	7.4	12	26	105	293	296
14	95	9.2	10	165	141	116	7.4	39	27	191	316	293
15	182	9.7	79	162	140	102	7.8	52	28	252	326	262
16	180	9.7	148	161	160	100	7.8	52	55	260	324	238
17	180	9.7	148	193	195	100	7.8	52	86	258	324	237
18	180	10	185	224	190	100	7.8	52	86	256	320	235
19	180	10	265	224	186	99	7.8	52	86	255	318	224
20	180	10	265	186	186	99	7.8	52	86	288	316	186
21	178	11	157	137	186	99	8.3	52	86	346	314	186
22	234	11	49	137	185	99	8.7	53	86	350	313	185
23	256	11	49	176	183	99	9.7	53	86	350	311	183
24	216	11	75	232	183	99	9.7	53	86	294	309	183
25	81	11	127	232	160	100	9.7	52	86	278	307	170
26	9.7	11	127	232	133	102	9.7	51	86	282	307	146
27	9.7	11	128	232	133	104	10	51	86	282	344	137
28	9.2	11	155	232	133	104	10	51	86	282	358	137
29	9.2	51	216	232	-	68	11	51	86	282	352	136
30	8.7	149	216	232	-	44	11	51	86	318	350	136
31	8.7	-	216	199	-	44	-	51	-	331	346	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	4,292.2	258	8.7	138		
November	470.9	149	8.7	15.7		
December	3,943	265	10	127		
Calendar year 1946	42,613.6	265	8.7	117		
January	6,096	232	137	197		
February	5,208	219	133	186		
March	3,407	133	44	110		
April	445.4	52	7.0	14.8		
May	1,073	53	11	34.6		
June	1,850	86	26	61.7		
July	5,999.0	350	7.0	194		
August	9,933	358	292	320		
September	7,629	352	136	254		
Water year 1946-47	50,346.5	358	7.0	138		

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Jan. 1-19, Feb. 3-9, 22, 23, Feb. 25 to Mar. 12, Mar. 17, 18.

East Branch Ontonagon River near Mass, Mich.

Location.- Wire-weight gage, lat. 46°41'25", long. 89°04'20", in sec. 33, T. 50 N., R. 38 W., at county highway bridge, 300 feet downstream from Adventure Creek, 5 miles south of Mass, and 6½ miles upstream from mouth.

Drainage area.- 265 square miles.

Records available.- July 1942 to September 1947.

Extremes.- Maximum discharge during year, 2,230 second-feet Apr. 23 (gage height, 9.04 feet, from floodmark); minimum, 98 second-feet, Aug. 12 (gage height, 3.6[illegible] feet, from graph based on gage readings).
1942-47: Maximum discharge, 3,510 second-feet Aug. 22, 1942 (gage height, 10.39 feet, from graph based on gage readings); minimum, that of Aug. 12, 1947.

Remarks.- Records good May 9 to Sept. 30, others fair except those for periods of ice effect or doubtful or no gage-height record, which are poor. Gage read twice daily except during period of ice effect, when once-daily readings were made.

Rating tables, water year 1946-47, except period of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 5		Apr. 6 to Sept. 30			
3.9	142	3.7	101	5.5	557
4.2	205	3.9	138	6.3	850
4.6	299	4.5	265	7.0	1,150
		5.0	400	8.0	1,640

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	154	*253	170	140	150	135	220	810	238	168	114	117
2	148	216	170	140	150	135	*240	790	216	162	114	119
3	146	203	170	140	150	135	260	790	199	150	110	117
4	138	196	180	140	145	135	300	750	184	148	110	115
5	134	190	180	150	135	135	600	680	191	174	110	112
6	132	201	190	150	135	135	1,300	557	214	170	108	110
7	131	258	190	150	135	135	1,200	460	203	152	106	148
8	132	287	210	140	135	135	1,000	354	188	142	105	130
9	131	304	230	140	135	135	900	311	349	134	105	119
10	150	297	230	*150	135	135	*870	278	1,100	132	103	115
11	185	275	220	150	135	135	1,040	270	890	121	101	125
12	198	263	190	150	140	135	880	272	400	125	98	144
13	177	256	170	150	*140	135	760	430	608	201	108	154
14	166	242	160	150	140	135	790	491	870	491	115	174
15	154	226	160	140	140	135	712	415	712	371	108	158
16	148	216	150	140	140	135	491	491	491	263	105	148
17	150	216	140	140	140	*135	810	400	357	214	110	140
18	148	216	*140	140	140	135	810	330	285	193	138	134
19	142	212	130	140	140	135	830	308	247	170	140	158
20	142	201	130	140	140	135	830	316	216	162	138	244
21	148	187	130	140	135	135	830	278	193	156	182	265
22	140	183	130	140	135	140	910	313	168	140	225	214
23	138	180	130	150	135	160	1,640	491	162	136	195	176
24	212	175	130	160	135	180	1,590	386	166	132	158	156
25	304	175	130	150	135	190	1,100	313	162	134	134	142
26	304	170	130	160	135	200	800	319	176	125	123	134
27	256	170	130	170	135	200	700	303	184	128	123	128
28	221	170	130	160	135	200	830	263	265	128	158	140
29	246	170	130	180	-	200	950	242	222	125	154	158
30	316	170	130	150	-	210	970	214	178	119	132	160
31	314	-	130	150	-	220	-	212	-	112	130	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	5,605	314	131	181	0.683	0.79
November	6,478	304	170	216	.815	.91
December	4,940	230	130	159	.600	.69
Calendar year 1946	86,487	2,620	119	237	.894	12.14
January	4,570	170	140	147	.555	.64
February	3,880	150	135	139	.525	.54
March	4,735	220	135	153	.577	.66
April	25,402	1,640	220	847	3.20	3.56
May	12,817	810	212	413	1.56	1.80
June	10,034	1,100	162	334	1.26	1.41
July	5,278	491	112	170	.642	.74
August	3,959	224	98	128	.483	.56
September	4,454	265	110	148	.558	.62
Water year 1946-47	92,152	1,640	98	252	.951	12.92

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Nov. 23 to Apr. 9. No gage-height record Nov. 26 to Dec. 3, Jan. 17-22, 24-26, Jan. 28 to Feb. 10, Apr. 11-13, 25-27, and doubtful gage-height record Nov. 12, 13, Apr. 15-22, May 1-6; discharge computed on basis of weather records and records for nearby stations.

Cisco Branch Ontonagon River at Cisco Lake Outlet, Mich.

Location.- Staff gage, lat. 46°15', long. 89°27', in sec. 32, T. 45 N., R. 41 W., just downstream from Cisco Lake Dam, 2½ miles upstream from Langford Lake Outlet, 4¾ miles upstream from U. S. Highway 2, and 13 miles southwest of Watersmeet, Mich.

Drainage area.- 50 square miles

Records available.- October 1944 to September 1947.

Extremes (regulated).- Maximum discharge during year, 169 second-feet June 11-13 (gage height, 1.60 feet); minimum daily 1.6 second-feet Sept. 19-23.
1944-47: Maximum discharge, 229 second-feet June 25, 26, 1946 (gage height, 1.88 feet); minimum daily, that of Sept. 19-23, 1947.

Remarks.- Records good except those below 10 second-feet, which are fair. Gage read once daily. Flow regulated by Cisco Lake.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1-7		Oct. 7 to Sept. 30			
0.3	5.0	0.25	1.9	0.7	32
.4	9.0	.3	3.6	.9	55
.5	14	.4	8.2	1.1	81
.6	21	.5	15	1.4	129
.7	30	.6	23	1.6	169

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	62	60	65	44	42	38	133	28	31	17	5.3
2	7.8	63	60	63	43	42	36	135	28	19	17	5.3
3	7.0	63	59	63	43	42	38	133	29	20	12	5.3
4	5.8	62	59	62	43	42	38	133	30	23	7.2	5.7
5	5.0	61	57	61	43	42	48	133	50	20	7.2	4.8
6	5.0	61	56	60	43	41	54	131	66	23	7.2	3.6
7	30	61	55	57	42	41	55	129	67	23	7.2	3.6
8	56	63	55	57	44	40	56	126	111	23	7.2	3.2
9	55	65	56	55	44	40	57	122	135	23	7.2	3.2
10	55	67	55	55	44	40	61	120	135	23	7.2	2.9
11	55	67	55	54	44	39	66	119	163	22	7.2	2.9
12	55	67	55	54	43	39	70	117	169	22	7.2	2.6
13	55	67	55	53	43	40	71	120	169	22	7.2	2.6
14	55	67	54	51	42	41	74	122	165	19	7.2	2.6
15	54	66	54	51	42	41	74	120	161	19	7.2	2.6
16	53	65	54	50	42	42	75	120	156	19	6.7	1.9
17	53	66	54	50	42	42	77	106	154	19	6.7	1.9
18	51	65	53	49	42	42	77	99	152	18	6.2	1.9
19	50	65	53	49	42	41	78	99	148	18	5.7	1.6
20	50	65	53	49	42	41	80	98	144	18	5.3	1.6
21	49	63	51	48	41	41	81	98	96	18	4.8	1.6
22	49	63	51	48	41	41	111	99	59	21	4.4	1.6
23	50	63	51	47	41	41	127	99	56	22	4.0	1.6
24	53	62	50	47	43	40	131	96	56	19	4.0	36
25	54	62	49	45	44	40	131	96	56	19	4.0	51
26	55	62	59	45	44	40	131	75	59	17	4.0	49
27	55	61	65	45	43	40	131	65	57	17	4.0	62
28	56	61	66	44	43	40	133	62	57	17	4.4	65
29	57	61	67	44	-	39	133	59	55	17	4.4	61
30	61	60	66	44	-	39	131	57	59	17	4.4	61
31	62	-	65	44	-	38	-	37	-	17	4.8	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,393.8	62	5.0	45.0		
November	1,906	67	60	63.5		
December	1,752	67	49	56.5		
Calendar year 1946	18,267.7	229	5.0	50.0		
January	1,609	65	44	51.9		
February	1,197	44	41	42.8		
March	1,259	42	38	40.6		
April	2,463	133	36	82.1		
May	3,258	135	37	105		
June	2,870	169	28	95.7		
July	625	31	17	20.2		
August	210.2	17	4.0	6.78		
September	454.9	65	1.6	15.2		
Water year 1946-47	18,997.7	169	1.6	52.0		

South Branch Ontonagon River at Ewen, Mich.

Location.- Staff gage, lat. 46°32'05", long. 89°16'30", in sec. 26, T. 48 N., R. 40 W., on piers of old M28 highway bridge in Ewen.

Drainage area.- About 320 square miles.

Records available.- April 1942 to September 1947.

Extremes.- Maximum discharge during year, 2,930 second-feet Apr. 24; maximum gage height, 12.91 feet Apr. 24; minimum observed, 107 second-feet (regulated) July 13 (gage height, 1.24 feet).

1942-47: Maximum discharge, 6,640 second-feet (regulated) June 25, 1946; maximum gage height, 18.86 feet June 25, 1946; minimum discharge observed, 83 second-feet (regulated) Aug. 7, 1944 (gage height, 1.00 feet).

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Gage read twice daily. Diversion from Middle Branch Ontonagon River by Bond Falls Canal (see p. 32).

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

1.4	125	7.5	1,195
1.6	147	9.5	1,750
2.4	251	12.6	2,780
3.9	494		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	266	512	280	390	340	260	266	1,130	425	327	375	391
2	216	425	280	390	320	270	281	1,300	442	304	375	400
3	190	408	300	390	300	260	343	1,400	391	266	375	391
4	209	383	330	380	300	270	442	1,240	351	244	367	383
5	281	*343	390	350	330	260	605	1,170	351	237	359	383
6	281	311	360	340	340	270	1,320	1,070	512	230	367	375
7	288	375	330	330	340	270	1,510	910	530	223	391	383
8	281	871	330	*320	340	270	1,480	776	459	216	391	400
9	335	970	360	320	340	270	*1,450	681	548	209	375	400
10	383	776	370	320	350	270	1,660	605	1,720	171	351	400
11	442	662	380	320	350	270	1,870	548	2,190	127	335	400
12	494	605	310	320	*360	270	1,810	530	1,630	117	327	400
13	319	567	300	320	360	*270	1,720	605	1,050	122	335	400
14	230	512	290	320	330	260	1,720	719	1,130	145	343	391
15	327	476	340	310	310	250	1,900	700	1,370	319	359	367
16	367	442	380	310	310	250	1,850	757	1,270	343	359	311
17	367	400	360	320	350	260	1,990	738	970	335	359	304
18	391	367	340	360	330	260	1,960	662	795	335	391	304
19	383	400	370	380	330	260	1,570	643	700	367	391	311
20	391	359	430	360	320	260	1,450	662	605	391	375	296
21	375	327	420	290	320	260	1,480	605	512	391	367	274
22	375	310	330	290	320	260	1,510	605	494	408	359	266
23	408	290	*230	300	310	260	1,960	890	476	416	359	258
24	476	280	210	360	310	290	2,810	871	459	408	359	251
25	476	260	250	390	310	310	2,550	738	442	359	351	244
26	776	250	270	390	260	320	2,050	662	425	343	343	237
27	494	230	280	380	260	320	1,630	605	425	343	351	244
28	400	220	290	380	260	310	1,320	548	400	335	408	251
29	383	210	340	370	-	300	1,200	476	383	335	416	266
30	476	300	350	360	-	280	1,200	442	351	335	408	266
31	624	-	350	350	-	260	-	400	-	375	400	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	11,704	776	190	378		
November	12,841	970	210	428		
December	10,150	430	210	327		
Calendar year 1946	166,344	6,130	130	456	-------	-------
January	10,710	390	290	345		
February	9,000	360	260	321		
March	8,450	320	250	273		
April	44,907	2,810	266	1,497		
May	23,688	1,400	400	764		
June	21,806	2,190	351	727		
July	9,076	416	117	293		
August	11,421	416	327	368		
September	9,947	400	237	332		
Water year 1946-47	183,700	2,810	117	503		

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Nov. 23 to Mar. 31. No gage-height record Oct. 2, Nov. 15-17, Nov. 22 to Dec. 3, Apr. 15, 16; discharge computed on basis of weather records and records for Bond Falls Canal near Paulding and other nearby stations. Discharge computed using rate of change of stage as a factor Apr. 24, 25, June 11.

West Branch Ontonagon River near Bergland, Mich.

Location.- Water-stage recorder, lat. 46°35'30", long. 89°32'20", in sec. 3, T. 48 N., R. 42 W., a quarter of a mile downstream from dam at outlet of Gogebic Lake and 1¼ miles east of Bergland. Datum of gage is 1,290.81 feet above mean sea level, datum of 1929.

Drainage area.- 160 square miles.

Records available.- July 1942 to September 1947.

Extremes (regulated).- Maximum discharge during year, 1,040 second-feet May 1 (gage height, 5.17 feet, during seiches on Gogebic Lake); minimum, 34 second-feet Sept. 29 (gage height, 1.22 feet, during seiches on Gogebic Lake); minimum daily, 36 second-feet Sept. 30.

1942-47: Maximum discharge, 1,100 second-feet May 6, 1943 (gage height, 5.41 feet); minimum, about 8 second-feet Nov. 9, 1945 (flow from channel storage between dam and gage during a period of practically no flow from Gogebic Lake due to slush and ice lodged on dam); minimum daily, 28 second-feet Oct. 30, 31, Nov. 2-7, 1943.

Remarks.- Records excellent except those for Dec. 1 to May 7 or those for periods of ice effect, which are good. Flow regulated by Gogebic Lake.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 3		Dec. 4 to Sept. 30			
1.5	50	1.3	38	2.7	186
1.6	57	1.6	54	3.1	278
2.0	91	1.9	78	3.5	392
2.3	122	2.2	106	4.3	680
2.5	147	2.4	132	5.1	1,000

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	51	b64	159	68	55	90	1,000	121	201	121	58
2	56	52	b62	155	67	55	205	1,000	122	192	80	57
3	56	53	82	122	67	57	196	980	132	166	159	57
4	56	52	194	96	69	92	192	960	138	106	205	57
5	56	52	278	94	71	128	101	940	134	104	199	55
6	56	52	*276	93	71	125	49	900	131	103	182	80
7	104	*54	170	92	71	122	49	860	131	134	168	143
8	150	56	59	*92	b117	121	50	820	135	102	110	152
9	144	56	58	93	172	118	54	800	155	191	79	89
10	150	58	55	93	164	116	58	780	296	319	119	58
11	132	59	56	93	168	112	74	760	428	364	174	55
12	45	60	59	92	*170	110	160	700	456	318	167	54
13	44	60	b60	92	112	110	412	680	446	405	197	54
14	44	59	60	93	60	110	436	634	460	373	136	55
15	45	60	68	137	60	78	478	565	530	197	108	49
16	44	63	87	201	61	50	582	548	582	86	118	46
17	45	b62	103	192	62	50	620	399	565	85	117	45
18	45	b62	169	141	63	108	640	276	548	84	117	45
19	44	62	218	99	87	201	640	276	530	84	118	46
20	44	62	214	99	138	194	660	281	512	161	90	46
21	44	b66	209	102	137	156	680	281	442	149	73	44
22	44	b56	130	188	134	135	700	276	422	116	71	44
23	44	b62	57	239	132	132	760	288	405	98	71	43
24	47	60	58	192	135	131	820	304	351	84	69	41
25	48	60	59	125	135	129	880	281	260	85	67	40
26	45	61	60	70	112	128	920	309	220	82	144	40
27	45	62	62	70	56	124	920	276	207	82	186	39
28	46	63	160	71	55	77	940	263	220	82	172	39
29	47	66	205	70	-	45	960	200	207	82	101	37
30	51	65	166	69	-	45	980	140	209	156	59	36
31	51	-	162	68	-	45	-	146	-	174	58	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,928	150	44	62.2		
November	1,766	66	51	58.9		
December	3,720	278	55	120		
Calendar year 1946	51,569	1,040	44	141		
January	3,592	239	68	116		
February	2,814	172	55	100		
March	3,259	201	45	105		
April	14,306	980	49	477		
May	16,923	1,000	140	546		
June	9,495	582	121	316		
July	4,965	405	82	160		
August	3,835	205	58	124		
September	1,704	152	36	56.8		
Water year 1946-47	68,307	1,000	36	187		

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

Sturgeon River near Sidnaw, Mich.

Location.- Water-stage recorder, lat. 46°35', long. 88°35', in sec. 5, T. 48 N., R. 34 W., 40 feet downstream from new bridge on county road, 2 miles downstream from Rock River, 3½ miles northwest of Covington, 4 miles upstream from Perch River, and 9 miles northeast of Sidnaw. Prior to Oct. 2, 1946, staff gage at old timber bridge 20 feet upstream, at same datum.

Drainage area.- 155 square miles.

Records available.- October 1912 to September 1915, April 1943 to September 1947.

Extremes.- Maximum discharge during year, 2,430 second-feet May 1 (gage height, 9.31 feet); minimum, 12 second-feet Aug. 12, 13; minimum gage height, 3.67 feet Aug. 13.
1912-15, 1943-47: Maximum discharge, 3,280 second-feet May 7, 1943; maximum gage height, 10.18 feet June 6, 1944; minimum discharge, that of Aug. 12, 13, 1947; minimum gage height, 3.65 feet Aug. 25, 1944, from graph based on gage readings.

Remarks.- Records excellent except those below 50 second-feet, which are good, and those for periods of ice effect or no gage-height record, which are fair.

Rating table, water year 1946-47, except for periods of ice effect
(gage height, in feet, and discharge, in second-feet)

3.7	13	4.5	85	6.1	525
3.8	18	4.6	127	7.4	1,180
3.9	24	5.0	164	8.6	1,920
4.0	32	5.3	238	9.2	2,350
4.2	51	5.7	365		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a54	129	72	52	49	45	64	2,350	224	198	21	25
2	51	121	70	*51	50	45	66	2,130	206	173	20	22
3	46	120	68	50	*51	45	75	1,990	184	139	20	20
4	44	114	68	49	50	45	90	1,850	162	109	17	18
5	39	102	69	49	48	45	158	1,720	162	95	19	17
6	36	93	70	48	47	45	340	1,420	198	88	17	16
7	32	95	77	48	47	45	436	1,180	211	77	16	21
8	29	144	95	47	46	45	406	945	188	66	14	35
9	27	184	194	47	46	45	369	770	255	55	14	40
10	27	182	241	47	46	45	402	635	720	48	14	32
11	30	173	227	48	47	46	484	590	995	42	14	37
12	29	156	198	49	48	47	498	615	795	37	13	63
13	29	141	179	50	50	50	525	970	615	56	12	90
14	28	127	160	50	51	50	516	1,150	600	116	14	102
15	27	120	140	50	52	51	507	1,070	640	175	14	90
16	30	120	120	50	52	51	512	1,100	538	164	14	74
17	31	120	120	50	52	50	548	970	421	124	14	62
18	32	111	110	50	51	50	*590	795	327	101	16	51
19	31	114	98	50	50	50	595	660	264	93	16	56
20	30	102	90	50	*49	*49	640	561	214	88	18	112
21	30	98	85	48	48	50	745	476	177	83	23	171
22	27	*75	80	47	46	48	820	452	146	74	36	168
23	26	90	75	47	45	50	1,070	530	122	63	38	142
24	33	102	70	48	45	58	1,150	472	106	54	33	115
25	95	95	67	45	45	62	1,180	406	104	49	25	94
26	116	90	64	52	45	60	1,330	387	114	42	20	78
27	108	85	62	51	45	62	1,390	358	111	36	22	69
28	97	78	59	50	45	62	1,390	320	276	33	42	70
29	92	76	57	49	-	62	1,720	273	300	30	44	77
30	114	74	55	49	-	62	2,350	255	224	28	42	84
31	134	-	54	49	-	62	-	235	-	23	30	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,556	134	26	50.2	0.324	0.37
November	3,431	184	74	114	.735	.82
December	3,194	241	54	103	.665	.77
Calendar year	-	-	-	-	-	-
January	1,525	52	47	49.2	.317	.37
February	1,346	52	45	48.1	.310	.32
March	1,582	62	45	51.0	.329	.38
April	20,966	2,350	64	699	4.51	5.03
May	27,635	2,350	235	891	5.75	6.63
June	9,599	995	104	320	2.06	2.30
July	2,559	198	23	82.5	.532	.61
August	672	44	12	21.7	.140	.16
September	2,051	171	16	68.4	.441	.49
Water year 1946-47	76,116	2,350	12	209	1.35	18.25

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records.
Note.- Stage discharge relation affected by ice Nov. 27 to Dec. 4, Dec. 14 to Apr. 4.

Sturgeon River near Baraga, Mich.

Location.- Wire-weight gage, lat. 46°47', long. 88°37', in sec. 28, T. 51 N., R. 34 W., at bridge on State Highway 35, 6 miles west of Baraga and 6 miles downstream from Prickett Dam. Datum of gage is 660.00 feet above mean tide at New York City (Corps of Engineers bench mark).

Drainage area.- 364 square miles.

Records available.- October 1942 to September 1947 (discontinued).

Extremes.- Maximum discharge observed during year, 3,150 second-feet May 1 (gage height, 11.84 feet); minimum daily, 22 second-feet (regulated) Aug. 3.
1942-47: Maximum discharge, 4,830 second-feet May 7, 1943 (gage height, 14.87 feet, from graph based on gage readings); minimum daily, that of Aug. 3, 1947.

Remarks.- Records good except those below 500 second-feet and those for periods of extensive regulation, shifting control, ice effect, or no gage-height record, which are fair. Gage read twice daily. Flow regulated by power plant at Prickett Dam.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	207	230	170	190	190	190	240	3,150	560	460	290	100
2	211	290	300	220	160	180	250	2,970	540	450	240	280
3	229	200	290	220	190	210	280	2,850	560	400	22	300
4	224	280	280	210	200	240	329	2,420	560	250	260	310
5	257	280	260	180	200	280	390	2,320	530	180	300	280
6	31	330	250	210	200	340	420	2,170	500	170	270	260
7	113	370	250	210	190	400	500	1,560	460	320	190	35
8	233	370	170	210	170	210	524	1,380	324	300	150	240
9	229	400	350	210	160	220	572	1,160	399	290	150	230
10	245	370	500	210	190	446	670	1,020	654	250	130	210
11	238	410	440	200	200	446	885	925	1,790	230	140	200
12	190	420	450	170	190	359	1,250	905	1,520	190	130	190
13	28	370	340	200	200	420	840	1,250	1,340	180	130	180
14	160	320	250	210	*200	312	1,100	1,480	1,160	520	130	150
15	147	330	200	210	200	205	1,000	1,430	1,120	680	140	220
16	166	330	290	210	190	200	900	1,520	1,160	580	140	330
17	175	310	290	200	220	190	905	1,430	1,000	450	25	310
18	160	310	290	190	220	198	925	1,300	670	380	120	180
19	170	310	280	150	220	200	1,050	1,090	654	250	130	220
20	29	290	270	180	240	200	965	1,050	621	110	170	250
21	192	320	270	190	240	200	1,000	740	621	370	130	220
22	180	370	190	180	230	200	1,430	740	478	440	130	140
23	175	160	290	180	190	190	2,120	885	508	260	130	300
24	240	205	290	180	220	240	2,170	810	461	240	90	578
25	270	330	200	170	200	*230	2,070	687	368	190	130	251
26	280	350	260	150	180	230	2,120	638	338	180	120	268
27	203	320	270	200	180	240	1,700	640	446	23	140	240
28	360	190	*270	200	180	260	1,880	638	430	205	300	210
29	440	300	180	200	-	260	2,270	654	440	430	250	266
30	410	280	250	190	-	210	3,030	638	470	306	180	270
31	350	-	250	200	-	260	-	638	-	301	35	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	6,542	440	28	211	-	-
November	9,345	420	160	312	-	-
December	8,640	500	170	279	-	-
Calendar year 1946	136,594	1,780	28	374	1.03	13.96
January	6,030	220	150	195	-	-
February	5,550	240	160	198	-	-
March	7,966	446	180	257	-	-
April	33,785	3,030	240	1,126	-	-
May	41,088	3,150	838	1,325	-	-
June	20,680	1,790	324	689	-	-
July	9,585	680	23	309	-	-
August	4,892	300	22	158	-	-
September	7,196	578	35	240	-	-
Water year 1946-47	161,299	3,150	22	442	1.21	16.48

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 15 to Mar. 9. No gage-height record Dec. 7-22, July 1-27, Aug. 3 to Sept. 4; gage readings not representative of discharge for day because of extensive regulation Oct. 6, 14, 17, 20, 22-26, Oct. 28 to Dec. 6, Mar. 13, Mar. 19 to Apr. 2, Apr. 5-7, 13-16, May 21, 22, 24, 27, June 1-7, 29, 30, Sept. 5-23, 28, 30; discharge computed on basis of Prickett Dam power-plant records. Shifting-control method used July 28 to Aug. 2.

Sturgeon River near Arnheim, Mich.

Location.- Staff gage, lat. 46°56', long. 88°33', in sec. 6, T. 52 N., R. 33 W., a quarter of a mile downstream from Otter Lake, 3 miles northwest of Arnheim, and 8½ miles northeast of Pelkie. Datum of gage is 605.98 feet above mean tide at New York City (Corps of Engineers bench mark).

Drainage area.- 680 square miles.

Records available.- November 1942 to September 1947.

Extremes.- Maximum discharge during year, 5,100 second-feet May 1; maximum gage height, 12.88 feet May 1; minimum discharge, 254 second-feet Aug. 17-21, 26-28, Sept. 2; minimum gage height, 1.50 feet Aug. 17, 19, 20, 26-28, Sept. 2.
1942-47: Maximum discharge, 6,600 second-feet Apr. 25, 1944; maximum gage height, 13.93 feet Apr. 28, 1943, from graph based on gage readings; minimum discharge, that of Aug. 17-21, 26-28, Sept. 2, 1947; minimum gage height, that of Aug. 17, 19, 20, 26-28, Sept. 2, 1947.

Remarks.- Records good except those above 4,000 second-feet and those for periods of ice effect or no gage-height record, which are fair. Gage read once daily.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	345	520	403	437	340	330	460	4,950	1,000	730	392	289
2	340	484	381	437	340	330	484	4,770	910	715	392	254
3	350	460	381	426	340	330	520	4,760	880	670	370	271
4	360	448	*381	426	340	330	600	4,600	850	484	328	318
5	345	426	403	414	340	330	745	4,250	850	403	308	338
6	340	414	426	414	340	370	1,180	3,860	790	426	328	349
7	310	426	437	403	340	414	2,090	3,480	790	437	338	349
8	320	472	448	400	340	460	2,150	3,010	730	437	318	328
9	330	520	508	390	340	496	2,110	2,530	700	448	298	289
10	340	559	641	380	340	472	2,170	2,180	760	437	289	298
11	350	572	790	380	340	472	2,470	1,910	1,030	414	280	298
12	350	600	820	370	340	484	2,810	1,700	1,360	403	262	308
13	345	613	790	360	340	496	2,690	1,690	1,900	381	271	308
14	338	586	656	360	340	*520	2,630	1,990	1,970	414	271	318
15	318	559	586	360	340	496	2,630	2,130	2,430	559	262	308
16	298	533	586	370	340	472	2,590	2,110	2,550	656	262	328
17	308	520	670	370	340	426	2,630	2,110	2,120	670	254	338
18	328	520	600	360	340	403	2,630	2,000	1,770	670	254	381
19	318	484	572	350	340	392	2,550	1,820	1,470	600	254	403
20	308	484	559	340	350	381	2,510	1,660	1,060	520	254	426
21	289	472	546	340	350	370	2,510	1,470	1,030	426	254	460
22	271	496	533	350	350	370	2,580	1,390	1,000	426	271	426
23	289	496	508	360	350	381	2,920	1,430	910	448	298	392
24	318	448	484	350	360	392	3,760	1,470	820	426	289	403
25	338	392	472	340	350	414	4,140	1,330	790	403	280	448
26	381	360	460	340	*350	437	4,200	1,330	670	381	254	426
27	403	426	448	340	340	448	4,200	1,270	656	349	254	414
28	414	426	448	330	340	448	4,150	1,180	670	308	262	403
29	426	403	460	*330	-	460	4,140	1,150	760	308	298	360
30	496	392	448	330	-	472	4,720	1,090	760	338	318	381
31	533	-	437	340	-	460	-	1,030	-	370	318	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	10,799	533	271	348	0.512	0.59
November	14,511	613	360	484	.712	.79
December	16,282	820	381	525	.772	.89
Calendar year 1946	237,069	3,730	263	650	.956	12.96
January	11,497	437	330	371	.546	.63
February	9,600	360	340	343	.504	.53
March	13,056	520	330	421	.619	.71
April	75,969	4,720	460	2,532	3.72	4.15
May	71,650	4,950	1,030	2,311	3.40	3.92
June	33,986	2,550	656	1,133	1.67	1.86
July	14,657	730	308	473	.696	.80
August	9,081	392	254	293	.431	.50
September	10,612	460	254	354	.521	.58
Water year 1946-47	291,700	4,950	254	799	1.18	15.95

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Jan. 8 to Mar. 6. No gage-height record Oct. 1-4, 6-13; discharge computed on basis of weather records and records for nearby stations. Discharges Apr. 7 to May 21, June 13-18 computed using rate of change of stage as a factor.

Otter River near Elo, Mich.

Location.- Wire-weight gage, lat. 46°52', long. 88°37', in sec. 34, T. 52 N., R. 34 W., at highway bridge, 1¼ miles southeast of old Elo school and 3 miles upstream from Otter Lake.

Drainage area.- 175 square miles.

Records available.- November 1942 to September 1947.

Extremes.- Maximum discharge observed during year, 2,710 second-feet Apr. 30 (gage height, 11.47 feet); minimum, 79 second-feet Jan. 29 (discharge measurement), but may have been less at other times during period of ice effect.
1942-47: Maximum discharge, 4,300 second-feet Apr. 24, 1944 (gage height, 13.30 feet); minimum, 72 second-feet July 25, 27, Aug. 1, 2, 16, 17, 26, 27, 1946.

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

Rating tables, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used June 16-28, Sept. 20-30)

Oct. 1 to Apr. 3		Apr. 4 to Sept. 30			
3.6	89	3.6	88	6.8	731
3.9	134	3.9	129	8.5	1,240
4.1	166	4.6	237	10.1	1,920
		5.6	441	11.0	2,390

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	90	134	110	98	85	95	150	1,440	179	196	81	89
2	89	128	110	96	85	98	*160	1,240	170	173	83	89
3	89	124	110	94	85	98	160	1,440	161	146	84	86
4	94	113	*110	92	85	100	200	1,200	154	129	84	83
5	86	107	110	90	85	100	274	960	156	133	83	82
6	85	106	110	88	85	100	1,020	704	161	142	84	81
7	82	107	110	88	85	98	900	566	154	122	84	83
8	83	171	120	86	85	98	*704	452	149	111	82	83
9	85	169	145	86	85	98	652	376	166	104	81	81
10	106	164	150	84	85	95	842	334	334	100	81	80
11	126	163	150	84	85	98	1,240	355	366	97	80	84
12	125	148	140	82	88	100	1,050	386	274	93	80	93
13	119	137	125	82	90	120	786	578	237	115	82	102
14	112	126	115	82	90	*125	870	566	704	155	93	104
15	107	122	115	82	90	125	758	430	1,020	125	88	97
16	102	124	115	82	90	125	786	376	566	111	81	91
17	98	122	115	82	90	125	842	314	344	102	82	86
18	96	119	115	82	90	125	758	274	255	100	107	93
19	94	116	110	82	90	125	731	264	202	97	100	146
20	94	116	110	84	90	130	786	255	174	96	92	204
21	92	113	110	80	90	130	842	246	152	93	101	164
22	90	112	110	80	95	135	870	284	137	89	139	125
23	90	115	110	84	95	150	1,680	452	128	88	112	107
24	119	125	105	90	98	160	1,520	376	122	89	97	98
25	164	120	105	90	98	155	1,240	294	122	94	87	93
26	134	120	105	92	*95	150	1,320	284	121	91	82	91
27	119	118	105	92	95	140	1,200	264	135	88	88	88
28	113	115	*100	85	90	155	1,050	220	334	88	101	91
29	116	112	100	*85	-	160	1,600	212	228	87	94	96
30	156	110	100	85	-	150	2,390	212	182	86	89	89
31	163	-	98	85	-	145	-	186	-	81	88	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	3,318	164	82	107	0.611	0.71
November	3,776	171	106	126	.720	.80
December	3,543	150	98	114	.651	.75
Calendar year 1946	62,380	1,200	72	171	.977	13.25
January	2,674	98	80	86.3	.493	.57
February	2,499	98	85	89.2	.510	.53
March	3,808	160	95	123	.703	.81
April	27,381	2,390	150	913	5.22	5.82
May	15,540	1,440	186	501	2.86	3.30
June	7,587	1,020	121	253	1.45	1.61
July	3,421	196	81	110	.629	.73
August	2,790	139	80	90.0	.514	.59
September	2,979	204	80	99.3	.567	.63
Water year 1946-47	79,316	2,390	80	217	1.24	16.85

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 23 to Apr. 4.

Manistique River near Germfask, Mich.

Location.- Staff gage, lat. 46°15'25", long. 85°52'20", in sec. 36, T. 45 N., R. 13 W., at bridge on State Highway 98, half a mile upstream from Fox River, 2 miles downstream from Manistique Lake, and 2½ miles east of Germfask. Auxiliary water-stage recorder on Manistique Lake at outlet from South Manistique Lake.

Drainage area.- 120 square miles.

Records available.- April 1942 to September 1947.

Extremes.- Maximum discharge during year, 242 second-feet June 1, 2, but may have been greater during seiches on Manistique Lake; maximum gage height observed, 4.40 feet May 6; maximum reverse flow, 105 second-feet Apr. 14, 15, but may have been greater during period of no gage-height record; minimum gage height, 0.90 foot Oct. 22, Sept. 6-8.
1942-47: Maximum discharge, 446 second-feet June 29, 1943 (from graph based on gage readings); maximum gage height, 5.70 feet June 22, 25, 1943 (from graph based on gage readings); maximum reverse flow, 299 second-feet Mar. 28, 1945; minimum gage height, 0.16 foot Sept. 1, 1942 (from graph based on gage readings).

Remarks.- Records good except those for periods of ice effect, shifting control, or those affected by wind on Manistique Lake, which are fair, and those for periods of indefinite slope-stage-discharge relation or no gage-height record, which are poor. Gage read twice daily. Stage-discharge relation affected by backwater from Fox River; discharge computed using fall as determined by auxiliary water-stage recorder as a factor. Occasionally during high stages of Fox River, flow at this station is reversed.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62	80	e100	110	82	111	90	e145	240	e195	135	59
2	60	84	e100	110	132	110	90	161	238	192	129	60
3	58	85	100	110	131	111	88	121	222	185	128	60
4	58	e84	100	110	130	110	87	124	216	176	126	56
5	56	84	102	105	134	*112	94	128	218	181	124	55
6	56	83	101	105	131	110	92	115	229	181	123	54
7	56	82	100	105	135	108	90	141	220	172	124	53
8	53	e84	101	110	134	107	88	174	218	171	117	52
9	54	85	92	110	134	103	40	175	214	170	112	55
10	56	85	93	110	134	103	0	204	220	168	110	56
11	60	88	88	115	130	101	-52	200	e225	166	108	57
12	59	87	*105	120	129	98	-90	205	e225	162	104	58
13	58	89	119	120	127	102	-100	206	227	159	99	60
14	54	86	120	120	127	104	-105	207	226	161	99	59
15	54	83	115	*120	126	105	-105	206	e230	196	94	58
16	e54	e88	115	120	126	101	-100	214	235	195	92	57
17	55	e88	110	120	126	101	-90	214	231	191	89	58
18	53	88	110	115	128	97	-50	216	231	e185	88	64
19	53	89	110	115	130	94	0	216	229	183	87	76
20	52	89	110	115	125	93	30	214	226	181	86	78
21	50	90	110	115	122	94	65	223	221	178	84	83
22	48	e97	110	120	121	95	97	218	212	171	81	80
23	50	97	110	120	124	93	108	e225	214	166	79	80
24	55	97	110	125	124	96	116	227	214	161	79	78
25	74	96	110	130	119	102	e115	229	209	156	79	76
26	74	80	110	133	118	e100	115	e230	205	158	75	74
27	74	85	110	132	116	98	e120	231	202	153	72	71
28	73	100	110	129	113	94	124	236	203	152	71	70
29	77	102	110	129	-	94	127	e236	203	147	65	70
30	81	100	110	112	-	94	138	228	195	e140	64	70
31	85	-	110	66	-	90	-	230	-	139	59	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,862	85	48	60.1	0.501	0.58
November	2,655	102	80	88.5	.738	.82
December	3,301	120	88	106	.883	1.02
Calendar year 1946	41,068	191	-102	113	.942	12.70
January	3,576	133	66	115	.958	1.11
February	3,508	135	82	125	1.04	1.09
March	3,131	112	90	101	.842	.97
April	1,222	138	-105	40.7	.339	.38
May	6,099	236	115	197	1.64	1.89
June	6,598	240	195	220	1.83	2.04
July	6,311	196	139	171	1.42	1.65
August	2,982	135	59	96.2	.802	.92
September	1,937	83	52	64.6	.538	.60
Water year 1946-47	42,182	240	-105	116	.967	13.07

* Winter discharge measurement made on this day.
e Slope-stage-discharge relation affected by wind on Manistique Lake.
Note.- Stage-discharge relation affected by ice Dec. 29 to Jan. 25. No gage-height record Nov. 27, 28, Dec. 14-28, Apr. 6-18; no gage-height record at auxiliary gage Sept. 24, 25; slope-stage-discharge relation indefinite Apr. 6-20; discharge computed on basis of discharge measurements, weather records, and records for nearby stations. Reverse flow indicated by minus sign. Shifting-control method used Apr. 21 to July 14.

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Manistique River at Germfask, Mich.

Location.- Water-stage recorder, lat. 46°14'00", long. 85°55'40", in SE¼ sec. 4, T. 44 N., R. 13 W., 1 mile south of Germfask and 1½ miles upstream from Grays Creek.

Drainage area.- 341 square miles.

Records available.- March 1938 to September 1947.

Extremes.- Maximum discharge during year, 1,170 second-feet Apr. 12 (gage height, 5.15 feet); minimum, 205 second-feet Sept. 7.
1938-47: Maximum discharge observed, 2,130 second-feet Apr. 1, 1938 (gage height, 8.50 feet, site and datum then in use); minimum observed, 184 second-feet Aug. 27, 29, 30, Sept. 6, 1938.

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

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

1.5	220
2.1	358
2.6	478
3.2	628
5.1	1,140

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	281	454	400	470	330	370	394	840	759	454	288	218
2	274	442	400	460	325	370	418	896	759	454	288	222
3	270	430	400	460	325	370	454	952	706	442	288	227
4	265	406	400	450	320	370	478	1,000	680	418	286	220
5	263	394	400	450	320	*360	528	1,030	680	430	283	213
6	258	382	406	440	320	360	503	1,030	759	454	279	209
7	249	370	418	430	320	360	553	980	759	442	279	209
8	249	394	466	420	320	360	*840	924	732	418	281	231
9	247	406	553	405	320	358	896	868	706	406	279	235
10	247	406	590	390	320	358	1,000	813	680	382	274	224
11	254	*418	590	390	320	358	1,090	759	654	382	265	218
12	244	430	*578	390	320	346	1,140	732	628	370	256	220
13	244	418	516	375	330	358	1,090	732	603	370	254	240
14	247	406	466	390	350	358	1,110	759	603	370	256	238
15	249	394	430	*400	370	370	1,110	786	603	418	263	224
16	251	394	450	400	370	382	1,110	813	603	406	256	220
17	260	430	470	390	370	370	1,090	813	578	382	251	222
18	263	442	500	375	370	370	1,060	786	566	370	249	240
19	256	430	510	375	360	358	1,000	759	540	370	249	300
20	251	418	510	375	360	358	952	732	528	358	251	334
21	249	418	510	350	360	358	896	732	516	358	249	346
22	249	418	510	310	350	358	868	732	490	346	247	346
23	251	394	510	310	370	346	868	786	478	346	242	334
24	260	410	500	330	370	370	868	786	466	334	240	322
25	370	420	500	350	370	382	868	786	454	334	240	300
26	442	420	490	360	370	358	868	759	454	322	231	288
27	442	410	490	375	370	430	868	732	454	322	224	283
28	442	410	480	390	370	394	868	706	454	322	220	281
29	442	410	480	405	-	382	840	680	466	311	220	281
30	466	410	470	360	-	382	840	706	454	311	213	288
31	466	-	470	335	-	382	-	732	-	300	213	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	9,201	466	244	297	0.871	1.00
November	12,384	454	370	413	1.21	1.35
December	14,863	590	400	479	1.40	1.62
Calendar year 1946	154,288	1,060	216	423	1.24	16.83
January	12,110	470	310	391	1.15	1.32
February	9,670	370	320	345	1.01	1.05
March	11,406	430	346	368	1.08	1.24
April	25,468	1,140	394	849	2.49	2.78
May	25,141	1,030	680	811	2.38	2.74
June	17,812	759	454	594	1.74	1.94
July	11,702	454	300	377	1.11	1.28
August	7,914	288	213	255	.748	.86
September	7,733	346	209	258	.757	.84
Water year 1946-47	165,404	1,140	209	453	1.33	18.02

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 24 to Dec. 5, Dec. 16 to Mar. 8.

Manistique River near Blaney, Mich.

Location.- Water-stage recorder, lat. 46°05'05", long. 86°03'35", in NE¼ sec. 33, T. 43 N., R. 14 W., half a mile downstream from Duck Creek and 7 miles southwest of Blaney.

Drainage area.- 704 square miles.

Records available.- March 1938 to September 1947.

Extremes.- Maximum discharge during year, 4,260 second-feet Apr. 13 (gage height, 17.69 feet); minimum, 261 second-feet Sept. 7 (gage height, 6.06 feet).
1938-47: Maximum discharge observed, 9,300 second-feet Apr. 1, 1938 (gage height, 19.42 feet); minimum discharge, 234 second-feet Aug. 19-24, 1941; minimum gage height, 5.63 feet Aug. 23, 1941.

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

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 5		Apr. 6 to Sept. 30			
6.6	352	6.1	270	13.2	2,085
9.2	941	7.0	450	15.5	2,940
10.0	1,130	9.0	895	16.6	3,480
		11.2	1,425	17.6	4,160

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	406	826	840	670	470	510	680	1,910	1,400	69[illegible]	387	270
2	395	803	840	670	470	510	740	2,020	1,400	69[illegible]	387	279
3	395	780	840	660	460	520	820	2,260	1,320	67[illegible]	387	279
4	384	758	840	650	460	520	1,000	2,440	1,250	604	376	279
5	373	714	900	630	450	520	1,250	2,500	1,230	58[illegible]	376	270
6	373	670	950	610	450	*520	1,720	2,500	1,350	604	376	270
7	362	648	1,030	590	450	520	*2,510	2,440	1,420	62[illegible]	376	261
8	351	670	1,130	580	450	520	2,900	2,260	1,400	604	376	270
9	351	714	1,130	560	450	540	3,180	2,080	1,320	56[illegible]	366	279
10	351	736	1,130	550	450	520	3,430	1,940	1,280	53[illegible]	366	279
11	362	780	*1,130	540	450	520	3,770	1,770	1,230	52[illegible]	356	279
12	362	803	1,110	530	450	510	4,160	1,630	1,150	50[illegible]	346	270
13	351	*803	987	530	460	520	4,160	1,570	1,110	50[illegible]	336	279
14	351	780	872	*540	500	550	4,070	1,600	1,080	51[illegible]	326	298
15	351	758	940	580	520	550	3,990	1,600	1,080	54[illegible]	326	288
16	362	758	950	600	520	550	3,840	1,630	1,080	56[illegible]	326	279
17	373	849	930	600	520	550	3,650	1,660	1,030	53[illegible]	326	279
18	373	872	920	580	520	550	3,480	1,570	987	51[illegible]	326	288
19	373	849	900	580	520	570	3,280	1,510	941	50[illegible]	326	346
20	362	826	870	580	500	570	3,030	1,480	895	494	326	461
21	351	803	850	560	500	570	2,740	1,450	849	494	316	494
22	351	826	820	530	500	580	2,400	1,420	803	483	316	505
23	351	803	800	490	500	580	2,260	1,540	758	47[illegible]	307	472
24	362	803	780	500	510	590	2,300	1,630	736	461	307	450
25	505	872	760	520	510	620	2,260	1,600	714	45[illegible]	307	418
26	714	849	750	540	510	590	2,190	1,510	714	45[illegible]	298	408
27	736	840	740	570	510	580	2,160	1,420	692	44[illegible]	288	398
28	714	840	720	580	510	630	2,120	1,350	714	42[illegible]	288	387
29	736	840	710	580	-	630	2,050	1,300	714	42[illegible]	279	398
30	803	840	690	560	-	630	1,980	1,350	714	41[illegible]	279	387
31	849	-	690	520	-	640	-	1,400	-	39[illegible]	270	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	13,833	849	351	446	0.634	0.73
November	23,713	872	648	790	1.12	1.25
December	27,549	1,130	690	889	1.26	1.46
Calendar year 1946	296,654	3,600	288	813	1.15	15.67
January	17,780	670	490	574	.815	.94
February	13,570	520	450	485	.689	.72
March	17,280	640	510	557	.791	.91
April	78,120	4,160	680	2,604	3.70	4.13
May	54,340	2,500	1,300	1,753	2.49	2.87
June	31,361	1,420	692	1,045	1.48	1.66
July	16,311	692	398	526	.747	.86
August	10,348	387	270	334	.474	.55
September	10,120	505	261	337	.479	.53
Water year 1946-47	314,325	4,160	261	861	1.22	16.61

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 27 to Dec. 6, Dec. 15 to Apr. 4.

Manistique River near Manistique, Mich.

Location.- Water-stage recorder, lat. 46°01'50", long. 86°09'40", in SE¼ sec. 15, T. 42 N., R. 15 W., 1 mile downstream from West Branch and 6 miles northeast of Manistique.

Drainage area.- 1,100 square miles.

Records available.- March 1938 to September 1947.

Extremes.- Maximum discharge during year, 6,530 second-feet Apr. 13-15; maximum gage height, 10.44 feet Apr. 13; minimum discharge, 407 second-feet Sept. 7, 8 (gage height, 1.48 feet).

1938-47: Maximum discharge, 9,900 second-feet Mar. 22, 1945; minimum, 363 second-feet Sept. 13, 14, 1942; minimum gage height, 1.01 feet Aug. 23, 1941.

Remarks.- Records excellent except those for Apr. 1-10, which are good, and those for periods of ice effect, which are fair.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 6		Apr. 7 to Sept. 30					
1.8	565	1.5	413	4.6	1,560	9.0	4,520
2.4	760	2.0	573	6.0	2,300	9.8	5,570
4.4	1,560	3.6	1,130	7.8	3,440	10.4	6,530
4.7	1,710						

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	655	1,310	1,300	870	670	730	g1,250	3,440	2,300	1,060	590	428
2	640	1,270	1,300	840	660	730	g1,450	3,520	2,300	1,080	590	428
3	625	1,230	1,300	810	650	*750	g1,650	3,840	2,240	1,020	590	428
4	625	1,230	1,300	810	640	750	g1,950	4,310	2,120	950	573	428
5	610	1,150	1,400	790	640	750	g2,250	4,630	2,010	915	573	428
6	595	1,110	1,500	790	640	750	g2,660	4,870	2,120	950	573	413
7	580	1,070	1,650	790	640	750	g3,160	4,750	2,240	950	573	413
8	565	1,070	1,700	760	640	770	g3,840	4,410	2,240	950	573	410
9	565	1,110	1,710	760	660	750	g4,310	4,020	2,180	915	556	413
10	565	1,150	1,710	740	660	750	g4,630	3,680	2,060	862	556	444
11	565	1,230	*1,760	740	660	750	5,140	3,370	1,960	828	540	428
12	565	1,310	1,760	720	660	750	5,680	3,090	1,860	792	524	428
13	550	1,310	1,660	*720	680	770	6,530	2,900	1,760	775	508	428
14	550	*1,310	1,390	740	710	790	6,530	2,780	1,660	775	492	444
15	550	1,270	1,500	760	730	820	6,530	2,780	1,680	810	492	444
16	565	1,230	1,500	810	730	820	6,360	2,780	1,660	845	508	444
17	565	1,310	1,450	810	730	820	6,200	2,780	1,610	828	508	444
18	580	1,390	1,450	810	730	820	5,880	2,720	1,560	792	508	444
19	580	1,350	1,450	780	730	820	5,720	2,600	1,460	758	508	492
20	565	1,350	1,400	780	730	840	5,280	2,540	1,370	758	508	606
21	565	1,310	1,350	780	710	840	5,000	2,480	1,290	740	508	706
22	565	1,310	1,300	740	730	870	4,520	2,480	1,250	723	492	740
23	550	1,310	1,250	700	730	870	4,110	2,540	1,170	706	492	723
24	565	1,310	1,200	680	730	900	4,020	2,660	1,150	689	476	689
25	672	1,350	1,150	700	730	920	3,930	2,660	1,060	689	476	658
26	930	1,310	1,100	720	730	920	3,840	2,600	1,060	689	460	622
27	1,070	1,300	1,050	760	730	870	3,840	2,480	1,020	672	460	606
28	1,110	1,300	1,000	780	730	920	3,760	2,360	1,060	656	460	606
29	1,150	1,300	960	780	-	970	3,680	2,240	1,060	656	444	606
30	1,230	1,300	930	780	-	1,050	3,600	2,240	1,060	639	428	606
31	1,310	-	900	740	-	1,150	-	2,300	-	622	428	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	21,377	1,310	550	690	0.627	0.72
November	37,860	1,390	1,070	1,262	1.15	1.28
December	42,380	1,780	900	1,367	1.24	1.43
Calendar year 1946	484,230	5,900	520	1,327	1.21	16.36
January	23,790	870	680	767	.697	.80
February	19,410	730	640	693	.630	.66
March	25,760	1,150	730	831	.755	.87
April	127,500	6,530	1,250	4,250	3.86	4.31
May	96,790	4,870	2,240	3,122	2.84	3.27
June	49,530	2,300	1,020	1,651	1.50	1.67
July	25,074	1,060	622	809	.735	.85
August	15,967	590	428	515	.468	.54
September	15,395	740	410	513	.466	.52
Water year 1946-47	500,833	6,530	410	1,372	1.25	16.92

* Winter discharge measurement made on this day.
g Discharge computed from graph based on float-tape gage readings and fragmentary recorder record.
Note.- Stage-discharge relation affected by ice Nov. 27 to Dec. 8, Dec. 15 to Apr. 6.

Duck Creek near Blaney, Mich.

Location.- Water-stage recorder, lat. 46°06'50", long. 86°04'50", in SE¼ sec. 17, T. 43 N., R. 14 W., 3 miles upstream from mouth and 7 miles west of Blaney.

Drainage area.- 92 square miles including area from which flow is diverted to Duck Creek from Walsh and Marsh Creeks (watershed indeterminate because of swamps).

Records available.- March 1938 to September 1947.

Extremes.- Maximum discharge during year, 1,030 second-feet Apr. 12 (gage height, 10.13 feet; minimum, 4.0 second-feet Sept. 7 (gage height, 1.45 feet).
1938-47: Maximum discharge observed, 1,740 second-feet Apr. 26, 1939 (gage height, 11.70 feet, site and datum then in use); minimum discharge, that of Sept. 7, 1947.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Records include flow from Walsh and Marsh Creeks, which originate upstream from line between R. 14 W. and R. 15 W. and is diverted to Duck Creek through drainage canal about 3 miles above station.

Rating tables, water year 1946-47, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Mar. 31

1.9	14	2.8	60
2.2	26	3.4	104
2.5	42	3.8	137

Apr. 1 to Sept. 30

1.5	5.0	2.4	36	7.0	502
1.6	7.0	2.8	60	9.0	760
1.7	10	3.4	104	9.6	868
2.1	22	4.0	155	10.0	990
2.2	26	5.0	262		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	66	71	31	28	29	40	334	180	44	9.4	4.8
2	16	61	70	32	26	30	42	370	170	41	9.1	6.0
3	16	58	70	32	26	30	45	394	155	35	9.1	5.4
4	15	54	70	31	26	29	52	430	146	32	8.8	4.6
5	15	50	72	30	26	29	62	442	146	32	8.2	4.4
6	14	46	74	29	26	*29	85	442	180	36	8.2	4.2
7	14	46	89	28	26	30	160	418	175	32	11	4.4
8	13	54	102	28	26	30	320	382	165	28	11	5.4
9	14	53	120	28	26	30	*580	358	150	25	9.4	5.0
10	14	53	137	27	26	28	679	334	142	22	8.5	4.6
11	15	63	*142	27	26	27	889	310	137	20	7.3	4.4
12	16	66	142	27	26	27	990	280	124	19	6.8	4.8
13	15	*64	120	28	27	29	826	274	116	18	6.6	5.2
14	14	59	92	*31	28	32	646	262	112	19	6.4	6.6
15	15	55	80	37	30	34	791	250	112	20	6.0	5.4
16	17	57	61	38	30	34	746	256	108	18	6.0	6.0
17	19	71	52	36	30	34	705	244	99	17	6.0	6.4
18	17	67	46	35	29	34	666	222	91	16	7.0	7.3
19	16	70	38	34	28	34	627	206	85	16	7.3	15
20	15	64	33	34	27	34	588	206	79	16	7.9	20
21	15	61	31	34	27	34	538	200	73	16	7.6	20
22	15	70	30	31	28	34	502	195	68	14	6.6	18
23	15	73	29	30	27	36	490	222	61	14	6.4	16
24	17	75	28	31	26	37	478	222	58	13	5.8	14
25	47	75	25	33	28	38	466	212	55	14	6.6	13
26	53	74	25	36	29	40	442	200	55	14	6.0	12
27	53	73	25	36	30	40	430	185	50	13	5.4	11
28	49	72	28	38	30	40	406	175	50	13	5.4	12
29	59	71	28	37	-	40	382	175	49	12	5.2	14
30	73	71	29	36	-	40	358	185	41	11	5.0	13
31	73	-	31	32	-	40	-	180	-	10	4.8	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	776	73	13	25.0		
November	1,892	75	46	63.1		
December	1,990	142	25	64.2		
Calendar year 1946	31,597	820	10	86.6		
January	997	38	27	32.2		
February	768	30	26	27.4		
March	1,032	40	27	33.3		
April	14,231	990	40	474		
May	8,565	442	175	276		
June	3,232	180	41	108		
July	650	44	10	21.0		
August	224.8	11	4.8	7.25		
September	272.9	20	4.2	9.10		
Water year 1946-47	34,630.7	990	4.2	94.9		

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 25 to Dec. 4, Dec. 14 to Apr. 5. No gage-height record Feb. 4-10, Mar. 27 to Apr. 9; discharge computed on basis of weather records and records for nearby stations.

West Branch Manistique River near Manistique, Mich.

Location.- Water-stage recorder, lat. 46°05'20", long. 86°09'40", in SE¼ sec. 27, T. 43 N., R. 15 W., 300 feet downstream from Stutts Creek and 10 miles northeast of Manistique.

Drainage area.- 322 square miles.

Records available.- April 1938 to September 1947.

Extremes.- Maximum discharge during year, 2,240 second-feet May 5 (gage height, about 9.1 feet, occurred during period of partly obstructed intake): minimum, 97 second-feet Sept. 6, 7 (gage height, 1.97 feet).
1938-47: Maximum discharge observed, 5,300 second-feet Apr. 29, 1937 (gage height, 12.9 feet); minimum observed, that of Sept. 6, 7, 1947.

Remarks.- Records good except those for periods of ice effect, shifting control, and doubtful gage-height record, which are fair, and those for period of no gage-height record, which are poor.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-29, Sept. 19-30)

2.0	101	3.1	293	6.7	1,320
2.3	147	3.7	435	7.7	1,680
2.6	197	4.7	720	9.0	2,200

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	182	315	330	215	210	200	230	1,350	690	275	137	104
2	175	315	330	215	190	200	240	1,440	675	275	136	106
3	168	304	330	210	185	200	250	1,680	645	260	134	104
4	163	304	330	210	185	*200	270	1,960	615	250	133	102
5	158	304	335	210	185	200	320	2,200	615	240	128	100
6	153	293	340	210	185	200	400	2,160	630	245	125	98
7	150	293	350	210	185	200	500	1,960	615	245	131	98
8	149	304	361	210	185	200	640	1,720	600	245	133	100
9	147	304	385	210	185	200	840	1,520	585	240	130	102
10	145	326	422	210	185	200	*1,080	1,380	555	229	125	102
11	147	338	448	205	185	200	1,260	1,260	525	219	122	101
12	145	350	*472	205	185	195	1,410	1,170	498	210	119	101
13	145	361	460	205	190	200	1,560	1,080	472	202	114	106
14	145	*361	361	210	195	200	1,680	1,050	460	197	113	106
15	145	350	400	225	200	200	1,760	990	460	206	118	104
16	149	350	400	*235	200	200	1,840	990	460	206	130	107
17	150	361	390	235	205	200	1,880	960	448	197	130	104
18	152	361	380	235	205	200	1,880	930	422	190	125	107
19	152	350	365	235	205	200	1,840	900	400	185	126	131
20	152	338	350	235	200	200	1,760	870	370	183	124	142
21	152	338	340	235	200	205	1,640	840	350	180	122	163
22	150	350	320	225	200	205	1,520	840	325	177	120	172
23	149	338	305	215	200	205	1,480	870	310	173	116	173
24	155	340	285	220	200	210	1,480	870	295	168	116	166
25	190	340	265	225	195	210	1,480	870	275	168	113	161
26	222	335	250	235	195	210	1,480	810	270	170	112	155
27	272	335	235	240	200	210	1,480	780	265	163	110	152
28	293	335	230	240	200	215	1,480	720	275	158	108	153
29	315	335	225	245	-	215	1,440	690	275	153	107	152
30	326	335	220	240	-	220	1,410	690	275	149	107	150
31	326	-	215	225	-	225	-	675	-	142	104	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	5,622	326	145	181	0.562	0.65
November	9,963	361	293	332	1.03	1.15
December	10,429	472	215	336	1.04	1.20
Calendar year 1946	139,406	2,080	126	382	1.19	16.11
January	6,880	245	205	222	.689	.79
February	5,440	210	185	194	.602	.63
March	6,325	225	195	204	.634	.73
April	36,530	1,880	230	1,218	3.78	4.22
May	36,225	2,200	675	1,169	3.63	4.18
June	13,655	690	265	455	1.41	1.58
July	6,300	275	142	203	.630	.73
August	3,768	137	104	122	.379	.44
September	3,722	173	98	124	.385	.43
Water year 1946-47	144,859	2,200	98	397	1.23	16.73

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Nov. 24 to Dec. 6, Dec. 15 to Apr. 8. No gage-height record June 19 to July 9; discharge computed on basis of weather records and records for nearby stations. Doubtful gage-height record Apr. 7 to May 30 due to partly obstructed intake; discharge computed from reconstructed graph based on unaffected portions of record within period.

Indian River near Manistique, Mich.

Location.- Water-stage recorder, lat. 45°59'30", long. 86°17'15", in NE¼ sec. 34, T. 42 N., R. 16 W., above Indian Lake Outlet, 2 miles northwest of Manistique. Datum of gage is 608.66 feet above mean sea level (levels by Michigan Department of Conservation). Auxiliary staff gage above dam 1½ miles downstream.

Drainage area.- 302 square miles.

Records available.- March 1938 to September 1947.

Extremes.- Maximum discharge during year, 759 second-feet May 7 (gage height, 5.47 feet, caused by seiches on Indian Lake); minimum daily, about 20 second-feet Nov. 23 (caused by ice jams on Indian Lake at outlet); minimum gage height, 3.05 feet Nov. 23.
1938-47: Maximum discharge, 1,550 second-feet June 24, 1943 (gage height, 7.79 feet), from rating curve extended above 660 second-feet, by computation of flow over dam; minimum daily, that of Nov. 23, 1946; minimum gage height, that of Nov. 23, 1946.

Remarks.- Records excellent except those for periods of ice effect or no gage-height record, which are good, and those below 150 second-feet, which are poor. Indian Lake regulated by needles in gate section of rock-filled timber dam 1½ miles below gage. Discharge computed by using fall as determined by twice-daily readings at auxiliary gage as a factor.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	265	325	424	360	306	271	276	631	580	298	234	198
2	262	330	414	360	293	271	291	669	580	294	223	205
3	262	335	414	360	293	273	288	657	559	286	219	195
4	257	342	401	355	309	276	298	684	554	281	211	193
5	262	335	404	355	306	273	306	705	559	293	209	193
6	256	323	401	350	299	276	354	718	559	290	209	191
7	261	325	401	350	299	278	388	718	554	286	219	201
8	255	404	404	353	296	268	411	690	554	285	213	193
9	265	405	404	353	296	268	448	697	538	290	211	201
10	275	377	404	343	299	268	a473	679	538	284	209	201
11	297	389	*404	a335	286	268	488	675	528	286	206	205
12	279	406	400	329	286	270	516	675	517	285	215	199
13	266	*430	100	329	286	263	550	675	506	280	211	203
14	251	437	400	334	283	283	579	648	511	280	213	211
15	254	442	395	*334	286	286	610	654	515	280	209	205
16	251	445	395	334	283	283	610	654	501	277	205	205
17	243	455	395	324	283	283	631	622	517	283	203	186
18	243	445	390	324	283	283	637	627	501	285	203	190
19	243	435	390	318	283	283	637	627	482	269	211	200
20	250	442	390	324	283	273	642	627	474	267	211	217
21	254	461	390	329	283	283	642	616	464	272	213	218
22	247	400	385	319	283	273	637	610	446	265	211	208
23	241	a20	385	319	283	286	637	622	366	263	211	215
24	257	a50	380	322	286	283	642	622	278	256	207	200
25	292	440	380	309	283	286	642	590	281	263	203	200
26	292	430	375	309	283	283	642	616	275	267	194	197
27	286	430	375	303	283	283	654	579	280	263	199	197
28	290	430	370	309	273	283	648	559	296	254	199	208
29	302	430	370	309	-	278	648	595	285	256	194	205
30	337	424	370	306	-	268	642	580	288	256	203	210
31	342	-	365	306	-	273	-	580	-	247	200	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	8,337	342	241	269	-	-
November	11,342	461	20	378	-	-
December	11,875	424	100	383	-	-
Calendar year 1946	128,660	576	20	352	1.17	15.84
January	10,270	360	306	331	-	-
February	8,095	309	273	289	-	-
March	8,576	286	263	277	-	-
April	15,865	654	276	529	-	-
May	19,901	718	559	642	-	-
June	13,886	580	275	463	-	-
July	8,553	298	247	276	-	-
August	6,478	234	194	209	-	-
September	6,050	218	186	202	-	-
Water year 1946-47	129,228	718	20	354	1.17	15.91

* Winter discharge measurement made on this day.
a No reference or auxiliary gage-height record; discharge computed on basis of gage-height record for other gage and weather records.
Note.- Slope-stage-discharge relation affected by ice Nov. 22-29, Dec. 12 to Jan. 5.

Brule River near Florence, Wis.

Location.- Water-stage recorder, lat. 45°57', long. 88°16', in sec. 11, T. 41 N., R. 32 W. Michigan meridian, at county highway bridge, 1 mile upstream from Paint River, 3½ miles north of Florence, and 6 miles upstream from confluence with Michigamme River.

Drainage area.- 380 square miles.

Records available.- January 1914 to February 1916 and June 1944 to September 1947.

Extremes.- Maximum discharge during year, 1,270 second-feet Apr. 25; maximum gage height, 5.60 feet Dec. 15 (ice jam); minimum discharge, 178 second-feet Aug. 11-13 (gage height, 1.88 feet).

1914-16, 1944-47: Maximum discharge, 2,480 second-feet June 26, 1946; maximum gage height, 7.25 feet Mar. 20, 1945 (ice jam); minimum discharge, about 160 second-feet Dec. 12, 1944 (ice jam upstream).

Remarks.- Records excellent except those for period of ice effect, which are fair. Flow not adjusted for ground water pumped from mines at Iron River.

Rating tables, water year 1946-47, except period of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 3		Apr. 4 to Sept. 30			
2.1	245	1.9	183	2.5	420
2.3	319	2.0	211	3.0	725
2.5	401	2.2	280	3.6	1,150

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	263	343	260	220	205	210	*330	660	380	332	194	227
2	259	335	260	220	200	210	350	764	385	310	197	224
3	252	327	250	*220	*200	210	370	846	361	284	197	214
4	249	308	250	220	190	210	405	764	337	269	197	214
5	249	292	250	220	190	210	482	680	346	295	194	214
6	245	281	255	220	195	210	909	608	405	346	189	208
7	245	319	260	220	195	210	*712	547	395	319	197	208
8	242	433	270	215	195	210	647	499	365	280	189	214
9	245	410	280	210	195	210	595	458	346	262	189	217
10	245	372	290	215	195	210	666	431	416	250	189	214
11	256	363	300	220	195	210	818	410	565	243	183	237
12	252	339	*300	220	195	210	777	405	464	240	180	265
13	249	323	300	225	200	220	654	614	431	247	180	250
14	245	319	290	230	200	230	732	699	499	262	191	250
15	245	315	290	220	205	230	738	614	499	258	203	237
16	270	331	280	240	200	220	718	571	436	243	217	230
17	274	327	280	*240	200	230	712	517	390	237	208	230
18	263	304	280	240	200	220	699	481	356	240	217	230
19	259	315	270	230	200	*225	654	538	342	233	243	262
20	249	*296	265	230	200	225	608	493	328	254	250	297
21	249	296	260	220	200	225	583	426	314	250	254	289
22	249	259	260	215	190	220	608	420	306	237	237	265
23	249	270	240	215	190	240	902	498	302	227	224	247
24	270	290	210	220	200	280	1,190	481	314	221	211	233
25	363	280	220	230	200	270	1,190	426	319	214	203	221
26	351	280	210	220	205	265	965	415	314	211	205	217
27	319	270	210	220	205	260	853	405	309	230	205	211
28	296	260	200	215	205	290	751	390	453	214	230	233
29	296	270	220	215	-	280	692	390	431	208	240	247
30	376	260	220	200	-	280	692	385	356	203	224	240
31	393	-	220	200	-	305	-	370	-	197	214	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	8,467	393	242	273	0.718	0.83
November	9,387	433	259	313	.824	.92
December	7,950	300	200	256	.674	.78
Calendar year 1946	123,451	2,360	200	338	.889	12.08
January	6,845	240	200	221	.582	.67
February	5,550	205	190	198	.521	.54
March	7,235	305	210	233	.613	.71
April	21,002	1,190	330	700	1.84	2.06
May	16,206	846	370	523	1.38	1.59
June	11,464	565	302	382	1.01	1.12
July	7,816	346	197	252	.663	.76
August	6,451	254	180	208	.547	.63
September	7,045	297	208	235	.618	.69
Water year 1946-47	115,418	1,190	180	316	.832	11.30

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Nov. 23 to Apr. 3.

Menominee River at Twin Falls, near Iron Mountain, Mich.

Location.- Lat. 45°52'20", long. 88°04'10", in sec. 12, T. 40 N., R. 31 W., at power plant of Wisconsin Michigan Power Co., 3 miles upstream from Pine River and 3½ miles north of city of Iron Mountain.

Drainage area.- 1,790 square miles.

Records available.- January 1914 to September 1947.

Average discharge.- 33 years, 1,795 second-feet.

Extremes (regulated).- Maximum daily discharge during year, 5,320 second-feet Apr. 25; minimum daily, 938 second-feet Sept. 1.
1914-47: Maximum daily discharge, 16,700 second-feet Apr. 23, 24, 1916; minimum daily, 154 second-feet Aug. 9, 1925.

Remarks.- Records good. Discharge determined from powerhouse records. Flow regulated by power plant at which station is located and also by plants on Brule and Michigamme Rivers and by Way Reservoir on Michigamme River.

Cooperation.- Records of daily discharge computed by Wisconsin Michigan Power Co. on basis of load-discharge rating of hydroelectric units as developed by Geological Survey in 1932-33 and taintor-gate ratings based on theoretical formulas.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,200	1,320	1,070	1,110	1,250	1,240	1,630	4,030	1,670	1,700	1,140	938
2	1,220	1,500	1,210	1,300	1,220	1,080	1,820	4,220	1,860	1,730	1,050	1,220
3	1,190	1,420	1,240	1,360	1,300	1,380	1,600	4,230	1,960	1,680	985	1,280
4	1,160	1,440	1,300	1,290	1,380	1,470	1,210	3,980	2,200	1,350	1,430	1,290
5	1,070	1,500	1,600	1,000	1,390	1,400	1,510	3,780	2,000	1,290	1,450	1,140
6	976	1,660	1,220	1,310	1,440	1,480	2,090	4,120	1,980	1,220	1,380	1,090
7	1,080	1,670	1,060	1,420	1,370	1,570	2,150	3,420	1,950	1,540	1,360	1,050
8	1,100	1,680	1,080	1,260	1,120	1,410	2,280	3,530	1,560	1,830	1,300	1,220
9	1,100	1,670	1,360	1,350	1,100	1,140	1,820	3,310	1,800	1,830	1,070	1,360
10	1,060	1,520	1,330	1,210	1,200	1,330	2,170	3,720	1,800	1,680	1,060	1,410
11	1,120	1,500	1,330	1,100	1,350	1,420	2,400	3,750	2,230	1,450	1,300	1,390
12	1,060	1,550	1,490	1,030	1,390	1,420	2,380	2,960	3,110	1,260	1,230	1,240
13	1,030	1,320	1,540	1,230	1,300	1,650	2,340	4,020	3,270	1,320	1,200	1,140
14	1,120	1,200	1,330	1,230	1,240	1,620	2,320	4,110	3,870	1,380	1,210	1,020
15	1,160	1,050	1,080	1,300	1,150	1,320	2,450	4,350	3,000	1,610	1,170	1,250
16	1,200	1,010	1,390	1,290	1,110	1,010	2,480	3,950	2,500	1,590	1,090	1,300
17	1,220	999	1,290	1,300	1,210	1,320	2,470	4,140	3,050	1,620	988	1,310
18	1,160	1,070	1,270	1,220	1,310	1,530	2,530	3,990	2,980	1,520	1,230	1,420
19	1,070	1,140	1,400	1,080	1,410	1,510	2,780	3,200	2,480	1,570	1,320	1,370
20	1,070	1,140	1,180	1,290	1,400	1,320	2,620	3,920	2,400	1,150	1,320	1,190
21	1,140	1,080	1,070	1,390	1,320	1,210	2,470	3,240	2,350	1,580	1,270	1,120
22	1,170	1,030	1,040	1,480	1,240	1,210	2,720	2,940	1,840	1,730	1,180	1,290
23	1,060	1,030	1,180	1,400	1,040	1,010	3,940	3,060	1,640	1,650	1,140	1,480
24	1,170	1,060	1,190	1,280	1,280	1,600	4,680	3,590	1,600	1,620	1,120	1,420
25	1,160	1,300	1,070	1,220	1,370	1,650	5,320	3,270	1,570	1,540	1,270	1,340
26	1,100	1,350	1,150	1,140	1,390	1,580	4,920	2,720	1,560	1,430	1,210	1,380
27	1,130	1,200	1,280	1,370	1,300	1,400	3,580	2,470	1,540	1,310	1,280	1,120
28	1,170	1,110	1,280	1,370	1,310	1,230	4,190	2,460	1,420	1,510	1,310	1,170
29	1,120	1,050	1,140	1,330	-	1,150	4,140	3,220	1,330	1,600	1,200	1,220
30	1,310	1,050	1,310	1,370	-	1,060	4,050	2,560	1,620	1,490	1,040	1,230
31	1,390	-	1,280	1,370	-	1,390	-	1,820	-	1,370	976	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	35,286	1,390	976	1,138	0.636	0.73
November	38,619	1,680	999	1,287	.719	.80
December	38,760	1,600	1,040	1,250	.698	.80
Calendar year 1946	611,795	7,950	976	1,676	.936	12.68
January	39,400	1,480	1,000	1,271	.710	.82
February	35,890	1,440	1,040	1,282	.716	.75
March	42,110	1,650	1,010	1,358	.759	.88
April	83,040	5,320	1,210	2,768	1.55	1.73
May	108,080	4,350	1,820	3,486	1.95	2.25
June	64,140	3,870	1,330	2,138	1.19	1.33
July	47,150	1,830	1,150	1,521	.850	.98
August	37,279	1,450	978	1,203	.672	.77
September	37,398	1,480	938	1,247	.697	.78
Water year 1946-47	607,152	5,320	938	1,663	.929	12.62

Menominee River below Koss, Mich.

Location.- Lat. 45°21'50", long. 87°39'20", in sec. 9, T. 34 N., R. 27 W., at power plant of Wisconsin Public Service Corp., half a mile upstream from Little Cedar River and 4 miles downstream from Koss.

Drainage area.- 3,790 square miles.

Records available.- July 1913 to September 1947.

Average discharge.- 34 years, 3,191 second-feet.

Extremes (regulated).- Maximum daily discharge during year, 8,870 second-feet May 4; minimum daily, 1,080 second-feet Aug. 17.
1913-47: Maximum daily discharge, 23,200 second-feet Apr. 23, 25, 1916; minimum daily, 162 second-feet 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 many power plants and reservoirs above station.

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,100	2,200	2,240	1,550	2,040	2,040	2,160	5,700	4,650	2,980	2,200	1,360
2	2,200	3,210	1,960	2,040	1,800	2,040	2,880	6,410	3,920	3,540	2,100	1,380
3	2,400	2,960	1,920	1,560	1,800	1,800	3,140	7,120	3,300	3,200	2,000	1,650
4	2,100	2,520	2,000	2,040	1,920	1,440	3,360	8,870	3,240	2,150	1,350	1,800
5	1,970	2,900	2,160	1,800	1,800	1,800	3,430	8,090	3,330	2,900	1,450	2,160
6	1,860	2,650	2,280	1,920	1,680	2,280	5,570	6,910	3,480	2,550	1,750	1,800
7	1,700	2,880	2,600	1,640	2,160	2,160	8,410	6,740	3,400	3,100	2,280	1,680
8	1,750	2,880	2,670	1,770	2,040	2,040	8,290	6,240	3,250	3,150	2,040	1,440
9	1,700	3,150	2,180	1,800	2,040	2,040	7,010	5,600	2,800	3,320	2,040	1,440
10	1,920	4,060	2,240	2,280	1,700	2,040	5,950	5,340	2,680	3,120	1,920	1,680
11	1,870	3,930	2,640	1,920	1,800	1,800	5,800	5,340	2,950	3,000	1,560	1,800
12	1,880	3,240	2,760	2,040	1,680	1,800	6,080	5,420	3,440	2,640	1,200	2,040
13	1,440	2,880	1,180	1,560	1,750	1,980	5,960	5,190	3,380	2,520	1,680	2,280
14	1,360	3,120	1,800	1,920	2,000	2,500	6,140	5,490	5,110	1,920	1,850	2,100
15	1,440	3,000	1,800	1,800	2,050	2,450	5,240	6,230	5,760	2,040	1,400	1,800
16	2,030	2,880	2,280	1,900	1,800	2,250	5,170	6,260	6,200	2,640	1,890	1,440
17	1,770	2,900	1,920	2,000	1,500	1,900	5,210	6,090	4,780	2,280	1,080	1,920
18	1,960	2,640	1,800	2,000	1,830	1,750	4,830	5,980	5,140	2,760	1,560	1,920
19	1,920	2,280	1,920	1,820	1,750	1,900	4,920	6,140	4,640	2,400	2,040	2,160
20	2,070	2,640	2,050	1,900	1,800	2,280	4,830	5,230	4,580	2,400	2,400	2,400
21	1,730	2,320	2,180	1,900	1,800	2,400	4,540	5,080	3,640	2,280	2,880	2,280
22	1,850	2,250	2,100	1,850	2,160	1,560	4,120	5,680	3,410	1,800	2,640	1,560
23	1,820	2,010	1,650	1,920	2,040	2,160	4,450	5,180	3,000	2,280	2,440	1,800
24	2,010	2,810	1,460	2,400	2,040	2,040	5,310	4,590	2,860	2,880	2,210	2,400
25	2,050	2,300	1,550	2,280	1,800	2,040	7,510	4,870	2,760	2,160	2,050	1,950
26	2,360	1,550	1,800	2,160	1,800	2,520	8,170	5,200	2,900	2,160	2,280	2,100
27	2,690	2,140	2,160	1,560	1,920	2,880	8,600	4,850	2,410	2,560	2,280	2,000
28	2,180	2,580	1,560	1,560	1,920	2,880	7,350	4,190	2,800	2,040	2,050	2,100
29	2,450	2,280	1,800	2,160	-	2,640	5,770	5,070	2,640	1,800	2,150	1,650
30	2,970	2,040	1,500	2,040	-	2,280	6,510	4,630	2,640	2,160	2,200	1,750
31	2,400	-	1,950	2,040	-	2,040	-	5,290	-	2,200	1,730	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	61,950	2,970	1,360	1,998	0.527	0.61
November	81,200	4,060	1,550	2,707	.714	.80
December	62,110	2,760	1,180	2,004	.529	.61
Calendar year 1946	1,094,040	10,900	1,180	2,997	.791	10.75
January	59,130	2,400	1,550	1,907	.503	.58
February	52,420	2,160	1,500	1,872	.494	.51
March	65,730	2,880	1,440	2,120	.559	.64
April	166,710	8,600	2,160	5,557	1.47	1.64
May	179,020	8,870	4,190	5,775	1.52	1.75
June	109,090	6,200	2,410	3,636	.959	1.07
July	78,930	3,540	1,800	2,546	.672	.77
August	60,700	2,880	1,080	1,958	.517	.60
September	55,840	2,400	1,360	1,861	.491	.55
Water year 1946-47	1,032,830	8,870	1,080	2,830	.747	10.13

Menominee River near McAllister, Wis.

Location.- Water-stage recorder, lat. 45°19'20", long. 87°39'40", in sec. 17, T. 33 N., R. 23 E., 2¼ miles downstream from Little Cedar River, 2⅝ miles east of McAllister, and 22 miles upstream from mouth.

Drainage area.- 4,020 square miles.

Records available.- March 1945 to September 1947.

Extremes (regulated).- Maximum discharge during year, 11,400 second-feet Apr. 7 (gage height, 13.71 feet); minimum observed, 538 second-feet Oct. 6 (gage height, 7.29 feet); minimum daily, 1,220 second-feet Aug. 17.
1945-47: Maximum discharge, 12,800 second-feet June 28, 1946 (gage height, 14.33 feet); minimum, that of Oct. 6, 1946; minimum daily, that of Aug. 17, 1947.

Remarks.- Records good. Flow regulated by many power plants and reservoirs above station.

Rating table, water year 1946-47, except period of ice effect (gage height, in feet, and discharge, in second-feet)

8.1	1,220	9.0	2,220	11.0	5,530
8.3	1,420	9.5	2,910	12.0	7,700
8.6	1,740	10.0	3,700	13.1	10,100

Discharge, in second-feet, water year October 1946 to September 1947

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

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	59,750	3,060	1,370	1,927	0.479	0.55
November	82,180	3,870	1,630	2,739	.681	.76
December	61,640	2,840	1,420	1,988	.495	.57
Calendar year 1946	1,157,270	12,500	1,370	3,171	.789	10.69
January	58,500	2,350	1,550	1,887	.469	.54
February	52,300	2,100	1,550	1,868	.465	.48
March	65,910	2,850	1,500	2,126	.529	.61
April	209,970	10,100	2,630	6,999	1.74	1.94
May	208,810	9,680	4,770	6,736	1.68	1.94
June	113,540	6,380	2,350	3,785	.942	1.05
July	78,900	3,960	1,740	2,545	.633	.73
August	58,050	2,980	1,220	1,873	.466	.54
September	51,870	2,280	1,270	1,729	.430	.48
Water year 1946-47	1,101,420	10,100	1,220	3,018	.751	10.19

Note.- Discharge computed from daily wire-weight gage readings Jan. 10 to Apr. 5. Stage-discharge relation affected by ice Dec. 13 to Mar. 30 (no gage-height record Dec. 23, Jan. 5-9, Mar. 14).

Paint River at Crystal Falls, Mich.

Location.- Water-stage recorder, lat. 46°07', long. 88°20', in sec. 20, T. 43 N., R. 32 W., 150 feet below municipal power plant at Crystal Falls and 13 miles upstream from mouth. Datum of gage is 1,306.1 feet above mean sea level (Wisconsin Michigan Power Co. bench mark).

Drainage area.- 616 square miles.

Records available.- August 1944 to September 1947.

Extremes (regulated).- Maximum discharge during year, 4,160 second-feet Sept. 16 (gage height, 5.61 feet); minimum, 12 second-feet Sept. 16 (gage height, 1.05 feet), power-plant leakage while restoring head following emptying of reservoir for repairs; minimum daily, 149 second-feet Sept. 19.

1944-47: Maximum discharge, 4,160 second-feet Mar. 29, 1945, Sept. 16, 1947; maximum gage height, that of Sept. 16, 1947; minimum discharge, that of Sept. 16, 1947; minimum daily, that of Sept. 19, 1947.

Remarks.- Records excellent except those for period of ice effect, which are good. Diurnal fluctuation caused by power plant immediately above station.

Rating table, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)

1.9	166	3.3	1,000
2.1	231	4.1	1,770
2.3	309	4.8	2,610
2.5	407	5.1	3,100
2.8	600	5.3	3,500

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	319	506	345	281	258	253	*306	2,340	611	386	208	246
2	294	524	317	282	258	251	345	2,540	621	350	218	234
3	276	478	313	281	270	255	398	2,740	558	349	208	225
4	268	460	328	297	284	253	439	2,470	525	323	199	215
5	257	438	335	297	260	251	508	2,160	559	330	202	217
6	257	411	339	290	263	254	801	1,880	701	460	197	206
7	246	437	347	293	258	254	917	1,560	697	493	191	198
8	272	565	357	290	271	256	910	1,310	617	429	183	190
9	295	628	408	282	250	250	899	1,130	573	373	185	199
10	296	602	498	289	272	261	1,030	1,010	732	347	183	194
11	302	584	493	293	267	255	1,210	915	1,160	319	168	234
12	304	552	486	280	264	254	1,200	869	1,200	286	173	298
13	278	528	336	298	264	269	1,160	1,060	1,180	285	180	325
14	288	516	277	285	272	264	1,380	1,220	1,280	331	193	315
15	280	497	323	299	262	261	1,400	1,220	1,300	403	196	331
16	281	495	340	282	259	264	1,510	1,270	1,220	436	187	433
17	301	493	309	*278	271	257	1,670	1,270	1,060	419	178	297
18	294	406	278	293	269	261	1,770	1,150	870	397	197	183
19	288	463	282	279	267	258	1,600	1,060	712	368	242	149
20	262	456	289	298	*253	254	1,520	998	586	366	248	318
21	282	420	296	307	257	263	1,570	905	494	359	240	376
22	271	293	295	289	259	271	1,670	846	440	331	237	368
23	260	319	300	281	255	269	2,280	974	413	299	286	342
24	285	405	285	287	253	306	3,510	992	397	291	233	347
25	465	396	259	292	251	316	3,620	886	386	273	242	316
26	526	378	269	290	252	305	3,020	822	386	259	241	323
27	456	361	272	307	257	288	2,780	774	389	253	247	348
28	439	329	262	295	254	283	2,580	694	407	243	267	154
29	432	367	256	290	-	294	2,320	663	402	229	304	315
30	500	357	278	285	-	277	2,280	634	378	248	265	304
31	538	-	287	265	-	289	-	607	-	220	233	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	10,112	538	246	326	0.529	0.61
November	13,664	628	293	455	.739	.82
December	10,059	498	256	324	.526	.61
Calendar year 1946	184,963	3,350	225	507	.823	11.17
January	8,955	307	265	289	.469	.54
February	7,330	284	250	262	.425	.44
March	8,296	316	250	268	.435	.50
April	46,603	3,620	306	1,553	2.52	2.81
May	38,969	2,740	607	1,257	2.04	2.35
June	20,854	1,300	378	695	1.13	1.26
July	10,455	493	220	337	.547	.63
August	6,731	304	168	217	.352	.41
September	8,200	433	149	273	.443	.50
Water year 1946-47	190,228	3,620	149	521	.846	11.48

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Jan. 29 to Mar. 23.

Michigamme River near Crystal Falls, Mich.

Location.- Water-stage recorder, lat. 46°07', long. 88°13', in sec. 20, T. 43 N., R. 31 W., 5 miles downstream from Way Dam, 6 miles east of Crystal Falls, and 16 miles upstream from confluence with Brule River.

Drainage area.- 670 square miles.

Records available.- August 1944 to September 1947.

Extremes (regulated).- Maximum discharge during year, 2,390 second-feet May 19, 21 (gage height, 6.66 feet); minimum, 92 second-feet Dec. 12, 13 (gage height, 1.84 feet).
1944-47: Maximum discharge, 2,930 second-feet Apr. 11, 1945 (gage height, 7.34 feet); minimum, that of Dec. 12, 13, 1946.

Remarks.- Records excellent except those for periods of no gage-height record, which are fair. Flow regulated by Way Reservoir.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

2.1	112	3.4	398	5.3	1,350
2.4	160	3.9	579	6.0	1,830
2.9	265	4.6	930	6.6	2,310

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	374	222	395	538	623	770	380	695	770	601	795	309
2	371	158	459	538	623	770	482	720	947	558	605	549
3	371	158	579	457	623	745	532	720	1,110	558	482	720
4	398	135	579	337	623	720	579	720	978	579	459	695
5	447	102	579	335	646	720	561	972	770	601	795	695
6	447	100	579	477	646	695	820	1,290	661	670	795	670
7	430	107	579	601	646	670	782	1,320	519	828	795	670
8	424	114	579	601	646	646	900	1,350	519	999	795	731
9	447	111	579	601	623	646	954	1,400	519	638	770	795
10	482	111	579	601	623	601	1,080	1,600	538	500	770	795
11	500	109	432	601	623	579	725	1,870	794	570	745	770
12	538	108	132	601	623	601	270	1,950	1,300	670	745	745
13	538	107	191	601	623	623	266	2,070	1,690	670	745	745
14	538	107	362	601	623	579	287	2,070	1,550	393	745	635
15	538	106	362	601	623	483	289	2,070	888	930	770	508
16	500	109	404	601	623	420	284	2,070	1,230	930	820	720
17	464	108	464	601	623	332	248	2,150	1,410	930	795	695
18	395	167	519	601	623	343	127	2,150	1,290	930	795	670
19	282	265	601	601	623	392	118	2,230	990	857	820	573
20	279	265	601	601	623	392	114	2,310	960	579	795	398
21	345	267	601	623	601	392	111	2,140	870	786	795	282
22	464	312	601	646	601	414	114	1,950	795	930	654	401
23	464	401	601	623	601	368	198	1,950	709	900	482	732
24	464	398	601	623	632	322	287	1,910	579	900	482	930
25	387	392	601	623	695	332	279	1,910	579	900	568	930
26	258	408	601	623	695	371	265	1,580	579	690	670	705
27	254	398	601	623	695	392	260	1,170	601	500	670	482
28	254	395	536	623	745	398	386	1,170	670	660	670	482
29	254	395	386	623	-	383	500	1,170	579	820	646	560
30	267	395	442	623	-	364	585	981	558	795	646	695
31	265	-	538	623	-	306	-	795	-	795	477	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	12,439	538	254	401		
November	6,530	408	100	218		
December	15,663	601	132	505		
Calendar year 1946	226,390	1,320	100	620		
January	17,972	646	335	580		
February	17,817	745	601	636		
March	15,769	770	306	509		
April	12,783	1,080	111	426		
May	48,453	2,310	695	1,563		
June	25,952	1,690	519	865		
July	22,667	999	393	731		
August	21,596	820	459	697		
September	19,285	930	282	643		
Water year 1946-47	236,926	2,310	100	649		

Note.- No gage-height record Dec. 13-21, May 8-10, Sept. 28-30; discharge computed on basis of record of gate openings at Way Dam.

Pine River at Pine River power plant, near Florence, Wis.

Location.- Lat. 45°49'40", long. 88°14'55", in sec. 28, T. 39 N., R. 18 E., at power plant of Wisconsin Michigan Power Co., 4 miles downstream from Popple River and 6½ miles south of Florence.

Drainage area.- 543 square miles.

Records available.- October 1923 to September 1947. January 1914 to September 1923 at site 4 miles upstream (drainage area, 511 square miles).

Average discharge.- 24 years (1923-47), 435 second-feet.

Extremes (regulated).- Maximum daily discharge during year, 1,440 second-feet May 3; minimum daily, 35 second-feet Aug. 3.
1923-47: Maximum daily discharge, 4,380 second-feet Apr. 9, 1929; no flow at times in 1924, 1926, 1927, 1930, 1931, 1933, 1940.

Remarks.- Records good except those for high stages, which are fair. Discharge determined from power-plant records. Flow regulated by power plant at station, but pondage is small and monthly discharge is very nearly natural flow.

Cooperation.- Records of daily discharge computed by Wisconsin Michigan Power Co. on basis of load-discharge rating of hydroelectric units as developed by Geological Survey, and gate ratings based on theoretical formulas. Rating of units checked within 4.5 percent by one discharge measurement made in 1947.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	312	585	208	114	182	169	208	1,200	502	579	201	208
2	312	598	208	185	169	84	312	1,350	520	474	179	195
3	208	568	182	182	192	192	312	1,440	529	364	35	195
4	208	585	208	188	172	98	403	1,360	468	364	182	182
5	312	473	296	130	156	198	511	1,310	435	383	131	180
6	87	364	224	187	169	188	926	1,180	452	899	156	201
7	296	489	289	189	156	117	864	1,100	439	865	164	59
8	181	597	312	182	195	198	995	814	312	616	181	182
9	182	704	312	191	125	78	884	744	394	473	52	169
10	182	744	409	185	188	275	1,000	684	455	368	52	169
11	208	684	312	195	159	133	1,110	624	610	312	159	182
12	195	624	364	84	159	172	1,100	615	814	312	95	208
13	195	620	347	188	159	156	884	722	804	205	112	208
14	208	520	78	195	159	172	1,120	904	784	208	208	223
15	208	447	208	195	159	172	1,170	971	804	312	92	182
16	208	520	198	195	98	130	1,010	984	769	208	128	178
17	238	520	182	182	182	208	1,060	944	624	208	58	188
18	312	364	188	195	182	208	971	737	559	208	208	195
19	208	507	117	100	182	159	924	809	497	208	294	195
20	312	429	195	195	182	190	804	594	390	104	312	201
21	229	364	140	195	156	166	744	624	364	347	305	182
22	245	312	175	176	182	150	797	650	312	312	312	208
23	270	312	186	195	100	104	1,030	284	351	208	312	208
24	249	208	169	182	182	260	1,340	780	302	208	312	208
25	354	335	126	195	169	208	1,340	744	247	312	312	188
26	412	312	195	160	169	208	1,320	689	320	205	299	169
27	520	312	195	196	169	208	1,210	624	312	55	169	133
28	416	208	114	195	182	208	1,050	604	364	253	208	104
29	416	208	117	169	-	208	1,100	611	464	208	208	208
30	520	312	191	169	-	185	1,120	598	648	208	312	208
31	520	-	182	175	-	208	-	624	-	195	208	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	8,723	520	87	281	0.517	0.60
November	13,825	744	208	461	.849	.95
December	6,627	409	78	214	.394	.45
Calendar year 1946	144,625	1,830	52	396	.729	9.91
January	5,464	196	84	176	.324	.37
February	4,634	195	98	166	.306	.32
March	5,410	275	78	175	.322	.37
April	27,619	1,340	208	921	1.70	1.90
May	25,918	1,440	284	836	1.54	1.78
June	14,845	814	247	495	.912	1.02
July	10,181	899	55	328	.604	.70
August	5,956	312	35	192	.354	.41
September	5,516	223	59	184	.339	.38
Water year 1946-47	134,718	1,440	35	369	.680	9.25

Pike River at Amberg, Wis.

Location.- Water-stage recorder, lat. 45°29'50", long. 87°59'40", in sec. 21, T. 35 N., R. 20 E., 500 feet upstream from Chicago, Milwaukee, St. Paul & Pacific Railroad bridge, a quarter of a mile south of Amberg, and 1¼ miles downstream from North Branch. Prior to Oct. 6, 1946, staff gage at same site and datum.

Drainage area.- 250 square miles.

Records available.- February 1914 to September 1947.

Average discharge.- 33 years, 229 second-feet.

Extremes.- Maximum discharge during year, 1,160 second-feet Apr. 7 (gage height, 4.79 feet); minimum, 91 second-feet Aug. 16, 17 (gage height, 1.64 feet).
1914-47: Maximum discharge observed, 2,730 second-feet Apr. 10, 1932 (gage height, 7.68 feet, site and datum then in use), from rating curve extended above 1,100 second-feet; minimum observed, 26 second-feet Dec. 27, 1925 (gage height, 1.30 feet, site and datum then in use).

Remarks.- Records good except those for period of ice effect, which are fair. Gage read once daily to Oct. 5.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	188	150	120	114	109	200	332	290	240	105	123
2	118	177	122	120	113	108	260	415	254	209	105	119
3	134	177	133	119	111	107	353	494	231	180	106	116
4	132	175	138	118	110	106	389	466	218	180	105	111
5	128	165	140	117	109	106	480	395	212	251	105	108
6	130	158	*142	117	108	*106	937	350	207	638	108	99
7	121	180	143	118	107	106	1,010	314	204	655	121	105
8	114	275	144	119	106	105	709	284	199	425	111	105
9	110	278	145	120	105	105	585	263	196	314	106	105
10	111	260	145	121	105	105	550	243	199	269	110	100
11	110	260	145	122	105	107	602	231	218	215	104	108
12	116	254	145	124	105	110	585	234	199	180	99	116
13	121	240	140	128	106	122	482	266	218	170	96	127
14	121	234	110	135	110	130	466	293	296	165	96	127
15	121	223	115	140	120	128	429	287	317	160	94	119
16	121	231	125	135	130	123	402	287	290	151	92	116
17	123	237	130	130	126	119	372	272	246	142	111	116
18	125	218	130	128	120	115	341	266	212	136	145	112
19	125	201	130	126	115	112	311	260	193	136	237	119
20	123	180	130	125	113	110	296	299	177	170	a270	127
21	121	177	128	*124	111	115	287	296	172	182	a290	128
22	119	170	127	123	110	130	287	a285	167	160	a250	128
23	121	160	126	122	110	150	344	a275	153	147	a220	123
24	130	170	125	121	110	160	422	a265	153	136	190	119
25	182	200	124	120	110	160	408	257	160	130	172	112
26	199	215	123	120	110	150	369	246	196	125	153	112
27	180	220	123	119	110	136	347	237	182	127	138	112
28	172	220	122	118	110	134	329	248	260	119	142	125
29	196	215	122	117	-	135	314	275	347	119	142	136
30	212	200	122	116	-	145	329	332	275	114	136	134
31	212	-	122	115	-	165	-	314	-	110	128	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	4,264	212	110	138	0.552	0.64
November	6,258	278	158	209	.836	.93
December	4,066	150	110	131	.524	.60
Calendar year 1946	70,054	800	99	192	.768	10.41
January	3,797	140	115	122	.488	.56
February	3,119	130	105	111	.444	.46
March	3,819	165	105	123	.492	.57
April	13,195	1,010	200	440	1.76	1.96
May	9,281	494	231	299	1.20	1.38
June	6,641	347	153	221	.884	.99
July	6,451	655	110	208	.832	.96
August	4,387	290	92	142	.568	.65
September	3,507	136	99	117	.468	.52
Water year 1946-47	68,785	1,010	92	188	.752	10.22

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for Oconto River near Gillett.
Note.- Stage-discharge relation affected by ice Nov. 22 to Apr. 1.

Oconto River near Gillett, Wis.

Location.- Water-stage recorder, lat. 44°52', long. 88°18', in sec. 34, T. 28 N., R. 18 E., at highway bridge, 2 miles upstream from Christy Brook and 2½ miles south of Gillett.

Drainage area.- 678 square miles.

Records available.- June 1906 to March 1909, January 1914 to September 1947.

Average discharge.- 34 years (1908, 1914-47), 596 second-feet.

Extremes.- Maximum discharge during year, 1,660 second-feet Apr. 8 (gage height, 3.30 feet); minimum, 168 second-feet Aug. 17, 18 (gage height, 0.48 foot).
1906-9, 1914-47: Maximum discharge observed, 6,470 second-feet Apr. 11, 1922 (gage height, 9.1 feet), caused by failure of dam at Pulcifer, 4 miles upstream; minimum, 93 second-feet Nov. 26, 1941 (gage height, 0.13 foot), flow retarded by anchor ice above station.

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

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

0.5	172	1.9	760
.7	227	2.2	912
1.0	340	2.6	1,150
1.3	468	3.0	1,440
1.6	610	3.2	1,580

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	304	454	430	300	270	255	520	735	912	352	195	289
2	300	450	370	295	270	255	528	760	886	364	195	281
3	304	450	370	290	270	255	586	810	810	372	197	273
4	296	446	420	290	270	255	635	860	710	376	197	262
5	289	423	440	285	270	260	735	886	660	363	195	252
6	289	406	460	285	265	*271	1,080	886	635	364	192	244
7	289	446	470	290	265	280	1,370	835	586	352	187	238
8	285	586	480	300	260	290	1,620	785	635	332	180	227
9	289	660	477	305	260	310	1,580	735	685	303	182	227
10	292	685	505	305	255	340	1,480	685	685	289	180	224
11	292	685	519	305	255	390	1,370	635	610	273	180	224
12	292	710	482	305	255	440	1,290	610	586	263	177	252
13	289	685	350	310	255	500	1,290	610	586	255	174	320
14	289	635	250	315	255	540	1,260	635	660	248	174	336
15	289	610	265	320	260	550	1,150	660	760	248	170	332
16	292	610	300	325	265	510	1,050	685	735	248	170	308
17	292	586	330	325	270	450	992	710	660	244	170	292
18	292	586	320	320	270	350	912	735	562	241	180	289
19	292	586	305	310	270	330	860	735	519	234	248	292
20	292	562	300	310	270	350	810	735	496	244	340	328
21	289	562	300	305	270	400	760	710	446	252	524	352
22	292	562	300	*300	265	460	710	685	402	270	505	332
23	292	402	300	300	265	560	710	710	384	266	436	312
24	308	348	300	300	260	610	760	760	384	255	376	296
25	380	500	300	300	255	640	835	735	393	244	364	277
26	436	528	300	300	255	620	860	710	402	234	428	266
27	441	562	300	300	255	570	860	660	397	230	368	255
28	419	610	300	295	255	510	810	660	389	224	332	285
29	419	533	300	285	-	450	785	735	384	221	324	389
30	436	500	300	275	-	480	760	835	360	215	316	436
31	454	-	300	275	-	500	-	886	-	200	320	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	10,014	454	285	323	0.476	0.55
November	16,368	710	348	546	.805	.90
December	11,143	519	250	359	.529	.61
Calendar year 1946	188,002	4,100	218	515	.760	10.32
January	9,325	325	275	301	.444	.51
February	7,360	270	255	263	.388	.40
March	12,981	640	255	419	.618	.71
April	28,968	1,620	520	966	1.42	1.58
May	22,813	886	610	736	1.09	1.26
June	17,319	912	360	577	.851	.95
July	8,585	376	200	277	.409	.47
August	8,176	524	170	264	.389	.45
September	8,690	436	224	290	.428	.48
Water year 1946-47	161,742	1,620	170	443	.653	8.87

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 30 to Dec. 8, Dec. 13 to Apr. 1.

Wheeler Lake near Lakewood, Wis.

Location.- Staff gage, lat. 45°19', long. 88°29', in sec. 27, T. 33 N., R. 16 E., on southwest shore of lake at Berglund's Resort, 3½ miles east of Lakewood.
Drainage area.- 2 square miles.
Records available.- August 1936 to September 1947 (fragmentary).
Extremes.- Maximum elevation observed during year, 95.10 feet Apr. 11, 14; minimum observed, 94.20 feet Sept. 26, 29.
1936-47: Maximum elevation observed, 96.50 feet Oct. 5, Nov. 9, 1943; minimum observed, 93.64 feet Oct. 9, 12, 1937.
Remarks.- Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin.

Elevation, in feet, water year October 1946 to September 1947

Date	Elevation	Date	Elevation	Date	Elevation	Date	Elevation	Date	Elevation
Oct. 4	4.73	Dec. 2	4.91	Mar. 31	4.92	May 30	5.00	Aug. 1	4.48
7	4.73	6	4.93	Apr. 4	4.90	June 2	4.98	4	4.48
11	4.71	9	4.93	7	5.00	6	4.86	8	4.40
14	4.69	13	4.97	11	5.10	9	4.86	11	4.40
18	4.65	16	4.97	14	5.10	13	4.90	15	4.32
21	4.65	20	4.95	18	5.04	16	4.91	18	4.32
25	4.69	23	4.95	21	5.04	20	4.82	22	4.42
28	4.69	27	4.95	25	5.00	23	4.82	25	4.42
Nov. 1	4.81	30	4.95	28	5.00	27	4.78	29	4.42
4	4.81	Mar. 3	4.80	May 2	5.00	28	4.80	Sept. 1	4.40
8	4.87	7	4.80	5	5.00	July 4	4.76	5	4.28
11	4.87	10	4.80	9	4.98	7	4.76	8	4.28
15	4.91	14	4.92	12	4.98	11	4.70	12	4.30
18	4.91	17	4.92	16	4.98	14	4.70	15	4.30
22	4.91	21	4.92	19	4.98	18	4.70	19	4.30
25	4.91	24	4.92	23	5.00	21	4.70	22	4.28
29	4.91	28	4.92	26	5.00	25	4.68	26	4.20
						28	4.68	29	4.20

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

Boot Lake near Townsend, Wis.

Location.- Staff gage, lat. 45°15', long. 88°39', in sec. 9, T. 32 N., R. 15 E., on narrow neck of land cut by a small channel extending across north end of lake, 5½ miles southwest of Townsend.
Drainage area.- 1.5 square miles.
Records available.- August 1936 to September 1947 (fragmentary).
Extremes.- Maximum elevation observed during year, 95.80 feet June 13; minimum observed, 94.94 feet Sept. 30.
1936-47: Maximum elevation observed, 98.25 feet June 28, 1943; minimum observed, 94.69 feet Oct. 31, Nov. 7, 1936.
Remarks.- Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin.

Elevation, in feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	95.40	-					-	-	-	-	-	-
2	-	95.51					-	-	95.67	95.54	95.28	-
3	-	-					-	-	-	-	-	-
4	-	95.50					-	-	-	-	95.24	95.04
5	95.38	-					-	-	95.74	95.52	-	-
6	95.37	-					-	-	-	95.50	-	95.00
7	-	-					-	-	-	-	-	-
8	-	-					-	-	95.75	-	95.21	94.97
9	-	95.36					-	-	-	95.50	95.20	-
10	-	-					-	-	-	95.49	95.19	-
11	95.35	95.30					95.64	-	-	95.48	-	-
12	-	-					-	-	95.71	-	-	-
13	-	-					-	-	95.80	95.48	95.12	95.00
14	-	-					95.65	-	-	-	-	95.02
15	-	-					-	-	95.62	-	-	-
16	95.28	-					-	95.68	-	-	-	-
17	-	-					-	-	-	95.42	-	-
18	-	-					-	95.70	-	95.42	95.10	-
19	95.27	-					95.64	-	95.59	-	-	-
20	95.24	-					-	-	-	-	-	95.00
21	-	-					-	-	-	-	-	-
22	-	-					95.64	95.72	-	-	95.17	-
23	-	-					-	-	95.66	95.36	95.17	95.00
24	-	-					-	95.70	-	-	-	95.00
25	-	-					-	95.66	-	-	-	-
26	95.31	-					-	-	-	95.34	95.10	-
27	-	-					-	-	-	95.34	-	94.96
28	-	-					-	-	95.59	-	-	-
29	95.37	-					-	-	-	-	-	-
30	-	-					-	-	-	95.32	95.10	94.94
31	-	-					-	95.70	95.56	-	-	-

Fox River at Berlin, Wis.

Location.- Staff gage, lat. 43°57'05", long. 88°57'30", in sec. 16, T. 17 N., R. 13 E., at Government lock and dam at Berlin, 2½ miles upstream from Barnes Creek.

Drainage area.- 1,430 square miles.

Records available.- January 1898 to September 1947.

Average discharge.- 49 years, 1,124 second-feet.

Extremes.- Maximum discharge observed during year, 3,160 second-feet Apr. 12 (gage height, 12.2 feet); minimum daily, 489 second-feet Aug. 31 (gage height, 7.2 feet). 1898-1947: Maximum discharge observed, 6,900 second-feet Mar. 17, 18, 1946 (gage height, 15.5 feet); minimum daily, 250 second-feet Feb. 1-4, 1900.

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

Cooperation.- Gage-height record furnished by Corps of Engineers.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	740	845	882	710	650	670	1,990	2,350	1,810	2,050	920	512
2	740	882	774	710	650	680	1,990	2,290	1,810	2,110	960	536
3	707	920	809	710	670	*686	1,930	2,230	1,750	2,170	960	536
4	707	920	882	700	670	690	1,930	2,230	1,750	2,170	960	589
5	707	920	882	700	670	700	1,930	2,170	1,690	2,050	960	617
6	707	920	920	700	670	710	2,230	2,050	1,690	1,930	882	646
7	707	960	920	700	660	720	2,410	1,990	1,630	1,810	882	646
8	707	1,040	920	700	650	740	2,600	1,930	1,580	1,630	845	646
9	676	1,040	845	700	640	750	2,740	1,810	1,530	1,480	809	646
10	646	1,080	809	700	640	770	2,810	1,750	1,480	1,330	774	646
11	646	1,130	774	700	640	790	3,020	1,690	1,430	1,130	740	617
12	676	1,130	809	700	650	850	3,160	1,630	1,380	1,130	740	617
13	676	1,130	774	700	650	1,050	3,090	1,530	1,580	1,080	707	617
14	646	1,180	740	720	660	1,090	3,090	1,480	1,810	1,040	676	646
15	646	1,180	720	760	660	1,140	3,020	1,380	1,930	1,000	676	646
16	646	1,130	700	760	670	1,200	2,950	1,330	2,050	960	617	646
17	646	1,130	680	760	680	1,350	2,880	1,280	2,110	960	617	617
18	676	1,180	690	740	690	1,500	2,880	1,230	2,110	774	617	617
19	740	1,180	700	750	690	1,800	2,880	1,230	2,170	740	617	617
20	740	1,180	700	760	690	2,000	2,810	1,280	2,110	740	589	617
21	707	1,130	710	740	690	2,300	2,740	1,280	2,050	774	589	617
22	707	1,000	720	710	690	2,200	2,740	1,280	1,990	774	589	646
23	707	845	720	680	680	2,170	2,740	1,280	1,870	740	589	646
24	676	845	720	*666	670	2,050	2,740	1,280	1,810	740	589	646
25	740	882	720	660	660	2,050	2,740	1,280	1,750	740	562	646
26	809	882	720	670	660	1,990	2,740	1,180	1,690	707	562	646
27	809	882	720	690	660	1,990	2,670	1,130	1,580	808	562	646
28	774	845	720	710	660	1,990	2,600	1,130	1,530	882	562	646
29	809	882	720	710	-	2,050	2,530	1,330	1,690	920	562	707
30	809	882	720	700	-	2,050	2,410	1,530	1,870	882	512	707
31	845	-	720	660	-	1,990	-	1,690	-	882	489	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	22,174	845	646	715	0.500	0.58
November	30,152	1,180	845	1,005	.703	.78
December	23,840	920	680	769	.538	.62
Calendar year 1946	448,644	6,900	489	1,229	.859	11.65
January	21,976	760	660	709	.496	.57
February	18,620	690	640	665	.465	.48
March	42,716	2,300	670	1,378	.964	1.11
April	78,990	3,160	1,930	2,633	1.84	2.05
May	49,250	2,350	1,130	1,589	1.11	1.28
June	53,230	2,170	1,380	1,774	1.24	1.38
July	37,134	2,170	707	1,198	.838	.97
August	21,715	960	489	700	.490	.56
September	18,830	707	512	628	.439	.49
Water year 1946-47	418,627	3,160	489	1,147	.802	10.87

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 14 to Mar. 22.

Lake Winnebago at Oshkosh, Wis.

Location.- Staff gage, lat. 44°00'40", long. 88°32'00", in sec. 24, T. 18 N., R. 17 E., in mouth of upper Fox River at Chicago & Northwestern Railroad bridge, 0.2 mile downstream from bridge on Main Street in Oshkosh and 18 miles up the lake from Menasha Dam and outlet. Datum of gage, 745.05 feet above mean tide at New York City (levels by Corps of Engineers). Prior to 1882 lake levels were referred to Deuchman gage at lake outlet at Menasha Dam. Datum of Deuchman gage, which is still in existence, is 745.00 feet above mean tide at New York City.

Drainage area.- 6,030 square miles at lake outlet at Menasha Dam.

Records available.- October 1938 to September 1947. Records from 1857 to 1938 in files of Corps of Engineers. A report on Fox River by Corps of Engineers is published as House Document No. 146, 67th Congress, 2d session.

Extremes.- Maximum gage height observed during year, 3.29 feet June 13; minimum observed, 0.81 foot Mar. 12.
1857-1947: Maximum gage height observed, 5.33 feet (Deuchman gage) Nov. 8, 1881; minimum observed, -2.00 feet (Deuchman gage) Nov. 28, 1891.

Remarks.- Lake elevations controlled by dams at Menasha and Neenah which are operated in the interest of navigation. Crests of both dams are at elevation 746.73 feet. Present limits of regulation are from 21½ inches above crest of Menasha Dam down to crest during navigation season, plus additional 18 to 24 inches below crest during winter. Oshkosh staff gage gives true level of lake while Deuchman gage readings are affected by loss of head in channel between lake and dam. Gage read once daily.

Cooperation.- Records furnished by Corps of Engineers.

Gage height, in feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.17	2.19	2.50	2.17	1.88	1.17	1.48	3.00	3.23	3.13	2.58	2.25
2	2.15	2.19	2.52	2.17	1.85	1.13	1.52	3.15	3.19	3.10	2.58	2.21
3	2.10	2.21	2.50	2.15	1.83	1.08	1.58	3.06	3.17	3.08	2.56	2.23
4	2.10	2.19	2.46	2.13	1.83	1.04	1.60	3.02	3.13	3.08	2.54	2.21
5	2.15	2.25	2.44	2.10	1.81	0.98	1.67	3.04	3.21	3.06	2.54	2.23
6	2.15	2.25	2.42	2.08	1.81	0.94	1.83	3.08	3.17	3.08	2.50	2.29
7	2.13	2.29	2.35	2.08	1.79	0.90	2.00	2.92	3.10	3.08	2.50	2.25
8	2.13	2.23	2.38	2.06	1.77	0.85	2.08	3.02	3.08	3.02	2.54	2.21
9	2.08	2.42	2.38	2.06	1.73	0.83	2.17	3.00	3.04	3.02	2.50	2.23
10	2.10	2.46	2.17	2.04	1.71	0.83	2.29	3.02	3.02	3.02	2.46	2.23
11	2.10	2.48	2.29	2.04	1.67	0.83	2.42	2.96	3.02	3.06	2.44	2.17
12	2.17	2.46	2.33	2.02	1.63	0.81	2.29	2.92	3.10	3.00	2.42	2.19
13	2.10	2.42	2.25	2.00	1.58	0.83	2.48	3.00	3.29	3.00	2.38	2.15
14	2.06	2.50	2.23	2.00	1.54	0.88	2.54	2.94	3.04	3.02	2.33	1.98
15	2.08	2.50	2.23	2.00	1.54	0.90	2.60	2.92	3.21	2.92	2.42	2.02
16	2.13	2.42	2.23	2.00	1.52	0.88	2.58	3.00	3.10	2.96	2.33	2.02
17	2.13	2.48	2.02	2.00	1.48	0.85	2.60	3.00	3.08	2.92	2.29	2.04
18	2.02	2.50	2.19	1.98	1.46	0.90	2.67	3.08	3.00	2.83	2.25	2.00
19	2.08	2.46	2.19	1.98	1.44	0.88	2.77	3.04	2.94	2.92	2.42	2.00
20	2.04	2.50	2.17	1.96	1.42	0.90	2.79	3.10	2.94	2.90	2.25	1.98
21	2.00	2.52	2.17	1.94	1.38	0.92	2.77	3.04	3.00	2.81	2.40	2.00
22	2.00	2.67	2.17	1.92	1.33	0.92	2.75	3.10	2.96	2.77	2.33	1.96
23	2.02	2.58	2.15	1.92	1.29	0.98	2.83	3.10	2.92	2.73	2.33	1.94
24	2.00	2.54	2.15	1.92	1.25	1.02	2.90	3.08	2.92	2.67	2.31	2.04
25	2.00	2.52	2.13	1.90	1.21	1.17	2.94	3.04	2.94	2.65	2.42	1.98
26	2.19	2.52	2.13	1.85	1.19	1.29	2.96	2.96	3.00	2.63	2.42	1.98
27	2.15	2.42	2.13	1.81	1.17	1.27	3.00	3.15	3.04	2.92	2.31	1.94
28	2.10	2.48	2.27	1.83	1.15	1.31	3.04	3.13	3.10	2.69	2.44	1.96
29	2.08	2.50	2.23	1.85	-	1.33	3.02	3.17	3.10	2.67	2.38	1.92
30	2.10	2.48	2.21	1.92	-	1.40	3.04	3.23	3.21	2.63	2.25	1.94
31	2.17	-	2.19	1.90	-	1.46	-	3.19	-	2.67	2.25	-

Fox River at Rapide Croche Dam, near Wrightstown, Wis.

Location.- Lat. 44°19', long. 88°12', in sec. 4, T. 21 N., R. 19 E., at Rapide Croche Dam, 2 miles upstream from Wrightstown.

Drainage area.- 6,150 square miles.

Records available.- March 1896 to September 1947.

Average discharge.- 51 years, 4,311 second-feet.

Extremes (regulated).- Maximum daily discharge during year, 11,000 second-feet June 16; minimum daily, 1,250 second-feet Sept. 29.
1918-47: Maximum daily discharge, 21,300 second-feet June 6, 1943, Mar. 27, 1946; minimum daily, 138 second-feet Aug. 2, 1936.

Remarks.- Records good. Flow regulated by storage in Lake Winnebago (see preceding page).

Cooperation.- Figures of daily discharge (computed from power-plant records) furnished by Corps of Engineers; records reviewed by Geological Survey.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,230	2,120	2,890	3,530	3,910	4,840	4,430	6,410	8,390	7,810	2,800	2,370
2	2,310	1,840	2,720	3,710	3,450	4,780	3,440	6,620	7,640	7,170	2,880	2,290
3	2,320	1,550	3,720	3,160	3,460	4,580	4,160	6,860	7,310	5,440	2,480	2,190
4	2,120	1,830	3,700	3,490	2,890	4,490	3,970	6,870	7,370	4,490	2,660	2,170
5	2,200	1,990	3,730	3,090	3,320	4,560	5,390	6,500	7,570	4,640	2,810	2,430
6	1,800	2,110	3,760	3,880	3,790	4,650	4,730	7,140	7,160	4,900	2,830	2,400
7	1,650	2,300	3,720	3,840	4,540	4,380	4,520	7,000	6,960	4,340	2,760	2,140
8	2,040	2,240	3,390	3,420	4,020	4,580	4,460	6,950	6,850	4,160	2,740	2,260
9	2,160	2,050	3,630	3,500	4,210	4,050	4,950	7,030	6,880	2,860	2,000	2,290
10	2,000	1,910	3,630	3,770	4,420	4,530	6,000	7,130	7,040	2,910	2,100	2,620
11	2,070	1,930	3,700	3,660	4,280	4,520	8,690	7,140	4,860	2,700	2,830	2,320
12	1,820	2,250	3,770	3,190	4,430	4,450	8,590	7,010	4,480	2,890	2,680	2,370
13	1,620	4,120	1,700	3,560	4,370	5,460	8,890	4,830	7,120	3,050	3,520	2,740
14	1,960	3,320	3,800	4,080	4,250	4,570	8,740	4,550	10,900	3,710	3,130	2,450
15	1,980	3,630	3,210	3,770	4,260	4,720	9,140	4,350	10,600	3,700	2,660	2,860
16	1,900	3,620	3,510	3,380	4,100	4,470	9,170	3,730	11,000	3,610	2,700	2,110
17	1,960	3,000	2,860	3,600	4,090	4,750	9,620	3,920	10,900	3,650	2,250	2,080
18	1,720	3,710	3,500	3,530	4,240	4,530	9,650	3,810	10,200	3,460	2,370	2,200
19	2,050	3,950	3,190	3,530	4,310	4,660	9,630	4,070	6,320	3,540	2,460	1,980
20	1,670	3,520	3,130	3,370	4,580	4,720	9,550	4,210	6,220	3,300	2,340	2,130
21	1,750	3,670	3,420	2,590	4,770	4,390	9,330	4,400	4,980	3,070	2,680	1,860
22	2,150	3,250	2,870	3,490	5,540	4,370	5,950	4,400	4,670	3,880	2,380	2,020
23	1,930	3,460	2,800	3,820	5,380	4,220	6,400	4,350	5,120	3,940	2,690	2,320
24	2,170	3,430	2,750	3,250	5,020	5,980	6,200	4,260	3,660	3,280	2,080	2,280
25	1,970	3,380	3,080	3,760	5,050	4,380	6,310	4,340	3,490	2,960	2,210	1,970
26	1,770	3,450	3,400	3,320	4,200	4,480	6,590	4,280	3,390	3,600	2,510	2,310
27	1,640	3,490	3,770	3,440	4,470	4,690	6,270	4,210	3,570	2,480	2,300	2,290
28	1,880	3,440	3,820	3,510	4,860	4,440	6,980	4,200	3,370	2,780	2,100	2,120
29	1,950	2,860	3,700	3,320	-	4,130	6,760	6,520	4,770	3,240	2,410	1,250
30	2,060	3,180	3,560	2,250	-	2,780	6,440	9,590	7,430	2,980	2,360	1,650
31	1,810	-	2,820	3,350	-	4,400	-	9,490	-	2,770	1,730	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	60,660	2,320	1,620	1,957	0.318	0.37
November	86,600	4,120	1,550	2,887	.469	.52
December	103,250	3,820	1,700	3,331	.542	.62
Calendar year 1946	1,652,160	21,300	1,550	4,526	.736	9.99
January	107,160	4,080	2,250	3,457	.562	.65
February	120,210	5,540	2,890	4,293	.698	.73
March	140,550	5,980	2,780	4,534	.737	.85
April	204,950	9,650	3,440	6,832	1.11	1.24
May	176,170	9,590	3,730	5,683	.924	1.07
June	200,220	11,000	3,370	6,674	1.09	1.22
July	117,310	7,810	2,480	3,784	.615	.71
August	78,450	3,520	1,730	2,531	.412	.48
September	66,470	2,860	1,250	2,216	.360	.40
Water year 1946-47	1,462,000	11,000	1,250	4,005	.651	8.86

Silver Lake at Portage, Wis.

Location.- Staff gage, lat. 43°33', long. 89°29', in sec. 6, T. 12 N., R. 9 E., at ice hoist of C. Smith & Son, at southeast end of lake.

Drainage area.- 1 square mile.

Records available.- August 1936 to September 1947 (fragmentary).

Extremes.- Maximum elevation observed during year, 93.15 feet June 15, 21; minimum observed, 92.27 feet Oct. 19.
1936-47: Maximum elevation, that of June 15, 21, 1947; minimum observed, 90.85 feet Aug. 22, 24, 1937.

Remarks.- Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin.

Elevation, in feet, water year October 1946 to September 1947

Date	Elevation	Date	Elevation	Date	Elevation	Date	Elevation	Date	Elevation
Oct. 5	7.35	Dec. 1	7.35	May 3	7.94	June 28	7.98	Aug. 24	7.67
12	7.32	8	7.34	11	7.80	July 4	7.96	31	7.64
19	7.27	15	7.34	18	7.81	14	7.95	Sept. 6	7.65
26	7.32	22	7.34	24	7.84	20	7.94	13	7.62
Nov. 3	7.35	Apr. 5	7.80	31	7.95	27	7.99	20	7.56
10	7.35	12	7.95	June 7	7.90	Aug. 2	7.93	27	7.54
17	7.37	19	7.92	15	8.15	8	7.83		
24	7.36	26	7.93	21	8.15	17	7.76		

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

Little Green Lake near Markesan, Wis.

Location.- Staff gage, lat. 43°44', long. 88°58', in sec. 32, T. 15 N., R. 13 E., within 50 feet of lake outlet and 1½ miles north of Markesan.

Drainage area.- 5 square miles.

Records available.- August 1936 to September 1947 (fragmentary).

Extremes.- Maximum elevation observed during year, 96.01 feet Apr. 11; minimum observed, 95.76 feet May 14-16, 20-26.
1936-47: Maximum elevation observed, 96.74 feet June 23, 24, 1940; minimum observed, 94.28 feet Sept. 10, 11, 1936.

Remarks.- Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin.
The following readings are the only readings available during the water year October 1945 to September 1946:

Apr. 11, 1946	5.82
July 8.....	5.38
27.....	5.24

Elevation, in feet, water year October 1946 to September 1947

Date	Elevation	Date	Elevation	Date	Elevation	Date	Elevation	Date	Elevation
Apr. 1	-	Apr. 20	5.83	May 8	5.77	May 27	5.78	June 15	5.79
2	-	21	5.81	9	5.77	28	5.78	16	5.79
3	-	22	5.80	10	5.77	29	5.79	17	5.81
4	-	23	5.79	11	5.77	30	5.79	18	5.81
5	-	24	5.79	12	5.77	31	5.79	19	5.81
6	5.84	25	5.79	13	5.77	June 1	5.79	20	5.81
7	5.84	26	5.79	14	5.76	2	5.79	21	5.81
8	5.84	27	5.79	15	5.76	3	5.79	22	5.81
9	5.83	28	5.79	16	5.76	4	5.79	23	5.81
10	5.92	29	5.79	17	5.77	5	5.79	24	5.81
11	6.01	30	5.79	18	5.77	6	5.79	25	5.81
12	5.93	31	-	19	5.77	7	5.79	26	5.82
13	5.93	May 1	5.79	20	5.76	8	5.79	27	5.84
14	5.90	2	5.79	21	5.76	9	5.79	28	5.85
15	5.89	3	5.79	22	5.76	10	5.79	29	5.86
16	5.89	4	5.79	23	5.76	11	5.79	30	5.87
17	5.90	5	5.77	24	5.76	12	5.79	31	-
18	5.87	6	5.77	25	5.76	13	5.79	July 23	5.61
19	5.86	7	5.77	26	5.76	14	5.79		

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

Wolf River above West Branch Wolf River, Wis.

Location.- Chain gage, lat. 44°55', long. 88°39', in E½ sec. 3, T. 28 N., R. 15 E., half a mile upstream from West Branch Wolf River and 4 miles north of Keshena. Datum of gage is 856.57 feet above mean sea level (levels by Wisconsin Power & Light Co.).

Drainage area.- 633 square miles.

Records available.- March 1928 to September 1947.

Average discharge.- 19 years, 584 second-feet.

Extremes.- Maximum discharge observed during year, 1,420 second-feet Apr. 7 (gage height, 4.25 feet); minimum observed, 247 second-feet Aug. 16 (gage height, 1.45 feet).
1928-47: Maximum discharge observed, 2,580 second-feet Apr. 8, 1929 (gage height, 6.10 feet), from rating curve extended above 1,600 second-feet; minimum observed, 199 second-feet Feb. 20, 1936.

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

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

1.5	258	3.0	794
1.8	333	3.5	1,040
2.0	396	4.2	1,420
2.5	578		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	430	619	450	390	355	335	595	889	841	578	320	396
2	430	619	405	390	355	335	600	988	794	538	320	380
3	413	619	470	390	355	335	620	1,090	748	619	320	380
4	413	619	490	385	355	335	670	1,040	704	661	320	363
5	396	619	*492	385	355	*337	794	988	661	661	320	363
6	396	578	500	385	350	340	1,370	988	578	661	306	333
7	396	661	538	380	350	340	1,420	938	538	500	306	306
8	380	794	578	380	350	340	1,200	889	661	464	306	306
9	380	794	578	380	350	340	988	841	619	430	294	306
10	380	794	619	375	350	340	938	841	578	396	294	306
11	413	794	578	375	350	345	1,090	794	619	380	270	333
12	413	748	420	375	350	345	1,090	794	748	363	270	380
13	396	704	400	375	350	350	1,040	794	794	363	258	430
14	396	704	400	375	350	350	1,040	841	841	363	258	413
15	380	661	450	375	345	355	1,040	841	889	380	258	396
16	380	704	490	375	345	360	1,040	889	841	348	247	396
17	396	704	500	375	345	370	988	889	794	348	281	396
18	396	578	400	370	345	380	938	841	794	363	294	363
19	396	538	405	370	345	385	889	841	748	348	333	396
20	464	661	430	370	345	400	841	794	704	363	578	380
21	464	619	445	370	340	420	841	748	661	363	619	363
22	464	578	450	*368	340	440	841	704	578	413	538	363
23	430	413	450	365	340	460	889	748	500	380	464	348
24	430	396	435	360	340	490	1,040	704	500	363	464	333
25	538	538	420	360	335	515	1,040	704	500	348	538	306
26	578	578	415	360	335	535	988	748	500	348	464	306
27	538	619	410	360	335	550	988	748	464	348	396	306
28	538	578	405	355	335	565	938	794	464	333	430	396
29	538	578	400	355	-	580	889	889	538	333	430	464
30	661	538	395	355	-	585	938	938	619	333	413	464
31	661	-	390	355	-	590	-	889	-	320	413	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	13,884	661	380	448	0.708	0.82
November	18,947	794	396	632	.998	1.11
December	14,208	619	390	458	.724	.83
Calendar year 1946	223,458	2,260	333	612	.967	13.11
January	11,538	390	355	372	.588	.68
February	9,695	355	335	346	.547	.57
March	12,747	590	335	411	.649	.75
April	28,583	1,420	595	953	1.51	1.68
May	26,424	1,090	704	852	1.35	1.56
June	19,818	889	464	661	1.04	1.16
July	13,009	661	320	420	.664	.77
August	11,322	619	247	365	.577	.67
September	10,971	464	306	366	.578	.64
Water year 1946-47	191,146	1,420	247	524	.828	11.24

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 1-6, Dec. 12 to Apr. 4.

Wolf River at Keshena Falls, Wis.

Location.- Water-stage recorder, lat. 44°53', long. 88°39', in E½ sec. 22, T. 28 N., R. 15 E., 500 feet downstream from Keshena Falls, 1½ miles upstream from Keshena, and 2½ miles downstream from West Branch.

Drainage area.- 812 square miles.

Records available.- March 1928 to September 1947. May 1907 to March 1909 and February 1911 to March 1928 at site at Keshena, 1½ miles downstream.

Average discharge.- 37 years (1907-8, 1911-47), 794 second-feet.

Extremes.- Maximum discharge during year, 2,200 second-feet Apr. 6 (gage height, 7.43 feet); minimum, 111 second-feet Aug. 13 (gage height, 4.70 feet).
1907-9, 1911-47: Maximum discharge observed, 4,390 second-feet Apr. 10, 1922, from rating curve extended above 2,100 second-feet; minimum discharge, 91 second-feet Dec. 22, 1939 (gage height, 4.67 feet), result of low temperature.

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	582	785	560	500	455	395	722	1,060	1,020	692	420	a455
2	537	785	520	500	455	390	842	1,240	911	684	420	a440
3	537	801	560	500	455	385	974	1,340	851	722	448	h420
4	537	801	600	500	450	380	1,040	1,280	809	768	448	a415
5	556	752	*813	500	450	*377	1,220	1,220	760	785	415	a405
6	543	714	640	495	445	380	2,040	1,160	692	768	404	a405
7	531	826	677	495	445	385	1,990	1,100	628	635	420	a410
8	506	1,060	714	495	440	390	1,600	1,050	785	556	382	h431
9	500	1,080	730	495	440	395	1,240	983	785	525	356	a410
10	513	1,040	722	490	435	400	1,250	946	745	494	393	399
11	525	1,040	692	490	435	405	1,470	928	752	488	399	404
12	525	965	560	485	430	410	1,470	a920	859	465	361	494
13	537	919	520	485	430	415	1,340	a940	965	506	319	568
14	537	885	530	485	425	420	1,290	983	1,120	500	315	575
15	518	851	580	480	425	425	1,290	1,000	1,140	325	305	543
16	506	868	620	480	425	430	1,240	1,070	1,110	460	305	506
17	506	885	620	475	420	440	1,240	1,070	1,060	460	367	494
18	506	785	510	475	420	455	1,170	1,020	983	454	404	465
19	506	730	520	475	415	470	1,080	974	956	437	420	477
20	594	809	540	470	415	480	1,060	1,010	876	494	684	482
21	614	809	560	470	415	505	1,030	851	842	525	842	488
22	556	745	580	*461	410	540	1,010	817	793	506	420	477
23	543	543	580	460	410	560	1,090	894	656	471	642	460
24	582	549	570	460	410	580	1,270	859	677	465	635	410
25	677	714	560	460	405	600	1,240	834	335	454	670	420
26	692	745	540	460	405	620	1,170	842	341	442	575	398
27	692	722	535	460	400	630	1,160	859	614	477	512	409
28	677	707	525	460	400	650	1,140	965	594	471	531	537
29	722	692	515	460	-	660	1,090	1,060	670	442	556	670
30	809	628	510	455	-	670	1,100	1,150	737	426	a500	601
31	801	-	505	455	-	680	-	1,140	-	420	a475	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	17,966	809	500	580	0.714	0.82
November	24,235	1,080	543	808	.995	1.11
December	18,008	730	505	581	.716	.83
Calendar year 1946	278,525	2,360	437	763	.940	12.76
January	14,831	500	455	478	.589	.68
February	11,965	455	400	427	.526	.55
March	14,922	680	377	481	.592	.68
April	36,868	2,040	722	1,229	1.51	1.68
May	31,565	1,340	817	1,018	1.25	1.44
June	24,066	1,140	335	802	.988	1.10
July	16,317	785	325	526	.648	.75
August	14,343	842	305	463	.570	.66
September	14,068	670	398	469	.578	.64
Water year 1946-47	239,154	2,040	305	655	.807	10.94

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for station above West Branch Wolf River.
h Computed from once-daily gage readings.
Note.- Stage-discharge relation affected by ice Dec. 1-6, Dec. 12 to Mar. 31.

Wolf River at New London, Wis.

Location.- Staff gage, lat. 44°23', long. 88°44', in sec. 12, T. 22 N., R. 14 E., 15 feet downstream from Pearl Street Bridge and three-quarters of a mile downstream from Embarrass River. Datum of gage is 749.37 feet above mean sea level (levels by Corps of Engineers).
Drainage area.- 2,240 square miles.
Records available.- October 1913 to September 1947.
Average discharge.- 34 years, 1,838 second-feet.
Extremes.- Maximum discharge observed during year, 5,970 second-feet Apr. 12, 13 (gage height, 8.1 feet); minimum observed, 436 second-feet Aug. 17, 18 (gage height, 0.2 foot).
1913-47: Maximum discharge observed, 15,500 second-feet Apr. 13, 1922 (gage height, 11.4 feet), from rating curve extended above 12,000 second-feet; minimum discharge, 261 second-feet Sept. 6, 1933.
Maximum stage known, 11.6 feet Apr. 16, 1888, from information by Corps of Engineers.
Remarks.- Records good except those for period of ice effect, which are fair. Gage read once daily.
Cooperation.- Gage-height record furnished by Corps of Engineers.

Rating table, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Aug. 22-27, Aug. 29 to Sept. 30)

0.2	436	2.0	1,130	6.0	3,510
.4	505	2.5	1,390	7.0	4,420
.7	612	3.0	1,640	7.5	5,030
1.0	724	4.0	2,180	8.1	5,970
1.5	920	5.0	2,800		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,000	1,230	1,100	860	830	680	2,480	2,800	2,940	1,440	649	1,080
2	920	1,230	1,000	860	830	660	2,240	2,800	2,940	1,540	649	1,000
3	920	1,230	960	860	820	650	2,180	2,870	2,940	1,540	540	960
4	920	1,390	*945	860	810	*638	2,180	2,940	2,870	1,390	540	960
5	880	1,390	950	870	800	650	2,420	3,010	2,740	1,280	540	1,000
6	880	1,330	950	870	800	690	2,670	3,010	2,610	1,330	540	960
7	840	1,280	970	870	790	740	4,010	3,010	2,420	1,280	576	920
8	762	1,490	1,000	870	790	790	4,420	2,940	2,180	1,230	540	920
9	724	1,800	1,060	870	780	860	5,030	2,870	2,020	1,130	505	800
10	724	2,070	1,080	870	770	950	5,310	2,800	1,960	1,040	505	762
11	724	2,300	1,100	880	770	1,050	5,790	2,670	1,910	960	505	800
12	724	2,360	1,100	880	780	1,200	5,970	2,610	1,800	920	505	724
13	724	2,480	1,020	*877	790	1,330	5,970	2,420	1,910	880	470	762
14	724	2,480	920	880	810	1,500	5,790	2,360	2,420	880	505	840
15	762	2,360	870	880	830	1,700	5,620	2,360	2,740	762	470	1,000
16	762	2,180	830	880	840	1,850	5,310	2,480	2,870	840	470	1,000
17	762	2,070	800	870	840	1,920	5,030	2,420	2,940	840	436	960
18	800	2,020	800	870	840	1,880	4,650	2,540	2,940	840	436	1,000
19	800	1,910	810	870	830	1,780	4,420	2,540	2,800	762	505	960
20	724	1,860	840	870	810	1,700	4,110	2,610	2,610	800	649	960
21	724	1,640	850	870	800	1,700	3,830	2,610	2,300	762	1,130	840
22	724	1,700	870	870	780	1,720	3,590	2,610	2,070	649	1,750	840
23	724	1,130	880	870	760	1,800	3,440	2,540	1,750	688	2,070	800
24	724	880	890	870	750	1,900	3,370	2,540	1,640	762	2,180	762
25	880	900	890	860	730	2,000	3,290	2,480	1,490	762	2,070	800
26	1,040	950	890	860	720	2,200	3,220	2,420	1,440	724	1,750	800
27	1,130	1,020	880	850	710	2,400	3,150	2,300	1,390	724	1,390	800
28	1,130	1,100	870	850	700	2,700	3,080	2,180	1,390	840	1,180	800
29	1,080	1,130	870	850	-	2,900	3,010	2,180	1,280	724	1,080	880
30	1,230	1,130	860	840	-	2,940	2,940	2,420	1,280	612	1,080	880
31	1,230	-	860	840	-	2,740	-	2,800	-	649	1,080	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	26,692	1,230	724	861	0.384	0.44
November	48,040	2,480	880	1,601	.715	.80
December	28,715	1,100	800	926	.413	.48
Calendar year 1946	687,657	10,300	612	1,884	.841	11.40
January	26,847	880	840	866	.387	.45
February	22,110	840	700	790	.353	.37
March	48,218	2,940	638	1,555	.694	.80
April	118,520	5,970	2,180	3,951	1.76	1.96
May	81,140	3,010	2,180	2,617	1.17	1.35
June	66,590	2,940	1,280	2,220	.991	1.11
July	29,578	1,540	612	954	.426	.49
August	27,295	2,180	436	880	.393	.45
September	26,570	1,080	724	886	.396	.44
Water year 1946-47	550,315	5,970	436	1,508	.673	9.14

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 25 to Mar. 29.

Embarrass River near Embarrass, Wis.

Location.- Water-stage recorder, lat. 44°43', long. 88°44', on line between sec. 13, T. 26 N., R. 14 E., and sec. 18, T. 26 N., R. 15 E., three-quarters of a mile downstream from Mill Creek and 4 miles northwest of Embarrass.

Drainage area.- 395 square miles.

Records available.- June 1919 to September 1947.

Average discharge.- 28 years, 304 second-feet.

Extremes.- Maximum discharge during year, 2,390 second-feet Apr. 5 (gage height, 6.94 feet); minimum, 51 second-feet July 20, Aug. 18 (gage height, 2.54 feet).
1919-47: Maximum discharge observed, 6,760 second-feet Apr. 10, 1922 (gage height, 11.5 feet), from rating curve extended above 2,800 second-feet; minimum observed, 23 second-feet Aug. 3, 6, 7, 1931.

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	140	173	149	102	120	120	213	362	530	268	107	146
2	138	213	140	110	110	100	243	503	429	210	120	146
3	138	199	130	117	96	70	306	557	255	196	95	143
4	143	196	125	113	140	84	367	557	255	166	83	130
5	146	185	120	126	120	*96	945	525	263	157	100	135
6	135	173	125	135	100	110	2,120	387	272	166	100	132
7	107	213	149	137	112	118	1,740	413	272	173	95	97
8	107	429	132	142	122	124	1,360	377	259	151	95	122
9	114	530	170	144	112	100	804	342	220	143	80	151
10	135	492	154	138	102	78	736	311	206	138	78	132
11	140	487	173	132	118	170	892	272	240	124	76	132
12	138	482	179	122	130	200	948	228	213	124	80	117
13	112	418	210	110	130	250	797	311	272	97	85	170
14	97	377	100	140	130	330	623	382	525	114	80	293
15	124	338	76	155	124	370	461	434	629	124	80	202
16	124	316	72	162	104	350	382	487	646	120	85	179
17	124	298	100	165	112	387	424	519	311	107	69	154
18	124	280	110	150	130	351	397	525	311	107	71	148
19	124	251	120	115	130	268	362	476	206	92	92	127
20	97	240	124	137	120	228	324	429	182	60	398	138
21	130	206	120	126	140	163	324	397	188	78	825	127
22	112	216	110	140	150	176	293	367	166	100	741	114
23	122	197	84	*118	110	259	306	439	173	110	476	114
24	140	192	94	118	120	424	434	466	179	100	302	132
25	224	176	97	118	118	541	525	424	192	100	149	124
26	206	196	97	117	125	487	492	382	192	140	114	122
27	173	192	96	116	145	357	429	334	192	95	122	117
28	206	202	105	145	140	359	387	311	185	76	157	138
29	199	170	107	162	-	236	372	408	179	104	192	285
30	206	160	96	142	-	228	362	612	255	102	259	347
31	179	-	100	125	-	185	-	634	-	95	185	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	4,404	224	97	142	0.359	0.41
November	8,197	530	160	273	.691	.77
December	3,764	210	72	121	.306	.35
Calendar year 1946	107,467	2,350	72	294	.744	10.10
January	4,079	165	102	132	.334	.39
February	3,410	150	96	122	.309	.32
March	7,319	541	70	236	.597	.69
April	18,368	2,120	213	612	1.55	1.73
May	13,171	634	228	425	1.08	1.24
June	8,397	646	166	280	.709	.79
July	3,937	268	60	127	.322	.37
August	5,591	825	69	180	.456	.53
September	4,612	347	97	154	.390	.44
Water year 1946-47	85,249	2,120	60	234	.592	8.03

Peak discharge.- Apr. 5 (10 p.m.) 2,390 sec.-ft.; Apr. 12 (12 m.) 974 sec.-ft.; June 16 (5:30 p.m.) 948 sec.-ft.; Aug. 20 (9:30 p.m.) 1,030 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 2-6, Dec. 14 to Mar. 16.

Little Wolf River at Royalton, Wis.

Location.- Water-stage recorder, lat. 44°24', long. 88°51', in sec. 1, T. 22 N., R. 13 E., 4 miles upstream from mouth.

Drainage area.- 485 square miles.

Records available.- January 1914 to September 1947.

Average discharge.- 33 years, 438 second-feet.

Extremes.- Maximum daily discharge during year, 2,860 second-feet Apr. 7 (gage height, 4.60 feet); minimum, 110 second-feet Aug. 17 (gage height, 1.02 feet).
1914-47: Maximum discharge, 6,950 second-feet Mar. 30, 1943 (gage height, 8.00 feet), from rating curve extended above 3,500 second-feet; maximum gage height, 10.33 feet Mar. 25, 1939 (backwater from ice); minimum discharge, 57 second-feet Feb. 10, 1934.

Remarks.- Records good except those for periods of ice effect, which are fair. Diurnal fluctuation caused by power plant 6 miles above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	271	360	280	160	190	230	400	488	698	482	176	179
2	311	403	270	190	130	200	458	584	532	513	169	274
3	235	390	230	200	180	185	464	694	439	439	155	252
4	243	473	*254	190	230	*183	513	776	421	290	192	216
5	275	376	246	190	235	185	1,050	643	415	253	163	241
6	222	282	265	230	180	250	2,430	545	380	290	172	195
7	211	493	271	230	155	350	2,640	545	386	311	140	205
8	225	598	263	210	150	300	1,980	507	311	207	166	213
9	217	749	324	210	200	280	1,350	459	345	211	195	150
10	228	712	310	225	210	350	1,130	433	392	207	184	165
11	244	677	289	225	190	390	1,310	392	269	199	172	167
12	243	726	293	170	190	450	1,390	386	300	203	146	209
13	215	657	200	220	180	600	1,110	439	526	188	143	304
14	221	532	200	270	210	700	850	532	754	192	152	412
15	241	488	220	340	230	700	684	630	918	199	163	407
16	238	501	280	315	280	500	657	570	698	199	140	234
17	222	451	240	285	280	330	636	558	564	192	138	212
18	239	409	210	250	210	300	559	545	458	220	143	212
19	240	427	195	230	240	300	564	526	340	207	290	245
20	233	344	170	230	220	300	558	494	380	203	616	234
21	220	443	190	165	190	350	494	507	280	203	918	289
22	210	230	200	220	200	445	464	470	216	180	1,010	217
23	211	280	250	*229	210	495	501	458	280	163	887	186
24	251	320	260	240	210	829	603	584	261	184	636	198
25	415	430	165	220	180	924	643	532	286	180	398	200
26	433	398	190	280	175	804	623	439	296	180	345	186
27	428	362	235	300	175	605	513	403	264	284	280	193
28	282	308	220	270	205	480	501	451	270	166	271	239
29	335	312	205	270	-	426	545	532	266	172	304	409
30	415	268	210	240	-	327	520	733	377	188	316	414
31	330	-	210	200	-	348	-	827	-	180	273	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	8,304	433	210	268	0.553	0.64
November	13,399	749	230	447	.922	1.03
December	7,345	324	165	237	.489	.56
Calendar year 1946	163,785	5,000	150	449	.926	12.56
January	7,204	340	160	232	.478	.55
February	5,635	280	130	201	.414	.43
March	13,116	924	183	423	.872	1.01
April	26,139	2,640	400	871	1.80	2.01
May	16,652	827	386	537	1.11	1.28
June	12,322	918	216	411	.847	.94
July	7,285	513	163	235	.485	.56
August	9,458	1,010	138	305	.629	.73
September	7,257	414	150	242	.499	.56
Water year 1946-47	134,111	2,640	130	367	.757	10.30

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 22-25, Dec. 1-4, Dec. 13 to Mar. 21.

Waupaca River near Waupaca, Wis.

Location.- Water-stage recorder, lat. 44°21', long. 88°59', near north line of sec. 1, T. 21 N., R. 12 E., at highway bridge, 1½ miles downstream from Crystal River and 4 miles downstream from Waupaca.

Drainage area.- 305 square miles.

Records available.- October 1917 to September 1947. June 1916 to October 1917 at site 1 mile downstream.

Average discharge.- 31 years, 253 second-feet.

Extremes.- Maximum discharge during year, 855 second-feet Apr. 6; maximum gage height, 3.76 feet Dec. 4 (backwater from ice); minimum discharge, 65 second-feet June 7 (gage height, 0.65 foot).

1916-47: Maximum discharge observed, 1,980 second-feet Apr. 4, 1934 (gage height, 5.82 feet); minimum daily, 50 second-feet Jan. 22, 28, 1926.

Revisions.- The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede those published in the water-supply papers indicated.

Water-Supply Paper	Water year	Date	Gage height (feet)	Discharge (second-feet)
504.....	1918-19	Mar. 17	5.60	1,850
544.....	1921-22	Apr. 11	4.60	1,400
564.....	1922-23	Apr. 13	5.37	1,750
584.....	1923-24	Aug. 22	4.47	1,360
854.....	1937-38	Sept. 10, 11	4.6	1,400
894.....	1939-40	June 24	5.69	1,900
954.....	1941-42	June 7	3.49	960
1004.....	1943-44	Mar. 12	3.98	1,160
1034.....	1944-45	Mar. 16	3.60	1,000
1054.....	1945-46	Mar. 14	4.48	1,360

Remarks.- Records good except those for period of ice effect, which are fair. Considerable diurnal fluctuation caused by power plant above station.

Revisions.- Revised figures of discharge for high-water periods in the water years 1919, 1922, 1923, 1924, 1938, 1940, 1945, and 1946 are given herewith. They supersede those published in Water-Supply Papers 504, 544, 564, 584, 854, 894, 1034, and 1054.

Day (water year)	Discharge (second-feet)	Day (water year)	Discharge (second-feet)	Day (water year)	Discharge (second-feet)
1918-19		1922-23		1937-38	
Mar. 15.....	1,020	Apr. 14.....	1,530	Sept.13.....	1,000
16.....	1,440	15.....	1,120	1939-40	
17.....	1,750	1923-24		June 23.....	1,280
18.....	1,120	Aug. 21.....	600	24.....	1,220
1921-22		22.....	1,320	25.....	1,360
Apr. 8.....	960	23.....	1,140	26.....	1,160
9.....	1,240	1937-38		1944-45	
10.....	1,280	Mar. 18.....	1,200	Mar. 16.....	980
11.....	1,360	19.....	1,240	1945-46	
12.....	1,160	20.....	1,160	Mar. 12.....	980
June 12.....	1,280	21.....	880	13.....	1,120
13.....	1,080	Sept. 8.....	1,160	14.....	1,280
1922-23		9.....	1,200	15.....	1,240
Apr. 11.....	1,080	10.....	1,400	16.....	1,000
12.....	1,400	11.....	1,400		
13.....	1,700	12.....	1,280		

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
March 1919.....	15,237	1,750	190	492	1.61	1.86
Water year 1918-19..	98,460	1,750	135	270	.885	11.89
April 1922.....	19,519	1,360	312	651	2.13	2.38
June.....	12,197	1,280	236	407	1.33	1.48
Water year 1921-22..	101,939	1,360	100	279	.915	12.42
April 1923.....	19,429	1,700	210	648	2.12	2.36
Water year 1922-23..	89,793	1,700	115	246	.807	10.94
August 1924.....	13,757	1,320	234	444	1.46	1.68
Water year 1923-24..	100,869	1,320	110	276	.905	12.29
March 1938.....	13,184	1,240	170	425	1.39	1.59
September.....	15,716	1,400	167	524	1.72	1.92
Water year 1937-38..	100,609	1,400	131	276	.905	12.25
Calendar year 1938..	109,861	1,400	142	301	.987	13.38
June 1940.....	13,688	1,620	190	456	1.50	1.67
Water year 1939-40..	95,666	1,620	175	261	.856	11.66
Calendar year 1940..	100,772	1,620	150	275	.902	12.29
March 1945.....	11,123	980	200	359	1.18	1.36
Water year 1944-45..	87,370	980	134	239	.784	10.65
Calendar year 1945..	91,476	980	144	251	.823	11.15
March 1946.....	18,082	1,280	265	583	1.91	2.20
Water year 1945-46..	101,811	1,280	177	279	.915	12.41
Calendar year 1946..	100,369	1,280	170	275	.902	12.25

Discharge, in second-feet, of Waupaca River near Waupaca, Wis., water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	245	245	215	190	200	170	245	267	290	294	187	209
2	223	267	200	190	205	185	257	301	261	294	177	217
3	220	277	200	190	205	*197	261	335	248	232	177	212
4	209	270	210	190	200	200	267	318	232	226	198	195
5	209	254	274	190	200	210	418	301	248	215	185	206
6	201	238	215	192	200	215	803	274	182	220	179	195
7	212	280	223	195	195	235	648	264	212	209	177	198
8	217	348	209	195	190	265	383	257	229	209	169	206
9	206	314	217	195	190	295	380	251	238	201	169	203
10	212	311	220	195	190	330	414	238	229	201	164	185
11	223	348	217	195	190	380	479	232	226	192	182	195
12	215	a300	212	200	190	440	393	242	223	192	177	198
13	201	a290	195	210	180	530	341	264	328	179	172	267
14	226	a285	180	280	210	614	328	274	441	198	174	254
15	215	a300	177	350	260	448	311	287	362	201	174	235
16	217	a280	177	250	270	331	287	280	301	182	169	215
17	209	a260	180	210	260	254	277	267	277	185	167	209
18	217	254	185	210	200	232	287	261	261	201	179	209
19	203	245	190	210	190	226	284	274	245	198	212	201
20	198	229	195	210	185	215	290	267	232	190	331	201
21	215	235	175	190	185	229	277	257	217	201	404	206
22	215	238	170	170	185	242	267	254	217	182	314	245
23	203	413	175	200	170	264	287	274	215	179	261	212
24	220	407	195	*228	170	465	318	254	220	177	229	232
25	287	261	175	260	175	410	290	267	229	179	261	215
26	267	238	180	280	175	301	280	264	226	164	232	201
27	245	223	210	290	175	267	284	242	223	216	201	198
28	251	217	220	285	170	261	261	251	232	248	209	217
29	251	223	210	270	-	242	254	297	232	209	226	245
30	254	215	205	240	-	229	261	369	290	206	215	238
31	245	-	200	170	-	235	-	331	-	187	201	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	6,931	287	198	224	0.734	0.85
November	8,285	413	215	276	.905	1.01
December	6,206	274	170	200	.656	.76
Calendar year 1946	100,369	1,280	170	275	.902	12.25
January	8,830	350	170	220	.721	.83
February	5,515	270	170	197	.646	.67
March	9,117	614	170	294	.964	1.11
April	10,132	803	245	338	1.11	1.24
May	8,514	369	232	275	.902	1.04
June	7,566	441	182	252	.826	.92
July	6,366	294	164	205	.672	.77
August	6,472	404	164	209	.685	.79
September	6,419	267	185	214	.702	.78
Water year 1946-47	88,333	803	164	242	.793	10.77

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of daily generation at Weyauwega power plant 4 miles downstream.

Note.- Stage-discharge relation affected by ice Dec. 2-4, Dec. 13 to Mar. 13.

West Branch Fond du Lac River at Fond du Lac, Wis.

Location.- Water-stage recorder, lat. 43°45'45", long. 88°29'00", on line between secs. 17 and 20, T. 15 N., R. 17 E., at concrete bridge on County Trunk Highway T, three-quarters of a mile west of Fond du Lac and 2½ miles upstream from confluence with East Branch. Datum of gage is 766.78 feet above mean sea level (Corps of Engineers bench mark).

Drainage area.- 88 square miles.

Records available.- March 1939 to September 1947.

Extremes.- Maximum discharge during year, 770 second-feet June 13 (gage height, 4.42 feet); no flow on many days in October and September.
1939-47: Maximum daily discharge, 1,390 second-feet Mar. 27, 1943; no flow on many days

Remarks.- Records good except those below 1 second-foot and those for periods of ice effect, which are poor.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	.1	.7	.4	.2	.1	38	61	47	25	2.5	.2
2	0	.1	.5	.3	.1	.1	46	61	57	21	2.5	.2
3	0	.1	.5	.3	.1	.1	60	60	60	18	2.3	.2
4	0	.1	.4	.2	.1	.1	94	56	57	16	1.8	.2
5	0	.1	.5	.1	.1	.1	219	52	64	16	1.4	.3
6	0	.1	.5	.1	.1	.2	214	47	57	15	1.2	.2
7	0	.2	.6	.1	.1	.3	172	44	49	14	2.7	.2
8	0	.1	.6	.1	.1	.4	224	39	43	13	2.3	.1
9	.1	.1	.7	.1	.1	.7	243	33	37	11	2.3	.1
10		1.0	.8	.1	.1	1.0	321	29	31	9.9	2.1	.1
11	.1	1.6	.8	.1	.1	10	278	24	27	8.9	1.8	.1
12	.1	1.8	1.0	.2	.1	30	245	21	24	7.8	1.2	.1
13	.1	1.6	.6	.2	.2	45	219	18	334	6.8	1.0	.2
14	.1	1.6	.6	.3	.3	60	204	15	114	6.4	.8	.1
15	.1	1.4	.6	.4	.5	70	182	13	77	6.4	.6	0
16	0	1.6	.4	.4	.5	60	160	11	69	6.0	.4	0
17	0	1.0	.3	.5	.5	50	139	10	71	6.4	.4	.1
18	0	1.6	.2	.5	.5	32	127	10	80	6.8	.4	.1
19	0	1.0	.2	.2	.5	22	126	11	78	6.4	.2	0
20	0	1.0	.2	.1	.5	20	115	12	74	6.8	.2	0
21	0	1.0	.3	.1	.5	23	101	12	67	6.8	.2	.1
22	0	.7	.3	*.1	.4	35	90	12	58	6.4	.2	.1
23	0	.7	.3	.1	.3	50	109	12	53	6.0	.2	.1
24	.1	.8	.3	.1	.2	70	99	11	48	5.6	.1	.1
25	.1	.8	.3	.2	.1	96	83	9.9	42	4.8	.1	.1
26	.1	.8	.3	.3	.1	92	80	8.4	37	4.5	.1	.1
27	.1	.8	3.0	.3	.1	82	77	8.4	32	6.4	.1	.1
28	.1	.8	1.1	.3	.1	70	74	8.4	29	4.8	.1	.2
29	.1	.7	.8	.3	-	50	70	81	29	4.5	.1	.2
30	.1	.8	2.0	.2	-	40	66	47	26	3.3	.1	.1
31		-	.8	.2	-	36	-	41	-	2.7	.1	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1.3	0.1	0	0.04	0.00045	0.0005
November	24.1	1.8	.1	.80	.0091	.01
December	20.2	3.0	.2	.65	.0074	.009
Calendar year 1946	17,318.0	1,150	0	47.6	.541	7.34
January	6.9	.5	.1	.22	.0025	.003
February	6.6	.5	.1	.24	.0027	.003
March	1,046.1	96	.1	33.7	.383	.44
April	4,275	321	38	142	1.61	1.80
May	878.1	81	8.4	28.3	.322	.37
June	1,871	334	24	62.4	.709	.79
July	283.4	25	2.7	9.14	.104	.12
August	29.5	2.7	.1	.95	.011	.01
September	3.7	.3	0	.12	.0014	.002
Water year 1946-47	8,445.9	334	0	23.1	.262	3.56

Peak discharge.- Apr. 5 (10:30 p.m.) 400 sec.-ft.; Apr. 10 (10:30 a.m.) 444 sec.-ft.; June 13 (6:30 a.m.) 770 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 27-31, Jan. 14 to Apr. 3.

East Branch Fond du Lac River at Fond du Lac, Wis.

Location.- Water-stage recorder, lat. 43°45'15", long. 88°27'10", in sec. 22, T. 15 N., R. 17 E., at steel bridge on town road, an eighth of a mile west of U. S. Highway 41, half a mile south of Fond du Lac, and 2½ miles upstream from confluence with West Branch. Datum of gage is 762.82 feet above mean sea level (Corps of Engineers bench mark).

Drainage area.- 75 square miles.

Records available.- March 1939 to September 1947.

Extremes.- Maximum discharge during year, 1,220 second-feet June 13 (gage height, 4.65 feet); minimum, 0.6 second-foot Nov. 22 (gage height, 0.86 foot).
1939-47: Maximum discharge, 2,140 second-feet June 23, 1940; maximum gage height, 10.74 feet Mar. 16, 1943 (ice jam), from floodmarks; no flow Jan. 17-29, 1940.

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

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-15)

0.9	1.0	1.5	34	2.5	273
1.0	2.8	1.7	61	2.8	376
1.1	5.8	1.9	102	3.2	534
1.3	16	2.2	182	3.7	745

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.0	2.3	2.6	3.1	5.7	5.1	35	22	42	17	4.3	4.6
2	3.7	2.6	2.3	3.0	5.2	5.0	45	24	54	14	3.7	4.6
3	3.4	3.4	1.5	3.0	4.6	5.0	60	35	39	12	4.0	4.3
4	3.1	3.4	1.4	3.0	3.9	5.0	100	32	28	11	4.0	4.0
5	2.6	3.1	1.5	3.0	3.2	6.0	185	26	28	10	3.4	5.8
6	2.3	2.6	2.1	3.0	2.8	8.0	399	22	28	10	3.4	5.8
7	2.4	3.7	2.3	3.0	2.6	10	286	22	21	10	4.6	4.6
8	2.3	5.8	2.4	3.0	2.5	13	241	18	18	9.6	5.2	4.6
9	2.4	4.0	2.8	3.0	2.3	18	199	15	16	8.6	4.3	4.6
10	2.4	4.0	2.4	3.0	2.1	24	273	14	15	7.7	4.0	4.6
11	2.1	4.0	2.1	3.0	1.9	31	326	12	15	8.2	3.7	4.6
12	2.3	3.7	2.0	3.0	1.9	40	244	10	13	7.2	3.4	5.2
13	2.3	3.1	1.9	3.0	2.6	50	196	10	768	7.7	4.3	5.8
14	2.4	2.4	1.8	4.5	4.0	60	174	11	626	6.7	5.2	5.2
15	2.8	2.4	1.6	7.0	8.0	70	154	10	276	6.3	5.2	5.5
16	3.1	2.6	1.5	9.0	9.2	60	143	10	179	6.3	5.2	5.5
17	1.9	2.8	1.4	10	9.6	45	130	10	132	6.3	2.8	5.2
18	1.9	2.4	1.2	9.0	9.8	30	127	12	95	6.7	2.6	5.2
19	2.1	2.6	1.2	8.0	10	22	160	12	72	5.8	2.6	5.2
20	2.1	2.4	1.2	6.0	10	20	171	14	44	6.7	2.4	4.9
21	2.1	2.4	1.2	5.4	10	23	138	13	34	7.2	2.8	8.6
22	2.4	2.3	1.4	*5.1	10	32	117	12	26	5.8	3.1	8.6
23	1.9	1.7	1.5	5.2	9.8	50	151	11	24	5.2	3.1	6.7
24	2.4	1.5	1.7	5.6	9.6	70	138	11	21	4.9	3.1	5.5
25	3.4	3.4	1.9	6.2	7.0	100	56	10	18	4.9	3.1	5.5
26	3.4	4.6	2.0	7.2	6.0	95	46	10	17	4.9	3.1	5.5
27	2.4	2.6	2.4	7.8	5.5	88	39	9.6	15	9.6	3.4	5.8
28	2.3	3.1	3.2	8.0	5.3	78	32	10	14	9.6	4.0	7.2
29	2.4	3.4	3.5	7.7	-	50	27	138	20	5.8	4.0	8.2
30	2.6	2.1	3.4	6.9	-	38	24	104	22	5.2	4.0	7.2
31	2.3	-	3.2	6.3	-	32	-	52	-	4.6	4.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	79.2	4.0	1.9	2.55	0.034	0.04
November	90.4	5.8	1.5	3.01	.040	.04
December	62.6	3.5	1.2	2.02	.027	.03
Calendar year 1946	17,902.3	1,040	.4	49.0	.653	8.89
January	164.0	10	3.0	5.29	.071	.08
February	165.1	10	1.9	5.90	.079	.08
March	1,183.1	100	5.0	38.2	.509	.59
April	4,416	399	24	147	1.96	2.19
May	721.6	138	9.6	23.3	.311	.36
June	2,720	768	13	90.7	1.21	1.35
July	245.5	17	4.6	7.92	.106	.12
August	116.0	5.2	2.4	3.74	.050	.06
September	168.6	8.6	4.0	5.62	.075	.08
Water year 1946-47	10,132.1	768	1.2	27.8	.371	5.02

Peak discharge.- Apr. 6 (12:01 a.m., 2 p.m.) 418 sec.-ft.; Apr. 11 (4 a.m.) 372 sec.-ft.; June 13 (9 a.m.) 1,220 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 12 to Feb. 8, Feb. 14 to Apr. 4 (no gage-height record Dec. 12-14, 18-28, Jan. 21, 27-29, Feb. 23 to Mar. 1, Mar. 23 to Apr. 4; discharge computed on basis of 1 discharge measurement, observer's and engineers' notes, weather records, and records for Cedar Creek near Cedarburg).

Lake de Neveu near Fond du Lac, Wis.

Location.- Staff gage, lat. 43°44', long. 88°24', in sec. 30, T. 15 N., R. 18 E., at boathouse at north end of lake on farm of Nick Giebel, 4 miles southeast of Fond du Lac.

Drainage area.- 2 square miles.

Records available.- August 1936 to September 1947 (fragmentary).

Extremes.- Maximum elevation observed during year, 98.00 feet June 13; minimum, 97.28 feet Aug. 29, Sept. 2.
1936-47: Maximum elevation observed, 98.20 feet Sept. 18, 1938; minimum, 96.90 feet Aug. 15, 1936.

Remarks.- Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin.

Elevation, in feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.32	7.48	-	-	-	-	7.58	-	-	7.54	7.38	-
2	-	-	-	-	-	-	-	7.54	-	-	-	7.28
3	-	-	7.40	7.48	-	-	-	-	7.58	-	-	-
4	7.30	-	-	-	7.52	7.46	7.60	-	-	7.48	-	-
5	-	7.44	-	-	-	-	-	-	-	-	7.36	7.36
6	-	-	7.40	-	-	-	-	7.52	7.60	-	-	-
7	-	-	-	7.46	7.52	7.46	-	-	-	-	-	-
8	7.32	7.48	-	-	-	-	7.70	-	-	7.44	7.38	-
9	-	-	-	-	-	-	-	7.52	-	-	-	7.38
10	-	-	7.40	7.46	-	-	-	-	7.56	-	-	-
11	7.34	-	-	-	7.50	7.52	7.74	-	-	7.42	-	-
12	-	7.48	-	-	-	-	-	-	-	-	7.34	7.34
13	-	-	7.38	-	-	-	-	7.48	8.00	-	-	-
14	-	-	-	7.58	7.48	7.56	-	-	-	-	-	-
15	7.32	7.46	-	-	-	-	7.62	-	-	7.40	7.36	-
16	-	-	-	-	-	-	-	7.48	-	-	-	7.40
17	-	-	7.36	7.56	-	-	-	-	7.78	-	-	-
18	7.34	-	-	-	7.50	7.56	7.58	-	-	7.44	-	-
19	-	7.46	-	-	-	-	-	-	-	-	7.34	7.38
20	-	-	7.34	-	-	-	-	7.50	7.64	-	-	-
21	-	-	-	7.48	7.50	7.56	-	-	-	-	-	-
22	7.34	7.42	-	-	-	-	7.54	-	-	7.40	7.32	-
23	-	-	-	-	-	-	-	7.48	-	-	-	7.50
24	-	-	7.36	7.46	-	-	-	-	7.54	-	-	-
25	7.46	-	-	-	7.46	7.64	7.58	-	-	7.38	-	-
26	-	7.42	-	-	-	-	-	-	-	-	7.30	7.46
27	-	-	7.36	-	-	-	-	7.46	7.52	-	-	-
28	-	-	-	7.46	7.46	7.58	-	-	-	-	-	-
29	7.50	7.42	-	-	-	-	7.54	-	-	7.40	7.28	-
30	-	-	-	-	-	-	-	7.62	-	-	-	7.50
31	-	-	7.52	7.58	-	-	-	-	-	-	-	-

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

Milwaukee River at Milwaukee, Wis.

Location.- Water-stage recorder, lat. 43°06'00", long. 87°54'30", in NE¼ sec. 5, T. 7 N., R. 22 E., near north limits of Milwaukee, 2,000 feet downstream from Port Washington Road Bridge and 6 miles upstream from mouth. Datum of gage is 607.3 feet above mean sea level, adjustment of 1912.

Drainage area.- 661 square miles.

Records available.- April 1914 to September 1947.

Average discharge.- 33 years, 392 second-feet.

Extremes.- Maximum discharge during year, 2,500 second-feet Mar. 25 (gage height, 4.80 feet); minimum, 4 second-feet (regulated) Nov. 15 (gage height, 1.57 feet).
. 1914-47: Maximum discharge, 15,100 second-feet Mar. 20, 1918 (gage height, 9.00 feet, datum then in use, from floodmark); no flow Sept. 8, 1943, result of regulation.

Remarks.- Records good except those for periods of ice effect, which are fair. Occasional regulation caused by dams above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	52	73	84	94	100	125	710	614	1,040	142	91	46
2	40	73	52	87	95	122	816	622	1,110	154	78	46
3	42	114	59	83	95	122	799	636	876	150	70	44
4	36	101	57	81	96	122	920	672	766	130	65	48
5	38	107	73	80	97	122	1,210	636	587	114	59	163
6	34	104	84	80	97	138	1,710	580	516	107	59	65
7	30	168	94	79	99	130	1,840	516	468	98	73	70
8	44	114	91	79	100	126	1,650	504	451	111	57	91
9	44	104	94	78	100	138	1,380	474	381	107	57	91
10	40	138	84	78	100	172	1,400	428	404	104	57	76
11	46	138	84	78	103	190	1,590	358	347	98	54	65
12	36	111	72	78	105	243	1,590	335	341	84	50	68
13	40	280	60	78	110	486	1,240	364	474	78	52	59
14	40	114	42	168	116	726	1,010	312	650	76	50	52
15	50	34	50	194	121	783	850	347	703	76	48	48
16	40	94	50	248	125	799	680	358	658	76	46	54
17	48	111	49	264	128	808	703	480	587	73	44	54
18	76	104	48	228	130	672	464	433	547	70	42	54
19	57	91	47	219	130	650	643	587	457	73	42	52
20	57	81	46	199	130	749	658	710	428	78	42	54
21	59	81	46	199	130	859	614	710	324	81	42	224
22	65	70	47	146	130	938	554	629	290	84	42	138
23	57	101	48	114	130	1,110	580	643	280	81	42	138
24	70	73	50	142	130	1,710	774	534	88	78	36	126
25	70	81	52	150	130	2,100	859	574	199	78	38	107
26	65	91	54	176	130	1,650	757	504	130	76	40	101
27	76	78	81	214	128	1,340	643	433	126	101	48	91
28	76	84	122	204	127	1,220	504	399	126	84	44	94
29	76	94	130	243	-	1,080	498	1,300	118	84	44	98
30	68	101	138	181	-	833	486	1,380	130	118	46	94
31	65	-	110	163	-	757	-	1,290	-	142	46	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,637	76	30	52.8	0.080	0.09
November	3,108	280	34	104	.157	.18
December	2,198	138	42	70.9	.107	.12
Calendar year 1946	121,549	6,090	21	333	.504	6.84
January	4,505	264	78	145	.219	.25
February	3,212	130	95	115	.174	.18
March	21,020	2,100	122	678	1.03	1.19
April	28,132	1,840	464	938	1.42	1.58
May	18,362	1,380	312	592	.896	1.03
June	13,602	1,110	88	453	.685	.76
July	3,006	154	70	97.0	.147	.17
August	1,604	91	36	51.7	.078	.09
September	2,511	224	44	83.7	.127	.14
Water year 1946-47	102,897	2,100	30	282	.427	5.78

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 12, 13, 15-26, Dec. 31 to Jan. 8, Feb. 1 to Mar. 2.

Cedar Creek near Cedarburg, Wis.

Location.- Chain gage, lat. 43°19'25", long. 87°58'50", on line between secs. 14 and 23, T. 10 N., R. 21 E., at bridge on State Trunk Highway, 2 miles north of Cedarburg and 6 miles upstream from mouth.

Drainage area.- 113 square miles.

Records available.- August 1930 to September 1947.

Average discharge.- 17 years, 56.0 second-feet.

Extremes.- Maximum daily discharge during year, 500 second-feet Mar. 25; maximum gage height observed, 8.58 feet Mar. 24 (backwater from ice); minimum discharge observed, 3.0 second-feet Dec. 19 (gage height, 5.08 feet).
1930-47: Maximum discharge, 3,180 second-feet by discharge measurement June 23, 1940; maximum gage height observed, 12.00 feet Feb. 7, 1938 (backwater from ice); minimum discharge observed, 0.2 second-foot Aug. 9-12, 1936.

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.7	7.4	8.0	10	11	13	105	125	262	24	9.6	12
2	5.2	8.2	6.8	9.3	11	13	152	143	192	24	9.6	12
3	4.4	13	6.8	9.0	11	13	164	131	179	20	9.6	9.2
4	4.4	13	*7.6	8.7	11	13	188	119	155	20	8.7	8.2
5	4.4	11	8.0	8.6	11	13	230	108	114	18	7.8	10
6	4.4	11	8.8	8.5	11	13	326	91	97	17	6.3	11
7	4.4	12	10	8.5	11	13	342	76	76	17	6.3	11
8	4.4	14	11	8.4	12	14	214	56	81	16	6.3	12
9	4.4	14	12	8.4	12	15	195	61	81	16	7.1	11
10	4.4	13	12	8.4	12	17	201	56	86	15	7.1	10
11	5.2	13	11	8.4	12	21	326	51	61	15	7.1	10
12	4.4	12	9.0	8.4	12	30	310	51	66	15	6.3	9.2
13	4.4	11	8.0	8.4	12	50	208	51	131	15	6.3	8.2
14	4.4	11	6.0	15	13	70	140	40	137	16	5.5	8.2
15	4.4	11	5.0	22	13	100	122	40	125	14	5.5	8.2
16	4.4	11	4.0	27	13	110	116	36	114	12	4.8	8.2
17	5.2	10	3.5	26	13	120	105	36	86	11	4.8	7.4
18	6.7	10	3.2	23	13	80	116	34	61	12	4.8	7.4
19	8.2	10	3.0	19	13	70	128	143	51	16	4.2	6.7
20	8.2	8.2	3.2	16	13	80	128	204	42	16	4.2	6.7
21	7.4	8.2	3.6	14	13	100	105	185	40	15	4.2	17
22	7.4	7.4	4.2	13	13	130	89	155	40	14	4.2	44
23	6.3	7.0	5.0	*11	13	180	140	143	34	13	4.8	35
24	7.4	6.8	5.3	12	13	300	294	149	30	13	7.1	29
25	9.2	7.0	5.7	17	13	500	246	167	28	12	8.7	25
26	10	7.4	6.0	22	13	450	182	131	28	11	11	19
27	10	8.0	7.0	24	13	380	158	97	26	11	8.7	17
28	9.2	8.4	15	24	13	326	140	119	26	11	7.1	17
29	8.2	8.7	15	22	-	140	105	326	26	11	8.7	18
30	7.4	9.0	14	17	-	116	89	422	24	11	12	18
31	7.4	-	12	14	-	100	-	390	-	9.6	12	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	192.5	10	4.4	6.21	0.055	0.06
November	301.7	14	6.8	10.1	.089	.10
December	239.7	15	3.0	7.73	.068	.08
Calendar year 1946	26,265.5	1,950	1.9	72.0	.637	8.67
January	451	27	8.4	14.5	.128	.15
February	344	13	11	12.3	.109	.11
March	3,590	500	13	116	1.03	1.19
April	5,364	342	89	179	1.58	1.76
May	3,936	422	34	127	1.12	1.29
June	2,499	262	24	83.3	.737	.82
July	460.6	24	9.6	14.9	.132	.15
August	220.4	12	4.2	7.11	.063	.07
September	425.6	44	6.7	14.2	.126	.14
Water year 1946-47	18,024.5	500	3.0	49.4	.437	5.92

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 23 to Dec. 6, Dec. 12-18, Dec. 20 to Mar. 27.

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Hart ditch at Munster, Ind.

Location.- Water-stage recorder and concrete control, lat. 41°33'35", long. 87°28'50", in N½ sec. 20, T. 36 N., R. 9 W., at city limit of Munster, a quarter of a mile downstream from U. S. Highway 6 and 0.4 mile upstream from mouth.
Drainage area.- 68 square miles, revised (authority, Corps of Engineers)
Records available.- September 1942 to September 1947.
Extremes.- Maximum discharge during year, 2,490 second-feet Apr. 6 (gage height, 6.17 feet), by slope-area method; minimum not determined, occurred during period of no gage-height record; minimum daily, 3.0 second-feet Aug. 22-24.
1942-47: Maximum discharge, that of Apr. 6, 1947; maximum gage height, 7.23 feet Mar. 15, 1944; minimum discharge, 1.2 second-feet July 29, 1946 (gage height, 0.47 foot).
Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Flow from this ditch discharges into Little Calumet River near Munster, practically all of this flow discharging into Calumet Sag Charnel or Grand Calumet River.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-4, Nov. 14 to Dec. 4, Apr. 7-9, June 16 to July 2, July 6 to Aug. 9, Aug. 14-18, Aug. 26 to Sept. 22)

0.5	4.5	1.1	87	3.5	1,080
.6	13	1.3	131	4.5	1,450
.7	24	1.6	212	5.4	1,840
.8	36	1.9	320		
.9	51	2.3	500		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.5	11	8.9	b18	102	b9.5	146	364	407	16	6.2	5.3
2	4.5	13	8.0	b17	b60	b10	148	151	1,170	15	11	4.5
3	4.5	37	8.0	b17	b50	b10	108	108	510	14	8.0	4.5
4	3.7	58	*8.0	b16	*b38	11	122	89	198	13	6.2	4.5
5	3.7	30	8.0	b16	b30	13	1,420	68	122	13	6.2	4.5
6	4.5	20	8.9	*b17	b26	*13	1,840	60	95	18	5.3	4.5
7	3.7	18	8.9	b16	b22	14	675	60	253	14	24	3.7
8	5.3	18	8.9	b16	b16	14	262	51	405	13	14	4.5
9	6.2	15	9.8	b16	b12	17	172	44	167	12	11	5.3
10	6.2	20	14	b16	b10	19	278	39	98	11	8.9	7.1
11	6.2	22	16	24	b10	19	850	35	70	9.8	7.1	16
12	7.1	19	151	45	b11	24	324	32	54	9.8	7.1	80
13	6.2	16	284	56	b13	43	164	35	46	11	7.1	36
14	6.2	14	106	284	20	143	122	34	42	16	5.3	19
15	5.3	14	60	292	34	48	93	29	38	14	5.3	14
16	5.3	16	48	159	25	39	89	32	31	11	5.3	12
17	6.2	19	38	95	19	26	81	130	31	8.9	5.3	8.9
18	9.8	18	29	66	16	25	68	203	35	8.9	3.7	7.1
19	7.1	18	25	56	b14	24	79	108	29	8.9	a3.5	6.2
20	5.3	17	21	54	b13	22	675	167	25	8.9	a3.5	5.3
21	5.3	15	22	34	b12	22	1,020	285	22	8.0	a3.5	41
22	5.3	13	21	b35	b11	22	516	159	18	8.0	a3.0	134
23	5.3	13	20	32	b10	42	178	102	16	7.1	a3.0	54
24	6.2	13	20	32	b11	463	405	120	18	7.1	a3.0	31
25	7.1	13	18	32	b10	570	209	161	18	7.1	a5.0	20
26	5.3	13	17	36	b10	225	126	136	17	7.1	4.5	15
27	5.3	13	17	36	b9.5	164	91	89	16	8.9	4.5	12
28	5.3	11	21	35	b8.5	156	72	89	15	8.9	3.7	11
29	5.3	9.8	28	34	-	206	81	282	20	8.0	8.0	8.9
30	6.2	9.8	25	241	-	228	662	167	20	7.1	14	8.9
31	8.9	-	b21	288	-	144	-	91	-	6.2	8.9	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	177.0	8.9	3.7	5.71	0.084	0.10
November	536.6	58	9.8	17.9	.263	.29
December	1,079.4	284	8.0	34.8	.512	.59
Calendar year 1946	16,452.8	705	3.0	45.1	.663	10.56
January	2,131	292	16	68.7	1.01	1.17
February	623.0	102	8.5	22.2	.326	.34
March	2,785.5	570	9.5	89.9	1.32	1.52
April	10,876	1,840	68	363	5.34	5.95
May	3,520	364	29	114	1.68	1.93
June	4,006	1,170	15	134	1.97	2.19
July	329.7	18	6.2	10.6	.156	.18
August	215.1	24	3.0	6.94	.102	.12
September	588.7	134	3.7	19.6	.288	.32
Water year 1946-47	26,868.0	1,840	3.0	73.6	1.08	14.70

Peak discharge.- Apr. 6 (1:30 a.m.) 2,490 sec.-ft.; Apr. 11 (1 p.m.) 925 sec.-ft.; Apr. 21 (7:30 a.m.) 1,210 sec.-ft.; June 2 (3:30 p.m.) 1,210 sec.-ft.
* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of 1 discharge measurement and weather records.
b Stage-discharge relation affected by ice.

Wolf Lake at Chicago, Ill.

Location.- Water-stage recorder, lat. 41°40'00", long. 87°32'15", in SW¼ sec. 29, T. 37 N., R. 15 E., at outlet on west shore in Chicago. Datum of gage is 580.45 feet above mean sea level, datum of 1929 (Cook County Highway bench mark).

Records available.- December 1939 to September 1947.

Extremes.- Maximum mean hourly gage height during year, 1.88 feet Apr. 5; minimum mean hourly, 1.14 feet Oct. 13.
1939-47: Maximum mean hourly gage height, 2.14 feet Sept. 29, 1945 (corrected); minimum gage height observed, 0.76 foot Aug. 3, 1940.

Remarks.- Mean hourly values used to determine extremes in order to dampen effects of wind action.

Gage height, in feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.17	1.41	1.59	1.45	1.48	1.33	1.42	1.57	1.57	1.40	1.21	1.40
2	1.19	1.41	1.59	1.45	1.45	1.33	1.45	1.56	1.68	1.40	1.21	1.39
3	1.20	1.48	1.58	1.48	1.43	1.32	1.46	1.56	1.68	1.40	1.24	1.40
4	1.21	1.51	1.57	1.47	1.42	1.32	1.46	1.51	1.67	1.37	1.21	1.43
5	1.18	1.53	1.56	1.44	1.42	1.32	1.79	1.50	1.63	1.35	1.22	1.47
6	1.18	1.53	1.55	1.42	a1.41	1.33	1.73	1.51	1.64	1.43	1.23	1.46
7	1.20	1.52	1.53	1.42	a1.40	1.34	1.82	1.51	1.66	1.44	1.29	1.47
8	1.21	1.50	1.50	1.41	a1.39	1.33	1.81	1.48	1.68	1.43	1.31	1.48
9	1.22	1.54	1.49	1.41	a1.38	1.31	1.79	1.47	1.64	1.40	1.30	1.48
10	1.22	1.56	1.52	1.41	a1.37	1.30	1.79	1.44	1.58	1.40	1.29	1.48
11	1.18	1.50	1.52	1.40	a1.36	1.31	1.78	1.38	1.57	1.39	1.27	1.53
12	1.18	1.52	1.59	1.39	1.35	1.32	1.76	1.36	1.58	1.35	1.27	1.59
13	1.17	1.52	1.61	1.38	1.35	1.34	1.75	1.36	1.52	1.37	1.28	1.55
14	1.16	1.58	1.61	1.42	1.36	1.38	1.70	1.39	1.49	1.38	1.30	1.51
15	1.16	1.59	1.58	1.43	1.37	1.35	1.69	1.36	1.48	1.40	1.32	1.47
16	1.17	1.59	1.58	1.43	1.34	1.34	1.68	1.37	1.49	1.37	1.31	1.47
17	1.22	1.60	1.57	1.42	1.34	1.33	1.61	1.43	1.51	1.35	1.28	1.47
18	1.29	1.61	1.55	1.41	1.35	1.33	1.62	1.50	1.55	1.32	1.26	1.46
19	1.29	1.60	1.55	1.39	1.35	1.33	1.66	1.48	1.54	1.29	1.27	1.45
20	1.28	1.61	1.54	1.38	1.35	1.33	1.79	1.49	1.53	1.23	1.28	1.43
21	1.27	1.60	1.53	1.37	1.36	1.34	1.75	1.50	1.52	1.23	1.29	1.50
22	1.28	1.56	1.51	1.38	1.35	1.32	1.72	1.49	1.49	1.23	1.30	1.57
23	1.29	1.62	1.49	1.38	1.33	1.33	1.68	1.50	1.48	1.21	1.30	1.55
24	1.30	1.57	1.48	1.40	1.32	1.42	1.71	1.50	1.43	1.21	1.29	1.57
25	1.33	1.61	1.47	1.40	1.33	1.44	1.69	1.49	1.42	1.19	1.30	1.58
26	1.32	1.61	1.46	1.39	1.33	1.48	1.61	1.46	1.42	1.17	1.33	1.55
27	1.31	1.61	1.47	1.38	1.33	1.49	1.60	1.47	1.41	1.18	1.33	1.54
28	1.30	1.60	1.47	1.40	1.33	1.46	1.56	1.52	1.40	1.21	1.34	1.51
29	1.30	1.62	1.47	1.44	-	1.41	1.56	1.50	1.42	1.20	1.40	1.50
30	1.29	1.62	1.46	1.49	-	1.43	1.60	1.47	1.42	1.19	1.43	1.52
31	1.37	-	1.46	1.48	-	1.41	-	1.45	-	1.21	1.44	-

a No gage-height record; gage heights interpolated.

Burns ditch at Gary, Ind.

Location.- Wire-weight gage, lat. 41°34'25", long. 87°17'15", in N½ sec. 13, T. 36 N., R. 8 W., at Central Avenue Bridge, half a mile east of Gary and 1¼ miles downstream from Deep River.

Drainage area.- 174 square miles.

Records available.- October 1943 to September 1947.

Extremes.- Maximum discharge during year, 2,340 second-feet Apr. 6 (gage height, 13.00 feet); minimum, 1.8 second-feet Oct. 14; minimum gage height, 3.59 feet Aug. 17.
1943-47: Maximum discharge, that of Apr. 6, 1947; maximum gage height, 16.44 feet Mar. 16, 1944 (from graph based on gage readings); minimum discharge, that of Oct. 14, 1946; minimum gage height, that of Aug. 17, 1947.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Gage read once daily to Jan. 11, twice daily thereafter. Burns ditch is an artificial channel which reverses the direction of flow of part of Little Calumet River and flows into Lake Michigan at Wickliffe.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used June 15 to Aug. 17, Sept. 26-30)

Oct. 1 to Jan. 31				Feb. 1 to Sept. 30					
3.65	3.8	4.4	67	3.7	10	4.2	51	10.5	1,420
3.7	5.8	4.7	106	3.8	16	4.5	93	12.0	1,920
3.8	11	5.5	235	3.9	23	5.3	232	12.8	2,240
3.9	18	6.0	329	4.0	31	7.0	559		
4.1	35	6.5	435	4.1	40	9.0	1,020		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.8	32	16	45	470	20	374	1,170	460	59	30	31
2	7.9	52	16	43	384	21	346	995	1,020	47	14	31
3	8.4	73	19	40	270	22	327	709	1,170	36	24	22
4	8.4	65	23	36	200	24	308	519	874	31	17	29
5	7.9	49	25	35	150	26	1,270	403	622	23	26	42
6	a8.0	44	26	37	100	28	2,240	318	460	48	29	26
7	7.9	49	24	*39	60	30	1,720	280	470	44	48	25
8	7.4	44	24	40	50	32	1,270	238	601	39	42	19
9	5.4	39	26	40	37	35	874	196	622	35	43	9.6
10	10	49	44	32	23	40	687	167	499	24	22	22
11	6.3	50	44	38	21	50	1,070	150	356	22	18	22
12	6.8	40	60	65	23	60	1,100	131	270	20	14	67
13	5.0	41	a250	96	25	81	850	116	218	29	9.6	51
14	2.6	37	339	189	*43	164	643	103	191	31	14	33
15	6.3	32	a250	329	60	183	519	96	155	33	27	22
16	5.0	35	174	360	65	141	432	99	129	21	17	20
17	7.4	45	191	262	61	106	374	180	124	27	8.2	15
18	12	47	a130	210	54	88	327	327	138	30	12	12
19	18	45	a100	163	45	81	289	470	134	38	15	10
20	18	42	78	147	40	*75	622	580	119	27	20	17
21	15	40	60	165	36	71	1,330	732	103	36	29	80
22	14	40	a58	79	31	74	1,270	778	72	42	32	153
23	14	39	57	77	30	86	922	665	72	20	20	98
24	14	39	a54	82	28	289	874	539	80	15	18	88
25	28	40	a50	89	27	559	898	519	65	13	113	59
26	22	31	a50	89	23	559	687	489	63	16	70	25
27	20	25	65	118	22	499	519	432	56	26	22	27
28	21	24	71	96	20	412	394	374	47	17	13	48
29	22	26	a80	95	-	384	327	403	64	12	25	59
30	20	34	a70	239	-	422	601	422	63	14	30	28
31	21	-	a60	435	-	432	-	365	-	52	34	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	376.5	28	2.6	12.1	0.070	0.08
November	1,248	73	24	41.6	.239	.27
December	2,534	339	16	81.7	.470	.54
Calendar year 1946	39,100.1	874	2.6	107	.615	8.36
January	3,810	435	32	123	.707	.81
February	2,398	470	20	85.6	.492	.51
March	5,094	559	20	164	.943	1.09
April	23,464	2,240	289	782	4.49	5.02
May	12,965	1,170	96	418	2.40	2.77
June	9,317	1,170	47	311	1.79	1.99
July	927	59	12	29.9	.172	.20
August	855.8	113	8.2	27.6	.159	.18
September	1,190.6	153	9.6	39.7	.228	.25
Water year 1946-47	64,179.9	2,240	2.6	176	1.01	13.71

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of 1 discharge measurement, weather records, and records for Hart ditch at Munster.
Note.- Stage-discharge relation affected by ice Jan. 1-10, Feb. 3-12, Feb. 18 to Mar. 11.

Little Calumet River at Porter, Ind.

Location.- Wire-weight gage, lat. 41°37'18", long. 87°05'13", in NE¼ sec. 34, T. 37 N., R. 6 W., at highway bridge, three-quarters of a mile northwest of Porter and 4½ miles upstream from Salt Creek.

Drainage area.- 62 square miles (revised).

Records available.- May 1945 to September 1947.

Extremes.- Maximum discharge during year, 2,140 second-feet Apr. 5 (gage height, 9.42 feet, from floodmarks); minimum, 18 second-feet Oct. 9; minimum gage height, 2.28 feet Aug. 24.

1945-47: Maximum discharge, 2,440 second-feet (revised) June 28, 1945 (gage height, 9.88 feet, from graph based on gage readings); minimum, 18 second-feet Aug. 10, 11, Oct. 9, 1946; minimum gage height, 2.19 feet Aug. 10, 11, 1946.

Remarks.- Records good except those for November and December and those for periods of ice effect or no gage-height record, which are fair. Gage read twice daily.

Revisions.- Revised figures of discharge, in second-feet, for the high-water period in the water year 1945, superseding those published in Water-Supply Paper 1034, are given herewith:

June 28.....1,080
29.....1,460

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
June.....	4,515	1,460	37	150	2.26	2.53

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	50	34	42	100	21	116	184	320	40	32	30
2	20	55	33	40	65	21	113	156	735	38	30	41
3	20	60	33	35	50	24	106	113	395	35	29	32
4	20	55	33	31	38	25	151	99	216	34	29	30
5	20	45	36	30	35	25	1,050	92	131	34	30	33
6	20	40	35	33	32	27	1,400	83	106	37	30	37
7	20	45	35	38	30	30	508	77	120	36	37	34
8	19	45	36	40	28	31	298	77	156	36	35	31
9	19	42	36	*39	26	33	258	73	116	37	32	31
10	19	45	36	42	25	36	266	64	102	38	31	33
11	22	47	45	45	25	45	281	64	74	37	30	35
12	24	42	100	55	30	56	229	58	65	37	28	44
13	25	38	250	70	35	64	156	58	83	37	27	39
14	20	37	120	150	*41	62	120	58	80	35	28	34
15	20	37	70	170	60	58	116	59	64	34	28	35
16	21	40	60	90	50	55	110	72	63	34	29	31
17	27	45	45	70	44	47	106	77	86	34	28	29
18	54	42	47	59	45	44	102	151	99	34	28	29
19	51	39	46	58	40	44	92	135	77	39	28	29
20	48	37	44	58	40	*44	165	120	58	39	28	29
21	34	36	45	56	35	44	525	180	46	35	28	72
22	25	34	44	56	30	48	668	289	47	34	27	126
23	25	35	43	58	28	58	565	325	44	33	27	56
24	26	37	42	59	25	96	395	298	34	30	27	43
25	26	36	41	58	25	255	273	197	35	30	29	36
26	26	35	41	57	24	316	175	191	35	30	43	34
27	26	34	41	54	23	229	113	131	41	40	29	33
28	28	34	43	53	22	165	106	135	42	37	27	32
29	28	36	45	51	-	127	102	165	42	30	31	31
30	28	37	50	170	-	120	110	131	42	30	40	32
31	35	-	45	250	-	124	-	106	-	32	30	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October.....	818	54	19	26.4	0.426	0.49
November.....	1,240	60	34	41.3	.666	.74
December.....	1,654	250	33	53.4	.861	.99
Calendar year 1946	21,877	462	19	59.9	.966	13.12
January.....	2,117	250	30	68.3	1.10	1.27
February.....	1,051	100	22	37.5	.605	.63
March.....	2,374	316	21	76.6	1.24	1.42
April.....	8,775	1,400	92	292	4.71	5.26
May.....	4,018	325	58	130	2.10	2.41
June.....	3,554	735	34	118	1.90	2.13
July.....	1,086	40	30	35.0	.565	.65
August.....	935	43	27	30.2	.487	.56
September.....	1,161	126	29	38.7	.624	.70
Water year 1946-47	28,783	1,400	19	78.9	1.27	17.25

* Winter discharge measurement made on this day.

Note.- No gage-height record Oct. 27, Oct. 29 to Nov. 19, Dec. 11-16, Jan. 11-17, Jan. 30 to Feb. 3, Feb. 13, 15, 16; discharge computed on basis of 1 discharge measurement, weather records, and records for Salt Creek near McCool and Hart ditch at Munster. Stage-discharge relation affected by ice Dec. 31 to Jan. 10, Jan. 22, Feb. 4-12, 14, Feb. 18 to Mar. 12.

Salt Creek near McCool, Ind.

Location.- Wire-weight gage, lat. 41°35'48", long. 87°08'40", in SE¼ sec. 6, T. 36 N., R. 6 W., at county highway bridge, just downstream from Michigan Central Railroad bridge, 1¼ miles north of McCool, and 1½ miles upstream from Little Calumet River.

Drainage area.- 73 square miles (revised).

Records available.- May 1945 to September 1947.

Extremes.- Maximum discharge during year, 1,850 second-feet Apr. 5 (gage height, 11.83 feet); minimum not determined, occurred during period of ice effect; minimum daily, 20 second-feet Feb. 28; minimum gage height, 3.18 feet Aug. 19, from graph based on gage readings.

1945-47: Maximum discharge, that of Apr. 5, 1947; minimum daily, that of Feb. 28, 1947; minimum gage height, that of Aug. 19, 1947.

Remarks.- Records good except those for periods of shifting control, ice effect, or no gage-height record, which are fair. Gage read twice daily.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	54	36	40	121	23	120	472	174	43	28	39
2	28	64	36	43	75	24	134	231	619	39	32	45
3	27	68	36	42	60	23	111	111	463	38	34	32
4	27	64	36	40	45	23	111	100	208	37	31	32
5	27	50	36	35	40	30	913	90	114	36	28	45
6	26	45	36	46	35	37	1,030	82	92	39	29	35
7	27	50	37	45	30	35	410	86	134	38	41	30
8	28	51	37	*41	28	30	213	75	245	35	37	27
9	28	47	38	40	27	37	138	68	146	34	31	29
10	28	50	49	40	25	40	130	64	94	35	30	33
11	28	52	46	45	25	45	330	61	77	36	30	41
12	29	48	118	60	30	50	260	59	68	34	29	88
13	28	43	285	70	35	61	134	57	73	35	29	58
14	28	41	127	170	*40	111	102	54	71	36	30	37
15	29	41	75	180	43	60	90	53	64	37	30	40
16	27	45	71	100	39	50	92	60	60	36	29	34
17	28	49	68	79	38	44	90	99	60	34	28	29
18	56	46	47	68	36	42	82	236	84	32	28	29
19	37	43	45	64	31	42	77	134	66	39	27	27
20	30	42	48	62	35	*41	340	111	56	33	28	26
21	29	42	49	48	28	43	695	217	51	32	28	59
22	29	40	47	52	28	43	360	270	47	33	28	150
23	29	39	47	56	22	60	177	117	42	31	28	85
24	30	41	47	59	25	228	295	108	52	30	58	49
25	39	43	49	61	26	410	255	159	49	29	43	39
26	34	40	44	64	23	270	134	146	45	30	34	35
27	31	38	45	62	23	142	100	102	43	34	31	32
28	29	38	57	61	20	111	84	97	41	35	29	30
29	31	38	59	59	-	142	88	154	49	31	48	31
30	31	37	50	197	-	177	320	146	48	30	75	31
31	a40	-	47	290	-	134	-	92	-	28	47	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	946	56	26	30.5	0.418	0.48
November	1,389	68	37	46.3	.634	.71
December	1,848	285	36	59.6	.816	.94
Calendar year 1946	23,639	793	23	64.8	.888	12.03
January	2,319	290	35	74.8	1.02	1.18
February	1,033	121	20	36.9	.505	.53
March	2,608	410	23	84.1	1.15	1.33
April	7,415	1,030	77	247	3.38	3.78
May	3,911	472	53	126	1.73	1.99
June	3,435	619	41	114	1.56	1.75
July	1,069	43	28	34.5	.473	.54
August	1,058	75	27	34.1	.467	.54
September	1,297	150	26	43.2	.592	.66
Water year 1946-47	28,328	1,030	20	77.6	1.06	14.43

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and records for Hart ditch at Munster.

Note.- Stage-discharge relation affected by ice Dec. 18-20, Dec. 30 to Jan. 14, Jan. 21-23, Feb. 3-15, Feb. 19 to Mar. 12. Shifting-control method used Oct. 1 to Dec. 12, Feb. 2, 16-18, Mar. 13-23, June 16 to Aug. 17, Aug. 24 to Sept. 30.

Deep River at Lake George Outlet, at Hobart, Ind.

Location.- Staff gage above concrete dam, lat. 41°32'03", long. 87°15'22", in NW¼NW¼ sec. 32, T. 36 N., R. 7 W., at northeast end of Lake George in Hobart, an eighth of a mile upstream from Duck Creek.

Drainage area.- 124 square miles.

Records available.- April to September 1947.

Extremes.- Maximum discharge during period, 2,410 second-feet Apr. 6 (gage height, 5.41 feet, from floodmarks determined by Corps of Engineers); minimum, 5.8 second-feet Aug. 20-24, 26-28 (gage height, 1.91 feet).

Remarks.- Records good except those for period of no gage-height record, which are fair. Gage read once daily to May 28, twice daily thereafter.

Rating tables, April to September 1947 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used July 1)

Apr. 1 to July 1						July 2 to Sept. 30	
2.1	29	2.5	132	4.2	1,110	1.95	8.2
2.2	48	2.7	204	4.7	1,590	2.0	16
2.3	72	3.1	370	5.2	2,150	2.1	33
2.4	100	3.6	640			2.2	55
						2.3	81

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			†16				a280	1,190	336	33	7.7	18
2							a260	812	908	31	12	19
3							a250	508	908	28	13	19
4							224	361	542	23	13	19
5							1,010	284	353	19	12	16
6							2,150	239	255	23	13	13
7							1,290	200	247	19	16	13
8							804	164	400	19	26	13
9							520	132	395	18	21	12
10							425	103	340	18	15	11
11							661	100	243	16	13	28
12							759	75	220	16	12	40
13							520	75	122	16	11	37
14							361	75	100	16	8.7	31
15							297	75	89	18	8.7	24
16							251	75	75	18	7.7	19
17							208	83	72	18	7.7	12
18							167	268	72	18	7.7	11
19							136	445	72	18	7.7	9.8
20							370	542	82	18	6.7	11
21							1,290	598	48	18	5.8	84
22							972	689	44	16	5.8	87
23							640	520	37	15	5.8	76
24							598	415	33	12	5.8	55
25							622	380	29	11	15	40
26							455	366	31	11	26	24
27							357	318	25	13	5.8	18
28							272	247	25	13	6.7	13
29							212	264	31	13	7.7	13
30							470	336	33	8.7	19	13
31							-	318	-	7.7	19	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October						
November						
December						
Calendar year						
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March	-	-	-	-	-	-
April	16,831	2,150	136	561	4.52	5.05
May	10,257	1,190	75	331	2.67	3.08
June	6,147	908	25	205	1.65	1.84
July	543.4	33	7.7	17.5	.141	.16
August	362.0	26	5.8	11.7	.094	.11
September	798.8	87	9.8	26.6	.215	.24
Water year	-	-	-	-	-	-

† Result of discharge measurement.
a No gage-height record; discharge computed on basis of weather records and records for Burns ditch at Gary and Hart ditch at Munster.

Galien River near New Troy, Mich.

Location.- Wire-weight gage, lat. 41°51'23", long. 86°32'48", in SW¼ sec. 17, T. 7 S., R. 19 W., at highway bridge, 1 mile upstream from East Branch Galien River and 1.4 miles south of New Troy.
Drainage area.- 47 square miles.
Records available.- July 1945 to February 1947 (discontinued).
Extremes.- Maximum discharge during period October 1946 to February 1947, 132 second-feet Dec. 12 (gage height, 6.38 feet, from graph based on gage readings); minimum, 9.7 second-feet Dec. 8; minimum gage height, 3.69 feet Oct. 3-7.
1945-47: Maximum discharge, 427 second-feet Jan. 5, 1946 (gage height, 10.04 feet); minimum, that of Dec. 8, 1946; minimum gage height, 3.54 feet Aug. 28, 1946.
Remarks.- Records good except those for periods of ice effect, which are poor. Gage read twice daily.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	14	17	12	24	47	16	14	13	33	52	-
2	14	20	12	25	40	17	14	16	33	39	-
3	14	17	12	23	35	18	21	13	31	31	-
4	14	16	12	18	28	19	16	12	27	29	-
5	13	14	12	17	26	20	14	13	24	30	-
6	13	13	11	18	24	21	13	13	24	28	-
7	13	15	10	22	22	22	13	12	24	26	-
8	13	15	10	*23	20	23	13	12	24	29	-
9	13	14	12	21	18	24	13	12	24	30	-
10	14	15	16	23	16	25	18	12	24	33	-
11	15	14	16	31	17	26	14	11	24	44	-
12	15	15	60	42	20	27	13	12	23	36	-
13	16	13	93	38	25	28	13	12	31	31	-
14	15	12	47	88	38	29	13	11	30	55	-
15	14	12	35	74	*86	30	15	11	26	72	-
						31	27	-	25	68	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	454	27	13	14.6	0.311	0.36
November	407	20	11	13.6	.289	.32
December	797	93	10	25.7	.547	.63
Calendar year 1946..	13,299	376	10	36.4	.774	10.52
January	1,100	88	17	35.5	.755	.87
February 1-15	462	86	16	30.8	.655	.37

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 18-20, Dec. 30 to Jan. 10, Jan. 21-24, Jan. 31 to Feb. 14.

East Branch Galien River near New Troy, Mich.

Location.- Staff gage, lat. 41°53'08", long. 86°30'50", in SE¼ sec. 4, T. 7 S., R. 19 W., at highway bridge 2 miles northeast of New Troy and 2.6 miles upstream from mouth.
Drainage area.- 19.2 square miles.
Records available.- July 1945 to February 1947 (discontinued).
Extremes.- Maximum discharge during period October 1946 to February 1947, 32 second-feet Feb. 14 (gage height, 2.30 feet, from graph based on gage readings); minimum, 1.4 second-feet Oct. 6, 7 (gage height, 0.98 foot).
1945-47: Maximum discharge, 94 second-feet Jan. 5, 1946 (gage height, 3.85 feet, from graph based on gage readings); minimum, 1.4 second-feet Sept. 19, 22, Oct. 6, 7, 1946; minimum gage height, 0.93 foot Sept. 14-19, 1946.
Remarks.- Records good except those for periods of ice effect, which are poor. Gage read twice daily. A discharge of 250 second-feet was computed by slope-area method for peak which occurred on Apr. 6, 1947.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	2.0	3.0	2.1	6.5	13	16	1.9	2.6	10	15	-
2	2.0	3.0	2.1	8.0	11	17	1.9	3.6	9.9	13	-
3	1.9	3.0	2.2	7.0	10	18	2.2	3.2	9.5	11	-
4	1.6	3.2	2.2	6.0	9.5	19	2.1	3.0	9.0	10	-
5	1.6	2.9	2.2	5.8	8.5	20	1.9	2.9	8.5	9.7	-
6	1.4	2.6	2.2	6.5	7.5	21	1.6	2.9	7.4	9.5	-
7	1.4	3.2	2.0	9.0	7.0	22	1.6	2.6	7.1	9.0	-
8	1.5	3.5	2.0	*11	6.5	23	1.6	2.2	6.9	9.5	-
9	1.6	2.8	2.1	10	6.0	24	1.7	2.1	7.1	10	-
10	1.6	2.8	4.0	10	5.5	25	2.6	2.2	10	10	-
11	1.5	3.0	2.8	8.5	6.0	26	2.5	2.0	6.4	11	-
12	1.7	4.9	10	8.4	12	27	2.1	2.0	6.1	11	-
13	1.9	3.9	18	8.2	20	28	2.1	2.0	7.4	11	-
14	1.9	2.9	13	15	28	29	1.9	2.0	8.8	10	-
15	1.9	2.6	11	19	*17	30	1.9	2.0	8.9	18	-
						31	3.9	-	7.0	16	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	59.0	3.9	1.4	1.90	0.099	0.11
November	84.6	4.9	2.0	2.82	.147	.16
December	207.9	18	2.0	6.71	.349	.40
Calendar year 1946	3,306.6	84	1.4	9.06	.472	6.39
January	322.6	19	5.8	10.4	.542	.62
February 1-15	167.5	28	5.5	11.2	.583	.32

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 18-20, Dec. 31 to Jan. 11, Jan. 21-25, Feb. 1-13.

St. Joseph River at Mottville, Mich.

Location.- Float gage, lat. 41°48', long. 85°45', in NE¼ sec. 6, T. 8 S., R. 12 W., at hydroelectric plant of Michigan Gas & Electric Co. at Mottville, 5 miles downstream from Fawn River. Datum of gage is 759.5 feet above mean sea level (levels by Michigan Gas & Electric Co.).

Records available.- December 1923 to September 1947.

Average discharge.- 23 years (1924-47), 1,458 second-feet.

Extremes (regulated).- Maximum discharge during year, 8,480 second-feet Apr. 8, 9 (gage height, 5.34 feet); minimum daily, 107 second-feet Oct. 13.
1924-47: Maximum discharge, that of Apr. 8, 9, 1947; minimum, 20 second-feet Sept. 7, 1930; minimum daily, 44 second-feet Oct. 17, 1937.

Remarks.- Records fair. Flow regulated by power plant. Gage read hourly.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	608	1,130	163	538	1,200	791	2,800	4,120	5,060	2,740	1,210	1,500
2	686	990	559	958	992	626	3,040	4,100	5,500	2,570	1,070	1,530
3	638	466	782	958	1,600	1,060	3,160	4,060	5,970	2,410	942	1,300
4	495	1,000	924	722	1,180	892	3,370	4,060	5,810	2,230	1,110	1,430
5	404	1,100	718	576	972	1,010	4,320	4,150	6,130	2,000	1,030	1,560
6	164	990	762	934	1,100	900	6,050	4,210	5,810	1,990	1,040	1,440
7	678	960	500	864	1,260	1,020	7,670	3,970	5,500	2,180	1,010	1,150
8	518	1,140	219	842	1,040	761	8,280	3,720	5,060	2,110	1,020	1,600
9	495	824	896	902	874	672	8,360	3,630	4,640	2,060	863	1,380
10	550	706	816	788	1,330	1,040	7,890	3,370	4,480	1,940	692	1,230
11	682	996	818	710	1,160	1,090	7,670	3,190	4,320	1,760	1,110	1,330
12	279	955	1,130	679	1,270	1,070	7,040	3,100	4,140	1,530	884	1,380
13	107	789	1,150	1,030	1,220	1,150	6,430	2,870	3,750	1,460	1,070	1,480
14	773	916	1,060	1,010	1,020	1,330	5,890	3,050	3,820	1,740	776	1,490
15	549	875	1,040	1,000	1,060	1,520	5,540	3,060	3,980	1,590	1,050	1,620
16	518	722	1,460	1,030	710	1,570	4,810	2,920	3,910	1,700	748	1,510
17	710	469	1,360	952	1,350	1,820	4,400	3,220	3,670	1,710	456	1,500
18	504	943	1,030	1,050	1,270	1,720	4,320	3,680	3,960	1,620	1,130	1,490
19	302	749	938	693	1,120	1,790	4,320	3,800	3,950	1,520	1,010	1,330
20	371	818	1,020	1,360	1,170	1,810	4,540	4,470	3,630	1,550	928	1,310
21	747	781	751	1,210	882	1,800	5,050	5,200	3,540	1,720	898	1,390
22	664	912	732	1,100	989	1,810	5,970	5,810	3,220	1,610	888	1,500
23	568	866	1,120	964	444	1,870	6,130	6,130	3,100	1,550	700	1,630
24	588	352	1,140	1,130	1,040	2,180	6,460	6,130	3,000	1,480	644	1,540
25	526	864	645	1,150	951	2,830	6,290	6,130	2,770	1,510	1,340	1,410
26	366	746	999	888	1,050	3,030	6,130	5,810	2,770	1,340	1,260	1,420
27	329	742	1,140	1,230	988	3,230	5,650	5,350	2,870	1,220	1,220	1,410
28	626	346	936	1,270	882	3,380	5,060	5,500	3,080	1,460	1,170	1,310
29	577	850	788	1,320	-	3,310	4,640	5,500	2,890	1,420	1,430	1,540
30	724	596	1,040	1,540	-	3,110	4,640	5,200	2,810	1,340	1,340	1,490
31	818	-	1,020	1,610	-	3,030	-	4,920	-	1,160	1,340	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	16,564	818	107	534		
November	24,593	1,140	346	820		
December	27,656	1,460	163	892		
Calendar year 1946	377,511	3,480	98	1,034		
January	31,008	1,610	538	1,000		
February	30,124	1,600	444	1,076		
March	53,222	3,380	626	1,717		
April	165,920	8,360	2,800	5,531		
May	134,430	6,130	2,870	4,336		
June	123,140	6,130	2,770	4,105		
July	54,220	2,740	1,160	1,749		
August	31,379	1,430	456	1,012		
September	43,200	1,630	1,150	1,440		
Water year 1946-47	735,456	8,360	107	2,015		

St. Joseph River at Niles, Mich.

Location.- Water-stage recorder, lat. 41°49'45", long. 86°15'35", in sec. 26, T. 7 S., R. 17 W., at Niles, 1 mile upstream from Dowagiac Creek. Datum of gage is 635.02 feet above mean sea level, datum of 1929. Auxiliary float gage in powerhouse of Buchanan Dam, 8 miles downstream.

Drainage area.- 3,620 square miles.

Records available.- October 1930 to September 1947.

Average discharge.- 15 years (1930-37, 1938-39, 1940-47), 2,857 second-feet.

Extremes.- Maximum discharge during year, 13,600 second-feet Apr. 21 (gage height, 9.80 feet); minimum daily, 708 second-feet Oct. 13.
1930-47: Maximum discharge, 17,300 second-feet May 26, 1943 (gage height, 11.78 feet); minimum daily, 407 second-feet (regulated) Aug. 2, 1936.

Remarks.- Records fair. Flow regulated by power plants above station. Discharge computed by using fall as determined by hourly readings of auxiliary gage as a factor.

Cooperation.- Gage-height record at auxiliary gage furnished by Indiana & Michigan Electric Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,210	1,860	1,000	1,610	4,960	1,620	5,950	9,050	8,440	4,230	1,840	3,030
2	1,050	1,780	1,700	1,510	3,310	1,800	6,130	8,460	10,300	4,250	1,770	4,120
3	1,150	2,010	1,500	1,610	3,560	2,230	6,730	8,180	11,000	3,740	1,780	4,040
4	1,070	1,870	1,500	1,640	3,540	2,080	6,100	7,760	10,300	3,720	2,100	3,590
5	905	2,120	1,400	1,210	2,880	2,030	8,560	7,480	9,840	3,160	2,100	3,310
6	780	2,050	1,300	1,820	b2,000	2,060	12,200	6,900	9,520	3,330	1,900	3,180
7	932	1,890	1,200	1,780	b2,300	1,870	12,700	7,410	8,900	3,580	1,700	2,420
8	1,260	1,960	1,200	1,620	b2,200	1,680	12,800	7,090	8,900	3,460	1,800	3,330
9	1,160	1,790	1,100	1,880	b2,500	1,550	12,400	6,730	8,460	3,330	1,800	3,010
10	926	1,630	2,000	1,550	b2,300	2,060	12,000	6,270	7,900	3,390	1,400	3,100
11	994	2,030	1,500	1,390	b2,600	1,890	12,000	6,150	7,480	3,030	1,800	2,820
12	1,020	2,200	2,000	1,540	b2,600	2,280	12,400	5,690	7,210	2,620	1,700	4,410
13	708	1,830	2,800	2,040	b2,800	3,030	11,600	5,800	7,000	2,490	1,700	2,350
14	914	1,740	2,200	1,780	b2,700	3,350	10,400	5,220	6,740	2,950	1,800	3,330
15	1,240	1,770	2,060	2,940	2,620	3,620	9,520	5,480	6,700	2,880	1,600	2,820
16	1,370	1,390	2,600	2,860	2,740	3,400	9,050	5,450	6,660	2,740	1,600	3,060
17	1,170	1,250	2,300	2,740	2,700	3,540	8,180	5,720	6,630	2,820	1,200	2,920
18	1,380	1,750	2,310	2,090	2,900	3,410	8,320	7,240	6,300	3,310	1,700	3,010
19	1,080	1,680	1,470	2,300	2,810	3,250	7,900	7,310	6,510	3,060	1,800	2,900
20	752	1,500	1,880	2,480	2,040	3,370	8,900	7,370	6,280	2,810	1,800	2,580
21	1,540	1,600	1,830	2,580	2,600	3,350	12,600	8,940	5,680	3,030	1,790	2,590
22	1,380	1,600	1,700	2,150	1,760	3,480	12,600	10,100	5,560	2,990	1,710	4,330
23	1,380	1,500	2,050	1,670	2,090	3,070	11,800	10,100	5,470	2,180	1,600	2,660
24	1,090	1,300	1,660	2,110	1,600	4,690	11,400	9,390	4,840	2,530	1,380	3,540
25	1,170	1,500	1,740	2,620	2,200	5,730	11,200	9,230	4,720	2,500	1,830	2,750
26	1,000	1,600	1,860	2,510	2,290	6,370	10,400	9,080	4,630	2,280	2,570	2,550
27	748	1,600	1,730	2,760	2,050	5,890	10,000	8,490	4,810	2,390	2,380	2,840
28	1,170	1,400	1,890	3,020	2,180	6,480	9,360	8,340	4,610	2,240	2,180	2,830
29	1,230	1,100	1,820	2,660	-	5,440	8,900	8,630	4,700	2,510	2,640	2,990
30	1,200	1,600	1,910	3,070	-	5,860	8,900	8,490	4,610	2,330	2,890	3,190
31	1,690	-	1,590	4,750	-	6,240	-	8,210	-	2,260	2,560	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	34,670	1,690	708	1,118	0.309	0.36
November	50,900	2,200	1,100	1,697	.469	.52
December	54,800	2,800	1,000	1,768	.488	.56
Calendar year 1946	840,732	6,680	636	2,303	.636	8.62
January	68,290	4,750	1,210	2,203	.609	.70
February	72,830	4,960	1,800	2,601	.719	.75
March	106,700	6,460	1,550	3,442	.951	1.10
April	301,000	12,800	5,950	10,030	2.77	3.09
May	235,760	10,100	5,220	7,605	2.10	2.42
June	210,700	11,000	4,610	7,023	1.94	2.16
July	92,050	4,280	2,180	2,969	.820	.95
August	58,400	2,890	1,200	1,884	.520	.60
September	93,600	4,410	2,350	3,120	.862	.96
Water year 1946-47	1,379,700	12,800	708	3,780	1.04	14.17

b Stage-discharge relation affected by ice.

Note.- No gage-height record at reference gage Nov. 20 to Dec. 13, Aug. 4-19; discharge computed on basis of weather records, discharge measurements, records for station at Mottville, and power-plant record at Buchanan.

East Branch Coldwater River at Coldwater, Mich.

Location.- Staff gage, lat. 41°55'50", long. 85°00'50", in sec. 21, T. 6 S., R. 6 W., at sewage-treatment plant in coldwater, 2 miles upstream from mouth. Datum of gage is 930.72 feet above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Drainage area.- 59 square miles.

Records available.- December 1937 to September 1947.

Extremes.- Maximum discharge during year, 680 second-feet Apr. 5 (gage height, 4.51 feet, from floodmark), by slope-area method; minimum observed, 0.1 second-foot Dec. 13, 15-18; minimum gage height observed, 0.86 foot several days in October, November, December.
1937-47: Maximum discharge, that of Apr. 5, 1947; minimum observed, that of Dec. 13, 15-18, 1946; minimum gage height observed, 0.82 foot Aug. 13-15, 1946.

Remarks.- Records fair. Gage read twice daily.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.9	1.5	0.4	0.4	16	8.1	138	215	213	60	57	14
2	.9	.7	.4	.4	14	7.6	171	251	286	57	a50	12
3	1.0	.6	.4	.4	14	7.0	171	233	233	54	46	12
4	.9	.6	.4	.4	10	7.6	167	218	205	53	39	11
5	1.0	.6	.4	.4	9	7.6	419	209	195	50	30	12
6	1.0	.6	.4	.4	9	8.1	337	201	201	50	20	12
7	1.0	.8	.4	.4	8	8.1	258	189	233	46	18	12
8	.9	.8	.4	.4	8	7.6	251	186	226	43	18	11
9	.9	.5	.4	.4	8	7.6	238	179	193	39	17	15
10	1.0	.5	.5	.4	8	8.1	229	174	178	38	18	14
11	.9	.5	.5	.6	8	10	256	166	170	35	21	11
12	.9	.5	.4	1	8	15	254	165	156	33	23	14
13	.9	.5	.1	1.4	10	32	233	160	149	28	26	15
14	1.1	.5	.2	2.6	13	57	218	159	159	27	23	13
15	1.0	.5	.2	2.8	13	36	205	149	153	26	23	20
16	1.1	.6	.1	2.6	13	38	226	151	146	25	26	15
17	1.1	.6	.1	1.6	13	31	218	191	141	23	24	13
18	1.2	.6	.1	1.5	14	29	218	298	137	22	24	12
19	.7	.6	.2	2.4	12	34	215	207	129	22	24	12
20	.7	.5	.2	4.3	10	36	324	247	119	20	17	12
21	.8	.5	.2	3.2	8.6	39	367	268	113	23	15	17
22	.8	.4	.2	3.0	8.1	39	301	251	103	23	13	16
23	.8	.5	.2	2.8	7.6	44	286	226	95	23	12	13
24	.7	.5	.2	3.6	10	97	278	226	92	26	12	13
25	.9	.5	.2	4.0	11	116	271	233	87	30	17	12
26	.9	.5	.4	6.4	9.8	122	254	222	85	37	17	12
27	.9	.4	.4	5.8	9.2	112	240	209	78	43	12	12
28	1.0	.4	.4	7.0	8.6	112	218	209	73	50	12	11
29	1.0	.4	.4	5.8	-	115	211	274	68	54	18	12
30	.7	.4	.4	7.6	-	122	211	253	65	56	17	9.4
31	.8	-	.4	15	-	122	-	199	-	59	15	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	28.4	1.2	0.7	0.92	0.016	0.02
November	17.1	1.5	.4	.57	.0097	.01
December	9.6	.5	.1	.31	.0053	.006
Calendar year 1946	6,479.3	106	.1	17.8	.302	4.09
January	89.0	15	.4	2.87	.049	.06
February	290.9	16	7.6	10.4	.176	.18
March	1,455.4	122	7.0	46.3	.785	.90
April	7,385	419	138	246	4.17	4.65
May	6,498	298	149	210	3.56	4.10
June	4,479	286	65	149	2.53	2.82
July	1,175	60	20	37.9	.642	.74
August	704	57	12	22.7	.385	.44
September	389.4	20	9.4	13.0	.220	.25
Water year 1946-47	22,498.8	419	.1	61.6	1.04	14.18

a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 30 to Jan. 12, Feb. 5-12.

Fawn River at Orland, Ind.

Location.- Staff gage, lat. 41°44'30", long. 85°10'15", in N½ sec. 20, T. 38 N., R. 12 E., at bridge on State Highway 327, 1,300 feet upstream from concrete dam at Fawn River State Fish Hatchery and 0.7 mile north of Orland.

Drainage area.- 88.4 square miles.

Records available.- August 1943 to February 1947 (discontinued).

Extremes.- Maximum daily discharge during period October 1946 to Febraury 1947, 83 second-feet Feb. 16; maximum gage height, 2.00 feet Dec. 13; minimum daily discharge, 2.5 second-feet (regulated) Nov. 7, 8; minimum gage height, 1.02 feet (regulated) Nov. 5, 6.

1943-47: Maximum daily discharge, 205 second-feet Mar. 23, 24, 1944; maximum gage height, 2.30 feet Mar. 17, 1944, from graph based on gage readings; minimum daily discharge, that of Nov. 7, 8, 1946; minimum gage height, 0.90 foot Dec. 15, 16, 1945.

Remarks.- Records fair except those for periods of ice effect, which are poor. Discharge includes diversion for fish hatchery at station. Occasional regulation by Nevada Mills above station. Gage read twice daily.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.4	12	14	26	46							
2	3.4	31	14	30	42							
3	3.4	21	14	32	41							
4	3.4	16	13	29	39							
5	3.5	13	13	30	38							
6	3.9	13	13	36	37	†67						
7	4.5	2.5	13	38	35							
8	4.1	2.5	13	38	34							
9	4.6	5.9	13	37	33							
10	6.5	8.1	17	38	32				†130			
11	6.1	12	26	*40	33							
12	6.5	14	36	62	38							
13	6.5	15	44	61	45						†9.2	
14	6.2	15	43	53	67							
15	6.2	15	39	50	81		†184					
16	6.2	14	35	42	83							
17	6.2	14	30	33	82							
18	10	14	28	41	79							
19	9.6	14	30	42	78							†37
20	7.7	14	44	40	76							
21	6.8	14	40	37	74							
22	7.3	13	38	35	72							
23	7.8	12	33	40	66							
24	6.5	14	25	45	76							
25	5.9	14	30	45	80							
26	5.6	14	43	46	68							
27	6.0	14	38	42	58							
28	6.5	14	38	41	62							
29	6.5	14	38	42	-							
30	6.6	14	32	55	-							
31	13	-	31	60	-		-		-			

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	190.4	13	3.4	6.14	0.069	0.08
November	403.0	31	2.5	13.4	.152	.17
December	878	44	13	28.3	.320	.37
Calendar year 1946	11,412.7	113	2.5	31.3	.354	4.80
January	1,286	62	26	41.5	.469	.54
February	1,595	83	32	57.0	.645	.67
March	-	-	-	-	-	-
April	-	-	-	-	-	-
May	-	-	-	-	-	-
June	-	-	-	-	-	-
July	-	-	-	-	-	-
August	-	-	-	-	-	-
September	-	-	-	-	-	-
Water year	-	-	-	-	-	-

* Winter discharge measurement made on this day.
† Result of discharge measurement.
Note.- Stage-discharge relation affected by ice Dec. 31 to Jan. 9, Jan. 21, 22, Feb. 2-13, 20-28.

Pigeon Creek near Flint, Ind.

Location.- Wire-weight gage, lat. 41°38'18", long. 85°06'46", in NW¼ sec. 26, T. 37 N., R. 12 E., at highway bridge, 1 mile southeast of Flint and 1½ miles downstream from outlet of Hogback Lake.

Drainage area.- 109 square miles.

Records available.- October 1945 to September 1947.

Extremes.- Maximum discharge during year, 458 second-feet Apr. 24 (gage height, 10.71 feet, backwater from tributaries); minimum daily, 11 second-feet Oct. 14-16; minimum gage height observed, 7.75 feet Aug. 7, but may have been less during period of no gage-height record.

1945-47: Maximum discharge, that of Apr. 24, 1947; minimum daily, that of Oct. 14-16, 1946; minimum gage height observed, 6.74 feet July 26, 1946, but may have been less during period of no gage-height record in 1946.

Remarks.- Records fair above 20 second-feet and poor below. Gage read twice daily.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a14	14	15	25	75	38	202	268	162	52	21	33
2	a14	16	14	26	84	37	216	241	190	50	20	34
3	a14	18	14	27	118	36	235	a230	218	48	20	40
4	a14	19	14	28	126	36	265	224	244	46	20	45
5	a14	21	14	26	115	a35	292	218	250	43	20	60
6	a13	21	14	a26	102	35	316	208	241	41	19	63
7	a13	21	14	26	90	34	333	192	218	39	18	62
8	a13	20	a14	22	80	33	347	176	a200	37	a19	59
9	a13	21	a14	21	74	32	344	158	a190	37	a21	55
10	a13	21	a14	21	67	31	326	145	178	36	a22	53
11	a13	20	a15	21	59	30	298	128	158	35	a22	53
12	a12	20	a16	21	55	33	277	117	141	34	22	54
13	a12	20	a17	24	51	41	259	110	126	33	a22	55
14	a11	19	24	24	51	52	244	110	115	31	a22	55
15	a11	19	26	31	51	68	230	119	114	31	a22	55
16	a11	19	32	36	55	86	216	128	120	33	a22	58
17	a13	19	33	55	60	94	198	132	130	35	a21	58
18	a19	19	34	63	65	94	198	135	117	34	a21	57
19	a21	19	32	68	65	87	205	152	110	34	a21	56
20	a20	18	30	67	63	a82	221	162	105	32	21	54
21	a18	17	30	64	62	80	283	174	98	30	a21	54
22	a17	17	28	63	58	72	c388	188	92	a29	a20	51
23	a16	16	28	62	54	72	c430	198	87	28	a20	49
24	a15	16	28	61	51	80	c448	198	82	27	20	45
25	a15	16	a25	60	48	108	c440	188	77	26	20	a45
26	a14	16	26	59	44	126	c430	176	72	26	20	a44
27	a13	16	25	60	42	145	c388	169	68	24	20	a42
28	a13	15	24	61	40	169	c350	160	67	a23	19	40
29	a12	15	26	62	-	185	c319	152	62	22	19	41
30	12	a15	25	62	-	192	305	141	57	22	20	43
31	13	-	25	66	-	192	-	135	-	22	22	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	436	21	11	14.1	0.129	0.15
November	543	21	14	18.1	.166	.19
December	690	34	14	22.3	.205	.24
Calendar year 1946	16,896	220	11	46.3	.425	5.78
January	1,538	68	21	43.2	.396	.46
February	1,905	126	40	68.0	.624	.65
March	2,435	192	30	78.5	.720	.83
April	9,003	448	198	300	2.75	3.07
May	5,232	268	110	169	1.55	1.79
June	4,089	250	57	136	1.25	1.40
July	1,040	52	22	33.5	.307	.35
August	637	22	18	20.5	.188	.22
September	1,513	63	33	50.4	.462	.52
Water year 1946-47	28,861	448	11	79.1	.726	9.87

a No gage-height record; discharge computed on basis of 4 discharge measurements, weather records, and unpublished records for outlet of Hogback Lake, 1½ miles upstream.

c Backwater from downstream tributaries or channel conditions; discharge computed on basis of unpublished records and 1 discharge measurement at outlet of Hogback Lake, 1½ miles upstream.

Christiana Creek at Elkhart, Ind.

Location.- Wire-weight gage, lat. 41°41'43", long. 85°58'15", in NE¼ sec. 5, T. 37 N., R. 5 E., at Cassopolis Street Bridge, in Elkhart, a quarter of a mile upstream from mouth. Datum of gage is 730.00 feet above mean sea level, datum of 1929.

Drainage area.- 111 square miles.

Records available.- December 1946 to September 1947.

Extremes.- Maximum discharge during period, 452 second-feet Apr. 8 (gage height, 2.19 feet); minimum, 40 second-feet Jan. 22 (gage height, 0.66 foot, from graph based on gage readings).

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

Rating tables, Dec. 12, 1946, to Sept. 30, 1947, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Dec. 12-30, Jan. 7-11,
Mar. 28, Aug. 4 to Sept. 30)

Dec. 12 to Apr. 8		Apr. 9 to Sept. 30	
0.8	67	0.7	69
1.0	108	.8	88
1.3	177	1.3	195
1.7	285	1.8	320
2.1	420	2.1	420

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			-	b70	112	75	198	244	267	131	100	154
2			-	b68	108	75	195	254	277	127	100	193
3			-	b66	98	75	208	247	285	123	100	193
4			-	b64	b88	73	226	242	285	118	96	188
5			-	b62	a80	71	270	242	277	118	92	195
6			-	b68	a76	73	357	225	a270	127	86	177
7			-	75	a74	73	420	225	267	129	86	161
8			-	67	a72	71	444	209	254	129	82	148
9			-	61	a70	71	a450	195	240	129	78	133
10			-	61	71	69	402	186	223	133	75	137
11			-	69	71	73	378	181	211	131	73	137
12			*85	71	75	75	354	172	204	129	69	152
13			100	*69	83	83	344	165	209	127	69	161
14			119	75	87	102	306	168	197	123	67	163
15			117	83	*87	117	315	163	190	121	66	157
16			117	85	89	108	296	165	179	121	64	146
17			110	100	87	108	280	184	179	123	64	135
18			89	81	89	104	264	206	177	127	60	125
19			79	79	93	95	257	213	172	131	59	116
20			89	81	79	81	272	235	168	129	57	110
21			85	69	77	79	293	262	161	127	69	114
22			81	50	63	81	304	272	154	125	67	114
23			75	81	69	98	306	272	148	123	66	123
24			69	79	71	108	296	264	150	118	67	121
25			58	83	75	190	280	264	140	114	82	112
26			73	85	77	195	a270	252	135	112	71	108
27			69	87	77	200	264	242	140	118	67	106
28			73	89	75	190	250	247	140	116	71	100
29			81	91	-	180	240	252	140	110	100	98
30			79	95	-	185	240	240	135	106	114	94
31			b72	104	-	198	-	237	-	104	135	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	-	-	-	-	-	-
November	-	-	-	-	-	-
December 12-31	1,720	119	58	86.0	0.775	0.58
Calendar year	-	-	-	-	-	-
January	2,368	104	50	76.4	.688	.79
February	2,273	112	63	81.2	.732	.76
March	3,376	200	69	109	.982	1.13
April	8,979	450	195	299	2.69	3.01
May	6,925	272	163	223	2.01	2.32
June	5,974	285	135	199	1.79	2.00
July	3,799	133	104	123	1.11	1.27
August	2,452	135	57	79.1	.713	.82
September	4,171	195	94	139	1.25	1.40
Water year	-	-	-	-	-	-

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of 1 discharge measurement and weather records.
b Stage-discharge relation affected by ice.

Elkhart River at Goshen, Ind.

Location.- Water-stage recorder, lat. 41°35', long. 85°50', near line between secs. 8 and 9, T. 36 N., R. 6 E., at River Avenue Bridge at Goshen, half a mile upstream from Rock Run.

Drainage area.- 573 square miles.

Records available.- April 1931 to September 1947 in reports of Geological Survey. September 1924 to September 1927 in reports of Indiana Department of Conservation.

Average discharge.- 19 years (1924-27, 1931-47), 450 second-feet.

Extremes.- Maximum discharge during year, 3,360 second-feet Apr. 21 (gage height, 7.56 feet); minimum, 58 second-feet (regulated) Oct. 30 (gage height, 1.54 feet); minimum daily, 77 second-feet Oct. 5.
1931-47: Maximum discharge, 5,090 second-feet May 25, 1943 (gage height, 9.46 feet), from rating curve extended above 4,000 second-feet; minimum, 28 second-feet (regulated) Sept. 5, 6, 1941; minimum daily, 35 second-feet Sept. 26, 1941; minimum gage height, 1.27 feet May 25, 30, 1932.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by three power plants above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	136	274	208	151	1,190	300	826	1,440	990	421	198	294
2	130	384	189	237	966	300	943	1,320	1,500	395	153	612
3	122	316	181	270	872	220	1,090	1,220	1,560	370	181	774
4	111	308	177	*220	740	280	1,020	1,120	1,220	336	214	627
5	77	284	172	250	420	240	1,390	1,060	1,040	332	188	550
6	79	199	191	250	520	270	1,830	990	966	329	137	461
7	128	238	219	260	560	310	1,560	990	966	326	194	446
8	117	230	84	264	600	290	1,190	920	1,140	318	137	408
9	118	199	233	236	580	170	1,060	849	1,040	247	175	378
10	122	a220	198	243	560	275	1,040	802	920	277	125	356
11	129	a240	215	236	520	350	1,240	755	896	328	159	330
12	87	a260	246	222	501	537	1,560	708	849	259	157	494
13	87	258	363	278	483	640	1,320	686	802	273	147	550
14	149	209	375	337	546	802	1,120	663	802	323	136	494
15	134	226	329	708	537	755	1,040	663	826	262	172	435
16	140	169	300	686	*510	618	1,020	663	802	251	197	442
17	85	244	293	564	483	537	1,060	708	755	327	208	457
18	197	235	141	506	474	537	1,040	755	755	396	205	438
19	163	223	219	412	330	*519	990	778	732	454	187	412
20	209	202	275	465	290	510	1,840	849	663	411	173	378
21	187	154	316	380	330	514	3,090	1,040	640	353	253	371
22	185	215	179	280	330	496	2,300	1,320	596	249	208	519
23	161	222	289	420	180	478	1,880	1,060	564	268	167	615
24	160	179	307	452	280	564	1,720	896	528	306	169	507
25	131	197	220	398	290	966	1,660	872	510	210	242	468
26	182	194	163	573	320	966	1,560	872	519	233	344	445
27	180	218	266	618	300	802	1,440	872	564	280	282	377
28	191	220	298	568	270	802	1,390	872	514	268	220	373
29	158	192	194	478	-	849	1,340	920	434	238	223	373
30	144	171	296	686	-	896	1,390	966	403	226	281	343
31	211	-	250	1,560	-	849	-	896	-	197	314	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	4,310	211	77	139	0.243	0.28
November	6,880	384	154	229	.400	.45
December	7,386	375	84	238	.415	.48
Calendar year 1946	138,102	1,580	76	378	.660	8.96
January	13,208	1,560	151	426	.743	.86
February	13,982	1,190	180	499	.871	.91
March	16,642	966	170	537	.937	1.08
April	41,949	3,090	826	1,398	2.44	2.72
May	28,525	1,440	663	920	1.61	1.85
June	24,496	1,560	403	817	1.43	1.59
July	9,463	454	197	305	.532	.61
August	6,146	344	125	198	.346	.40
September	13,727	774	294	458	.799	.89
Water year 1946-47	186,714	3,090	77	512	.894	12.12

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for Yellow River at Knox.
Note.- Stage-discharge relation affected by ice Jan. 3-7, 21-23, Feb. 4-11, Feb. 19 to Mar. 9.

Kalamazoo River near Battle Creek, Mich.

Location.- Water-stage recorder, lat. 42°20'45", long. 85°15'45", in NE¼ sec. 32, T. 1 S., R. 8 W., half a mile upstream from Wabascon Creek and 3 miles downstream from city of Battle Creek. Datum of gage is 797.00 feet above mean sea level, datum of 1929.

Drainage area.- 849 square miles.

Records available.- July 1937 to September 1947.

Average discharge.- 10 years (1937-47), 659 second-feet.

Extremes.- Maximum discharge during year, 7,290 second-feet Apr. 7 (gage height, 9.13 feet); minimum, 153 second-feet (regulated) Oct. 14; minimum daily, 176 second-feet (regulated) Oct. 7, 10; minimum gage height, 1.78 feet Feb. 26.
1937-47: Maximum discharge, that of Apr. 7, 1947; minimum, 50 second-feet (regulated) Sept. 22, 1939; minimum daily, 143 second-feet (regulated) Aug. 21, 1941; minimum gage height, 1.51 feet Feb. 22, 1940.

Remarks.- Records good except those for periods of no gage-height record, which are fair. Slight regulation from power plants upstream.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1	181	342	314	406	579	367	1,410	1,140	1,800	887	514	935
2	183	342	314	400	553	405	1,590	1,480	1,900	776	536	820
3	215	358	262	400	559	338	1,920	1,790	2,000	719	489	729
4	193	354	318	410	485	308	2,600	1,980	2,240	592	488	695
5	208	365	295	400	401	398	3,990	1,990	2,310	721	494	672
6	201	329	306	370	425	371	6,070	1,800	2,170	737	501	666
7	176	312	327	333	410	356	7,130	1,650	2,000	703	481	659
8	201	361	303	420	390	396	6,980	1,460	1,870	692	518	553
9	193	340	335	379	430	377	5,990	1,300	1,830	646	450	549
10	176	334	290	400	430	375	4,730	1,180	1,870	666	495	569
11	190	429	358	398	400	376	3,690	1,030	1,680	610	640	629
12	184	328	411	408	360	434	3,130	978	1,490	628	479	792
13	218	294	604	387	362	604	2,860	950	1,280	655	495	863
14	184	304	688	462	442	774	2,600	1,220	1,340	638	483	764
15	215	327	566	587	454	935	2,280	1,180	1,410	710	500	712
16	191	320	509	581	440	798	2,000	1,230	1,440	845	454	655
17	220	310	543	612	450	918	1,800	1,340	1,520	801	463	647
18	284	360	381	598	418	884	1,770	1,540	1,520	767	463	654
19	258	353	368	635	423	767	1,800	1,650	1,340	740	488	617
20	305	330	386	580	388	707	1,920	1,750	1,250	740	484	548
21	260	319	427	568	394	804	2,130	2,020	1,110	800	484	632
22	225	335	419	473	398	826	2,330	2,200	1,050	800	510	867
23	248	322	378	475	360	918	2,380	2,230	934	800	437	756
24	252	322	335	588	377	1,140	2,310	2,380	828	760	502	798
25	257	287	346	524	371	1,720	2,160	2,500	959	720	562	787
26	239	327	401	606	355	1,780	1,760	2,500	1,030	700	492	745
27	281	327	344	638	382	1,840	1,580	2,200	1,110	700	784	685
28	276	295	449	656	357	1,850	1,430	2,000	1,160	670	627	617
29	230	311	376	693	-	1,800	1,380	1,800	1,040	590	651	643
30	221	321	353	544	-	1,580	1,310	1,800	962	576	875	578
31	268	-	416	531	-	1,330	-	1,700	-	530	1,000	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	6,933	305	176	224	0.264	0.30
November	9,958	429	287	332	.391	.44
December	12,122	688	262	391	.461	.53
Calendar year 1946	174,638	2,940	176	478	.563	7.66
January	15,462	693	333	499	.588	.68
February	11,793	579	355	421	.496	.52
March	26,476	1,850	308	854	1.01	1.16
April	85,030	7,130	1,310	2,834	3.34	3.73
May	51,968	2,500	950	1,676	1.97	2.27
June	44,443	2,310	828	1,481	1.74	1.94
July	22,019	887	530	710	.836	.96
August	16,839	1,000	437	543	.640	.74
September	20,836	935	548	695	.819	.91
Water year 1946-47	323,879	7,130	176	887	1.04	14.18

Note.- No gage-height record Jan. 2-6, Feb. 7-12, May 25 to June 3, July 19-29; discharge computed on basis of weather records and records for Kalamazoo River at Comstock and Battle Creek at Battle Creek.

Kalamazoo River at Comstock, Mich.

Location.- Water-stage recorder, lat. 42°17'05", long. 85°30'50", in NE¼ sec. 19, T. 2 S., R. 10 W., at highway bridge at Comstock, a quarter of a mile downstream from Comstock Creek. Datum of gage is 759.12 feet above mean sea level, datum of 1929.

Drainage area.- 1,010 square miles.

Records available.- April to August 1931, October 1932 to September 1947.

Average discharge.- 13 years (1934-47), 832 second-feet.

Extremes.- Maximum discharge during year, 6,910 second-feet Apr. 8 (gage height, 7.94 feet); minimum, 270 second-feet Oct. 3, Nov. 2; minimum gage height, 0.72 foot Oct. 3. 1931, 1932-47: Maximum discharge, that of Apr. 8, 1947; minimum observed, 199 second-feet Oct. 14, 1934; minimum gage height observed, 0.56 foot May 4, 1931.

Remarks.- Records good except those for period of no gage-height record, which are fair. Flow regulated by power plants above station.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 26 to Dec. 13)

0.8	310	3.0	1,810	6.0	4,510
1.2	515	3.6	2,260	7.0	5,710
1.6	780	4.4	2,880	7.8	6,730
2.4	1,360	5.2	3,600		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	340	330	435	488	801	588	1,470	1,440	1,960	955	675	1,360
2	310	325	476	476	829	569	1,580	1,400	2,180	955	654	1,100
3	290	405	450	482	801	575	1,740	1,620	2,260	843	654	1,060
4	325	405	395	510	752	515	2,020	1,880	2,340	857	675	885
5	355	430	420	488	488	450	3,470	2,410	2,260	836	601	920
6	365	445	425	488	415	533	4,570	2,040	2,480	871	620	955
7	350	450	410	551	594	545	6,110	1,850	2,410	920	620	906
8	345	455	425	557	696	588	6,830	1,700	2,260	878	614	815
9	350	460	476	634	654	557	6,640	1,470	2,110	829	634	710
10	375	504	504	582	a660	575	5,720	1,360	1,850	759	563	724
11	355	569	471	563	a640	563	4,850	1,280	1,880	787	634	794
12	350	689	563	563	a600	575	3,900	1,060	1,700	745	724	1,060
13	350	498	885	588	a540	780	3,200	1,140	1,550	766	654	1,170
14	370	435	1,020	575	a650	1,100	3,060	1,250	1,470	808	634	1,140
15	370	476	990	780	a660	1,060	2,720	1,360	1,440	766	634	990
16	410	510	899	822	a600	1,170	2,360	1,320	1,550	878	608	906
17	370	569	717	773	a660	1,140	2,170	1,440	1,550	1,060	527	920
18	527	539	836	815	a660	1,140	1,980	1,580	1,550	990	575	829
19	794	539	594	815	594	1,100	1,980	1,740	1,550	920	588	850
20	608	527	539	871	575	1,020	2,030	1,770	1,360	906	661	801
21	601	510	582	850	575	990	2,040	2,040	1,210	990	668	759
22	460	425	647	627	575	1,100	2,260	2,180	1,140	990	647	1,170
23	466	504	654	627	575	1,140	2,480	2,340	1,020	990	627	1,170
24	476	498	582	654	557	1,510	2,480	2,410	822	955	588	1,020
25	736	551	471	857	575	1,770	2,410	2,480	955	920	640	1,060
26	1,140	460	515	822	539	1,770	2,180	2,480	1,170	843	829	1,020
27	955	455	557	892	515	1,810	1,880	2,260	1,140	843	614	955
28	836	435	575	913	539	1,850	1,620	2,110	1,170	829	1,020	843
29	455	482	717	955	-	1,880	1,470	1,960	1,210	551	801	780
30	385	460	601	955	-	1,850	1,510	1,960	1,060	661	990	808
31	365	-	557	766	-	1,700	-	1,880	-	675	1,170	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	14,784	1,140	290	477	0.472	0.54
November	14,340	689	325	478	.473	.53
December	18,388	1,020	395	593	.587	.68
Calendar year 1946	243,760	3,310	280	668	.661	8.99
January	21,339	955	476	688	.681	.79
February	17,319	829	415	619	.613	.64
March	32,513	1,880	450	1,049	1.04	1.20
April	88,730	6,830	1,470	2,958	2.93	3.27
May	55,210	2,480	1,060	1,781	1.76	2.03
June	48,607	2,480	822	1,620	1.60	1.78
July	26,576	1,060	551	857	.849	.98
August	21,143	1,170	527	682	.675	.78
September	28,480	1,360	710	949	.940	1.05
Water year 1946-47	387,429	6,830	290	1,061	1.05	14.27

a No gage-height record; discharge computed on basis of weather records and records for stations near Allegan and near Battle Creek.

Kalamazoo River at Calkins Dam, near Allegan, Mich.

Location.- Water-stage recorder, lat. 42°34', long. 85°57', in sec. 15, T. 2 N., R. 14 W., at hydroelectric plant of city of Allegan, 1 mile upstream from Swan Creek and 8 miles northwest of Allegan. Datum of gage is at mean sea level (levels by city of Allegan).

Drainage area.- 1,540 square miles.

Records available.- April 1929 to September 1936, October 1937 to September 1947.

Average discharge.- 16 years (1930-36, 1937-47), 1,264 second-feet).

Extremes.- Maximum discharge during year, 17,500 second-feet Apr. 11 (gage height, 606.76 feet); minimum daily, 330 second-feet Oct. 8; minimum gage height, 594.37 feet Feb. 28.
1929-36, 1937-47: Maximum discharge, that of Apr. 11, 1947; minimum daily, 73 second-feet Aug. 31, 1941; minimum gage height, 594.32 feet Sept. 21, 22, 1941.

Remarks.- Records good except those below 500 second-feet, which are poor. Flow regulated by city of Allegan power plant.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	574	878	982	744	1,500	1,070	3,220	2,440	2,980	1,530	972	1,420
2	568	858	1,000	1,040	1,120	932	3,600	2,810	4,020	1,230	945	1,440
3	550	505	951	990	1,220	992	4,340	2,610	3,620	1,340	860	1,570
4	570	918	545	974	1,290	990	3,800	2,360	4,210	1,230	978	1,260
5	558	536	494	730	1,250	831	7,760	2,610	3,500	1,270	984	1,410
6	692	918	752	800	1,160	724	10,800	3,000	3,420	1,230	850	1,230
7	537	882	900	602	1,160	746	7,700	2,730	3,760	1,450	798	1,200
8	330	884	693	871	1,210	988	8,550	2,760	3,770	1,470	795	1,330
9	493	1,050	578	1,090	1,240	798	8,240	2,680	2,790	1,340	722	1,300
10	489	978	732	1,090	1,280	870	9,130	2,470	3,160	1,230	790	1,200
11	535	1,000	989	1,080	1,040	792	10,500	2,190	2,720	1,250	956	1,210
12	575	1,020	930	640	1,020	794	6,590	1,930	2,600	1,030	978	1,200
13	724	1,030	1,100	924	870	908	5,840	1,840	2,620	1,030	972	1,260
14	542	853	1,180	954	1,070	1,040	4,590	1,710	2,390	1,200	928	1,250
15	614	1,100	1,230	948	1,070	1,280	4,530	2,100	2,560	1,170	948	1,630
16	630	996	1,420	1,080	942	1,560	3,820	2,290	2,100	1,030	942	1,400
17	426	929	1,340	1,150	1,090	1,720	3,880	2,170	2,190	1,070	864	1,190
18	794	1,030	1,320	1,150	1,090	1,740	3,200	2,210	2,140	1,220	985	1,180
19	780	906	1,210	1,060	1,030	1,750	3,290	2,330	2,320	1,500	702	1,170
20	612	582	1,180	1,230	1,070	1,850	4,100	2,570	2,160	1,330	365	1,130
21	787	762	1,090	1,300	1,090	1,910	3,930	2,870	2,050	1,230	376	1,100
22	871	1,120	977	1,270	1,080	1,980	3,400	3,880	1,920	1,150	733	1,500
23	872	1,060	1,100	1,200	1,020	2,120	3,730	3,270	1,680	1,210	914	1,720
24	836	1,030	1,080	1,120	1,010	2,940	3,430	3,130	1,600	1,330	851	1,660
25	828	956	955	1,060	964	4,110	3,360	4,070	1,510	1,300	947	1,540
26	798	606	720	1,030	956	4,100	3,490	3,200	1,410	1,250	951	1,230
27	711	513	783	1,270	901	3,590	3,150	3,900	1,500	1,030	922	1,470
28	1,130	406	916	1,300	778	3,240	2,760	3,640	1,710	1,230	942	1,150
29	1,190	614	916	1,350	-	3,080	2,670	3,420	1,610	1,230	1,000	1,260
30	1,120	920	1,070	1,400	-	2,890	2,720	3,140	1,660	1,030	1,120	1,230
31	1,030	-	1,080	1,400	-	3,060	-	2,660	-	995	1,320	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	21,766	1,190	330	702	0.456	0.53
November	25,838	1,120	406	861	.559	.62
December	30,193	1,420	494	974	.632	.73
Calendar year 1946	413,609	5,240	238	1,133	.736	10.00
January	32,847	1,400	602	1,060	.688	.79
February	30,521	1,500	778	1,090	.708	.74
March	55,395	4,110	724	1,787	1.16	1.34
April	150,120	10,800	2,670	5,004	3.25	3.63
May	84,990	4,070	1,710	2,742	1.78	2.05
June	75,680	4,210	1,410	2,523	1.64	1.83
July	38,515	1,550	995	1,242	.806	.93
August	27,408	1,320	365	884	.574	.66
September	39,840	1,720	1,100	1,328	.862	.96
Water year 1946-47	613,113	10,800	330	1,680	1.09	14.81

Battle Creek at Battle Creek, Mich.

Location.- Staff gage, lat. 42°19'55", long. 85°09'15", in sec. 5, T. 2 S., R. 7 W., 350 feet upstream from Verona Road Bridge in city of Battle Creek and 3 miles upstream from mouth. Datum of gage is 823.24 feet above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).
Drainage area.- 241 square miles.
Records available.- October 1930 to July 1931, October 1932 to September 1947.
Average discharge.- 13 years (1934-47), 203 second-feet.
Extremes.- Maximum discharge during year, 3,640 second-feet Apr. 7 (gage height, 4.48 feet, from floodmark); minimum observed, 39 second-feet Oct. 7-17 (gage height, 0.56 foot).
1930-31, 1932-47: Maximum discharge, that of Apr. 7, 1947; minimum, 22 second-feet Aug. 14, 1934; minimum gage height, about -0.5 foot in July 1936 and on Aug. 31, 1939, due to opening of gates at dam forming control.
Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Gage read twice daily.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

0.6	50	1.5	481
.7	78	1.9	800
.8	112	2.9	1,780
1.0	193	4.0	3,060
1.2	294	4.4	3,540

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50	88	72	92	160	95	570	351	518	207	98	163
2	50	102	72	88	160	95	518	447	673	189	98	142
3	50	105	72	d5	160	95	971	554	714	167	98	123
4	50	105	72	85	145	95	1,520	845	935	159	95	109
5	50	105	72	85	110	90	1,740	800	935	154	92	105
6	44	105	72	81	100	90	2,880	673	757	172	102	105
7	42	112	72	78	105	90	3,560	554	673	176	98	95
8	39	109	72	78	100	90	3,070	461	673	176	92	85
9	39	102	68	78	105	90	2,470	388	673	167	88	81
10	39	105	81	*81	105	90	1,970	357	714	159	85	88
11	39	98	81	78	100	*95	1,540	328	632	154	85	105
12	39	88	139	/8	90	100	1,350	283	518	146	81	135
13	39	85	184	88	90	110	1,270	283	447	142	78	180
14	39	85	203	112	110	130	1,100	311	394	142	75	193
15	39	78	193	135	120	160	899	294	388	150	68	180
16	39	78	180	167	120	210	766	283	481	150	66	163
17	42	78	154	190	120	260	657	357	518	163	78	142
18	85	78	142	190	120	350	593	593	481	167	75	120
19	95	78	127	190	120	300	570	554	427	176	75	116
20	81	75	116	170	*120	270	632	593	351	180	78	116
21	78	72	102	160	120	300	800	632	305	184	95	120
22	72	72	98	135	120	350	890	714	278	180	105	146
23	72	72	98	135	115	430	890	845	241	176	102	180
24	66	72	95	165	110	554	757	890	217	167	95	231
25	63	72	92	150	100	673	632	845	207	167	85	198
26	60	72	92	170	100	890	554	757	203	163	112	180
27	60	72	109	180	100	980	481	714	203	163	105	a170
28	55	72	105	180	95	845	461	632	203	146	98	a150
29	55	72	98	180	-	714	413	593	227	127	120	a150
30	52	72	95	160	-	593	351	554	217	112	167	a140
31	72	-	92	150	-	554	-	518	-	102	180	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,695	95	39	54.7	0.227	0.26
November	2,579	112	72	86.0	.357	.40
December	3,320	203	68	107	.444	.51
Calendar year 1946	57,217	1,670	30	157	.651	8.84
January	3,994	190	78	129	.535	.62
February	3,220	160	90	115	.477	.50
March	9,788	980	90	316	1.31	1.51
April	34,875	3,560	351	1,162	4.82	5.38
May	17,003	890	283	548	2.27	2.62
June	14,203	935	203	473	1.96	2.19
July	4,983	207	102	161	.668	.77
August	2,960	180	66	95.5	.396	.46
September	4,211	231	81	140	.581	.65
Water year 1946-47	102,831	3,560	39	282	1.17	15.87

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for Kalamazoo River near Battle Creek and at Comstock.
Note.- Stage-discharge relation affected by ice Jan. 17 to Mar. 23.

Grand River at Jackson, Mich.

Location.- Water-stage recorder, lat. 42°17'05", long. 84°24'30", in sec. 22, T. 2 S., R. 1 W., 1 mile north of Jackson and 2¼ miles upstream from Portage River. Datum of gage is 900.00 feet above mean sea level (Fargo Engineering Co. bench mark).

Drainage area.- 174 square miles.

Records available.- April 1935 to September 1947.

Average discharge.- 12 years, 115 second-feet.

Extremes.- Maximum discharge during year, 796 second-feet Apr. 5; maximum gage height, 12.21 feet Apr. 10; minimum discharge, 18 second-feet Oct. 6, 16; minimum daily, 20 second-feet Oct. 6.

1935-47: Maximum discharge, 1,070 second-feet June 25, 1937 (gage height, 13.50 feet); minimum, 9.2 second-feet Aug. 22, 1936; minimum daily, 12 second-feet Aug. 23, 1936.

Remarks.- Records good.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet) (Shifting-control method used Oct. 1 to Dec. 9, Apr. 5-15, Aug. 1 to Sept. 30)

Oct. 1 to Jan. 14		Jan. 15 to Sept. 30			
8.4	26	8.5	48	9.6	201
8.5	34	8.6	48	10.2	316
8.8	67	8.8	73	11.0	489
9.0	95	9.2	130	11.7	665
9.2	128				

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	68	30	40	121	48	330	445	397	95	54	69
2	26	46	31	44	116	45	424	489	408	95	52	76
3	26	53	34	44	115	49	382	454	430	93	49	80
4	27	52	35	41	100	53	382	430	430	84	66	79
5	25	52	35	35	104	53	618	419	419	83	58	80
6	20	51	35	42	105	53	574	419	397	73	56	73
7	26	56	32	44	98	54	567	397	397	70	58	69
8	28	48	28	44	87	54	597	376	376	74	55	72
9	28	45	32	52	80	49	642	286	306	70	52	70
10	28	51	55	86	54	68	639	258	286	72	46	79
11	30	48	41	90	55	76	665	233	233	76	52	74
12	26	48	96	84	55	93	618	235	201	70	58	81
13	22	48	66	90	61	112	574	231	236	66	52	84
14	27	46	57	136	71	138	527	218	268	65	80	74
15	27	47	57	115	65	128	484	214	326	76	63	100
16	26	47	66	120	59	126	470	230	356	79	54	80
17	40	41	66	116	64	126	440	248	346	90	53	79
18	89	42	46	120	66	133	465	306	326	87	54	79
19	38	43	57	115	59	171	454	326	306	84	53	74
20	32	42	59	143	61	164	501	356	277	90	55	70
21	34	39	51	107	56	159	501	408	162	83	54	102
22	37	40	47	111	53	151	501	465	144	104	50	84
23	42	33	53	118	47	164	501	477	132	97	45	80
24	40	34	40	121	52	224	501	477	127	97	38	80
25	42	36	42	112	53	239	489	489	120	93	61	77
26	35	35	48	120	54	220	465	477	118	97	87	76
27	32	34	46	124	50	258	430	465	122	126	54	72
28	39	30	53	127	52	258	408	442	112	127	66	68
29	36	31	36	127	-	268	386	430	108	120	108	72
30	41	32	45	107	-	268	366	386	100	115	72	74
31	44	-	50	133	-	316	-	366	-	88	65	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,038	89	20	33.5	0.193	0.22
November	1,318	68	30	43.9	.252	.28
December	1,469	96	28	47.4	.272	.31
Calendar year 1946	26,887	336	20	73.7	.424	5.74
January	2,908	143	35	93.8	.539	.62
February	2,013	121	47	71.9	.413	.43
March	4,318	316	45	139	.799	.92
April	14,901	665	330	497	2.86	3.19
May	11,452	489	214	369	2.12	2.44
June	7,966	430	100	266	1.53	1.71
July	2,739	127	65	88.4	.508	.59
August	1,820	108	38	58.7	.337	.39
September	2,327	102	68	77.6	.446	.50
Water year 1946-47	54,269	665	20	149	.856	11.60

Grand River at Lansing, Mich.

Location.- Water-stage recorder, lat. 42°45'20", long 84°34'55", in SW¼ sec. 5, T. 4 N., R. 2 W., at northwest limits of Lansing, 3½ miles downstream from Cedar River.

Drainage area.- 1,230 square miles.

Records available.- November 1934 to September 1947. March 1901 to August 1906 at site at Seymour Street Bridge, 1¾ miles upstream.

Average discharge.- 10 years (1935-37, 1938-39, 1940-47), 790 second-feet.

Extremes.- Maximum discharge during year, 16,400 second-feet Apr. 7 (gage height, 15.59 feet, from floodmark); minimum, 22 second-feet (regulated) Mar. 10; minimum daily, 52 second-feet Oct. 6.
1934-47: Maximum discharge, that of Apr. 7, 1947; minimum, 6 second-feet (regulated) Aug. 26, 1941; minimum daily, 20 second-feet Aug. 25, 1941.

Remarks.- Records good except those for periods of no gage-height record, which are poor. Flow regulated by power plants above station.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used July 3 to Sept. 30)

0.9	54	2.5	470	7.0	3,410
1.1	82	3.0	685	8.5	4,900
1.3	117	3.5	930	10.9	7,730
1.5	159	4.0	1,220	13.3	11,800
1.7	209	5.0	1,840	15.3	15,800
2.0	295	6.0	2,560		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	113	274	157	200	578	267	2,140	1,910	2,400	562	438	421
2	112	329	173	100	626	262	3,510	2,720	2,720	482	294	416
3	111	344	154	200	622	274	5,910	3,980	3,500	395	269	284
4	113	395	166	375	641	235	6,330	3,680	3,590	407	271	339
5	58	275	171	325	585	250	8,590	3,140	3,230	396	388	378
6	52	314	174	425	425	268	14,400	2,560	2,720	423	237	276
7	92	286	174	383	357	259	15,900	2,330	2,640	435	294	234
8	110	294	187	249	374	316	13,300	2,050	3,410	425	332	262
9	130	241	219	246	420	275	9,270	1,910	3,500	410	262	307
10	150	297	210	179	394	358	6,490	1,640	2,960	400	239	300
11	175	289	182	221	357	358	5,410	1,520	2,400	375	218	579
12	200	239	433	236	385	477	5,160	1,310	1,980	375	258	1,090
13	160	283	514	283	354	1,100	4,740	1,250	1,770	375	226	1,250
14	130	223	606	419	349	1,980	4,190	1,980	1,770	400	220	1,020
15	100	348	535	615	351	2,400	3,620	2,120	1,640	425	234	766
16	95	162	543	936	378	2,260	3,360	1,910	1,700	475	230	630
17	150	209	357	931	391	1,840	3,150	1,980	1,640	525	265	634
18	250	236	336	773	389	1,530	2,960	1,980	1,540	575	248	555
19	300	207	303	641	383	1,450	3,200	2,260	1,410	650	270	486
20	325	209	336	728	358	1,590	3,590	2,260	1,270	700	274	453
21	225	232	342	773	283	1,840	4,080	2,640	1,200	559	239	685
22	175	260	392	678	278	1,770	3,880	3,320	922	536	251	633
23	145	196	319	618	317	1,770	3,500	3,320	875	534	220	921
24	165	172	206	569	280	2,190	3,050	3,140	731	504	226	820
25	147	202	258	816	280	2,880	2,880	3,140	664	467	214	718
26	98	234	302	1,060	281	2,190	2,640	3,050	687	439	341	601
27	165	214	300	1,140	317	2,050	2,260	2,800	713	368	276	514
28	140	132	250	1,090	257	2,120	2,120	2,560	665	344	304	492
29	176	180	210	1,070	-	2,050	1,910	2,400	561	426	463	494
30	197	190	250	755	-	1,980	1,840	2,480	498	355	597	457
31	205	-	350	551	-	1,910	-	2,480	-	292	502	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	4,764	325	52	154	0.125	0.14
November	7,466	395	132	249	.202	.23
December	9,109	606	154	294	.239	.28
Calendar year 1946	204,868	4,900	43	561	.456	6.20
January	17,585	1,140	100	567	.461	.53
February	11,010	641	257	393	.320	.33
March	40,499	2,880	235	1,306	1.06	1.22
April	153,380	15,900	1,840	5,113	4.16	4.64
May	75,820	3,980	1,250	2,446	1.99	2.29
June	55,306	3,590	498	1,844	1.50	1.67
July	14,034	700	292	453	.368	.42
August	9,100	597	214	294	.239	.28
September	17,075	1,250	262	569	.463	.52
Water year 1946-47	415,148	15,900	52	1,137	.924	12.55

Note.- No gage-height record Oct. 9-22, Dec. 27 to Jan. 6, July 8-20; discharge computed on basis of weather records and records for Grand River at Grand Rapids and Cedar River at East Lansing.

Grand River at Grand Rapids, Mich.

Location.- Water-stage recorder, lat. 42°57'10", long. 85°41'15", at municipal sewage pumping plant near west limits of Grand Rapids, Kent County, three-quarters of a mile upstream from Plaster Creek. Datum of gage is 589.01 feet above mean sea level (levels by city of Grand Rapids).
Drainage area.- 4,900 square miles.
Records available.- October 1930 to September 1947. March 1901 to December 1905 and January 1906 to September 1918 (gage heights only) at site at Fulton Street Bridge in Grand Rapids.
Average discharge.- 17 years (1930-47), 3,165 second-feet.
Extremes.- Maximum discharge during year, 38,600 second-feet Apr. 9 (gage height, 16.43 feet); minimum daily, 750 second-feet Oct. 13.
1930-47: Maximum discharge, that of Apr. 9, 1947; minimum observed, 341 second-feet Aug. 17, 1936; minimum daily, 381 second-feet Aug. 17, 1936.
A stage of 19.3 feet occurred at Fulton Street gage Mar. 27, 1904 (discharge, 53,000 second-feet).
Remarks.- Records good except those for periods of ice effect and those below 1,500 second-feet, which are fair. Flow slightly regulated by power plants above station.
Cooperation.- Gage-height record furnished by city of Grand Rapids.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

-4.4	765	0.0	3,790	13.5	26,600
-4.0	915	2.0	5,720	15.0	32,000
-3.2	1,280	5.0	9,020	16.3	37,800
-2.4	1,780	8.0	13,300		
-1.0	2,900	11.0	19,300		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	975	1,230	1,280	1,900	3,000	1,860	8,360	7,490	7,940	2,580	1,360	2,580
2	975	1,230	1,230	1,800	3,300	1,820	9,930	7,820	9,150	2,340	1,360	2,740
3	975	1,570	1,200	1,900	3,300	1,940	12,200	8,660	10,700	2,260	1,330	2,420
4	915	1,940	1,230	1,800	3,300	1,860	13,600	9,150	11,900	2,100	1,390	2,260
5	875	1,940	1,230	1,800	3,000	1,780	17,100	9,800	13,200	2,100	1,360	2,020
6	800	1,820	1,180	1,800	2,800	1,780	23,200	10,500	13,900	2,180	1,390	1,820
7	895	1,780	1,260	1,700	2,800	1,680	29,800	9,930	12,700	a2,400	1,230	1,710
8	935	1,740	1,180	1,650	2,800	1,680	36,400	9,150	11,400	a2,300	1,260	1,600
9	855	1,780	1,300	1,600	2,800	1,820	38,300	8,060	10,100	2,180	1,200	1,600
10	895	1,680	1,280	1,600	2,500	a1,800	35,300	6,940	9,670	1,900	1,160	1,820
11	955	1,780	1,330	1,600	2,350	1,740	32,000	6,320	9,930	1,860	1,160	2,340
12	855	1,710	1,480	1,650	2,300	1,980	27,900	6,020	9,540	1,780	1,260	3,610
13	750	1,600	2,020	1,650	2,200	2,740	24,200	6,220	8,300	1,680	1,360	3,610
14	855	1,570	2,260	1,780	2,100	4,420	21,600	7,380	7,160	1,600	1,230	3,790
15	935	1,480	2,100	2,100	2,100	6,120	19,300	7,600	6,850	1,740	1,200	5,610
16	895	1,540	2,100	3,070	2,420	7,380	17,200	7,820	6,940	1,980	1,130	3,340
17	895	1,510	2,100	3,340	2,420	7,600	15,200	8,060	6,420	1,940	1,160	2,900
18	1,080	1,510	1,640	3,250	2,420	6,940	13,500	7,940	5,920	1,980	835	2,820
19	1,040	1,570	1,680	3,250	2,260	6,420	12,200	7,600	5,720	2,180	935	2,500
20	1,180	1,450	1,780	3,250	2,180	6,120	11,700	7,490	5,520	2,020	1,110	2,260
21	1,060	1,360	1,640	3,000	1,980	6,520	12,200	7,710	4,820	2,020	1,180	2,850
22	1,160	1,420	1,740	2,850	2,100	6,940	12,500	8,900	4,420	1,980	1,280	4,620
23	1,200	1,420	1,900	2,700	2,020	7,160	13,200	9,800	4,150	1,980	1,280	4,920
24	1,080	1,360	1,600	2,700	2,100	8,300	14,200	10,100	3,790	1,900	1,180	4,720
25	1,130	1,510	1,480	2,800	2,100	10,100	14,000	10,600	3,520	1,900	1,160	4,420
26	1,180	1,330	1,480	3,250	1,980	10,700	12,800	10,900	3,610	1,680	1,360	4,150
27	995	1,300	1,390	3,610	1,900	10,700	11,600	10,600	3,160	1,640	1,230	3,610
28	1,020	1,260	1,940	*3,970	1,900	10,600	10,300	10,100	2,980	1,600	1,230	3,340
29	1,060	1,230	1,900	4,150	-	10,200	9,150	9,410	2,820	1,570	1,420	2,980
30	1,130	1,300	1,860	3,430	-	9,410	8,180	8,900	2,740	1,450	a1,800	2,900
31	1,200	-	1,860	2,800	-	8,660	-	8,300	-	1,450	2,340	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	30,750	1,200	750	992	0.202	0.23
November	45,920	1,940	1,230	1,531	.312	.35
December	49,650	2,260	1,180	1,602	.327	.38
Calendar year 1946	1,117,580	26,400	750	3,062	.625	8.50
January	77,750	4,150	1,600	2,508	.512	.59
February	68,430	3,300	1,900	2,444	.499	.52
March	168,770	10,700	1,680	5,444	1.11	1.28
April	537,120	38,300	8,180	17,900	3.65	4.07
May	265,270	10,900	6,020	8,557	1.75	2.02
June	218,950	13,900	2,740	7,298	1.49	1.66
July	60,270	2,580	1,450	1,944	.397	.46
August	39,880	2,340	835	1,286	.262	.30
September	89,860	4,920	1,600	2,995	.611	.68
Water year 1946-47	1,652,620	38,300	750	4,528	.924	12.54

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for Grand River at Lansing and Thornapple River near Hastings.
Note.- Stage-discharge relation affected by ice Dec. 31 to Jan. 13, Jan. 21-26, Jan. 31 to Feb. 15. Water below level of intake Oct. 1-18, Aug. 18, 19; discharge computed from graph based on staff-gage readings.

Portage River below Little Portage Lake, near Munith, Mich.

Location.- Wire-weight gage, lat. 42°20'55", long. 84°13'45", in NW¼ sec. 32, T. 1 S., R. 2 E., at highway bridge on Portage Lake Road, 0.3 mile downstream from Little Portage Lake and 3¼ miles southeast of Munith. Datum of gage is 900.00 feet above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Drainage area.- 55 square miles.

Records available.- April 1944 to September 1947.

Extremes.- Maximum discharge during year, 800 second-feet Apr. 6, 7 (gage height, 13.0 feet, from graph based on gage readings); minimum, 0.2 second-foot Oct. 2-4, 14, 15; minimum gage height observed, 8.18 feet Oct. 14, 15.
1944-47: Maximum discharge, that of Apr. 6, 7, 1947; no flow July 28 to Aug. 14, Aug. 22 to Sept. 7, 1946; minimum gage height observed, 8.15 feet Aug. 31 to Sept. 6, 1946.

Remarks.- Records good except those for period of doubtful gage-height record, which are fair. Gage read twice daily.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.5	8.7	6.5	8.9	33	8.0	128	106	114	20	10	38
2	.5	11	5.9	8.0	30	8.0	150	119	126	18	9.9	43
3	.2	13	5.3	8.0	26	8.0	192	118	145	15	8.8	38
4	.2	13	5.0	8.0	24	8.0	236	106	150	14	7.5	32
5	.5	12	5.3	8.0	23	8.4	400	95	145	13	7.8	30
6	.5	12	5.0	7.7	30	8.9	710	90	130	13	7.5	27
7	.9	14	5.9	7.4	36	8.9	775	89	121	13	6.5	24
8	1.1	14	6.8	6.8	39	8.9	675	82	114	12	6.5	21
9	.9	12	8.0	5.9	26	8.9	550	74	102	10	6.1	19
10	1.1	10	10	5.3	13	8.9	446	67	86	9.6	5.7	16
11	1.4	9.4	14	6.2	12	12	363	60	75	9.0	5.3	17
12	1.4	10	22	6.5	12	17	314	54	65	9.0	4.9	22
13	.7	10	31	6.8	13	25	271	51	55	11	4.5	28
14	.5	9.8	39	8.9	13	32	240	58	56	13	4.2	27
15	.2	9.4	50	14	12	57	214	66	60	14	4.4	24
16	.7	8.7	61	17	12	64	191	84	80	17	4.4	26
17	1.1	8.4	38	18	12	62	174	98	56	23	4.2	26
18	4.4	8.7	27	20	14	57	170	109	51	26	5.1	26
19	7.4	10	25	23	14	54	170	126	48	30	6.1	24
20	8.7	10	20	24	13	55	186	135	42	32	4.5	23
21	9.0	9.4	18	24	12	55	220	145	39	32	3.8	22
22	8.4	8.7	15	24	14	56	214	155	35	32	3.8	28
23	8.0	8.0	13	20	13	61	192	160	32	26	3.8	32
24	8.4	8.4	15	20	11	66	181	155	30	26	3.6	33
25	8.7	8.7	16	21	10	71	170	150	27	24	3.2	32
26	8.0	8.7	10	28	8.9	78	165	140	27	20	3.8	31
27	7.7	8.7	8.4	34	8.9	82	155	130	26	18	5.3	28
28	7.4	8.4	12	38	8.0	86	150	126	26	16	7.8	26
29	6.5	7.7	14	39	-	92	115	126	24	13	16	30
30	6.5	7.4	12	39	-	103	108	119	22	12	27	28
31	7.1	-	11	37	-	111	-	113	-	11	32	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	118.6	9.0	0.2	3.83	0.070	0.08
November	298.2	14	7.4	9.94	.181	.20
December	535.1	61	5.0	17.3	.315	.36
Calendar year 1946	8,589.9	260	0	23.5	.427	5.79
January	542.4	39	5.3	17.5	.318	.37
February	492.8	39	8.0	17.6	.320	.33
March	1,380.9	111	8.0	44.5	.809	.93
April	8,203	775	108	273	4.96	5.53
May	3,306	160	51	107	1.95	2.25
June	2,089	150	22	69.6	1.27	1.42
July	551.6	32	9.0	17.8	.324	.37
August	234.0	32	3.2	7.55	.137	.16
September	821	43	18	27.4	.498	.56
Water year 1946-47	18,572.6	775	.2	50.9	.925	12.56

Note.- Doubtful gage-height record Dec. 17 to Jan. 22; discharge computed on basis of 1 discharge measurement, weather records, and records for stations on nearby streams.

Orchard Creek at Munith, Mich.

Location.- Staff gage, lat. 42°23'35", long. 84°15'50", on line between secs. 12 and 13, T. 1 S., R. 1 E., at highway bridge, half a mile west of Munith and 3.0 miles upstream from mouth. Datum of gage is 900.00 feet above mean sea level, datum of 1929 (levels by Michigan State Department of Conservation).

Drainage area.- 49 square miles.

Records available.- March 1944 to September 1947.

Extremes.- Maximum discharge during year, 1,470 second-feet Apr. 5 (gage height, 14.88 feet, from graph based on gage readings); minimum observed, 1.7 second-feet Oct. 6. 1944-47:; Maximum discharge, that of Apr. 5, 1947; minimum observed, 1.6 second-feet Sept. 5-7, 22, 23, 1946.

Remarks.- Records fair except those for periods of ice effect or doubtful gage-height record, which are poor. Gage read twice daily.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.4	6.7	6.7	10	25	9	132	149	121	18	11	13
2	2.4	11	9.2	9	22	9	364	329	424	16	10	11
3	2.6	10	9.6	9	20	9	357	210	406	16	9.6	9.6
4	2.4	10	9.2	9	20	9	297	141	231	14	8.8	9.0
5	2.1	8.9	8.5	9	20	9	1,010	125	144	14	8.4	7.6
6	1.7	8.5	7.7	8	23	9	1,130	107	131	14	8.4	6.5
7	1.9	8.5	7.3	8	30	9	700	94	151	16	7.6	6.5
8	1.9	9.6	6.7	7	20	9	460	73	165	14	7.6	5.9
9	1.9	11	6.4	6	13	9	325	61	116	13	7.6	5.3
10	1.9	10	*6.7	6	13	9	240	54	88	13	8.4	5.3
11	2.1	9.6	6.7	6	13	12	190	49	66	13	7.6	15
12	2.1	8.9	7.7	7	13	17	155	44	52	13	7.6	32
13	2.1	8.1	20	9	15	35	135	42	50	12	7.6	36
14	2.1	8.1	51	12	18	98	120	60	181	13	7.6	26
15	2.1	7.3	45	15	17	94	110	60	132	14	8.0	23
16	2.4	7.3	40	17	16	66	100	72	95	14	7.6	23
17	4.0	7.3	35	18	*15	50	90	73	69	14	7.6	21
18	9.6	7.3	30	20	15	44	138	122	56	14	7.6	18
19	9.6	7.3	25	21	15	52	163	112	49	15	7.6	14
20	8.1	7.3	20	21	17	63	231	134	42	15	7.8	11
21	6.4	7.3	18	20	15	*67	217	144	35	16	8.0	9.6
22	5.8	7.3	15	19	15	66	149	165	29	16	8.0	25
23	5.4	7.3	14	*18	15	77	119	114	27	14	7.6	34
24	5.1	7.3	15	18	15	138	108	131	25	14	7.6	27
25	5.1	7.3	15	18	13	160	94	126	24	13	7.6	20
26	5.4	7.3	12	22	11	154	77	118	28	13	9.6	18
27	4.8	7.3	10	25	10	131	64	98	25	12	9.2	16
28	4.8	6.7	13	30	10	160	57	91	24	12	8.4	14
29	4.8	6.7	14	35	-	87	54	176	22	12	d75	14
30	5.1	6.7	13	35	-	80	56	135	19	11	d54	13
31	6.7	-	11	30	-	94	-	98	-	11	d20	-

Month	Seoond-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	124.8	9.6	1.7	4.03	0.082	0.09
November	243.9	11	6.7	8.13	.166	.19
December	508.4	51	6.4	16.4	.335	.39
Calendar year 1946	8,061.1	224	1.6	22.1	.451	6.13
January	497	35	6	16.0	.327	.38
February	464	30	10	16.6	.339	.35
March	1,833	160	9	59.1	1.21	1.40
April	7,442	1,130	54	248	5.06	5.64
May	3,507	329	42	113	2.31	2.66
June	3,025	424	19	101	2.06	2.30
July	429	18	11	13.8	.282	.33
August	378.8	75	7.8	12.2	.249	.29
September	489.3	36	5.3	16.3	.333	.37
Water year 1946-47	18,942.2	1,130	1.7	51.9	1.06	14.39

* Winter discharge measurement made on this day.
d Doubtful gage-height record; discharge computed on basis of weather records, records for Grand River at Jackson, and Portage River below Little Portage Lake near Munith.
Note.- Stage-discharge relation affected by ice Dec. 15 to Mar. 13.

Cedar River at East Lansing, Mich.

Location.- Water-stage recorder and concrete dam, lat. 42°43'40", long. 84°28'40", in SW¼ sec. 18, T. 4 N., R. 1 W., at East Lansing, 3 miles upstream from Sycamore Creek and 4 miles upstream from mouth. Datum of gage is 824.39 feet above mean sea level, datum of 1929.

Drainage area.- 355 square miles.

Records available.- March 1931 to September 1947. August 1902 to December 1903 at site three-quarters of a mile downstream.

Average discharge.- 16 years (1931-47), 177 second-feet.

Extremes.- Maximum discharge during year, 5,920 second-feet Apr. 7 (gage height, 11.58 feet); minimum, 11 second-feet Jan. 3.
1902-3, 1931-47: Maximum discharge, that of Apr. 7, 1947; minimum, 3 second-feet July 31, 1931.

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	52	30	28	151	61	621	414	531	88	63	163
2	19	66	23	14	148	59	1,260	1,100	651	85	61	128
3	18	68	24	18	128	57	2,580	1,290	878	80	61	a110
4	18	68	28	57	119	57	2,700	851	797	80	59	a95
5	18	61	30	52	103	54	3,340	606	616	78	57	80
6	14	59	30	50	95	54	5,490	481	485	85	52	75
7	12	54	39	50	93	54	5,510	415	476	88	50	71
8	14	54	52	46	93	54	4,120	364	824	80	50	68
9	21	54	50	41	88	57	2,860	313	1,050	75	48	61
10	24	54	50	41	85	66	1,780	275	906	73	46	75
11	30	54	26	36	85	85	1,360	242	646	68	46	226
12	34	52	21	39	83	145	1,280	225	494	68	48	651
13	30	52	103	43	80	381	1,060	225	368	66	48	587
14	19	48	98	57	80	718	851	725	348	66	54	373
15	18	43	68	148	80	962	697	631	450	75	50	253
16	16	41	71	198	80	824	616	573	389	88	50	232
17	14	41	66	195	80	616	587	592	a325	106	50	198
18	34	41	52	142	80	441	582	611	a270	111	52	160
19	71	39	61	119	83	398	718	666	a245	169	50	133
20	59	39	59	125	80	463	878	587	221	211	54	117
21	48	39	57	228	73	582	1,050	718	211	185	63	125
22	39	41	43	198	73	540	934	1,020	172	154	66	267
23	36	41	19	157	71	550	744	906	151	131	59	317
24	36	38	24	131	68	851	656	797	136	111	57	260
25	36	39	57	179	68	990	631	797	133	98	54	201
26	34	40	59	271	68	513	517	797	133	85	61	166
27	34	30	59	309	68	410	423	718	128	80	57	142
28	38	30	39	317	63	472	360	550	119	78	57	125
29	36	30	34	257	-	494	309	504	106	73	126	117
30	38	30	52	145	-	441	294	592	95	71	215	108
31	48	-	66	125	-	513	-	621	-	66	204	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	927	71	12	29.9	0.084	0.10
November	1,398	68	30	46.6	.131	.15
December	1,490	103	19	48.1	.135	.16
Calendar year 1946	55,110.8	2,080	8.6	151	.425	5.79
January	3,816	317	14	123	.346	.40
February	2,466	151	63	88.1	.248	.26
March	11,962	990	54	386	1.09	1.26
April	44,808	5,510	294	1,494	4.21	4.70
May	19,206	1,290	225	620	1.75	2.02
June	12,354	1,050	95	412	1.16	1.29
July	2,972	211	66	95.9	.270	.31
August	2,066	215	46	66.6	.188	.22
September	5,684	651	61	189	.532	.59
Water year 1946-47	109,149	5,510	12	299	.842	11.46

a No gage-height record; discharge computed on basis of records for Raisin River at Monroe and Grand River at Jackson.

Note.- Doubtful gage-height record Mar. 13 to June 16, due to partially plugged intake; discharge computed on basis of recorded range in stage, U. S. Weather Bureau staff-gage readings, weather records, and records for Raisin River at Monroe and Grand River at Jackson.

Lookingglass River near Eagle, Mich.

Location.- Wire-weight gage, lat. 42°49'45", long. 84°46'40", in sec. 10, T. 5 N., R. 4 W., at highway bridge, 1½ miles northeast of Eagle and 10 miles upstream from mouth.

Drainage area.- 281 square miles.

Records available.- August 1944 to September 1947.

Extremes.- Maximum discharge during year, 2,860 second-feet Apr. 5 (gage height, 7.70 feet, from graph based on gage readings); minimum daily, 15 second-feet Jan. 2, occurred during period of ice effect; minimum gage height observed, 1.18 feet Oct. 6-8. 1944-47: Maximum discharge, that of Apr. 5, 1947; minimum, that of Jan. 2, 1947; minimum gage height observed, 1.12 feet Aug. 13, 1944.

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

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

1.2	26	2.4	200	5.5	1,400
1.4	45	3.2	388	6.7	2,160
1.7	79	3.8	570	7.7	2,860
2.0	122	4.6	910		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	55	39	25	120	55	446	375	440	83	52	158
2	26	58	37	15	120	50	742	470	835	80	50	156
3	26	65	30	40	110	50	758	427	630	72	50	149
4	25	66	32	50	100	45	830	427	485	69	49	131
5	25	52	*32	50	90	45	2,400	414	440	69	60	114
6	25	49	32	45	80	45	2,300	414	414	73	53	91
7	24	48	35	45	75	45	1,670	427	401	75	49	79
8	24	49	35	45	75	45	1,620	414	770	75	47	69
9	25	52	38	40	75	50	1,740	388	552	65	47	64
10	26	49	39	35	70	*55	1,860	350	440	65	47	64
11	27	47	40	35	70	70	2,000	314	401	65	47	122
12	28	46	62	35	70	120	1,940	278	401	66	45	207
13	29	45	106	60	70	300	1,730	248	427	65	42	182
14	30	43	111	100	65	770	1,540	242	860	67	41	198
15	29	41	79	150	65	a1,000	1,350	237	750	166	41	222
16	30	41	75	160	65	a800	1,180	251	590	166	39	253
17	33	43	71	160	*65	a600	1,020	266	535	264	39	276
18	44	40	63	130	65	518	945	290	470	166	37	292
19	45	40	64	110	65	401	870	302	414	142	37	290
20	43	40	65	130	65	338	1,020	314	362	135	41	280
21	41	40	63	150	60	338	865	401	307	129	45	278
22	38	39	60	150	60	326	730	401	255	116	45	375
23	34	39	52	120	60	375	670	375	204	102	45	285
24	36	39	46	110	60	535	638	388	156	97	43	262
25	38	38	57	200	60	470	614	401	129	80	42	255
26	37	38	60	230	55	414	590	427	120	73	48	255
27	37	39	55	250	55	414	542	414	108	67	49	244
28	36	39	45	250	55	455	485	414	98	63	92	240
29	37	39	35	200	-	455	435	427	91	60	262	226
30	38	39	45	150	-	427	391	427	86	57	240	196
31	47	-	45	110	-	427	-	401	-	54	168	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,009	47	24	32.5	0.116	0.13
November	1,358	66	38	45.3	.161	.18
December	1,648	111	30	53.2	.189	.22
Calendar year 1946	56,043	2,120	22	154	.548	7.41
January	3,380	250	15	109	.388	.45
February	2,045	120	55	73.0	.260	.27
March	10,038	1,000	45	324	1.15	1.33
April	33,921	2,400	391	1,131	4.02	4.48
May	11,324	470	237	365	1.30	1.50
June	12,171	860	86	406	1.44	1.61
July	2,921	264	54	94.2	.335	.39
August	1,992	262	37	64.3	.229	.26
September	6,015	375	64	200	.712	.79
Water year 1946-47	87,822	2,400	15	241	.858	11.61

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for Cedar River at East Lansing.
Note.- Stage-discharge relation affected by ice Dec. 3-8, Dec. 28 to Mar. 13.

Maple River at Maple Rapids, Mich.

Location.- Wire-weight gage, lat. 43°06'35", long. 84°41'35", in sec. 5, T. 8 N., R. 3 W., at highway bridge at Maple Rapids, just downstream from Pine Creek.

Drainage area.- 434 square miles.

Records available.- August 1944 to September 1947.

Extremes.- Maximum discharge during year, 4,810 second-feet Apr. 6 (gage height, 9.97 feet, from graph based on gage readings); minimum observed, 12 second-feet Oct. 6-15; minimum gage height observed, 1.90 feet Oct. 4, 7.
1944-47: Maximum discharge, that of Apr. 6, 1947; minimum observed, 8.2 second-feet Aug. 11, 1944 (gage height, 1.61 feet).

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	29	31	85	320	65	795	498	510	154	37	98
2	15	31	29	65	280	60	958	598	598	137	36	125
3	14	32	28	75	250	60	1,280	685	860	125	34	129
4	13	34	27	75	220	*55	1,530	735	1,140	109	34	121
5	13	36	27	70	200	55	2,610	755	1,300	92	35	113
6	13	36	28	65	175	55	4,430	718	1,300	85	34	102
7	12	36	28	65	150	55	4,450	655	1,140	76	32	88
8	12	36	28	65	140	55	3,860	598	a1,000	68	31	75
9	12	36	28	60	130	60	3,180	548	885	62	30	60
10	12	37	29	60	125	70	2,560	498	a850	56	30	52
11	12	36	29	55	115	80	2,250	440	775	54	29	66
12	12	36	32	55	110	100	2,130	410	700	50	28	113
13	12	35	60	60	105	220	1,870	390	625	50	27	121
14	12	34	85	70	100	330	1,510	430	522	52	26	121
15	12	34	82	184	100	498	1,280	430	510	61	25	117
16	13	32	82	227	100	625	1,040	450	548	71	24	113
17	13	33	82	208	100	735	846	450	625	85	23	102
18	15	33	74	189	100	795	767	440	655	88	22	92
19	16	33	65	195	100	775	743	430	625	88	21	79
20	17	32	62	248	100	775	838	420	572	88	22	65
21	18	32	59	262	90	775	940	460	498	95	34	71
22	19	32	57	255	90	795	1,030	610	440	95	33	145
23	18	33	55	234	85	838	1,030	670	380	85	33	173
24	18	32	56	227	85	1,000	1,060	700	345	79	30	184
25	19	33	a55	234	80	a1,300	1,030	685	308	69	28	189
26	20	33	51	285	75	1,140	838	700	278	60	30	189
27	22	32	48	338	70	970	775	700	248	56	36	178
28	23	33	117	370	65	885	670	670	220	51	41	168
29	23	32	137	410	-	838	598	625	195	46	44	158
30	24	32	129	420	-	795	a550	585	173	42	52	145
31	27	-	100	370	-	755	-	535	-	40	98	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	496	27	12	16.0	0.037	0.04
November	1,005	37	29	33.5	.077	.09
December	1,800	137	27	58.1	.134	.15
Calendar year 1946	73,190	3,200	12	201	.463	6.26
January	5,581	420	55	180	.415	.48
February	3,660	320	65	131	.302	.31
March	15,614	1,300	55	504	1.16	1.34
April	47,448	4,450	550	1,582	3.65	4.07
May	17,518	755	390	565	1.30	1.50
June	18,825	1,300	173	628	1.45	1.62
July	2,369	154	40	76.4	.176	.20
August	1,039	98	21	33.5	.077	.09
September	3,552	189	52	118	.272	.30
Water year 1946-47	118,907	4,450	12	326	.751	10.19

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for Looking-glass River near Eagle and Thornapple River near Hastings.
Note.- Stage-discharge relation affected by ice Dec. 31 to Jan. 14, Jan. 31 to Mar. 12.

Thornapple River near Hastings, Mich.

Location.- Wire-weight gage, lat. 42°36'55", long. 85°14'15", in sec. 27, T. 3 N., R. 8 W., at highway bridge, a half mile downstream from Cedar Creek, 2 miles downstream from Thornapple Lake, and 3½ miles southeast of Hastings.

Drainage area.- 385 square miles.

Records available.- October 1944 to September 1947.

Extremes.- Maximum discharge during year, 6,810 second-feet Apr. 7 (gage height, 10.20 feet, from graph based on gage readings); minimum observed, 63 second-feet Oct. 7-12 (gage height, 2.85 feet).
1944-47: Maximum discharge, that of Apr. 7, 1947; minimum observed, 43 second-feet Aug. 26-28, 1946.

Remarks.- Records good except those for periods of no gage-height record, which are fair. Gage read twice daily.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	68	118	110	148	255	162	747	513	597	248	141	137
2	65	155	104	140	264	158	1,220	741	791	232	139	125
3	65	166	102	145	255	158	2,140	1,060	1,220	205	139	110
4	65	175	100	140	a250	158	2,720	1,260	1,570	196	141	100
5	65	172	100	142	240	158	3,620	1,260	1,500	188	139	100
6	65	152	100	140	231	156	6,100	1,060	1,320	202	135	98
7	63	150	100	132	231	156	6,590	817	1,060	220	135	95
8	63	148	104	128	231	156	5,220	615	895	220	133	94
9	63	148	106	125	228	156	3,560	489	895	214	129	92
10	63	148	112	125	200	158	2,580	394	895	199	127	93
11	63	142	115	132	193	160	2,080	330	895	188	124	98
12	63	135	142	135	186	179	1,850	287	810	190	119	163
13	65	128	281	135	179	252	1,710	274	645	185	118	217
14	65	120	323	152	169	499	1,570	438	507	190	114	264
15	68	120	314	225	176	705	1,370	681	507	202	112	287
16	68	120	273	341	191	825	1,140	681	603	199	108	236
17	74	122	204	375	200	855	954	621	669	220	104	196
18	96	122	155	341	196	723	862	591	735	228	106	175
19	128	120	148	305	181	598	862	597	675	217	102	165
20	135	120	148	277	174	582	992	603	567	196	113	155
21	130	118	148	a265	174	675	1,260	657	460	185	135	159
22	118	110	148	253	172	771	1,460	895	382	178	125	287
23	90	110	142	237	172	825	1,430	1,090	340	170	114	404
24	90	110	138	241	172	945	1,290	1,120	305	165	106	421
25	102	110	135	245	169	1,280	1,060	1,060	296	159	100	366
26	100	112	128	297	169	1,450	830	960	315	155	112	274
27	98	110	122	395	169	1,420	645	862	320	155	114	236
28	94	108	142	455	164	1,310	567	772	320	155	108	205
29	92	108	169	438	-	1,100	507	717	300	149	107	199
30	94	110	140	318	-	885	477	645	278	139	120	199
31	110	-	145	255	-	777	-	633	-	141	135	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	2,588	135	63	83.5	0.217	0.25
November	3,887	175	108	130	.338	.38
December	4,698	323	100	152	.395	.46
Calendar year 1946	90,838	3,290	43	249	.647	8.78
January	7,182	455	125	232	.603	.70
February	5,591	264	164	200	.519	.54
March	18,392	1,450	156	593	1.54	1.78
April	57,413	6,590	477	1,914	4.97	5.54
May	22,723	1,260	274	733	1.90	2.19
June	20,672	1,570	278	689	1.79	2.00
July	5,890	248	139	190	.494	.57
August	3,754	141	100	121	.314	.36
September	5,750	421	92	192	.499	.56
Water year 1946-47	158,540	6,590	63	434	1.13	15.33

a No gage height record; discharge interpolated.

Higgins Lake Outlet near Roscommon, Mich.

Location.- Wire-weight gage, lat. 44°25'50", long. 84°40'10", in sec. 34, T. 24 N., R. 3 W., on upstream side county highway bridge over Higgins Lake Outlet, 3 miles southwest of Roscommon and 8 miles upstream from Backus Creek. Datum of gage is 1,150.88 feet above mean sea level (levels by Michigan Department of Conservation).

Drainage area.- 58 square miles.

Records available.- June 1942 to September 1947.

Extremes.- Maximum discharge observed during year, 89 second-feet May 29 (gage height, 2.50 feet); minimum observed, 18 second-feet Oct. 22, 23; minimum gage height observed, 1.09 feet Oct. 23.

1942-47: Maximum discharge observed, 110 second-feet June 28, 1943 (gage height, 3.15 feet); minimum observed, 10 second-feet Dec. 2, 1944 (gage height, 0.97 foot), caused by ice jam upstream.

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

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Nov. 2)

Oct. 1 to Apr. 30		May 1 to Sept. 30	
1.1	19	1.6	39
1.2	22	1.9	54
1.4	29	2.1	65
1.7	42	2.4	83
2.0	60		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	a20	a21	25	27	35	42	a65	83	a74	52	42
2	26	20	20	26	27	35	42	a70	85	73	51	44
3	27	a22	a20	26	27	35	a42	77	a84	72	50	42
4	a26	a23	20	26	27	36	a42	80	84	70	50	40
5	25	a22	19	26	27	40	a45	83	82	67	50	40
6	24	a22	*20	26	27	*40	a48	83	83	66	50	40
7	24	a22	a20	26	27	40	*48	82	82	64	51	a39
8	24	a22	a20	27	27	40	48	82	83	63	50	39
9	23	22	a21	*27	27	39	48	79	82	61	48	39
10	a23	24	a21	27	26	38	50	76	81	62	48	40
11	23	24	a20	27	*26	38	54	75	82	62	48	43
12	23	24	a21	27	26	37	54	73	83	62	46	44
13	22	24	a22	27	27	37	54	74	83	64	46	45
14	22	24	a21	27	28	41	50	74	84	71	a45	45
15	21	23	a20	27	29	42	54	75	84	a76	44	44
16	a21	a22	a20	27	30	44	56	75	84	75	42	44
17	21	a23	a20	27	30	43	55	74	82	74	42	43
18	20	21	a20	27	30	42	56	77	81	73	42	42
19	20	*22	a20	27	30	42	56	78	80	72	42	40
20	19	22	20	27	30	42	57	79	79	71	a45	41
21	19	22	21	27	31	41	56	82	77	72	50	44
22	18	21	22	26	31	41	56	81	75	68	50	46
23	18	a21	22	26	31	40	56	81	73	64	50	47
24	19	21	21	26	32	a45	58	81	74	61	49	46
25	20	21	20	26	33	a48	59	85	75	57	50	44
26	a20	21	20	26	34	48	59	86	75	55	49	44
27	a19	21	20	25	35	47	60	83	75	a52	47	42
28	20	20	20	25	35	46	60	84	74	52	47	43
29	21	20	21	25	-	46	59	88	76	52	46	44
30	21	a21	22	26	-	46	60	87	75	53	44	42
31	21	-	24	27	-	42	-	84	-	53	42	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	677	27	18	21.8	0.376	0.43
November	657	24	20	21.9	.378	.42
December	639	24	19	20.6	.355	.41
Calendar year 1946	15,273	71	18	41.8	.721	9.79
January	817	27	25	26.4	.455	.52
February	817	35	26	29.2	.503	.52
March	1,276	48	35	41.2	.710	.82
April	1,584	60	42	52.8	.910	1.02
May	2,453	88	65	79.1	1.36	1.57
June	2,400	85	73	80.0	1.38	1.54
July	2,011	76	52	64.9	1.12	1.29
August	1,467	52	42	47.3	.816	.94
September	1,278	47	39	42.6	.734	.82
Water year 1946-47	16,076	88	18	44.0	.759	10.30

* Winter discharge measurement made on this day.

a No gage-height record; discharge interpolated, or computed on basis of weather records, records of stage of Higgins Lake, and records for Manistee River near Grayling.

Note.- Stage-discharge relation affected by ice Dec. 2, Dec. 20 to Mar. 13 (no gage-height record Dec. 21, Dec. 23 to Jan. 8, Jan. 22, Feb. 1, 2, 7, 19, Mar. 1-5, 7, 8).

Muskegon River near Merritt, Mich.

Location.- Wire-weight gage, lat. 44°20'10", long. 84°53'30", in sec. 2, T. 22 N., R. 5 W., at bridge on State Highway 55, half a mile upstream from West Branch, 2¾ miles east of Merritt, and 5 miles west of Houghton Lake. Datum of gage is 1,117.82 feet above mean sea level (levels by Michigan Department of Conservation).

Drainage area.- 309 square miles.

Records available.- October 1946 to September 1947.

Extremes.- Maximum discharge observed during year, 904 second-feet Apr. 17 (gage height, 7.61 feet); minimum observed, 42 second-feet Oct. 4, 5 (gage height, 2.47 feet).

Remarks.- Records fair except those for periods of ice effect or doubtful or no gage-height record, which are poor. Occasional regulation by operation of gates at Reedsburg Dam.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Nov. 11-18)

2.5	44	5.0	250
3.0	76	5.5	307
3.5	113	6.0	378
4.0	154	6.5	482
4.5	200	7.6	904

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49	77	a130	120	120	140	190	512	a640	215	141	a75
2	46	82	a120	120	130	140	200	a600	624	210	129	80
3	44	99	129	130	140	145	210	724	529	195	a125	79
4	44	117	133	130	140	145	220	804	482	186	125	77
5	44	109	133	130	150	145	*250	864	456	181	121	76
6	44	109	137	130	150	145	*475	824	433	190	117	75
7	46	109	141	130	150	145	*500	804	404	181	a115	74
8	50	117	141	130	150	158	560	744	362	a170	113	72
9	53	121	*141	130	150	150	540	704	354	d160	109	71
10	55	129	141	130	150	150	520	684	a350	d150	103	73
11	55	168	137	145	*160	*163	600	624	340	d150	102	87
12	60	225	145	141	160	145	a680	546	347	d150	102	a100
13	61	176	a150	168	160	150	804	529	340	163	101	88
14	63	154	150	158	160	154	804	529	386	181	99	85
15	62	154	150	*150	160	154	804	529	423	205	95	90
16	64	a155	150	154	150	154	804	a520	404	205	a90	a90
17	67	154	130	168	140	154	884	a540	340	200	86	a90
18	72	150	130	154	130	150	804	584	320	195	84	83
19	68	150	125	150	140	158	704	565	307	186	86	89
20	66	150	113	150	140	150	644	546	225	176	90	99
21	63	145	109	140	140	a150	a600	584	220	190	a100	129
22	62	129	a110	130	140	163	*565	565	230	186	a95	158
23	66	133	121	130	140	172	565	565	250	172	a90	a170
24	65	133	121	130	140	176	546	664	240	163	89	168
25	67	141	113	140	140	a165	512	604	235	154	87	168
26	72	a150	100	a150	130	158	512	529	245	154	84	163
27	76	a150	103	a170	130	172	546	529	235	163	82	163
28	72	a140	a110	190	140	190	546	529	225	163	80	158
29	72	a140	a110	170	-	190	469	565	a220	150	78	a160
30	70	a140	110	150	-	195	469	684	a220	137	77	163
31	74	-	120	130	-	a190	-	a650	-	137	76	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,872	76	44	60.4	0.195	0.22
November	4,106	225	77	137	.443	.49
December	3,953	150	100	128	.414	.48
Calendar year	-	-	-	-	-	-
January	4,448	190	120	143	.463	.53
February	4,030	160	120	144	.466	.49
March	4,916	195	140	159	.515	.59
April	16,527	884	190	551	1.78	1.99
May	19,244	864	512	621	2.01	2.32
June	10,386	640	220	346	1.12	1.25
July	5,418	215	137	175	.566	.65
August	3,071	141	76	99.1	.321	.37
September	3,253	170	71	108	.350	.39
Water year 1946-47	81,224	884	44	223	.722	9.77

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated or computed on basis of weather records and records for station at Evart.
d Doubtful gage-height record; discharge computed on basis of 1 discharge measurement and records for station at Evart.
Note.- Stage-discharge relation affected by ice Dec. 14-18, Dec. 30 to Jan. 10, Jan. 21 to Mar. 2, Apr. 2-11 (no gage-height record Dec. 15, Jan. 1, 26, 27, Feb. 1-10, 12, 14, Apr. 9).

Muskegon River at Evart, Mich.

Location.- Wire-weight gage, lat. 43°54', long. 85°15', in sec. 34, T. 18 N., R. 8 W., on highway bridge at east edge of Evart, half a mile upstream from Twin Creek.

Drainage area.- 1,450 square miles.

Records available.- November 1930 to June 1931, January 1934 to September 1947.

Average discharge.- 13 years (1934-47), 951 second-feet.

Extremes.- Maximum discharge observed during year, 5,440 second-feet Apr. 12 (gage height, 12.41 feet); minimum observed, 348 second-feet Oct. 8 (gage height, 6.85 feet).
1930-31, 1934-47: Maximum discharge observed, 7,000 second-feet June 3, 4, 1945 (gage height, 13.68 feet, from high-water mark); minimum observed, 237 second-feet Aug. 28, 1941 (gage height, 6.58 feet).

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

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

6.9	370	9.0	1,850
7.2	515	10.0	2,800
7.5	685	11.0	3,860
8.0	1,030	12.4	5,440

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	370	450	574	560	500	586	1,220	2,600	2,210	813	537	392
2	374	455	520	540	560	586	1,420	3,530	2,120	806	520	397
3	374	570	500	580	650	608	1,760	4,300	2,030	785	520	392
4	370	737	554	580	650	698	2,210	4,630	1,900	757	510	392
5	366	750	559	580	650	608	2,600	4,520	1,760	737	495	410
6	356	673	559	580	650	603	3,750	4,300	1,720	724	485	406
7	356	637	559	600	650	614	4,080	3,970	1,620	704	475	388
8	348	625	570	600	650	724	4,520	3,640	1,540	673	460	374
9	352	625	586	580	650	608	4,410	3,200	1,460	649	450	379
10	356	637	*598	580	670	750	4,520	3,000	1,340	631	445	388
11	356	667	598	600	*700	*685	5,320	2,700	1,300	649	440	532
12	356	655	608	600	700	631	5,440	2,400	1,220	637	430	532
13	361	637	649	600	700	655	5,200	2,260	1,140	625	425	505
14	370	673	620	*630	680	692	4,960	2,160	1,180	643	415	480
15	374	692	600	679	655	704	4,410	2,080	1,180	737	410	455
16	370	692	600	a720	655	673	3,860	1,980	1,140	792	397	435
17	379	692	620	a720	655	679	3,420	1,900	1,060	855	425	435
18	402	679	600	692	655	730	3,200	2,030	1,030	820	397	435
19	406	655	580	655	650	724	3,000	2,080	995	813	392	420
20	406	637	580	625	650	685	2,600	2,260	960	750	384	420
21	406	614	600	a600	630	704	2,800	2,300	960	744	406	537
22	406	614	600	599	630	764	2,600	2,350	890	711	415	730
23	402	592	580	598	625	771	2,400	2,300	827	667	410	711
24	402	586	560	570	598	1,180	3,100	2,210	806	649	420	692
25	420	625	540	576	603	1,340	2,900	2,120	834	608	430	649
26	425	631	540	667	598	1,100	2,700	2,160	876	592	445	608
27	420	614	500	750	625	1,060	2,600	2,120	869	598	430	586
28	415	592	600	925	685	1,180	2,500	2,030	855	603	406	570
29	445	581	600	792	-	1,260	2,350	2,210	848	592	397	581
30	465	581	560	a650	-	1,180	2,300	2,300	841	576	406	576
31	455	-	560	560	-	1,180	-	2,350	-	554	392	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	12,063	465	348	389	0.268	0.31
November	18,868	750	450	629	.434	.48
December	17,874	649	500	577	.398	.46
Calendar year 1946	354,504	5,780	314	916	.632	8.56
January	19,548	925	540	631	.435	.50
February	17,974	700	500	642	.443	.46
March	24,962	1,340	586	805	.555	.64
April	98,350	5,440	1,220	3,278	2.26	2.52
May	83,990	4,630	1,900	2,709	1.87	2.16
June	37,511	2,210	806	1,250	.862	.96
July	21,494	855	554	693	.478	.55
August	13,569	537	384	438	.302	.35
September	14,807	730	374	494	.341	.38
Watsr year 1946-47	381,010	5,440	348	1,044	.720	9.77

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 14 to Jan. 14, Jan 31 to Feb. 14, Feb. 19-22.

Muskegon River at Newaygo, Mich.

Location.- Water-stage recorder, lat. 43°25', long. 85°48', in sec. 24, T. 12 N., R. 13 W., in tailrace of power plant operated by Consumers Power Co. at Newaygo, 600 feet downstream from Penoyer Creek.

Drainage area.- 2,350 square miles.

Records available.- October 1930 to September 1947. June 1901 to December 1906 at site above Newaygo.

Average discharge.- 17 years (1930-47), 1,747 second-feet.

Extremes (regulated).- Maximum discharge during year, 6,390 second-feet Apr. 12 (gage height, 50.55 feet); minimum, 597 second-feet Oct. 21 (gage height, 46.44 feet); minimum daily, 639 second-feet Oct. 20.

1901-6, 1930-47: Maximum discharge recorded, 11,600 second-feet June 2, 1945 (gage height, 53.76 feet); minimum, about 150 second-feet June 4, 1941; minimum daily, 390 second-feet July 13, 1934.

Remarks.- Records good except those below 1,000 second-feet and those for period of no gage-height record, which are fair. Flow regulated by Hardy Dam (since 1931), Croton Dam, and several smaller dams, and by power plant at Newaygo.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Nov. 3, Sept. 21-30)

46.4	660	48.0	2,350
46.5	740	49.5	4,710
46.8	1,000	50.5	6,310
47.4	1,590		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,100	1,030	1,110	1,890	1,890	1,830	2,660	3,750	3,430	1,830	1,330	764
2	1,120	684	1,510	1,890	1,830	1,830	3,370	4,070	3,670	1,830	1,130	1,060
3	1,110	796	1,830	1,830	1,830	1,830	3,770	5,030	3,750	1,590	1,040	1,210
4	1,100	2,020	1,830	1,830	1,830	1,830	3,780	5,350	3,750	1,160	1,540	1,140
5	1,090	2,140	1,510	1,410	1,830	1,830	4,150	5,350	3,750	1,170	1,770	1,140
6	1,030	1,890	1,140	1,300	1,830	1,830	4,580	5,350	3,590	1,180	1,590	780
7	1,060	1,890	1,130	1,770	1,830	1,830	5,210	5,510	3,510	1,830	1,120	724
8	1,040	1,890	1,000	1,830	1,830	1,830	5,880	5,510	3,430	1,830	1,120	1,150
9	1,060	1,180	991	1,830	1,830	1,830	5,880	5,350	3,350	1,830	1,130	1,150
10	1,060	1,140	1,480	1,950	1,830	1,830	5,800	5,190	3,110	1,830	1,110	1,480
11	973	1,480	1,830	1,830	1,830	1,830	5,700	5,190	2,580	1,830	1,070	1,710
12	700	1,830	1,890	1,770	1,830	1,830	6,310	4,390	2,210	1,430	1,480	1,380
13	692	1,770	1,740	1,830	1,830	1,830	6,280	4,070	2,020	1,130	1,710	1,070
14	684	1,650	1,110	1,890	1,830	1,830	6,090	3,750	1,830	1,330	1,590	1,090
15	676	1,060	1,110	1,890	1,830	1,830	5,960	3,670	1,830	1,880	1,030	1,330
16	676	1,040	1,580	1,890	1,830	1,830	5,830	3,510	2,020	2,080	708	1,710
17	676	1,110	1,830	1,890	1,830	1,830	5,460	3,670	2,140	2,080	700	1,590
18	865	1,540	1,770	1,170	1,830	1,830	4,920	3,670	2,210	2,080	1,140	1,220
19	838	1,770	1,440	1,240	1,830	1,830	4,760	3,670	2,210	2,020	1,770	1,110
20	639	1,830	1,230	1,830	1,830	1,830	4,600	3,670	2,020	1,830	1,770	1,090
21	668	1,770	1,100	1,890	1,830	1,830	4,170	3,430	1,830	1,830	1,430	1,250
22	973	1,380	1,130	1,830	1,830	1,830	4,090	3,510	1,830	1,830	1,160	1,720
23	1,010	1,160	1,160	1,830	1,830	1,830	4,040	3,670	1,830	1,590	1,030	2,350
24	1,020	1,030	1,120	1,830	1,830	2,020	4,550	3,670	1,830	1,270	716	2,140
25	1,020	1,580	1,120	1,830	1,830	3,460	5,190	3,670	1,770	1,270	982	1,770
26	838	1,890	1,290	1,830	1,830	3,030	5,190	3,670	1,190	1,270	1,380	1,650
27	653	1,830	1,350	1,830	1,770	2,580	5,030	3,510	1,140	1,270	1,170	1,100
28	964	1,830	1,160	2,020	1,830	2,210	4,710	3,430	1,210	1,260	1,170	1,080
29	1,160	1,130	1,190	2,210	-	2,210	4,230	3,430	1,170	a1,300	1,130	1,480
30	1,540	1,120	1,830	2,140	-	2,210	4,070	3,430	1,590	1,330	1,030	1,830
31	1,030	-	1,890	2,210	-	2,280	-	3,430	-	1,330	796	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	29,065	1,540	639	938	0.399	0.46
November	44,460	2,140	684	1,482	.631	.70
December	43,401	1,890	991	1,400	.596	.69
Calendar year 1946	705,807	9,400	639	1,934	.823	11.16
January	56,210	2,210	1,170	1,813	.771	.89
February	51,240	1,890	1,770	1,830	.779	.81
March	62,090	3,460	1,830	2,003	.852	.98
April	146,260	6,310	2,660	4,875	2.07	2.31
May	128,570	5,510	3,430	4,147	1.76	2.03
June	71,800	3,750	1,140	2,393	1.02	1.14
July	49,330	2,080	1,130	1,591	.677	.78
August	37,842	1,770	700	1,221	.520	.60
September	40,268	2,350	724	1,342	.571	.64
Water year 1946-47	760,536	6,310	639	2,084	.887	12.03

a No gage-height record; discharge computed on basis of weather records and records for station at Evart.

Pere Marquette River at Scottville, Mich.

Location.- Water-stage recorder, lat. 43°46'40", long. 86°16'45", in sec. 19, T. 18 N., R. 16 W., at Scottville, 5¾ miles downstream from South Branch. Datum of gage is 606.30 feet above mean sea level, datum of 1929.

Drainage area.- 709 square miles.

Records available.- June 1943 to September 1947. August 1939 to June 1943 at site 4¾ miles upstream, published as Pere Marquette River at Custer.

Extremes.- Maximum discharge during year, 2,030 second-feet Apr. 8 (gage height, 5.50 feet); minimum, 370 second-feet Sept. 10 (gage height, 1.91 feet).
1939-47: Maximum discharge, 2,400 second-feet June 4, 5, 1945 (gage height, 5.84 feet); minimum observed, 310 second-feet Aug. 9, 10, 1941 (gage height, 2.12 feet, site and datum then in use).

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

Rating table, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)

1.9	370	4.0	1,070
2.4	475	4.5	1,330
2.9	610	5.0	1,650
3.5	840	5.5	2,030

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	400	430	500	500	600	530	885	1,020	1,200	565	462	390
2	390	430	500	450	600	530	1,100	1,040	1,120	565	450	390
3	390	475	488	500	600	550	1,300	1,120	1,040	550	450	390
4	390	538	475	520	600	550	1,480	1,200	1,020	550	450	390
5	390	580	475	530	550	550	1,650	1,220	1,020	550	450	380
6	390	565	475	530	500	550	1,830	1,170	998	580	440	390
7	380	512	475	530	500	538	1,910	1,120	952	595	440	380
8	380	512	475	530	550	512	1,990	1,040	908	565	430	380
9	380	512	475	530	550	512	1,950	975	840	538	420	380
10	380	525	*488	530	550	*512	1,760	908	800	538	420	370
11	390	525	488	540	550	512	1,720	862	780	580	420	410
12	390	525	500	560	550	512	1,620	820	740	565	410	565
13	390	512	512	550	600	525	1,520	840	740	538	410	595
14	390	488	500	*600	600	580	1,450	930	740	525	400	512
15	390	475	500	630	600	595	1,300	998	760	512	400	475
16	400	475	500	650	580	595	1,200	1,070	800	512	400	440
17	400	500	500	630	550	580	1,120	1,070	800	525	400	430
18	400	512	500	570	550	580	1,070	1,020	760	525	390	430
19	410	512	475	570	550	565	1,040	1,020	720	512	390	420
20	420	488	500	570	550	565	998	1,070	680	512	390	410
21	410	488	500	500	520	595	998	1,100	662	525	410	488
22	410	488	500	400	540	595	975	1,070	628	538	420	580
23	410	500	520	450	520	628	952	1,040	610	525	410	628
24	410	500	540	550	520	760	952	1,020	595	500	400	610
25	440	525	540	600	570	862	1,070	998	595	488	400	525
26	440	550	520	650	570	930	1,220	1,020	610	475	400	488
27	440	550	500	600	560	885	1,280	1,070	610	488	400	462
28	430	525	540	560	550	820	1,200	1,100	595	488	390	462
29	430	512	550	540	-	862	1,120	1,120	580	500	390	462
30	430	500	550	600	-	885	1,070	1,170	580	475	390	462
31	440	-	550	600	-	862	-	1,200	-	462	400	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	12,540	440	380	405	0.571	0.66
November	15,229	580	430	508	.717	.80
December	15,611	550	475	504	.711	.82
Calendar year 1946	212,415	1,700	351	582	.821	11.15
January	17,070	650	400	551	.777	.90
February	15,610	600	500	558	.787	.82
March	19,627	930	512	633	.893	1.03
April	39,730	1,990	885	1,324	1.87	2.09
May	32,421	1,220	820	1,046	1.48	1.71
June	23,483	1,200	580	783	1.10	1.23
July	16,366	595	462	528	.745	.86
August	12,832	462	390	414	.584	.67
September	13,694	628	370	456	.643	.72
Water year 1946-47	234,213	1,990	370	642	.905	12.31

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 14 to Mar. 5.

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Big Sable River near Free Soil, Mich.

Location.- Staff gage, lat. 44°07'15", long. 86°16'50", in sec. 24, T. 20 N., R. 17 W., 30 feet downstream from bridge on U. S. Highway 31, 2¼ miles northwest of Free Soil, and 6 miles upstream from Hamlin Lake. Datum of gage is 615.32 feet above mean sea level, datum of 1929 (levels by Michigan State Department of Conservation).

Drainage area.- 127 square miles.

Records available.- May 1942 to September 1947.

Extremes.- Maximum discharge observed during year, 487 second-feet Apr. 7 (gage height, 3.16 feet); minimum observed, 93 second-feet Oct. 8-15.
1942-47: Maximum discharge observed, that of Apr. 7, 1947; maximum gage height observed, 3.26 feet Jan. 20, 1943 (backwater from ice); minimum discharge observed, 81 second-feet Aug. 14, 1944.

Remarks.- Records good except those above 200 second-feet and those for periods of ice effect, which are fair. Gage read once daily.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96	105	120	b130	b160	143	188	288	298	139	112	95
2	96	106	120	b130	b160	137	338	298	269	139	111	96
3	96	126	118	b130	b160	129	369	338	250	140	111	96
4	96	133	118	b120	b150	126	380	358	232	142	110	96
5	95	128	118	b130	b140	126	411	338	224	150	110	98
6	95	123	118	b130	b140	126	465	308	215	157	110	98
7	94	121	118	b130	b150	126	487	288	207	146	109	96
8	93	120	115	b130	b160	126	476	250	197	139	108	94
9	93	a120	115	b130	b160	128	454	232	189	136	106	94
10	93	a120	116	b130	*b160	*128	443	224	185	136	106	96
11	93	124	*118	126	b150	128	443	207	180	150	106	138
12	93	121	115	129	b150	131	465	201	174	150	104	140
13	93	116	124	*116	b150	137	454	205	177	147	102	125
14	93	115	114	b130	b150	143	422	210	189	132	102	114
15	93	114	b120	b130	b150	153	380	232	196	132	101	111
16	96	118	b120	b130	154	142	338	232	189	132	100	107
17	96	125	b120	143	159	145	308	232	180	145	100	106
18	97	124	b110	148	161	143	298	250	171	145	100	106
19	98	119	b110	142	b160	143	288	250	162	135	100	105
20	98	118	b110	132	b150	140	288	232	158	138	103	108
21	96	116	114	b130	b140	138	269	232	152	143	103	192
22	96	120	115	b130	b140	143	250	224	147	136	100	216
23	96	120	115	b140	b140	174	260	209	140	129	100	192
24	96	120	b115	b150	155	195	278	204	139	124	99	164
25	104	129	b110	161	157	204	288	212	143	118	98	145
26	106	138	b115	159	157	202	269	232	146	114	98	134
27	105	133	b120	154	132	202	269	232	143	118	97	128
28	104	128	b120	154	134	194	260	250	140	122	96	126
29	104	123	b120	b150	-	194	241	298	143	119	96	129
30	a105	120	b110	b150	-	190	318	298	142	116	96	129
31	105	-	b130	b160	-	178	-	308	-	115	94	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	3,014	106	93	97.2	0.765	0.88
November	3,645	138	105	122	.961	1.07
December	3,621	150	110	117	.921	1.06
Calendar year 1946	50,283	408	89	138	1.09	14.72
January	4,254	161	116	137	1.08	1.24
February	4,169	161	132	149	1.17	1.22
March	4,714	204	126	152	1.20	1.38
April	10,397	487	168	347	2.73	3.05
May	7,872	358	201	254	2.00	2.31
June	5,477	298	159	183	1.44	1.61
July	4,176	153	114	135	1.06	1.22
August	3,186	112	94	103	.811	.94
September	3,670	216	94	122	.961	1.07
Water year 1946-47	58,195	487	93	159	1.25	17.05

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
b Stage-discharge relation affected by ice.

Manistee River near Grayling, Mich.

Location.- Water-stage recorder, lat. 44°41'35", long. 84°50'50", in sec. 31, T. 27 N., R. 4 W., just upstream from bridge on State Highway 72, 2½ miles downstream from Goose Creek and 6½ miles northwest of Grayling.

Drainage area.- 159 square miles.

Records available.- November 1942 to September 1947.

Extremes.- Maximum discharge during year, 354 second-feet Apr. 12; maximum gage height, 1.94 feet Feb. 6 (backwater from ice); minimum discharge, 131 second-feet Jan. 30 (gage height, 0.30 foot).
1942-47: Maximum discharge, that of Apr. 12, 1947; maximum gage height, that of Feb. 6, 1947; minimum, 122 second-feet Feb. 14, 1943 (gage height, 0.49 foot).

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

Discharge, in second-feet, water year October 1946 to Septesber 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	176	171	182	b180	188	176	176	244	235	188	176	166
2	171	171	176	b180	188	176	182	282	226	188	176	171
3	171	176	176	b180	182	176	182	292	226	188	176	171
4	171	176	176	b175	173	176	188	292	218	188	176	166
5	171	176	176	171	162	171	202	292	218	182	171	166
6	171	171	*176	b170	b200	171	262	282	226	188	171	166
7	171	176	182	176	b200	*171	262	253	218	188	171	166
8	171	176	182	176	b200	171	235	244	218	182	171	166
9	171	176	182	*176	b190	171	226	244	218	182	171	166
10	171	182	182	176	b180	171	244	235	210	182	171	166
11	171	182	176	b170	b180	171	312	235	210	188	171	176
12	166	176	182	166	*b180	171	344	235	210	195	171	176
13	166	176	182	166	188	176	312	253	218	188	171	182
14	171	176	176	171	188	176	302	282	218	188	166	182
15	171	176	188	176	176	176	312	262	218	195	166	171
16	171	176	182	171	171	176	312	253	210	188	166	171
17	171	182	176	176	171	176	302	235	210	182	166	171
18	171	176	182	171	176	176	302	235	202	188	166	171
19	171	176	176	166	176	176	282	235	202	182	166	171
20	171	178	188	166	b178	176	282	235	202	188	176	176
21	171	176	182	155	176	171	272	244	202	188	202	210
22	171	176	182	142	176	171	272	244	195	182	202	253
23	171	176	176	171	176	176	272	244	195	182	182	244
24	171	176	171	182	182	188	302	235	195	182	176	210
25	171	182	176	195	176	188	302	235	195	176	171	195
26	171	182	171	182	176	188	272	244	195	176	171	195
27	171	176	169	171	176	195	272	235	195	162	171	188
28	171	176	149	171	176	192	262	235	195	188	171	188
29	176	176	171	171	-	182	253	244	195	182	166	195
30	176	176	182	142	-	176	244	262	195	176	171	195
31	171	-	182	148	-	176	-	244	-	176	166	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	5,308	176	166	171	1.08	1.24
November	5,295	182	171	176	1.11	1.24
December	5,489	188	149	177	1.11	1.28
Calendar year 1946	68,191	292	149	187	1.18	15.94
January	5,289	195	142	171	1.08	1.24
February	5,059	200	162	181	1.14	1.19
March	5,473	195	171	177	1.11	1.28
April	7,944	344	176	265	1.67	1.86
May	7,786	292	235	251	1.58	1.82
June	6,270	235	195	209	1.31	1.46
July	5,728	195	176	185	1.16	1.34
August	5,364	202	166	173	1.09	1.26
September	5,490	253	166	183	1.15	1.28
Water year 1946-47	70,493	344	142	193	1.21	16.49

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

Manistee River near Sherman, Mich.

Location.- Wire-weight gage, lat. 44°26', long. 85°42', on line between sec. 36, T. 24 N., R. 12 W., and sec. 31, T. 24 N., R. 11 W., 150 feet upstream from Wheeler Creek and three-quarters of a mile north of Sherman.

Drainage area.- 900 square miles.

Records available.- July 1903 to May 1916, November 1930 to June 1931, January 1934 to September 1947.

Average discharge.- 25 years (1903-15, 1934-47), 1,088 second-feet.

Extremes.- Maximum discharge observed during year, 2,870 second-feet Apr. 12 (gage height, 14.21 feet); minimum observed, 775 second-feet Sept. 9-11.
1903-16, 1930-31, 1934-47: Maximum discharge observed, 3,500 second-feet Mar. 25, 1913 (gage height, 7.0 feet, datum then in use); minimum observed, 540 second-feet Feb. 21-23, 1936 (backwater from ice).

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

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

9.5	775	12.0	1,680
10.0	920	13.0	2,180
11.0	1,250	14.1	2,810

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	860	860	860	850	950	920	1,010	1,920	1,630	950	890	830
2	860	860	860	870	950	920	1,110	2,120	1,500	950	890	860
3	830	860	860	900	950	920	1,250	2,340	1,410	950	860	830
4	830	890	860	930	950	920	1,330	2,460	1,330	950	860	830
5	830	890	890	900	920	890	1,540	2,400	1,290	950	860	830
6	830	860	890	930	900	890	2,120	2,290	1,250	950	860	800
7	830	860	890	930	920	890	2,290	2,240	1,220	950	860	800
8	830	890	890	930	950	890	2,180	2,120	1,180	920	860	800
9	830	920	920	930	950	890	2,070	1,870	1,180	920	860	800
10	830	920	890	900	950	*890	2,120	1,680	1,110	860	830	775
11	830	a920	*890	900	950	890	2,460	1,540	1,110	890	830	775
12	800	920	890	900	920	890	2,810	1,450	1,110	920	830	830
13	800	920	920	*860	950	890	2,810	1,450	1,110	920	830	860
14	800	890	860	900	960	920	2,750	1,450	1,110	950	830	860
15	830	860	900	900	940	920	2,570	1,500	1,140	1,010	800	860
16	830	890	900	900	930	920	2,340	1,540	1,140	980	800	860
17	830	890	900	900	920	890	2,240	1,540	1,140	980	800	830
18	830	890	880	900	900	890	2,120	1,500	1,110	980	800	830
19	830	890	860	920	880	890	2,020	1,500	1,080	950	800	830
20	830	890	900	920	880	890	1,920	1,450	1,040	1,010	860	830
21	830	890	900	920	920	890	1,770	1,410	1,040	1,040	890	830
22	830	890	940	900	920	890	1,680	1,410	1,010	1,040	890	860
23	830	890	950	950	920	890	1,720	1,450	1,010	980	950	1,110
24	830	920	940	1,000	920	1,080	1,770	1,410	1,010	950	920	1,180
25	830	920	940	1,050	900	1,110	1,770	1,450	1,010	920	890	1,110
26	860	920	900	1,050	900	1,110	1,820	1,540	980	920	890	1,040
27	860	920	900	1,020	900	1,010	1,770	1,500	980	920	860	1,010
28	860	890	900	1,010	920	1,040	1,720	1,450	980	950	830	980
29	860	890	880	980	-	1,040	1,630	1,630	980	920	830	950
30	890	860	870	950	-	1,010	1,680	1,680	980	920	830	950
31	860	-	850	950	-	980	-	1,720	-	890	830	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	25,910	890	800	836	0.929	1.07
November	26,760	920	860	892	.991	1.11
December	27,680	950	850	893	.992	1.14
Calendar year 1946	374,180	2,340	775	1,025	1.14	15.45
January	28,850	1,050	850	931	1.03	1.19
February	25,920	960	830	926	1.03	1.07
March	29,060	1,110	890	937	1.04	1.20
April	58,390	2,810	1,010	1,946	2.16	2.41
May	53,010	2,460	1,410	1,710	1.90	2.19
June	34,170	1,630	980	1,139	1.27	1.42
July	29,390	1,040	860	948	1.05	1.21
August	26,420	950	800	852	.947	1.09
September	26,540	1,180	775	885	.983	1.10
Water year 1946-47	392,100	2,810	775	1,074	1.19	16.20

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 15 to Jan. 18, Jan. 22-27, Jan. 30 to Feb. 27.

Sturgeon River near Wolverine, Mich.

Location.- Staff gage, lat. 45°17'25", long. 84°36'15", in sec. 31, T. 34 N., R. 2 W., 1½ miles north of Wolverine and 2 miles downstream from West Branch.

Drainage area.- 164 square miles.

Records available.- April 1942 to September 1947.

Extremes.- Maximum discharge observed during year, 558 second-feet Apr. 12, May 5 (gage height, 3.89 feet); minimum daily, 147 second-feet Aug. 28, 29, Sept. 9.
1942-47: Maximum discharge, 919 second-feet Apr. 1, 1943 (gage height, 5.45 feet, from floodmark); minimum observed, 118 second-feet Aug. 22, 24, 1944 (gage height, 2.17 feet).

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

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used July 29 to Sept. 30)

2.3	147	3.0	320
2.4	168	3.5	450
2.7	242	3.8	531

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	189	175	177	170	180	173	186	291	258	173	162	170
2	182	175	177	170	190	170	201	325	242	177	162	170
3	182	191	182	170	190	168	208	411	226	175	160	160
4	180	194	177	170	180	168	286	464	214	177	160	155
5	173	186	170	170	170	168	346	531	219	186	158	151
6	173	182	175	170	162	162	a400	372	221	206	155	151
7	175	177	180	170	170	168	437	294	214	189	153	149
8	173	173	182	170	160	168	398	263	214	175	153	149
9	175	170	186	170	160	168	359	245	206	175	153	147
10	175	189	191	170	160	168	424	234	201	173	a150	149
11	175	208	186	180	160	168	518	226	208	168	a150	a160
12	182	198	184	170	160	164	544	219	214	166	a150	a180
13	175	177	191	182	180	168	477	a300	250	166	149	a200
14	175	173	180	204	180	168	398	504	286	168	a150	189
15	173	168	170	224	170	162	385	450	273	198	a150	177
16	170	*173	180	208	170	162	346	323	242	a180	a150	194
17	168	182	190	201	*160	164	325	271	226	170	a150	201
18	168	184	a190	186	160	175	315	265	219	166	a150	191
19	168	177	*180	180	160	180	a304	258	208	170	149	180
20	168	168	186	*175	150	177	278	239	204	208	160	180
21	170	168	180	164	160	180	265	239	201	189	189	a250
22	170	168	a180	155	170	180	278	247	196	168	180	398
23	170	180	a180	160	170	184	310	263	189	164	164	307
24	170	a200	a170	191	170	*237	336	247	182	164	155	198
25	177	*216	160	182	184	234	325	a275	173	166	153	189
26	182	194	150	180	177	208	310	312	166	160	151	194
27	182	180	160	184	175	204	297	310	166	219	149	194
28	180	175	160	196	175	196	294	250	166	214	147	221
29	182	173	160	190	-	188	294	275	170	186	147	224
30	194	173	160	180	-	180	291	320	170	173	149	201
31	189	-	160	160	-	182	-	281	-	162	151	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	5,465	194	168	176	1.07	1.23
November	5,447	216	168	182	1.11	1.24
December	5,454	191	150	176	1.07	1.23
Calendar year 1946	75,656	531	150	207	1.26	17.14
January	5,552	224	155	179	1.09	1.26
February	4,761	190	150	170	1.04	1.08
March	5,540	237	162	179	1.09	1.26
April	10,135	544	186	338	2.06	2.30
May	9,502	531	219	307	1.87	2.16
June	6,324	286	166	211	1.29	1.44
July	5,531	219	160	178	1.09	1.26
August	4,809	189	147	155	.945	1.09
September	5,779	398	147	193	1.18	1.32
Water year 1946-47	74,299	544	147	204	1.24	16.87

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated, or computed on basis of weather records and records for Middle Branch Au Sable River at Grayling.
Note.- Stage-discharge relation affected by ice Dec. 14-17, Dec. 25 to Jan. 12, Jan. 29 to Feb. 24 (no gage-height record Feb. 4. 9).

Indian River at Indian River, Mich.

Location.- Water-stage recorder, lat. 45°24'35", long. 84°37'10", in sec. 24, T. 35 N., R. 3 W., at Indian River, an eighth of a mile downstream from Burt Lake and 3½ miles upstream from Mullett Lake. Datum of gage is 590.21 feet above mean sea level, datum of 1929 (levels by Michigan State Department of Conservation).

Drainage area.- 583 square miles.

Records available.- April 1942 to September 1947.

Extremes.- Maximum discharge during year, 911 second-feet May 7 (gage height, 5.40 feet); minimum daily, 330 second-feet Dec. 16-19; minimum gage height, 3.57 feet Sept. 1.
1942-47: Maximum discharge, 1,080 second-feet Apr. 25,1943 (gage height, 5.65 feet); minimum daily, that of Dec. 16-19, 1946; minimum gage height, that of Sept. 1, 1947.

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	494	465	464	430	642	564	510	744	879	714	500	373
2	494	465	451	440	624	545	505	790	879	714	500	373
3	486	478	451	440	624	545	505	812	879	695	500	373
4	490	478	a451	440	624	545	505	837	861	695	489	369
5	490	478	451	440	619	540	530	886	861	683	489	369
6	494	465	451	450	605	540	556	886	861	683	489	369
7	494	465	464	450	619	526	586	886	869	a683	477	366
8	485	478	460	450	619	522	604	886	846	683	477	366
9	485	474	460	460	619	522	621	861	846	683	466	362
10	476	474	472	460	614	522	632	837	829	667	462	362
11	476	474	460	460	599	517	650	837	854	644	462	359
12	480	474	400	460	599	517	690	820	829	650	450	355
13	480	474	375	470	599	504	710	845	837	633	450	355
14	480	474	370	470	599	512	710	845	812	633	450	352
15	484	462	350	490	594	512	730	845	837	633	439	352
16	484	471	330	490	594	508	744	845	820	615	435	352
17	a480	471	*330	490	*594	508	744	845	796	598	424	352
18	474	458	330	490	594	508	744	845	796	598	424	352
19	474	458	330	490	589	503	744	853	781	581	435	372
20	462	458	340	*490	589	503	744	828	781	581	431	382
21	465	458	340	500	589	498	744	828	759	581	431	417
22	465	480	350	520	589	498	744	828	737	563	431	427
23	465	467	350	520	584	498	744	828	744	554	431	427
24	452	467	350	540	584	494	767	836	722	554	427	427
25	465	*467	350	540	584	506	744	836	722	540	427	421
26	478	454	350	560	569	515	744	836	728	540	416	421
27	465	467	360	560	564	501	767	836	708	540	402	411
28	465	454	380	580	564	501	767	836	728	540	402	415
29	478	454	400	610	-	510	744	870	a728	540	390	436
30	491	451	400	624	-	510	767	870	728	527	387	429
31	478	-	430	642	-	510	-	870	-	527	376	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	14,829	494	452	478	0.820	0.95
November	14,013	480	451	467	.801	.89
December	12,250	472	330	395	.678	.78
Calendar year 1946	211,495	860	330	579	.993	13.52
January	15,456	642	430	499	.856	.99
February	16,786	642	564	600	1.03	1.07
March	16,004	564	494	516	.885	1.02
April	20,296	767	505	677	1.16	1.29
May	26,107	886	744	842	1.44	1.66
June	24,057	879	708	802	1.38	1.54
July	19,073	714	527	615	1.05	1.21
August	13,769	500	376	444	.762	.88
September	11,496	436	352	383	.657	.73
Water year 1946-47	204,136	886	330	559	.959	13.01

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 12 to Jan. 28.

Cheboygan River near Cheboygan, Mich.

Location.- Water-stage recorder, lat. 45°34'40", long. 84°29'15", in sec. 19, T. 37 N., R. 1 W., 300 feet downstream from Mullett Lake, 2½ miles upstream from Black River, and 5 miles south of Cheboygan. Datum of gage is 591.21 feet above mean sea level, datum of 1929. Auxiliary staff gage at Cheboygan, 5 miles downstream. Datum of auxiliary gage is 590.00 feet above mean sea level, datum of 1929.

Drainage area.- 865 square miles.

Records available.- November 1942 to September 1947.

Extremes.- Maximum daily discharge during year, 1,500 second-feet May 31; maximum daily gage height, 3.09 feet Apr. 15, 16; minimum daily discharge, 178 second-feet Sept. 14; minimum daily gage height, 1.17 feet Oct. 23, 27.

1942-47: Maximum daily discharge, 1,590 second-feet Apr. 16, 1943; maximum daily gage height, 3.13 feet Apr. 17, 1945; minimum daily discharge, 128 second-feet Oct. 14, 1943; minimum daily gage height, that of Oct. 23, 27, 1946.

Remarks.- Records fair except those for periods of ice effect or no gage-height record, which are poor. Discharge computed by using fall as determined from hourly readings of auxiliary staff gage as a factor. Flow affected by backwater from power plant at Cheboygan.

Cooperation.- Auxiliary gage readings furnished by Michigan Public Service Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	681	a425	438	470	692	609	621	1,360	1,420	756	967	679
2	753	415	468	549	583	624	622	1,390	1,350	869	787	499
3	686	416	486	577	583	641	569	1,390	1,350	869	427	342
4	681	489	a485	431	558	671	558	1,390	1,340	1,200	593	379
5	598	454	a440	377	618	666	586	1,440	1,320	1,350	702	391
6	549	a400	a400	512	590	626	880	1,450	1,330	1,230	630	310
7	624	a450	359	512	575	624	1,050	1,450	1,310	1,220	661	284
8	643	a400	322	537	606	641	911	1,440	1,310	1,250	679	396
9	737	466	377	.445	673	641	885	1,420	1,260	1,300	595	422
10	516	427	437	499	623	641	788	1,400	1,140	1,240	376	397
11	456	440	462	454	608	656	1,050	1,400	1,160	1,220	484	417
12	447	444	445	a350	610	624	1,290	1,390	1,180	1,240	522	467
13	472	447	499	476	569	624	1,320	1,380	1,220	1,230	574	342
14	497	460	b450	453	506	616	1,350	1,400	1,180	1,240	710	178
15	531	408	b400	401	645	593	1,340	1,400	1,230	1,230	711	373
16	478	500	b350	485	609	601	1,350	1,390	1,230	1,220	490	435
17	381	450	b400	445	574	616	1,380	1,400	1,190	1,230	439	286
18	437	472	*b450	447	*628	601	1,380	1,400	1,190	1,050	624	422
19	452	405	b500	469	645	593	1,390	1,390	1,200	915	709	466
20	420	a475	b450	532	587	616	1,360	1,250	1,090	617	730	375
21	535	a450	e500	535	632	631	1,340	1,140	1,020	964	715	299
22	524	a200	e450	507	656	635	1,350	1,180	1,050	1,060	599	520
23	449	395	e500	522	618	619	1,350	1,240	988	984	548	582
24	425	385	e550	551	622	608	1,380	1,200	855	947	787	570
25	405	433	e400	646	607	821	13,80	1,250	701	1,060	683	461
26	397	*421	e500	655	592	549	1,380	1,270	644	902	624	573
27	381	422	e550	620	624	696	1,390	1,280	638	789	563	529
28	473	376	532	581	639	636	1,380	1,270	612	787	721	459
29	454	a400	428	614	-	640	1,370	1,350	769	1,090	677	593
30	446	430	578	659	-	626	1,360	1,470	685	1,110	570	632
31	a400	-	584	709	-	611	-	1,500	-	994	329	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	15,928	753	381	514	0.594	0.68
November	12,755	500	200	425	.491	.55
December	14,190	584	322	458	.529	.61
Calendar year 1946	292,028	1,290	200	800	.925	12.52
January	16,020	709	350	517	.598	.69
February	17,072	692	506	610	.705	.73
March	19,596	821	549	632	.731	.84
April	34,360	1,390	558	1,145	1.32	1.47
May	42,080	1,500	1,140	1,357	1.57	1.81
June	32,962	1,420	612	1,099	1.27	1.42
July	33,163	1,350	617	1,070	1.24	1.43
August	19,226	967	329	620	.717	.83
September	13,078	679	178	436	.504	.56
Water year 1946-47	270,430	1,500	178	741	.857	11.62

* Winter discharge measurement made on this day.

a No gage-height record at reference gage; discharge computed on basis of gage-height record at auxiliary gage.

b Stage-discharge relation affected by ice.

e No gage-height record at auxiliary gage; discharge computed on basis of power-plant record.

Pigeon River at Afton, Mich.

Location.- Staff gage, lat. 45°22'25", long. 84°30'50", in sec. 2, T. 34 N., R. 2 W., three-quarters of a mile west of Afton, 2 miles downstream from Wilker Creek, and 5½ miles upstream from Mullett Lake

Drainage area.- 159 square miles.

Records available.- April 1942 to September 1947.

Extremes.- Maximum discharge observed during year, 595 second-feet Apr. 8 (gage height, 5.70 feet); minimum observed, 72 second-feet Aug. 29, 30, Sept. 4-7 (gage height, 4.18 feet).

1942-47: Maximum daily discharge, 1,100 second-feet Mar. 31, 1943; maximum gage height, about 10.5 feet Mar. 31, 1943, from floodmarks (ice jam); minimum discharge observed, 60 second-feet Aug. 12, 1945 (gage height, 4.04 feet).

Remarks.- Records fair except those for periods of ice effect or doubtful gage-height record, which are poor. Gage read once daily.

Rating tables, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Mar. 16		Mar. 17 to Sept. 30			
4.3	93	4.2	75	5.0	271
4.4	112	4.3	91	5.3	391
4.5	134	4.5	130	5.6	540
		4.7	178		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	93	108	112	100	120	100	173	254	d200	105	100	83
2	93	110	114	100	120	100	173	d400	d180	105	93	77
3	91	112	121	100	120	100	186	d450	d170	105	89	74
4	88	110	127	100	120	110	247	d500	d160	105	88	72
5	90	110	130	100	110	110	271	d450	d160	109	86	72
6	90	108	123	100	110	100	328	d400	d150	115	86	72
7	90	104	121	110	110	100	453	357	d140	113	83	72
8	90	104	114	110	110	100	578	290	d140	107	81	75
9	90	102	112	110	100	100	524	244	d140	105	81	78
10	90	110	114	110	100	90	405	215	d140	104	81	78
11	90	123	119	110	100	90	391	198	135	105	80	88
12	90	125	121	110	110	100	405	234	126	107	75	d100
13	90	121	120	120	120	100	429	264	146	113	75	d120
14	90	121	110	130	130	100	378	328	168	117	74	d140
15	91	125	100	140	130	100	340	391	173	111	75	124
16	93	123	100	130	130	95	320	301	170	107	75	102
17	93	116	*100	120	*130	95	308	257	158	105	75	100
18	93	114	110	120	120	102	271	254	148	105	75	104
19	91	112	110	110	110	102	257	244	146	105	83	105
20	90	114	110	*110	110	107	244	237	144	104	89	107
21	91	116	110	110	110	115	237	231	139	104	89	109
22	93	119	110	110	110	137	251	222	120	104	86	109
23	91	121	110	110	110	146	261	222	107	102	85	126
24	90	121	110	110	110	*144	271	222	104	102	81	148
25	91	*123	100	120	110	148	290	254	91	100	81	158
26	93	121	100	120	110	163	293	237	86	100	77	173
27	101	116	100	120	110	168	278	d220	85	113	75	d160
28	104	112	100	120	110	168	247	d200	96	128	75	d120
29	108	112	100	120	-	170	212	d220	102	124	74	d100
30	110	112	100	120	-	170	209	d250	102	113	74	d90
31	108	-	100	110	-	173	-	d220	-	107	80	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	2,896	110	88	93.4	0.587	0.68
November	3,445	125	102	115	.723	.81
December	3,428	130	100	111	.698	.80
Calendar year 1946	52,796	1,040	73	145	.912	12.36
January	3,510	140	100	113	.711	.82
February	3,190	130	100	114	.717	.75
March	3,703	173	90	119	.748	.86
April	9,230	578	173	308	1.94	2.16
May	8,766	500	198	283	1.78	2.05
June	4,126	200	85	138	.868	.97
July	3,349	128	100	108	.679	.78
August	2,521	100	74	81.3	.511	.59
September	3,136	173	72	105	.660	.74
Water year 1946-47	51,300	578	72	141	.887	12.01

* Winter discharge measurement made on this day.

d Doubtful gage-height record; discharge computed on basis of weather records and records for Black River near Tower and Sturgeon River near Wolverine.

Note.- Stage-discharge relation affected by ice Dec. 13 to Mar. 16.

Black River near Tower, Mich.

Location.- Water-stage recorder, lat. 45°22'55", long. 84°19'10", in sec. 33, T. 35 N., R. 1 E., 1½ miles upstream from Milligan Creek and 2 miles northwest of Tower. Datum of gage is 685.83 feet above mean sea level (levels by Michigan State Department of Conservation).

Drainage area.- 310 square miles.

Records available.- November 1942 to September 1947.

Extremes.- Maximum discharge during year, 1,180 second-feet Apr. 14 (gage height, 4.64 feet); minimum, 9.1 second-feet (regulated) Mar. 20 (gage height, 1.93 feet); minimum daily, 84 second-feet (regulated) Aug. 17.
1942-47: Maximum discharge, 1,660 second-feet Apr. 1, 1943 (gage height, 5.30 feet); minimum, that of Mar. 20, 1947; minimum daily, that of Aug. 17, 1947.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Low and medium flow regulated by power plant at Tower.

Rating table, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)

2.4	90	3.0	285	4.0	755
2.6	141	3.3	410	4.3	945
2.8	207	3.6	550	4.5	1,080

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	172	200	211	190	140	190	230	595	525	230	152	125
2	189	184	168	200	130	190	250	700	515	124	151	144
3	184	177	164	210	200	210	270	815	414	208	142	149
4	169	192	138	200	200	200	300	880	378	196	155	141
5	164	207	190	200	220	190	388	945	360	205	150	147
6	151	196	200	210	210	200	555	848	341	263	140	129
7	160	203	190	210	200	200	640	785	332	320	135	103
8	161	200	180	220	200	200	700	700	307	305	138	136
9	148	185	190	220	200	190	785	610	303	248	133	120
10	154	187	190	220	210	210	848	313	287	206	119	118
11	162	243	200	200	200	200	880	515	286	210	139	151
12	163	233	180	200	190	190	978	468	254	182	135	167
13	132	243	180	200	180	210	1,040	520	278	a180	123	181
14	178	215	150	170	190	220	1,120	550	286	a180	114	183
15	154	208	130	170	190	230	1,040	755	312	a220	107	170
16	168	205	160	200	200	210	*945	978	332	a250	138	155
17	144	194	*160	180	*220	230	848	912	322	a220	84	146
18	138	216	170	180	190	210	785	654	284	a200	133	174
19	157	199	170	170	210	200	700	540	259	a200	124	165
20	149	200	180	200	200	200	650	500	247	a190	113	158
21	165	203	180	*200	180	220	615	482	239	a190	152	229
22	169	196	180	180	200	240	580	482	207	189	174	309
23	163	194	200	150	180	230	560	478	236	180	206	335
24	142	187	180	140	200	*230	585	500	212	177	126	360
25	157	201	130	160	200	270	625	486	211	171	134	336
26	170	*212	170	180	180	220	675	525	196	160	131	253
27	132	209	200	190	200	270	675	550	205	165	126	223
28	169	200	210	200	200	350	620	491	227	196	119	217
29	177	213	140	200	-	350	590	535	218	210	129	229
30	161	188	190	200	-	300	605	575	238	198	122	228
31	167	-	190	160	-	250	-	675	-	157	118	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	4,969	189	132	160	0.516	0.59
November	6,090	243	177	203	.655	.73
December	5,471	211	130	176	.568	.65
Calendar year 1946	91,729	945	105	251	.810	10.99
January	5,910	220	140	191	.616	.71
February	5,420	220	138	194	.623	.65
March	7,010	350	190	226	.729	.84
April	20,082	1,120	230	669	2.16	2.41
May	19,382	978	313	625	2.02	2.33
June	8,809	525	196	294	.949	1.06
July	6,418	320	157	207	.668	.77
August	4,162	206	84	134	.432	.50
September	5,681	360	103	189	.610	.68
Water year 1946-47	99,384	1,120	84	272	.877	11.92

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for Thunder Bay River near Hillman.
Note.- Stage-discharge relation affected by ice Dec. 5 to Apr. 4.

Black River near Cheboygan, Mich.

Location.- Water-stage recorder, lat. 45°30'00", long. 84°19'24", in sec. 21, T. 36 N., R. 1 E., half a mile downstream from Black Lake, 5½ miles upstream from Alverno Dam, and 12 miles southeast of Cheboygan. Datum of gage is 609.26 feet above mean sea level (levels by Michigan State Department of Conservation). Auxiliary water-stage recorder 3 miles downstream at same datum.

Drainage area.- 597 square miles.

Records available.- November 1942 to September 1947.

Extremes.- Maximum daily discharge during year, 1,660 second-feet Apr. 20; minimum daily, 24 second-feet Sept. 28.
1942-47: Maximum daily discharge, 2,070 second-feet Apr. 12, 1943; minimum daily, 21 second-feet Jan. 1, 2, Sept. 10, 1944.

Remarks.- Records good above 200 second-feet and fair below except those for periods of no gage-height record, which are poor. Discharge computed by using fall as determined by auxiliary water-stage recorder as a factor. Flow affected during most of time by backwater from power plant at Alverno Dam.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	294	265	198	153	380	430	344	1,250	779	477	285	273
2	243	174	242	298	526	422	348	a1,200	779	490	239	153
3	190	72	283	250	369	434	339	a1,250	814	528	169	111
4	219	270	239	290	494	444	351	1,290	812	287	317	131
5	211	200	247	135	523	423	374	1,270	1,000	347	331	124
6	53	179	194	317	505	403	450	1,320	855	170	325	83
7	223	218	182	295	489	396	416	1,340	832	365	385	74
8	146	259	154	324	497	394	546	1,340	774	421	334	48
9	132	171	294	281	433	364	652	1,310	707	436	290	71
10	159	111	312	208	413	364	806	1,340	677	452	136	80
11	195	291	243	338	404	384	805	1,300	731	a450	290	134
12	148	208	225	205	419	360	844	1,290	685	a350	285	78
13	114	213	311	400	442	354	993	1,250	548	161	307	250
14	180	177	206	529	435	378	1,200	1,260	568	390	283	107
15	159	146	64	367	396	432	1,220	1,230	467	340	288	228
16	217	a200	432	336	366	403	1,450	1,250	581	317	239	216
17	232	a250	445	395	436	389	1,430	1,210	599	255	83	83
18	214	a275	e450	326	422	401	1,450	1,220	594	346	249	184
19	129	a300	329	272	425	395	1,570	1,090	536	223	314	286
20	52	a275	248	356	410	394	1,660	932	542	184	317	103
21	183	a250	212	e350	427	377	1,550	955	453	320	242	106
22	171	a500	193	e325	472	398	1,540	908	424	283	210	274
23	190	a300	273	319	491	354	1,430	932	513	272	156	343
24	207	156	214	323	487	354	1,320	944	427	270	97	278
25	170	256	158	295	460	406	1,280	909	376	286	254	244
26	246	250	270	321	430	381	1,310	934	449	227	216	248
27	213	284	327	316	427	345	1,300	932	462	202	115	84
28	287	146	a250	364	390	377	1,290	909	463	231	201	24
29	307	250	a35	320	-	405	1,300	902	222	284	107	285
30	315	252	a250	447	-	412	1,300	942	426	310	148	215
31	286	-	326	325	-	357	-	802	-	319	123	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	6,085	315	52	196	0.328	0.38
November	6,898	500	72	230	.385	.43
December	7,826	450	35	252	.422	.49
Calendar year 1946	143,827	1,410	35	394	.660	8.97
January	9,780	529	135	315	.528	.61
February	12,388	526	369	442	.740	.77
March	12,130	444	345	391	.655	.76
April	30,868	1,660	339	1,029	1.72	1.92
May	35,011	1,340	802	1,129	1.89	2.18
June	18,095	1,000	222	603	1.01	1.13
July	9,966	528	161	321	.538	.62
August	7,335	385	83	237	.397	.46
September	4,918	345	24	164	.275	.31
Water year 1946-47	161,300	1,660	24	442	.740	10.08

a No gage-height record at reference gage; discharge computed on basis of gage-height record at auxiliary gage.
e No gage-height record at auxiliary gage; discharge computed on basis of weather records and hourly gage readings at Alverno Dam.

Rainy River near Onaway, Mich.

Location.- Staff gage, lat. 45°21'25", long. 84°10'00", in sec. 2, T. 34 N., R. 2 E., 1½ miles downstream from Little Rainy River and 3 miles east of Onaway. Datum of gage is 747.77 feet above mean sea level (levels by Michigan State Department of Conservation).

Drainage area.- 79 square miles.

Records available.- January 1942 to September 1947.

Extremes.- Maximum discharge observed during year, 340 second-feet Apr. 12 (gage height, 4.68 feet); minimum observed, 0.1 second-foot Sept. 5-10; minimum gage height observed, 1.95 feet Sept. 8.

1942-47: Maximum discharge observed, 668 second-feet Apr. 1, 1943 (gage height, 5.55 feet); minimum observed, 0.1 second-foot Aug. 15 to Sept. 3, 1944, Aug. 25-30, 1945, Sept. 5-10, 1947.

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.5	2.2	5.9	1.8	4.5	4.0	19	88	86	9.4	6.4	0.3
2	2.2	2.2	6.2	1.8	4.5	4.0	24	94	76	8.0	5.8	.2
3	2.0	2.0	6.2	1.8	4.0	4.5	38	156	68	6.4	5.8	.2
4	2.2	2.0	6.2	1.5	3.5	4.5	52	197	59	5.3	5.8	.2
5	2.2	2.2	7.0	1.5	3.5	4.5	66	193	51	5.3	5.3	.1
6	2.0	2.2	7.0	1.5	3.5	4.5	143	186	43	24	5.3	.1
7	1.8	2.2	7.0	1.5	4.0	4.5	221	174	38	63	5.3	.1
8	1.6	2.7	6.6	1.5	4.5	5.0	280	143	32	57	4.7	.1
9	1.6	3.0	6.2	1.5	4.5	5.0	203	135	28	40	3.6	.1
10	1.4	3.2	5.5	1.5	4.0	5.5	201	128	27	24	2.9	.1
11	1.2	3.5	5.5	2.0	4.5	5.9	306	121	25	16	1.9	.2
12	1.1	3.8	4.8	2.0	4.5	6.2	335	116	25	13	1.6	.4
13	.9	3.8	4.0	2.5	4.5	6.2	256	102	25	11	1.3	3.6
14	.8	3.5	3.8	4.5	4.5	6.2	249	95	27	11	.7	6.4
15	.7	3.5	3.5	5.0	4.5	6.6	261	91	30	11	.4	4.5
16	a1.0	4.0	3.2	6.0	4.0	7.0	232	84	30	11	.3	3.2
17	a1.5	4.3	*3.2	6.6	4.0	7.0	188	82	26	11	.2	2.9
18	a1.7	4.3	3.0	6.6	*4.0	7.7	154	78	22	9.7	.4	2.9
19	a1.8	4.5	3.0	6.2	4.0	7.7	126	74	20	8.7	.8	7.2
20	a1.8	4.8	2.7	5.9	4.0	7.7	107	68	17	7.5	1.2	16
21	a1.8	4.8	2.7	*5.5	4.0	8.4	92	67	14	6.6	2.7	39
22	1.8	4.8	2.7	5.5	4.0	8.4	84	66	13	5.8	2.2	45
23	1.6	5.2	2.2	4.8	4.0	9.8	87	66	12	5.3	.8	42
24	1.4	5.5	2.2	4.8	4.0	*14	88	66	11	5.3	.3	40
25	1.4	5.5	2.2	3.2	4.0	17	87	70	11	5.3	.2	34
26	1.6	4.5	2.0	5.5	4.0	19	36	74	10	5.1	.2	20
27	1.8	5.9	1.8	4.8	4.0	19	86	73	9.4	7.5	.3	17
28	1.8	6.6	1.8	a4.5	4.0	20	86	74	9.4	8.3	.3	14
29	2.0	6.6	1.8	a4.5	-	20	87	77	11	7.2	.2	18
30	2.2	6.2	1.8	a4.5	-	19	88	87	10	6.6	.2	15
31	2.2	-	1.8	4.5	-	19	-	91	-	6.6	.2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	51.6	2.5	0.7	1.66	0.021	0.02
November	119.5	6.6	2.0	3.98	.050	.06
December	123.5	7.0	1.8	3.98	.050	.06
Calendar year 1946	9,432.9	334	.3	25.8	.327	4.45
January	117.3	6.6	1.5	3.78	.048	.06
February	115.0	4.5	3.5	4.11	.052	.05
March	287.8	20	4.0	9.28	.117	.13
April	4,332	335	19	144	1.82	2.03
May	3,216	197	66	104	1.32	1.52
June	865.8	86	9.4	28.9	.366	.41
July	421.9	63	5.1	13.6	.172	.20
August	67.1	6.4	.2	2.16	.027	.03
September	352.8	45	.1	11.1	.141	.16
Water year 1946-47	10,050.3	335	.1	27.5	.348	4.73

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and records for North Branch Thunder Bay River near Bolton.

Note.- Stage-discharge relation affected by ice Dec. 18, 19, Jan. 4-16, Jan. 31 to Feb. 10.

Thunder Bay River near Hillman, Mich.

Location.- Water-stage recorder, lat. 45°00'30", long. 83°58'15", on line between secs. 8 and 9, T. 30 N., R. 4 E., just upstream from bridge on State Highway 32, a quarter of a mile downstream from Miller Creek, and 5 miles southwest of Hillman.

Drainage area.- 232 square miles.

Records available.- June 1945 to September 1947.

Extremes.- Maximum discharge during year, 1,380 second-feet Apr. 12 (gage height, 8.86 feet); minimum daily, 114 second-feet Aug. 18.
1945-47: Maximum discharge, that of Apr. 12, 1947; minimum daily, that of Aug. 18, 1947.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Diurnal fluctuation from power plant at Atlanta.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	155	163	170	190	220	200	*234	372	291	172	140	134
2	170	171	a150	200	240	200	234	430	276	146	137	158
3	158	180	a170	200	*230	*200	241	617	248	157	137	146
4	165	198	*a190	200	230	190	262	569	228	148	138	147
5	145	196	180	200	200	200	346	754	234	154	149	144
6	150	190	176	*190	220	200	653	672	221	168	144	130
7	144	183	179	190	200	210	733	513	221	159	134	143
8	151	187	184	190	200	190	653	420	214	163	137	129
9	161	186	178	190	200	210	589	354	195	148	128	136
10	147	198	195	200	200	190	610	330	195	157	137	136
11	149	219	194	200	200	180	920	298	202	146	118	164
12	148	210	183	200	200	180	1,260	276	202	155	136	176
13	156	212	180	190	220	190	846	314	194	141	121	165
14	142	203	190	200	230	200	733	476	298	181	122	174
15	152	173	200	230	230	210	692	452	291	201	127	141
16	155	184	200	210	220	210	610	430	255	168	126	152
17	156	205	180	190	200	200	513	372	243	169	131	144
18	153	188	140	200	220	210	488	346	202	158	114	147
19	156	182	150	190	200	190	441	338	204	151	128	148
20	157	178	160	*200	180	186	400	298	187	158	136	153
21	148	177	160	190	200	186	372	291	168	147	213	248
22	153	192	170	160	180	179	363	314	182	152	192	384
23	155	189	180	190	200	196	363	298	164	154	174	298
24	153	172	170	200	190	259	430	276	164	149	162	242
25	160	186	180	210	190	300	420	291	167	145	133	181
26	179	177	170	220	190	350	390	330	196	127	152	173
27	163	183	160	220	190	a300	372	314	163	171	140	177
28	142	178	140	230	190	a270	338	291	154	193	127	164
29	161	177	190	200	-	a250	330	330	167	171	130	176
30	184	185	190	130	-	a240	322	363	191	142	137	178
31	168	-	190	170	-	a230	-	322	-	159	129	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	4,836	184	142	156	0.672	0.77
November	5,622	219	163	187	.806	.90
December	5,449	200	140	176	.759	.88
Calendar year 1946	77,737	750	120	213	.918	12.45
January	6,080	230	130	196	.845	.97
February	5,770	240	180	206	.886	.92
March	6,706	350	179	216	.931	1.07
April	15,138	1,260	234	505	2.18	2.43
May	12,051	754	276	389	1.68	1.94
June	6,317	298	154	211	.909	1.01
July	4,910	201	127	158	.681	.79
August	4,329	213	114	140	.603	.70
September	5,186	384	129	173	.746	.83
Water year 1946-47	82,394	1,260	114	226	.974	13.21

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for Thunder Bay River near Bolton and Black River near Tower.
Note.- Stage-discharge relation affected by ice Dec. 5, Dec. 13 to Mar. 19, Mar. 25, 26.

Thunder Bay River near Bolton, Mich.

Location.- Water-stage recorder, lat. 45°07'40", long. 83°38'30", in sec. 36, T. 32 N., R. 6 E., half a mile upstream from Orchard Hill bridge, 4 miles upstream from North Branch Thunder Bay River, 5 miles southwest of Bolton, and 11 miles northwest of Alpena.

Drainage area.- 588 square miles.

Records available.- March 1945 to September 1947.

Extremes.- Maximum discharge during year, 3,410 second-feet Apr. 12; maximum gage height, 9.02 feet Apr. 8 (backwater from ice); minimum discharge, 182 second-feet Oct. 3 (gage height, 3.05 feet).

1945-47: Maximum discharge, 3,690 second-feet Mar. 15, 1946; maximum gage height, that of Apr. 8, 1947; minimum discharge, 168 second-feet June 28, 29, Sept. 23, 1946 (gage height, 2.98 feet).

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by power plant at Hillman and by Fletcher Pond on Upper South Branch Thunder Bay River.

Rating table, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)

3.2	212	4.5	568	6.0	1,290
3.5	278	5.0	780	7.0	1,905
4.0	403	5.5	1,020	8.8	3,250

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	216	349	349	500	270	480	350	669	648	362	313	301
2	214	313	237	500	300	460	350	870	628	362	349	313
3	210	313	375	500	330	460	360	1,150	512	337	362	325
4	233	349	*349	500	*330	*410	370	1,460	463	325	337	313
5	325	260	337	500	320	420	440	1,580	403	325	389	325
6	337	264	375	470	320	420	600	1,640	418	418	433	313
7	313	264	313	*450	320	420	1,300	1,500	403	349	433	325
8	375	260	313	420	320	400	2,200	1,180	418	313	448	301
9	375	253	273	350	330	410	2,100	895	433	313	433	313
10	375	262	273	330	310	440	a2,000	870	463	349	448	313
11	325	294	278	300	310	440	2,700	780	448	375	433	325
12	294	299	290	300	310	420	3,170	690	403	362	433	262
13	290	349	251	300	310	430	3,250	628	375	433	418	257
14	262	389	225	300	320	450	2,770	735	512	479	418	262
15	290	389	231	300	350	420	*2,180	848	669	495	389	283
16	255	313	280	320	370	440	1,840	a1,000	648	549	403	248
17	278	294	320	300	350	430	1,580	a1,100	568	495	403	266
18	280	301	370	280	350	400	1,320	a1,000	628	479	389	262
19	264	301	380	300	350	400	1,150	a800	495	479	418	278
20	240	287	380	300	390	370	995	a700	375	479	418	290
21	227	287	360	270	400	370	870	a640	362	463	433	337
22	244	290	350	260	430	370	758	a700	325	479	463	403
23	266	290	320	260	480	370	712	a700	389	479	463	479
24	287	296	370	270	500	350	735	a630	403	463	448	389
25	283	278	370	310	500	330	802	a600	418	433	433	349
26	296	283	360	320	500	450	802	712	463	448	418	294
27	301	337	410	320	500	600	758	895	463	495	375	233
28	296	362	350	320	480	700	669	690	375	512	375	225
29	292	349	380	300	-	760	628	568	362	448	375	283
30	325	362	400	250	-	600	608	628	337	418	337	313
31	362	-	450	260	-	400	-	712	-	362	313	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	8,930	375	210	288		
November	9,237	389	253	308		
December	10,319	450	225	333		
Calendar year 1946	166,117	3,610	188	455		
January	10,660	500	250	344		
February	10,350	500	270	370		
March	13,820	760	330	446		
April	38,367	3,250	350	1,279		
May	27,570	1,640	568	889		
June	13,807	669	325	460		
July	13,078	549	313	422		
August	12,500	463	313	403		
September	9,180	479	225	306		
Water year 1946-47	177,818	3,250	210	487		

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for Thunder Bay River near Hillman and Upper South Branch Thunder Bay River near Lachine.
Note.- Stage-discharge relation affected by ice Dec. 16 to Apr. 9.

Upper South Branch Thunder Bay River near Lachine, Mich.

Location.- Water-stage recorder, lat. 45°03'30", long. 83°47'00", on line between secs. 23 and 26, T. 31 N., R. 5 E., just upstream from bridge on State Highway 32, 1 mile upstream from mouth, 3½ miles downstream from Fletcher Pond, and 3½ miles southwest of Lachine. Datum of gage is 711.80 feet above mean sea level, datum of 1929.

Drainage area.- 171 square miles.

Records available.- March 1945 to September 1947.

Extremes (regulated).- Maximum daily discharge during year, 424 second-feet May 16; maximum gage height, 4.60 feet Apr. 12 (backwater from Thunder Bay River); minimum daily discharge, 3.8 second-feet Oct. 2.

1945-47: Maximum daily discharge, 450 second-feet Mar. 15, 1946; maximum gage height, that of Apr. 12, 1947; minimum daily discharge, 1.0 second-foot Sept. 13, 1946.

Remarks.- Records good except those for periods of ice effect, backwater from Thunder Bay River, or no gage-height record, which are fair. Flow regulated by Fletcher Pond.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.6	125	118	b135	b60	189	*16	21	162	124	131	145
2	3.8	104	*93	133	b60	185	18	e30	129	113	174	147
3	14	106	93	133	*b60	*162	21	e35	79	120	176	143
4	84	*73	93	133	b60	147	25	e35	79	124	187	143
5	162	28	93	131	b60	140	e35	e27	77	128	252	149
6	160	28	93	*129	b60	138	e40	e20	75	164	262	147
7	181	28	89	129	61	138	e43	e16	73	70	302	145
8	227	28	56	101	59	140	e45	e13	84	65	302	143
9	225	28	45	62	b60	a150	e40	e100	101	76	302	143
10	193	30	45	56	61	a170	e45	238	131	145	302	143
11	133	29	45	56	56	a170	e50	149	124	149	302	a50
12	111	37	45	b56	b56	a170	e60	136	96	164	302	a80
13	107	153	45	b56	56	a170	e50	116	77	252	292	a56
14	104	153	b45	56	56	166	e45	107	126	312	292	56
15	104	144	b70	58	56	b170	e40	238	142	312	292	56
16	104	70	b110	b58	56	162	e35	424	129	322	292	61
17	106	70	b130	b58	b56	155	e30	341	150	312	282	100
18	104	69	b140	56	62	155	e26	160	252	312	282	100
19	61	69	b140	56	104	155	e22	140	118	312	292	100
20	59	69	b140	*58	129	a120	e20	133	82	312	282	100
21	59	69	b140	b60	155	a100	e19	133	80	322	292	95
22	62	70	140	b60	194	a100	18	133	93	322	258	59
23	102	65	138	61	217	a100	18	153	181	322	272	35
24	107	65	138	61	214	a40	e25	124	176	302	282	32
25	107	65	136	58	208	17	e30	88	192	302	272	30
26	106	b100	134	59	202	a100	e24	372	232	312	232	30
27	106	131	138	59	198	a325	e19	328	190	322	225	29
28	104	147	b140	61	194	a350	15	115	124	282	223	44
29	107	145	b140	61	-	a150	13	88	120	183	210	107
30	149	145	b140	b60	-	a50	15	104	124	176	153	106
31	147	-	b135	b60	-	a16	-	153	-	125	145	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	3,403.4	227	3.8	110		
November	2,443	153	28	81.4		
December	3,247	140	45	105		
Calendar year 1946	42,992.4	450	1.0	118		
January	2,370	135	56	76.5		
February	2,870	217	56	102		
March	4,500	350	46	145		
April	902	60	13	30.1		
May	4,270	424	13	138		
June	3,798	252	73	127		
July	6,908	322	65	223		
August	7,864	302	131	254		
September	2,774	149	29	92.5		
Water year 1946-47	45,349.4	424	3.8	124		

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and record of gate operations at Fletcher Pond.

b Stage-discharge relation affected by ice.

e Backwater from Thunder Bay River; discharge computed on basis of gage heights, 1 discharge measurement, weather records, record of gate operations at Fletcher Pond, and records for Thunder Bay River near Hillman.

North Branch Thunder Bay River near Bolton, Mich.

Location.- Water-stage recorder, lat. 45°08'55", long. 83°36'35", in sec. 28, T. 32 N., R. 7 E., 1½ miles upstream from mouth, 2½ miles south of Bolton, and 9 miles northwest of Alpena.

Drainage area.- 184 square miles.

Records available.- March 1945 to September 1947.

Extremes.- Maximum discharge during year, 2,330 second-feet Apr. 13 (gage height, 7.00 feet); minimum, 8.6 second-feet Sept. 9 (gage height, 2.74 feet).
1945-47: Maximum discharge, that of Apr. 13, 1947; minimum, 6.1 second-feet Aug. 29, 1945 (gage height, 2.67 feet).

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	16	17	26	25	35	*60	457	178	39	19	9.8
2	13	14	*17	23	35	35	65	580	175	42	23	11
3	11	15	17	21	32	32	75	756	166	36	23	10
4	10	15	23	20	*30	*30	100	845	149	32	16	9.4
5	11	*15	25	19	25	30	200	880	129	31	15	12
6	20	17	25	20	22	35	600	810	110	36	16	12
7	14	14	25	*25	30	37	800	838	108	33	16	12
8	10	19	20	30	40	37	900	673	110	37	18	9.8
9	10	23	17	35	33	37	800	477	103	39	23	10
10	9.5	21	15	30	25	33	1,280	382	97	36	23	13
11	10	17	27	23	23	34	1,350	305	92	34	17	15
12	10	17	29	21	27	43	1,520	261	85	36	15	14
13	12	25	31	20	38	50	1,820	216	84	25	12	15
14	10	24	27	25	45	45	1,900	216	103	19	11	14
15	13	20	22	32	40	40	1,560	205	94	24	11	12
16	16	19	17	25	32	33	*1,310	208	88	27	11	12
17	16	18	17	23	25	36	1,100	208	90	26	11	16
18	17	15	20	22	29	43	938	202	90	22	9.4	15
19	15	15	23	21	32	52	782	191	88	27	12	15
20	14	20	23	20	32	48	655	184	79	26	14	13
21	13	20	17	25	45	42	557	172	70	25	15	23
22	12	22	16	20	35	38	487	152	60	25	14	21
23	16	20	12	25	25	42	418	146	43	26	13	23
24	17	22	12	30	23	52	375	163	43	25	15	35
25	16	17	18	30	30	55	357	188	43	26	14	33
26	12	12	15	28	40	50	413	191	38	23	12	30
27	13	16	13	23	45	70	432	188	39	27	11	30
28	12	19	16	25	37	75	384	181	37	20	13	31
29	13	20	20	25	-	70	339	184	40	19	17	23
30	20	12	25	20	-	65	370	188	35	18	16	24
31	20	-	30	13	-	55	-	178	-	17	13	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	418.5	20	9.5	13.5	0.073	0.08
November	539	25	12	18.0	.098	.11
December	631	31	12	20.4	.111	.13
Calendar year 1946	37,049.5	1,600	9.5	102	.554	7.47
January	745	35	13	24.0	.130	.15
Fsbruary	900	45	22	32.1	.174	.18
March	1,379	75	30	44.5	.242	.28
April	21,947	1,900	60	732	3.98	4.44
May	10,805	880	146	349	1.90	2.19
June	2,667	178	35	88.9	.483	.54
July	878	42	17	28.3	.154	.18
August	468.4	23	9.4	15.1	.082	.09
Septsmber	523.0	35	9.4	17.4	.095	.11
Water year 1946-47	41,900.9	1,900	9.4	115	.625	8.48

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 27 to Dec. 8, Dec. 14 to Apr. 9 (no gage-height record Dec. 31 to Jan. 6, Jan. 10-19).

Lower South Branch Thunder Bay River near Hubbard Lake, Mich.

Location.- Water-stage recorder, lat. 44°51'33", long. 83°35'40", in sec. 4, T. 28 N., R. 7 E., 50 feet downstream from Hubbard Lake and 1 mile south of town of Hubbard Lake.

Drainage area.- 146 square miles.

Records available.- August 1945 to September 1947.

Extremes (regulated).- Maximum daily discharge during year, 512 second-feet May 7, 8; minimum daily, 0.6 second-foot Apr. 27, 28.
1945-47: Maximum daily discharge, that of May 7, 8, 1947; minimum daily, 0.2 second-foot Nov. 24-26, 1945, Apr. 14, 15, 20, 1946.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by Hubbard Lake Dam.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a20	87	68	117	64	152	4.8	3.0	149	85	77	116
2	a50	77	68	117	64	152	3.6	74	58	85	77	132
3	43	78	92	110	64	152	3.6	208	35	85	75	152
4	74	42	102	99	64	150	3.6	309	35	85	104	152
5	104	14	100	99	64	147	3.9	431	33	103	129	152
6	104	14	100	80	64	147	3.9	472	33	86	129	152
7	104	14	61	59	64	147	3.9	512	33	39	132	148
8	104	11	30	59	64	172	3.9	512	67	39	132	148
9	104	11	30	59	66	b210	3.9	450	90	87	132	152
10	85	11	32	59	66	*b250	3.9	238	124	135	132	148
11	74	10	30	59	66	b250	3.3	73	167	160	129	152
12	73	40	26	59	66	b250	3.0	44	174	167	132	152
13	73	125	26	59	64	*b230	2.4	78	178	160	a132	152
14	73	88	53	59	64	b250	2.2	186	198	160	132	160
15	75	13	73	59	66	b270	2.0	198	198	156	132	156
16	75	13	73	59	66	301	2.0	206	178	156	129	156
17	75	13	95	59	66	284	1.8	198	112	174	129	156
18	52	13	106	59	75	263	1.6	194	33	190	141	156
19	33	12	91	61	93	179	1.6	198	17	186	156	160
20	36	12	91	61	112	125	1.6	198	14	190	152	160
21	34	11	89	61	128	125	1.4	198	14	190	152	87
22	33	7.5	89	a61	134	123	1.4	202	51	186	152	22
23	55	13	87	61	134	67	1.4	234	145	186	156	10
24	82	58	87	61	132	6.5	1.2	246	174	186	156	10
25	78	89	87	61	147	5.1	1.0	254	171	190	135	10
26	78	104	87	61	154	88	.7	258	167	194	119	10
27	80	117	89	61	152	137	.6	246	127	190	116	10
28	96	128	95	61	152	163	.6	254	85	147	116	41
29	106	123	95	61	-	130	1.0	250	85	110	116	81
30	108	111	95	63	-	58	1.6	226	85	91	119	81
31	108	-	108	64	-	7.9	-	214	-	77	119	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	2,289	108	20	73.8		
November	1,459.5	128	7.5	48.6		
December	2,355	108	26	76.0		
Calendar year 1946	38,327.3	440	.2	105		
Jannary	2,128	117	59	68.6		
February	2,515	154	64	89.8		
March	4,991.5	301	5.1	161		
April	71.4	4.8	.6	2.38		
May	7,364.0	512	3.0	238		
June	3,030	198	14	101		
July	4,275	194	39	138		
August	3,939	156	75	127		
September	3,374	160	10	112		
Water year 1946-47	37,791.4	512	.6	104		

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of record of gate operations at Hubbard Lake Dam.
b Stage-discharge relation affected by ice.

Middle Branch Au Sable River at Grayling, Mich.

Location.- Water-stage recorder, lat. 44°39'35", long. 84°42'45", in sec. 7, T. 26 N., R. 3 W., just upstream from bridge on U. S. Highway 27 at Grayling and three-quarters of a mile upstream from East Branch. Datum of gage is 1,123.49 feet above mean sea level, datum of 1929.

Drainage area.- 110 square miles.

Records available.- November 1942 to September 1947.

Extremes.- Maximum discharge during year, 241 second-feet Apr. 12 (gage height, 2.81 feet); minimum, 38 second-feet (regulated) Jan. 22 (gage height, 0.95 foot).
1942-47: Maximum discharge, 274 second-feet June 2, 1943 (gage height, 3.00 feet); minimum, 28 second-feet (regulated) Apr. 21, 1946 (gage height, 0.80 foot).

Remarks.- Records good. Diurnal fluctuation caused by power plant upstream.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

1.1	48	2.0	141
1.2	56	2.3	177
1.4	75	2.8	241

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	61	63	60	64	62	73	133	124	71	62	59
2	62	60	56	62	73	67	73	165	127	69	60	67
3	60	65	59	63	72	63	78	183	110	68	55	63
4	60	67	67	62	68	58	85	183	104	69	63	58
5	59	64	68	65	64	62	102	189	99	67	56	57
6	57	62	71	62	66	66	140	177	102	67	57	58
7	56	62	62	63	65	67	159	153	98	78	58	53
8	58	67	67	63	63	61	152	136	99	71	52	56
9	55	68	73	62	64	65	134	125	92	66	57	57
10	54	75	73	60	62	63	137	120	88	73	59	56
11	58	79	67	63	62	60	189	117	92	84	55	68
12	57	75	63	63	62	66	234	112	86	86	55	70
13	54	72	73	63	65	66	215	120	87	80	53	92
14	57	70	54	68	67	66	189	147	98	84	52	87
15	57	70	56	71	68	61	189	152	105	84	52	71
16	56	66	65	71	69	60	189	136	97	82	51	70
17	62	75	68	67	70	61	171	125	87	78	47	68
18	54	67	62	62	64	62	165	120	79	77	54	67
19	58	70	60	73	65	60	159	116	88	73	51	66
20	59	69	65	73	60	65	146	112	78	79	55	68
21	55	66	63	63	61	62	137	117	79	82	97	105
22	54	73	63	52	65	62	137	122	93	74	102	139
23	67	56	65	60	62	66	143	120	66	73	86	133
24	51	67	60	70	65	77	177	117	71	68	68	106
25	62	70	54	72	67	87	177	125	72	64	64	88
26	67	68	60	72	66	62	153	109	81	66	61	84
27	66	66	51	78	65	71	148	109	75	67	59	81
28	60	62	61	77	67	83	136	115	72	73	59	79
29	62	62	60	72	-	77	131	118	75	72	56	84
30	65	64	62	57	-	70	131	135	76	78	60	81
31	62	-	61	50	-	72	-	127	-	63	56	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,829	67	51	59.0	0.536	0.62
November	2,018	79	56	67.3	.612	.68
December	1,952	73	51	63.0	.573	.66
Calendar year 1946	27,200	177	30	74.5	.677	9.18
January	2,019	78	50	65.1	.592	.68
February	1,831	73	60	65.4	.595	.62
March	2,050	87	58	66.1	.601	.69
April	4,449	234	73	148	1.35	1.51
May	4,135	189	109	133	1.21	1.40
June	2,700	127	66	90.0	.818	.91
July	2,286	86	63	73.7	.670	.77
August	1,872	102	47	60.4	.549	.63
September	2,291	139	53	76.4	.695	.78
Water year 1946-47	29,432	234	47	80.6	.733	9.95

Rifle River at Michigan Highway 70, near Sterling, Mich.

Location.- Water-stage recorder, lat. 44°04', long. 84°02', in sec. 5, T. 19 N., R. 4 E., at bridge on State Highway 70, 3 miles north of Sterling.

Drainage area.- 320 square miles.

Records available.- January 1937 to September 1947.

Extremes.- Maximum discharge during year, 2,860 second-feet Apr. 6 (gage height, 9.21 feet); minimum, 87 second-feet (regulated) Dec. 2 (gage height, 1.14 feet).
1937-47: Maximum discharge, 3,610 second-feet June 2, 1943; maximum gage height, 13.90 feet Mar. 25, 1943 (backwater from ice); minimum discharge, that of Dec. 2, 1946.

Remarks.- Records good except those for periods of ice effect, which are fair. Diurnal fluctuation during low flow caused by power plant above station.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

1.3	109	3.5	570
1.4	123	4.5	865
1.5	138	6.0	1,410
2.0	220	8.0	2,260
2.5	325	8.8	2,660

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	164	177	185	190	250	190	375	640	495	187	152	138
2	158	195	143	190	270	200	450	935	433	177	147	142
3	155	233	190	210	260	190	600	1,330	409	169	148	150
4	150	373	220	200	250	180	800	1,140	361	166	155	144
5	147	274	213	200	*200	200	1,220	1,410	337	164	146	141
6	146	220	199	200	190	200	2,660	1,080	325	167	144	138
7	141	209	194	210	200	190	2,260	790	302	165	138	135
8	147	228	190	210	200	180	*1,730	625	337	171	134	124
9	146	231	190	200	200	190	1,370	570	361	164	134	128
10	147	239	213	200	190	180	1,330	470	314	161	135	135
11	148	280	206	210	190	*200	1,970	445	302	159	135	197
12	152	233	215	220	180	220	2,160	409	291	260	126	270
13	150	220	*265	200	200	250	1,570	433	280	209	126	259
14	147	190	250	220	210	300	1,110	470	314	157	126	233
15	152	190	230	250	210	290	970	445	325	154	123	190
16	153	197	230	250	200	275	820	458	291	159	126	171
17	153	235	230	*220	210	250	715	433	267	163	126	163
18	164	224	200	220	200	225	715	520	257	177	119	155
19	171	204	200	220	190	210	685	558	239	177	120	152
20	164	200	210	210	180	220	610	470	224	172	126	161
21	156	197	200	220	170	300	520	655	211	159	190	325
22	163	200	210	180	190	300	482	730	204	187	211	640
23	156	194	200	180	180	350	532	532	194	172	179	421
24	158	192	190	210	190	900	1,250	470	192	159	166	278
25	163	197	180	230	200	750	1,040	558	207	150	153	243
26	172	200	180	270	200	600	790	715	206	147	155	211
27	164	194	170	300	190	*500	715	582	202	160	147	200
28	159	192	190	320	180	450	625	495	187	211	142	194
29	180	177	200	300	-	420	558	685	188	179	144	197
30	202	188	180	250	-	400	545	730	187	164	144	209
31	188	-	180	200	-	380	-	558	-	156	144	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	4,916	202	141	159	0.497	0.57
November	6,483	373	177	216	.675	.75
December	6,253	265	143	202	.631	.73
Calendar year 1946	99,632	2,360	126	274	.856	11.60
January	6,890	320	180	222	.694	.80
February	5,680	270	170	203	.634	.66
March	9,690	900	180	313	.978	1.13
April	31,177	2,660	375	1,039	3.25	3.63
May	20,341	1,410	409	656	2.05	2.36
June	8,442	495	187	281	.878	.98
July	5,622	280	147	181	.566	.65
August	4,461	211	119	144	.450	.52
September	6,244	640	124	208	.650	.73
Water year 1946-47	116,199	2,660	119	318	.994	13.51

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 3, 4, Dec. 14 to Apr. 4.

Shiawassee River at Owosso, Mich.

Location.- Water-stage recorder, lat. 43°00'54", long. 84°10'52", in SW¼ sec. 12, T. 7 N., R. 2 E., a quarter of a mile north of Owosso. Datum of gage is 707.25 feet above mean sea level, datum of 1929.

Drainage area.- 538 square miles.

Records available.- March 1931 to September 1947.

Average discharge.- 14 years (1931-33, 1935-47), 294 second-feet.

Extremes.- Maximum discharge during year, 6,240 second-feet Apr. 6 (gage height, 10.35 feet); minimum, 23 second-feet (regulated) Oct. 10; minimum gage height, 1.57 feet Oct. 27; minimum daily discharge, 25 second-feet (regulated) Oct. 10.
1931-47: Maximum discharge, that of Apr. 6, 1947; minimum, 0.2 second-foot (regulated) July 27, 1934 (gage height, 1.12 feet); minimum daily, 2.0 second-feet (regulated) July 28, 1934.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by power plant at Shiawasseetown.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Msr.	Apr.	May	June	July	Aug.	Sept.
1	35	85	76	110	275	110	1,060	644	931	170	132	221
2	41	117	70	100	300	100	1,750	800	1,580	155	125	317
3	42	102	60	90	325	110	2,510	710	1,370	145	124	316
4	53	124	*72	80	250	110	2,720	688	1,060	145	130	298
5	50	100	91	75	275	110	4,300	642	950	130	120	271
6	31	106	91	80	250	100	*5,920	580	778	120	114	226
7	56	104	92	85	225	100	4,730	560	688	130	112	205
8	55	104	84	85	200	110	4,480	540	939	130	109	176
9	56	111	91	85	200	110	4,050	482	1,190	100	103	149
10	25	110	80	85	*200	100	3,400	458	1,190	100	100	170
11	47	106	82	90	180	110	2,960	440	1,250	110	104	221
12	60	93	115	90	150	200	2,520	423	1,160	110	94	500
13	31	89	161	*90	180	300	2,100	430	1,010	100	79	542
14	63	94	128	200	190	600	1,820	672	1,030	120	88	549
15	43	97	215	400	190	887	1,570	602	850	150	93	516
16	55	101	130	350	190	806	1,240	679	800	190	101	475
17	53	99	133	325	190	770	1,090	665	732	190	105	414
18	70	92	120	300	180	670	1,030	688	569	250	81	329
19	76	92	110	275	180	617	1,400	642	445	350	106	292
20	71	107	120	300	160	694	1,580	620	387	450	123	256
21	74	103	110	350	150	787	1,650	882	329	400	111	286
22	68	97	120	375	140	771	1,340	1,070	290	377	95	594
23	62	90	120	350	120	884	1,160	950	260	357	112	507
24	63	96	110	350	110	1,230	1,060	1,140	240	327	116	464
25	74	86	100	500	100	1,040	925	1,140	230	299	108	397
26	75	85	100	600	110	639	825	1,140	230	256	108	332
27	58	78	120	620	120	839	745	975	220	234	123	277
28	77	85	130	456	120	920	677	950	200	225	132	246
29	77	85	140	415	-	1,010	591	975	180	210	155	252
30	63	77	130	333	-	948	595	925	180	193	174	258
31	92	-	120	253	-	983	-	875	-	143	206	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,796	92	25	57.9	0.108	0.12
November	2,915	124	77	97.2	.181	.20
December	3,421	215	60	110	.204	.24
Calendar year 1946	94,220	2,830	25	258	.480	6.53
January	7,897	620	75	255	.474	.55
February	5,260	325	100	188	.349	.36
March	16,765	1,230	100	541	1.01	1.16
April	61,798	5,920	591	2,060	3.83	4.27
May	22,987	1,140	423	742	1.38	1.59
June	21,268	1,580	180	709	1.32	1.47
July	6,366	450	100	205	.381	.44
August	3,583	206	79	116	.216	.25
September	10,056	594	149	335	.623	.70
Water year 1946-47	164,112	5,920	25	450	.836	11.35

* Winter discharge measurement made on this day.

Note.- No gage-height record June 22 to July 21; discharge computed on basis of weather records and records for station near Fergus Stage-discharge relation affected by ice Dec. 2, 3, Dec. 18 to Jan. 26, Feb. 1 to Mar. 15 (no gage-height record Jan. 4-13).

Shiawassee River near Fergus, Mich.

Location.- Wire-weight gage, lat. 43°15'17", long. 84°06'20", in sec. 22, T. 10 N., R. 3 E., at highway bridge, 1.2 miles east of Fergus and 1¾ miles upstream from Bear Creek. Datum of gage is 587.80 feet above mean sea level, datum of 1929.

Drainage area.- 637 square miles.

Records available.- January 1940 to September 1947.

Extremes.- Maximum daily discharge during year, 7,290 second-feet Apr. 6 (includes overflow bypassing gage); maximum gage height, 12.50 feet Apr. 6, from floodmarks; minimum discharge observed, 30 second-feet Oct. 12 (gage height, 3.12 feet).
1940-47: Maximum daily discharge, that of Apr. 6, 1947; maximum gage height, that of Apr. 6, 1947; minimum discharge observed, 29 second-feet Aug. 31, 1946 (gage height, 3.10 feet).

Remarks.- Records good except those for periods of ice effect or overflow bypassing gage, which are fair. Gage read twice daily.

Rating table, water year 1946-47, except for periods of ice effect or overflow bypassing gage (gage height, in feet, and discharge, in second-feet)

3.2	35	5.6	260	8.5	1,150
3.4	48	6.1	344	9.5	1,750
4.1	99	6.8	508	10.8	2,780
4.9	174	7.6	750	12.5	6,850

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	93	78	90	300	120	1,310	810	1,030	232	185	208
2	49	104	55	80	325	120	1,990	1,550	3,060	196	168	246
3	39	119	60	110	350	120	e3,100	1,100	2,600	185	148	306
4	40	128	*65	100	375	120	e3,590	960	1,610	185	148	315
5	40	119	86	90	300	120	e5,490	960	1,250	174	148	290
6	50	123	104	90	300	110	e7,290	850	1,080	153	138	267
7	48	107	102	100	270	*110	e5,780	790	915	168	123	246
8	44	119	92	100	230	110	e5,250	732	982	174	134	214
9	55	119	96	100	250	140	e4,810	698	1,340	134	128	185
10	62	115	101	100	*230	140	e4,080	620	1,340	134	115	158
11	52	123	90	110	200	140	e3,690	620	1,400	148	119	190
12	33	119	97	110	180	200	3,100	590	1,400	143	119	288
13	44	103	153	*100	210	400	2,520	635	1,280	119	111	521
14	52	101	123	100	220	1,000	2,190	732	2,430	128	105	521
15	44	119	143	250	210	1,200	1,970	810	1,550	158	107	348
16	55	105	138	450	220	1,100	1,620	790	1,120	202	171	508
17	47	115	143	400	210	1,000	1,340	892	982	202	105	456
18	60	107	120	375	210	900	1,270	850	810	208	119	397
19	80	91	140	350	200	800	1,550	830	620	408	97	324
20	93	102	130	350	180	900	2,270	770	521	420	115	298
21	85	105	140	450	150	1,000	2,270	915	456	364	158	282
22	85	128	130	425	120	1,000	1,820	1,310	386	420	134	420
23	85	107	140	400	130	1,200	1,520	1,150	334	408	115	605
24	75	105	130	350	140	1,800	1,370	1,180	315	386	119	521
25	72	111	120	400	140	1,500	1,200	1,340	290	354	128	469
26	85	96	110	700	130	1,000	1,080	1,370	290	306	143	408
27	76	97	130	700	130	1,520	982	1,220	282	282	128	344
28	77	83	170	600	130	1,820	892	1,120	260	260	138	290
29	82	89	200	500	-	1,400	810	1,120	239	253	143	274
30	82	89	180	400	-	1,250	770	1,150	226	226	158	274
31	80	-	130	350	-	1,220	-	1,050	-	208	174	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,911	93	33	61.6	0.097	0.11
November	3,241	128	83	108	.170	.19
December	3,726	200	55	120	.188	.22
Calendar year 1946	118,096	4,500	33	324	.509	6.90
January	8,830	700	80	285	.447	.52
February	6,040	375	120	216	.339	.35
March	23,560	1,800	110	760	1.19	1.37
April	76,924	7,290	770	2,564	4.03	4.50
May	29,514	1,550	590	952	1.49	1.72
June	30,398	3,060	226	1,013	1.59	1.77
July	7,338	420	119	237	.372	.43
August	4,018	185	97	132	.207	.24
September	10,373	605	158	346	.543	.61
Water year 1946-47	205,936	7,290	33	564	.885	12.03

* Winter discharge measurement made on this day.
e Overflow bypassing gage; discharge computed on basis of 3 discharge measurements and records for station at Owosso.
Note.- Stage-discharge relation affected by ice Dec. 2-4, Dec. 18 to Mar. 26.

Saginaw River at Saginaw, Mich.

Location.- Staff gage, lat. 43°26'00", long. 83°56'30", in sec. 24, T. 12 N., R. 4 E., at Genesee Street Bridge in Saginaw, 3¾ miles downstream from Tittabawassee River and 18.1 miles upstream from mouth. Datum of gage is 566.85 feet above U. S. Lake Survey datum (levels by U. S. Weather Bureau).

Drainage area.- 6,060 square miles.

Records available.- 1904, 1908, 1909, 1912, 1913, 1916, 1918, 1919, 1929, 1930, and 1942 (flood discharge for certain periods only); December 1942 to September 1947 (high-water periods only).

Extremes.- Maximum discharge during year, 40,200 second-feet Apr. 8 (gage height, 19.9 feet).

1904-47: Maximum discharge, 68,000 second-feet Mar. 29, 1904 (gage height, 24.9 feet).

Remarks.- Records fair. Gage read every two hours. Discharge computed by using level of Lake Huron as a factor except above a stage of 18 feet.

Discharge, in second-feet, 1904, 1908, 1909, 1912, 1913, 1916, 1918, 1919, 1929, 1930, 1942, 1947

Day	1904		1908		1909		1912				1913	
	Mar.	Apr.	Mar.	Apr.	Apr.	May	Mar.	Apr.	May	June	Mar.	Apr.
1	-	57,700	-	26,100	-	18,600	-	25,800	-	23,200	-	18,100
2	-	53,600	-	25,400	-	31,600	-	32,600	-	20,400	-	18,600
3	-	52,500	-	24,000	-	40,100	-	36,000	-	-	-	18,400
4	-	51,400	-	21,900	-	34,300	-	35,700	-	-	-	20,000
5	-	48,200	-	19,900	-	31,900	-	37,300	-	-	-	25,700
6	-	43,500	-	18,100	-	29,800	-	42,400	-	-	-	28,600
7	-	38,900	-	17,000	-	26,800	-	47,500	-	-	-	28,400
8	-	35,100	-	16,700	-	23,600	-	49,500	-	-	-	26,400
9	-	32,000	12,900	16,500	-	21,100	-	48,400	-	-	-	23,400
10	-	29,300	15,500	16,400	-	19,600	-	43,600	-	-	-	20,800
11	14,000	27,200	18,900	16,200	-	18,400	-	38,600	-	-	-	19,500
12	16,700	25,400	23,000	15,400	-	16,800	-	34,700	-	-	9,620	19,100
13	18,600	23,700	27,700	14,200	-	14,800	-	31,000	-	-	12,600	19,000
14	19,500	22,000	32,900	13,200	-	13,300	-	27,100	-	-	15,400	18,300
15	19,900	20,600	37,200	12,500	-	12,200	-	23,800	-	-	17,900	17,000
16	19,900	19,900	39,400	-	-	-	-	21,500	-	-	29,700	15,600
17	19,700	19,200	38,900	-	-	-	-	19,600	-	-	33,300	14,000
18	19,300	16,100	37,400	-	-	-	-	17,800	-	-	31,500	12,600
19	18,700	16,900	36,200	-	-	-	-	16,900	-	-	26,400	11,400
20	17,900	17,800	33,200	-	-	-	-	16,400	15,600	-	22,200	10,700
21	17,400	18,100	29,700	-	-	-	-	15,600	21,200	-	19,400	-
22	17,200	17,400	27,000	-	-	-	-	14,400	36,800	-	18,300	-
23	18,600	16,600	25,200	-	-	-	-	-	52,100	-	17,900	-
24	24,000	16,000	23,700	-	-	-	-	-	57,700	-	18,100	-
25	33,300	15,400	22,600	-	-	-	-	-	56,600	-	19,700	-
26	43,300	14,800	21,700	-	-	-	-	-	51,500	-	23,200	-
27	54,100	14,200	21,400	-	-	-	-	-	44,600	-	23,800	-
28	63,600	13,700	22,500	-	-	-	-	-	38,700	-	22,000	-
29	67,800	-	25,100	-	12,100	-	-	-	34,200	-	19,900	-
30	66,300	-	26,800	-	12,800	-	14,600	-	30,300	-	18,300	-
31	62,600	-	26,600	-	-	-	18,900	-	26,400	-	17,800	-

Discharge, in second-feet, of Saginaw River at Saginaw, Mich., 1904, 1908, 1909, 1912, 1913, 1916, 1918, 1919, 1929, 1930, 1942, 1947--Continued

Day	1916		1918		1919		1929		1930		1942
	Mar.	Apr.	Mar.	Apr.	Mar.	Apr.	Mar.	Apr.	Feb.	Mar.	Mar.
1	-	59,100	-	16,500	-	14,400		15,800	-	26,300	-
2	-	55,600	-		-	12,700		16,600	-	24,000	-
3	-	50,500	-		-	-		19,600	-	21,800	-
4	-	43,900	-		-	-		20,700	-	19,600	-
5	-	37,800	-		-	-		22,000	-	17,400	-
6	-	32,900	-		-	-		25,500	-	16,000	-
7	-	28,100	-		-	-		30,900	-	14,800	-
8	-	24,500	-		-	-		35,600	-	13,300	-
9	-	21,000	-		-	-		39,000	-	12,000	16,100
10	-	19,300	-		-	-		40,100	-	-	17,200
11	-	16,800	-		-	-		37,900	-	-	20,900
12	-	14,600	-		-	-		33,600	-	-	20,700
13	-	-	17,800		-	-		29,300	-	-	23,300
14	-	-	19,200		-	-		26,100	-	-	23,700
15	-	-	22,000		-	-		23,300	-	-	23,200
16	-	-	25,600		13,400	-		21,200	-	-	23,200
17	-	-	30,000		19,800	-		19,600	-	-	28,600
18	-	-	34,200		32,700	-		17,800	-	-	40,900
19	-	-	39,400		43,300	-		16,100	-	-	48,600
20	-	-	44,800		47,000	-		14,800	-	-	46,600
21	-	-	49,200		44,500	-		-	13,800	-	44,700
22	-	-	51,500		39,900	-		-	16,000	-	41,400
23	-	-	50,200		35,100	-		-	18,200	-	37,000
24	-	-	46,100		30,100	-		-	20,300	-	32,000
25	-	-	40,300		25,600	-		-	22,000	-	26,800
26	-	-	35,000		22,500	-		-	25,300	-	23,100
27	17,600	-	29,900		20,600	-		-	28,400	-	18,700
28	32,900	-	25,700		19,000	-		-	28,500	-	15,100
29	50,300	-	22,700		17,100	-		-	-	-	14,800
30	56,500	-	20,300		15,700	-		-	-	-	13,700
31	59,800	-	18,200		15,800	-	14,200	-	-	-	-

Day	1947											
					Mar.	Apr.	May	June				
1					-	-	-	-				
2					-	16,000	-	e16,000				
3					-	18,100	16,200	e19,000				
4					-	20,300	18,000	20,500				
5					-	23,200	18,600	18,900				
6					-	28,500	17,000	17,800				
7					-	36,600	16,100	16,900				
8					-	39,900	13,900	e16,000				
9					-	37,800	-	14,400				
10					-	35,700	-	-				
11					-	33,500	-	-				
12					-	32,800	-	14,800				
13					-	31,200	-	13,200				
14					-	27,900	16,000	-				
15					-	24,800	13,400	-				
16					-	21,600	12,900	-				
17					-	17,700	13,100	-				
18					-	15,500	-	-				
19					-	15,000	-	-				
20					-	-	13,300	-				
21					-	-	13,600	-				
22					-	-	14,800	-				
23					-	-	15,700	-				
24					-	-	16,600	-				
25					17,800	-	16,600	-				
26					18,400	-	e16,000	-				
27					16,400	-	15,300	-				
28					-	-	15,100	-				
29					-	-	14,300	-				
30					-	-	-	-				
31					-	-	-	-				

e Level of Lake Huron not representative of conditions for day; discharge computed on basis of weather records and records for stations on nearby streams.

Flint River at Genesee, Mich.

Location.- Wire-weight gage lat. 43°06'25", long. 83°37'00", in sec. 10, T. 8 N., R. 7 E., at highway bridge at Genesee, three-quarters of a mile downstream from Butternut Creek. Datum of gage is 695.27 feet above mean sea level, datum of 1929.

Drainage area.- 593 square miles.

Records available.- March 1931 to September 1947.

Average discharge.- 16 years, 333 second-feet.

Extremes.- Maximum discharge during year, 8,650 second-feet Apr. 8 (gage height, 27.06 feet, from floodmark); minimum observed, 43 second-feet Oct. 16 (gage height, 13.05 feet).

1931-47: Maximum discharge, that of Apr. 8, 1947; minimum observed, about 10 second-feet Aug. 15, 1936.

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	57	111	100	140	400	110	1,240	718	1,960	184	208	189
2	54	144	100	130	350	100	1,730	790	2,700	178	203	160
3	51	145	100	130	350	100	2,410	790	2,750	168	187	144
4	52	145	*95	120	325	100	3,660	790	2,810	158	145	150
5	58	152	90	120	275	110	5,520	790	2,700	155	139	212
6	59	147	85	120	250	110	*7,260	790	2,300	152	134	201
7	54	*147	80	110	200	110	8,440	760	1,880	155	140	172
8	50	152	80	110	170	110	7,930	730	1,760	155	148	156
9	48	144	80	110	150	120	5,690	592	1,680	150	142	144
10	45	129	85	110	130	120	3,840	580	1,640	150	139	152
11	51	120	100	100	140	150	2,900	410	1,560	144	134	194
12	54	105	150	100	150	200	2,540	390	1,440	142	123	250
13	50	100	180	100	*150	300	2,140	480	1,150	144	111	340
14	49	94	190	200	150	700	1,800	542	940	150	100	480
15	48	86	200	*350	160	800	1,500	642	850	160	90	492
16	44	96	200	500	180	750	1,300	910	760	220	87	442
17	48	103	190	450	190	700	1,120	1,030	680	270	84	400
18	60	100	170	400	190	*700	1,050	1,060	605	390	81	340
19	94	98	150	350	170	750	1,240	1,120	542	542	81	270
20	104	96	140	375	150	800	1,280	1,060	480	555	91	190
21	103	91	130	400	140	800	1,120	1,000	410	518	123	210
22	97	94	120	450	130	900	1,000	1,120	390	492	129	390
23	93	91	120	500	120	1,000	940	1,480	320	410	117	555
24	79	89	130	560	120	1,480	880	1,210	226	330	124	605
25	76	86	120	540	120	1,680	880	1,320	197	250	134	592
26	82	89	100	520	110	1,640	820	1,360	216	260	144	542
27	77	90	100	560	110	1,480	790	1,440	230	216	160	430
28	77	95	130	600	110	1,400	760	1,440	218	242	148	370
29	84	100	160	550	-	1,240	730	1,400	206	236	152	330
30	93	100	160	500	-	1,180	718	1,360	189	230	177	300
31	98	-	150	450	-	1,210	-	1,280	-	218	205	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	2,089	104	44	67.4	0.114	0.13
November	3,339	152	86	111	.187	.21
December	3,985	200	80	129	.218	.25
Calendar year 1946	123,251	4,370	44	338	.570	7.74
January	9,755	600	100	315	.531	.61
February	5,190	400	110	185	.312	.32
March	20,950	1,680	100	676	1.14	1.31
April	73,228	8,440	718	2,441	4.12	4.60
May	29,384	1,480	390	948	1.60	1.84
June	33,789	2,810	189	1,126	1.90	2.12
July	7,724	555	142	249	.420	.48
August	4,180	208	81	135	.228	.26
September	9,402	605	144	313	.528	.59
Water year 1946-47	203,015	8,440	44	556	.938	12.72

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

Flint River near Flint, Mich.

Location.- Water-stage recorder, lat. 43°02'20", long. 83°46'10", in SW¼ sec. 4, T. 7 N., R. 6 E., at sewage-treatment plant 2 miles downstream from Flint and 5 miles downstream from Swartz Creek. Datum of gage is 678.80 feet above mean sea level (levels by U. S. Weather Bureau and city of Flint).

Drainage area.- 927 square miles.

Records available.- August 1932 to September 1947.

Average discharge.- 15 years, 506 second-feet.

Extremes.- Maximum discharge during year, 14,900 second-feet Apr. 6 (gage height, 16.35 feet); minimum, 59 second-feet Oct. 10, 11 (gage height, 2.31 feet).
1932-47: Maximum discharge, that of Apr. 6, 1947; minimum, 9.0 second-feet Aug. 7, 1934.

Remarks.- Records good except those for periods of ice effect, which are fair. Some regulation by reservoirs above station. City of Flint diverts water above station for municipal and industrial use, but sewage from city is included in flow at station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	81	168	141	b200	b500	156	1,960	880	1,570	205	269	357
2	78	193	118	b200	b500	158	3,580	1,040	4,090	208	250	385
3	77	220	113	b190	b500	161	5,100	1,150	3,850	196	214	344
4	76	250	*133	b170	b350	166	5,420	1,220	3,310	179	187	324
5	73	211	122	b170	b300	158	8,740	1,430	3,490	171	168	337
6	73	211	118	b180	b250	168	14,500	1,320	3,040	176	161	282
7	80	208	118	b170	b230	171	12,900	1,220	2,510	179	193	272
8	71	214	126	b170	b200	187	11,800	1,180	2,770	166	193	241
9	68	202	133	b160	b180	226	9,190	1,080	2,510	163	193	211
10	65	202	137	b150	b200	258	6,620	940	2,110	161	182	260
11	66	185	144	b160	b220	297	4,990	910	2,110	161	168	519
12	70	176	324	b160	b220	430	4,030	791	1,870	158	153	1,040
13	71	179	326	b160	*229	775	3,170	664	1,380	146	141	1,320
14	73	171	301	352	276	1,670	2,530	1,120	1,290	342	137	1,150
15	68	163	236	*735	308	1,630	2,100	1,010	1,180	276	139	1,180
16	68	163	220	710	298	1,420	2,030	1,430	1,120	292	120	1,040
17	81	166	295	660	308	1,160	1,850	1,640	1,040	301	114	646
18	176	153	266	600	285	1,190	1,680	1,600	850	716	120	620
19	153	149	217	590	285	1,250	2,270	1,570	880	1,150	152	463
20	151	146	199	685	272	1,220	2,770	1,540	579	910	220	361
21	174	146	202	785	266	1,380	3,130	1,750	508	790	260	583
22	146	151	190	635	256	1,380	2,770	2,190	447	790	260	1,010
23	141	141	187	554	244	1,630	2,430	1,830	395	630	272	1,010
24	128	139	168	536	229	2,800	2,190	2,030	357	522	298	1,010
25	122	146	166	710	174	3,070	1,990	2,030	350	475	364	1,010
26	116	141	161	980	174	2,440	1,750	2,190	314	300	364	940
27	114	144	158	1,070	168	2,170	1,360	2,110	282	314	295	790
28	114	141	299	1,040	176	1,990	1,290	2,110	263	334	241	555
29	113	144	250	b900	-	2,040	1,150	2,190	250	350	247	518
30	126	139	b230	b800	-	1,750	975	2,110	193	334	311	447
31	179	-	b220	b700	-	1,710	-	1,680	-	298	314	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	3,192	179	65	103	0.111	0.13
November	5,162	250	139	172	.186	.21
December	6,018	326	113	194	.209	.24
Calendar year 1946	182,157	6,640	46	499	.538	7.32
January	15,282	1,070	150	493	.532	.61
February	7,598	500	168	271	.292	.30
March	35,209	3,070	156	1,136	1.23	1.42
April	126,265	14,500	975	4,209	4.54	5.06
May	45,955	2,190	664	1,482	1.60	1.84
June	44,908	4,090	193	1,497	1.61	1.80
July	11,396	1,150	146	368	.397	.46
August	6,700	364	114	216	.233	.27
September	19,225	1,320	211	641	.691	.77
Water year 1946-47	326,910	14,500	65	896	.967	13.11

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

Flint River near Fosters, Mich.

Location.- Wire-weight gage, lat. 43°17'56", long. 83°55'58", in sec. 6, T. 10 N., R. 5 E., at bridge on Sheridan Road, 1 mile west of Fosters and 4 miles downstream from Silver Creek. Datum of gage is 582.22 feet above mean sea level (levels by U. S. Weather Bureau).

Drainage area.- 1,120 square miles.

Records available.- January 1940 to September 1947.

Extremes.- Maximum daily discharge during year, 18,200 second-feet Apr. 7; maximum gage height, 17.97 feet Apr. 6, from floodmark; minimum discharge observed, 76 second-feet Oct. 6, 7 (gage height, 4.10 feet).

1940-47: Maximum daily discharge, that of Apr. 7, 1947; maximum gage height, that of Apr. 6, 1947; minimum discharge observed, 27 second-feet Aug. 6, 1941 (gage height, 3.67 feet).

Maximum stage known, about 18.4 feet (from U. S. Weather Bureau data) in March 1904.

Remarks.- Records fair except those for periods of ice effect or those for period when some flow bypassed station, which are poor. Records include flow bypassing station during high stages through breaks in dikes. Gage read twice daily.

Rating tables, water year 1946-47, except periods of ice effect and bypassing flow (gage height, in feet, and discharge, in second-feet)

Oct. 1 to June 2

4.1	76	6.1	462	14.0	3,070
4.5	127	7.5	840	15.6	4,060
4.9	189	9.8	1,460	16.4	4,720
5.3	264	12.1	2,200		

June 3 to Sept. 30

4.8	130	7.4	758
5.2	214	9.5	1,340
6.0	396	12.1	2,200

Note.- Same as preceding table above 12.1 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	92	140	110	250	1,000	220	2,190	1,060	1,670	267	338	326
2	89	172	131	250	750	220	e3,300	1,240	3,710	269	303	396
3	86	210	160	240	650	200	e5,800	1,300	4,540	267	280	384
4	81	249	*150	230	600	200	*e8,260	1,350	4,060	249	258	360
5	80	264	167	210	500	200	e8,600	1,460	3,780	234	225	338
6	80	230	138	200	400	200	e16,300	1,640	3,640	232	203	314
7	76	228	126	220	350	200	e18,200	1,460	3,170	234	201	294
8	81	228	127	210	300	210	e14,800	1,350	2,870	223	225	276
9	81	220	134	210	270	230	e11,100	1,240	2,970	212	225	258
10	78	219	137	210	250	260	e7,980	1,160	2,540	214	214	220
11	78	219	137	190	300	300	e5,940	1,080	2,120	212	203	234
12	80	213	154	200	*325	400	e4,820	1,000	2,040	236	186	840
13	80	198	450	200	300	600	e4,020	786	1,770	214	169	1,200
14	83	191	350	250	300	1,000	3,220	1,730	2,010	205	160	1,230
15	82	186	300	650	350	2,000	2,730	1,380	1,490	445	150	1,170
16	83	182	275	900	400	1,800	2,330	1,300	1,260	384	154	1,170
17	84	179	275	850	375	1,500	2,080	1,700	1,200	360	136	894
18	100	174	350	800	350	1,300	1,920	1,760	1,060	396	122	731
19	152	162	350	750	350	1,500	2,140	1,700	950	1,230	124	637
20	146	156	300	750	350	1,800	3,170	1,670	894	1,200	201	470
21	138	153	250	800	350	1,600	3,640	1,980	624	950	276	420
22	153	152	250	900	325	1,700	3,400	2,640	598	839	278	950
23	138	148	240	800	300	2,080	2,820	2,200	548	812	282	1,030
24	138	147	230	700	275	3,070	2,500	2,080	482	650	298	1,080
25	134	147	210	700	250	3,920	2,170	2,200	445	585	326	1,030
26	130	154	200	1,000	225	2,820	2,000	2,360	445	520	408	1,030
27	126	146	200	1,200	200	2,770	1,730	2,280	398	314	384	950
28	126	144	250	1,300	200	2,540	1,410	2,100	349	267	285	758
29	133	146	275	1,200	-	2,280	1,330	2,170	338	408	249	598
30	130	140	275	1,000	-	2,170	1,190	2,280	314	408	289	559
31	134	-	275	1,000	-	2,100	-	2,000	-	372	314	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	3,272	153	76	106	0.095	0.11
November	5,497	264	140	183	.163	.18
December	6,976	450	110	225	.201	.23
Calendar year 1946	222,689	8,000	67	610	.545	7.38
January	18,370	1,300	190	593	.529	.61
February	10,595	1,000	200	378	.337	.35
March	41,170	3,920	200	1,328	1.19	1.37
April	148,890	18,200	1,190	4,963	4.43	4.94
May	51,616	2,640	786	1,665	1.49	1.72
June	52,281	4,540	314	1,743	1.56	1.74
July	13,408	1,230	205	433	.387	.45
August	7,444	408	122	240	.214	.25
September	20,107	1,230	220	670	.598	.67
Water year 1946-47	379,626	18,200	76	1,040	.929	12.62

* Winter discharge measurement made on this day.

e Some flow bypassing station; discharge computed on basis of 3 discharge measurements and records for station near Flint.

Note.- Stage-discharge relation affected by ice Dec. 3, 4, Dec. 13 to Mar. 22.

Farmers Creek near Lapeer, Mich.

Location.- Staff gage and concrete control, lat. 43°02', long. 83°20', at sewage-treatment plant at Michigan Home and Training School, 2 miles west of Lapeer, Lapeer County. Datum of gage is 805.79 feet (revised) above mean sea level, datum of 1929.
Drainage area.- 57 square miles.
Records available.- March 1933 to September 1947.
Average discharge.- 14 years, 26.7 second-feet.
Extremes.- Maximum discharge during year, 1,280 second-feet Apr. 6 (gage height, 19.87 feet, from floodmark), by contracted-opening method; minimum observed, 2.4 second-feet Oct. 12-14 (gage height, 15.04 feet).
1933-47: Maximum discharge, that of Apr. 6, 1947; minimum not determined.
Revisions.- The maximum discharge for the water year 1942 has been revised to 630 second-feet Mar. 18 (gage height, 18.50 feet), and that for the water year 1943, to 1,220 second-feet June 3 (gage height, 19.74 feet), superseding figures published in Water-Supply Papers 954 and 974.
Remarks.- Records good except those below 10 or above 1,000 second-feet and those for period of ice effect, which are fair. Gage read twice daily. Occasional regulation by dam above station.
Revisions.- Revised figures of discharge, in second-feet, for the high-water period in the water year 1943, superseding those published in Water-Supply Paper 974, are given herewith:

June 3 1,100
4 570

	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
June	3,818	1,100	17	127	2.23	2.49
Water year 1942-43	19,082.4	1,100	3.5	52.3	.918	12.46
Calendar year 1943	18,024.3	1,100	2.7	49.4	.867	11.77

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	9.1	6.4	12	43	10	106	60	73	8.7	9.1	18
2	3.5	12	5.7	11	43	10	151	70	86	7.5	8.3	19
3	3.1	14	5.1	10	39	10	237	79	124	6.4	7.5	17
4	3.1	16	5.1	10	34	10	354	76	169	5.7	6.7	15
5	3.1	15	5.4	12	27	10	*542	72	145	5.1	5.7	17
6	3.1	14	6.7	10	23	11	1,080	66	100	5.1	6.4	16
7	3.1	12	7.5	9.9	20	11	945	61	79	5.1	5.7	16
8	2.9	12	8.3	9.5	17	11	385	56	83	4.5	5.7	14
9	2.7	11	8.7	10	16	11	268	52	79	4.2	5.1	12
10	2.7	11	9.5	10	16	13	212	49	75	3.9	5.1	11
11	2.7	11	9.5	10	14	17	183	44	65	3.9	4.5	21
12	2.4	11	13	11	13	22	162	40	57	3.9	4.2	66
13	2.4	10	19	9.9	12	26	145	40	44	3.9	3.7	203
14	2.6	9.5	20	18	13	b45	126	43	42	4.5	3.5	217
15	3.1	8.7	21	*24	14	b70	108	43	41	9.9	2.9	163
16	2.7	8.7	19	28	14	b110	97	50	42	38	3.4	94
17	2.7	8.7	16	56	16	b100	91	57	39	65	3.9	63
18	5.1	8.3	13	57	17	*b70	89	75	36	72	4.5	49
19	8.3	7.9	11	50	18	b60	104	69	31	76	5.1	39
20	11	7.9	9.5	48	18	b70	136	63	28	79	6.0	32
21	11	7.9	9.5	51	16	b90	181	68	24	73	10	34
22	9.1	7.9	9.5	47	14	b110	183	79	21	56	17	57
23	7.5	8.7	9.9	35	13	133	174	100	17	43	27	94
24	6.4	7.9	10	34	12	176	153	101	15	34	28	156
25	5.7	7.9	8.7	37	11	198	131	115	14	28	24	113
26	5.7	7.9	8.3	54	11	272	111	142	12	22	21	76
27	6.0	7.5	10	80	10	194	96	160	11	20	17	55
28	6.4	7.1	14	90	10	144	83	131	9.9	17	16	44
29	6.4	7.1	13	76	-	122	73	104	8.7	14	15	40
30	6.4	7.1	19	55	-	113	65	91	9.5	13	17	37
31	7.9	-	17	48	-	113	-	82	-	10	19	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	151.9	11	2.4	4.90	0.086	0.10
November	294.8	16	7.1	9.83	.172	.19
December	348.3	21	5.1	11.2	.196	.23
Calendar year 1946	9,345.5	377	1.0	25.6	.449	6.10
January	1,023.3	90	9.5	33.0	.579	.67
February	524	43	10	18.7	.328	.34
March	2,362	272	10	76.2	1.34	1.54
April	6,771	1,080	65	226	3.96	4.42
May	2,338	160	40	75.4	1.32	1.52
June	1,580.1	169	8.7	52.7	.925	1.03
July	742.3	79	3.9	23.9	.419	.48
August	318.0	28	2.9	10.3	.181	.21
September	1,808	217	11	60.3	1.06	1.18
Water year 1946-47	18,261.7	1,080	2.4	50.0	.877	11.91

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

Cass River at Frankenmuth, Mich.

Location.- Water-stage recorder, lat. 43°19'42", long. 83°45'28", on line between secs. 27 and 28, T. 11 N., R. 6 E., at highway bridge, 1 mile west of Frankenmuth and 2.6 miles upstream from Dead Creek. Datum of gage 584.00 feet above mean sea level (levels by Michigan State Department of Conservation).

Drainage area.- 848 square miles.

Records available.- February 1908 to March 1909, July 1935 to September 1936, June 1939 to September 1947.

Extremes.- Maximum discharge during year, 15,400 second-feet Apr. 6 (gage height, 20.23 feet); minimum, 1.8 second-feet (regulated) Oct. 24 (gage height, 1.62 feet); minimum daily, 5.0 second-feet (regulated) Oct. 23.

1908-9, 1935-36, 1939-47: Maximum discharge, 17,700 second-feet Mar. 18, 1942; maximum gage height, 20.91 feet Mar. 10, 1942 (backwater from ice); minimum daily discharge, about 1.5 second-feet (regulated) Aug. 6, 1944.

Remarks.- Records good except those for periods of ice effect or no gage-height record and those below 50 second-feet, which are fair. Flow regulated by mill above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	58	29	150	350	100	a1,500	494	655	107	128	94
2	29	55	35	170	300	120	a2,500	770	1,220	105	115	98
3	29	43	*49	170	250	120	*4,670	2,460	3,140	107	99	74
4	25	76	46	120	230	110	6,230	1,870	2,500	109	104	81
5	24	84	47	80	200	100	9,000	1,400	1,950	99	93	73
6	24	58	54	90	180	95	14,600	1,470	1,550	86	88	74
7	23	52	47	80	150	*90	12,500	1,190	1,130	88	88	70
8	22	85	21	150	130	120	7,940	830	1,000	99	100	85
9	22	58	52	130	150	130	5,520	880	2,150	116	94	72
10	24	32	45	120	170	140	3,850	705	1,950	118	95	71
11	17	65	94	100	160	150	3,700	561	1,260	96	110	72
12	5.4	89	57	100	*150	180	3,870	472	755	100	96	87
13	5.4	57	219	150	140	250	2,850	869	373	103	90	78
14	15	28	76	*150	130	500	1,990	3,420	538	117	85	67
15	24	45	84	300	170	700	1,190	3,280	572	114	87	91
16	79	47	89	400	140	800	1,100	2,600	439	132	79	76
17	52	51	126	300	110	900	887	1,440	472	132	56	73
18	39	62	115	300	150	800	926	1,190	384	128	83	63
19	50	50	101	300	170	700	777	1,040	319	213	74	64
20	51	46	79	325	150	700	1,400	1,160	268	227	66	62
21	52	47	74	350	120	900	1,220	1,330	235	198	70	44
22	39	49	41	325	120	1,100	980	2,260	142	175	70	126
23	5.0	45	55	325	110	1,400	755	2,370	157	152	69	139
24	5.8	29	42	300	130	2,000	631	1,750	151	128	61	137
25	30	61	24	500	140	a2,500	607	1,370	143	100	83	125
26	38	43	66	500	110	a2,000	607	1,950	138	100	85	116
27	43	49	61	1,000	90	a1,600	561	2,150	130	125	80	99
28	57	32	259	1,000	80	a1,300	428	1,300	128	174	70	87
29	39	57	250	800	-	a1,100	417	1,210	117	167	72	96
30	42	42	150	600	-	a1,000	439	807	111	150	71	88
31	43	-	100	500	-	a900	-	730	-	131	142	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
Ootcber	981.6	79	5.0	31.7	0.037	0.04
November	1,595	89	28	53.2	.063	.07
December	2,587	259	21	83.5	.098	.11
Calendar year 1946	148,067.6	10,400	5.0	406	.479	6.48
January	9,885	1,000	80	319	.376	.43
February	4,480	350	80	160	.189	.20
March	22,605	2,500	90	729	.860	.99
April	93,645	14,600	417	3,122	3.68	4.11
May	45,338	3,420	472	1,463	1.73	1.99
June	24,077	3,140	111	803	.947	1.06
July	3,996	227	86	129	.152	.18
Augumt	2,703	142	56	87.2	.103	.12
Sentember	2,584	139	44	86.1	.102	.11
Water year 1946-47	214,476.6	14,600	5.0	588	.693	9.41

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and records for Flint River near Flint.

Note.- Stage-discharge relation affected by ice Dec. 29 to Mar. 24 (no gage-height record Jan. 30 to Feb. 3, Feb. 7-12).

Tittabawassee River at Midland, Mich

Location.- Water-stage recorder, lat. 43°36', long. 84°15', in NE¼ sec. 28, T. 14 N., R. 2 E., 0.5 mile south of Midland and 1 mile downstream from Chippewa River. Datum of gage is 590.28 feet above mean sea level, datum of 1929.

Drainage area.- 2,400 square miles.

Records available.- March 1936 to September 1947

Average discharge.- 11 years, 1,392 second-feet (unadjusted).

Extremes.- Maximum discharge during year, 12,200 second-feet Apr. 7, May 3; maximum gage height, 12.70 feet May 3; minimum discharge, 90 second-feet (regulated) Oct. 15 (gage height, -0.50 foot).

1936-47:. Maximum discharge, 31,200 second-feet Mar. 8, 1946 (gage height, 18.75 feet); minimum, 39 second-feet (regulated) Oct. 12, 1942; minimum gage height, that of Oct. 15, 1946.

Remarks.- Records good except those for periods of no gage-height record, which are fair. Water is diverted from river a short distance above station for industrial use; small part returned to river a quarter of a mile below station; remainder returned 1 mile below and below control. Records of daily discharge not adjusted for diversion. Low flow regulated by power plants above station.

Cooperation.- Gage-height record and records of diversion furnished by Dow Chemical Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	340	510	297	733	708	362	3,820	3,650	4,050	765	206	170
2	411	467	325	794	556	398	4,830	7,740	4,050	564	156	218
3	304	377	321	1,080	550	614	5,480	12,000	5,800	353	630	272
4	268	1,390	329	719	775	614	5,370	10,400	4,720	415	328	250
5	318	1,550	345	412	1,190	720	6,000	8,160	3,250	324	279	636
6	156	968	390	1,070	1,350	1,050	10,000	5,980	2,690	367	316	412
7	390	1,120	403	967	1,020	1,590	11,700	5,170	1,980	324	364	219
8	706	861	377	1,140	694	852	7,260	4,050	2,330	576	222	188
9	472	528	403	763	476	617	6,350	3,650	3,250	451	136	764
10	215	504	535	586	584	750	5,730	3,410	2,350	376	130	988
11	324	731	530	442	752	1,190	8,740	3,250	2,660	708	464	472
12	206	1,010	505	388	672	1,980	10,300	3,010	1,100	374	404	262
13	210	646	520	722	556	2,100	7,830	2,610	1,750	255	444	317
14	134	574	281	1,370	943	3,330	5,400	3,970	1,750	758	a400	283
15	216	778	203	1,900	1,670	3,810	4,820	3,570	1,230	468	a150	826
16	182	501	229	1,720	1,440	2,770	4,070	3,890	1,780	688	130	1,030
17	378	497	271	1,220	610	2,930	3,770	4,210	1,600	1,420	125	460
18	701	428	303	894	604	2,370	3,700	3,730	895	1,210	186	178
19	266	730	378	726	716	1,940	3,470	3,810	960	503	193	214
20	227	710	426	774	786	2,130	3,490	3,490	1,140	1,200	170	189
21	286	631	416	1,230	652	3,250	3,170	4,290	738	504	135	381
22	330	526	520	756	468	3,410	2,770	6,980	494	503	143	1,370
23	400	444	561	668	750	3,330	2,690	5,530	726	514	161	1,730
24	416	445	a600	758	508	5,080	6,170	4,450	818	678	138	1,470
25	586	391	a600	832	492	5,980	8,980	4,370	610	502	198	1,510
26	180	446	a500	1,510	737	4,370	6,580	5,350	756	285	530	1,580
27	156	496	a700	2,750	899	4,130	5,440	4,810	562	250	802	803
28	289	426	a1,100	2,410	682	4,290	4,540	4,050	534	664	268	413
29	623	321	a900	2,400	-	4,290	3,890	4,130	342	1,000	234	610
30	880	305	a800	1,630	-	4,290	3,730	4,990	572	765	202	540
31	573	-	914	1,190	-	3,890	-	4,210	-	436	174	-

Month	Observed				Mean diversion (second-feet)†	Adjusted for diversion		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Runoff in inches
October	11,129	880	134	359	108	467	0.195	0.22
November	19,311	1,550	305	644	106	750	.312	.35
December	14,982	1,100	203	483	94	577	.240	.28
Calendar year 1946	525,366	29,200	127	1,439	100	1,539	.641	8.70
January	34,554	2,750	388	1,115	86	1,201	.500	.58
February	21,838	1,670	468	780	88	868	.362	.38
March	78,427	5,980	362	2,530	94	2,624	1.09	1.26
April	170,090	11,700	2,690	5,670	94	5,764	2.40	2.68
May	152,910	12,000	2,610	4,933	110	5,043	2.10	2.42
June	55,467	5,800	342	1,849	116	1,965	.819	.91
July	18,200	1,420	250	587	110	697	.290	.33
August	8,418	802	125	272	118	390	.163	.19
September	18,755	1,730	170	625	112	737	.307	.34
Water year 1946-47	604,080	12,000	125	1,655	103	1,758	.732	9.94

† Diversion by Dow Chemical Co. for industrial use.
a No gage-height record; discharge computed on basis of weather records and records for Chippewa River near Mount Pleasant.

Salt River near North Bradley, Mich.

Location.- Wire-weight gage, lat. 43°42', long. 84°28', on bridge on U. S. Highway 10, 1½ miles southeast of North Bradley. Datum of gage is 618.01 feet above mean sea level (levels by Michigan Department of Conservation).

Drainage area.- 138 square miles.

Records available.- June 1934 to September 1947.

Average discharge.- 13 years, 69.0 second-feet.

Extremes.- Maximum discharge during year, 2,180 second-feet Apr. 25 (gage height, 10.39 feet, from floodmark); minimum observed, 3.8 second-feet Oct. 27 (gage height, 0.52 foot).

1934-47: Maximum discharge observed, 7,970 second-feet Mar. 7, 1946 (gage height, 14.92 feet), from rating curve extended above 4,500 second-feet; minimum observed, 1.1 second-feet Aug. 14, 1944 (gage height, 0.21 foot).

Remarks.- Records good except those below 10 second-feet and those for periods of ice effect or no gage-height record, which are fair. Gage read twice daily.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.1	7.0	a10	30	30	17	316	184	141	14	8.8	8.0
2	6.1	9.0	a9.5	25	30	19	471	1,260	302	11	8.4	8.8
3	6.1	a15	a9.0	22	27	19	510	1,100	532	12	8.4	8.0
4	6.1	28	a8.5	19	*24	18	*521	448	233	12	8.4	7.0
5	5.5	24	a10	19	22	*17	512	364	136	11	8.4	7.0
6	5.2	17	*11	17	22	17	1,200	244	104	12	8.4	7.0
7	4.9	15	13	17	21	18	632	178	83	11	8.4	7.0
8	5.2	14	11	16	21	20	319	136	89	11	7.4	6.4
9	5.5	14	11	15	19	20	206	111	141	10	7.0	5.8
10	4.6	15	11	15	17	20	242	94	83	9.8	7.0	7.0
11	4.3	15	11	15	15	25	860	80	72	11	7.0	10
12	4.6	15	14	16	14	35	531	72	75	14	7.4	16
13	4.6	14	13	18	15	50	251	124	61	15	7.4	14
14	4.9	12	14	22	17	200	170	652	64	17	7.0	9.1
15	5.2	11	16	28	20	350	127	233	66	53	6.4	7.7
16	5.2	11	11	50	22	300	100	304	60	37	6.1	7.0
17	5.5	12	9.8	45	24	250	85	228	47	25	a6.1	6.4
18	7.8	13	8.6	30	25	200	73	233	38	23	6.1	6.1
19	9.0	13	8.2	25	23	150	65	233	32	31	5.8	6.1
20	11	12	8.6	35	20	350	73	156	28	25	6.1	7.4
21	8.2	12	9.4	55	22	400	61	409	24	18	6.1	30
22	7.4	11	9.0	40	22	350	49	582	21	16	6.4	84
23	6.4	a10	8.6	*35	21	300	54	238	19	14	6.4	54
24	6.1	a10	7.4	32	21	880	1,200	162	19	12	6.7	32
25	6.1	a11	6.7	45	21	a500	1,160	222	19	12	7.7	19
26	5.5	a11	9.0	80	19	271	292	376	19	11	8.0	15
27	4.0	a11	9.4	150	19	284	206	211	17	13	7.4	12
28	5.8	a10	23	100	18	258	162	162	16	14	7.0	11
29	7.4	a10	35	60	-	271	131	352	16	12	7.0	13
30	7.0	a10	15	40	-	304	118	418	16	10	8.4	12
31	7.4	-	15	30	-	284	-	206	-	9.4	a8.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	188.7	11	4.0	6.09	0.044	0.05
November	392.0	28	7.0	13.1	.095	.11
December	365.7	35	6.7	11.8	.086	.10
Calendar year 1946	29,763.4	5,360	3.3	81.5	.591	8.03
January	1,146	150	15	37.0	.268	.31
February	591	30	14	21.1	.153	.16
March	6,197	880	17	200	1.45	1.67
April	10,697	1,200	49	357	2.59	2.89
May	9,772	1,260	72	315	2.28	2.63
June	2,573	532	16	85.8	.622	.69
July	506.2	53	9.4	16.3	.118	.14
August	225.1	8.8	5.8	7.26	.053	.06
September	443.8	84	5.8	14.8	.107	.12
Water year 1946-47	33,097.5	1,260	4.0	90.7	.657	8.93

* Winter discharge measurement made on this day.

a No gage-height record; discharge interpolated, or computed on basis of weather records and records for Chippewa River near Mount Pleasant.

Note.- Stage-discharge relation affected by ice Dec. 29 to Mar. 23.

Chippewa River near Mount Pleasant, Mich.

Location.- Water-stage recorder, lat. 43°37'35", long. 84°42'30", on line between secs. 7 and 8, T. 14 N., R. 3 W., 4 miles northeast of Mount Pleasant. Datum of gage is 710.38 feet above mean sea level (levels by Michigan State Department of Conservation).

Drainage area.- 416 square miles.

Records available.- October 1930 to July 1931, October 1932 to September 1947.

Average discharge.- 15 years (1932-47), 284 second-feet.

Extremes.- Maximum discharge during year, 1,640 second-feet Apr. 26 (gage height, 7.72 feet); minimum, 31 second-feet (regulated) Oct. 21; minimum gage height, 2.99 feet Dec. 14; minimum daily discharge, 69 second-feet (regulated) Sept. 9.
1930-31, 1932-47: Maximum discharge, 4,960 second-feet Mar. 8, 1946 (gage height, 12.78 feet); minimum, 12 second-feet (regulated) Aug. 18, 1945; minimum gage height, 2.82 feet Dec. 21, 1944; minimum daily discharge, 19 second-feet (regulated) Aug. 16, 1936.

Remarks.- Records good except those for periods of ice effect, which are poor. Diurnal fluctuation during low flow caused by power plant above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	133	150	178	225	250	230	*568	660	608	186	150	128
2	128	150	160	200	225	230	668	1,040	575	181	156	147
3	116	192	150	200	200	230	773	1,180	748	189	167	83
4	111	214	160	190	175	230	810	1,290	545	189	186	105
5	105	209	181	180	200	*230	961	1,150	500	175	167	108
6	116	212	*178	190	200	240	1,180	1,010	455	175	144	116
7	102	192	164	200	200	240	1,260	818	395	178	161	128
8	94	170	167	190	200	230	1,200	695	625	161	158	136
9	111	203	184	170	200	230	1,070	608	440	158	144	69
10	80	209	184	180	200	250	930	530	395	128	178	111
11	114	226	184	190	200	250	1,050	485	380	167	116	147
12	86	228	206	180	210	300	1,170	470	353	186	97	189
13	97	214	212	180	230	350	1,170	485	329	164	153	144
14	111	189	170	190	250	320	1,010	515	338	186	97	136
15	97	186	200	350	300	280	763	500	353	231	105	111
16	102	186	220	325	280	260	680	590	362	326	114	128
17	111	178	220	300	280	240	604	575	332	276	133	108
18	114	212	200	300	280	220	551	590	299	239	108	102
19	122	212	180	300	260	220	533	575	276	232	125	100
20	147	198	200	300	240	250	515	530	268	219	116	97
21	91	212	200	275	250	300	500	608	245	234	150	142
22	114	206	180	225	240	280	440	695	231	220	136	371
23	128	198	180	275	230	300	440	608	212	189	122	362
24	125	178	170	310	220	835	826	545	203	186	133	268
25	125	198	170	350	240	932	1,400	530	209	206	125	231
26	130	203	190	400	220	652	1,540	590	206	156	175	172
27	153	203	180	500	220	683	1,180	515	186	184	136	175
28	130	184	350	450	230	606	852	440	214	203	111	170
29	150	186	350	400	-	606	712	625	214	168	94	206
30	158	181	275	350	-	559	642	608	200	184	108	147
31	139	-	225	300	-	559	-	530	-	164	128	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	3,640	158	80	117	0.281	0.32
November	5,879	228	150	196	.471	.53
December	6,168	350	150	199	.478	.55
Calendar year 1946	109,086	4,560	52	299	.719	9.74
January	8,375	500	170	270	.649	.75
February	6,430	300	175	230	.553	.58
March	11,342	932	220	366	.880	1.01
April	25,998	1,540	440	867	2.08	2.32
May	20,590	1,290	440	664	1.60	1.84
June	10,696	748	186	357	.858	.96
July	6,139	326	128	198	.476	.55
August	4,193	186	94	135	.325	.37
September	4,637	371	69	155	.373	.42
Water year 1946-47	114,087	1,540	69	313	.752	10.20

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 2-4, Dec. 15 to Mar. 23 (no gage-height record Feb. 5-13, Feb. 22 to Mar. 3).

Pine River at Alma, Mich.

Location.- Water-stage recorder, lat. 43°23', long. 84°39', in sec. 34, T. 12 N., R. 3 W., at Alma, 270 feet downstream from highway bridge. Datum of gage is 718.37 feet above mean sea level, datum of 1929.

Drainage area.- 288 square miles.

Records available.- October 1930 to September 1947.

Average discharge.- 17 years, 175 second-feet.

Extremes.- Maximum discharge during year, 1,820 second-feet Apr. 6 (gage height, 7.25 feet); minimum daily, 42 second-feet Oct. 14.
1930-47: Maximum discharge observed, 4,070 second-feet Feb. 6, 1938 (gage height, 10.43 feet); minimum daily, 2 second-feet (regulated) July 23, 1938.

Remarks.- Records fair except those for periods of ice effect or no gage-height record, which are poor. Occasional regulation by dam above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	83	94	110	130	120	110	*503	350	447	116	108	90
2	96	97	100	120	120	120	652	615	572	112	100	100
3	86	125	85	110	*100	120	714	590	615	114	95	80
4	64	150	90	110	120	*110	777	602	565	109	92	70
5	54	200	*100	110	130	120	1,180	602	565	103	93	60
6	50	150	110	100	130	120	1,610	525	485	108	92	55
7	49	140	118	110	130	120	1,230	438	395	110	90	50
8	50	130	118	110	130	120	1,090	376	899	110	84	50
9	58	140	125	110	130	130	902	317	447	103	79	50
10	62	150	126	100	130	150	782	277	376	102	75	60
11	55	160	129	100	140	150	952	311	277	108	77	100
12	58	150	150	100	170	200	858	201	231	105	64	130
13	54	140	229	110	200	250	774	243	246	106	61	100
14	42	130	179	125	170	225	699	447	293	108	60	90
15	48	130	55	225	140	200	564	495	334	124	55	80
16	51	140	126	200	140	175	483	578	301	156	45	75
17	58	160	127	180	150	160	402	505	269	162	47	70
18	73	150	113	180	150	150	237	545	202	150	44	65
19	62	137	98	160	140	150	302	505	175	156	45	65
20	71	132	107	180	140	175	393	456	162	162	50	65
21	84	129	106	170	140	225	402	665	156	156	70	124
22	87	129	107	150	130	200	376	678	140	139	60	277
23	82	117	108	130	130	250	350	652	134	134	55	317
24	76	128	94	*150	120	500	555	628	126	122	50	325
25	68	127	98	180	120	800	525	640	127	113	50	254
26	71	127	90	250	120	600	590	640	128	112	100	175
27	73	137	103	317	110	600	565	565	125	110	80	156
28	73	129	277	325	110	550	476	555	118	108	70	137
29	68	126	230	325	-	500	384	545	123	107	60	138
30	77	130	190	300	-	500	334	476	128	106	70	156
31	83	-	150	200	-	515	-	447	-	107	80	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	2,066	96	42	66.6	0.231	0.27
November	4,084	200	94	136	.472	.53
December	3,948	277	55	127	.441	.51
Calendar year 1946	72,431	3,290	27	198	.687	9.36
January	5,167	325	100	167	.580	.67
February	3,760	200	100	134	.465	.48
March	8,295	800	110	268	.931	1.07
April	19,661	1,610	237	655	2.27	2.53
May	15,469	678	201	499	1.73	1.99
June	9,161	899	118	305	1.06	1.18
July	3,738	162	102	121	.420	.48
August	2,201	108	44	71.0	.247	.28
September	3,564	325	50	119	.413	.46
Water year 1946-47	81,114	1,610	42	222	.771	10.45

* Winter discharge measurement made on this day.

Note.- No gage-height record Nov. 3-18, Mar. 5-30, Aug. 19 to Sept. 20; discharge computed on basis of weather records and records for Chippewa River near Mount Pleasant. Stage-discharge relation affected by ice Dec. 1-6, Dec. 29 to Jan. 26, Jan. 30 to Mar. 4 (no gage-height record Feb. 4-13, 19-25).

Sebewaing River (State drain) near Sebewaing, Mich.

Location.- Water-stage recorder, lat. 43°43', long. 83°26', on line between secs. 16 and 21, T. 15 N., R. 9 E., at highway bridge on Rescue Road, 1½ miles upstream from East Fork and 1½ miles southeast of Sebewaing. Datum of gage is 590.0 feet above mean sea level (levels by Corps of Engineers).

Drainage area.- 62 square miles.

Records available.- January 1940 to September 1947.

Extremes.- Maximum discharge during year not determined, occurred during period of no gage-height record; no flow at times.
1940-47: Maximum discharge not determined; maximum gage height, 12.81 feet Mar. 9, 1942 (ice jam), but may have been higher during period of no gage-height record in April 1947; no flow for long periods.

Remarks.- Records good above 10 second-feet and fair below except those for periods of ice effect or no gage-height record and those below 1 second-foot, which are poor.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		0	0.1	8	40	2	130	35	20	0.4	1.9	0
2		.4	0	3	30	2	350	91	186	.2	1.4	0
3		.4	*.1	2	15	2	1,200	56	151	0	1.1	0
4		.6	0	1	15	2	1,700	40	54	0	.8	0
5		.4	.1	1	15	2	3,500	47	33	0	.7	0
6		.3	.1	1	15	3	2,000	34	25	0	.4	0
7		.2	.2	1	15	3	500	82	18	0	.2	0
8		.2	.2	.9	12	4	*127	49	14	0	.1	0
9		.2	.3	.8	10	5	83	31	14	0	0	0
10		.4	.3	.7	8	7	100	24	13	0	0	0
11		.5	.2	1	*8	11	600	19	10	0	0	0
12		.6	1.0	2	7	25	400	16	7	14	0	0
13		.5	2	1	7	50	150	24	30	8.3	0	7
14		.4	3	*7	6	100	73	60	100	5.0	0	3
15		.2	.8	50	6	400	51	35	70	6.2	0	.7
16		.2	.3	70	6	400	38	33	39	16	0	.3
17		.2	.2	55	5	350	32	27	26	14	0	.2
18		.2	.1	40	5	300	31	59	22	20	0	.2
19		.2	0	30	5	230	37	44	17	70	0	.2
20		.2	0	25	4	280	47	28	11	75	0	.2
21		.2	0	35	4	370	32	126	7.7	35	0	.3
22		.2	0	70	4	300	28	133	5.0	9	0	.6
23		.1	.1	45	4	400	26	53	3.3	3	0	1
24		.1	.1	30	3	550	41	44	2.4	1.8	0	1.6
25		.2	0	65	3	1,000	32	74	2.1	1.3	0	.8
26		.1	0	140	3	600	26	145	2.0	.9	0	.5
27		.2	0	200	3	350	23	60	1.7	2.3	0	.2
28		.1	10	150	3	150	20	35	1.3	12	0	.1
29		.2	20	110	-	70	16	40	1.0	9.2	0	.3
30		.1	40	80	-	70	37	34	.7	4.5	0	.1
31		-	20	60	-	80	-	24	-	2.6	0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	0	0	0	0	0	0
November	7.8	.6	0	.26	.0042	.005
December	99.2	40	0	3.20	.052	.06
Calendar year 1946	12,126.6	2,210	0	33.2	.535	7.28
January	1,285.4	200	.7	41.5	.669	.77
February	261	40	3	9.3	.150	.16
March	6,118	1,000	2	197	3.18	3.67
April	11,430	3,500	16	381	6.15	6.86
May	1,602	145	16	51.7	.834	.96
June	887.2	186	.7	29.6	.477	.53
July	310.7	75	0	10.0	.161	.19
August	6.6	1.9	0	.21	.0034	.004
September	17.3	7	0	.58	.0094	.01
Water year 1946-47	22,025.2	3,500	0	60.3	.973	13.22

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 13 to Apr. 5 (no gage-height record Mar. 24 to Apr. 2, Apr. 5). No gage-height record Apr. 6, 7, 10-13, June 6-15, July 18-23, Sept. 13-23; discharge computed on basis of weather records and records for Black River near Fargo and East Fork Sebewaing River near Sebewaing.

East Fork Sebewaing River (Columbia drain) near Sebewaing, Mich.

Location.- Water-stage recorder, lat. 43°44', long. 83°24', on line between secs. 10 and 11, T. 15 N., R. 9 E., at highway bridge on Gettel Road, 2¼ miles upstream from mouth and 2½ miles southeast of Sebewaing. Datum of gage is 607.00 feet above mean sea level (levels by Corps of Engineers).

Drainage area.- 38 square miles.

Records available.- January 1940 to September 1947.

Extremes.- Maximum discharge during year not determined, occurred during period of no gage-height record; no flow at times.
1940-47: Maximum discharge not determined occurred during period of no gage-height record in Apr. 1947; maximum gage height, 9.70 feet Mar. 15, 1943 (ice jam); no flow for long periods.

Remarks.- Records good above 10 second-feet and fair below except those for periods of ice effect or no gage-height record and those below 1 second-foot, which are poor.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		0	0.2	1	16	2	a450	a11	9.6	0.3	0.3	
2		0	.1	1	12	2	a600	a40	84	.3	.1	
3		0	*.1	.9	9	2	a800	a25	103	.2	.1	
4		0	.1	.8	7	2	a1,000	a13	23	.1	.1	
5		0	.1	.7	6	2	a1,500	a15	14	.1	.1	
6		0	.1	.6	6	*2	a1,000	a13	10	0	.1	
7		0	.1	.6	5	1	290	a25	7.8	0	0	
8		0	.2	.6	5	1	*88	a20	6.9	0	0	
9		a.3	.2	.6	4	1	37	a15	6.9	0	0	
10		a.6	.2	.6	4	1	45	a10	6.0	0	0	
11		a.7	.2	.6	*3	2	184	8.2	4.1	0	0	
12		a.9	.3	.6	3	3	134	6.6	2.9	0	0	
13		a.7	.4	.6	3	5	39	7.8	4.6	0	0	
14		a.6	.8	*.7	3	50	25	40	53	0	0	
15		.3	1.5	.8	3	100	19	21	22	0	0	
16		.3	.9	40	3	200	15	16	14	0	0	
17		.3	.7	80	3	300	11	14	10	0	0	
18		.3	.5	50	2	400	11	44	6.6	0	0	
19		.3	.3	25	2	370	14	30	4.3	3.0	0	
20		.3	.2	20	2	250	16	15	3.1	3.1	0	
21		.2	.2	20	2	270	11	114	2.2	1.6	0	
22		.3	.2	20	3	280	9.2	105	1.7	.8	0	
23		.3	.2	35	3	300	9.2	24	1.4	.4	0	
24		.2	.2	50	3	400	20	19	1.2	.3	0	
25		.2	.2	90	3	500	17	34	1.0	.2	0	
26		.2	.2	200	3	400	10	100	.7	.1	0	
27		.2	.3	140	2	350	8.2	54	.6	.2	0	
28		.2	3	100	2	280	a7	18	.5	.4	0	
29		.2	25	60	-	200	a5	20	.5	.3	0	
30		.2	8	30	-	230	a12	22	.4	.4	0	
31		-	2	20	-	250	-	13	-	.5	0	

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	0	0	0	0	0	0
November	7.8	.9	0	.26	.0068	.008
December	46.7	25	.1	1.51	.040	.05
Calendar year 1946	5,487.0	685	0	15.0	.395	5.39
January	990.7	200	.6	32.0	.842	.97
February	122	16	2	4.4	.116	.12
March	5,156	500	1	166	4.37	5.04
April	6,386.6	1,500	5	213	5.61	6.26
May	912.6	114	6.6	29.4	.774	.89
June	406.0	103	.4	13.5	.355	.40
July	12.3	3.1	0	.40	.011	.01
August	.8	.3	0	.03	.00079	.0009
September	0	0	0	0	0	0
Water year 1946-47	14,041.5	1,500	0	38.5	1.01	13.75

Peak discharge.- Apr. 5 (time and discharge unknown), Apr. 11 (10:30 p.m.) 231 sec.-ft.; May 21 (8:30 p.m.) 226 sec.-ft.; May 26 (10:30 p.m.) 125 sec.-ft.; June 3 (12:30 a.m.) 189 sec.-ft.
* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for Black River near Fargo and Sebewaing River near Sebewaing.
Note.- Stage-discharge relation affected by ice Dec. 13 to Apr. 5.

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Black River near Fargo, Mich.

Location.- Wire-weight gage, lat. 43° 06', long. 82° 37', in sec. 32, T. 8 N., R. 16 E., at highway bridge on Norman Road, 2½ miles southeast of Fargo, 4½ miles upstream from Mill Creek, and 12 miles northwest of Port Huron.

Drainage area.- 475 square miles (revised).

Records available.- February 1944 to September 1947.

Extremes.- Maximum discharge during year, 14,400 second-feet Apr. 5 (gage height, 16.06 feet, from floodmark), from rating curve extended above 8,500 second-feet; minimum discharge observed, 4.0 second-feet Oct. 7, 8 (gage height, 1.54 feet).
1944-47: Maximum discharge, that of Apr. 5, 1947; minimum observed, 1.8 second-feet Sept. 18, 19, 1946.

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.8	15	8.8	70	150	45	2,250	226	330	68	126	13
2	6.8	12	11	50	95	47	3,540	498	2,620	58	95	18
3	7.3	10	12	50	60	50	4,400	1,210	3,250	46	75	26
4	6.8	10	11	50	60	50	5,960	1,610	2,290	29	60	28
5	4.7	11	*10	45	50	45	9,850	1,330	1,300	25	48	18
6	4.7	11	10	43	55	43	10,100	930	805	31	39	15
7	4.4	10	10	42	50	42	8,260	680	480	239	43	17
8	5.1	12	12	40	47	40	5,600	585	1,620	200	56	15
9	9.7	12	11	40	45	40	2,630	433	1,930	95	37	14
10	9.7	14	12	40	55	40	1,440	452	1,090	72	34	14
11	9.7	14	10	37	45	40	1,360	532	a600	53	40	16
12	8.8	13	11	35	42	45	1,150	532	a300	51	58	d125
13	8.8	12	14	35	40	100	840	1,120	a200	55	47	d400
14	9.2	12	18	50	*37	600	705	3,250	a250	46	43	d150
15	7.3	12	18	90	40	1,300	540	1,750	a250	88	55	d50
16	8.3	14	15	*150	40	1,000	379	1,400	a200	84	34	19
17	9.7	12	17	130	40	900	359	1,360	170	70	26	23
18	10	11	15	115	37	660	390	1,330	134	58	20	20
19	9.2	5.9	13	110	37	720	386	a1,300	105	289	20	20
20	10	11	12	100	37	850	376	a1,200	98	177	19	19
21	10	11	11	115	35	1,360	369	a1,300	81	141	18	22
22	9.7	9.2	11	130	35	1,750	a350	a1,500	79	132	12	91
23	9.7	10	10	120	37	2,930	320	a1,300	73	95	14	101
24	10	11	10	100	38	3,960	295	a1,500	62	72	15	75
25	9.7	12	10	200	39	5,340	274	a1,600	58	58	16	55
26	9.7	12	10	400	40	3,780	231	2,450	55	49	21	47
27	10	12	11	1,100	40	1,750	200	1,720	47	257	14	47
28	9.7	12	30	950	40	608	163	955	48	955	12	42
29	7.8	9.7	50	700	-	504	155	630	98	298	12	37
30	8.8	9.2	150	450	-	512	186	480	118	188	16	24
31	12	-	110	280	-	608	-	330	-	159	16	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	264.1	12	4.4	8.52	0.018	0.02
November	342.0	15	5.9	11.4	.024	.03
December	663.8	150	8.8	21.4	.045	.05
Calendar year 1946	89,117.9	8,330	2.1	244	.514	6.73
January	5,867	1,100	35	189	.398	.46
February	1,366	150	35	48.8	.103	.11
March	29,759	5,340	40	960	2.02	2.33
April	63,058	10,100	155	2,102	4.43	4.94
May	35,493	3,250	226	1,145	2.41	2.78
June	18,741	3,250	47	625	1.32	1.47
July	4,238	955	25	137	.288	.33
August	1,142	126	12	36.8	.077	.09
September	1,561	400	13	52.0	.109	.12
Water year 1946-47	162,494.9	10,100	4.4	445	.937	12.73

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for Flint River near Flint.
d Doubtful gage-height record; discharge computed on basis of weather records and records for Flint River near Flint.
Note.- Stage-discharge relation affected by ice Dec. 16 to Mar. 20.

Mill Creek near Abbottsford, Mich.

Location.- Staff gage, lat. 43°03', long. 82°37', in NW¼ sec. 17, T. 7 N., R. 16 E., at county highway bridge, 1 mile upstream from mouth and 2 miles northeast of Abbottsford.

Drainage area.- 138 square miles.

Records available.- May to September 1947.

Extremes.- Maximum discharge during period, 930 second-feet June 2 (gage height, 6.04 feet, from graph based on gage readings); minimum, 11 second-feet Aug. 17-20 (gage height, 2.42 feet).

Remarks.- Records good except those for periods of no gage-height record, which are fair. Gage read twice daily.

Discharge, in second-feet, May to September 1947

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-	217	31	44	29	16	-	148	178	14	56
2	-	652	24	32	50	17	-	117	106	12	50
3	-	810	22	28	46	18	-	94	86	11	41
4	-	612	18	23	38	19	-	77	102	11	33
5	-	508	17	22	32	20	-	63	104	11	28
6	-	345	18	17	27	21	-	52	74	15	40
7	-	272	22	22	23	22	-	47	55	a20	158
8	-	415	17	20	23	23	-	40	46	a85	160
9	-	475	15	15	18	24	-	35	36	66	154
10	-	345	15	15	16	25	-	32	30	44	125
11	-	186	17	15	16	26	730	29	26	30	122
12	-	132	23	14	20	27	612	26	94	22	117
13	-	a110	17	14	a90	28	490	24	332	21	59
14	-	190	16	14	a70	29	370	67	219	21	52
15	-	190	27	14	a70	30	298	56	114	21	46
						31	228	-	70	26	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
May 26-31...	2,728	730	228	455	3.30	0.74
June.....	6,366	810	24	212	1.54	1.72
July.....	1,971	332	15	63.6	.461	.53
August.....	739	85	11	23.8	.172	.20
September...	1,809	160	16	60.3	.437	.49

a No gage-height record; discharge computed on basis of weather records and records for Black River near Fargo and Flint River near Flint.

STREAMS TRIBUTARY TO LAKE ST. CLAIR

Clinton River near Fraser, Mich.

Location.- Wire-weight gage, lat. 42°34'40", long. 82°57'00", on line between secs. 19 and 20, T. 2 N., R. 13 E., on Garfield Road bridge, 2⅔ miles north of Fraser and 4 miles upstream from North Branch.

Drainage area.- 454 square miles.

Records available.- May to September 1947.

Extremes.- Maximum discharge observed during period, 2,700 second-feet July 19 (gage height, 14.38 feet); minimum observed, 89 second-feet Aug. 25 (gage height, 5.09 feet).

Remarks.- Records good. Gage read twice daily.

Discharge, in second-feet, May to September 1947

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-	670	222	193	326	16	-	526	374	156	334
2	-	1,220	182	190	526	17	-	456	310	120	270
3	-	1,640	169	177	326	18	-	422	645	116	246
4	-	940	158	179	198	19	-	374	2,390	120	214
5	-	742	147	182	185	20	-	342	1,080	156	222
6	-	688	147	177	222	21	-	342	473	310	230
7	-	742	238	222	193	22	-	326	358	198	508
8	-	1,510	155	358	190	23	-	318	286	135	390
9	-	1,450	140	206	209	24	-	310	230	111	310
10	-	920	135	155	214	25	-	286	201	105	286
11	-	670	128	132	270	26	-	278	169	201	294
12	-	562	142	124	1,100	27	1,020	270	185	185	286
13	-	473	130	117	900	28	1,020	254	187	150	270
14	-	742	171	128	473	29	1,000	238	172	150	270
15	-	634	350	238	382	30	820	254	182	326	278
						31	688	-	177	456	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
May 27-31.....	4,548	1,020	688	910	2.00	0.37
June.....	18,599	1,640	238	620	1.37	1.53
July.....	10,033	2,390	128	324	.714	.82
August.....	5,773	456	105	186	.410	.47
September.....	10,122	1,100	185	337	.742	.83

Clinton River at Mount Clemens, Mich.

Location.- Water-stage recorder, lat. 42°35'45", long. 82°54'35", 20 feet downstream from Moravian Drive Bridge, a quarter of a mile downstream from North Branch, and half a mile west of Mount Clemens. Auxiliary wire-weight gage 8,500 feet downstream on Gratiot Avenue Bridge. Datum of both gages is 570.43 feet above mean sea level, datum of 1929.

Drainage area.- 733 square miles.

Records available.- May 1934 to September 1947.

Average discharge.- 13 years, 452 second-feet.

Extremes.- Maximum discharge during year, 21,200 second-feet Apr. 6 (gage height, 23.55 feet, from floodmark); minimum daily, 60 second-feet Oct. 7; minimum gage height, 3.63 feet Dec. 1.

1934-47: Maximum discharge, that of Apr. 6, 1947; minimum gage height, 2.90 feet Oct. 15, 1934.

Revisions.- The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede those published in the water-supply papers indicated.

Water-Supply Paper	Water year	Date	Gage height (feet)	Discharge (second-feet)
854.....	1937-38	Feb. 14	19.64	12,900
974.....	1942-43	May 12	21.89	17,700
1034.....	1944-45	May 18	19.28	12,200
1054.....	1945-46	June 18	19.43	12,400

Remarks.- Records fair except those for periods of indefinite stage-discharge relation, ice effect, partly plugged intake, no gage-height record, and those below 150 second-feet, which are poor. Discharge computed by using fall as determined by twice-daily readings of auxiliary gage as a factor for part of year.

Revisions.- Revised figures of discharge for high-water periods in the water years 1938, 1943, 1945, and 1946 are given herewith. They supersede those published in Water-Supply Papers 854, 974, 1034, 1054.

Feb. 14, 1938.....12,900 May 18, 1945.....11,300
May 12, 1943.....15,800 June 18, 1946..... 9,120

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
February 1938.....	67,401	12,900	600	2,407	3.28	3.42
Water year 1937-38.....	194,508	12,900	67	533	.727	9.87
Calendar year 1938.....	192,011	12,900	-	526	.718	9.75
May 1943.....	85,160	15,800	735	2,747	3.75	4.32
Water year 1942-43.....	326,863	15,800	139	896	1.22	16.60
Calendar year 1943.....	295,837	15,800	80	811	1.11	15.03
May 1945.....	57,302	11,300	227	1,848	2.52	2.90
Water year 1944-45.....	144,504	11,300	40	396	.540	7.32
Calendar year 1945.....	168,250	11,300	50	461	.629	8.53
June 1946.....	31,990	9,120	120	1,066	1.45	1.62
Water year 1945-46.....	175,007	9,120	50	479	.653	8.86

Discharge, in second-feet, of Clinton River at Mount Clemens, Mich., water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	e70	188	103	130	350	180	1,640	e1,300	895	e300	e240	473
2	e65	243	91	120	300	180	3,120	e2,500	e2,000	e250	e230	767
3	66	200	170	160	250	160	5,480	e2,300	e4,000	e220	e220	426
4	e65	131	126	150	220	140	3,770	e1,600	2,350	e200	e220	e300
5	76	162	*141	120	200	150	h7,370	e1,800	1,240	e200	220	e350
6	e65	142	162	130	200	170	h19,200	e1,700	e1,000	227	210	e320
7	e60	123	133	130	200	250	h9,050	e1,300	e1,000	e300	260	e280
8	64	e140	127	120	200	230	3,720	1,100	e1,900	e210	420	e260
9	e65	151	149	100	230	200	2,470	922	e2,000	e200	e260	e280
10	76	198	143	120	210	170	1,880	814	1,410	178	e190	296
11	85	203	181	110	190	200	1,680	769	e1,000	e180	e170	334
12	95	189	e600	120	170	400	1,580	659	e750	e180	e170	1,090
13	100	205	800	130	150	800	1,420	621	e600	e180	e160	1,300
14	95	148	280	200	*170	1,670	1,220	659	e1,000	230	e170	e700
15	95	151	230	1,000	220	1,590	1,100	832	e1,050	450	280	e550
16	100	101	300	800	350	1,090	1,140	624	802	450	e200	e450
17	110	e100	250	550	250	682	1,550	606	618	362	e150	e370
18	150	e95	200	450	200	504	2,350	1,000	530	697	e150	e330
19	250	e95	150	400	200	*465	3,370	1,700	e480	2,530	e180	e300
20	200	94	140	450	300	497	4,340	1,550	e430	1,760	e250	e300
21	150	84	140	800	280	549	3,850	1,440	e420	624	e500	e320
22	90	e85	120	450	250	557	2,470	2,710	e400	e450	346	705
23	95	e85	170	350	230	641	1,800	1,510	e380	e350	276	626
24	100	e85	130	300	210	1,530	1,380	1,380	e370	e280	187	435
25	110	e90	130	350	210	3,220	1,220	2,770	e350	e250	e150	e370
26	120	e95	100	500	200	2,220	1,060	4,200	e350	212	e250	e370
27	120	e95	110	450	180	1,260	894	2,690	e330	e230	e230	352
28	110	e95	130	400	160	1,220	818	1,440	e300	e230	e190	e330
29	100	85	115	300	-	1,260	854	1,550	e300	e220	229	e350
30	e90	112	130	500	-	1,260	e1,100	1,300	e325	e240	489	e350
31	102	-	150	500	-	1,460	-	1,020	-	e220	632	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per scuare mile	Runoff in inches
October	3,139	250	60	101	0.138	0.16
November	3,970	243	84	132	.180	.20
December	5,901	800	91	190	.259	.30
Calendar year 1946	156,478	9,120	50	429	.585	7.92
January	10,390	1,000	100	335	.457	.53
February	6,280	350	150	224	.306	.32
March	24,905	3,220	140	803	1.10	1.27
April	92,696	19,200	818	3,090	4.22	4.71
May	46,366	4,200	606	1,496	2.04	2.35
June	28,580	4,000	300	953	1.30	1.45
July	12,610	2,530	178	407	.555	.64
August	7,829	632	150	253	.345	.40
September	13,684	1,300	260	456	.622	.69
Water year 1946-47	256,350	19,200	60	702	.958	13.02

* Winter discharge measurement made on this day.

e Stage-discharge relation indefinite; discharge computed on basis of weather records and records for River Rouge at Detroit and Black River near Fargo.

h Computed from staff-gage readings.

Note.- Stage-discharge relation affected by ice Dec. 13 to Mar. 13. No gage-height record Oct. 11-29, July 14-16, Aug. 5-8; discharge computed as explained in footnote e. Intake partly plugged Apr. 8-29, May 8 to June 1, June 4, 5, 10, 16-18, July 6, 10, 17-21, 26; discharge computed as explained in footnote e.

North Branch Clinton River near Mount Clemens, Mich.

Location.- Wire-weight gage, lat. 42°37'45", long. 82°53'25", in NW¼ sec. 2, T. 2 N., R. 13 E., at bridge on State Highway 59, 2 miles north of Mount Clemens and 3½ miles upstream from mouth.

Drainage area.- 185 square miles.

Records available.- May to September 1947.

Extremes.- Maximum discharge observed during period, 1,520 second-feet May 26 (gage height, 12.48 feet); minimum observed, 3.0 second-feet Aug. 25 (gage height, 3.30 feet).

Remarks.- Records fair. Gage read twice daily.

Discharge, in second-feet, May to September 1947

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-	132	31	35	204	16	-	132	35	22	a80
2	-	581	32	25	146	17	-	84	22	15	a70
3	-	1,280	32	24	78	18	-	74	21	22	a60
4	-	1,040	32	20	69	19	-	64	156	30	a55
5	-	399	35	22	63	20	-	54	103	49	a50
6	-	161	35	16	57	21	-	46	54	146	a60
7	-	119	39	19	42	22	-	38	39	138	a200
8	-	128	32	25	38	23	-	37	36	77	250
9	-	256	28	29	33	24	282	37	31	26	a100
10	-	231	27	22	31	25	646	39	29	10	a50
11	-	115	24	18	30	26	1,410	35	28	15	a45
12	-	82	19	25	a250	27	950	35	28	14	a40
13	-	71	26	22	a180	28	321	33	27	20	a40
14	-	145	26	25	a120	29	288	33	28	28	a40
15	-	302	39	25	a100	30	250	46	32	38	a40
						31	156	-	38	210	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
May 24-31	4,303	1,410	156	538	2.91	0.86
June	5,829	1,280	33	194	1.05	1.17
July	1,164	156	19	37.5	.203	.23
August	1,212	210	10	39.1	.211	.24
September	2,621	250	30	87.4	.472	.53

a No gage-height record; discharge computed on basis of weather records and records for stations on nearby streams.

Middle Branch Clinton River near Mount Clemens, Mich.

Location.- Wire-weight gage, lat. 42°37'40", long. 82°55'50", in NW¼ sec. 4, T. 2 N., R. 13 E., at bridge on State Highway 59, 3½ miles northwest of Mount Clemens and 3½ miles upstream from mouth.

Drainage area.- 51 square miles.

Records available.- May to September 1947.

Extremes.- Maximum discharge observed during period, 635 second-feet June 2 (gage height, 9.37 feet); minimum, 2.9 second-feet Aug. 14 (gage height, 2.28 feet).

Remarks.- Records good except those for period of no gage-height record, which are fair, and those below 10 second-feet, which are poor. Gage read twice daily.

Discharge, in second-feet, May to September 1947

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-	52	7.5	5.5	13	16	-	29	22	4.7	11
2	-	346	6.9	5.1	20	17	-	22	19	4.7	9.6
3	-	153	6.3	5.9	9.8	18	-	18	56	4.6	8.7
4	-	58	6.1	5.7	8.7	19	-	16	95	9.8	8.1
5	-	44	6.3	5.3	80	20	-	13	41	18	7.7
6	-	35	7.1	5.1	24	21	-	12	21	20	10
7	-	31	8.7	5.5	11	22	-	11	14	7.7	76
8	-	85	8.1	9.8	7.7	23	52	9.8	11	5.7	32
9	-	64	6.1	6.1	7.1	24	a50	9.2	8.3	5.1	19
10	-	36	6.5	4.9	7.1	25	a55	8.7	7.3	5.5	13
11	-	24	6.3	4.9	8.7	26	a55	8.7	7.1	6.3	11
12	-	18	5.1	4.2	143	27	56	8.1	7.9	5.3	9.8
13	-	16	4.6	3.5	73	28	54	7.7	9.8	4.4	9.4
14	-	80	16	3.4	23	29	75	7.9	7.9	8.3	10
15	-	42	24	5.3	14	30	50	9.6	6.9	18	10
						31	38	-	5.9	33	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
May 23-31	485	75	38	53.9	1.06	0.35
June	1,274.7	346	7.7	42.5	.833	.93
July	465.7	95	4.6	15.0	.294	.34
August	241.3	33	3.4	7.78	.153	.18
September	695.4	143	7.1	23.2	.455	.51

a No gage-height record; discharge computed on basis of weather records and records for stations on nearby streams.

River Rouge at Detroit, Mich.

Location.- Wire-weight gage, lat. 42°21'40", long. 83°15'15", on line between secs. 33 and 34, T. 1 S., R. 10 E., at Detroit and 3 miles upstream from Middle River Rouge. Datum of gage is 579.90 feet above mean sea level.

Drainage area.- 194 square miles.

Records available.- November 1930 to September 1947.

Average discharge.- 17 years, 97.4 second-feet.

Extremes.- Maximum discharge during year, 13,000 second-feet Apr. 5; maximum gage height, 23.0 feet Apr. 6, from floodmark; minimum daily discharge, 8 second-feet Oct. 6; minimum gage height observed, 4.55 feet Oct. 7.
1930-47: Maximum discharge, that of Apr. 5, 1947; maximum gage height, that of Apr. 6, 1947; minimum discharge observed, 2.7 second-feet Aug. 11, 1934 (gage height, 3.50 feet).

Remarks.- Records fair except those for periods of ice effect or no gage-height record, which are poor. Discharge above 700 second-feet computed by using rate of change of stage and storage as factors. Gage read twice daily.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	28	a26	35	100	50	412	315	260	53	24	360
2	9.2	53	d24	30	90	40	1,110	682	550	46	21	330
3	9.0	a45	26	42	75	50	1,590	a600	502	42	21	196
4	9.0	37	24	40	70	45	611	378	a400	40	21	107
5	8.4	30	24	30	60	45	5,290	422	253	38	19	85
6	a8	30	*24	35	55	40	7,380	a400	253	a40	19	68
7	8.2	29	23	35	50	55	1,580	315	364	a40	18	57
8	8.6	29	a23	30	55	80	606	253	770	45	20	55
9	8.8	28	24	25	60	80	457	214	687	36	a30	47
10	9.2	a30	24	32	55	100	402	183	392	35	18	33
11	11	33	26	28	50	150	402	a170	253	44	18	33
12	13	38	64	30	45	250	438	165	201	42	28	1,040
13	a14	39	358	35	35	400	a400	a150	171	39	17	a800
14	15	35	a200	40	45	500	322	246	364	a200	15	300
15	14	28	70	200	55	350	308	214	a300	392	57	182
16	15	27	87	250	75	250	350	183	214	246	43	123
17	16	a25	68	200	80	180	470	183	195	177	30	101
18	a20	24	46	130	*85	150	684	a200	149	195	21	83
19	51	23	40	100	75	*130	a900	260	128	422	a25	68
20	a40	23	35	*120	70	120	a1,000	486	a110	a350	43	59
21	a30	a22	35	150	60	110	1,170	840	100	225	102	55
22	15	22	30	153	60	110	a800	765	a95	164	84	210
23	16	23	45	116	60	110	392	a600	89	110	51	174
24	a17	a23	35	75	55	350	364	518	77	78	40	104
25	a19	23	35	49	55	600	315	1,100	68	62	a45	85
26	21	25	25	80	50	700	266	896	82	58	98	64
27	a20	a25	30	130	47	329	227	438	72	a50	73	55
28	19	26	33	150	45	336	208	406	64	47	45	53
29	18	a25	30	140	-	a350	a210	a380	a65	39	68	51
30	19	d27	35	100	-	a350	280	364	70	32	182	59
31	22	-	40	80	-	378	-	280	-	27	518	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	513.4	51	8	16.6	0.086	0.09
November	875	53	22	29.2	.151	.17
December	1,609	358	23	51.9	.268	.31
Calendar year 1946	30,003.0	927	5.2	82.2	.424	5.75
January	2,690	250	25	86.8	.447	.52
February	1,717	100	35	61.3	.316	.33
March	6,788	700	40	219	1.13	1.30
April	28,944	7,380	208	965	4.97	5.54
May	12,606	1,100	150	407	2.10	2.42
June	7,298	770	64	243	1.25	1.40
July	3,414	422	27	110	.567	.65
August	1,814	518	15	58.5	.302	.35
September	5,037	1,040	33	168	.866	.97
Water year 1946-47	73,305.4	7,380	8	201	1.04	14.05

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for Raisin River at Monroe and Grand River at Jackson.
d Doubtful gage-height record; discharge computed on basis of weather records and records for Raisin River at Monroe and Grand River at Jackson.
Note.- Stage-discharge relation affected by ice Dec. 19 to Jan. 21, Jan. 26 to Mar. 26 (no gage-height record Dec. 21, 22, 25, 29, Jan. 1, 4, 11, 12, 14, 17, 19, 21, 26, 29, Feb. 1, 2, 7, 9-17, 21-24, 26, 27, Mar. 1-3, 5, 7-9, 13, 14, 18, 22, 23, 25).

Middle River Rouge near Garden City, Mich.

Location.- Wire-weight gage, lat. 42°20'55", long. 83°18'45", in W½ sec. 6, T. 2 S., R. 10 E., at Inkster Road Bridge, 1¾ miles northeast of Garden City and 6¼ miles upstream from mouth. Former gage at site at Detroit, 4¾ miles downstream, at different datum.
Drainage area.- 89 square miles.
Records available.- June to September 1947. November 1930 to September 1933 at site 4¾ miles downstream, published as Middle River Rouge at Detroit.
Extremes.- Maximum discharge during period, 522 second-feet Sept. 12 (gage height, 6.87 feet, from graph based on gage readings); minimum observed, 3.0 second-feet Aug. 10, 16 (gage height, 1.70 feet).
1930-33, 1947: Maximum discharge, 1,420 second-feet May 1, 1933 (gage height, 11.55 feet, site and datum then in use); minimum, 1.4 second-feet Aug. 21, 24, 28, Sept. 21, 1931.
Remarks.- Records fair. Gage read twice daily.

Discharge, in second-feet, June to September 1947

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1	-	39	31	a150	16	127	112	3.2	51
2	-	32	30	a300	17	95	85	17	32
3	-	26	30	a200	18	78	112	33	23
4	-	26	30	a90	19	69	127	24	18
5	-	26	29	a50	20	57	112	24	13
6	119	23	28	37	21	48	94	36	18
7	162	40	22	35	22	44	70	a30	73
8	206	38	16	34	23	44	46	a20	51
9	224	35	8.3	29	24	41	60	a15	45
10	146	35	9.4	23	25	40	33	a25	29
11	108	24	16	48	26	35	30	47	27
12	83	22	15	428	27	44	32	30	20
13	66	25	23	407	28	38	29	26	22
14	146	58	a15	156	29	38	30	28	29
15	173	112	8.1	87	30	48	32	a35	30
					31	-	33	a70	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
June 6-30.....	2,277	224	35	91.1	1.02	0.95
July.....	1,598	127	22	51.5	.579	.67
August.....	774.0	70	3.2	25.0	.281	.32
September.....	2,555	428	13	85.2	.957	1.07

a No gage-height record; discharge computed on basis of weather records and records for Lower River Rouge at Inkster and River Rouge at Detroit.

Lower River Rouge at Inkster, Mich.

Location.- Wire-weight gage, lat. 42°18'00", long. 83°18'00", in S½ sec. 19, T. 2 S., R. 10 E., at John Daly Road Bridge, 0.6 mile northeast of Inkster and 4¾ miles upstream from mouth. Former gage at site at Dearborn, 3½ miles downstream, at different datum.
Drainage area.- 90 square miles.
Records available.- June to September 1947. November 1930 to September 193? at site 3½ miles downstream, published as Lower River Rouge at Dearborn.
Extremes.- Maximum discharge during period, 430 second-feet Sept. 12 (gage height, 6.20 feet, from graph based on gage readings); minimum, 0.7 second-foot Aug. 13, 14 (gage height, 3.00 feet).
1930-33, 1947: Maximum discharge, about 1,400 second-feet May 1, 193? (gage height, 12.16 feet, site and datum then in use); minimum, 0.3 second-foot Sept. 2, 1933 (gage height, 1.42 feet, site and datum then in use).
Remarks.- Records good above 50 second-feet and fair below. Gage read twice daily.

Discharge, in second-feet, June to September 1947

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1	-	4.4	1.1	a90	16	26	9.1	2.0	18
2	-	3.4	1.1	184	17	18	11	.9	12
3	-	2.6	1.1	95	18	15	16	.9	9.1
4	-	2.2	1.1	26	19	13	27	.9	7.0
5	57	1.7	.9	16	20	10	18	2.0	a?0
6	55	1.7	.9	12	21	7.6	13	7.0	a35
7	210	4.4	.9	9.1	22	5.8	7.0	14	56
8	222	3.0	1.0	6.8	23	5.2	5.0	8.8	33
9	211	2.1	1.0	5.5	24	5.2	3.8	a8	15
10	60	2.4	1.0	4.8	25	5.2	2.7	7.0	10
11	37	3.0	1.0	4.0	26	6.2	2.2	3.2	7.3
12	25	7.9	.9	252	27	7.9	2.0	3.4	5.5
13	7.6	6.0	.7	111	28	7.9	2.2	5.0	5.0
14	36	7.6	.9	60	29	16	2.0	14	4.0
15	36	5.8	2.6	29	30	14	2.1	20	3.9
					31	-	1.7	a40	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
June 5-30..	1,119.6	222	5.2	43.1	0.479	0.46
July.....	183.0	27	1.7	5.90	.066	.07
August.....	153.3	40	.7	4.95	.055	.03
September..	1,146.0	252	3.9	38.2	.424	.47

a No gage-height record; discharge computed on basis weather records and records for River Rouge at Detroit and Middle River Rouge near Garden City.

Huron River at Commerce, Mich.

Location.- Staff gage, lat. 42°35'25", long. 83°29'05", on line between NE¼ and SE¼ sec. 10, T. 2 N., R. 8 E., at first bridge on Commerce Road east of Commerce, at mouth of Hayes Creek.

Drainage area.- 51 square miles, including that of Hayes Creek.

Records available.- March 1946 to September 1947 (includes flow of Hayes Creek).

Extremes.- Maximum discharge during year, 266 second-feet Apr. 7 (gage height, 2.98 feet); minimum, 9.8 second-feet Oct. 1-9 (gage height, 0.92 foot).
1946-47: Maximum discharge, that of Apr. 7, 1947; minimum observed, 7.2 second-feet Aug. 18, Sept. 28, 1946 (gage height, 0.84 foot).

Remarks.- Records good. Gage read twice daily.

Rating table, water year 1946-47
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 7				Apr. 8 to Sept. 30	
0.9	9.0	2.3	120	1.1	23
1.1	17	2.5	146	1.3	34
1.3	27	2.7	180	1.5	49
1.5	40	2.9	234	1.8	74
1.7	65	3.0	274	2.3	120

Note.- Same as preceding table above 2.3 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.8	22	16	19	43	27	73	90	94	44	46	74
2	9.8	22	15	20	43	29	85	89	96	41	46	72
3	9.8	22	15	20	43	31	98	88	95	38	46	69
4	9.8	22	15	20	43	31	100	92	96	35	44	69
5	9.8	22	15	20	43	31	151	96	95	33	43	69
6	9.8	22	15	20	39	31	207	94	95	33	41	67
7	9.8	21	15	20	37	31	250	90	106	32	40	66
8	10	21	15	20	36	31	222	92	116	29	38	64
9	9.8	21	15	20	36	31	175	87	117	27	34	59
10	11	21	16	20	36	27	166	82	130	26	33	57
11	11	21	17	20	36	24	162	78	130	24	33	57
12	11	21	20	20	36	28	162	74	116	24	33	55
13	11	20	24	20	36	28	162	70	108	24	30	53
14	11	19	24	22	36	32	157	69	107	31	30	55
15	11	19	26	26	36	33	149	69	105	35	30	59
16	12	19	26	26	36	36	135	70	101	41	30	62
17	16	19	26	22	34	36	130	71	94	49	29	65
18	16	19	26	23	32	34	130	72	90	76	28	64
19	16	19	26	22	35	33	132	74	83	106	29	62
20	15	17	26	22	36	33	132	76	82	101	32	63
21	15	17	24	22	36	33	132	85	75	101	49	64
22	15	17	23	22	31	33	130	90	74	100	52	64
23	15	17	22	22	36	36	124	90	66	94	52	61
24	15	16	22	22	36	50	121	94	64	87	52	60
25	15	16	22	26	31	114	120	95	60	83	56	59
26	15	16	22	31	27	143	109	94	60	78	52	57
27	15	16	22	31	27	82	96	92	57	73	51	56
28	15	15	23	32	27	73	90	92	55	70	51	53
29	17	15	20	32	-	73	85	108	48	59	56	52
30	20	15	19	38	-	73	88	108	46	56	62	51
31	20	-	19	41	-	72	-	92	-	51	68	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	406.4	20	9.8	13.1	0.257	0.30
November	569	22	15	19.0	.373	.42
December	631	26	15	20.4	.400	.46
Calendar year	-	-	-	-	-	-
January	741	41	19	23.9	.469	.54
February	1,003	43	27	35.8	.702	.73
March	1,399	143	24	45.1	.884	1.02
April	4,073	250	73	136	2.67	2.98
May	2,663	108	69	85.9	1.68	1.94
June	2,661	130	46	88.7	1.74	1.94
July	1,701	106	24	54.9	1.08	1.24
August	1,316	68	28	42.5	.833	.96
September	1,838	74	51	61.3	1.20	1.34
Water year 1946-47	19,001.4	250	9.8	52.1	1.02	13.87

Huron River near Dexter, Mich.

Location.- Wire-weight gage, lat. 42°23'10", long. 83°54'40", in S½ sec. 13, T. 1 S., R. 4 E., on highway bridge on North Territorial Road, half a mile east of Hudson Mills, 4 miles north of Dexter, and 12 miles northwest of Ann Arbor. Datum of gage is 837.11 feet above mean sea level (levels by Michigan Department of Conservation).

Drainage area.- 506 square miles.

Records available.- March 1946 to September 1947.

Extremes.- Maximum discharge during year, 3,120 second-feet Apr. 9 (gage height, 8.17 feet, from graph based on gage readings); minimum observed, 72 second-feet Oct. 2, 3; minimum gage height observed, 3.08 feet Oct. 16, 17.
1946-47: Maximum discharge, that of Apr. 9, 1947; minimum observed, 56 second-feet Sept. 6, 9, 10, 1946; minimum gage height, 2.97 feet Aug. 9, 14, 15, 1946.

Remarks.- Records fair.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	142	a130	150	260	210	855	1,000	882	304	402	460
2	72	163	131	160	260	200	922	1,000	882	292	394	a500
3	77	172	127	160	260	180	1,010	970	882	280	a385	564
4	103	175	121	160	260	180	1,100	970	882	268	376	a600
5	111	181	119	160	260	180	1,570	970	a900	a250	364	a650
6	107	178	*123	160	260	190	2,170	970	882	a230	a330	a600
7	91	a170	125	160	250	210	2,560	940	882	a210	312	586
8	79	a170	123	160	250	220	2,870	910	882	a200	284	a600
9	85	a170	127	160	240	230	3,090	855	910	a200	260	a600
10	77	172	133	160	240	230	3,040	855	910	a180	242	591
11	77	175	131	160	230	220	2,960	828	910	a170	225	a600
12	77	169	a130	160	230	210	2,750	800	910	a160	a200	a600
13	77	169	a140	160	230	200	2,440	772	882	a150	169	602
14	75	166	a180	160	230	200	2,150	745	a850	a150	169	a600
15	77	166	a210	170	230	210	1,870	718	a800	a150	a180	613
16	75	163	a220	190	230	250	1,710	745	772	a150	187	a620
17	81	160	a220	210	230	360	1,620	745	a730	a170	a200	640
18	121	155	a220	210	250	407	1,550	a750	718	a180	225	a640
19	121	148	a200	200	*250	440	1,500	772	718	a200	a230	a640
20	133	a150	a180	220	230	*475	1,480	828	718	a230	a240	630
21	138	145	a160	*240	230	475	1,450	828	684	a270	246	a620
22	138	145	a150	240	230	480	1,420	855	657	324	a270	586
23	140	142	155	220	230	510	a1,400	882	618	372	284	510
24	a140	145	152	220	230	580	1,450	910	564	407	304	a500
25	140	148	152	220	230	a700	1,390	a950	525	435	a330	490
26	138	145	158	220	230	690	a1,300	970	465	445	356	480
27	138	142	169	240	230	745	1,240	940	412	450	a350	475
28	133	a140	166	270	220	772	1,180	940	372	a450	a350	450
29	133	135	175	280	-	800	1,090	940	344	435	a350	416
30	133	133	150	280	-	828	1,060	882	320	a425	407	407
31	135	-	175	270	-	828	-	882	-	416	a430	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	3,296	140	72	106	0.209	0.24
November	4,734	181	133	158	.312	.35
December	4,852	220	119	157	.310	.36
Calendar year	-	-	-	-	-	-
January	6,130	280	150	198	.391	.45
February	6,710	260	220	240	.474	.49
March	12,410	828	180	400	.791	.91
April	52,197	3,090	855	1,740	3.44	3.84
May	27,122	1,000	718	875	1.73	1.99
June	21,863	910	320	729	1.44	1.61
July	8,553	450	150	276	.545	.63
August	9,051	430	169	292	.577	.67
September	16,870	650	407	562	1.11	1.24
Water year 1946-47	173,788	3,090	72	476	.941	12.78

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records, records for Huron River at Commerce, Cedar River at East Lansing, and Raisin River at Monroe.
Note.- Stage-discharge relation affected by ice Dec. 30 to Mar. 16 (no gage-height record Jan. 16-20, 22, Feb. 17, 18, 21, Mar. 4, 16).

Hayes Creek at Commerce, Mich.

Location.- Staff gage, lat. 42°35'25", long. 83°28'45", on line between NW¼ and SW¼ sec. 11, T. 2 N., R. 8 E., at bridge 600 feet upstream from mouth and half a mile east of Commerce.

Drainage area.- 7.5 square miles (revised).

Records available.- March 1946 to September 1947.

Extremes.- Maximum discharge during year, 154 second-feet Apr. 7 (gage height, 4.25 feet, from graph based on gage readings); minimum, 1.2 second-feet Oct. 2, 3 (gage height, 1.62 feet).
1946-47: Maximum discharge, that of Apr. 7, 1947; minimum, that of Oct. 2, 3, 1946.

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.3	6.2	5.8	b5	13	6.6	17	29	14	14	19	34
2	1.2	6.2	6.0	b5	13	6.8	27	31	18	14	16	36
3	1.2	6.6	5.8	b5	13	8.0	32	30	18	9.4	14	34
4	1.4	6.4	5.8	b5	13	8.3	29	29	17	9.0	14	32
5	1.4	5.6	5.8	b5	13	8.3	67	27	16	8.8	14	32
6	1.5	5.2	*4.0	5.6	13	8.3	98	26	16	8.8	13	30
7	1.7	5.2	3.8	5.8	13	8.3	130	24	20	9.0	12	25
8	1.8	4.6	3.8	6.0	12	8.3	123	24	24	8.2	12	24
9	1.8	4.6	3.8	5.8	12	8.3	91	23	30	7.6	11	23
10	2.0	4.6	4.4	5.6	12	*7.0	79	20	43	7.4	11	20
11	2.0	4.6	5.2	5.6	12	6.6	75	19	41	7.4	11	19
12	2.4	4.6	6.6	5.6	12	7.8	72	18	33	7.4	11	20
13	2.2	4.2	7.6	5.8	11	8.0	69	16	28	7.4	10	20
14	2.2	4.2	7.8	6.6	8.5	8.0	68	13	28	9.0	10	20
15	2.4	4.2	6.6	7.4	8.3	8.0	64	12	26	11	10	20
16	2.6	4.0	5.6	7.6	8.0	8.3	60	12	24	10	10	19
17	5.6	3.8	5.6	*7.0	7.8	8.0	60	13	22	11	10	18
18	6.0	3.8	5.6	7.0	*7.6	7.8	59	14	21	22	10	18
19	5.4	3.8	5.6	6.6	b9	7.4	58	14	19	34	11	17
20	5.0	3.8	5.4	6.6	b8	7.0	58	15	18	32	12	17
21	4.6	3.8	5.2	6.6	b9	7.0	57	19	17	36	20	19
22	4.6	5.4	5.0	6.6	b9	7.0	55	21	16	42	20	20
23	4.6	7.0	5.0	6.6	8.7	7.2	53	20	15	41	18	18
24	4.8	6.6	5.0	6.6	8.7	12	52	22	14	37	15	16
25	5.0	6.6	5.0	7.6	7.8	24	51	21	14	34	17	16
26	5.0	6.6	5.2	8.5	7.0	29	46	19	14	32	15	15
27	5.2	5.8	5.6	8.5	7.0	18	37	18	13	31	14	14
28	5.4	4.6	7.8	8.5	6.8	17	32	18	12	30	14	14
29	5.6	4.8	7.2	8.7	-	16	28	30	12	29	16	13
30	5.6	5.2	b6	b11	-	16	27	27	11	26	20	12
31	5.8	-	b5	b13	-	16	-	14	-	23	23	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	107.3	6.0	1.2	3.46	0.461	0.53
November	152.6	7.0	3.8	5.09	.679	.76
December	172.6	7.8	3.8	5.57	.743	.86
Calendar year	-	-	-	-	-	-
January	211.8	13	5	6.83	.911	1.05
February	283.2	13	6.8	10.1	1.35	1.41
March	324.3	29	6.6	10.5	1.40	1.61
April	1,774	130	17	59.1	7.88	8.79
May	638	31	12	20.6	2.75	3.17
June	614	43	11	20.5	2.73	3.05
July	608.4	42	7.4	19.6	2.61	3.01
August	433	23	10	14.0	1.87	2.16
September	635	36	12	21.2	2.83	3.16
Water year 1946-47	5,954.2	130	1.2	16.3	2.17	29.56

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

Portage Creek near Pinckney, Mich.

Location.- Staff gage, lat. 42°25'40", long. 83°57'35", in sec. 34, T. 1 N., R. 4 E., at highway bridge, 2 miles upstream from Little Portage Lake and 2¼ miles southwest of Pinckney. Datum of gage is 860.38 feet above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Drainage area.- 79 square miles.

Records available.- November 1944 to September 1947.

Extremes.- Maximum discharge during year, 529 second-feet Apr. 9, 10 (gage height, 5.72 feet); minimum observed, 0.6 second-foot Oct. 5 (gage height, 0.56 foot).
1944-47: Maximum discharge, that of Apr. 9, 10, 1947; minimum, that of Oct. 5, 1946.

Remarks.- Records good except those below 3 second-feet and those for period of ice effect, which are fair. Gage read once daily.

Rating table, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used July 26 to Sept. 22)

0.55	0.5	0.9	5.5	2.3	43	4.1	205
.6	1.0	1.1	9.7	2.6	55	4.7	296
.7	2.3	1.4	17	2.9	73	5.2	396
.8	3.8	1.9	30	3.3	116	5.7	524

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	11	16	18	35	17	146	159	154	32	24	20
2	.7	14	18	19	40	18	163	158	154	32	23	22
3	.7	13	15	20	45	19	185	153	154	32	22	22
4	.7	12	13	20	45	19	195	139	160	31	20	22
5	.6	12	13	20	40	17	269	107	154	30	20	23
6	.7	12	13	20	35	16	344	122	160	28	20	23
7	.8	14	14	20	35	16	415	122	166	27	20	23
8	1.0	15	14	20	34	16	498	120	166	26	16	22
9	1.1	15	14	20	32	17	524	119	166	26	9.0	21
10	1.6	16	*17	20	30	17	524	115	166	25	8.2	24
11	2.4	17	19	19	28	17	511	113	160	24	8.2	27
12	2.9	17	24	17	26	17	477	106	154	24	8.2	34
13	2.8	16	28	19	24	20	428	105	149	24	7.7	32
14	2.4	16	30	19	21	25	376	106	149	24	9.3	32
15	2.4	16	32	18	23	35	334	106	135	24	17	35
16	2.3	17	33	17	23	35	303	115	127	25	16	37
17	4.1	22	30	18	23	40	280	120	122	29	14	36
18	8.4	20	18	20	23	52	258	124	117	30	13	35
19	6.1	18	15	20	*30	56	220	127	109	31	14	35
20	5.2	18	20	20	28	*64	232	138	105	30	18	35
21	5.9	18	20	22	25	67	230	144	100	31	17	36
22	6.3	19	17	*25	23	70	219	144	91	32	16	48
23	6.3	18	19	30	22	76	211	138	83	32	14	66
24	6.7	18	23	25	22	97	204	144	79	31	14	60
25	7.1	17	20	22	20	130	197	144	69	30	20	55
26	6.9	16	17	24	19	154	186	149	53	29	24	52
27	6.7	16	17	25	18	149	180	154	39	30	21	50
28	6.9	16	19	27	17	138	174	149	34	31	18	49
29	6.7	15	19	30	-	144	168	154	33	29	19	48
30	7.9	14	23	32	-	149	163	154	33	28	21	47
31	9.0	-	20	35	-	144	-	154	-	26	22	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	124.3	9.0	0.6	4.00	0.051	0.06
November	478	22	11	15.9	.201	.22
December	6[illegible]	33	13	19.7	.249	.29
Calendar year 1946	12,376.4	176	.6	33.9	.429	5.82
January	681	35	17	22.0	.278	.32
February	786	45	17	28.1	.356	.37
March	1,851	154	16	59.7	.756	.87
April	8,614	524	146	287	3.63	4.05
May	4,102	159	105	132	1.67	1.92
June	3,541	166	33	118	1.49	1.66
July	883	32	24	28.5	.361	.42
August	515.6	24	7.7	16.6	.210	.24
September	1,071	66	20	35.7	.452	.50
Water year 1946-47	23,254.9	524	.6	63.7	.806	10.92

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 17 to Mar. 17.

Raisin River at Monroe, Mich.

Location.- Water-stage recorder and concrete dam, lat. 41°54'50", long. 83°23'15", at municipal water-supply plant in Monroe, 4 miles upstream from mouth. Datum of gage is 570.00 feet above mean sea level (city of Monroe bench mark).

Drainage area.- 1,020 square miles.

Records available.- September 1937 to September 1947.

Average discharge.- 10 years, 656 second-feet.

Extremes.- Maximum discharge during year, 11,200 second-feet Apr. 6 (gage height, 9.85 feet); minimum, 23 second-feet (regulated) Oct. 20 (gage height, 5.58 feet); minimum gage height, 3.06 feet Oct. 12 (gates in dam open).
1937-47: Maximum discharge observed, 12,900 second-feet May 19, 1945 (gage height, 10.10 feet); minimum discharge, about 2 second-feet Sept. 19, 20, 1941; minimum gage height, that of Oct. 12, 1946.

Remarks.- Records good except those below 1,500 second-feet and those for periods of no gage-height record, which are fair. Slight regulation from power plants upstream.

Cooperation.- Water-stage recorder inspected by employees of city of Monroe.

Rating table, water year 1946-47, except period when gates in dam were open
(gage height, in feet, and discharge, in second-feet)

5.6	32	6.2	550	8.9	6,700
5.7	87	6.5	970	9.4	8,800
5.8	156	6.9	1,630	9.7	10,300
5.9	237	7.4	2,610		
6.0	328	8.1	4,260		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	75	139	128	1,030	221	2,220	1,250	1,680	371	213	424
2	60	108	126	135	985	172	2,820	3,410	2,180	339	196	492
3	45	115	153	188	835	221	3,270	3,040	3,160	301	180	538
4	35	149	81	172	538	188	2,890	2,930	2,930	292	164	481
5	30	188	90	118	392	196	4,820	2,780	2,820	301	172	414
6	30	180	139	172	382	164	10,200	2,480	2,650	237	142	403
7	30	115	78	172	360	264	7,900	1,960	2,340	237	142	349
8	75	135	122	128	414	403	7,660	1,520	2,180	237	156	360
9	60	156	128	108	550	403	6,940	1,280	2,080	213	188	328
10	40	75	128	164	481	382	4,840	1,080	1,770	213	142	229
11	60	135	128	142	435	492	3,780	955	1,520	246	156	246
12	30	172	138	149	349	880	3,410	820	1,220	255	180	255
13	35	164	332	172	255	1,230	2,860	694	1,000	205	149	435
14	70	122	360	220	282	1,920	2,530	764	1,150	205	101	550
15	100	149	446	730	527	2,200	2,280	955	1,520	237	142	615
16	45	135	458	850	667	2,140	1,980	1,030	a1,900	255	188	538
17	35	135	349	970	667	1,980	2,040	1,000	a1,750	414	156	424
18	45	156	205	1,020	694	1,810	2,140	1,430	a1,600	382	156	382
19	63	142	135	792	516	1,280	2,260	2,140	a1,300	492	188	339
20	47	149	196	641	446	985	3,430	2,760	985	694	172	282
21	142	101	196	874	371	880	6,700	3,630	792	563	128	282
22	47	135	164	722	292	850	6,700	4,000	667	446	196	310
23	122	122	237	708	282	865	7,500	3,390	628	392	205	310
24	52	75	180	641	273	1,350	6,000	3,270	538	371	135	273
25	94	135	188	538	229	2,930	4,260	3,630	458	328	188	292
26	a70	172	135	589	229	2,930	3,160	4,130	435	301	227	328
27	a65	108	149	680	170	3,040	2,460	3,270	392	246	180	292
28	a70	122	180	694	149	3,040	1,850	2,930	392	246	261	282
29	a70	115	149	602	-	3,040	1,490	2,650	371	246	328	282
30	75	149	153	628	-	2,930	1,260	2,300	382	213	310	301
31	75	-	170	835	-	2,480	-	1,890	-	196	360	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,892	142	30	61.0	0.060	0.07
November	3,989	188	75	133	.130	.14
December	5,832	458	78	188	.184	.21
Calendar year 1946	148,534	3,160	12	407	.399	5.40
January	14,682	1,020	108	474	.465	.54
February	12,800	1,030	149	457	.448	.47
March	41,866	3,040	164	1,351	1.32	1.52
April	121,650	10,200	1,260	4,055	3.98	4.44
May	69,368	4,130	694	2,238	2.19	2.52
June	42,790	3,160	371	1,426	1.40	1.56
July	9,674	694	196	312	.306	.35
August	5,801	360	101	187	.183	.21
September	11,036	615	229	368	.361	.40
Water year 1946-47	341,380	10,200	30	935	.917	12.43

a No gage-height record; discharge computed on basis of weather records and records for Cedar River at East Lansing.

Note.- Gates in dam open Oct. 1-18; discharge computed on basis of 1 discharge measurement, weather records, and records for Cedar River at East Lansing.

Tenmile Creek at Toledo, Ohio

Location.- Water-stage recorder, lat. 41°39'29", long. 83°37'19", on line between secs. 31 and 32, T. 9 S., R. 7 E., at Secor Road Bridge at Toledo, a quarter of a mile upstream from Toledo University and 4½ miles west of Lucas County Courthouse. Datum of gage is 580.00 feet above mean sea level, datum of 1929.

Drainage area.- 139 square miles.

Records available.- March 1945 to September 1947.

Extremes.- Maximum discharge during year, 1,420 second-feet June 3 (gage height, 9.14 feet); no flow Oct. 5-10.
1945-47: Maximum discharge, 1,930 second-feet May 18, 1945 (gage height, 9.85 feet); no flow at times.

Remarks.- Records fair except those for periods of ice effect, no gage-height record, or indefinite stage-discharge relation, which are poor.

Rating table, water year 1946-47, except periods of ice effect or indefinite stage-discharge relation (gage height, in feet, and discharge, in second-feet) (Shifting-control method used Oct. 13, Oct. 17 to Nov. 2, Nov. 7-15, Nov. 17 to Dec. 2, Dec. 4-11, Feb. 17, Feb. 25 to Mar. 12)

1.95	0	2.3	10	4.5	225
2.0	.1	2.4	16	6.0	462
2.05	.8	2.6	28	7.2	674
2.1	2.2	3.0	57	8.0	865
2.15	3.8	3.4	91	8.5	1,040
2.2	5.8	3.9	143	9.0	1,310

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	3.5	3.2	5.8	a130	13	168	267	137	18	3.5	e65
2	.1	3.8	2.8	10	a150	12	230	865	546	14	3.5	e50
3	.1	a3.0	a2.8	17	93	9.5	316	645	1,270	12	3.8	e40
4	.1	a2.0	3.2	10	b65	10	189	356	884	10	4.6	e25
5	0	a1.4	2.8	b9	b45	10	364	255	391	9.5	5.0	e35
6	0	a1.1	2.8	b8	b40	10	1,020	165	225	10	4.6	e25
7	a0	3.2	2.8	7.6	*b35	*10	722	153	168	10	6.2	e15
8	a0	3.8	3.2	7.1	b25	10	313	117	160	9.0	11	e10
9	a0	3.5	2.8	6.7	b20	10	203	89	115	9.0	5.4	e8
10	a0	3.8	4.6	6.2	b16	12	147	71	80	13	5.0	e7
11	a.1	4.2	5.0	11	15	15	164	60	63	13	4.6	e7
12	a.2	4.2	a10	18	14	18	308	54	48	10	4.6	e8
13	.4	3.5	a20	15	18	28	203	78	68	9.5	3.8	e10
14	a.4	3.2	a15	32	29	105	143	240	450	12	5.0	e10
15	a.4	2.8	a12	100	a50	121	105	204	334	13	19	e7
16	a.4	a2.0	9.5	71	a75	76	139	126	155	29	10	e6
17	.4	1.9	6.7	31	66	43	a360	186	96	39	9.0	a5
18	3.5	1.9	5.8	28	b45	37	a300	a400	78	25	9.0	a4
19	3.2	1.9	*4.6	22	b25	33	a190	a800	59	22	7.6	a4
20	3.5	2.2	3.8	34	b20	34	a500	a600	46	19	6.7	a4
21	2.5	1.9	4.6	63	b18	42	a1,000	a410	36	15	e7	a10
22	1.6	2.8	5.4	43	b16	55	a1,150	a500	32	13	e8	a25
23	1.4	2.8	a6	36	b15	73	a850	348	28	11	a8	e19
24	.7	1.9	a5	27	b14	170	a550	196	24	8.5	a8	e14
25	2.2	1.6	a5	24	14	445	348	412	21	8.0	e35	e10
26	1.1	5.8	a5	28	15	a350	240	730	19	7.1	e40	e8
27	.7	5.8	a6	39	14	a220	171	400	18	7.1	a12	a5
28	.7	5.0	a7	49	12	a150	117	232	18	7.1	a10	a4
29	.7	3.5	9.0	47	-	a250	93	196	28	6.7	e20	e4
30	.8	3.2	8.0	a60	-	a320	96	165	21	5.8	e60	e5
31	1.0	-	b6	a95	-	222	-	116	-	4.6	e75	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	26.3	3.5	0	0.85	0.0061	0.007
November	91.2	5.8	1.1	3.04	.022	.02
December	190.4	20	2.8	6.14	.044	.05
Calendar year 1946	22,903.1	914	0	62.7	.451	6.12
January	960.4	100	5.8	31.0	.223	.26
February	1,094	150	12	39.1	.281	.29
March	2,913.5	445	9.5	94.0	.676	.78
April	10,699	1,150	93	357	2.57	2.87
May	9,436	865	54	304	2.19	2.52
June	5,618	1,270	18	187	1.35	1.51
July	399.9	39	4.6	12.9	.093	.11
August	414.9	75	3.5	13.4	.096	.11
September	449	65	4	15.0	.108	.12
Water year 1946-47	32,292.6	1,270	0	88.5	.637	8.65

Peak discharge.- Apr. 6 (7 p.m.) 1,140 sec.-ft.; Apr. 22 (time and discharge unknown); May 2 (4 p.m.) 930 sec.-ft.; May 18 (time and discharge unknown); May 26 (11 a.m.) 810 sec.-ft.; June 3 (6 p.m.) 1,420 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and records for Bean Creek at Powers and Swan Creek at Toledo.

b Stage-discharge relation affected by ice.

e Stage-discharge relation indefinite; discharge computed on basis of gage-height record, 2 discharge measurements, weather records, and records for Bean Creek at Powers and Swan Creek at Toledo.

St. Joseph River near Newville, Ind.

Location.- Wire-weight gage, lat. 41°23'10", long. 84°48'05", in Ohio, in SW¼ sec. 18, T. 5 N., R. 1 E., at bridge on Ohio State Highway 249, 3½ miles northeast of Newville.

Drainage area.- 614 square miles.

Records available.- November 1946 to September 1947.

Extremes.- Maximum discharge during period, 6,050 second-feet Apr. 23 (gage height, 15.32 feet); minimum, 34 second-feet Aug. 14 (gage height, 1.76 feet).

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

Rating tables, Nov. 21, 1946, to Sept. 30, 1947, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Nov. 21 to Apr. 23				Apr. 24 to Sept. 30			
2.0	59	9.0	1,510	1.8	37	2.9	151
2.4	101	10.5	2,020	2.1	62	3.7	271
3.0	179	11.5	2,510	2.4	92	5.7	670
4.0	340	12.5	3,290	Note.- Same as preceding table above 5.7 feet.			
5.7	670	15.2	5,950				

Dischsrge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		-	72	147	*1,900	140	1,760	970	970	163	52	170
2		-	71	158	*1,600	130	1,720	1,240	1,660	152	48	314
3		-	66	180	*1,500	140	1,860	1,450	2,060	137	46	280
4		-	57	160	1,100	130	1,900	1,510	1,940	124	45	271
5		-	55	130	700	*130	1,940	1,480	1,800	112	45	239
6		-	56	120	750	120	2,450	1,320	1,540	102	42	190
7		-	54	100	600	120	2,710	1,070	1,270	98	42	208
8		-	57	100	450	120	3,110	870	1,140	92	42	231
9		-	55	90	350	120	3,560	720	1,020	88	39	174
10		-	56	90	280	140	3,110	600	920	92	38	143
11		-	60	90	250	200	2,450	520	795	92	38	119
12		-	124	110	230	350	2,190	470	620	96	37	112
13		-	630	150	250	600	1,980	450	520	91	35	118
14		-	795	300	350	1,240	1,830	540	620	99	38	216
15		-	590	800	620	1,450	1,630	795	695	116	43	216
16		-	367	1,100	740	1,200	1,400	895	795	120	39	177
17		-	*264	995	700	1,000	1,320	1,040	795	142	40	164
18		-	*110	795	600	950	1,300	1,450	720	132	42	174
19		-	170	530	450	900	1,270	1,830	580	130	38	150
20		-	160	451	350	745	1,960	1,720	490	110	37	125
21		57	140	700	270	630	3,750	1,540	410	103	39	104
22		59	120	600	220	610	5,550	1,630	341	93	41	106
23		57	110	600	180	570	5,950	1,690	288	83	43	111
24		58	110	640	180	734	4,950	1,660	263	78	49	155
25		58	115	620	160	1,930	3,650	1,630	239	73	49	152
26		60	105	570	150	*2,570	2,710	1,450	223	69	45	126
27		69	100	530	140	2,570	2,060	1,340	208	66	44	107
28		73	119	510	140	2,450	1,570	1,170	223	63	41	99
29		78	157	480	-	2,450	1,240	970	200	62	43	93
30		76	224	995	-	2,240	1,040	895	177	60	49	90
31		-	172	1,900	-	1,980	-	920	-	56	52	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	-	-	-	-	-	-
Novsmber 21-30	645	78	57	64.5	0.105	0.04
December	5,341	795	54	172	.280	.32
Calendar year	-	-	-	-	-	-
January	14,741	1,900	90	476	.775	.89
February	15,210	1,900	140	543	.884	.92
March	28,659	2,570	120	924	1.50	1.74
April	73,920	5,950	1,040	2,464	4.01	4.48
May	35,835	1,830	450	1,156	1.88	2.17
June	23,522	2,060	177	784	1.28	1.42
July	3,094	163	56	99.8	.163	.19
August	1,321	52	35	42.6	.069	.08
September	4,934	314	90	164	.267	.30
Water year	-	-	-	-	-	-

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 18-27, Jan. 3-15, 21-25, Jan. 31 to Mar. 13, Mar. 16-19.

St. Joseph River near Fort Wayne, Ind.

Location.- Water-stage recorder, lat. 41°10', long. 85°04', in SW¼NW¼SE¼ sec. 4, T. 31 N., R. 13 E., at Ely Bridge on Mayhew Road, 3½ miles downstream from Cedar Creek and 8 miles northeast of Fort Wayne. Auxiliary water-stage recorder at St. Joe Dam, 5½ miles downstream.

Drainage area.- 1,060 square miles.

Records available.- August 1941 to September 1947.

Extremes.- Maximum discharge during year, 6,970 second-feet Apr. 24 (gage height, 13.01 feet); minimum daily, 51 second-feet Oct. 7, 10; minimum gage height, 1.73 feet (regulated) Aug. 11, 12.

1941-47: Maximum discharge, 10,600 second-feet May 18, 1943 (gage height, 16.70 feet); minimum daily, 27 second-feet Aug. 21, 1941; minimum gage height, 1.40 feet Sept. 20, 29, 1941.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge below 825 second-feet computed by using fall as determined from auxiliary water-stage recorder as a factor. Some regulation at low flow by pumping plant 5½ miles below station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	52	129	156	300	4,530	250	*2,990	1,970	1,800	294	144	102
2	57	229	151	310	3,340	230	2,920	2,510	3,200	270	137	203
3	56	224	*138	350	2,640	230	2,990	2,640	3,340	251	134	377
4	56	210	133	350	1,900	230	2,640	2,330	2,990	237	132	332
5	54	217	128	350	1,200	220	2,710	2,150	2,640	227	127	348
6	53	204	128	300	1,200	230	3,730	1,970	2,330	215	132	342
7	51	183	130	250	900	230	3,730	1,720	2,210	204	117	253
8	55	171	128	220	700	210	3,340	1,420	1,870	196	121	262
9	53	164	125	200	600	220	3,410	1,200	1,520	191	121	270
10	51	150	130	200	500	250	3,650	1,040	1,340	204	116	226
11	55	153	131	200	450	350	4,130	925	1,200	208	111	206
12	58	153	415	250	400	600	3,970	825	1,040	208	110	204
13	58	154	1,380	350	450	985	2,990	790	885	200	108	170
14	56	154	1,470	600	600	2,090	2,570	817	865	206	96	192
15	57	163	1,200	1,500	1,000	1,970	2,390	1,000	885	334	121	228
16	60	167	885	1,770	1,100	1,770	2,210	1,240	925	350	92	274
17	62	160	633	1,620	1,100	1,400	2,390	1,200	985	343	97	206
18	136	a140	300	1,380	900	1,300	2,090	1,900	1,000	311	91	206
19	113	a135	350	1,130	700	1,200	1,870	2,510	925	334	91	171
20	101	a130	330	985	580	1,100	3,080	2,570	790	293	91	218
21	93	a110	310	900	480	1,000	5,800	2,570	671	240	97	187
22	106	a120	270	950	420	945	6,430	2,990	582	222	91	211
23	110	a120	230	950	360	905	6,700	2,450	497	209	85	209
24	110	a120	210	950	310	1,180	6,880	2,210	451	194	94	166
25	103	a120	200	950	310	3,810	5,980	2,210	418	179	94	146
26	103	a140	190	950	300	4,450	4,610	2,090	387	172	123	166
27	94	159	*180	950	280	3,890	3,270	1,800	367	162	87	171
28	95	165	180	900	*260	3,650	2,510	1,470	367	156	95	176
29	99	161	250	850	-	3,970	2,030	1,340	346	154	64	160
30	98	154	300	2,910	-	3,970	2,090	1,470	323	154	73	140
31	100	-	350	5,010	-	3,410	-	1,380	-	147	82	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	2,405	136	51	77.6	0.073	0.08
November	4,759	229	110	159	.150	.17
December	11,111	1,470	125	358	.338	.39
Calendar year 1946	201,491	5,710	51	552	.521	7.07
January	28,885	5,010	200	932	.879	1.01
February	27,510	4,530	260	982	.926	.97
March	46,245	4,450	210	1,492	1.41	1.62
April	106,100	6,880	1,870	3,537	3.34	3.72
May	54,707	2,990	790	1,765	1.67	1.92
June	37,149	3,340	323	1,238	1.17	1.30
July	7,083	350	147	228	.215	.25
August	3,274	144	64	106	.100	.11
September	6,522	377	102	217	.205	.23
Water year 1946-47	335,730	6,880	51	920	.868	11.77

* Winter discharge measurement made on this day.

a No gage-height record at reference gage; discharge computed on basis of weather records and records for St. Joseph River at Newville and Cedar Creek near Cedarville.

Note.- Stage-discharge relation affected by ice Dec. 18 to Jan. 15, Jan. 21-29, Feb. 4 to Mar. 12, Mar. 17-20.

Maumee River at New Haven, Ind.

Location.- Wire-weight gage, lat. 41°05', long. 85°01', in SW¼ sec. 1, T. 30 N., R. 13 E., at highway bridge, a quarter of a mile upstream from Wabash Railroad bridge, half a mile north of New Haven, and 6 miles downstream from confluence of St. Marys and St. Joseph Rivers.

Drainage area.- 1,940 square miles.

Records available.- December 1946 to September 1947 (high-water records only).

Extremes.- Maximum discharge during period, 11,600 second-feet June 3 (gage height, 16.47 feet).

Remarks.- Records excellent. Regulation at low flow by power plants above station. Flow slightly regulated by Lake St. Marys and by diversion from or into Wabash River Basin and into Miami & Erie Canal. Gage read twice daily.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			-	-	9,660	-	4,270	6,660	3,350	-		
2			-	-	7,830	-	4,200	6,930	8,500	-		
3			-	-	5,780	-	4,270	7,330	11,400	-		
4			-	-	4,340	-	3,780	6,930	10,900	-		
5			-	-	2,800	†227	3,920	6,390	8,710	-		
6			-	-	2,100	-	5,940	5,460	6,390	-		
7			-	-	1,700	-	5,860	3,920	8,270	-		
8			-	-	-	-	5,060	2,870	8,710	-		
9			-	-	-	-	4,820	2,240	7,030	-		
10			-	-	-	-	4,820	1,760	5,620	-		
11			-	-	-	-	6,120	1,490	4,660	-		
12			-	-	-	-	6,300	1,340	3,710	-		
13			1,880	-	-	-	5,060	1,340	2,660	-		
14			2,240	-	-	3,920	3,710	1,640	1,960	-		
15		†192	1,700	2,940	-	4,270	3,150	1,700	1,640	-		
16			-	3,500	-	3,150	3,290	2,100	1,430	-		
17			†1,040	3,080	-	2,590	4,340	2,240	1,400	1,460		
18			†726	2,380	-	2,450	4,200	3,080	1,430	1,700		†314
19			†399	2,030	-	2,240	3,500	3,710	-	2,730		
20			-	2,100	-	1,820	4,820	3,430	-	2,520		
21			-	a2,900	-	1,460	8,380	3,570	-	1,460		
22			-	2,170	-	-	9,060	4,500	-	-		
23			-	1,580	-	-	8,490	4,200	-	-		
24			-	1,640	-	1,520	8,270	3,640	-	-		
25			-	2,100	-	5,050	7,940	3,920	-	-		
26			-	2,380	-	6,210	8,050	5,060	-	-		
27			-	2,450	-	5,380	7,730	4,820	-	-		
28			-	2,170	-	4,980	5,460	3,500	-	-		
29			-	2,240	-	5,700	4,420	3,080	-	-	†213	
30			-	6,140	-	6,030	6,210	3,220	-	-		
31			-	9,780	-	5,220	-	2,660	-	-		

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October						
November						
December						
Calendar year						
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March	-	-	-	-	-	-
April	165,440	9,060	3,150	5,515	2.84	3.17
May	114,730	7,330	1,340	3,701	1.91	2.20
June	-	-	-	-	-	-
July	-	-	-	-	-	-
August	-	-	-	-	-	-
September	-	-	-	-	-	-
Water year	-	-	-	-	-	-

† Result of discharge measurement.
a No gage-height record; discharge computed on basis of records for St. Joseph and St. Marys Rivers near Fort Wayne.

Maumee River at Antwerp, Ohio

Location.- Water-stage recorder, lat. 41°11'56", long. 84°44'40", in sec. 22, T. 3 N., R. 1 E., just downstream from highway bridge, 1 mile north of Antwerp, 7 miles downstream from Indiana State line, and 10 miles upstream from Marie DeLarme Creek. Datum of gage is 695.49 feet above mean sea level, adjustment of 1912.

Drainage area.- 2,049 square miles.

Records available.- September 1921 to December 1935, April 1939 to September 1947.

Average discharge.- 22 years, 1,547 second-feet.

Extremes.- Maximum discharge during year, 11,600 second-feet June 4 (gage height, 14.43 feet); minimum, 74 second-feet Oct. 15, 16 (gage height, 0.67 foot).
1921-35, 1939-47: Maximum discharge, 26,200 second-feet May 20, 1943 (gage height, 20.29 feet); minimum, 24 second-feet Oct. 17, 1930, June 21, 22, 1933 (gage height, 0.32 foot).

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Low flow slightly regulated by power plant at Fort Wayne, Ind.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	85	126	226	550	9,920	310	4,810	7,280	2,770	667	240	162
2	86	194	207	606	*8,840	300	4,370	7,280	7,280	501	218	182
3	90	322	184	806	7,060	290	4,370	7,500	11,200	425	207	328
4	90	248	192	1,200	5,280	280	4,130	7,280	11,600	384	205	540
5	90	226	170	1,230	3,730	270	4,050	6,840	10,200	370	200	645
6	88	223	158	1,010	2,380	270	5,780	5,980	7,720	364	192	782
7	85	218	153	850	1,700	280	6,290	4,720	7,280	351	180	667
8	78	245	146	600	1,400	290	5,480	3,330	9,560	331	162	520
9	80	197	146	550	1,150	310	4,900	2,530	8,270	306	182	468
10	85	167	146	500	900	360	4,810	2,100	6,400	322	251	450
11	86	192	167	500	800	446	5,680	1,780	5,180	360	213	394
12	88	167	197	550	750	624	6,730	1,550	4,210	338	187	422
13	86	197	1,090	650	700	1,010	5,880	1,420	3,170	325	177	478
14	82	177	2,100	900	750	2,690	4,290	1,680	2,310	338	144	581
15	77	187	1,900	2,170	850	4,290	3,410	1,840	1,840	600	184	460
16	77	190	1,550	3,410	1,100	3,650	3,250	2,040	a1,800	735	281	425
17	83	177	1,230	3,410	1,300	2,850	4,130	2,380	a1,700	1,640	167	401
18	126	192	*929	2,770	1,350	2,530	4,450	2,690	a1,600	1,520	216	387
19	226	150	750	2,240	1,100	2,450	3,810	3,730	1,450	2,100	624	331
20	187	172	600	2,100	800	2,170	4,050	3,650	1,290	2,850	560	315
21	155	160	500	2,850	600	1,740	8,160	3,490	1,140	2,100	645	331
22	148	153	400	2,930	500	1,450	9,080	3,970	980	1,260	540	370
23	144	150	390	2,240	500	1,380	8,840	4,450	879	879	471	457
24	124	139	370	1,740	540	1,550	8,380	3,890	808	645	351	501
25	137	133	300	1,900	500	4,050	8,160	3,650	782	475	287	453
26	135	141	250	2,380	450	6,400	8,160	4,450	712	394	254	397
27	130	205	270	2,450	390	6,180	7,830	5,080	624	331	248	370
28	120	215	309	2,380	*330	5,480	6,290	4,130	645	331	226	338
29	116	213	344	2,100	-	5,880	4,630	3,250	602	315	187	306
30	114	229	520	*4,200	-	6,400	5,480	3,250	645	289	251	287
31	114	-	735	9,800	-	5,880	-	3,090	-	283	237	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	3,412	226	77	110	0.054	0.06
Novembsr	5,705	322	126	190	.093	.10
December	16,629	2,100	146	536	.262	.30
Calendar year 1946	415,446	8,720	77	1,138	.555	7.54
January	61,572	9,800	500	1,986	.969	1.12
February	55,670	9,920	330	1,988	.970	1.01
March	72,060	6,400	270	2,325	1.13	1.30
April	169,680	9,080	3,250	5,656	2.76	3.08
May	120,300	7,500	1,420	3,881	1.89	2.18
June	114,645	11,600	802	3,822	1.87	2.09
July	22,089	2,850	263	713	.348	.40
August	8,487	645	144	274	.134	.15
September	12,748	782	162	425	.207	.23
Water year 1946-47	662,997	11,600	77	1,816	.886	12.02

* Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 19-27, Jan. 2, 7-14, Feb. 7-23, Feb. 25 to Mar. 10.

Maumee River near Defiance, Ohio

Location.- Water-stage recorder and concrete dam, lat. 41°17'30", long. 84°16'50", in NW¼ sec. 22, T. 4 N., R. 5 E., 40 feet upstream from Independence Dam, 275 feet downstream from point of diversion to Miami & Erie Canal, 4 miles downstream from Auglaize River, and 4½ miles east of Defiance. Datum of gage is 659.12 feet above mean sea level.

Drainage area.- 5,530 square miles.

Records available.- October 1924 to December 1935, March 1939 to September 1947.

Average discharge.- 19 years, 3,612 second-feet (not including flow in Miami & Erie Canal).

Extremes.- Maximum discharge during year, 41,600 second-feet June 4 (gage height, 7.77 feet); minimum, 84 second-feet Oct. 12, 13 (gage height, 1.45 feet).
1924-35, 1939-47: Maximum discharge, 80,800 second-feet May 19, 1943 (gage height, 13.1 feet); minimum, 18 second-feet Aug. 2, 1934 (gage height, 1.24 feet).

Remarks.- Records good. Flow affected by regulation of Auglaize River at hydroelectric plant of Toledo Edison Co., 3 miles south of Defiance. Diversion into Miami & Erie Canal above station not included in records; for miscellaneous measurements of this canal, see page 281.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	130	205	318	1,130	33,100	606	12,400	15,200	9,720	1,060	334	812
2	130	218	350	1,690	24,600	547	10,900	21,100	22,800	1,200	336	1,400
3	130	302	382	1,620	15,900	566	11,200	22,000	36,100	1,200	286	1,590
4	130	450	382	2,910	11,500	779	11,500	18,200	40,800	884	394	2,140
5	130	414	302	2,980	7,700	528	10,900	14,100	36,100	606	302	1,730
6	130	334	270	2,240	3,600	488	14,800	11,800	21,500	646	270	1,590
7	130	382	257	1,960	2,910	488	16,600	10,600	20,700	646	286	2,730
8	120	398	244	1,110	2,530	508	14,400	8,260	30,100	625	257	3,120
9	130	334	257	1,330	1,900	606	11,500	6,470	36,100	469	257	2,270
10	120	398	430	1,160	1,600	776	10,600	3,900	29,200	508	302	1,400
11	130	334	270	1,160	1,700	906	10,000	3,500	17,400	711	334	908
12	120	334	1,550	1,460	1,700	1,560	11,800	3,050	11,500	776	302	973
13	100	302	2,770	2,170	1,560	1,510	11,500	3,280	8,550	994	366	732
14	100	302	3,160	3,540	1,560	5,800	9,130	6,000	10,300	950	286	1,160
15	110	334	3,620	6,310	1,640	9,130	6,850	6,580	8,260	1,230	508	1,200
16	110	302	2,770	9,130	1,990	10,000	7,410	6,310	7,130	1,700	244	928
17	110	334	2,240	10,600	2,140	6,850	10,600	7,130	5,840	2,080	586	732
18	218	270	1,510	8,550	2,110	5,000	14,400	10,000	4,630	2,980	902	732
19	192	302	1,160	5,540	2,020	4,630	11,500	9,420	3,940	3,200	711	606
20	244	302	1,020	5,490	1,840	4,020	11,200	9,420	3,240	4,280	1,020	469
21	450	270	797	7,980	1,430	3,620	17,800	9,130	2,400	3,780	972	566
22	302	270	690	9,420	1,130	3,120	22,800	10,600	1,900	2,800	1,060	625
23	244	205	994	7,410	994	3,050	21,100	11,500	1,670	1,670	1,350	690
24	205	192	668	6,100	1,110	4,520	17,800	10,300	1,400	1,160	1,230	950
25	318	205	508	5,340	928	10,300	15,200	9,420	1,250	862	1,130	972
26	218	395	469	5,540	862	18,600	15,500	11,500	1,690	776	556	950
27	179	302	690	6,100	862	17,800	20,200	14,400	884	586	398	606
28	205	430	732	6,360	818	15,500	16,200	12,400	732	414	586	776
29	205	469	1,230	5,000	-	14,800	11,800	11,800	818	469	862	528
30	218	450	1,620	13,700	-	16,600	9,720	11,200	1,040	547	606	382
31	205	-	1,780	30,100	-	15,500	-	10,000	-	382	430	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	5,463	450	100	176		
November	9,739	469	192	325		
December	33,440	3,620	244	1,079		
Calendar year 1946	991,543	28,200	100	2,717		
January	175,130	30,100	1,110	5,649		
February	131,734	33,100	818	4,705		
March	179,708	18,600	488	5,765		
April	397,310	22,800	6,850	13,240		
May	318,570	22,000	3,050	10,280		
June	377,694	40,800	732	12,590		
July	40,191	4,280	382	1,296		
August	17,493	1,350	244	564		
September	34,267	3,120	382	1,142		
Water year 1946-47	1,719,739	40,800	100	4,712		

Maumee River at Waterville, Ohio

Location.- Water-stage recorder, lat. 41°30'00", long. 83°42'46", at highway bridge in Waterville, Lucas County, 3 miles downstream from Tontogany Creek. Datum of gage is 596.33 feet above mean sea level, adjustment of 1912.

Drainage area.- 6,314 square miles.

Records available.- November 1898 to December 1901, August 1921 to December 1935, March 1939 to September 1947.

Average discharge.- 22 years (1921-35, 1939-47), 4,269 second-feet (does not include flow in Miami & Erie Canal; canal was abandoned in 1929 and was filled in prior to March 1939)

Extremes.- 1945-46: Maximum discharge during water year, 37,400 second-feet June 14 (gage height, 9.43 feet); minimum, 116 second-feet (revised) Sept. 4, 5, 12, 13 (gage height, 1.57 feet).
1946-47: Maximum discharge during water year, 43,800 second-feet June 4 (gage height, 10.18 feet); minimum, 107 second-feet Oct. 14, 15 (gage height, 1.52 feet).
1921-35, 1939-47: Maximum discharge, 78,000 second-feet May 20, 1943 (gage height, 13.9 feet); minimum, 32 second-feet Sept. 29, 1941.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Low flow slightly regulated by power plants above station.

Revisions.- Revised figures of discharge for the water year 1946, superseding those published in Water-Supply Paper 1054, are given herein.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Dec. 12)

1.5	95	2.0	470	4.4	6,450
1.6	125	2.2	755	5.4	10,800
1.7	175	2.4	1,100	6.4	16,200
1.8	250	3.0	2,440	8.0	26,900
1.9	350	3.8	4,500	10.1	43,000

Discharge, in second-feet, 1945-47

1945-46

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,680	794	1,570	24,800	1,200	6,860	2,260	522	2,650	8,950	350	155
2	14,100	992	1,710	24,800	1,300	8,480	1,810	650	4,520	7,050	300	135
3	19,000	874	1,570	a17,000	1,400	8,700	1,380	490	4,220	4,800	242	135
4	17,800	506	1,500	a14,000	1,300	8,910	1,990	779	4,080	3,940	250	122
5	13,200	682	1,400	11,200	1,100	8,910	1,040	1,310	2,330	3,040	260	119
6	8,480	746	1,370	14,900	1,000	9,580	1,110	618	1,810	2,270	250	130
7	5,910	842	1,280	15,500	1,650	12,900	1,100	778	1,420	1,790	290	140
8	4,520	794	1,220	13,200	1,810	14,900	1,060	975	1,260	957	270	160
9	3,690	890	1,170	11,200	1,850	14,900	1,010	874	778	788	250	175
10	3,100	586	1,040	11,700	2,140	12,200	941	746	698	838	338	240
11	2,520	666	958	11,200	1,710	9,810	854	1,370	698	1,240	197	236
12	2,030	924	762	10,000	1,520	8,270	1,100	1,880	2,320	1,070	140	135
13	1,550	1,170	650	8,480	1,370	5,540	858	858	20,900	920	175	119
14	1,330	1,100	550	7,650	5,580	4,670	810	1,590	37,400	976	165	135
15	1,200	1,310	500	6,860	12,400	5,910	958	2,100	31,100	497	165	145
16	1,130	1,220	550	4,520	19,000	8,480	618	3,320	22,000	434	212	150
17	874	1,080	600	a2,500	14,300	10,000	618	9,130	15,600	422	220	140
18	826	842	500	a2,700	10,700	11,200	794	9,810	12,600	386	198	140
19	810	778	*550	2,800	8,700	11,900	538	8,480	16,200	386	415	140
20	858	730	500	2,310	6,860	11,700	666	6,860	24,800	1,130	340	135
21	634	698	480	1,590	6,480	9,350	586	5,000	22,000	3,550	290	130
22	924	1,260	460	1,500	5,540	7,450	650	3,800	16,200	2,110	190	140
23	941	794	450	1,300	3,940	5,000	666	3,130	10,800	1,260	175	155
24	1,500	1,590	500	1,200	3,640	5,000	554	2,650	7,250	976	170	182
25	1,670	1,650	2,000	1,300	3,080	4,370	618	2,520	4,800	680	150	140
26	1,610	1,500	5,000	1,400	3,210	4,220	538	5,000	2,680	538	165	130
27	1,110	1,200	8,060	1,500	*3,940	3,800	666	5,000	2,180	410	190	140
28	1,290	1,460	12,200	1,400	5,540	3,310	554	3,160	3,580	386	205	140
29	1,240	1,380	12,400	a1,200	-	2,850	490	1,790	12,000	374	190	150
30	1,010	1,400	15,500	*a1,300	-	2,550	586	2,400	11,300	374	145	150
31	992	-	21,400	1,200	-	2,430	-	2,240	-	434	150	-

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records and records for station near Defiance.
Note.- Stage-discharge relation affected by ice Dec. 13-26, Jan. 22-28, Jan. 31 to Feb. 6.

Discharge, in second-feet, of Maumee River at Waterville, Ohio, 1945-47--Continued

1946-47

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	145	182	620	b1,600	37,400	850	14,400	13,000	10,100	1,300	362	976
2	145	250	398	2,000	29,700	800	12,000	22,000	25,500	1,140	350	2,370
3	122	242	470	b2,100	*19,200	800	11,800	24,100	42,200	1,200	386	2,220
4	119	434	484	b2,900	13,600	950	12,000	20,600	43,000	1,220	340	2,130
5	122	458	446	b3,600	10,000	850	12,000	15,600	39,000	870	386	2,180
6	122	410	386	b3,000	6,400	*750	16,200	12,600	26,900	605	330	1,880
7	130	386	386	2,500	4,000	750	18,000	10,800	20,600	605	280	2,130
8	125	605	374	1,600	3,000	800	15,600	8,720	29,700	605	280	3,120
9	135	386	386	1,700	2,500	850	12,600	7,050	35,800	665	250	2,900
10	145	340	422	1,500	2,000	950	10,600	4,220	32,600	772	260	1,830
11	150	551	497	1,500	2,100	1,100	10,100	3,680	22,000	1,140	340	1,410
12	205	446	603	1,800	2,100	1,500	11,800	3,300	13,000	1,200	386	920
13	186	422	3,250	2,300	2,000	1,600	12,000	3,120	8,950	1,330	340	957
14	110	350	3,550	3,500	2,100	3,940	9,620	6,850	10,800	1,160	374	725
15	110	310	3,680	6,850	2,300	8,500	7,250	7,450	9,850	1,350	422	1,220
16	160	398	3,300	9,180	2,500	9,400	6,650	6,850	7,050	1,590	578	1,140
17	170	458	3,070	12,300	2,700	7,850	12,000	6,850	5,920	2,800	422	788
18	261	300	2,080	10,600	2,500	6,100	15,000	14,700	4,950	3,170	710	635
19	224	320	b1,700	7,250	2,300	4,800	12,800	11,600	4,220	3,940	976	680
20	190	386	*1,400	5,250	2,100	4,360	13,300	10,100	3,680	3,810	838	551
21	260	398	1,150	9,850	1,800	3,940	22,700	10,100	2,940	4,500	1,120	524
22	362	887	1,000	11,000	1,400	3,680	24,800	12,300	2,580	3,680	976	680
23	300	277	870	9,200	1,300	3,420	23,400	12,300	1,900	2,540	1,330	680
24	235	150	1,300	7,500	b1,350	4,360	19,900	11,300	1,670	1,520	1,480	680
25	250	220	920	6,280	b1,200	12,200	16,200	10,800	1,480	1,160	1,280	904
26	320	269	710	6,280	b1,100	18,600	16,200	12,800	1,410	887	1,140	957
27	232	592	665	6,850	b1,050	20,600	19,900	15,000	1,630	838	605	870
28	198	470	870	6,850	b1,000	17,400	18,000	14,100	920	524	446	605
29	269	564	1,260	5,580	-	16,800	13,000	13,000	976	484	592	772
30	266	564	b1,800	13,300	-	17,400	9,620	12,000	1,030	564	870	484
31	238	-	b2,100	37,400	-	16,800	-	10,600	-	458	1,100	-

* Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.- No gage-height record Dec. 20-22, Jan. 2, 7-14, 22-24, Feb. 5-23, Mar. 1-13; discharge computed on basis of weather records and records for station near Defiance.

Monthly discharge, in second-feet, 1945-47

Month	Seoond-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October 1945	119,529	19,000	634	3,856	0.611	0.70
November	30,458	1,650	506	1,015	.161	.18
December	98,400	21,400	450	3,174	.503	.58
Calendar year 1945	1,763,898	51,600	147	4,833	.765	10.41
January 1946	232,210	24,800	1,200	7,491	1.19	1.37
February	132,260	19,000	1,000	4,724	.748	.78
March	244,150	14,900	2,430	7,876	1.25	1.44
April	27,423	2,260	490	914	.145	.16
May	89,830	9,810	490	2,898	.459	.53
June	300,174	37,400	698	10,010	1.59	1.77
July	52,976	8,950	374	1,709	.271	.31
August	7,047	415	140	227	.036	.04
September	4,443	240	119	148	.023	.03
Water year 1945-46	1,338,900	37,400	119	3,668	.581	7.89
October 1946	6,006	362	110	194	.031	.04
November	12,025	887	150	401	.064	.07
December	40,147	3,680	374	1,295	.205	.24
Calendar year 1946	1,148,691	37,400	110	3,147	.498	6.78
January 1947	203,120	37,400	1,500	6,552	1.04	1.20
February	160,700	37,400	1,000	5,739	.909	.95
March	192,700	20,600	750	6,216	.984	1.13
April	429,440	24,800	6,650	14,310	2.27	2.53
May	347,490	24,100	3,120	11,210	1.78	2.05
June	412,356	43,000	920	13,750	2.18	2.43
July	47,627	4,500	458	1,536	.243	.28
August	19,549	1,480	250	631	.100	.12
September	37,918	3,120	484	1,264	.200	.22
Water year 1946-47	1,909,078	43,000	110	5,230	.828	11.26

Cedar Creek at Auburn, Ind.

Location.- Wire-weight gage, lat. 41°21', long. 85°03', in SW¼ sec. 29, T. 34 N., R. 13 E., at Ninth Street Bridge in Auburn, 2 miles upstream from Peckhart ditch.

Drainage area.- 93 square miles.

Records available.- July 1943 to September 1947.

Extremes.- Maximum discharge during year, 983 second-feet Apr. 21 (gage height, 9.02 feet); minimum, 4.4 second-feet Aug. 28; minimum gage height, 1.03 feet Oct. 15.
1943-47: Maximum discharge, 1,010 second-feet Apr. 12, 1944 (gage height, 9.30 feet, from graph based on gage readings); minimum, 2.1 second-feet Sept. 18, 1946; minimum gage height, 0.91 foot Sept. 25, 1946.

Remarks.- Records fair. Gage read twice daily.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.6	50	15	b29	468	21	300	157	188	15	7.3	7.8
2	10	66	13	31	294	20	416	249	468	14	6.4	29
3	10	37	12	39	205	18	342	210	318	13	6.4	18
4	9.6	23	12	34	152	17	244	162	265	12	6.0	21
5	10	16	11	b31	118	*18	520	137	152	12	5.6	9.6
6	10	13	11	28	94	21	611	114	117	11	5.6	7.3
7	9.6	12	10	25	73	20	378	105	137	11	5.2	5.2
8	11	12	11	23	58	17	254	92	142	11	4.8	5.2
9	12	12	11	21	50	18	194	80	103	11	4.8	5.2
10	11	11	11	18	44	23	167	73	80	11	4.8	5.2
11	11	12	13	*20	43	57	354	68	62	11	4.8	5.2
12	11	18	142	38	38	112	318	63	50	9.6	5.2	17
13	11	16	238	38	46	137	210	71	49	9.2	5.2	14
14	12	15	126	132	101	330	167	194	50	11	6.0	8.7
15	8.2	12	75	244	142	172	137	147	46	14	7.8	10
16	8.7	11	55	178	99	115	178	121	40	12	6.4	12
17	8.7	11	50	121	70	80	227	152	38	18	6.0	8.7
18	18	9.2	44	88	56	65	172	403	40	15	5.2	7.3
19	15	8.7	35	72	42	61	157	266	36	12	5.2	6.4
20	11	8.7	32	90	38	62	746	200	31	11	5.2	6.4
21	11	8.7	28	106	34	64	949	318	27	9.2	5.6	15
22	8.2	11	23	72	31	58	651	330	24	8.7	6.0	23
23	9.2	12	23	68	27	67	429	210	23	7.8	6.4	18
24	12	13	23	56	28	162	318	194	22	7.8	6.4	13
25	23	14	20	65	26	611	244	178	22	7.3	6.4	9.6
26	27	18	20	104	22	494	205	152	22	7.3	6.4	8.2
27	30	25	20	108	19	342	178	120	20	7.3	6.0	7.3
28	31	23	44	87	b17	282	147	109	18	7.8	4.8	6.9
29	38	18	52	80	-	416	137	157	18	7.8	7.3	7.8
30	29	16	44	502	-	378	152	147	16	7.3	7.3	7.3
31	34	-	35	735	-	330	-	111	-	7.3	6.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	469.8	38	8.2	15.2	0.163	0.19
November	532.3	66	8.7	17.7	.190	.21
December	1,259	238	10	40.6	.437	.50
Calendar year 1946	16,573.7	778	2.8	45.4	.488	6.63
January	3,283	735	18	106	1.14	1.31
February	2,435	468	17	87.0	.935	.97
March	4,588	611	17	148	1.59	1.83
April	9,502	949	137	317	3.41	3.80
May	5,090	403	63	164	1.76	2.04
June	2,564	468	16	85.5	.919	1.03
July	329.4	18	7.3	10.6	.114	.13
August	182.5	7.8	4.8	5.89	.063	.07
September	325.3	29	* 5.2	10.8	.116	.13
Water year 1946-47	30,560.3	949	4.8	83.7	.900	12.21

* Winter discharge measurement made on thie day.
b Stage-discharge relation affected by ice.

Cedar Creek near Cedarville, Ind.

Location.- Wire-weight gage, lat. 41°13', long. 85°05', in NW¼ sec. 19, T. 32 N., R. 13 E., at bridge on State Highway 427, 2⅝ miles northwest of Cedarville and 4 miles upstream from mouth. Datum of gage is 779.75 feet above mean sea level (unadjusted).

Drainage area.- 279 square miles.

Records available.- October 1946 to September 1947.

Extremes.- Maximum discharge during period, 3,050 second-feet Apr. 21 (gage height, 9.06 feet, from graph based on gage readings); minimum, 19 second-feet Sept. 10, 11 (gage height, 1.40 feet).

Remarks.- Records excellent above 150 second-feet and good below, except those for periods of ice effect, which are fair.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 30 to Dec. 11, Sept. 22-30)

1.5	34	3.2	460
1.9	102	6.5	1,770
2.2	167	8.7	2,850
2.7	300		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	76	57	b105	1,770	72	770	710	378	72	40	37
2	-	149	53	b105	930	72	810	830	990	65	40	34
3	-	116	52	b115	610	72	850	650	1,050	60	40	35
4	-	88	52	b150	478	70	630	422	730	60	40	38
5	-	70	50	b180	b350	65	550	330	478	60	38	40
6	-	60	48	b140	b270	70	1,210	286	321	58	37	42
7	-	58	48	b110	b220	72	910	251	300	57	34	32
8	-	60	45	b90	b180	74	590	227	339	53	32	29
9	-	58	45	b80	b150	76	442	214	265	52	31	31
10	-	57	48	77	b140	88	381	197	225	53	29	23
11	-	55	60	77	b130	151	890	172	187	60	29	25
12	-	60	275	112	b120	280	910	165	162	53	31	35
13	-	62	750	246	b130	324	590	187	151	52	32	47
14	-	57	404	411	197	870	432	283	160	58	34	45
15	-	55	225	550	246	630	336	283	149	69	50	40
16	-	53	174	550	*220	330	366	260	133	77	40	38
17	-	52	*160	387	174	222	670	294	129	84	34	37
18	-	47	b150	249	160	180	512	650	133	86	34	34
19	-	45	b135	197	149	165	390	630	122	76	32	32
20	-	43	b120	207	140	162	1,250	478	93	64	29	31
21	-	37	102	225	124	160	2,850	570	69	57	29	29
22	-	40	88	b210	108	151	2,350	970	55	53	28	50
23	-	43	79	b200	98	160	1,410	630	88	48	26	52
24	-	42	77	b190	89	299	930	495	89	47	26	45
25	-	43	76	217	82	1,530	670	453	91	45	26	48
26	-	53	72	263	81	1,530	512	400	88	43	35	43
27	-	79	79	288	79	1,130	414	309	82	43	31	34
28	-	77	114	243	77	790	354	268	81	42	26	32
29	-	70	144	214	-	950	312	375	76	40	31	32
30	29	62	b130	1,090	-	950	404	375	72	40	50	31
31	52	-	b110	2,450	-	890	-	300	-	40	45	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	-	-	-	-	-	-
November	1,867	149	37	62.2	0.223	0.25
December	4,022	750	45	130	.466	.54
Calendar year	-	-	-	-	-	-
January	9,728	2,450	77	314	1.13	1.30
February	7,502	1,770	77	268	.961	1.00
March	12,585	1,530	65	406	1.46	1.68
April	23,695	2,850	312	790	2.83	3.16
May	12,664	970	165	409	1.47	1.69
June	7,286	1,050	55	243	.871	.97
July	1,767	86	40	57.0	.204	.24
August	1,059	50	26	34.2	.123	.14
September	1,101	52	23	36.7	.132	.15
Water year	-	-	-	-	-	-

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

St. Marys River at Decatur, Ind.

Location.- Wire-weight gage, lat. 40°51', long. 84°56', in SW¼ sec. 27, T. 28 N., R. 14 E., at bridge on U. S. Highway 27, half a mile north of city limits of Decatur and half a mile upstream from Holthouse ditch.

Drainage area.- 615 square miles.

Records available.- November 1946 to September 1947.

Extremes.- Maximum discharge during period, 6,310 second-feet June 2 (gage height, 20.3 feet, from graph based on gage readings); minimum, 12 second-feet Nov. 6 (gage height, 1.91 feet).

Remarks.- Records excellent except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by Lake St. Marys and by diversion from or into Wabash River Basin and into Miami & Erie Canal. Gage read once or twice daily.

Rating table, November 1946 to September 1947, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

2.0	16	4.5	245	16.5	3,140
2.4	37	5.4	381	18.0	4,050
2.8	64	7.0	695	18.9	4,810
3.2	98	12.5	1,970	19.8	5,730
3.8	159	15.5	2,750		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		14	45	182	*3,190	68	934	3,340	1,970	132	63	50
2		16	38	206	*2,410	68	890	3,700	4,680	111	a60	141
3		18	31	571	2,040	70	824	4,130	5,730	107	62	182
4		16	25	531	a1,400	*68	695	3,770	4,050	108	60	245
5		14	23	350	450	62	1,030	2,880	2,840	102	57	238
6		13	21	250	350	74	1,560	1,990	2,480	95	54	188
7		16	19	180	300	99	1,320	1,260	3,980	93	108	a160
8		15	18	160	250	111	1,190	890	3,980	89	a110	142
9		16	18	110	180	103	1,050	653	3,400	87	84	117
10		22	28	90	140	114	802	531	2,780	93	60	93
11		26	46	150	120	182	1,070	453	2,280	95	43	91
12		28	260	300	110	266	1,470	381	1,660	86	32	332
13		25	674	250	110	464	912	537	1,070	89	28	226
14		22	372	*480	130	1,540	632	695	716	193	25	127
15		22	317	1,100	170	1,210	491	531	482	611	32	102
16		22	294	1,160	188	a870	961	780	364	758	100	91
17		21	*252	912	170	824	1,830	780	340	912	a250	79
18		22	170	737	137	737	1,370	1,000	324	824	416	70
19		20	103	737	110	501	1,350	737	294	1,680	425	66
20		18	103	1,000	93	348	a1,600	632	273	a1,400	317	59
21		16	85	1,830	88	310	2,020	980	259	695	226	53
22		16	a70	1,140	78	317	1,490	1,510	245	407	226	269
23		15	60	824	74	332	1,100	1,230	232	238	164	245
24		a14	51	957	74	463	980	1,190	226	164	95	182
25		15	50	1,160	74	957	1,580	2,310	219	124	70	154
26		41	50	1,160	70	1,260	2,570	2,540	212	99	59	116
27		80	42	1,000	66	980	2,240	1,710	206	91	60	90
28		63	a50	758	70	1,030	1,830	1,390	232	92	59	74
29		50	178	695	-	1,490	1,830	1,510	273	94	56	70
30		46	444	2,580	-	1,370	2,950	1,320	188	82	50	70
31		-	a270	*3,840	-	1,070	-	868	-	70	54	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	-	-	-	-		
November	742	80	13	24.7		
December	4,207	674	18	136		
Calendar year	-	-	-	-		
January	25,400	3,840	90	819		
February	12,642	3,190	66	452		
March	17,358	1,540	62	560		
April	40,571	2,950	491	1,352		
May	46,228	4,130	381	1,491		
June	45,985	5,730	188	1,533		
July	9,821	1,680	70	317		
August	3,505	425	25	113		
September	4,122	332	50	137		
Water year	-	-	-	-		

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of 1 discharge measurement, weather records, and records for station near Fort Wayne.
Note.- Stage-discharge relation affected by ice Jan. 5-15, Feb. 5-15, Feb. 22 to Mar. 3.

St. Marys River near Fort Wayne, Ind.

Location.- Water-stage recorder, lat. 41°00', long. 85°08', in sec. 35, T. 30 N., R. 12 E., 130 feet downstream from highway bridge, 4 miles south of Fort Wayne, and 12 miles upstream from mouth.

Drainage area.- 753 square miles.

Records available.- November 1930 to September 1947 in reports of Geological Survey. October 1924 to October 1925 and July to September 1927 in reports of Indiana Department of Conservation.

Average discharge.- 15 years (1931-33, 1934-47), 510 second-feet.

Extremes.- Maximum discharge during year, 7,150 second-feet June 3 (gage height, 15.03 feet); minimum, 6.2 second-feet Oct. 12, 13 (gage height, 0.53 foot).
1930-47: Maximum discharge, 13,400 second-feet May 19, 1943 (gage height, 18.79 feet); minimum observed, 3.4 second-feet Oct. 19, 1934 (gage height, 0.28 foot).

Remarks.- Records good except those for periods of ice effect, which are fair. Flow regulated by Lake St. Marys and by diversion from or into Wabash River Basin and into Miami and Erie Canal.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 21 to Dec. 12, Dec. 26-30, Sept. 24-30)

0.6	9.0	2.7	313	10.6	3,630
.7	18	3.4	480	13.0	5,310
1.4	94	4.8	920	14.9	7,050
1.7	131	6.0	1,360		
2.1	193	8.0	2,220		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	16	49	250	4,010	78	1,060	3,940	1,490	160	76	59
2	14	22	46	300	3,220	80	990	4,080	5,130	127	70	142
3	14	25	*40	700	2,520	84	955	4,200	7,050	112	68	184
4	11	24	31	600	1,700	80	780	4,200	6,090	112	66	197
5	9.0	22	25	450	700	78	1,020	3,820	4,340	112	62	280
6	9.0	19	22	300	450	84	1,860	2,830	3,220	107	59	244
7	8.6	19	18	220	350	95	1,600	1,640	4,920	104	56	179
8	9.0	23	15	200	300	110	1,320	1,100	5,230	98	143	150
9	11	21	13	150	230	115	1,160	798	4,480	94	131	135
10	11	25	14	120	200	130	955	615	3,690	96	87	112
11	11	34	28	180	180	190	1,320	510	2,940	101	63	96
12	7.4	35	160	400	150	320	1,770	442	2,130	100	44	274
13	9.0	37	765	350	130	540	1,200	442	1,360	96	32	346
14	13	34	555	600	150	1,700	798	798	885	145	28	188
15	13	30	370	1,300	200	1,800	630	645	615	363	36	127
16	11	26	346	1,440	230	990	815	750	442	798	32	106
17	14	25	280	1,160	220	885	1,950	885	381	868	354	93
18	58	24	220	868	180	850	1,680	1,200	358	1,190	495	83
19	59	23	140	798	150	660	1,440	955	335	2,370	442	76
20	52	22	120	1,090	120	455	1,680	720	302	1,680	393	72
21	37	18	110	1,900	110	370	2,420	780	270	920	358	72
22	27	15	90	1,200	100	358	2,000	1,520	260	570	302	173
23	23	14	80	900	92	381	1,360	1,440	242	346	217	324
24	28	12	70	1,100	86	567	1,100	1,160	228	220	139	219
25	33	9.9	70	1,200	90	1,130	1,470	1,900	222	158	96	173
26	32	14	*62	1,200	84	1,440	2,880	2,940	217	126	75	141
27	27	54	60	1,200	78	1,160	2,880	2,420	209	110	64	110
28	23	90	63	920	*74	*1,130	2,220	1,520	217	107	64	87
29	21	71	134	780	-	1,600	2,080	1,600	280	105	64	75
30	19	57	430	2,860	-	1,640	3,630	1,680	232	101	64	71
31	14	-	350	*4,140	-	1,280	-	1,060	-	86	59	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	643.0	59	7.4	20.7		
November	860.9	90	9.9	28.7		
December	4,776	765	13	154		
Calendar year 1946	142,851.9	3,400	7.4	391		
January	28,876	4,140	120	931		
February	16,104	4,010	74	575		
March	20,380	1,800	78	657		
April	47,023	3,630	630	1,567		
May	52,590	4,200	442	1,696		
June	57,765	7,050	209	1,926		
July	11,682	2,370	86	377		
August	4,239	495	28	137		
September	4,588	346	59	153		
Water year 1946-47	249,526.9	7,050	7.4	684		

* Winter discharge measurement made on this day.
Note:- Stage-discharge relation affected by ice Dec. 18-25, Dec. 31 to Jan. 15, Jan. 22-26, Feb. 4 to Mar. 14.

Bean Creek at Powers, Ohio

Location.- Water-stage recorder, lat. 41°40'40", long. 84°13'50", in NE¼ sec. 24, T. 9 S., R. 1 E., at bridge on U. S. Highway 20, 1 mile east of Powers and 2¼ miles upstream from Iron Creek. Datum of gage is 722.6 feet above mean sea level, adjustment of 1912.

Drainage area.- 238 square miles.

Records available.- October 1940 to September 1947.

Extremes.- Maximum discharge during year, 3,290 second-feet Apr. 6, 21 (gage height, 12.33 feet); minimum, 10 second-feet Oct. 1-7 (gage height, 0.65 foot).
1940-47: Maximum discharge, 3,650 second-feet May 18, 1945 (gage height, 12.66 feet); minimum, 6.4 second-feet Sept. 17, 1941.

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

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Mar. 7-13, July 19 to Sept. 11, Sept. 15-30)

0.6	8.8	1.5	54	6.0	750
.7	12	1.8	78	9.0	1,500
.8	16	2.3	128	12.1	3,130
1.0	24	3.0	220		
1.2	35	4.0	385		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	21	21	b35	220	a35	a500	342	350	76	26	60
2	11	31	20	b40	185	a35	579	655	836	70	24	54
3	11	32	b20	56	142	a35	655	617	771	65	23	68
4	11	26	b19	51	128	a35	506	488	488	62	22	50
5	11	22	19	b45	a120	a40	1,240	385	360	63	21	53
6	11	20	19	b40	a100	a40	2,970	326	283	60	21	74
7	11	21	19	b35	a90	*43	2,520	292	308	59	21	57
8	11	21	19	b35	a80	41	1,220	259	488	53	20	46
9	11	21	19	b35	a75	44	771	220	351	52	19	40
10	12	21	21	b40	a70	45	617	199	275	50	19	42
11	13	22	22	56	a65	108	674	185	213	50	19	41
12	13	23	64	70	a65	342	750	170	174	50	18	96
13	12	24	178	78	a70	524	598	178	183	51	17	118
14	12	22	95	176	a110	975	470	283	904	49	17	87
15	13	21	61	b550	a260	814	410	220	655	50	22	68
16	13	20	52	b350	283	524	376	178	410	62	21	62
17	13	20	45	199	b210	360	453	230	292	74	19	60
18	19	19	50	152	b160	235	453	636	235	68	18	52
19	23	19	*b55	120	b120	220	453	453	192	62	17	48
20	21	*20	b65	156	b85	228	1,800	453	158	60	17	44
21	18	20	b55	235	b65	235	3,130	648	138	59	18	44
22	16	21	b50	b200	b55	206	1,890	1,050	124	54	21	54
23	15	20	b45	b160	b45	206	1,070	731	115	52	20	72
24	15	19	41	b130	b45	402	750	542	105	45	19	62
25	15	20	48	b120	b40	1,520	617	636	101	41	20	52
26	15	22	46	b130	a40	1,050	524	598	97	37	19	45
27	14	23	43	138	a35	750	436	419	94	36	22	41
28	14	23	33	116	a35	542	368	342	97	34	20	42
29	14	22	36	100	-	506	317	394	96	31	22	44
30	15	21	40	219	-	488	308	436	83	30	34	37
31	18	-	b40	*385	-	a450	-	334	-	28	72	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	432	23	11	13.9	0.058	0.07
November	657	32	19	21.9	.092	.10
December	1,360	178	19	43.9	.184	.21
Calendar year 1946	33,973.7	1,200	8.3	93.1	.391	5.29
January	4,252	550	35	137	.576	.66
February	2,998	283	35	107	.450	.47
March	11,078	1,520	35	357	1.50	1.73
April	27,425	3,130	308	914	3.84	4.28
May	12,899	1,050	170	416	1.75	2.02
June	8,976	904	83	299	1.26	1.41
July	1,633	76	28	52.7	.221	.25
August	688	72	17	22.2	.093	.11
September	1,713	118	37	57.1	.240	.27
Water year 1946-47	74,111	3,130	11	203	.853	11.58

Peak discharge.- Mar. 14 (6:30 p.m.) 1,100 sec.-ft.; Mar. 25 (4 p.m.) 1,840 sec.-ft.; Apr. 6 (6 p.m.) 3,290 sec.-ft.; Apr. 21 (5 a.m.) 3,290 sec.-ft.; May 22 (11 a.m.) 1,120 sec.-ft.; June 2 (7:30 p.m.) 1,100 sec.-ft.

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for Tiffin River at Stryker.
b Stage-discharge relation affected by ice.

Tiffin River at Stryker, Ohio

Location.- Water-stage recorder, lat. 41°30'05", long. 84°25'50", in SW¼ sec. 5, T. 6 N., R. 4 E., at electric railroad bridge at west edge of Stryker. Datum of gage is 685.5 feet above mean sea level, adjustment of 1912.

Drainage area.- 444 square miles.

Records available.- October 1940 to September 1947. September 1921 to September 1928 at site about 3 miles downstream, published as Tiffin River near Stryker.

Average discharge.- 14 years, 292 second-feet.

Extremes.- Maximum discharge during year, 5,160 second-feet Apr. 22 (gage height, 14.43 feet); minimum, 11 second-feet Oct. 1; minimum gage height, 1.35 feet Aug. 14. 1921-28, 1940-47: Maximum discharge, 5,690 second-feet May 18, 1945 (gage height, 14.80 feet); minimum, 5.0 second-feet Sept. 20, 1941.

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	60	43	47	1,130	63	1,070	457	641	91	34	127
2	12	64	36	58	1,090	73	970	586	1,020	83	32	142
3	13	67	32	72	702	68	990	802	1,500	77	28	91
4	12	56	44	87	436	60	1,030	970	1,910	75	26	86
5	16	46	50	77	341	63	1,090	970	1,750	74	26	75
6	16	36	49	58	320	64	1,410	785	1,350	76	28	87
7	18	32	47	50	278	68	2,060	560	893	73	32	101
8	20	34	47	47	231	72	2,640	468	613	72	44	82
9	19	36	49	a45	189	72	2,380	404	599	68	30	69
10	20	36	52	46	140	82	1,750	352	560	73	26	62
11	21	36	a70	50	110	130	1,470	299	436	73	24	63
12	24	39	a180	116	89	310	1,290	268	330	78	25	104
13	24	42	362	142	87	524	1,170	252	344	77	24	184
14	22	40	404	a360	194	874	1,110	320	1,290	76	24	178
15	24	36	215	a650	446	1,070	970	479	1,290	80	43	123
16	23	32	116	a600	536	1,200	718	425	1,380	220	45	91
17	24	32	94	a450	468	1,200	656	394	1,290	178	34	81
18	34	30	75	a250	330	944	702	840	912	126	28	74
19	44	28	45	a190	241	524	702	1,220	512	108	26	67
20	40	28	66	a280	173	372	1,450	1,540	362	95	25	60
21	40	26	60	a370	147	352	4,180	1,150	288	89	25	59
22	34	30	52	a300	125	352	5,020	1,260	236	83	28	74
23	36	39	51	a250	104	330	3,900	1,200	199	75	a30	88
24	30	36	50	215	83	446	2,510	1,260	168	70	a30	90
25	38	39	43	231	73	1,160	1,800	1,260	147	61	30	80
26	41	47	44	262	78	1,540	1,470	1,230	134	56	32	67
27	43	55	45	330	73	1,980	1,180	1,200	125	50	30	56
28	42	60	47	[illegible]0	65	1,850	838	1,110	126	47	32	50
29	41	56	61	257	-	1,580	548	874	124	43	32	52
30	41	55	61	512	-	1,380	457	718	116	40	39	53
31	53	-	49	1,070	-	1,200	-	686	-	36	63	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	876	53	11	28.3	0.064	0.07
November	1,253	67	26	41.8	.094	.10
December	2,639	404	32	85.1	.192	.22
Calendar year 1946	61,546	1,450	11	169	.381	5.17
January	7,792	1,070	45	251	.565	.65
February	8,279	1,130	65	296	.667	.69
March	20,003	1,980	60	645	1.45	1.67
April	47,531	5,020	457	1,584	3.57	3.98
May	24,339	1,540	252	785	1.77	2.04
June	20,645	1,910	116	688	1.55	1.73
July	2,523	220	36	81.4	.183	.21
August	975	63	24	31.5	.071	.08
September	2,616	184	50	87.2	.196	.22
Water year 1946-47	139,471	5,020	11	382	.860	11.66

a No gage-height record; discharge computed on basis of records for Bean Creek at Powers.

Auglaize River near Fort Jennings, Ohio

Location.- Water-stage recorder, lat. 40°56'55", long. 84°15'58", in SE¼ sec. 15, T. 1 S., R. 5 E., at highway bridge, 3½ miles northeast of Fort Jennings and 6 miles upstream from Ottawa River. Datum of gage is 713.9 feet above mean sea level, adjustment of 1912.

Drainage area.- 333 square miles.

Records available.- August 1921 to December 1935, October 1940 to September 1947.

Average discharge.- 21 years, 278 second-feet.

Extremes.- Maximum discharge during year, 3,600 second-feet Jan. 31 (gage height, 12.48 feet); minimum, 10 second-feet Aug. 13, 14 (gage height, 1.31 feet).
1921-35, 1940-47: Maximum discharge, 8,200 second-feet Jan. 15, 1930 (gage height, 16.6 feet); minimum, 5.0 second-feet Aug. 28, 1932 (gage height, 0.75 foot).

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Some diversion from Lake St. Marys by Miami & Erie Canal into Jennings Creek, tributary to Auglaize River above station.

Rating table, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting control method used Oct. 1 to Jan. 15, Jan. 17-20, 24-30)

1.3	10	1.8	39	5.0	627
1.4	13	1.9	49	7.0	1,140
1.5	18	2.0	62	8.5	1,620
1.6	24	2.6	160	11.0	2,640
1.7	31	3.8	371	12.2	3,360

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	35	53	152	2,780	30	410	2,420	493	89	27	61
2	17	34	43	167	770	30	515	2,550	1,340	123	24	64
3	17	33	34	340	410	30	1,230	1,840	3,010	73	22	636
4	18	30	33	570	a290	30	745	795	3,140	54	18	482
5	16	28	35	352	a230	30	721	515	1,160	45	18	271
6	18	27	35	199	a170	35	1,260	371	559	39	16	191
7	15	33	32	160	a120	40	948	324	1,920	33	16	177
8	14	35	31	140	a110	45	472	352	2,640	33	26	313
9	16	33	28	104	a100	50	324	306	1,840	33	31	210
10	18	34	31	84	a95	55	262	236	697	37	19	140
11	20	39	34	75	a80	70	262	194	410	67	14	96
12	25	43	62	115	a65	112	342	168	280	203	12	84
13	21	39	298	134	*60	162	352	175	211	107	12	78
14	22	38	387	157	65	658	280	228	191	283	13	91
15	21	40	177	562	70	870	228	297	394	283	28	91
16	21	39	110	1,080	80	400	381	254	390	203	48	75
17	24	38	*91	820	75	245	1,880	297	236	314	461	59
18	42	34	81	390	60	182	1,080	627	371	333	410	54
19	33	31	75	236	50	148	515	870	180	353	262	47
20	28	31	70	377	40	133	371	472	209	454	160	44
21	33	31	62	1,720	35	148	948	477	157	280	110	38
22	40	33	56	a800	30	165	1,030	1,260	123	170	80	70
23	33	30	47	a500	30	182	570	820	102	105	452	88
24	30	28	43	430	35	271	400	420	89	67	342	150
25	33	32	34	440	*35	805	512	410	84	49	201	134
26	36	43	37	515	35	*1,540	2,000	1,000	78	42	133	86
27	32	50	39	526	30	922	2,000	1,080	73	39	94	62
28	29	53	54	*362	30	581	770	697	72	47	62	50
29	30	58	143	262	-	795	451	650	70	42	52	46
30	28	56	271	1,100	-	974	1,170	673	78	33	52	40
31	32	-	191	3,360	-	627	-	493	-	30	58	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	780	42	14	25.2		
November	1,108	58	27	36.9		
December	2,717	387	28	87.6		
Calendar year 1946	66,483.7	2,980	9.7	182		
January	16,229	3,360	75	524		
February	5,980	2,780	30	214		
March	10,365	1,540	30	334		
April	22,429	2,000	228	748		
May	21,271	2,550	168	686		
June	20,597	3,140	70	687		
July	4,091	454	30	132		
August	3,273	461	12	106		
September	4,028	636	38	134		
Water year 1946-47	112,868	3,360	12	309		

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for Ottawa River at Allentown.
Note.- Stage-discharge relation affected by ice Feb. 13 to Mar. 11.

Auglaize River near Defiance, Ohio

Location.- Water-stage recorder, lat. 41°14'15", long. 84°24'02", in NE¼ sec. 9, T. 3 N., R. 4 E., 125 feet downstream from dam and power plant of Toledo Edison Co., a quarter of a mile upstream from Jackson ditch, and 3 miles south of Defiance. Datum of gage is 660.00 feet above mean sea level, adjustment of 1912.
Drainage area.- 2,329 square miles.
Records available.- April 1915 to December 1935, October 1940 to September 1947. May to August 1903 at site at highway bridge 1¾ miles downstream.
Average discharge.- 27 years (1915-35, 1940-47), 1,598 second-feet.
Extremes.- Maximum discharge during year, 25,100 second-feet June 9 (gage height, 18.30 feet); minimum daily, 22 second-feet Nov. 5, 6.
1915-35, 1940-47: Maximum discharge, 48,000 second-feet May 19, 1943 (gage height, 25.5 feet, from floodmark), from rating curve extended above 22,000 second-feet on basis of flood-routing studies; minimum daily, 6 second-feet Oct. 17, 1923.
Remarks.- Records good except those for periods of no gage-height record, which are fair. Flow regulated by power plant above station. Some diversion by Miami & Erie Canal from Lake St. Marys into Jennings Creek, tributary to Auglaize River above station.

Rating tables, water year 1946-47
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to June 4

4.45	26	5.5	460	11.0	7,500
4.5	35	6.0	765	13.0	11,400
4.55	47	6.5	1,170	16.0	18,700
4.6	63	7.0	1,640	18.0	24,200
4.8	139	8.0	2,720		
5.1	265	9.0	4,070		

June 5 to Sept. 30

4.45	37
4.5	50
4.6	81
4.8	154
5.1	274

Note.- Same as preceding table above 5.4 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	24	31	500	18,200	63	5,030	8,450	4,300	497	42	812
2	40	24	234	1,050	11,400	67	3,920	11,900	12,500	509	123	1,080
3	35	126	146	731	6,600	74	4,700	12,300	20,000	772	42	1,140
4	35	61	120	2,240	3,920	310	5,370	8,070	24,200	382	191	1,540
5	35	22	77	a1,900	a1,400	89	4,700	5,370	17,700	116	47	1,020
6	35	22	74	a1,150	a1,100	93	6,600	3,770	9,020	254	50	873
7	35	100	31	a1,000	a1,050	100	8,070	3,280	12,500	191	64	1,940
8	35	115	87	a430	a810	104	6,060	2,960	19,200	246	50	2,100
9	35	28	88	a360	a630	168	3,700	2,100	24,200	64	182	1,340
10	33	139	224	a1,050	a300	306	2,810	1,120	18,200	140	51	850
11	31	98	80	a610	a310	631	1,910	865	9,800	190	147	180
12	31	118	1,540	576	a260	686	2,290	913	5,710	442	47	454
13	30	84	1,720	1,170	a200	504	2,470	1,530	3,220	404	184	173
14	28	86	1,090	1,900	a290	2,760	1,790	3,420	3,700	714	75	532
15	28	85	954	3,160	398	3,420	1,440	3,700	2,900	616	181	483
16	28	73	593	4,220	482	3,560	2,550	3,280	3,220	934	47	230
17	28	74	542	5,370	501	1,970	4,960	3,160	2,540	846	398	126
18	31	66	354	3,920	430	1,050	8,450	3,160	1,740	1,350	774	262
19	30	118	322	2,140	368	908	6,060	3,220	1,320	1,300	572	127
20	150	76	402	2,440	440	857	3,920	3,020	1,240	1,700	437	50
21	122	88	268	3,920	256	816	5,200	2,880	1,030	1,030	244	248
22	80	112	166	a1,700	127	953	7,690	3,700	661	1,040	408	200
23	26	30	412	a3,600	127	1,100	6,420	4,860	480	332	916	173
24	30	35	125	a3,400	293	2,240	4,220	3,560	473	329	744	498
25	177	61	31	a3,200	264	3,700	3,420	3,350	458	154	750	368
26	25	240	132	2,720	282	8,830	5,380	5,540	957	276	47	386
27	24	182	350	2,780	230	8,070	10,000	7,880	50	126	131	232
28	81	246	222	2,750	178	6,600	7,320	6,240	42	45	440	350
29	31	192	778	1,830	-	6,060	4,700	6,600	186	158	632	50
30	82	160	1,130	7,730	-	7,690	3,920	6,060	446	189	332	50
31	72	-	1,240	16,100	-	6,780	-	4,700	-	114	180	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,519	177	24	49.0		
November	2,885	246	22	96.2		
December	13,563	1,720	31	438		
Calendar year 1946	429,285	13,800	22	1,176		
Jannary	85,647	16,100	360	2,763		
February	50,846	18,200	127	1,816		
March	70,559	8,830	63	2,276		
April	145,070	10,000	1,440	4,836		
May	140,958	12,300	865	4,547		
June	201,993	24,200	42	6,733		
July	15,460	1,700	45	499		
August	8,528	916	42	275		
September	17,867	2,100	50	596		
Water year 1946-47	754,895	24,200	22	2,068		

a No gage-height record; discharge computed on basis of power-plant records.

Ottawa River at Allentown, Ohio

Location.- Water-stage recorder and concrete control, lat. 40°45'18", long. 84°11'41", in NW¼ sec. 29, T. 3 S., R. 6 E., at highway bridge at Allentown, Allen County, 0.3 mile downstream from Kessler Run. Datum of gage is 789.67 feet above mean sea level, adjustment of 1912.

Drainage area.- 168 square miles.

Records available.- October 1923 to December 1935, August 1943 to September 1947.

Average discharge.- 16 years, 119 second-feet.

Extremes.- Maximum discharge during year, 2,220 second-feet June 7 (gage height, 6.98 feet); minimum, 13 second-feet Oct. 24, 28 but may have been less during period of ice effect.

1923-35, 1943-47: Maximum discharge, 3,880 second-feet Apr. 11, 1944 (gage height, 9.00 feet); minimum, 1.4 second-feet June 28, 29, 1933.

Flood of Mar. 15, 1939, reached a stage of 10.1 feet and flood of May 1943, a stage of 10 feet, discharge not determined.

Remarks.- Records good except those for periods of ice effect or doubtful gage-height record, which are fair. Diurnal fluctuation and some regulation due to operation of water-supply and sewage-treatment plants of city of Lima above station.

Rating table, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Nov. 20 to Jan. 1, June 8 to Aug. 20)

2.4	13	3.1	65	3.7	238
2.5	17	3.2	83	3.8	287
2.7	27	3.3	105	4.0	405
2.8	33	3.4	130	4.7	860
2.9	41	3.5	160	6.4	1,810
3.0	51	3.6	196		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	22	15	24	*574	15	277	860	230	31	17	31
2	17	19	15	52	316	15	680	970	1,230	31	17	368
3	18	18	17	154	167	15	645	680	1,570	26	16	130
4	18	22	17	85	130	15	399	418	726	24	15	78
5	17	17	17	41	83	16	497	287	524	18	18	76
6	16	18	17	27	65	17	805	243	444	18	18	937
7	14	28	16	26	58	18	405	234	1,810	20	18	512
8	18	22	15	24	53	19	209	248	1,570	17	18	189
9	18	20	15	24	52	21	151	204	787	17	18	108
10	17	29	31	27	48	22	133	164	560	35	15	64
11	18	30	22	32	35	26	136	139	387	46	14	44
12	21	24	96	46	34	41	142	122	258	37	17	92
13	15	20	125	30	33	78	171	87	217	29	18	67
14	15	20	38	34	34	327	136	69	296	36	18	39
15	17	20	21	217	38	253	125	57	581	32	69	41
16	17	18	*18	374	42	151	600	65	511	26	68	24
17	20	22	26	221	44	110	805	72	399	22	31	21
18	84	17	19	112	32	87	477	158	321	23	22	20
19	24	20	18	74	24	79	262	282	262	70	21	20
20	18	18	18	352	20	74	287	185	213	41	20	20
21	15	18	20	751	17	81	719	217	154	31	322	27
22	17	18	19	238	15	85	484	374	110	26	116	113
23	18	18	17	122	15	90	304	272	85	22	28	35
24	17	16	24	118	*15	*151	225	200	59	20	23	26
25	37	17	18	133	16	1,100	579	559	47	18	20	26
26	22	59	16	209	16	706	1,120	970	37	18	49	29
27	16	29	18	*217	15	387	d450	624	32	22	24	26
28	15	20	29	145	15	287	d220	477	39	17	22	20
29	18	18	41	105	-	712	d200	464	35	20	22	19
30	18	18	41	1,140	-	745	d750	431	33	18	55	20
31	20	-	29	1,330	-	444	-	277	-	18	24	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	632	84	14	20.4	0.121	0.14
November	655	59	16	21.8	.130	.14
December	848	125	15	27.4	.163	.19
Calendar year 1946	32,320	1,830	13	88.5	.527	7.15
January	6,484	1,330	24	209	1.24	1.43
February	2,006	574	15	71.6	.426	.44
March	6,187	1,100	15	200	1.19	1.37
April	12,393	1,120	125	413	2.46	2.74
May	10,409	970	57	336	2.00	2.31
June	13,527	1,810	32	451	2.68	2.99
July	829	70	17	26.7	.159	.18
August	1,173	322	14	37.8	.225	.26
September	3,222	937	19	107	.637	.71
Water year 1946-47	58,365	1,810	14	160	.952	12.90

Peak discharge.- Jan. 30 (10 p.m.) 2,010 sec.-ft.; Mar. 25 (9:30 a.m.) 1,400 sec.-ft.; Apr. 26 (3 a.m.) 1,460 sec.-ft.; June 2 (10 p.m.) 2,080 sec.-ft.; June 7 (5:30 p.m.) 2,220 sec.-ft.; Sept. 6 (9 p.m.) 1,290 sec.-ft.

* Winter discharge measurement made on this day.

d Doubtful gage-height record; discharge computed on basis of records for Auglaize River near Fort Jennings.

Note.- Stage-discharge relation affected by ice Feb. 20 to Mar. 9.

Blanchard River near Findlay, Ohio

Location.- Water-stage recorder, lat. 41°03'21", long. 83°41'17", on east line sec. 10, T. 1 N., R. 10 E., at highway bridge, 2 miles west of Findlay. Datum of gage is 754.55 feet above mean sea level.
Drainage area.- 343 square miles.
Records available.- November 1923 to December 1935, October 1940 to September 1947.
Average discharge.- 18 years (1924-35, 1940-47), 219 second-feet.
Extremes.- Maximum discharge during year, 8,160 second-feet June 8 (gage height, 13.73 feet); minimum, 1.9 second-feet Oct. 19 (gage height, 0.81 foot).
1923-35, 1940-47: Maximum discharge, 9,300 second-feet Dec. 1, 1927 (gage height, 14.5 feet); minimum, 0.4 second-foot Aug. 26, 27, Sept. 3, 1934.
Flood of March 1913 reached a stage of 18.5 feet.
Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Dec. 12, Apr. 7-16)

0.7	2.5	1.3	48	5.0	1,300
.8	5.0	1.4	64	7.5	2,320
.9	9.0	1.7	125	9.5	3,370
1.0	15	2.1	221	10.5	4,190
1.1	24	2.4	320	12.0	5,880
1.2	35	3.0	575	13.1	7,320

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.8	9.0	13	72	2,000	26	519	1,140	365	341	12	702
2	5.8	9.6	10	112	615	25	1,460	1,580	2,120	219	12	575
3	4.0	8.2	9.0	328	328	26	1,620	930	3,820	99	12	519
4	3.5	9.6	8.2	283	266	25	930	575	2,470	62	11	418
5	3.2	9.0	8.2	a160	190	26	1,300	895	895	47	9.6	265
6	3.5	8.2	7.0	a100	b170	31	1,460	575	595	39	10	464
7	2.8	13	6.6	a65	*149	39	738	575	3,820	36	11	357
8	3.0	4.5	7.0	a50	105	*40	441	519	7,320	33	18	224
9	2.8	4.5	7.4	45	85	45	313	332	3,280	31	42	132
10	3.0	7.4	15	40	66	48	250	224	895	34	42	89
11	4.5	8.2	7.8	60	56	59	241	176	472	52	24	66
12	5.0	7.8	70	127	50	81	316	147	287	97	17	87
13	4.8	8.2	211	95	50	116	250	242	218	93	14	81
14	4.8	8.2	149	112	58	430	208	507	1,010	61	28	51
15	5.0	8.2	83	365	74	477	176	238	1,070	48	114	43
16	5.0	7.4	54	668	74	221	620	183	499	48	59	36
17	7.8	7.4	*44	575	66	154	1,180	183	276	58	31	31
18	20	7.0	30	276	56	105	702	1,040	370	48	48	25
19	2.5	a7	30	181	40	107	365	772	340	59	48	23
20	2.2	6.2	26	496	b35	93	448	401	241	42	91	20
21	3.5	6.2	25	1,380	b30	97	1,380	379	173	33	342	33
22	4.5	6.2	24	b800	b30	118	860	738	134	27	239	87
23	5.8	6.2	24	423	b30	136	523	535	107	23	66	114
24	7.0	6.2	24	305	30	362	361	273	87	21	38	83
25	12	6.6	22	336	31	1,500	755	1,590	74	20	28	54
26	6.6	18	20	515	30	1,460	1,860	2,820	64	17	330	38
27	5.8	14	20	595	26	738	1,300	2,020	58	26	490	30
28	7.0	20	58	423	26	555	575	1,040	53	24	224	26
29	7.8	20	140	290	-	1,070	340	1,180	54	19	114	26
30	7.8	15	149	1,560	-	1,260	575	720	194	17	247	25
31	9.0	-	121	3,130	-	825	-	414	-	15	820	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	177.8	20	2.2	5.74	0.017	0.02
November	277.0	20	4.5	9.23	.027	.03
December	1,423.2	211	6.6	45.9	.134	.15
Calendar year 1946	63,935.8	4,930	2.2	175	.510	6.92
January	13,967	3,130	40	451	1.31	1.51
February	4,766	2,000	26	170	.496	.52
March	10,295	1,500	25	332	.968	1.12
April	22,066	1,860	176	736	2.15	2.40
May	22,943	2,820	147	740	2.16	2.49
June	31,361	7,320	53	1,045	3.05	3.40
July	1,789	341	15	57.7	.168	.19
August	3,591.6	820	9.6	116	.338	.39
September	4,724	702	20	157	.457	.51
Water year 1946-47	117,380.6	7,320	2.2	322	.939	12.73

Peak discharge.- Jan. 31 (7 a.m.) 3,440 sec.-ft.; Apr. 2 (6 p.m.) 1,940 sec.-ft.; Apr. 26 (8 a.m.) 1,980 sec.-ft.; May 26 (11 a.m.) 2,920 sec.-ft.; June 3 (10 a.m.) 4,290 sec.-ft.; June 8 (6 a.m.) 8,160 sec.-ft.
* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for Portage River at Woodville.
b Stage-discharge relation affected by ice.

Blanchard River at Glandorf, Ohio

Location.- Wire-weight gage, lat. 41°02'40", long. 84°04'55", in NE¼ sec. 17, T. 1 N., R. 7 E., at highway bridge, half a mile upstream from Pike Run and three-quarters of a mile north of Glandorf.

Drainage area.- 643 square miles.

Records available.- August 1921 to July 1928, January to September 1947.

Extremes.- Maximum discharge during period, 11,300 second-feet June 9 (gage height, 23.8 feet); minimum observed, 16 second-feet Aug. 9 (gage height, 1.87 feet).

1921-28, 1947: Maximum discharge, 12,500 second-feet (revised) Mar. 22, 1927 (gage height, 24.4 feet); minimum, 6.6 second-feet Sept. 11, 1925 (gage height, 1.53 feet).

Revisions.- The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede those published in the water-supply papers indicated.

Water-Supply Paper	Water year	Date	Gage height (feet)	Discharge (second-feet)
604.....	1922	Apr. 1	22.4	8,570
604.....	1924	Mar. 31	20.8	5,910
624.....	1926	Apr. 7	23.6	10,900
644.....	1927	Mar. 22	24.4	12,500
664.....	1928	Dec. 2	21.7	7,270

Remarks.- Records good. Gage read twice daily.

Revisions.- Revised figures of discharge for high-water periods in the water years 1922, 1924, 1926 to 1928 are given herewith. They supersede those published in Water-Supply Papers 604, 624, 644, and 664.

Day (water year)	Discharge (second-feet)	Day (water year)	Discharge (second-feet)
1921-22		1925-26	
Mar. 31.....	5,910	Sept.27.....	6,160
Apr. 1.....	8,380		
2.....	7,090	1926-27	
May 21.....	6,300	Feb. 1.....	8,950
		Mar. 21.....	7,630
1923-24		22.....	12,500
Mar. 31.....	5,910	23.....	9,140
1925-26		1927-28	
Apr. 6.....	6,750	Dec. 1.....	5,800
7.....	10,900	2.....	7,270
8.....	8,570	3.....	6,300
Sept. 7.....	6,590	16.....	6,440
		Apr. 1.....	6,590

Rating table, Jan. 31 to Sept. 30, 1947, except period of ice effect (gage height, in feet, and discharge, in second-feet)

1.8	12	2.9	96	9.0	1,090	20.0	5,130
2.0	22	3.5	167	11.0	1,550	21.0	6,160
2.2	35	4.5	308	16.0	3,040	22.0	7,810
2.5	58	7.0	715	18.5	4,100	23.6	10,900

Discharge, in second-feet, of Blanchard River at Glandorf, Ohio, January to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					4,670	60	1,400	1,810	818	353	29	894
2					3,850	60	1,210	2,860	2,500	400	26	822
3					2,260	65	2,170	3,180	5,050	323	24	768
4					681	65	2,440	2,740	6,030	167	21	630
5					a450	60	1,780	1,450	4,810	107	18	464
6					a330	65	2,680	1,550	3,040	107	23	1,270
7					a250	75	2,920	1,010	3,850	81	18	1,400
8					a210	75	1,660	1,070	10,300	72	17	630
9					200	80	786	786	10,900	67	16	353
10					180	85	512	579	7,090	62	16	221
11					160	110	432	400	3,660	72	41	154
12					120	160	416	308	1,550	107	45	142
13					110	221	512	432	562	130	31	180
14					120	909	368	1,250	656	154	23	193
15					130	1,090	323	1,010	1,600	118	24	124
16					150	664	436	579	1,500	112	112	86
17					130	432	1,900	464	715	76	148	76
18					110	353	2,140	464	496	91	76	62
19					85	207	1,230	1,190	613	154	54	53
20					75	193	930	930	496	102	58	47
21					70	193	1,600	750	353	81	67	41
22					65	207	2,260	1,050	278	62	278	81
23					65	249	1,550	1,050	207	52	193	167
24					70	400	858	715	167	44	142	193
25					*70	1,710	813	813	142	38	81	136
26					70	*2,890	2,320	2,350	130	31	62	107
27					65	2,710	2,890	2,980	118	30	152	76
28					60	1,780	2,320	2,800	142	39	432	58
29					-	1,660	1,060	2,440	112	47	278	50
30					-	2,320	894	1,930	207	44	167	45
31				*4,400	-	2,140	-	1,150	-	35	249	-

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for station near Findlay.
Note.- Stage-discharge relation affected by ice Feb. 9 to Mar. 11.

Monthly discharge, in second-feet, 1921-22, 1923-24, 1925-28, 1947

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
Octcber 1921	874	90	16	28.2	0.044	0.05
November	16,932	2,860	44	564	.877	.98
December	18,267	3,000	199	589	.916	1.06
Calendar year	-	-	-	-	-	-
January 1922	9,101	1,300	-	294	.457	.53
February	14,359	1,420	-	513	.798	.83
March	40,150	5,910	185	1,295	2.01	2.32
April	76,831	8,380	185	2,561	3.98	4.44
May	63,704	6,300	152	2,055	3.20	3.69
June	7,012	1,130	53	234	.364	.41
July	6,806	1,220	33	220	.342	.39
August	865	60	15	27.9	.043	.05
September	2,973	395	14	99.1	.154	.17
Water year 1921-22	257,874	8,380	14	707	1.10	14.92
October 1923	968	133	15	31.2	.049	.06
November	954	50	20	31.8	.049	.05
December	38,423	4,140	33	1,240	1.93	2.22
Calendar year 1923	182,001	4,500	14	499	.776	10.53
January 1924	35,593	5,040	-	1,080	1.68	1.94
February	19,632	-	171	677	1.05	1.13
March	54,760	5,910	333	1,766	2.75	3.17
April	21,008	4,140	145	700	1.09	1.22
May	12,386	895	199	400	.622	.72
June	30,868	4,340	100	1,030	1.60	1.78
July	4,179	674	22	135	.210	.24
August	1,148	158	14	37.0	.058	.07
September	4,403	1,200	13	147	.229	.26
Water year 1923-24	222,322	5,910	13	607	.944	12.86
October 1925	1,482	121	18	47.8	.074	.09
November	11,012	1,180	38	367	.571	.64
December	4,804	333	-	155	.241	.28
Calendar year 1925	83,176.2	4,460	6.9	228	.355	4.82
January 1926	7,892	1,940	64	255	.397	.46
February	39,731	3,820	199	1,420	2.21	2.30
March	32,888	3,420	116	1,060	1.65	1.90
April	61,482	10,900	92	2,049	3.19	3.56
May	3,167	212	58	102	.159	.18
June	2,704	284	13	90.1	.140	.16
July	628	77	9	20.3	.032	.04
August	6,633	1,480	15	214	.333	.38
September	62,838	6,590	22	2,095	3.26	3.64
Water year 1925-26	235,261	10,900	9	645	1.00	13.63

Monthly discharge, in second-feet, of Blanchard River at Glandorf, Ohio, 1921-22, 1923-24, 1925-28, 1947--Continued

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October 1926	31,500	5,090	120	1,020	1.59	1.83
November	7,024	546	125	234	.364	.41
December	8,412	609	-	271	.421	.49
Calendar year 1926	264,899	10,900	9	726	1.13	15.35
January 1927	33,060	4,530	-	1,070	1.66	1.91
February	43,825	8,950	212	1,565	2.43	2.53
March	59,317	12,500	186	1,913	2.98	3.44
April	13,326	1,340	125	444	.691	.77
May	23,348	3,070	125	753	1.17	1.35
June	6,912	860	120	230	.358	.40
July	7,306	4,020	18	236	.367	.42
August	8,910	1,480	29	287	.446	.51
September	3,642	333	27	121	.188	.21
Water year 1926-27	246,582	12,500	18	676	1.05	14.27
October 1927	2,564	173	21	82.7	.129	.15
November	8,644	3,420	20	288	.448	.50
December	76,195	7,270	199	2,458	3.82	4.40
Calendar year 1927	287,049	12,500	18	786	1.22	16.59
January 1928	21,166	1,290	-	683	1.06	1.22
February	29,710	3,160	-	1,020	1.59	1.72
March	21,837	-	-	704	1.09	1.26
April	35,994	6,590	120	1,200	1.87	2.09
May	3,427	226	72	111	.173	.20
June	29,774	4,510	83	992	1.54	1.72
July	4,385	506	41	141	.219	.25
August	-	-	-	-	-	-
September	-	-	-	-	-	-
Water year	-	-	-	-	-	-
October	-	-	-	-	-	-
November	-	-	-	-	-	-
December	-	-	-	-	-	-
Calendar year	-	-	-	-	-	-
January	-	-	-	-	-	-
February 1947	14,806	4,670	60	529	.823	.86
March	21,288	2,890	60	687	1.07	1.23
April	42,810	2,920	323	1,427	2.22	2.48
May	42,090	3,180	308	1,358	2.11	2.43
June	68,092	10,900	112	2,270	3.53	3.94
July	3,358	400	30	108	.168	.19
August	2,921	432	16	94.2	.147	.17
September	9,523	1,400	41	317	.493	.55
Water year	-	-	-	-	-	-

Eagle Creek near Findlay, Ohio

Location.- Wire-weight gage, lat. 40°59'35", long. 83°39'05", on line between sec. 1, T. 1 S., R. 10 E. and sec. 36, T. 1 N., R. 10 E., at county highway bridge, 3¼ miles south of Findlay, Hancock County, and 4¼ miles upstream from mouth.

Drainage area.- 46.5 square miles.

Records available.- January to September 1947.

Extremes.- Maximum discharge observed during period, 2,920 second-feet June 7 (gage height, 13.38 feet); minimum observed, 0.6 second-foot Aug. 13 (gage height, 2.35 feet).

Remarks.- Records good except those for periods of no gage-height record, which are fair. Gage read once daily, oftener during high stages.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				-	98	a3.5	71	359	43	31	1.0	184
2				-	47	3.6	512	527	781	12	1.0	86
3				-	45	3.8	174	130	646	8.9	.9	51
4				-	41	3.8	76	130	130	5.6	.9	17
5				-	29	4.2	425	145	61	4.4	.8	41
6				-	18	4.8	296	71	99	4.4	1.2	39
7				-	11	5.2	86	123	2,380	4.8	1.0	29
8				-	10	5.0	45	66	596	3.6	1.0	15
9				-	8.2	5.4	24	39	145	3.6	.8	10
10				-	7.2	5.0	25	27	66	5.4	.8	7.2
11				-	6.3	14	37	20	41	16	1.2	5.0
12				-	6.1	19	66	15	25	23	.8	10
13				-	5.8	21	35	17	23	11	.6	6.8
14				13	5.8	131	27	19	854	7.9	1.0	4.0
15				171	9.2	64	21	18	216	6.3	9.2	4.0
16				153	8.4	35	245	12	64	4.2	4.0	2.8
17				66	7.7	18	215	58	33	4.0	7.9	2.2
18				23	5.8	17	81	170	71	4.0	3.4	1.8
19				a17	4.8	11	49	66	47	3.6	2.1	1.6
20				102	3.8	12	150	47	25	3.2	2.1	1.6
21				153	a3.5	18	311	66	18	2.1	3.6	5.4
22				76	a3.5	15	116	47	14	1.9	1.6	37
23				64	a3.5	43	66	33	12	1.8	1.0	41
24				37	a3.5	143	51	29	10	1.6	1.0	15
25				58	a3.5	456	297	700	7.9	1.6	.9	3.8
26				110	a3	161	458	400	7.4	1.5	123	3.0
27				86	a3	81	122	130	7.0	2.6	70	2.8
28				49	a3	86	58	145	6.3	1.9	15	a2.5
29				39	-	300	43	123	8.6	1.5	5.6	2.4
30				710	-	116	142	98	54	1.5	20	2.0
31				464	-	76	-	47	-	1.4	574	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October						
November						
December						
Calendar year						
January 14-31	2,341	710	13	130	2.80	1.88
February	404.6	98	3	14.4	.310	.32
March	1,881.3	456	3.5	60.7	1.31	1.51
April	4,324	512	21	144	3.10	3.46
May	3,877	700	12	125	2.69	3.10
June	6,491.2	2,380	6.3	216	4.65	5.19
July	186.3	31	1.4	6.01	.129	.15
August	857.4	574	.6	27.7	.596	.69
September	633.9	184	1.6	21.1	.454	.51
Water year	-	-	-	-	-	-

a No gage-height record; discharge computed on basis of records for Blanchard River near Findlay.

Town Creek near Van Wert, Ohio

Location.- Water-stage recorder, lat. 40°49'30", long. 84°34'50", in sec. 36, T. 2 S., R. 2 E., at bridge on U. S. Highway 127, 3 miles south of Van Wert and 5½ miles downstream from Roller Creek.

Drainage area.- 20.4 square miles.

Records available.- July 1945 to September 1947.

Extremes.- Maximum discharge during year, 720 second-feet June 2 (gage height, 8.26 feet); no flow on many days.
1945-47: Maximum discharge, that of June 2, 1947; no flow for long periods.

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

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Dec. 12, Apr. 27-29, June 2-10)

1.3	0	1.8	7.4	3.2	82
1.4	.6	1.9	11	3.8	130
1.5	1.6	2.0	14	5.0	244
1.6	2.9	2.1	19	6.2	378
1.7	4.7	2.4	33	7.5	573

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		0	0.2	3	54	0.3	15	125	220	0.4	0.1	0
2		0	0	5	20	.3	32	228	572	.3	0	.4
3		0	0	20	10	.3	21	93	187	.1	0	2.0
4		0	0	10	6	.3	15	43	63	.1	0	.6
5		0	0	5	4	.3	30	25	32	.1	0	.4
6		0	0	3	3.0	.4	39	17	22	.1	0	.2
7		0	0	2.4	2.5	.4	15	19	181	.1	0	.2
8		.1	0	2.3	2.3	.6	10	15	87	0	.3	0
9		0	0	2.3	2.1	1.0	7.4	9.0	35	0	.4	0
10		a.2	.3	2.4	2.0	2.5	5.8	6.0	18	.1	.1	0
11		a.2	.4	5.0	1.9	5	40	4.7	9.7	.1	0	0
12		a.1	9.2	27	2.0	11	53	4.0	5.2	.1	0	.5
13		a0	24	12	2.1	20	21	9.5	4.3	.1	0	.5
14		0	6.6	30	2.4	75	14	17	4.0	1.0	0	.4
15		.1	1.0	73	3.0	25	9.0	9.4	3.1	14	.2	.2
16		.2	.2	48	2.0	12	80	39	2.4	12	1.5	0
17		.2	*.3	23	1.5	8	77	37	2.1	3.1	2.5	0
18		.1	.3	12	1.0	6.0	32	32	2.5	5.5	.9	0
19		0	.2	8.4	.7	4.3	18	19	2.0	47	.2	0
20		0	.2	81	.5	6.0	36	11	1.6	17	0	0
21		0	.2	88	.4	6.9	80	69	1.4	6.6	0	.5
22		0	.2	30	.4	7.7	35	47	1.1	3.3	0	3.2
23		0	.2	17	.4	9.7	22	20	1.0	2.1	0	3.6
24		0	.3	17	.4	27	15	68	1.0	1.5	0	1.4
25		0	.2	28	*.5	*69	117	385	1.1	1.1	0	.5
26		.9	.2	30	.5	49	121	121	1.0	.9	0	.1
27		1.3	.5	*20	.4	27	43	66	.9	1.0	0	0
28		1.2	2.0	13	.4	27	23	114	.8	.9	0	0
29		.8	9.2	20	-	57	46	91	.7	.6	0	0
30		.5	14	446	-	26	229	50	.6	.4	0	0
31		-	5	184	-	18	-	25	-	..3	0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	0	0	0	0	0	0
November	5.9	1.3	0	.20	.0098	.01
December	74.9	24	0	2.42	.119	.14
Calendar year 1946	3,722.0	350	0	10.2	.500	6.77
January	1,267.8	446	2.3	40.9	2.00	2.31
February	126.4	54	.4	4.51	.221	.23
March	503.0	75	.3	16.2	.794	.92
April	1,301.2	229	5.8	43.4	2.13	2.38
May	1,818.6	385	4.0	58.7	2.88	3.32
June	1,463.5	572	.6	48.8	2.39	2.67
July	119.9	47	0	3.87	.190	.22
August	6.2	2.5	0	.20	.0098	.01
September	14.7	3.6	0	.49	.024	.03
Water year 1946-47	6,702.1	572	0	18.4	.902	12.24

Peak discharge.- Jan. 30 (11:30 a.m.) 701 sec.-ft.; Apr. 30 (12 m.) 264 sec.-ft.; May 2 (3 a.m.) 307 sec.-ft.; May 25 (4:30 a.m.) 523 sec.-ft.; June 1 (4 p.m.) 418 sec.-ft.; June 2 (10 a.m.) 720 sec.-ft.

* Winter discharge measurement made on this day.

a No gage height record; discharge computed on basis of recorded range in stage and weather records.

Note.- Stage-discharge relation affected by ice Dec. 15-26, Dec. 31 to Jan. 9, Jan. 22-24, Feb. 2 to Mar. 17.

Roller Creek at Ohio City, Ohio

Location.- Water-stage recorder, lat. 40°46'15", long. 84°38'15", on line between secs. 16 and 21, T. 3 S., R. 2 E., at highway bridge, three-quarters of a mile west of Ohio City, Van Wert County, and 3¾ miles upstream from mouth.

Drainage area.- 4.94 square miles.

Records available.- August 1946 to September 1947 (fragmentary).

Extremes.- 1946: No flow during August and September.
1946-47: Maximum discharge during water year, 249 second-feet Jan. 30 (gage height, 7.86 feet); no flow on many days.

Remarks.- Records poor. No flow during August and September 1946.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		0	0	1.4	10	b0.1	3.9	-	-	0.1	0	-
2		0	0	6.9	b4	b.1	-	‡33	-	0	0	-
3		-	0	16	b2.2	b.2	-	-	-	0	-	-
4		-	0	5.9	b1.3	b.3	-	-	-	0	-	-
5		-	0	b2.5	-	b.5	-	-	-	0	-	-
6		-	0	b1.2	-	3.0	-	-	-	0	-	-
7		-	0	b.7	-	3.4	-	5.2	†46	0	-	-
8		-	0	b.5	-	2.0	-	3.8	-	0	.1	-
9		-	0	.4	-	1.3	-	2.5	-	0	.1	-
10		-	.1	.3	-	2.6	-	1.8	-	0	0	-
11		-	.1	b2.5	-	4.0	-	1.6	-	0	-	†0
12		-	18	b5	-	3.7	-	-	-	0	-	-
13		-	13	b2.5	-	9.6	-	-	1.5	.2	-	-
14		-	2.8	b10	-	24	-	-	1.2	1.1	-	0
15		0	1.0	*b18	-	5.8	-	-	.7	1.9	-	0
16		0	*b.6	b10	-	3.1	-	-	.6	.6	-	-
17		0	b1.0	b5	-	2.1	-	-	.6	.3	-	-
18		0	b.5	b3	-	1.4	-	-	.6	21	-	-
19		0	b.2	b2.5	-	1.5	-	-	.3	41	-	-
20		0	b.1	b35	b.1	1.8	-	-	.3	6.2	-	-
21		0	b.1	b20	b.1	2.2	-	-	.3	2.1	-	-
22		0	b.1	b5	b.1	2.2	-	-	.2	1.1	-	-
23		0	b.1	b3	b.1	a3	-	-	.2	.5	-	.4
24		0	b.1	6.0	b.1	a10	-	-	.2	.3	-	.1
25		0	.1	10	b.2	23	-	†44	.2	.2	-	0
26		.2	.1	9.8	b.1	8.9	-	-	.2	.2	-	0
27		.6	.1	6.4	b.1	5.8	-	-	.2	.2	-	0
28		.1	3.1	*3.9	b.1	8.4	-	-	.2	.2	-	0
29		0	12	4.4	-	12	†3.3	-	.1	.1	-	0
30		0	6.2	136	-	5.4	-	-	.1	.1	-	0
31		-	2.0	32	-	4.2	-	-	-	0	-	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
August 19-31, 1946	0	0	0	0	0	0
September	0	0	0	0	0	0
October 1946	0	0	0	0	0	0
November	-	-	-	-	-	-
December	61.4	18	0	1.98	.401	.46
Calendar year	-	-	-	-	-	-
January 1947	365.8	136	.3	11.8	2.39	2.76
February	-	-	-	-	-	-
March	155.6	24	.1	5.02	1.02	1.18
April	-	-	-	-	-	-
May	-	-	-	-	-	-
June 13-30	7.7	1.5	.1	.43	.087	.06
July	77.4	41	0	2.50	.503	.58
August	-	-	-	-	-	-
September	-	-	-	-	-	-
Water year	-	-	-	-	-	-

* Winter discharge measurement made on this day.
† Result of discharge measurement.
‡ Average of 2 discharge measurements made on this day.
a No gage-height record; discharge interpolated.
b Stage-discharge relation affected by ice.

Swan Creek at Toledo, Ohio

Location.- Water-stage recorder, lat. 41°37'37", long. 83°35'40", in SE¼ sec. 9, T. 3 of Twelve Mile Reservation, at Detroit Avenue Bridge in Toledo and 5.2 miles upstream from mouth. Datum of gage is 570.00 feet above mean sea level, datum of 1929.
Drainage area.- 185 square miles.
Records available.- March 1945 to September 1947.
Extremes.- Maximum discharge during year, 1,880 second-feet Apr. 22 (gage height, 14.27 feet); minimum daily, 2.0 second-feet Oct. 5-10.
1945-47: Maximum discharge, 2,200 second-feet May 18, 1945 (gage height, 14.48 feet); minimum daily, that of Oct. 5-10, 1946.
Remarks.- Records good except those below 100 second-feet, which are fair, and those for periods of ice effect or no gage-height record, which are poor.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 21 to Dec. 30, July 21 to Aug. 12)

3.5	2.0	6.5	16	8.0	307
3.9	2.8	6.6	22	12.0	1,240
4.6	4.9	6.7	31	13.9	1,760
5.4	8.1	6.8	44		
6.4	13	6.9	62		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a2.2	5.3	a9	b15	a600	a20	272	393	227	39	6.3	100
2	a2.2	11	a8	a25	399	20	330	954	698	30	5.5	141
3	a2.1	9.6	a7	a40	215	20	422	767	1,070	25	a5	138
4	a2.1	9.6	6.7	a30	b140	20	a250	573	1,120	22	a5	53
5	a2.0	7.7	6.7	a25	b90	20	364	491	765	20	h5.5	32
6	a2.0	a7	8.6	b20	b80	21	629	376	364	20	a5	36
7	a2.0	a6	9.1	b18	b65	*22	629	318	392	20	a6	28
8	a2.0	6.7	9.1	b16	b50	21	399	289	836	20	a12	21
9	a2.0	6.7	a11	b15	b40	20	252	200	781	20	5.7	18
10	a2.0	9.1	a12	a14	b35	21	197	158	342	28	a6	14
11	a3	9.1	a13	a25	b30	23	215	127	206	51	a6	13
12	a4	11	a20	a40	b30	28	376	109	142	49	h5.5	14
13	a4	11	a80	a35	34	36	a290	125	139	36	a5	14
14	a4	9.1	a45	85	35	a150	a210	284	470	26	a6	14
15	a4	6.7	a30	171	74	a250	178	300	456	26	15	13
16	a4	6.7	22	186	125	a160	197	206	275	63	20	12
17	a4	6.7	17	83	85	90	468	262	182	58	16	11
18	a6	6.7	16	44	68	66	434	980	153	62	13	9.8
19	a7	6.7	*18	49	48	77	296	1,290	138	44	10	7.9
20	a7	6.7	13	66	41	68	612	957	101	34	8.6	a8
21	5.7	6.7	11	125	38	81	1,260	526	79	24	7.3	a14
22	4.8	6.7	12	79	31	98	1,740	675	64	18	7.5	20
23	4.3	6.7	13	72	26	112	1,140	583	51	15	7.7	28
24	3.7	6.7	a11	a60	23	200	658	342	44	11	a11	20
25	3.6	6.7	a13	a55	22	491	422	480	40	10	a25	16
26	3.9	13	a11	87	22	572	342	721	38	8.8	63	13
27	4.0	14	a10	90	22	399	266	583	38	7.5	24	10
28	4.2	20	20	90	a20	a370	193	364	73	7.9	13	8.4
29	5.1	a14	22	83	-	a360	153	330	72	7.7	13	9.1
30	4.8	a10	21	a120	-	388	162	318	64	6.5	13	12
31	4.9	-	b17	a250	-	330	-	229	-	5.9	100	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	116.6	7	2.0	3.76	0.020	0.02
November	263.6	20	5.3	8.79	.048	.05
December	522.2	80	6.7	16.8	.091	.10
Calendar year 1946	31,845.4	932	2.0	87.2	.471	6.39
January	2,113	250	14	68.2	.369	.43
February	2,488	600	20	88.9	.481	.50
March	4,554	572	20	147	.795	.92
April	13,356	1,740	153	445	2.41	2.69
May	14,274	1,290	109	460	2.49	2.87
June	9,420	1,120	38	314	1.70	1.90
July	815.3	63	5.9	26.3	.142	.16
August	451.6	100	5	14.6	.079	.09
September	848.2	141	7.9	28.3	.153	.17
Water year 1946-47	49,222.5	1,740	2.0	135	.730	9.90

Peak discharge.- Apr. 22 (9 a.m.) 1,880 sec.-ft.; May 2 (9:30 a.m.) 978 sec.-ft.; May 19 (8 a.m) 1,320 sec.-ft.; May 26 (4 p.m.) 744 sec.-ft.; June 4 (2 p.m.) 1,150 sec.-ft.; June 8 (11 p.m.) 930 sec.-ft.
* Winter discharge measurement made on this day;
a Nc gage-height record; discharge computed on basis of weather records and records for Bean Creek at Powers and Tenmile Creek at Toledo.
b Stage-discharge relation affected by ice.
h Computed from wire-weight gage readings.

Portage River at Woodville, Ohio

Location.- Water-stage recorder, lat. 41°26'55", long. 83°21'41", in sec. 28, T. 6 N., R. 13 E., at bridge on U. S. Highway 20 in Woodville. Datum of gage is 615.14 feet above mean sea level, adjustment of 1912.
Drainage area.- 433 square miles.
Records available.- July 1928 to December 1935, October 1939 to September 1947.
Average discharge.- 15 years, 261 second-feet.
Extremes.- Maximum discharge during year, 7,580 second-feet June 3 (gage height, 11.91 feet); minimum, 3.3 second-feet Aug. 13, 14 (gage height, 1.92 feet).
1928-35, 1939-47: Maximum discharge, 9,300 second-feet Apr. 12, 1944 (gage height, 13.08 feet); minimum, 0.3 second-foot Aug. 28, 1931; minimum gage height, 1.60 feet July 25, 26, 1934.
Flood of March 1913 reached a stage of 17 feet, from information by local residents.
Remarks.- Records good except those for periods of ice effect or fragmentary or no gage-height record, which are fair.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Nov. 27, Mar. 6-13, July 18 to Aug. 21)

1.95	3.6	2.7	84	5.8	1,340
2.0	5.8	3.0	141	7.0	2,200
2.1	12	3.2	190	8.0	3,050
2.2	20	3.5	283	9.5	4,600
2.3	30	4.0	477	11.0	6,370
2.5	55	5.2	1,030		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.7	11	43	174	*2,690	a26	655	695	413	332	10	a150
2	8.3	14	28	190	835	a26	f858	2,510	3,700	135	8.9	a300
3	8.9	15	25	806	494	a26	1,060	1,630	6,370	75	7.7	a250
4	8.3	15	21	812	473	a26	610	858	5,080	51	7.7	a200
5	8.3	14	18	402	238	a27	985	858	1,460	37	7.0	a450
6	8.9	13	18	b250	b180	*28	2,120	632	745	30	5.8	a1,100
7	8.9	14	18	b170	b140	30	1,210	477	1,610	29	5.4	a500
8	8.9	17	18	b150	b110	32	592	443	3,450	34	5.8	a200
9	8.9	25	17	b140	b85	35	410	304	1,520	30	5.8	101
10	7.7	25	17	b140	b70	40	286	210	610	56	6.4	62
11	7.0	25	17	137	b60	48	257	157	336	92	7.0	45
12	7.7	28	116	543	b60	66	283	130	199	327	5.4	35
13	7.7	38	978	610	b60	116	260	172	150	141	4.0	50
14	11	32	494	542	70	f864	182	2,720	392	91	4.5	63
15	13	22	199	1,580	82	930	162	2,100	655	91	12	40
16	14	18	120	1,440	f98	414	270	905	290	122	29	27
17	14	16	89	1,000	f84	f276	1,820	583	172	394	38	20
18	23	13	103	473	69	f174	1,000	768	135	304	30	18
19	52	11	*109	308	a60	167	552	632	137	185	19	14
20	42	10	110	611	f54	152	795	402	101	137	15	12
21	25	10	72	2,540	45	187	2,870	308	78	84	13	12
22	14	11	61	746	37	260	1,790	1,060	66	59	336	53
23	11	10	61	b550	32	300	930	655	58	45	268	181
24	9.5	10	47	b450	27	595	655	344	50	35	89	80
25	13	8.3	51	507	26	2,510	452	759	45	27	51	50
26	13	13	52	678	27	2,520	1,130	2,080	42	22	37	32
27	15	115	41	722	a27	1,080	930	1,060	38	20	45	23
28	21	150	77	516	a26	f858	481	678	40	18	54	18
29	17	82	b200	390	-	1,200	311	700	150	16	31	18
30	13	59	406	2,120	-	1,580	283	588	596	16	25	17
31	11	-	207	5,410	-	858	-	348	-	14	a200	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	438.7	52	7.0	14.2	0.033	0.04
November	844.3	150	8.3	28.1	.065	.07
December	3,833	978	17	124	.286	.33
Calendar year 1946	89,314.0	6,130	2.6	245	.566	7.67
January	25,107	5,410	137	810	1.87	2.16
February	6,259	2,690	26	224	.517	.54
March	15,451	2,520	26	498	1.15	1.33
April	24,199	2,870	162	807	1.86	2.08
May	25,766	2,720	130	831	1.92	2.21
June	28,688	6,370	38	956	2.21	2.47
July	3,049	394	14	98.4	.227	.26
August	1,383.4	336	4.0	44.6	.103	.12
September	4,121	1,100	12	137	.316	.35
Water year 1946-47	139,139.4	6,370	4.0	381	.880	11.96

Peak discharge.- Jan. 31 (6 p.m.) 6,010 sec.-ft.; Mar. 26 (3 a.m.) 3,150 sec.-ft.; Apr. 21 (1 p.m.) 3,250 sec.-ft.; May 14 (8 p.m.) 3,650 sec.-ft.; June 3 (11 p.m.) 7,580 sec.-ft.; June 8 (11 a.m.) 3,850 sec.-ft.
* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of recorded range in stage and records for Sandkusky River near Fremont.
b Stage-discharge relation affected by ice.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

Sandusky River near Bucyrus, Ohio

Location.- Water-stage recorder, lat. 40°48'13", long. 83°00'21", in NE¼ sec. 10, T. 3 S., R. 16 E., at highway bridge, 1½ miles west of Bucyrus and 12 miles downstream from Loss Creek. Datum of gage is 955.9 feet above mean sea level, adjustment of 1912.

Drainage area.- 89.8 square miles.

Records available.- August 1925 to November 1935, July 1938 to September 1947.

Average discharge.- 19 years, 78.3 second-feet.

Extremes.- Maximum discharge during year, 3,030 second-feet June 7 (gage height, 8.22 feet); minimum, 0.6 second-foot Oct. 3, 4, 6; minimum gage height, 0.78 foot Oct. 9.
1925-35, 1938-47: Maximum discharge observed, 6,900 second-feet Dec. 14, 1927 (gage height, 9.15 feet); minimum discharge, 0.4 second-foot Sept. 29, 1941, July 16, 1942.
Flood of Mar. 23, 1913, reached a stage of 14.5 feet, from floodmarks.

Remarks.- Records good except those for periods of no gage-height record, which are fair. Low flow slightly affected by operation of reservoirs for municipal supply of Bucyrus.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-9, Dec. 15-28, Dec. 31 to Jan. 2, Jan. 5-14, 19, 24, Feb. 5 to Mar. 14, Mar. 16-22, Sept. 30)

0.7	0.3	1.3	18	3.5	353
.8	1.0	1.5	30	4.0	493
.9	2.6	1.7	47	5.0	835
1.0	5.1	2.1	91	6.0	1,270
1.1	8.3	2.5	148	6.7	1,650
1.2	13	3.0	238	7.5	2,270

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.9	4.1	14	36	295	13	183	392	56	251	8.7	269
2	1.0	4.6	a12	71	139	14	1,790	672	660	99	7.7	78
3	.9	4.1	a9	353	90	14	738	328	2,220	56	7.0	37
4	.8	5.4	a7	215	85	14	236	218	414	36	6.4	22
5	1.0	5.3	a5	75	70	15	349	316	181	29	6.7	34
6	1.0	5.4	a3	48	58	19	463	181	192	26	6.1	84
7	1.5	8.1	a2.6	42	44	24	173	263	1,940	25	11	43
8	1.8	3.8	a2.3	36	32	27	100	181	1,120	24	7.0	23
9	1.9	3.8	2.1	24	27	27	81	100	234	24	7.3	15
10	2.2	6.4	6.4	22	24	23	67	74	121	38	9.6	10
11	5.3	11	10	24	22	25	58	57	84	56	7.7	7.7
12	3.9	7.4	145	40	22	35	49	47	55	210	4.4	17
13	2.4	10	594	38	22	46	40	67	62	79	3.8	10
14	2.6	5.7	154	56	26	142	36	174	1,620	42	3.6	8.0
15	3.8	3.9	64	426	42	126	32	140	1,350	34	3.8	7.0
16	4.8	3.2	41	430	51	56	178	87	244	a45	19	4.8
17	9.6	4.4	34	188	44	45	348	110	140	a40	9.3	4.1
18	21	2.8	33	86	36	33	130	471	296	a35	8.3	8.0
19	15	2.8	27	65	26	34	81	216	186	a25	4.6	7.3
20	8.0	2.8	24	489	26	38	143	282	96	a20	5.1	6.4
21	5.1	3.1	21	819	24	44	742	364	65	a18	47	14
22	3.4	2.9	19	148	21	69	263	714	48	a15	34	28
23	2.8	2.4	18	83	17	77	144	197	36	a13	12	28
24	2.8	2.3	16	75	16	328	112	104	30	a11	6.1	16
25	9.3	4.6	17	101	16	1,310	345	194	26	a10	58	11
26	3.4	36	16	270	16	477	796	610	22	a11	86	9.2
27	2.4	119	16	287	15	181	234	212	36	a18	29	8.0
28	2.8	48	67	133	14	133	121	172	37	52	17	7.0
29	3.4	25	164	95	-	370	87	122	144	25	11	11
30	3.6	17	210	834	-	526	119	104	1,110	16	22	7.7
31	5.2	-	60	1,620	-	212	-	68	-	11	264	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	133.6	21	0.8	4.31	0.048	0.06
November	365.3	119	2.3	12.2	.136	.15
December	1,813.4	594	2.1	58.5	.651	.75
Calendar year 1946	26,849.2	2,270	.6	73.6	.820	11.12
January	7,227	1,620	22	233	2.59	2.99
February	1,320	295	14	47.1	.524	.55
March	4,497	1,510	13	145	1.61	1.86
April	8,238	1,790	32	275	3.06	3.41
May	7,237	714	47	233	2.59	2.99
June	12,825	2,220	22	428	4.77	5.32
July	1,398	251	10	45.1	.502	.58
August	733.2	264	3.6	23.7	.264	.30
September	835.2	269	4.1	27.8	.310	.35
Water year 1946-47	46,622.7	2,220	.8	128	1.43	19.31

Peak discharge.- Jan. 31 (8 a.m.) 2,140 sec.-ft.; Mar. 25 (6 p.m.) 1,620 sec.-ft.; Apr. 2 (6 p.m.) 2,220 sec.-ft.; June 3 (5 a.m.) 2,960 sec.-ft.; June 7 (8 p.m.) 3,030 sec.-ft.; June 14 (10 p.m.) 2,960 sec.-ft.

a No gage-height record; discharge computed on basis of records for station near Upper Sandusky.

Sandusky River near Upper Sandusky, Ohio

Location.- Water-stage recorder, lat. 40°51'02", long. 83°15'23", in sec. 21, T. 2 S., R. 14 E., at highway bridge, three-quarters of a mile upstream from Rock Run and 2 miles northeast of Upper Sandusky. Datum of gage is 792.8 feet above mean sea level, adjustment of 1912.
Drainage area.- 299 square miles.
Records available.- October 1921 to December 1935, January 1938 to September 1947.
Average discharge.- 23 years, 242 second-feet.
Extremes.- Maximum discharge during year, 6,330 second-feet June 3 (gage height, 9.56 feet); minimum, 1.6 second-feet Oct. 3-7 (gage height, 0.88 foot).
1921-35, 1938-47: Maximum discharge, 8,900 second-feet Dec. 15, 1927 (gage height, 10.5 feet); minimum, 0.9 second-foot Sept. 24, 1939; minimum gage height, 0.67 foot Sept. 6, 7, 1934.
Flood in June 1937 reached a stage of 14.3 feet, from marks in gage well.
Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Dec. 12, Sept. 25-30)

0.8	1.0	1.4	44	2.8	470
.9	2.5	1.5	60	3.4	765
1.0	6.0	1.7	98	5.0	1,710
1.1	12	1.9	145	7.0	3,180
1.2	19	2.1	202	8.6	4,730
1.3	30	2.4	304	9.4	5,910

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.5	7.6	47	260	2,410	45	497	1,130	208	1,050	47	354
2	2.0	8.2	31	220	635	45	1,980	1,380	1,730	370	38	298
3	1.9	8.8	26	660	395	45	3,450	1,240	5,770	199	36	128
4	1.6	11	24	930	*350	*45	1,130	685	4,490	132	33	76
5	1.6	12	20	416	260	45	710	710	960	98	30	60
6	1.6	12	18	265	190	50	a800	645	679	86	28	143
7	1.9	12	16	237	130	55	a550	546	4,660	86	28	202
8	2.0	13	14	241	100	70	391	685	4,730	78	41	102
9	1.8	12	13	158	90	75	286	391	2,310	73	71	65
10	1.8	15	12	113	80	75	231	265	710	111	49	47
11	1.9	19	13	90	75	75	196	202	425	234	36	37
12	2.2	22	34	92	70	78	178	164	297	342	33	34
13	2.4	36	712	98	70	98	148	156	228	a240	28	40
14	3.2	36	734	105	75	193	128	484	1,730	167	23	33
15	7.1	31	268	330	100	391	116	685	3,100	125	21	28
16	5.6	23	150	1,170	130	224	328	366	1,750	196	28	28
17	4.6	21	*109	792	130	142	1,050	308	551	158	58	23
18	16	19	74	391	110	96	570	675	672	132	38	21
19	47	15	69	241	90	105	327	825	848	98	29	17
20	33	14	92	528	85	90	312	466	434	82	28	15
21	23	12	76	2,130	80	86	1,380	1,270	268	69	53	18
22	23	10	64	a1,600	70	102	1,200	2,940	196	58	54	65
23	16	9.3	62	a900	60	138	560	1,240	150	52	65	116
24	9.3	8.8	52	a500	55	256	382	515	120	49	40	78
25	9.3	8.8	57	304	55	2,010	549	657	105	44	33	50
26	9.8	14	49	470	55	2,210	2,060	1,590	92	41	180	36
27	7.6	60	47	820	50	777	1,290	930	84	47	240	28
28	17	199	55	528	45	410	520	650	86	71	102	22
29	12	109	175	354	-	608	334	610	94	138	65	22
30	9.8	65	412	1,310	-	1,350	319	416	999	90	64	21
31	8.8	-	327	3,630	-	777	-	290	-	60	67	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	287.3	47	1.6	9.27	0.031	0.04
November	843.5	199	7.6	28.1	.094	.10
December	3,852	734	12	124	.415	.48
Calendar year 1946	73,636.5	4,960	1.6	202	.676	9.15
January	19,883	3,630	90	641	2.14	2.47
February	6,045	2,410	45	216	.722	.75
March	10,766	2,210	45	347	1.16	1.34
April	21,772	3,450	116	726	2.43	2.71
May	23,116	2,940	156	748	2.49	2.87
June	38,476	5,770	84	1,283	4.29	4.79
July	4,776	1,050	41	154	.515	.59
August	1,686	240	21	54.4	.182	.21
September	2,207	354	15	73.6	.246	.27
Water year 1946-47	133,709.8	5,770	1.6	366	1.22	16.62

Peak discharge.- Jan. 31 (6 p.m.) 3,900 sec.-ft.; Apr. 3 (4 p.m.) 3,540 sec.-ft.; May 22 (10 a.m.) 3,180 sec.-ft.; June 3 (12 p.m.) 6,330 sec.-ft.; June 7 (3 p.m.) 6,110 sec.-ft.; June 15 (11:30 p.m.) 3,450 sec.-ft.
* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for station near Bucyrus.
Note.- Stage-discharge relation affected by ice Jan. 1, 2, Feb. 4 to Mar. 11.

Sandusky River near Mexico, Ohio

Location.- Water-stage recorder, lat. 41°02'39", long. 83°11'42", in sec. 13, T. 1 N., R. 14 E., at highway bridge, 3 miles upstream from Honey Creek and 4½ miles north of Mexico. Datum of gage is 733.1 feet above mean sea level, adjustment of 1912.

Drainage area.- 776 square miles.

Records available.- March 1923 to December 1935, July 1938 to September 1947.

Average discharge.- 21 years, 547 second-feet.

Extremes.- Maximum discharge during year, 10,500 second-feet June 8 (gage height, 16.68 feet); minimum, 9.6 second-feet Oct. 10, 11 (gage height, 1.62 feet).
1923-35, 1938-47: Maximum discharge observed, 15,200 second-feet Mar. 22, 1927 (gage height, 19.9 feet); minimum discharge, 1.8 second-feet (regulated) Oct. 31, 1942. Flood in June 1937 reached a stage of 22.5 feet, from information by local residents

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

Rating tables, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 10 to Nov. 28, Sept. 27-30)

Oct. 1 to June 8						June 9 to Sept. 30			
1.6	9.0	2.5	131	8.0	2,400	1.9	45	3.2	303
1.65	12	2.9	213	9.6	3,440	2.1	74	3.7	432
1.7	16	3.4	336	13.0	6,220	2.4	127	4.1	554
1.8	28	4.1	554	16.3	9,990				
2.0	51	5.0	895			Note.- Same as preceding table above 4.1 feet.			
2.2	80	6.6	1,630						

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	39	117	520	5,860	95	1,380	1,420	699	1,540	96	201
2	15	41	93	331	4,680	95	3,550	2,640	2,910	1,240	77	521
3	15	38	70	805	1,380	95	4,760	3,160	7,670	538	71	432
4	14	34	66	1,430	500	95	4,680	2,160	9,080	328	64	353
5	13	30	64	1,340	*310	*100	2,760	2,040	8,720	238	59	272
6	11	27	58	775	230	100	2,160	1,530	3,700	194	58	405
7	11	36	54	486	200	120	2,040	1,380	5,920	186	53	432
8	11	41	51	392	170	140	1,240	1,380	9,990	168	58	538
9	11	41	48	356	150	146	737	1,110	9,470	158	84	298
10	10	44	51	302	140	142	554	699	5,680	183	108	190
11	11	50	58	224	130	152	454	486	1,700	272	91	131
12	14	59	121	218	120	152	422	392	895	460	71	127
13	14	66	774	213	120	193	364	364	643	699	60	127
14	23	65	1,290	209	130	450	310	1,250	2,050	521	60	127
15	16	65	773	548	140	718	272	1,380	3,650	316	74	119
16	14	57	378	1,780	160	718	423	935	4,200	497	62	91
17	16	54	248	1,980	200	438	1,730	794	2,240	374	62	76
18	57	47	*170	1,200	200	292	1,930	1,930	1,430	274	118	66
19	66	41	146	625	170	260	1,160	1,930	1,630	281	151	60
20	65	36	133	927	140	218	767	1,430	1,290	223	176	56
21	61	34	150	3,720	130	211	2,160	1,550	737	179	320	59
22	46	32	129	a3,200	120	229	2,760	4,840	506	149	168	151
23	38	30	113	a1,700	110	285	1,830	4,360	392	127	112	230
24	34	26	113	1,020	110	658	1,060	3,020	320	110	108	279
25	33	24	99	895	100	3,070	1,300	3,440	274	94	94	208
26	36	43	83	1,200	100	4,120	3,510	4,840	238	89	395	127
27	32	108	93	1,680	100	3,160	3,510	4,040	216	93	506	91
28	27	218	113	1,480	95	1,580	2,160	4,040	194	108	316	72
29	28	255	213	915	-	1,480	1,040	2,820	190	137	201	65
30	31	164	520	2,110	-	2,520	815	1,530	296	179	212	64
31	36	-	699	5,590	-	2,280	-	998	-	133	268	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	825	66	10	26.6	0.034	0.04
November	1,845	255	24	61.5	.079	.09
December	7,088	1,290	48	229	.295	.34
Calendar year 1946	165,489.9	8,480	8.2	453	.584	7.94
January	38,171	5,590	209	1,231	1.59	1.83
February	15,995	5,860	95	571	.736	.77
March	24,512	4,120	95	784	1.01	1.16
April	51,838	4,760	272	1,728	2.23	2.49
May	63,888	4,840	364	2,061	2.66	3.07
June	86,930	9,990	190	2,898	3.73	4.16
July	10,088	1,540	89	325	4.19	.48
August	4,353	506	53	140	.180	.21
September	5,968	538	56	199	.256	.29
Water year 1946-47	311,301	9,990	10	853	1.10	14.93

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for station near Bucyrus.
Note.- Stage-discharge relation affected by ice Feb. 4 to Mar. 7.

Sandusky River near Fremont, Ohio

Location.- Water-stage recorder, lat. 41°18'28", long. 83°09'32", in sec. 17, T. 4 N., R. 15 E., at highway bridge, 2½ miles downstream from Wolf Creek and 3½ miles southwest of Fremont. Datum of gage is 626.3 feet above mean sea level, adjustment of 1912.

Drainage area.- 1,248 square miles.

Records available.- November 1923 to December 1935, July 1938 to September 1947. November 1898 to March 1901 at site 4 miles downstream.

Average discharge.- 21 years (1923-35, 1938-47), 860 second-feet.

Extremes.- Maximum discharge during year, 17,500 second-feet June 3 (gage height, 8.30 feet); minimum, 14 second-feet Oct. 9 (gage height, 0.92 foot).
1923-35, 1938-47: Maximum discharge (not determined) occurred Jan. 15, 1930; maximum gage height, 11.4 feet Mar. 3, 1940 (ice jam); minimum discharge, 5.0 second-feet Sept. 27, 28, 1941 (gage height, 0.80 foot).

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

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Dec. 15-18, 20-24, 26, 28-31)

0.9	10	1.6	320	3.9	4,320
1.0	28	1.9	560	5.0	7,250
1.1	56	2.2	905	6.5	11,700
1.2	94	2.6	1,560	8.0	16,400
1.4	194	3.2	2,730		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	39	218	700	8,110	120	2,480	1,720	1,470	1,170	162	490
2	23	39	156	600	6,690	120	4,880	3,610	5,810	1,910	122	507
3	24	45	117	1,240	2,860	120	6,970	4,200	16,400	968	103	718
4	24	42	99	2,340	1,450	120	6,280	3,500	12,600	516	94	498
5	24	36	90	2,260	450	*120	5,470	4,320	11,400	363	86	542
6	23	42	86	1,380	*340	130	4,700	3,380	6,640	274	79	1,510
7	19	42	79	814	280	140	3,380	2,670	9,020	248	67	1,610
8	19	48	75	560	240	150	2,280	2,540	16,100	224	86	866
9	15	50	71	500	210	160	1,400	2,060	13,900	212	83	610
10	17	53	71	460	190	180	978	1,350	9,280	206	90	363
11	19	50	79	430	180	200	801	905	3,570	320	112	242
12	19	67	122	410	170	230	729	694	1,740	424	108	194
13	17	75	965	400	160	340	640	620	1,180	718	86	183
14	15	75	1,650	416	180	895	542	2,650	2,530	879	79	178
15	17	83	1,430	1,210	210	1,490	472	3,270	4,570	525	140	156
16	19	86	764	2,560	240	1,150	630	2,360	4,700	464	206	151
17	21	83	481	3,050	250	788	2,650	1,600	3,640	1,190	126	122
18	45	79	*356	2,020	240	507	2,940	3,420	1,970	551	99	103
19	79	75	310	1,180	200	440	2,080	2,940	2,140	440	131	86
20	83	67	267	1,290	180	378	1,560	2,460	2,040	378	162	79
21	75	64	361	5,600	160	363	4,440	1,820	1,300	294	284	79
22	75	53	242	5,200	150	392	4,440	7,010	827	242	313	140
23	64	53	200	3,500	140	481	3,270	6,280	610	218	200	300
24	53	50	156	2,000	130	894	2,010	4,320	490	178	145	320
25	50	42	150	1,540	130	4,610	1,850	6,660	408	156	151	320
26	53	64	162	1,820	120	5,870	5,340	8,980	349	145	308	224
27	50	94	170	2,710	120	4,570	5,210	6,000	313	135	683	156
28	45	212	194	2,480	120	2,840	3,720	5,080	300	140	570	122
29	45	370	378	1,780	-	2,520	2,060	4,950	261	151	327	108
30	39	300	610	3,730	-	4,080	1,380	2,940	267	183	551	94
31	39	-	892	10,500	-	3,610	-	1,910	-	212	580	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,129	83	15	36.4	0.029	0.03
November	2,478	370	36	82.6	.066	.07
December	11,001	1,650	71	355	.284	.33
Calendar year 1946	249,522	12,900	13	684	.548	7.43
January	64,680	10,500	400	2,086	1.67	1.92
February	23,900	8,110	120	854	.684	.71
March	38,008	5,870	120	1,226	.982	1.13
April	85,582	6,970	472	2,853	2.29	2.56
May	106,219	8,980	620	3,426	2.75	3.17
June	135,825	16,400	261	4,528	3.63	4.05
July	14,034	1,910	135	453	.363	.42
August	6,333	683	67	204	.163	.19
September	11,071	1,610	79	369	.296	.33
Water year 1946-47	500,260	16,400	15	1,371	1.10	14.91

Peak discharge.- Jan. 31 (9 a.m.) 11,400 sec.-ft.; Apr. 2 (11:30 p.m.) 7,820 sec.-ft.; May 22 (1:30 p.m.) 8,400 sec.-ft.; May 26 (8 a.m.) 9,580 sec.-ft.; June 3 (12 m.) 17,500 sec.-ft.; June 8 (9:30 a.m.) 16,800 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 19, 25, 27, Jan. 1, 2, 9-13, 21-24, Feb. 5 to Mar. 13 (no gage-height record Feb. 9-14).

Havens Creek at Havens, Ohio

Location.- Water-stage recorder, lat. 41°17'40", long. 83°11'55", in sec. 24, T. 4 N., R. 14 E., at bridge on State Highway 12, three-quarters of a mile southwest of Havens, Sandusky County, and 1¾ miles above mouth.
Drainage area.- 5.00 square miles.
Records available.- August 1946 to September 1947.
Extremes.- Maximum discharge during period, 150 second-feet June 2 (gage height, 4.55 feet); no flow on many days.
Remarks.- Records poor.

Rating table, Aug. 21, 1946, to Sept. 30, 1947, except period of ice effect
(gage height, in feet, and discharge, in second-feet)

0.5	0	0.9	1.1	1.5	6.2	2.5	28
.6	.1	1.0	1.7	1.7	8.8	3.0	47
.7	.3	1.1	2.4	1.9	12	3.4	67
.8	.6	1.3	4.1	2.1	16	3.8	91

Discharge, in second-feet, 1946-47

1946

Day	Discharge	Day	Discharge
Aug. 21	0	Aug. 27	0
22	.1	28	0
23	.2	29	0
24	.1	30	0
25	0	31	0

1946-47

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0	0.2	0.5	6.0	0	4.4	3.8	14	0	0	1.6
2	0	0	0	3.2	4.7	0	7.4	5.6	79	0	0	7.4
3	0	0	0	7.0	4.2	0	4.7	3.3	42	0	0	1.5
4	0	0	0	4.4	b2.5	0	3.6	2.2	3	0	0	.1
5	0	0	.1	3.2	*b1.6	*0	6.4	2.9	6.8	0	0	6.7
6	0	0	.1	2.1	b.7	0	6.4	2.0	3.6	0	0	14
7	0	0	.2	1.6	b.4	0	3.1	3.2	8.3	0	0	4.7
8	0	0	.2	.9	.2	0	2.3	2.1	6.6	0	0	1.8
9	0	0	.1	.6	.2	0	1.8	1.0	3.2	0	0	.6
10	0	0	.4	.5	.1	.1	1.5	.5	1.5	0	0	0
11	0	.1	.8	3.3	.1	.2	1.6	.4	.5	0	0	0
12	0	.1	2.4	4.2	.1	.4	1.4	.3	.2	0	0	.1
13	0	0	4.0	2.5	.1	.8	.6	1.9	.1	0	0	.2
14	0	0	2.0	1.2	.2	6.6	.6	7.6	.4	0	0	0
15	0	0	1.0	3	.3	5.4	.4	4.0	.2	0	0	0
16	0	.1	.8	5	.2	3.2	7.2	2.6	.1	.7	0	0
17	0	.1	1.0	3	.1	1.4	6.6	2.5	0	.3	0	0
18	.2	0	.7	1.8	.2	.7	3.9	3.6	.1	0	0	0
19	0	0	.4	1.5	.1	1.1	2.7	2.3	0	.1	0	0
20	0	0	.3	4	.2	1.0	14	1.3	0	0	0	0
21	0	0	.4	5	.2	1.5	14	2.8	0	0	0	.3
22	0	0	.3	4	.1	2.0	6.3	4.4	0	0	0	1.3
23	0	0	.4	2.8	.1	2.6	4.5	2.3	0	0	0	.4
24	0	0	.5	2.0	0	5.1	3.5	1.3	0	0	0	0
25	0	0	.4	2.5	0	17	4.4	19	0	0	1.6	0
26	0	.3	.4	4	0	7.5	5.5	14	0	0	1.9	0
27	0	.9	.5	3	0	5.0	3.2	6.2	0	0	0	0
28	0	.4	3.8	2.4	0	5.1	1.9	8.8	0	0	0	0
29	0	.2	3.1	2.0	-	8.7	1.5	6.3	0	0	0	0
30	0	.2	2.3	*80	-	5.4	2.8	4.2	0	0	1.8	0
31	0	-	1.0	17	-	4.4	-	2.4	-	0	.6	-

* Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.- No gage-height record Nov. 12-14, Jan. 13-30; discharge computed on basis of weather records and recorded range in stage.

Monthly discharge, in second-feet, 1946-47

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
August 21-31, 1946	0.4	0.2	0	0.04	0.0080	0.003
September	0	0	0	0	0	0
Water year	-	-	-	-	-	-
Ootober 1946	.2	.2	0	.01	.0020	.002
November	2.4	.9	0	.08	.016	.02
December	27.8	4.0	0	.90	.180	.21
Calendar year	-	-	-	-	-	-
January 1947	178.2	80	.5	5.75	1.15	1.33
February	22.6	6.0	0	.81	.162	.17
Maroh	85.2	17	0	2.75	.550	.63
April	128.2	14	.4	4.27	.854	.95
May	124.8	19	.3	4.03	.806	.93
June	179.6	79	0	5.99	1.20	1.34
July	1.1	.7	0	.04	.0080	.009
Auguat	5.9	1.9	0	.19	.038	.04
September	40.7	14	0	1.36	.272	.30
Water year 1946-47	796.7	80	0	2.18	.436	5.93

Black River at Elyria, Ohio

Location.- Water-stage recorder, lat. 41°22'50", long. 82°06'15", in T. 6 N., R. 17 W., at Elyria, Lorain County, three-quarters of a mile below confluence of East and West Branches.

Drainage area.- 392 square miles.

Records available.- October 1944 to September 1947. May 1903 to July 1906 at site about 5½ miles downstream, published as Black River near Elyria.

Extremes.- Maximum discharge during year, 8,930 second-feet June 3 (gage height, 14.29 feet); minimum, 1.9 second-feet Oct. 1, 2.
1944-47: Maximum discharge, that of June 3, 1947; minimum, 0.4 second-foot Oct. 5, 1945.

Remarks.- Records good except those below 10 second-feet or those for periods of ice effect or no gage-height record, which are fair.

Rating table, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Dec. 12, June 23-29, July 3-22, July 26 to Aug. 6, Aug. 11-14, 16-29)

0.55	1.9	0.9	16	1.9	132	5.5	1,350
.6	3.0	1.0	22	2.4	226	7.0	2,280
.65	4.4	1.1	30	3.0	367	9.0	3,770
.7	6.1	1.3	49	3.7	577	11.0	5,490
.8	10	1.5	73	4.5	880	13.8	8,350

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.1	12	48	b100	3,130	29	1,250	297	292	440	19	1,020
2	2.1	11	37	165	594	29	4,520	1,150	4,040	187	17	3,390
3	2.6	10	29	657	302	28	4,800	860	8,350	88	16	1,310
4	3.0	10	24	925	243	29	1,250	481	3,930	53	15	300
5	2.6	9.8	23	466	178	29	2,620	2,770	691	40	15	173
6	2.1	10	21	269	b140	29	2,260	2,420	354	40	14	144
7	2.1	14	21	206	b110	29	932	1,880	1,180	38	110	119
8	2.8	15	21	102	b85	29	408	1,310	4,330	34	662	102
9	3.0	13	21	b85	b65	30	267	512	4,010	37	525	74
10	3.0	13	*28	b75	b55	32	216	302	973	36	119	57
11	3.6	23	48	63	b50	33	186	210	354	31	59	43
12	7.6	15	243	70	b50	37	153	162	208	30	37	37
13	4.4	21	1,170	77	b50	45	132	180	160	40	27	30
14	3.3	30	821	88	b55	72	116	1,080	1,930	44	39	24
15	4.1	23	283	846	74	116	101	1,490	2,840	34	127	24
16	4.7	17	147	*1,820	81	130	302	496	1,020	36	81	22
17	7.8	16	110	1,110	79	110	1,350	395	304	43	59	21
18	33	14	91	436	70	86	670	1,200	220	54	42	20
19	17	13	84	232	61	69	328	755	466	56	28	19
20	39	12	79	1,190	b50	60	1,150	394	256	39	21	16
21	24	12	60	3,210	*b45	61	4,860	551	151	40	38	35
22	14	16	46	1,100	b40	69	2,580	1,700	106	34	88	44
23	9.4	20	43	341	b35	93	700	1,040	80	206	41	35
24	7.7	20	41	278	b35	283	466	341	65	409	24	38
25	15	27	46	481	b35	1,620	1,010	352	54	154	20	41
26	6.5	54	50	983	b30	1,250	3,050	2,040	48	84	a35	30
27	6.5	249	43	1,350	b30	481	1,450	1,470	42	53	a85	22
28	8.6	236	54	642	b30	512	560	2,270	37	43	24	19
29	7.7	124	114	367	-	1,320	367	3,140	39	34	35	24
30	7.3	70	169	2,250	-	3,370	269	734	830	28	195	21
31	10	-	b130	6,450	-	2,030	-	367	-	22	1,050	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	266.6	39	2.1	8.60	0.022	0.03
November	1,129.8	249	9.8	37.7	.096	.11
December	4,145	1,170	21	134	.342	.39
Calendar year 1946	68,499.0	7,170	1.4	188	.480	6.51
January	26,434	6,450	63	853	2.18	2.51
February	5,802	3,130	30	207	.528	.55
March	12,140	3,370	28	392	1.00	1.15
April	38,323	4,860	101	1,277	3.26	3.64
May	32,349	3,140	162	1,044	2.66	3.07
June	37,360	8,350	37	1,245	3.18	3.55
July	2,507	440	22	80.8	.206	.24
August	3,667	1,050	14	118	.301	.35
September	7,254	3,390	16	242	.617	.69
Water year 1946-47	171,377.4	8,350	2.1	470	1.20	16.28

Peak discharge.- Jan. 31 (7 p.m.) 6,950 sec.-ft.; Apr. 3 (4 a.m.) 6,050 sec.-ft.; Apr. 21 (7 p.m.) 5,130 sec.-ft.; May 29 (5 a.m.) 4,330 sec.-ft.; June 3 (3 a.m.) 8,930 sec.-ft.; June 9 (4 a.m.) 5,040 sec.-ft.

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for Rocky River near Berea.
b Stage-discharge relation affected by ice.

Rocky River near Berea, Ohio

Location.- Water-stage recorder, lat. 41°24'22", long. 81°53'13", in T. 6 N., R. 15 W., at highway bridge just below confluence of East and West Branches and 2 miles northwest of Berea, Cuyahoga County. Datum of gage is 649.9 feet above mean sea level, datum of 1929 (Cuyahoga County benchmark).

Drainage area.- 269 square miles.

Records available.- November 1923 to September 1935, September 1943 to September 1947.

Average discharge.- 16 years, 249 second-feet.

Extremes.- Maximum discharge during year, 13,700 second-feet June 3 (gage height, 9.35 feet); minimum, 2.4 second-feet Oct. 5-7.

1923-35, 1943-47: Maximum discharge observed, 17,000 second-feet Aug. 7, 1935, from rating curve extended above 8,000 second-feet; maximum stage observed, 18.6 feet June 29, 1924 (backwater caused by tornado); minimum discharge, 0.2 second-foot Sept. 2, 1932, Aug. 18, 19, 22, 27, 28, 30, 31, 1933.

Maximum stage known, 20.9 feet in March 1913.

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.0	13	35	102	630	25	1,910	267	227	90	14	409
2	3.2	13	35	110	305	25	5,960	879	5,050	42	12	1,680
3	3.0	12	30	753	202	25	2,110	520	8,860	26	11	464
4	2.5	12	29	515	181	30	613	383	988	24	11	137
5	2.5	11	25	220	129	30	2,610	2,050	400	21	10	87
6	2.5	11	22	171	100	30	1,680	1,280	271	27	10	72
7	2.5	14	22	132	75	30	526	1,170	1,190	40	10	58
8	2.8	14	23	100	55	30	279	614	1,700	34	16	a45
9	2.8	13	22	70	45	35	216	301	565	34	14	a40
10	3.0	16	*29	60	40	35	181	212	258	25	a12	a30
11	a4	23	117	45	40	35	152	162	156	31	a10	a25
12	a6	24	194	50	40	44	134	137	110	29	a9	a20
13	a4	35	995	60	40	65	115	146	83	43	h7.4	a19
14	a3	*28	298	85	45	152	100	721	3,220	46	a20	a18
15	5.4	20	115	*1,250	60	258	90	426	2,500	32	46	a16
16	6.4	18	65	1,440	70	143	484	231	400	25	23	a15
17	5.7	16	63	611	70	104	863	220	227	54	16	14
18	25	15	60	250	60	76	323	595	202	94	14	14
19	77	16	55	156	50	61	209	323	258	52	11	13
20	44	17	50	1,530	45	61	1,270	498	140	36	10	13
21	22	16	46	2,430	*40	67	4,100	532	97	36	36	15
22	15	15	35	358	35	90	848	2,240	72	46	20	38
23	12	12	30	220	30	173	410	493	60	379	16	47
24	11	15	32	181	30	940	409	238	47	165	14	35
25	16	16	42	454	25	2,320	1,270	1,120	41	69	12	22
26	16	44	30	830	25	478	2,290	3,190	38	51	22	17
27	15	281	38	742	25	454	586	568	35	44	52	15
28	23	134	36	309	25	449	514	3,450	31	29	35	14
29	18	69	120	205	-	1,110	296	1,470	31	22	21	16
30	14	46	168	2,750	-	2,370	227	565	78	20	980	16
31	14	-	110	4,730	-	1,910	-	287	-	15	1,920	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	385.3	77	2.5	12.4	0.046	0.05
November	989	281	11	33.0	.123	.14
December	2,971	995	22	95.8	.356	.41
Calendar year 1946	56,234.2	7,500	2.4	154	.572	7.77
January	20,919	4,730	45	675	2.51	2.89
February	2,517	630	25	89.9	.334	.35
March	11,655	2,370	25	376	1.40	1.61
April	30,775	5,960	90	1,026	3.81	4.25
May	25,288	3,450	137	816	3.03	3.49
June	27,335	8,860	31	911	3.39	3.78
July	1,681	379	15	54.2	.201	.23
August	3,414.4	1,920	7.4	110	.409	.47
September	3,424	1,680	13	114	.424	.47
Water year 1946-47	131,353.7	8,860	2.5	360	1.34	18.14

Peak discharge.- Jan. 31 (4 a.m.) 7,500 sec.-ft.; Apr. 2 (5 p.m.) 7,270 sec.-ft.; Apr. 21 (5 a.m.) 5,310 sec.-ft.; May 28 (7 p.m.) 5,730 sec.-ft.; June 3 (2 a.m.) 13,700 sec.-ft.; June 14 (7 p.m.) 6,160 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and records for Black River at Elyria.

h Computed from tape-gage readings.

Note.- Stage-discharge relation affected by ice Dec. 2, 3, 19, 20, Jan. 9-14, Feb. 6 to Mar. 11.

Cuyahoga River at Hiram Rapids, Ohio

Location.- Water-stage recorder, lat. 41°20'27", long. 81°10'01", in T. 5 N., R. 7 W., at Hiram Rapids, Portage County, 0.6 mile downstream from Black Brook. Prior to Oct. 23, 1946, wire-weight gage at same site and datum.

Drainage area.- 147 square miles.

Records available.- October 1944 to September 1947. August 1927 to December 1935 at site 2½ miles downstream, published as Cuyahoga River near Hiram.

Extremes.- Maximum discharge during year, 1,690 second-feet Apr. 3 (gage height, 5.36 feet); minimum, 24 second-feet July 4, Sept. 18; minimum gage height, 1.05 feet July 4. 1927-35, 1944-47: Maximum discharge, 2,260 second-feet Jan. 20, 1929 (gage height, 8.2 feet, site and datum then in use); minimum, 5.1 second-feet Sept. 2, 1933.

Remarks.- Records good. Flow regulated by East Branch Reservoir. Gage read twice daily prior to Oct. 23, 1946.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Aug. 20						Aug. 20 to Sept. 30			
1.1	27	1.7	84	2.8	357	1.1	23	1.7	69
1.2	34	1.9	114	3.2	525	1.2	28	1.9	97
1.3	42	2.2	171	4.0	915	1.3	34	2.1	134
1.5	61	2.5	252	5.3	1,630	1.5	49	2.4	215

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	33	88	b178	990	72	815	320	642	45	29	94
2	43	32	64	163	915	71	1,250	265	765	43	28	141
3	42	31	51	225	715	b64	1,630	228	1,140	40	28	188
4	39	31	46	240	512	b56	1,510	211	1,510	36	31	209
5	38	30	43	b243	327	b64	1,480	262	1,340	33	32	200
6	37	28	45	b225	b246	71	1,480	346	1,020	33	30	172
7	36	28	47	b190	b206	79	1,310	450	840	35	27	139
8	35	30	48	148	b178	b91	1,020	476	790	36	28	109
9	35	32	47	b116	b144	97	765	433	604	37	34	82
10	34	32	*55	b87	b119	101	539	357	512	39	39	56
11	37	36	100	73	b104	*b116	380	275	412	40	41	41
12	45	51	128	87	b98	b144	299	214	331	41	42	34
13	59	56	228	95	b95	200	234	185	265	40	42	31
14	61	49	243	108	95	410	190	200	265	38	43	29
15	55	42	252	193	117	642	163	214	252	41	45	28
16	48	38	225	*320	142	840	190	222	228	51	46	26
17	47	40	188	b392	165	815	265	222	214	73	47	26
18	63	42	b150	b437	185	609	320	225	203	76	49	24
19	83	40	116	b380	b193	454	331	219	183	88	50	26
20	83	38	88	458	b181	335	374	292	158	90	51	32
21	77	36	65	594	b154	282	642	296	135	84	55	38
22	60	34	57	580	b129	268	815	446	112	73	59	51
23	51	33	54	715	b111	310	815	530	90	70	57	51
24	41	31	61	642	b94	467	690	599	71	68	56	47
25	38	33	68	642	80	690	594	690	59	60	55	45
26	41	63	65	690	74	613	618	915	53	49	55	44
27	46	114	b57	740	b73	666	613	965	51	43	49	46
28	42	124	107	715	b72	666	585	1,250	49	39	42	48
29	38	124	156	594	-	613	494	1,090	46	36	39	49
30	35	111	b178	594	-	609	396	940	46	33	47	48
31	34	-	b193	815	-	666	-	790	-	30	76	-

Month	Observed				Change in contents (equivalent, second-feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Psr square mile	Runoff in inchss
October	1,463	83	34	47.2	-7.2	40.0	0.272	0.31
November	1,442	124	28	48.1	+7.5	55.6	.378	.42
December	3,313	252	43	107	+25.7	133	.905	1.04
Calendar year 1946	60,895	1,060	22	167	-2.2	165	1.12	15.21
January	11,679	815	73	377	+24.7	402	2.73	3.15
February	6,514	990	72	233	-2.5	231	1.57	1.64
March	11,181	840	56	361	+3.0	364	2.48	2.86
April	20,807	1,630	163	694	-2.3	692	4.71	5.26
May	14,127	1,250	185	456	+.7	457	3.11	3.58
June	12,386	1,510	46	413	-1.8	411	2.80	3.12
July	1,540	90	30	49.7	-.2	49.5	.337	.39
August	1,352	76	27	43.6	+6.2	49.8	.339	.39
September	2,154	209	24	71.8	-17.8	54.0	.367	.40
Water year 1946-47	87,958	1,630	24	241	+3.0	244	1.66	22.56

* Winter discharge measurement made on this day.
† Change in contents in East Branch Reservoir.
b Stage-discharge relation affected by ice.

Cuyahoga River at Old Portage, Ohio

Location.- Water-stage recorder, lat. 41°08'04", long. 81°32'49", at old Portage, Summit County, at highway bridge 1¼ miles downstream from Little Cuyahoga River and 4 miles northwest of Akron.

Drainage area.- 405 square miles.

Records available.- September 1921 to December 1935, March 1939 to September 1947.

Average discharge.- 22 years, 418 second-feet.

Extremes.- Maximum discharge during year, 3,100 second-feet June 7 (gage height, 8.74 feet); minimum, 37 second-feet (regulated) Nov. 15.
1921-35, 1939-47: Maximum discharge, 3,820 second-feet Apr. 5, 1929; maximum gage height, 10.8 feet June 28, 1924; minimum discharge, 14 second-feet Aug. 27, 1944 (gage height, 0.47 foot).

Remarks.- Records good. Diurnal fluctuation caused by power plants above station. Flow regulated by reservoirs and lakes above station. At Lake Rockwell, about 16 miles above gage, an average of 55 second-feet was diverted for municipal supply of city of Akron. Sewage from city enters river below station.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Sept. 1				Sept. 1-30	
0.7	43	2.6	544	1.1	58
.8	56	4.4	1,170	1.3	92
.9	72	7.0	2,250	1.5	134
1.0	92	8.2	2,830	2.1	289
1.6	243			3.4	672

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	61	68	124	272	1,560	145	1,730	793	1,240	199	120	380
2	60	75	161	425	1,480	128	2,680	742	2,350	159	89	535
3	51	53	127	640	1,360	147	2,680	674	2,850	147	83	647
4	68	61	131	624	1,130	141	2,300	691	2,390	75	88	533
5	70	89	108	512	759	147	2,440	1,060	2,300	132	106	489
6	46	75	125	480	512	153	2,350	948	2,160	123	111	416
7	52	99	120	433	464	146	2,070	948	2,540	177	107	372
8	79	82	108	345	418	151	1,810	912	2,390	151	110	358
9	73	94	128	282	322	146	1,520	878	2,120	134	93	248
10	64	63	198	275	340	225	1,130	776	1,810	167	78	156
11	56	96	208	158	316	260	878	674	1,360	180	85	147
12	174	86	277	175	326	303	725	592	1,090	152	93	350
13	80	76	512	175	299	289	576	633	861	145	122	207
14	84	81	480	190	193	401	512	759	810	159	80	146
15	94	78	433	496	216	560	433	808	793	184	125	174
16	88	85	418	759	222	691	640	576	691	184	329	122
17	107	76	388	725	305	810	759	708	592	189	309	118
18	448	60	313	691	370	861	674	759	624	217	220	97
19	240	86	267	657	331	742	674	776	544	246	212	113
20	154	83	155	1,020	319	608	1,070	948	496	251	400	76
21	158	85	159	1,280	289	512	1,810	1,130	424	251	315	132
22	128	82	259	948	282	448	1,560	1,520	398	346	235	274
23	116	83	242	759	278	480	1,360	1,280	341	326	145	128
24	107	62	133	912	246	742	1,440	1,090	223	247	127	105
25	119	68	107	1,060	166	1,210	1,480	1,770	193	225	306	101
26	123	94	132	1,130	146	1,020	1,520	2,350	194	183	758	97
27	81	230	88	1,170	146	912	1,240	1,900	191	143	335	61
28	104	282	94	1,060	156	1,020	1,130	1,900	155	172	235	78
29	107	281	167	984	-	1,170	1,020	2,160	134	140	190	153
30	109	132	240	1,400	-	1,280	912	1,770	247	133	188	100
31	80	-	305	1,900	-	1,440	-	1,400	-	127	600	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	3,381	448	46	109		
November	2,965	282	53	98.8		
December	6,707	512	88	216		
Calendar year 1946	116,290	1,850	42	319		
January	21,937	1,900	158	708		
February	12,951	1,560	146	463		
March	17,288	1,440	128	558		
April	41,123	2,660	433	1,371		
May	33,725	2,350	576	1,088		
June	32,491	2,830	134	1,083		
July	5,664	346	75	183		
August	6,394	758	78	206		
September	6,913	647	61	230		
Water year 1946-47	191,539	2,830	46	525		

Cuyahoga River at Independence, Ohio

Location.- Water-stage recorder, lat. 41°23'44", long. 81°37'54", in T. 6 N., R. 12 W., at highway bridge 1 mile northeast of Independence. Datum of gage is 584.14 feet above mean sea level (levels by city of Cleveland).
Drainage area.- 709 square miles.
Records available.- September 1903 to July 1906, September 1921 to May 1923, September 1927 to December 1935, March 1940 to September 1947.
Average discharge.- 16 years (1921-22, 1927-35, 1940-47), 684 second-feet.
Extremes.- Maximum discharge during year, 11,000 second-feet June 2 (gage height, 19.07 feet); minimum, 74 second-feet Oct. 7 (gage height, 2.43 feet).
1921-23, 1927-35, 1940-47: Maximum discharge, that of June 2, 1947; minimum, 14 second-feet Nov. 30, 1930; minimum combined discharge of river and canal, 48 second-feet Aug. 29, 1933.
Remarks.- Records good. Diurnal fluctuation caused by power plants above station. Flow slightly regulated by reservoirs and lakes above station. A small amount of water from Tuscarawas River is diverted into this basin at Portage Lakes. Water diverted into Ohio Canal at Brecksville, 6 miles above station, bypasses station; measurements of canal during water year 1946-47 are as follows:

Date	Second-feet	Date	Second-feet
Oct. 15	47.6	Apr. 24	53.0
Nov. 15	61.4	June 5	51.1
Dec. 9	60.4	July 14	61.4
Jan. 15	55.0	Aug. 12	56.4
Feb. 20	65.7	Sept.17	48.9

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	138	141	208	413	2,920	232	4,100	1,300	1,950	315	197	834
2	107	124	226	686	2,200	224	7,160	1,450	5,990	267	189	1,440
3	104	128	234	1,900	1,850	240	6,080	1,200	8,440	264	162	1,000
4	100	103	212	1,350	1,650	238	4,040	1,150	4,680	240	160	729
5	109	134	200	926	1,180	237	5,800	3,020	3,380	194	171	600
6	104	143	195	726	834	231	4,480	2,360	3,020	192	185	514
7	81	143	190	606	666	237	3,380	2,200	3,440	248	178	423
8	113	169	179	530	587	252	2,700	1,750	4,680	238	170	396
9	116	152	175	420	492	243	2,260	1,450	3,320	243	172	347
10	122	143	273	420	474	263	1,850	1,250	2,700	289	157	278
11	111	171	572	316	474	378	1,450	1,020	2,050	267	122	233
12	258	229	854	357	456	408	1,200	879	1,600	454	148	223
13	238	164	1,700	326	452	480	926	856	1,300	297	158	525
14	126	152	1,000	364	406	946	790	1,600	5,070	278	200	300
15	149	145	768	1,550	587	1,020	666	1,200	2,220	279	156	225
16	145	140	606	2,050	530	1,030	1,630	975	1,400	364	334	238
17	142	170	626	1,550	530	1,050	1,850	950	1,080	356	398	202
18	689	122	492	1,150	587	1,100	1,400	1,350	1,120	366	292	196
19	511	136	413	950	511	1,010	1,100	1,180	975	370	277	177
20	289	143	309	3,080	474	822	2,540	2,050	790	347	316	185
21	238	137	265	3,140	427	716	5,160	2,190	706	358	538	165
22	226	145	316	1,800	401	705	3,200	4,200	597	654	357	498
23	198	136	350	1,300	376	911	2,360	2,530	522	1,200	282	300
24	178	129	340	1,400	370	2,000	2,310	1,900	434	500	237	223
25	172	108	238	1,850	296	3,320	2,920	3,420	354	372	246	195
26	268	479	186	2,050	247	2,050	3,620	5,760	334	314	837	181
27	160	705	192	2,050	233	1,750	2,480	3,800	313	274	560	172
28	143	475	368	1,700	231	1,750	2,050	5,600	308	244	359	146
29	169	384	492	1,450	-	2,420	1,700	4,280	278	243	288	170
30	153	331	549	3,540	-	3,380	1,500	3,440	361	224	780	244
31	170	-	445	5,400	-	3,620	-	2,420	-	212	2,310	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	5,827	689	81	188		
November	5,981	705	103	199		
December	13,173	1,700	175	425		
Calendar year 1946	207,681	4,500	77	569		
January	45,350	5,400	316	1,463		
February	20,441	2,920	231	730		
March	33,263	3,620	224	1,073		
April	82,502	7,160	666	2,750		
May	68,730	5,760	856	2,217		
June	63,412	8,440	278	2,114		
July	10,463	1,200	192	338		
August	10,936	2,310	122	353		
September	11,359	1,440	146	379		
Water year 1946-47	371,437	8,440	81	1,018		

Little Cuyahoga River at Mogadore, Ohio

Location.- Water-stage recorder and concrete control, lat. 41°03'45", long. 81°23'40", in T. 1 N., R. 10 W., 0.8 mile north of Mogadore, Summit County, and three-quarters of a mile upstream from Fritch Outlet.

Drainage area.- 12.3 square miles.

Records available.- February 1946 to September 1947.

Extremes.- Maximum discharge during year, 143 second-feet June 7 (gage height, 3.15 feet); minimum, 0.8 second-foot Oct. 21, 22 (gage height, 0.32 foot).
1946-47: Maximum discharge, that of June 7, 1947; minimum, 0.6 second-foot Sept. 16-23, 1946; minimum gage height, 0.28 foot Sept. 16-21, 1946.

Remarks.- Records good. Flow regulated by Mogadore Reservoir.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting control method used Oct. 30 to Dec. 27, *June 23 to Sept. 30*)

0.3	0.7	0.9	12	1.5	64
.4	1.5	1.0	16	1.6	75
.5	2.6	1.1	20	1.7	82
.6	4.2	1.2	26	1.9	93
.7	6.3	1.3	35	2.3	109
.8	8.9	1.4	48		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.8	1.9	7.8	9.8	17	11	23	33	51	12	6.3	5.3
2	1.8	1.6	8.9	12	19	11	48	28	91	12	6.0	7.5
3	1.7	1.7	8.6	15	20	11	36	26	96	11	6.3	7.0
4	1.6	14	8.3	15	20	10	46	25	75	10	6.8	6.3
5	1.5	19	8.1	15	19	10	44	31	67	9.8	7.0	7.5
6	1.3	18	8.1	14	18	10	42	31	70	9.5	6.0	7.5
7	1.2	18	7.8	14	18	10	39	31	106	9.2	8.6	7.3
8	1.6	17	7.3	14	17	9.8	35	28	94	8.9	19	7.0
9	3.4	16	7.0	14	17	9.8	31	26	82	8.6	18	6.8
10	1.8	15	9.2	14	17	9.5	28	12	73	8.3	14	6.3
11	1.3	13	9.8	13	16	9.5	25	26	65	8.6	7.8	6.0
12	2.8	4.6	20	13	15	9.5	27	22	61	8.9	12	6.6
13	3.9	3.9	12	13	15	9.5	24	22	37	8.6	23	8.1
14	3.1	3.7	11	13	15	11	21	26	21	8.6	19	7.5
15	1.5	3.7	10	17	15	10	18	25	20	8.9	18	7.3
16	1.3	2.8	10	18	15	10	22	24	20	9.2	22	7.3
17	2.1	2.5	9.5	17	15	10	23	19	19	9.2	21	7.3
18	9.8	2.1	8.9	16	15	9.5	22	25	20	8.6	23	6.5
19	6.0	2.4	8.9	16	14	9.5	23	25	19	8.3	19	6.3
20	3.1	4.8	8.9	21	14	9.5	28	29	18	7.8	15	6.0
21	.8	5.0	8.9	20	14	9.5	44	33	18	7.5	16	6.5
22	.8	4.0	8.6	19	13	9.8	39	51	17	9.5	13	7.8
23	.9	3.4	8.9	19	13	10	36	45	15	11	11	6.5
24	.9	3.4	8.9	19	12	13	34	37	14	11	8.9	6.0
25	1.0	3.2	8.6	19	12	16	37	49	13	10	24	5.8
26	1.3	9.6	8.3	20	12	16	42	62	13	9.5	12	5.4
27	1.2	2.9	8.3	20	11	16	35	53	12	11	9.2	5.2
28	1.4	1.0	6.9	19	11	16	33	47	12	11	7.3	5.2
29	2.1	1.0	4.4	15	-	25	30	41	14	8.9	6.3	6.0
30	2.4	2.1	9.2	24	-	22	32	37	13	6.8	5.8	5.8
31	2.2	-	9.8	22	-	20	-	41	-	6.8	5.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	67.6	9.8	0.8	2.18		
November	201.3	19	1.0	6.71		
December	280.9	20	4.4	9.06		
Calendar year	-	-	-	-		
January	509.8	24	9.8	16.4		
February	429	20	11	15.3		
March	373.4	25	9.5	12.0		
April	967	48	18	32.2		
May	1,010	62	12	32.6		
June	1,246	106	12	41.5		
July	289.0	12	6.8	9.32		
August	396.3	24	5.0	12.8		
September	197.6	8.1	5.2	6.59		
Water year 1946-47	5,967.9	106	.8	16.4		

Little Cuyahoga River at Massillon Road, Akron, Ohio

Location.- Water-stage recorder and concrete control, lat. 41°03'35", long. 81°27'45", in T. 1 N., R. 10 W., at bridge on Massillon Road in Akron, Summit County, and 250 feet upstream from Springfield Lake Outlet.

Drainage area.- 31.0 square miles.

Records available.- February 1946 to September 1947.

Extremes.- Maximum discharge during year, 521 second-feet Aug. 25 (gage height, 2.81 feet); minimum, 4.4 second-feet Oct. 8 (gage height, 0.34 foot).
1946-47: Maximum discharge, that of Aug. 25, 1947; minimum, 3.8 second-feet Sept. 18, 1946 (gage height, 0.30 foot).

Remarks.- Records good. Flow regulated by Fritch Lake and Mogadore Reservoir.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Nov. 25, June 23 to Aug. 6, Aug. 8-29)

0.3	3.8	0.7	18	1.1	70	1.5	124
.4	6.2	.8	24	1.2	84	1.6	154
.5	9.3	.9	31	1.3	78	1.8	218
.6	13	1.0	40	1.4	98	2.1	312

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.6	7.3	13	16	46	17	72	62	92	26	18	29
2	5.1	6.7	15	44	36	18	156	60	275	24	18	26
3	5.1	6.7	15	62	36	18	67	55	224	22	18	22
4	5.1	16	15	37	36	18	57	65	135	21	19	20
5	4.9	23	15	29	31	18	61	102	111	20	18	27
6	9.3	22	15	24	29	19	61	76	114	20	18	24
7	10	23	14	23	29	19	60	78	306	21	17	22
8	6.0	22	13	22	26	19	55	65	227	19	29	21
9	6.4	20	13	21	26	19	52	58	164	21	31	19
10	5.9	20	28	20	25	18	48	45	154	20	26	18
11	4.9	26	27	22	24	18	43	48	136	24	19	18
12	18	14	50	24	23	19	44	49	124	21	19	33
13	10	9.6	47	22	24	20	41	63	105	19	35	30
14	19	9.0	25	28	27	34	37	81	66	21	32	21
15	6.2	8.3	19	62	31	26	34	58	57	27	39	19
16	5.4	8.3	18	54	29	21	67	54	50	28	92	19
17	8.0	10	20	36	26	19	62	61	43	26	76	18
18	51	14	16	29	26	18	50	73	51	23	44	17
19	19	7.3	15	27	24	17	47	70	43	22	36	17
20	11	9.0	14	92	21	17	98	81	37	21	35	17
21	7.3	9.6	16	65	21	18	141	106	36	22	29	22
22	6.4	9.0	15	45	19	21	78	135	33	34	28	33
23	5.9	7.6	17	31	19	24	64	86	31	34	24	16
24	5.9	8.3	18	35	18	47	75	68	29	26	22	15
25	8.3	15	16	42	19	55	96	145	27	23	122	13
26	9.0	38	15	53	19	35	99	166	28	22	116	12
27	11	28	15	45	18	37	73	111	26	22	38	12
28	11	12	23	37	17	39	67	96	27	24	27	12
29	7.0	9.3	17	32	-	51	58	88	27	21	22	16
30	7.0	8.6	19	119	-	83	57	76	34	19	25	14
31	7.3	-	17	95	-	83	-	70	-	19	70	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	302.0	51	4.9	9.74		
November	427.6	38	6.7	14.3		
December	595	50	13	19.2		
Calendar year	-	-	-	-		
January	1,293	119	16	41.7		
February	725	46	17	25.9		
March	885	83	17	28.5		
April	2,020	156	34	67.3		
May	2,451	166	45	79.1		
June	2,812	306	26	93.7		
July	712	34	19	23.0		
August	1,162	122	17	37.5		
September	602	33	12	20.1		
Water year 1946-47	13,986.6	306	4.9	38.3		

Springfield Lake Outlet at Akron, Ohio

Location.- Water-stage recorder and concrete control, lat. 41°03'20", long. 81°27'50", in T. 1 N., R. 10 W., in Akron, Summit County, 0.3 mile upstream from mouth and 3 miles downstream from Springfield Lake.

Drainage area.- 8.40 square miles.

Records available.- May 1946 to September 1947.

Extremes.- Maximum discharge during year, 139 second-feet Aug. 17 (gage height, 2.40 feet); minimum, 0.79 second-foot (regulated) Dec. 4 (gage height, 0.62 foot).
1946-47: Maximum discharge, that of Aug. 17, 1947; minimum, 0.59 second-foot Sept. 2, 1946 (gage height, 0.55 foot).

Remarks.- Records fair except those for periods of no gage-height record, which are poor. Flow regulated by Springfield Lake.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.7	1.07	1.2	4.8	1.7	23
.8	1.48	1.3	6.4	1.8	32
.9	1.97	1.4	8.9	1.9	46
1.0	2.6	1.5	12.5	2.1	78
1.1	3.5	1.6	17	2.3	117

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.97	2.14	3.0	2.38	7.6	4	22	14	14.5	8.4	2.6	17.5
2	1.87	2.14	2.7	8.5	5.9	4	50	13	84	7.1	2.44	12.5
3	1.87	2.08	2.6	16.5	6.7	4	19	12	81	6.4	2.38	9.5
4	1.81	2.08	1.48	8.9	5.2	4	20	15.5	40	6.1	2.38	8.1
5	1.81	2.08	1.48	7.8	5.7	4	19	27	27	5.7	2.25	8.6
6	1.76	2.03	1.57	4.9	3.6	4	18	20	26	5.5	2.14	8.1
7	1.76	2.25	1.69	3.8	2.25	4	15	20	101	5.7	2.03	6.9
8	1.76	2.19	2.6	3.3	3	4	13	16	75	5.4	2.03	6.1
9	1.76	2.08	1.99	2.5	4	4	12.5	13.5	43	5.5	2.03	5.5
10	1.76	2.14	4.6	2.7	6	4	11.5	12	30	5.5	1.97	5.1
11	1.76	2.9	5.4	2.9	6.7	5	11	10.5	24	5.7	2.03	4.6
12	4.1	1.57	8.7	3.8	6.2	6	9.9	9.5	20	5.7	1.87	11
13	2.25	1.15	12	3.2	7.1	7	8.9	14	17.5	5.5	1.87	11.5
14	2.03	2.19	6.4	4.5	9.9	10	8.6	24	19	5.2	1.92	6.7
15	1.97	2.19	4.6	16	10	7.3	8.1	16.5	17	5.9	4.6	5.7
16	1.87	2.31	3.7	15	7.6	7.8	21	13.5	15	6.1	37	5.2
17	2.27	2.6	3.8	8.6	7	7.3	19	16	13.5	5.5	82	4.6
18	8.1	2.38	2.7	6.7	6	7.1	14	22	16.5	5.1	26	4.2
19	2.54	2.25	3.1	5.7	6	6.9	11.5	18.5	14	4.8	14.5	4.0
20	1.75	2.25	4.3	26	6	6.7	27	18	12	4.3	16.5	3.7
21	2.38	2.44	4.8	21	5	6.7	35	30	10.5	4.3	12	4.3
22	2.25	2.5	4.5	14	5	7.3	20	54	9.5	7.0	8.6	8.4
23	2.19	2.25	4.3	10	5	8.1	14	24	8.6	7.3	7.3	5.2
24	2.08	1.97	3.6	11	4	14.5	18	18	8.1	5.4	6.2	4.5
25	2.7	2.14	3.0	11	4	19	20	41	7.8	4.5	36	3.8
26	2.7	6.4	2.22	14	4	12.5	25	47	7.8	4.0	74	3.5
27	2.38	4.6	2.06	12	4	14	20	27	7.6	3.8	27	3.2
28	2.31	2.22	4.0	10	4	16	18	23	8.1	3.6	18	3.0
29	2.25	3.0	4.2	9.5	-	22	15	20	7.6	3.3	14	4.2
30	2.14	2.9	3.6	21	-	30	13	19	9.5	3.0	11.5	4.0
31	2.14	-	2.8	16	-	27	-	15.5	-	2.8	29	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	72.29	8.1	1.75	2.33		
November	73.42	6.4	1.15	2.45		
December	117.49	12	1.48	3.79		
Calendar year	-	-	-	-		
January	303.18	26	2.38	9.78		
February	157.45	10	2.25	5.62		
March	288.2	30	4	9.30		
April	537.0	50	8.1	17.9		
May	644.0	54	9.5	20.8		
June	775.1	101	7.6	25.8		
July	164.1	8.4	2.8	5.29		
August	454.14	82	1.87	14.6		
September	193.2	17.5	3.0	6.44		
Water year 1946-47	3,779.57	101	1.15	10.4		

Note.- No gage-height record Feb. 8-10, Feb. 17 to Mar. 13, Apr. 2-8, Apr. 21 to May 1; discharge computed on basis of weather records, operation of gates at Springfield Lake, and records for Little Cuyahoga River at Massillon Road, Akron.

Chagrin River at Willoughby, Ohio

Location.- Water-stage recorder, lat. 41°37'51", long. 81°24'13", at city waterworks, 800 feet downstream from East Branch, 1 mile southeast of Willoughby, Lake County, and 5 miles upstream from mouth.
Drainage area.- 251 square miles.
Records available.- July 1925 to November 1935, October 1939 to September 1947.
Average discharge.- 18 years, 291 second-feet (not including diversion).
Extremes.- Maximum discharge during year, 14,400 second-feet June 2 (gage height, 13.70 feet); minimum daily, 24 second-feet Oct. 5, 8.
1925-35, 1939-47: Maximum discharge, 24,000 second-feet (revised) June 26, 1931 (gage height, 9.90 feet, site and datum then in use); minimum daily, 3.0 second-feet July 25, 26, 1934.
Flood of Mar. 23, 1913, reached a stage of 17.3 feet, present datum, from floodmarks.
Revisions.- The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede those published in the water-supply papers indicated.

Water-Supply Paper	Water year	Date	Gage height (feet)	Discharge (second-feet)
684	1929	Jan. 19	9.4	22,000
714	1931	June 26	9.90	24,000

Remarks.- Records good except those for periods of ice effect, which are poor. Water diverted at dam just above station for municipal supply of city of Willoughby.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	44	79	146	723	65	1,650	332	382	79	42	283
2	33	42	68	296	432	65	3,970	497	5,270	68	38	197
3	30	44	71	1,250	308	70	1,780	417	5,620	61	39	143
4	27	42	64	598	250	70	915	493	1,130	56	43	83
5	24	41	62	258	190	75	3,320	2,440	667	52	42	68
6	25	41	62	194	160	80	1,610	1,250	497	54	36	59
7	25	41	64	146	130	90	745	1,130	964	76	34	54
8	24	44	62	135	120	100	502	733	1,130	70	31	49
9	25	45	59	132	110	120	399	481	554	66	31	45
10	26	45	82	135	110	150	324	358	371	76	33	41
11	29	64	337	143	110	250	280	288	275	134	30	36
12	64	96	499	204	120	550	269	246	226	142	29	35
13	88	71	993	200	130	1,330	243	334	194	87	31	35
14	56	56	410	*233	160	1,860	211	745	2,770	68	50	35
15	44	52	218	1,350	210	1,060	190	471	866	64	110	35
16	39	50	158	1,130	270	554	650	328	507	66	59	36
17	38	56	197	581	250	399	828	358	345	97	51	33
18	167	59	171	304	220	312	432	825	275	103	43	31
19	146	57	124	207	190	292	308	446	230	92	36	30
20	79	52	132	1,800	*160	328	1,380	446	183	110	33	29
21	57	50	111	1,850	140	362	2,410	1,050	150	110	42	34
22	54	50	104	408	120	394	825	2,100	125	745	51	162
23	44	46	98	350	100	733	522	734	105	689	43	85
24	42	45	138	451	85	1,600	574	446	92	194	38	54
25	48	50	135	985	75	1,730	836	1,890	90	103	50	42
26	59	245	113	810	70	778	1,250	2,500	87	74	48	36
27	59	380	111	703	70	685	771	884	87	72	42	36
28	48	177	354	399	65	559	691	1,900	87	63	36	38
29	45	118	394	288	-	804	451	1,090	74	56	38	45
30	42	92	320	2,600	-	1,090	367	784	85	51	229	59
31	44	-	141	2,520	-	1,290	-	466	-	45	1,600	-

Month	Observed				Diversion (mean second-feet)†	Adjusted for diversion		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Runoff in inches
October	1,561	167	24	50.4	2.17	52.6	0.210	0.24
November	2,295	380	41	76.5	2.03	78.5	.313	.35
December	5,934	993	59	191	2.01	193	.769	.89
Calendar year 1946	81,184	2,520	18	222	2.01	224	.892	12.15
January	20,806	2,600	132	671	1.99	673	2.68	3.09
February	5,078	723	65	181	2.25	183	.729	.76
March	17,845	1,860	65	576	2.12	578	2.30	2.65
April	28,703	3,970	190	957	1.97	959	3.82	4.26
May	26,462	2,500	246	854	1.52	856	3.41	3.93
June	23,438	5,620	74	781	2.19	783	3.12	3.48
July	3,823	745	45	123	2.42	125	.498	.57
August	3,058	1,600	29	98.6	2.67	101	.402	.46
September	1,948	283	29	64.9	2.39	67.3	.268	.30
Water year 1946-47	140,951	5,620	24	386	2.14	388	1.55	20.98

Peak discharge.- Jan. 30 (7 p.m.) 6,820 sec.-ft.; Apr. 2 (11 a.m.) 5,900 sec.-ft.; Apr. 5 (11 a.m.) 4,700 sec.-ft.; June 2 (11 p.m.) 14,400 sec.-ft.; June 14 (12 m.) 5,540 sec.-ft.; Aug. 31 (1 a.m.) 4,480 sec.-ft.
* Winter discharge measurement made on this day.
† Diversion for municipal supply of city of Willoughby.
Note.- Stage-discharge relation affected by ice Jan. 23, Feb. 4 to Mar. 12.

Grand River near North Bristol, Ohio

Location.- Water-stage recorder, lat. 41°24'45", long. 80°54'45", in T. 6 N., R. 5 W., at highway bridge, an eighth of a mile downstream from Center Creek and 2½ miles west of North Bristol, Trumbull County.
Drainage area.- 89.7 square miles.
Records available.- March 1942 to November 1947 (discontinued).
Extremes.- 1946-47: Maximum discharge during year, 2,950 second-feet June 3 (gage height, 12.80 feet); minimum, 1.8 second-feet Oct. 1.
1947: Maximum discharge during period October to November, 34 second-feet Oct. 4 (gage height, 3.75 feet); minimum, 3.6 second-feet Oct. 8, 9, 13, 17, 18.
1942-47: Maximum discharge, 2,950 second-feet Feb. 23, 1945, June 3, 1947 (gage height, 12.80 feet); minimum, 1.1 second-feet Sept. 25, 1946.
Remarks.- Records good except those below 10 second-feet, which are fair, and those for periods of ice effect or no gage-height record, which are poor.

Discharge, in second-feet, 1946-47

1946-47

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.2	6.2	a18	64	489	b9	a800	52	70	5.3	5.4	a50
2	4.2	6.6	13	70	158	b9	a1,100	96	829	4.9	5.3	a35
3	3.0	6.2	14	558	b80	b9	881	112	2,290	4.4	5.1	a25
4	2.5	6.4	12	580	b50	b9	282	74	496	4.4	4.7	a20
5	2.8	7.0	*11	287	b35	b9	584	271	145	4.0	4.9	a15
6	4.2	6.8	11	123	b30	b10	820	274	76	4.2	4.7	a12
7	3.7	6.2	14	64	b25	b11	251	a210	100	5.4	4.5	a10
8	2.4	6.4	13	45	a19	a14	a150	a120	637	7.0	4.4	a8
9	3.1	6.8	9.2	36	a17	b18	a100	a80	288	7.0	4.2	a7
10	3.6	7.2	12	30	a16	b20	76	54	a120	7.4	4.2	a6
11	4.0	8.0	103	29	a17	b25	58	37	48	8.8	4.2	a6
12	6.6	14	155	b35	a17	b35	52	27	31	a12	4.0	a5
13	11	12	516	*b60	*b18	b45	48	25	26	18	4.0	a5
14	4.7	8.8	348	78	b20	70	37	98	317	11	3.8	a4
15	3.4	9.0	117	460	b20	125	30	90	930	19	3.8	4.4
16	4.0	9.7	49	708	b25	a460	432	56	a200	20	4.2	4.0
17	3.7	9.7	42	396	b25	a150	365	41	a100	42	4.9	4.0
18	12	8.8	b50	162	b30	a80	161	123	a50	32	4.7	3.7
19	a30	9.2	b40	88	b25	a70	82	125	a35	31	4.4	3.7
20	12	9.2	24	403	b20	a65	128	349	23	23	4.0	3.6
21	6.0	8.3	19	1,120	a17	a70	1,110	279	17	16	4.2	3.7
22	6.8	8.3	18	a480	a14	a80	481	822	13	21	5.6	6.6
23	6.0	7.2	16	a180	a12	a130	167	398	10	42	4.4	a6
24	5.1	6.2	24	78	a11	a400	110	a340	8.3	18	3.8	a5
25	5.1	6.4	36	334	a11	a500	218	a700	7.2	11	3.4	a4
26	6.8	15	30	344	a10	a150	602	a950	7.6	8.8	3.4	3.8
27	7.6	198	24	384	a10	a100	279	a700	8.3	7.8	3.2	4.0
28	6.2	136	a100	184	a10	a130	140	a1,100	5.3	7.6	3.1	4.0
29	7.0	60	a450	545	-	a250	88	a700	5.1	7.2	3.0	4.0
30	6.2	a35	a310	272	-	a400	62	324	4.7	6.4	4.7	5.1
31	6.2	-	112	1,450	-	a600	-	134	-	5.8	72	-

Peak discharge.- Jan. 21 (7 a.m.) 1,410 sec.-ft.; Jan. 31 (10 a.m.) 1,790 sec.-ft.; Apr. 2 (time unknown) about 1,500 sec.-ft.; Apr. 21 (1 p.m.) 1,530 sec.-ft.; June 3 (3 a.m.) 2,950 sec.-ft.; June 15 (5 a.m.) 1,190 sec.-ft.
* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records, recorded range in stage, and records for station near Rome.
b Stage-discharge relation affected by ice.

1947

Day	Oct.	Nov.	Day	Oct.	Nov.	Day	Oct.	Nov.	Day	Oct.	Nov.	Day	Oct.	Nov.
1	5.4	6.8	7	4.2	7.8	13	3.7	9.7	19	3.8	7.4	25	4.0	-
2	4.4	5.8	8	3.8	7.2	14	3.7	7.4	20	4.4	6.8	26	4.0	-
3	3.8	5.4	9	3.7	6.6	15	3.7	6.6	21	5.1	-	27	4.4	-
4	22	8.4	10	3.8	6.2	16	3.7	7.4	22	4.2	-	28	4.7	-
5	7.8	15	11	3.8	6.2	17	3.7	10	23	4.2	-	29	5.6	-
6	4.9	9.2	12	3.7	8.0	18	3.7	8.5	24	4.0	-	30	8.8	-
												31	8.3	-

Monthly discharge, in second-feet, 1946-47

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October 1946	192.1	30	2.2	6.20	0.069	0.08
November	644.6	198	6.2	21.5	.240	.27
December	2,710.2	516	9.2	87.4	.974	1.12
Calendar year 1946	27,825.9	1,640	1.4	76.2	.849	11.53
January 1947	9,647	1,450	29	311	3.47	4.00
February	1,231	489	10	44.0	.491	.51
March	4,053	600	9	131	1.46	1.68
April	9,674	1,110	30	322	3.59	4.00
May	8,761	1,100	25	283	3.15	3.63
June	6,897.5	2,290	4.7	230	2.56	2.86
July	422.4	42	4.0	13.6	.152	.18
August	200.2	72	3.0	6.46	.072	.08
September	277.6	50	3.6	9.25	.103	.11
Water year 1946-47	44,710.6	2,290	2.2	122	1.36	18.52
October 1947	159.0	22	3.7	5.13	.057	.07
November 1-20	156.4	15	5.4	7.82	.087	.06

Grand River near Rome, Ohio

Location.- Water-stage recorder, lat. 41°36'20", long. 80°53'40", in T. 9 N., R. 4 W., at bridge on U. S. Highway 6, 2¼ miles upstream from Mud Creek and 2½ miles west of Rome, Ashtabula County.

Drainage area.- 276 square miles.

Records available.- March 1942 to November 1947 (discontinued).

Extremes.- 1946-47: Maximum discharge during year, 3,120 second-feet June 4 (gage height, 17.25 feet); minimum, 4.8 second-feet Oct. 1.
1947: Maximum discharge during period October to November, 41 second-feet Nov. 7 (gage height, 2.23 feet); minimum, 8.1 second-feet Oct. 13.
1942-47: Maximum discharge, 4,530 second-feet Dec. 31, 1942 (gage height, 20.0 feet); minimum, 3.7 second-feet Sept. 28, 29, 1946.

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

Discharge, in second-feet, 1946-47

1946-47

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.1	13	99	324	1,680	25	1,810	249	904	28	13	814
2	5.0	13	61	267	1,300	25	2,530	267	1,130	26	12	408
3	5.4	12	42	688	750	25	2,810	381	2,690	25	11	193
4	5.9	12	*32	796	350	30	2,280	357	2,990	23	11	113
5	6.8	12	30	742	220	30	2,140	706	2,730	21	11	72
6	6.2	12	31	724	150	30	2,080	832	1,660	19	10	41
7	5.8	12	30	635	110	30	1,760	868	1,010	19	10	28
8	5.4	12	29	300	95	35	1,340	778	1,090	20	10	23
9	5.6	13	30	160	85	40	742	550	814	20	10	19
10	6.1	13	32	120	80	50	381	369	814	21	10	16
11	5.9	16	92	100	80	65	267	233	601	25	9.8	15
12	7.5	22	214	110	80	90	217	155	285	31	9.8	13
13	11	31	652	*140	80	180	193	127	152	63	10	12
14	18	32	652	233	*85	1,130	162	225	172	75	13	12
15	19	26	550	956	85	1,380	134	357	670	34	25	12
16	15	21	437	1,240	95	1,240	273	294	958	37	16	12
17	11	19	258	1,180	100	940	688	233	1,070	60	15	12
18	17	20	162	1,000	110	567	652	324	652	86	13	11
19	37	22	144	650	95	324	567	346	285	110	12	10
20	61	21	144	850	70	249	560	422	155	110	15	10
21	49	19	113	1,460	50	267	1,510	648	102	80	15	10
22	30	18	80	1,100	40	285	1,510	1,560	73	56	13	13
23	19	17	65	800	35	422	1,510	1,360	56	83	14	15
24	15	16	74	750	30	778	1,160	1,200	46	92	17	18
25	13	16	96	900	30	1,160	760	1,140	41	73	15	18
26	14	38	113	1,130	30	1,050	976	1,780	36	38	13	15
27	14	169	92	1,200	25	886	1,010	1,710	37	25	12	12
28	18	225	260	1,030	25	760	994	1,810	44	20	11	11
29	18	225	601	742	-	778	706	1,840	36	18	11	10
30	16	169	550	789	-	1,010	381	1,710	31	16	34	11
31	14	-	408	1,780	-	1,320	-	1,460	-	15	880	-

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Jan. 8-13, 18-20, 22-25, Feb. 2 to Mar. 13.

1947

Day	Oct.	Nov.	Day	Oct.	Nov.	Day	Oct.	Nov.	Day	Oct.	Nov.
1	11	31	9	9.6	25	17	9.4	21	25	19	-
2	12	30	10	8.7	21	18	9.6	23	26	18	-
3	12	27	11	8.5	19	19	10	25	27	18	-
4	12	25	12	8.3	19	20	12	23	28	20	-
5	11	27	13	8.3	18	21	14	-	29	22	-
6	18	35	14	9.0	19	22	16	-	30	24	-
7	18	39	15	9.0	21	23	18	-	31	28	-
8	12	32	16	9.0	21	24	19	-			

Monthly discharge, in second-feet, 1946-47

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October 1946	479.7	61	5.0	15.5	0.056	0.06
November	1,266	225	12	42.2	.153	.17
December	6,173	652	29	199	.721	.83
Calendar year 1946	88,220.1	1,900	4.0	242	.877	11.88
January 1947	22,896	1,780	100	739	2.68	3.09
February	5,965	1,680	25	213	.772	.80
March	15,201	1,380	25	490	1.78	2.05
April	32,103	2,810	134	1,070	3.88	4.33
May	24,291	1,840	127	784	2.84	3.27
June	21,334	2,990	31	711	2.58	2.88
July	1,369	110	15	44.2	.160	.18
August	1,281.6	880	9.8	41.3	.150	.17
September	1,979	814	10	66.0	.239	.27
Water year 1946-47	134,338.3	2,990	5.0	368	1.33	18.10
October 1947	433.4	28	8.3	14.0	.051	.06
November 1-20	501	39	18	25.0	.091	.07

Grand River near Madison, Ohio

Location.- Water-stage recorder, lat. 41°44'26", long. 81°02'48", at highway bridge, half a mile upstream from Griswold Creek and 2 miles south of Madison, Lake County. Datum of gage is 674.47 feet above mean sea level, adjustment of 1912.
Drainage area.- 587 square miles.
Records available.- July 1922 to December 1935, February 1938 to September 1947.
Average discharge.- 22 years, 634 second-feet.
Extremes.- Maximum discharge during year, 8,900 second-feet June 3 (gage height, 9.60 feet);;minimum, 4.1 second-feet Oct. 7 (gage height, 0.68 foot).
1922-35, 1938-47: Maximum discharge, 16,400 second-feet Jan. 19, 1929; maximum gage height, 12.15 feet Feb. 22, 1945 (backwater from ice); practically no flow July 31, Aug. 1-2, 1934.
Remarks.- Records good except those for periods of ice effect, which are poor.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used June 3-19, June 21 to July 22, July 27 to Aug. 31)

Oct. 1 to June 2

0.6	2.5	1.8	115	5.0	1,610
.7	4.6	2.2	199	6.0	2,590
.8	8.0	2.6	310	7.0	3,850
1.0	19	3.0	450	7.8	5,180
1.2	35	3.5	670	8.8	7,180
1.5	70	4.0	930		

June 3 to Sept. 30

1.0	5.8	2.0	123
1.1	12	2.3	195
1.3	28	2.6	281
1.5	48	3.0	430
1.7	76	3.6	714

Note.- Same as preceding table above 3.8 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.5	21	212	554	3,850	75	4,150	745	1,530	40	27	1,320
2	4.9	20	134	554	2,320	75	6,380	820	2,640	33	25	902
3	4.9	18	96	1,860	1,820	75	6,980	1,050	8,220	29	25	452
4	5.2	18	75	2,260	1,220	75	4,450	902	6,180	26	25	236
5	5.2	16	*60	1,000	720	80	6,640	2,000	4,450	25	21	151
6	4.6	16	57	700	400	80	7,180	2,540	3,560	23	19	110
7	4.4	16	58	450	300	85	3,420	2,010	3,950	26	18	68
8	5.8	17	60	320	250	95	2,160	1,860	6,980	24	16	56
9	7.2	17	61	260	220	105	1,360	1,220	2,830	23	14	45
10	5.5	18	67	250	210	115	848	820	1,390	24	14	36
11	5.5	26	142	240	200	130	572	554	1,110	27	13	30
12	14	31	472	232	200	160	462	394	740	40	12	26
13	18	33	1,490	295	200	400	405	326	443	49	12	22
14	12	49	1,500	*477	210	3,230	366	511	950	84	12	19
15	12	55	875	2,840	220	4,450	316	770	1,320	106	12	18
16	24	45	622	3,700	230	2,540	460	646	1,650	81	33	17
17	25	40	524	2,480	250	1,570	1,770	576	1,420	120	34	15
18	39	34	478	1,570	270	1,100	1,280	1,960	1,140	193	26	14
19	32	32	366	1,250	250	950	930	1,220	633	158	22	14
20	47	32	227	1,700	180	900	1,230	990	344	167	18	14
21	80	34	219	4,450	130	800	4,610	1,460	203	151	15	15
22	69	33	172	2,370	110	900	3,420	4,980	151	498	19	38
23	52	29	144	1,300	90	1,530	2,320	3,170	108	960	18	26
24	35	27	199	1,530	80	2,810	1,910	1,820	84	766	16	24
25	27	27	283	2,640	75	3,850	1,530	2,010	72	351	18	23
26	24	88	274	2,810	75	2,060	2,160	5,180	64	183	18	24
27	20	386	199	2,810	75	1,390	2,010	4,150	56	110	17	22
28	18	567	898	1,860	75	1,360	1,690	3,050	53	66	14	18
29	18	387	1,730	1,250	-	1,730	1,280	3,630	57	53	14	18
30	20	301	1,250	2,200	-	2,540	848	2,930	49	39	30	18
31	26	-	720	6,180	-	3,170	-	2,210	-	32	277	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	670.7	80	4.4	21.6	0.037	0.04
November	2,433	567	16	81.1	.138	.15
December	13,664	1,730	57	441	.751	.87
Calendar year 1946	201,782.5	6,330	3.0	553	.942	12.78
January	52,392	6,180	232	1,690	2.88	3.32
February	14,230	3,850	75	508	.865	.90
March	38,430	4,450	75	1,240	2.11	2.43
April	73,137	7,180	316	2,438	4.15	4.63
May	56,504	5,180	326	1,832	3.11	3.58
June	52,377	8,220	49	1,746	2.97	3.31
July	4,507	960	23	145	.247	.28
August	854	277	12	27.5	.047	.05
September	3,791	1,320	14	126	.215	.24
Water year 1946-47	312,989.7	8,220	4.4	858	1.46	19.80

Peak discharge.- Jan. 31 (1 p.m.) 6,580 sec.-ft.; Apr. 3 (2 a.m.) 7,800 sec.-ft.; Apr. 5 (10 p.m.) 8,800 sec.-ft.; May 26 (5 p.m.) 5,780 sec.-ft.; June 3 (3 p.m.) 8,900 sec.-ft.; June 8 (6 a.m.) 7,590 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Jan. 5-11, 23, Feb. 6 to Mar. 13, Mar. 18-22 (no gage-height record Feb. 21 to Mar. 11; discharge computed on basis of weather records and records for station near Rome).

Phelps Creek near Windsor, Ohio

Location.- Water-stage recorder, lat. 41°30'55", long. 80°56'05", in T. 8 N., R. 5 W., at bridge on State Highway 534, 1.4 miles south of Windsor, Ashtabula County, and 1½ miles upstream from mouth.

Drainage area.- 26.4 square miles.

Records available.- March 1942 to September 1947.

Extremes.- Maximum discharge during year, 1,500 second-feet June 2 (gage height, 7.63 feet); no flow part of day Oct. 24, 25.
1942-47: Maximum discharge, 1,740 second-feet Feb. 22, 1945 (gage height, 8.27 feet), from rating curve extended above 840 second-feet; no flow Aug. 20, 21, 1943, and part of day Oct. 24, 25, 1946.

Remarks.- Records good except those below 5 second-feet or those for periods of ice effect, which are fair.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	1.0	4.7	b10	40	b4	300	16	16	1.3	0.8	30
2	.3	1.0	3.4	20	25	b4	652	30	586	1.2	.6	16
3	.3	1.0	3.4	170	18	b4	196	37	422	1.1	.6	8.8
4	.3	1.2	3.2	63	b16	b4	57	30	52	1.0	.6	5.1
5	.3	1.3	*2.8	b25	b14	b4	424	201	32	.9	.6	4.0
6	.4	1.4	3.8	b14	b11	5.8	151	53	33	.8	.8	3.0
7	.4	1.4	3.9	b10	b9	7.9	38	63	166	.9	.8	2.4
8	.5	1.6	3.8	10	b8	12	24	36	115	1.0	.8	2.1
9	.6	1.7	3.4	8.9	b6	14	22	22	38	1.0	.8	1.8
10	.6	2.0	7.4	8.6	b5	17	19	16	22	1.0	.8	1.7
11	.7	2.2	46	9.7	b5	b20	16	12	14	1.1	.8	1.4
12	1.0	4.7	90	18	b5	b40	17	8.3	9.2	1.1	.6	1.3
13	1.2	2.6	140	*25	*7.2	b80	16	9.7	7.6	.9	.6	1.3
14	1.6	1.7	32	68	9.2	b400	12	36	28	1.1	1.0	1.1
15	1.4	1.3	13	372	22	159	11	24	37	1.2	5.1	1.1
16	1.4	1.2	9.3	140	43	50	108	16	22	1.4	2.6	1.1
17	1.2	1.4	b11	60	41	29	88	19	13	1.2	1.7	1.1
18	4.7	2.3	b13	29	33	18	30	41	7.9	1.3	1.4	1.0
19	3.2	1.8	b7	26	b25	21	20	26	5.4	1.8	2.0	.9
20	.9	1.5	5.3	413	b18	30	143	54	3.7	1.4	3.1	.8
21	.4	1.4	5.0	186	b10	37	419	137	3.0	1.3	3.0	1.0
22	.2	1.4	5.3	26	b7	39	53	256	2.4	1.7	2.8	1.9
23	.2	1.3	5.3	28	b5	97	30	32	2.1	2.4	2.6	1.8
24	.1	1.4	11	49	b4	*225	34	18	2.0	3.0	1.6	1.6
25	.1	1.6	15	389	b4	215	79	339	1.8	1.8	1.2	1.7
26	.5	22	10	117	b4	29	153	304	1.8	1.4	1.2	1.6
27	1.2	43	6.7	64	b4	40	38	44	1.8	1.3	1.0	1.4
28	1.0	15	b140	30	b4	58	36	242	1.7	1.2	1.0	1.2
29	.7	8.2	91	20	-	62	23	53	1.7	1.0	1.3	1.2
30	.7	5.8	b30	307	-	108	18	36	1.6	.9	50	1.2
31	.9	-	b15	335	-	190	-	23	-	.8	369	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	27.4	4.7	0.1	0.88	0.033	0.04
November	135.4	43	1.0	4.51	.171	.19
December	740.7	140	2.8	23.9	.905	1.04
Calendar year 1946	9,485.2	597	.1	26.0	.985	13.37
January	3,051.2	413	8.6	98.4	3.73	4.30
February	402.4	43	4	14.4	.545	.57
March	2,023.7	400	4	65.3	2.47	2.85
April	3,227	652	11	108	4.09	4.56
May	2,234.0	339	8.3	72.1	2.75	3.17
June	1,649.7	586	1.6	55.0	2.08	2.32
July	39.5	3.0	.8	1.27	.048	.06
August	460.8	369	.6	14.9	.564	.65
September	100.5	30	.8	3.35	.127	.14
Water year 1946-47	14,092.3	652	.1	38.6	1.46	19.89

Peak discharge.- Jan. 30 (10 p.m.) 1,120 sec.-ft.; Apr. 2 (1 p.m.) 998 sec.-ft.; Apr. 21 (2 a.m.) 887 sec.-ft.; May 25 (10:30 p.m.) 1,060 sec.-ft.; June 2 (9:30 p.m.) 1,500 sec.-ft.; Aug. 31 (3:30 a.m.) 942 sec.-ft.
* Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice.

Rock Creek near Rock Creek, Ohio

Location.- Water-stage recorder, lat. 41°39'05", long. 80°50'10", in T. 10 N., R. 4 W., at highway bridge, 0.4 mile downstream from Plum Creek, 1.4 miles southeast of village of Rock Creek, Ashtabula County, 1½ miles downstream from Sugar Creek and 3 miles upstream from mouth.

Drainage area.- 56.6 square miles.

Records available.- March 1942 to September 1947.

Extremes.- Maximum discharge during year, 3,150 second-feet June 3 (gage height, 6.80 feet); no flow at times in October and August.
1942-47: Maximum discharge, that of June 3, 1947; no flow at times.

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

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 18 to Nov. 26)

0.1	0.	0.8	22	2.6	274
.2	.1	1.0	35	2.9	380
.3	.7	1.3	56	3.5	645
.4	2.2	1.6	86	4.3	1,060
.5	5.3	2.0	141	5.1	1,590
.6	10	2.3	199	5.9	2,250

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0.7	11	35	294	8	795	36	43	2.2	0.5	210
2	0	.7	8.2	80	104	8	1,090	84	518	1.8	.4	62
3	0	.7	5.8	559	69	8	660	98	2,200	1.4	.4	35
4	0	.8	*5.3	271	45	8	246	97	950	1.1	.2	25
5	0	.8	5.3	94	a30	8	800	454	100	.7	.2	16
6	0	.6	6.7	50	a20	9	559	340	150	.5	.1	11
7	0	.7	11	40	a16	11	213	274	900	.6	.1	7.7
8	0	.8	9.1	35	a14	15	86	204	514	.7	.1	5.3
9	0	.8	7.2	30	a13	25	66	88	208	.6	0	3.8
10	0	.7	14	25	12	30	56	51	83	.7	0	2.4
11	0	1.8	98	25	12	40	43	36	36	1.2	0	2.0
12	0	3.5	154	37	13	60	42	28	25	3.5	0	1.6
13	0	7.2	487	*42	13	150	37	24	19	17	0	1.4
14	0	4.9	149	78	*14	**500**	31	89	152	7.7	.1	1.2
15	0	2.9	50	670	16	441	26	108	745	8.2	5.8	1.0
16	0	2.0	34	523	20	189	164	51	372	40	2.0	.9
17	0	2.0	48	258	25	80	272	62	113	28	.9	.9
18	1.9	1.8	55	107	25	60	100	152	52	19	.6	.8
19	12	2.0	30	59	20	60	54	77	34	14	.4	.7
20	14	1.8	25	538	17	63	308	148	23	9.6	.3	.6
21	7.2	1.4	18	632	14	69	870	508	16	11	.3	.5
22	3.8	1.1	15	a250	12	98	398	695	11	23	.3	2.7
23	2.2	.9	15	a60	10	222	133	214	8.2	84	.2	1.4
24	1.2	.8	20	a70	9	443	91	71	6.3	25	.2	1.1
25	1.1	.9	29	a180	9	536	153	432	6.3	9.6	.5	1.6
26	1.6	27	26	360	8	108	420	950	4.5	4.5	1.1	1.4
27	1.1	133	30	342	8	92	164	364	4.2	2.7	.5	1.1
28	2.7	50	204	148	8	a150	96	489	3.8	1.8	.4	.9
29	2.4	25	174	74	-	a200	55	406	3.5	1.4	.4	1.0
30	1.2	15	112	408	-	392	41	159	2.7	1.0	1.7	1.0
31	1.0	-	50	965	-	595	-	72	-	.8	185	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	53.4	14	0	1.72	0.030	0.04
November	292.3	133	.6	9.74	.172	.19
December	1,906.6	487	5.3	61.5	1.09	1.26
Calendar year 1946	21,937.9	862	0	60.1	1.06	14.44
January	7,045	965	25	227	4.01	4.62
February	870	294	8	31.1	.549	.57
March	4,678	595	8	151	2.67	3.08
April	8,069	1,090	26	269	4.75	5.30
May	6,861	950	24	221	3.90	4.50
June	7,283.5	2,200	2.7	243	4.29	4.79
July	323.3	84	.5	10.4	.184	.21
August	202.7	185	0	6.54	.116	.13
September	402.0	210	.5	13.4	.237	.26
Water year 1946-47	37,986.8	2,200	0	104	1.84	24.95

Peak discharge.- Jan. 30 (11 p.m.) 1,420 sec.-ft.; Apr. 2 (1 p.m.) 1,420 sec.-ft.; Apr. 5 (11 a.m.) 1,240 sec.-ft.; May 21 (8 p.m.) 1,310 sec.-ft.; May 26 (2 a.m.) 1,280 sec.-ft.; June 3 (2 a.m.) 3,150 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and records for stations on nearby streams.

Note.- Stage-discharge relation affected by ice Dec. 18-20, 24, Dec. 31 to Jan. 2, Jan. 6-10, Feb. 4, Feb. 10 to Mar. 14.

Mill Creek near Jefferson, Ohio

Location.- Water-stage recorder, lat. 41°45'10", long. 80°48'00", in T. 11 N., R. 3 W., at bridge on State Highway 307, 1¾ miles northwest of Jefferson, Ashtabula County, and 3½ miles downstream from Griggs Creek.

Drainage area.- 78.3 square miles.

Records available.- March 1942 to September 1947.

Extremes.- Maximum discharge during year, 3,960 second-feet June 7 (gage height, 8.50 feet); no flow at times.
1942-47: Maximum discharge, 5,900 second-feet May 16, 1942 (gage height, 9.5 feet); no flow at times.

Remarks.- Records good except those below 10 second-feet, which are fair, and those for periods of ice effect or no gage-height record, which are poor.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0	20	59	297	11	780	53	42	0.6	3.6	0.6
2	0	0	12	104	109	11	1,670	207	648	.4	2.7	8.7
3	0	0	8.8	740	84	11	938	199	2,200	.2	1.8	11
4	0	0	6.9	a600	60	12	275	270	342	.1	1.0	6.3
5	0	0	5.7	179	40	13	1,920	625	92	0	.5	4.8
6	0	0	5.4	79	30	14	905	422	136	0	.4	3.8
7	0	0	5.7	42	25	22	198	345	1,190	.1	.3	2.2
8	0	0	6.3	28	25	40	82	275	1,900	.1	.1	1.0
9	0	0	6.9	15	20	56	61	156	295	.2	0	.5
10	0	0	11	14	20	63	62	81	85	.2	0	.3
11	0	.1	99	12	20	81	48	48	38	.2	0	.1
12	0	.3	164	21	20	174	44	31	24	.3	0	0
13	.1	0	474	37	22	382	37	29	16	.7	0	0
14	0	0	230	*99	*24	1,100	28	64	24	1.0	0	0
15	0	0	76	945	35	968	18	81	142	2.3	0	0
16	0	0	40	675	45	345	148	55	123	13	0	0
17	0	.2	87	277	50	168	425	61	52	83	0	0
18	1.2	1.3	147	112	45	a100	143	394	28	43	0	0
19	.3	1.8	79	65	35	a85	70	197	18	29	0	0
20	0	2.0	40	494	30	a80	291	206	11	13	0	0
21	0	2.2	28	861	25	a110	1,160	514	7.5	7.9	0	0
22	0	2.2	19	176	19	a200	312	1,160	5.4	70	0	.1
23	0	1.8	19	160	16	446	112	266	4.0	572	0	0
24	0	1.8	54	a90	14	913	80	87	2.9	368	0	0
25	0	1.8	71	a200	13	804	161	310	2.7	153	0	0
26	0	35	49	460	12	137	394	1,290	2.6	83	0	0
27	0	251	28	489	11	103	195	410	2.6	41	0	0
28	0	137	437	181	11	132	165	318	2.6	17	0	0
29	0	58	420	99	-	251	81	357	2.3	8.8	0	0
30	0	32	193	752	-	460	49	170	1.4	6.3	0	0
31	0	-	85	1,500	-	562	-	78	-	4.8	.2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1.6	1.2	0	0.05	0.00064	0.0007
November	528.5	251	0	17.6	.225	.25
December	2,927.7	474	5.4	94.4	1.21	1.40
Calendar year 1946	29,434.9	1,700	0	80.6	1.03	13.99
January	9,565	1,500	12	309	3.95	4.55
February	1,157	297	11	41.3	.527	.55
March	7,854	1,100	11	253	3.23	3.72
April	10,852	1,920	18	362	4.62	5.16
May	8,759	1,290	29	283	3.61	4.16
June	7,440.0	2,200	1.4	248	3.17	3.54
July	1,519.2	572	0	49.0	.626	.72
August	10.6	3.6	0	.34	.0043	.005
September	39.4	11	0	1.31	.017	.02
Water year 1946-47	50,654.0	2,200	0	139	1.78	24.08

Peak discharge.- Jan. 31 (6 a.m.) 2,170 sec.-ft.; Apr. 2 (8 p.m.) 2,120 sec.-ft.; Apr. 5 (4 p.m.) 3,260 sec.-ft.; May 26 (7 a.m.) 1,880 sec.-ft.; June 3 (7 a.m.) 3,340 sec.-ft.; June 7 (11 p.m.) 3,960 sec.-ft.

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for Grand River near North Bristol and Rock Creek near Rock Creek.
Note.- Stage-discharge relation affected by ice Feb. 4-12, Feb. 15 to Mar. 5.

Ashtabula River near Ashtabula, Ohio

Location.- Water-stage recorder, lat. 41°51'19", long. 80°45'43", at highway bridge, 1 mile upstream from Hubbard Run, 1¼ miles southeast of Ashtabula, Ashtabula County, and 5½ miles upstream from mouth.
Drainage area.- 118 square miles.
Records available.- July 1924 to December 1935, March 1939 to November 1947 (discontinued).
Average discharge.- 19 years, 144 second-feet.
Extremes.- 1946-47: Maximum discharge during year, 7,500 second-feet June 8 (gage height, 8.43 feet); no flow Oct. 1-11.
1947: Maximum discharge during October and November, 6.5 second-feet Nov. 6 (gage height, 1.13 feet); minimum daily, 0.1 second-foot Oct. 17, 18, 23-27.
1924-35, 1939-47: Maximum discharge, 10,800 second-feet May 16, 1942 (gage height, 9.67 feet); no flow at times during 1925-35, 1939-47.
Remarks.- Records good except those for periods of ice effect, which are poor.

Discharge, in second-feet, 1946-47

1946-47

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	2.4	27	74	451	25	789	252	62	3.6	3.9	6.0
2	0	2.4	27	150	192	25	1,890	477	685	3.4	3.1	23
3	0	2.4	16	1,130	128	25	1,110	417	2,210	3.1	2.5	11
4	0	2.1	16	532	110	30	444	237	432	2.5	2.1	6.1
5	0	2.6	11	192	90	30	2,820	674	124	2.3	1.8	4.1
6	0	2.9	9.3	114	70	35	1,450	531	94	2.1	1.5	3.4
7	0	2.9	10	65	55	40	367	562	1,290	6.1	1.2	2.7
8	0	2.9	10	49	50	50	166	411	3,180	4.7	1.1	2.1
9	0	3.6	9.3	42	45	75	124	237	416	3.6	.9	1.6
10	0	3.6	12	74	40	140	128	128	159	3.4	.8	1.3
11	0	6.9	83	58	40	250	100	80	82	3.9	.6	1.1
12	1.4	8.7	150	56	40	483	91	56	56	4.7	.6	.9
13	5.3	15	561	148	45	1,320	94	53	43	15	.5	.7
14	2.4	13	288	*156	*50	1,510	72	150	66	44	.5	.5
15	1.3	8.0	90	1,330	60	1,120	56	196	144	41	3.9	.5
16	.7	5.8	56	822	90	442	214	100	120	31	2.7	.5
17	.7	6.4	147	359	110	230	658	84	62	66	3.1	.4
18	5.9	4.5	305	145	90	162	261	1,120	40	46	3.9	.3
19	5.8	4.0	133	88	75	166	170	387	30	33	2.5	.3
20	2.9	4.9	88	588	65	251	585	399	22	32	1.9	.2
21	10	4.9	74	1,110	55	300	1,620	539	17	26	1.8	.2
22	5.8	4.5	51	197	45	285	446	1,480	14	44	1.6	3.2
23	5.3	3.2	51	148	40	555	182	372	11	170	1.3	2.7
24	3.2	2.6	149	196	35	1,240	131	124	10	144	1.1	1.6
25	2.6	4.0	246	935	30	1,090	254	423	7.9	56	.9	1.2
26	4.0	15	114	704	30	170	574	1,840	7.0	29	.8	.8
27	2.4	340	83	846	25	196	285	501	5.8	19	.8	.6
28	1.3	166	787	265	25	236	295	300	5.1	12	.7	.6
29	.9	67	531	138	-	387	142	326	4.7	8.3	.6	.9
30	.8	40	237	992	-	531	94	196	4.1	6.1	6.1	1.9
31	1.1	-	103	1,940	-	574	-	97	-	4.7	12	-

Peak discharge.- Jan. 31 (3 a.m.) 3,280 sec.-ft.; Apr. 2 (6 p.m.) 2,640 sec.-ft.; Apr. 5 (8 p.m.) 5,670 sec.-ft.; May 26 (4:30 a.m.) 3,090 sec.-ft.; June 3 (6 a.m.) 3,480 sec.-ft.; June 8 (3:30 a.m.) 7,500 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Feb. 4 to Mar. 11.

1947

Day	Oct.	Nov.	Day	Oct.	Nov.	Day	Oct.	Nov.	Day	Oct.	Nov.	Day	Oct.	Nov.
1	1.5	1.1	7	0.2	5.1	13	0.2	2.5	19	0.2	-	25	0.1	-
2	1.1	1.1	8	.2	4.7	14	.2	2.3	20	.2	-	26	.1	-
3	.6	1.1	9	.2	3.6	15	.2	2.3	21	.2	-	27	.1	-
4	.5	2.7	10	.2	2.7	16	.2	4.1	22	.2	-	28	.2	-
5	.4	2.3	11	.2	2.7	17	.1	5.8	23	.1	-	29	.7	-
6	.3	3.4	12	.2	2.9	18	.1	5.4	24	.1	-	30	1.6	-
												31	1.3	-

Monthly discharge, in second-feet, 1946-47

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October 1946	63.8	10	0	2.06	0.017	0.02
November	752.2	340	2.1	25.1	.213	.24
December	4,474.6	787	9.3	144	1.22	1.41
Calendar year 1946	43,920.0	2,940	0	120	1.02	13.84
January 1947	13,443	1,940	42	434	3.68	4.24
February	2,181	451	25	77.9	.660	.69
March	11,973	1,510	25	386	3.27	3.77
April	15,412	2,620	56	514	4.36	4.86
May	12,749	1,840	53	411	3.48	4.01
June	9,403.6	3,180	4.1	313	2.65	2.96
July	870.5	170	2.1	28.1	.238	.27
August	66.8	12	.5	2.15	.018	.02
September	80.4	23	.2	2.68	.023	.03
Water year 1946-47	71,469.9	3,180	.0	196	1.66	22.52
October 1947	11.7	1.6	.1	.38	.0032	.004
November 1-18	55.8	5.8	1.1	3.10	.026	.02

Cattaraugus Creek at Gowanda, N. Y.

Location.- Water-stage recorder, lat. 42°27'50", long. 78°56'10", at Gowanda, Erie County, 380 feet downstream from highway bridge, 600 feet downstream from powerhouse of Niagara, Lockport & Ontario Power Co., and 4.2 miles downstream from South Branch.

Drainage area.- 428 square miles.

Records available.- November 1939 to September 1947.

Extremes.- Maximum discharge during year, 24,700 second-feet Apr. 5 (gage height, 12.05 feet); minimum, 44 second-feet (regulated) Aug. 14 (gage height, 1.46 feet); minimum daily, 92 second-feet (regulated) Oct. 9.
1939-47: Maximum discharge, 35,900 second-feet Mar. 17, 1942 (gage height, 13.73 feet), from rating curve extended above 6,500 second-feet by logarithmic plotting; minimum, 6 second-feet (regulated) Aug. 21, 1941 (gage height, 1.01 feet); minimum daily, 52 second-feet Sept. 13, 1945.

Remarks.- Records good except those for periods of ice effect, which are fair. Flow regulated by municipal power plant and several industrial plants above station. Diurnal fluctuation at low and medium flow.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	138	201	447	430	2,250	320	1,250	1,500	853	277	298	198
2	112	175	390	600	1,520	340	5,170	3,760	1,520	266	248	545
3	103	169	360	1,400	1,200	320	5,530	3,550	6,420	262	239	428
4	98	157	399	820	1,080	260	3,630	2,320	1,860	240	228	268
5	99	150	313	540	700	240	*14,900	1,680	1,210	230	225	233
6	98	136	410	450	660	280	15,500	1,560	976	228	213	220
7	95	131	401	400	760	310	6,490	1,730	835	306	203	198
8	97	135	349	360	720	330	2,530	1,670	1,020	290	202	198
9	92	158	313	340	540	340	2,480	1,440	809	265	216	187
10	94	181	666	330	450	350	2,140	1,140	676	244	238	184
11	95	433	1,840	370	540	360	2,800	958	595	268	209	176
12	155	1,610	835	560	620	400	2,690	836	546	377	199	155
13	399	794	1,320	420	580	480	1,700	1,080	514	268	184	160
14	225	467	600	640	600	1,240	1,320	4,400	706	252	181	160
15	148	337	400	4,090	680	2,020	1,220	2,420	984	307	210	183
16	129	262	350	*2,040	780	1,520	3,810	1,440	655	284	996	557
17	126	273	420	1,110	660	1,300	3,310	1,200	540	299	592	250
18	239	308	330	810	580	1,020	2,050	1,520	475	486	344	194
19	478	244	250	678	500	820	1,870	1,350	432	1,170	279	172
20	262	216	230	2,210	460	860	4,910	1,350	398	544	444	197
21	195	197	230	2,800	420	800	8,200	1,370	378	392	300	194
22	160	185	250	760	340	753	3,110	2,870	345	1,230	312	825
23	142	195	290	800	300	*1,010	2,020	1,370	336	2,540	277	602
24	132	203	370	1,550	280	7,220	1,680	1,040	326	886	242	335
25	131	260	350	5,230	280	9,140	1,560	1,330	331	525	219	260
26	232	1,600	310	3,160	300	2,420	1,950	1,970	336	403	291	228
27	248	2,520	230	2,560	300	1,970	2,090	1,210	351	358	264	205
28	184	1,200	*5,600	1,790	*290	1,600	2,050	1,060	306	399	215	191
29	156	695	2,680	1,400	-	1,400	1,350	1,580	288	346	198	191
30	156	510	1,240	5,760	-	980	1,260	1,800	291	302	282	228
31	170	-	620	7,640	-	900	-	1,050	-	352	267	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	5,188	478	92	167	0.390	0.45
November	14,102	2,520	131	470	1.10	1.23
December	22,793	5,600	230	735	1.72	1.98
Calendar year 1946	189,193	6,000	82	518	1.21	16.45
January	52,048	7,640	330	1,679	3.92	4.52
February	18,390	2,250	280	657	1.54	1.60
March	41,303	9,140	240	1,332	3.11	3.59
April	110,570	15,500	1,220	3,686	8.61	9.61
May	53,554	4,400	836	1,728	4.04	4.65
June	25,312	6,420	288	844	1.97	2.20
July	14,596	2,540	228	471	1.10	1.27
August	8,815	996	181	284	.664	.77
September	8,122	825	155	271	.633	.71
Water year 1946-47	374,793	15,500	92	1,027	2.40	32.58

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 22, 23, Dec. 2, 3, 14-28, Dec. 30 to Jan. 14, Jan. 21-24, Feb. 4 to Mar. 14, Mar. 17-21, 28, Mar. 30 to Apr. 1. Shifting-control method used Apr. 5.

Buffalo Creek at Gardenville, N. Y.

Location.- Water-stage recorder, lat. 42°51'15", long. 78°45'30", in Gardenville, Erie County, 700 feet downstream from bridge on Union Road and 2 miles upstream from Cayuga Creek. Datum of gage is 604.04 feet above mean sea level, unadjusted.
Drainage area.- 145 square miles.
Records available.- October 1938 to September 1947.
Extremes.- Maximum discharge during year, 9,840 second-feet Apr. 5 (gage height, 7.35 feet); from rating curve extended above 4,000 second-feet by logarithmic plotting; minimum, 8.7 second-feet Oct. 8-12 (gage height, 1.11 feet).
1938-47: Maximum discharge, 14,000 second-feet Mar. 17, 1942, from rating curve extended above 4,000 second-feet by logarithmic plotting; maximum gage height, 11.90 feet Mar. 9, 1942 (ice jam); minimum discharge, 0.7 second-foot (regulated) Aug. 22, 24, 25, 1941; minimum gage height observed, 0.70 foot Aug. 28, 31, Sept. 3, 1939 (backwater from leaves and debris), Aug. 22, 24, 25, 1941.
Remarks.- Records good except those for periods of ice effect, which are fair. Diurnal fluctuation at low flow caused by mill 3.2 miles above station.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 5

1.1	7.9	2.0	290	3.4	1,320
1.2	18	2.2	393	4.0	2,040
1.4	62	2.4	509	4.5	2,800
1.6	123	2.6	640	5.0	3,700
1.8	199	3.0	950	5.8	5,440

Apr. 6 to Sept. 30

1.1	8.5	1.8	209	2.6	654
1.2	20	2.0	302	3.0	960
1.4	63	2.2	407	3.4	1,320
1.6	128	2.4	524		

Note.- Same as preceding table above 3.4 feet.

Discharge, in second-feet, water year October 1946 to September 19'7

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	90	104	86	480	68	474	727	114	33	40	25
2	21	62	80	130	280	76	1,460	2,170	908	33	33	50
3	15	52	74	300	235	74	1,360	1,090	2,970	35	28	69
4	12	47	82	175	195	56	901	895	426	33	25	35
5	10	40	82	116	140	54	5,340	402	236	28	23	23
6	10	33	110	92	135	62	4,480	364	188	28	20	20
7	9.6	30	92	82	150	74	*1,340	509	151	50	18	18
8	9.2	31	71	74	145	80	483	492	163	60	17	17
9	8.7	38	65	70	116	82	600	374	144	48	16	15
10	8.7	38	257	74	106	86	494	236	121	39	16	14
11	8.7	60	817	104	125	92	607	184	100	36	16	13
12	20	221	290	230	140	110	579	155	87	88	17	12
13	97	131	616	125	130	150	322	136	82	59	17	11
14	65	78	165	150	145	760	240	848	243	40	16	11
15	35	56	80	2,300	170	1,040	222	449	352	45	16	12
16	26	44	86	*474	185	660	1,430	254	171	71	18	30
17	25	43	104	225	155	470	973	236	114	42	36	40
18	44	59	62	160	130	360	494	282	82	34	28	20
19	124	49	42	130	116	320	852	245	69	98	22	15
20	71	40	44	1,100	106	335	991	535	62	98	19	13
21	44	36	44	900	98	325	1,890	435	56	60	20	14
22	32	34	56	130	74	310	940	966	52	66	20	37
23	27	47	62	140	62	488	514	297	47	449	18	78
24	25	58	80	250	60	*3,000	358	192	44	176	17	40
25	24	79	68	1,060	62	2,980	292	276	43	81	16	27
26	33	692	58	610	68	560	292	644	43	54	16	21
27	71	1,080	42	530	68	460	484	240	42	98	18	18
28	45	362	1,800	393	*64	380	515	201	37	138	17	17
29	35	179	*512	220	-	335	259	184	34	83	17	17
30	33	120	228	820	-	240	249	246	33	54	21	20
31	61	-	122	2,770	-	248	-	148	-	42	40	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,073.9	124	8.7	34.6	0.239	0.28
November	3,929	1,080	30	131	.903	1.01
December	6,395	1,800	42	206	1.42	1.64
Calendar year 1946	48,883.5	3,280	8.7	134	.924	12.54
January	14,020	2,770	70	452	3.12	3.60
February	3,940	480	60	141	.972	1.01
March	14,335	3,000	54	462	3.19	3.68
April	29,435	5,340	222	981	6.77	7.55
May	14,412	2,170	136	465	3.21	3.70
June	7,214	2,970	33	240	1.66	1.85
July	2,297	449	28	74.1	.511	.59
August	659	40	16	21.3	.147	.17
September	752	78	11	25.1	.173	.19
Water year 1946-47	98,461.9	5,340	8.7	270	1.86	25.27

Peak discharge.- Mar. 24 (4 p.m.) 4,860 sec.-ft.; Apr. 5 (8:30 p.m.) 9,840 sec.-ft.; June 3 (7 a.m.) 5,580 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 22-24, Dec. 1-7, 14-28, Dec. 31 to Jan. 15, Jan. 17-19, 21-25, 29, 30, Feb. 1 to Mar. 18, Mar. 24, 26-28, 30.

Cayuga Creek near Lancaster, N. Y.

Location.- Water-stage recorder, lat. 42°53'20", long. 78°38'40", just upstream from low flat-crested dam in Como Lake Park, 700 feet downstream from bridge on Bowen Road, 800 feet downstream from Little Buffalo Creek, and 2 miles southeast of Lancaster, Erie County. Datum of gage is 672.80 feet above mean sea level, unadjusted.

Drainage area.- 93.3 square miles.

Records available.- September 1938 to September 1947.

Extremes.- Maximum discharge during year, 5,690 second-feet Apr. 5; maximum gage height, 8.98 feet Jan. 15 (ice jam); minimum discharge, 2.6 second-feet Oct. 11 (gage height, 2.96 feet).

1938-47: Maximum discharge, 7,480 second-feet Mar. 17, 1942; maximum gage height, 12.36 feet Mar. 9, 1942 (ice jam); practically no flow Aug. 8, 9, 1939, when permanent stop logs were installed in dam.

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

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Jan. 14						Jan. 15 to Sept. 30					
3.0	3.2	3.8	25	4.6	244	3.0	3.3	4.0	36	5.3	802
3.1	5.1	4.0	36	4.8	359	3.1	5.2	4.1	48	5.6	1,130
3.2	7.2	4.1	48	5.0	494	3.2	7.4	4.2	76	6.0	1,660
3.3	9.5	4.2	74	5.3	740	3.3	9.8	4.4	154	6.5	2,490
3.4	12	4.3	109	5.7	1,160	3.4	12	4.6	256	7.0	3,470
3.6	18	4.4	149			3.6	18	4.8	382		
						3.8	25	5.0	532		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jnne	July	Aug.	Sept.
1	4.3	135	116	62	382	*34	400	534	61	13	25	8.6
2	4.0	68	78	114	254	37	960	1,470	1,050	13	19	57
3	4.2	66	70	250	190	34	824	829	1,690	13	17	30
4	3.7	54	83	120	155	27	856	684	249	13	15	14
5	a3.5	41	79	80	94	26	3,330	268	141	11	13	11
6	a3.5	30	113	62	90	31	2,390	240	112	11	12	6.6
7	a3.4	24	88	56	102	37	*719	389	89	28	10	6.1
8	a3.2	26	68	52	96	39	289	362	112	33	9.3	5.9
9	a3.0	45	55	48	70	40	440	268	89	23	8.6	5.3
10	a3.0	38	381	50	58	43	349	164	64	19	9.3	4.5
11	a3.0	120	535	80	76	50	432	116	51	20	7.4	4.1
12	11	336	267	200	84	64	356	94	41	52	7.3	3.6
13	77	120	416	82	78	94	188	80	39	29	6.6	3.3
14	32	72	*82	300	86	700	146	239	220	17	6.2	3.2
15	16	52	48	1,900	104	914	133	164	258	34	5.8	3.7
16	11	43	56	*333	116	574	995	120	108	109	8.6	9.6
17	11	44	78	185	94	432	576	120	62	84	8.6	7.6
18	127	48	45	130	80	330	372	258	45	31	8.8	5.5
19	178	36	29	98	70	290	784	178	38	170	8.8	4.3
20	61	32	31	954	64	300	650	755	31	99	7.1	4.2
21	34	29	31	450	58	300	760	506	26	41	7.3	4.5
22	24	26	43	90	40	270	560	746	23	306	7.9	29
23	19	28	47	100	32	540	319	192	20	513	6.6	25
24	16	39	70	200	31	*2,500	213	125	19	146	6.8	13
25	15	104	56	660	32	1,790	183	216	19	57	5.5	8.6
26	60	973	45	468	35	380	150	477	18	35	6.0	6.7
27	50	798	29	379	34	310	294	154	17	155	6.7	5.9
28	27	316	1,160	316	32	260	247	141	16	325	6.2	5.2
29	20	162	370	168	-	220	137	141	12	103	7.9	5.3
30	20	121	195	380	-	160	153	116	14	50	13	8.6
31	256	-	98	1,420	-	165	-	76	-	38	14	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
Ootober	1,103.8	256	3.0	35.6	0.382	0.44
Novsmber	4,026	973	24	134	1.44	1.60
December	4,862	1,160	29	157	1.68	1.94
Calendar year 1946	36,437.0	3,500	1.3	99.8	1.07	14.53
January	9,787	1,900	48	316	3.39	3.90
February	2,617	382	31	93.5	1.00	1.04
March	10,991	2,500	26	355	3.80	4.38
April	18,005	3,330	133	600	6.43	7.18
May	10,222	1,470	76	330	3.54	4.07
June	4,734	1,690	12	158	1.69	1.89
July	2,591	513	11	83.6	.896	1.03
August	301.3	25	5.5	9.72	.104	.12
September	309.9	57	3.2	10.3	.110	.12
Water year 1946-47	69,550.0	3,330	3.0	191	2.05	27.71

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of recorded range in stage and records for Buffalo Creek at Gardenville.

Note.- Stage-discharge relation affected by ice Dec. 1-3, 14-20, Dec. 24 to Jan. 15, Jan. 17-19, 21-25, 30, Feb. 3 to Mar. 4, Mar. 8-14, 18-24, Mar. 26 to Apr. 2.

Cazenovia Creek at Ebenezer, N. Y.

Location.- Water-stage recorder, lat. 42°49'45", long. 78°46'40", 40 feet upstream from highway bridge on Ridge Road in Ebenezer, Erie County, 4.4 miles upstream from mouth, and 5 miles southeast of Buffalo. Datum of gage is 606.86 feet above mean sea level, unadjusted.

Drainage area.- 136 square miles.

Records available.- June 1940 to September 1947.

Extremes.- Maximum discharge during year, 9,210 second-feet Apr. 5 (gage height, 11.02 feet, from reconstructed gage-height graph); minimum, 4.5 second-feet Oct. 1; minimum gage height, 0.475 foot Oct. 7, 8, 11.
1940-47: Maximum discharge, 11,200 second-feet Mar. 17, 1942 (gage height, 13.11 feet), from rating curve extended above 5,200 second-feet by logarithmic plotting; minimum, 3.7 second-feet Aug. 25, 1941 (gage height, 0.42 foot).

Remarks.- Records good except those for periods of ice effect, backwater from tree, partially obstructed intake, or no gage-height record, which are fair.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	123	141	110	560	82	500	786	114	27	34	26
2	12	67	a114	165	330	88	1,560	1,650	1,240	32	28	147
3	8.8	55	a102	370	300	80	1,490	779	e2,500	33	25	86
4	7.8	51	a118	200	280	64	963	648	e470	28	22	41
5	7.5	42	a114	140	185	62	*4,900	367	e270	25	21	27
6	7.5	35	a150	110	175	74	4,040	372	e200	25	21	22
7	7.2	30	a132	100	200	84	*1,370	516	e150	49	19	21
8	6.9	33	99	92	190	92	539	448	e165	50	17	18
9	6.9	37	84	86	140	94	741	355	e140	42	17	15
10	6.9	48	610	90	125	100	617	215	e114	36	17	13
11	6.9	133	852	130	150	118	904	165	e94	35	17	12
12	20	484	454	290	165	140	740	135	83	e90	16	10
13	123	185	693	150	155	200	353	140	77	52	13	9.8
14	60	102	160	420	170	1,000	250	1,840	e320	37	13	10
15	33	69	84	2,300	200	1,250	229	580	e330	42	12	11
16	23	a56	92	*f823	225	720	1,260	310	e150	e135	36	44
17	21	a53	130	300	185	490	919	280	e98	e82	68	43
18	72	a94	78	220	160	360	580	341	79	45	36	23
19	197	a61	52	180	145	320	979	263	68	e190	22	16
20	74	a56	56	1,200	130	360	1,250	720	60	e98	81	13
21	44	51	54	840	120	340	2,040	573	55	e60	45	14
22	33	48	70	165	90	312	924	1,110	50	60	28	74
23	27	58	78	180	74	*557	540	330	46	433	22	101
24	23	65	110	300	72	3,060	383	200	45	164	19	45
25	23	211	94	1,000	74	2,440	299	410	43	75	16	29
26	41	1,240	76	767	80	560	267	846	42	47	19	22
27	60	1,010	56	630	80	470	499	289	41	53	21	19
28	38	440	1,700	470	*76	390	456	258	37	94	19	17
29	30	223	*660	290	-	342	237	225	33	61	13	16
30	29	151	280	1,060	-	250	327	233	32	43	20	19
31	111	-	155	2,420	-	260	-	135	-	38	50	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,170.4	197	6.9	37.8	0.278	0.32
November	5,311	1,240	30	177	1.30	1.45
December	7,648	1,700	52	247	1.82	2.09
Calendar year 1946	58,686.1	3,500	5.6	161	1.18	16.04
January	15,398	2,420	86	497	3.65	4.21
February	4,836	560	72	173	1.27	1.32
March	14,759	3,060	62	476	3.50	4.04
April	30,156	4,900	229	1,005	7.39	8.25
May	15,319	1,850	135	494	3.63	4.19
June	7,146	2,500	32	238	1.75	1.95
July	2,281	433	25	73.6	.541	.62
August	807	81	12	26.0	.191	.22
September	963.8	147	9.8	32.1	.236	.26
Water year 1946-47	105,795.2	4,900	6.9	290	2.13	28.92

Peak discharge.- Mar. 24 (12:30 p.m.) 4,190 sec.-ft.; Apr. 5 (6:30 p.m.) 9,210 sec.-ft.
* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of recorded range in stage, partial recorder record, weather records, and records for nearby stations.
c Backwater from tree.
f Fragmentary gage-height record; discharge computed on basis of partial recorder record and normal recession pattern.
Note.- Stage-discharge relation affected by ice Nov. 23, Dec. 14 to Jan. 15, Jan. 17-25, 29, 30, Feb. 2 to Mar. 21, Mar. 26-28, Mar. 30 to Apr. 1. Shifting-control method used Oct. 4-6.

Tonawanda Creek at Batavia, N. Y.

Location.- Water-stage recorder, lat. 42°59'55", long. 78°11'20", 150 feet downstream from municipal dam and 500 feet above Walnut Street Bridge in Batavia, Genesee County. Datum of gage is 876.01 feet above mean sea level (city of Batavia bench mark).

Drainage area.- 172 square miles.

Records available.- July 1944 to September 1947.

Extremes.- Maximum discharge during year, 4,840 second-feet Apr. 6 (gage height, 13.85 feet); minimum, 11 second-feet Oct. 9 (gage height, 1.18 feet).
1944-47: Maximum discharge, that of Apr. 6, 1947; minimum, 1.5 second-feet (regulated) Aug. 12, 1944 (gage height, 0.975 foot).
Maximum stage known, 14.5 feet in March 1942, from records of city of Batavia.

Remarks.- Records excellent except those for periods of ice effect or those below 25 second-feet, which are good, and those for periods of doubtful or no gage-height record, which are fair. Slight regulation at low flow by manufacturing plant just above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	178	b145	b160	1,170	*69	b470	675	178	37	87	34
2	21	84	b120	b135	b660	86	844	772	368	36	72	62
3	17	63	b94	288	b390	b84	1,400	1,610	2,030	36	64	76
4	14	55	111	292	b320	b49	1,420	767	d1,500	42	57	42
5	14	48	106	b160	b205	b32	2,240	490	d540	38	51	32
6	13	43	135	b130	b170	31	4,600	403	d330	39	48	29
7	13	39	130	115	b190	63	3,590	457	d226	79	44	28
8	12	39	110	110	b185	b80	1,240	688	214	a114	39	24
9	11	40	95	b98	b160	b82	*896	582	199	a81	36	23
10	13	42	108	b90	b118	90	813	386	165	a82	37	23
11	13	45	615	b98	b122	94	810	296	138	64	36	21
12	22	211	379	236	b130	b102	1,020	242	119	106	32	19
13	86	152	492	202	b135	b118	737	210	114	103	30	19
14	63	89	b245	b185	141	241	434	399	127	60	30	20
15	35	67	*b118	1,420	148	570	392	430	373	50	29	24
16	28	56	b100	1,250	b170	844	594	291	205	51	34	32
17	26	52	b104	*504	b180	862	1,730	273	145	94	48	39
18	46	59	b86	309	b160	663	833	315	116	57	48	25
19	188	51	b62	b230	b140	533	796	332	98	178	36	22
20	92	47	b66	b460	b114	449	980	468	85	189	30	21
21	53	45	63	b1,020	b98	416	836	491	76	87	34	23
22	41	44	73	b560	b84	395	1,100	857	69	392	73	55
23	36	48	b70	b280	b72	440	1,140	535	62	1,200	39	81
24	31	52	b82	316	b64	1,470	1,030	301	56	783	32	44
25	30	88	b76	801	b70	*b2,900	516	255	53	249	32	31
26	53	217	b72	1,090	b80	b980	413	530	50	147	29	27
27	84	826	b54	866	b74	b880	467	313	53	150	29	24
28	48	697	b250	615	66	b780	849	252	46	518	28	24
29	38	278	772	388	-	b680	454	250	42	262	25	23
30	44	179	646	b270	-	b540	369	378	39	159	41	24
31	123	-	b290	972	-	b430	-	232	-	116	62	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per sq mile	Runoff in inches
October	1,337	188	11	43.1	0.251	0.29
November	3,934	826	39	131	.762	.85
December	5,869	772	54	189	1.10	1.27
Calendar year 1946	56,078	3,400	10	154	.895	12.12
January	13,650	1,420	90	440	2.56	2.95
February	5,616	1,170	64	201	1.17	1.21
March	15,053	2,900	31	486	2.83	3.25
April	33,013	4,600	369	1,100	6.40	7.14
May	14,480	1,610	210	467	2.72	3.13
June	7,816	2,030	39	261	1.52	1.69
July	5,599	1,200	36	181	1.05	1.21
August	1,312	87	25	42.3	.246	.28
September	971	81	19	32.4	.183	.21
Water year 1946-47	108,650	4,600	11	298	1.73	23.48

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed from reconstructed gage-height graph based on partial gage-height record and records for Little Tonawanda Creek at Linden.
b Stage-discharge relation affected by ice (doubtful gage-height record Mar. 26-29).
d Doubtful gage-height record; discharge computed as explained in footnote a.

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Little Tonawanda Creek at Linden, N. Y.

Location.- Water-stage recorder and concrete control, lat. 42°52'35", long. 78°09'45", at highway bridge in Linden, Genesee County, and 7 miles upstream from mouth.

Drainage area.- 22.0 square miles.

Records available.- July 1912 to September 1947.

Average discharge.- 34 years (1912-19, 1920-47), 27.7 second-feet.

Extremes.- Maximum discharge during year, 1,370 second-feet Apr. 5 (gage height, 9.48 feet); minimum, 1.0 second-foot Oct. 7, 8 (gage height, 0.33 foot).
1912-47: Maximum discharge, 2,400 second-feet Apr. 22, 1916 (gage height, 14.6 feet, from floodmarks), from rating curve extended above 1,500 second-feet by logarithmic plotting; minimum observed, 0.1 second-foot Sept. 5-7, 1934, and several times during Aug. 4-28, 1936.

Remarks.- Records good.

Rating tables, water year 1946-47, except periods of ice effect or backwater from leaves (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 5

0.3	0.8	0.9	12	2.5	113
.4	1.7	1.0	16	3.0	164
.5	3.0	1.1	19	4.0	288
.6	4.7	1.3	28	5.0	437
.7	6.8	1.6	44	6.0	617
.8	9.3	2.0	70	6.5	717

Apr. 6 to Sept. 30

0.4	1.6	0.8	9.6
.5	2.9	.9	13
.6	4.6	1.0	16
.7	6.9	1.1	19

Note.- Same as preceding table above 1.2 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.2	18	23	20	88	*13	84	92	21	4.2	6.6	3.8
2	c1.2	12	18	25	54	13	161	232	125	4.0	5.8	12
3	c1.2	9.6	16	56	41	12	151	117	461	4.4	5.2	6.2
4	c1.1	8.2	17	31	36	7.3	139	76	82	5.8	4.7	4.7
5	1.1	7.3	18	23	27	9.0	704	59	45	4.2	4.4	4.2
6	1.1	6.8	24	20	25	12	628	48	37	3.7	4.2	4.0
7	1.0	6.4	21	18	25	13	219	69	29	9.7	3.7	3.6
8	1.0	6.4	18	17	21	13	99	86	32	13	3.6	3.5
9	c1.1	6.5	16	16	16	13	*105	65	26	9.4	3.6	3.4
10	c1.1	6.4	46	18	15	13	93	44	21	12	3.5	3.1
11	1.1	10	80	23	17	14	147	35	17	7.4	3.2	2.8
12	2.5	36	45	42	18	16	128	29	15	16	3.0	2.8
13	6.1	18	*77	25	18	22	80	27	14	8.5	2.8	2.7
14	3.7	13	28	73	19	66	52	46	30	5.8	2.6	2.6
15	2.8	11	18	292	23	120	45	35	38	5.4	3.0	2.8
16	2.4	9.6	15	79	26	95	268	30	23	5.7	3.6	3.2
17	2.4	9.6	15	*44	21	74	133	28	16	6.1	6.0	2.6
18	16	9.6	13	33	19	58	90	37	13	5.6	5.3	2.4
19	21	8.5	11	28	17	48	130	30	11	19	3.7	2.3
20	9.0	8.2	11	189	16	50	105	39	9.4	12	3.4	2.4
21	6.4	7.7	11	96	15	49	113	50	8.2	10	24	2.8
22	5.1	8.0	12	39	13	46	201	92	7.4	134	12	8.8
23	4.5	8.2	12	34	11	92	147	41	6.5	84	5.6	6.4
24	4.0	8.5	14	66	11	537	88	29	6.2	31	4.5	4.4
25	3.9	13	13	153	12	*394	61	32	5.8	16	4.0	3.6
26	11	99	12	103	13	102	51	47	5.7	12	3.9	3.3
27	8.2	124	10	82	12	92	145	29	5.6	13	3.7	3.1
28	5.9	55	251	65	12	74	84	28	5.1	18	3.3	2.8
29	5.1	33	102	40	-	66	51	48	4.6	13	3.2	2.8
30	13	25	46	54	-	48	63	45	4.3	9.4	8.7	2.8
31	29	-	31	202	-	50	-	27	-	7.7	4.8	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	174.2	29	1.0	5.62	0.255	0.29
November	602.5	124	6.4	20.1	.914	1.02
December	1,044	251	10	33.7	1.53	1.76
Calendar year 1946	8,942.1	800	1.0	24.5	1.11	15.10
January	2,006	292	16	64.7	2.94	3.39
February	641	88	11	22.9	1.04	1.08
March	2,231.3	537	7.3	72.0	3.27	3.77
April	4,565	704	45	152	6.91	7.72
May	1,692	232	27	54.6	2.48	2.86
June	1,124.8	461	4.3	37.5	1.70	1.90
July	510.0	134	3.7	16.5	.750	.86
August	159.4	24	2.6	5.14	.234	.27
September	115.9	12	2.3	3.86	.175	.20
Water year 1946-47	14,866.1	704	1.0	40.7	1.85	25.12

Peak discharge.- Mar. 24 (6:45 p.m.) 778 sec.-ft.; Apr. 5 (4:45 p.m.) 1,370 sec.-ft.; June 5 (3 a.m.) 877 sec.-ft.

* Winter discharge measurement made on this day.

c Backwater from leaves.

Note.- Stage-discharge relation affected by ice Dec. 1-3, 14-27; Dec. 29 to Jan. 13, Jan. 17, 18, 21-24, 29, 30, Feb. 2-12, 17-19, 22-25, 27, Mar. 14, 15, 17-21, 23, 27, 28, 30, 31.

Genesee River at Scio, N. Y.

Location.- Water-stage recorder, lat. 42°09'50", long. 77°58'50", at site of former highway bridge, three-quarters of a mile upstream from Scio, Allegany County.

Drainage area.- 309 square miles.

Records available.- June 1916 to September 1947.

Average discharge.- 31 years, 386 second-feet.

Extremes.- Maximum discharge during year, 9,030 second-feet Apr. 5 (gage height, 9.65 feet); minimum, 55 second-feet Aug. 13, 14 (gage height, 0.76 foot).
1916-47: Maximum discharge, 12,000 second-feet May 28, 1946 (gage height, 10.63 feet); minimum, 5.8 second-feet Sept. 4, 1939 (gage height, 0.71 foot).

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

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Apr. 5)

Oct. 1 to Apr. 5						Apr. 5 to Sept. 30					
1.2	83	2.8	579	5.5	2,680	0.7	45	1.8	303	4.0	1,340
1.4	119	3.2	779	6.5	3,960	.8	62	2.2	434	4.5	1,690
1.6	163	3.6	1,010	7.4	5,320	1.0	100	2.6	589	5.5	2,590
2.0	273	4.0	1,280			1.2	143	3.0	771	6.5	3,720
2.4	411	4.5	1,690			1.4	192	3.5	1,040	7.8	5,530

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	344	270	193	b320	1,280	b98	633	852	497	123	148	221
2	246	237	b145	b450	1,000	106	1,700	1,410	538	155	121	736
3	199	218	b130	b1,500	790	b100	1,760	1,470	5,480	119	108	426
4	170	204	156	b1,250	695	b90	1,140	1,110	1,910	102	100	303
5	149	186	154	b780	b400	b104	5,260	1,100	1,160	96	106	259
6	132	168	163	655	b410	106	5,260	1,170	1,060	94	92	226
7	119	161	156	525	b350	102	2,420	1,110	852	187	82	192
8	110	168	154	487	b300	b92	*1,520	986	1,040	231	76	167
9	104	163	154	b400	b270	b96	1,230	836	677	148	75	145
10	100	154	161	364	b260	95	991	709	544	139	75	130
11	97	162	196	367	b245	b94	846	602	448	132	69	117
12	229	246	170	419	b230	113	836	524	386	210	64	106
13	571	207	382	280	b220	189	672	640	334	229	59	106
14	237	186	b250	*308	226	1,420	598	2,420	490	552	86	145
15	188	168	188	1,510	229	1,250	532	1,170	653	288	74	121
16	166	154	199	1,530	226	b580	1,000	888	389	213	190	113
17	154	158	212	896	b200	b440	922	786	312	290	197	92
18	444	156	b180	660	b195	b340	747	1,420	276	300	113	80
19	482	142	b160	566	b180	b290	686	1,060	245	396	324	75
20	292	138	*125	817	b120	315	1,790	1,150	218	291	1,530	94
21	249	134	176	1,280	b130	315	2,820	1,080	200	234	418	88
22	226	138	180	b440	b124	*308	1,530	2,410	177	253	356	230
23	207	140	173	b500	b120	428	1,170	1,260	160	480	256	165
24	188	130	191	607	b120	1,570	969	1,010	155	285	208	115
25	182	130	b165	920	121	2,490	1,010	1,200	207	232	180	98
26	822	169	b150	929	*119	b1,080	1,430	1,350	162	202	306	88
27	415	392	130	997	113	b820	1,190	904	141	187	234	80
28	332	252	748	796	110	b660	1,080	821	128	242	172	75
29	308	215	800	655	-	631	862	891	119	182	141	71
30	295	196	b560	1,180	-	508	816	815	108	155	728	76
31	279	-	b330	3,160	-	446	-	589	-	167	340	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	8,036	822	97	259	0.838	0.97
November	5,542	392	130	185	.599	.67
December	7,231	800	125	233	.754	.87
Calendar year 1946	155,728	8,960	64	427	1.38	18.75
January	25,548	3,160	280	824	2.67	3.07
February	8,763	1,280	110	313	1.01	1.05
March	15,276	2,490	90	493	1.60	1.84
April	43,400	5,260	532	1,447	4.68	5.22
May	33,743	2,420	524	1,088	3.52	4.06
June	19,066	5,480	108	636	2.06	2.29
July	6,914	552	94	223	.722	.83
August	7,028	1,530	59	227	.735	.85
September	4,940	736	71	165	.534	.59
Water year 1946-47	185,487	5,480	59	508	1.64	22.31

Peak discharge.- Apr. 5 (5:30 p.m.) 9,030 sec.-ft.; June 3 (8 a.m.) 8,620 sec.-ft.
* Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice (doubtful gage-height record Jan. 3, 4).

Genesee River at Portageville, N. Y.

Location.- Water-stage recorder, lat. 42°34'10", long. 78°02'45", in Portageville, Wyoming County, 300 feet downstream from unnamed tributary, 350 feet downstream from Pennsylvania Railroad bridge, and 0.7 mile upstream from Upper Falls.

Drainage area.- 982 square miles.

Records available.- December 1945 to September 1947.

Extremes.- Maximum discharge during year, 28,300 second-feet Apr. 6 (gage height, 17.39 feet); minimum, 130 second-feet (regulated) Aug. 13 (gage height, 2.69 feet).
1945-47: Maximum discharge, that of Apr. 6, 1947; minimum, that of Aug. 13, 1947.

Remarks.- Records good except those for periods of ice effect, which are fair. Some diurnal fluctuation during low flow caused by power plants. Slight seasonal regulation by Caneadea Reservoir (capacity, 1,106,000,000 cubic feet).

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 5

2.9	176	3.8	546	5.5	2,160
3.0	205	4.0	668	6.0	2,810
3.2	272	4.2	810	6.5	3,540
3.4	351	4.6	1,160	7.0	4,370
3.6	442	5.0	1,580	8.0	6,300

Note.- Same as following table above 8.2 feet.

Apr. 6 to Sept. 30

2.8	156	4.2	835	8.0	6,320
3.0	211	4.6	1,190	9.0	8,420
3.2	278	5.0	1,610	10.0	10,700
3.4	357	5.5	2,210	11.0	13,100
3.6	451	6.0	2,880	12.0	15,700
3.8	561	6.5	3,620	13.0	18,200
4.0	688	7.0	4,440	14.9	22,800

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	905	587	957	b960	4,110	b840	1,910	2,240	1,560	289	316	567
2	524	773	b860	b1,120	2,590	b1,000	6,620	4,250	1,480	328	308	569
3	414	743	b480	4,420	2,040	b960	8,640	6,160	12,300	378	257	1,110
4	351	695	492	3,420	1,840	b920	4,740	3,830	6,260	268	254	647
5	302	655	477	1,780	b1,100	b940	12,800	2,810	3,090	246	251	499
6	258	630	492	1,550	b780	*b480	22,800	2,870	2,570	246	216	431
7	240	424	773	1,240	b960	b340	9,920	2,670	2,070	364	191	366
8	215	369	736	1,130	b880	b560	4,740	2,680	2,790	452	169	332
9	199	508	773	b920	b960	b640	3,840	2,210	2,000	480	172	308
10	188	624	773	b860	b960	b660	3,290	1,860	1,560	378	156	274
11	190	1,070	1,440	940	b1,000	b440	3,290	1,590	1,320	353	158	255
12	254	1,960	923	1,150	b980	b380	3,300	1,400	1,210	345	174	243
13	1,150	1,310	1,080	b960	b760	b470	2,550	1,330	1,010	341	159	223
14	824	850	1,420	*906	b720	b2,050	2,080	7,860	843	414	171	213
15	514	662	b1,020	3,790	1,150	5,000	1,710	4,640	1,340	726	172	246
16	400	857	b900	4,650	1,130	*2,340	3,140	2,870	1,180	499	714	241
17	369	898	923	2,560	1,080	1,760	4,380	2,380	867	446	560	226
18	796	932	*940	1,770	b1,020	1,340	2,420	3,120	709	530	451	213
19	1,820	857	b620	1,440	b900	1,050	2,280	3,610	655	629	349	191
20	1,020	795	b450	2,120	b480	1,070	3,530	2,890	592	745	1,140	186
21	695	494	b720	4,960	b400	1,110	12,800	2,540	538	567	1,340	176
22	576	414	795	b1,450	b720	1,100	7,510	5,960	470	694	1,110	394
23	497	680	810	b1,020	b780	1,190	5,050	3,240	431	1,060	687	494
24	442	709	857	b1,800	b800	7,060	3,340	2,310	393	1,090	467	390
25	409	709	b880	4,740	b800	*10,800	2,770	2,150	362	774	417	288
26	1,480	1,140	b780	4,080	b780	3,990	4,050	4,180	414	493	765	235
27	1,600	2,760	b560	4,520	b480	2,580	4,000	2,770	375	398	598	201
28	1,060	1,500	4,260	2,920	b350	2,080	3,540	2,300	353	417	472	180
29	898	1,000	4,460	2,220	-	2,020	2,400	2,650	312	436	357	195
30	873	1,060	2,280	2,620	-	1,570	2,030	3,770	297	366	508	215
31	662	-	b1,300	11,900	-	1,280	-	1,970	-	372	1,080	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	20,125	1,820	188	649	-	-
November	26,665	2,760	369	889	-	-
December	34,231	4,460	450	1,104	-	-
Calendar year 1946	419,022	22,200	150	1,148	1.17	15.88
January	79,916	11,900	860	2,578	-	-
February	30,550	4,110	350	1,091	-	-
March	58,020	10,800	340	1,872	-	-
April	155,470	22,800	1,710	5,182	-	-
May	97,110	7,860	1,330	3,133	-	-
June	49,351	12,300	297	1,645	-	-
July	15,084	1,090	246	487	-	-
August	14,139	1,340	156	456	-	-
September	10,108	1,110	176	337	-	-
Water year 1946-47	590,769	22,800	156	1,619	1.65	22.39

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

Genesee River at St. Helena, N. Y.

Location.- Water-stage recorder, lat. 42°37'20", long. 77°59'20", at highway bridge in St. Helena, Wyoming County, 1½ miles downstream from Wolf Creek and 3 miles east of Castile.

Drainage area.- 1,017 square miles.

Records available.- August 1908 to September 1947.

Average discharge.- 39 years, 1,232 second-feet.

Extremes.- Maximum discharge during year, 30,700 second-feet Apr. 6 (gage height, 11.82 feet); minimum, 138 second-feet (regulated) Aug. 13 (gage height, 2.54 feet).
1908-47: Maximum discharge, 44,400 second-feet May 17, 1916, from rating curve extended above 29,000 second-feet; maximum gage height, 16.3 feet Feb. 23, 1945 (ice jam); minimum discharge, 18 second-feet (regulated) Oct. 5, 17, 1913 (gage height, 1.70 feet).

Remarks.- Records good except those for periods of partially obstructed intake, ice effect, or fragmentary or no gage-height record, which are fair. Some diurnal fluctuation during low flow caused by power plants. Slight seasonal regulation by Caneadea Reservoir (capacity, 1,106,000,000 cubic feet).

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	880	620	1,020	a1,000	f4,310	860	a1,950	2,440	1,720	292	321	609
2	565	620	920	a1,160	f2,770	1,020	f6,600	4,170	1,600	314	321	573
3	456	780	500	a4,500	2,140	1,020	f8,420	6,290	10,600	352	281	1,080
4	388	740	520	a3,600	f1,900	960	5,020	4,180	6,850	271	258	679
5	339	700	500	a1,850	f1,140	980	11,700	3,110	3,430	249	260	529
6	285	660	500	f1,600	f800	500	24,300	3,080	2,750	244	235	456
7	262	450	800	f1,300	980	350	f10,200	2,930	2,270	373	201	392
8	239	390	780	1,130	920	580	*5,090	2,940	2,820	446	176	346
9	226	520	820	944	980	660	4,080	2,380	2,150	518	180	327
10	214	640	820	f900	980	680	f3,590	2,030	1,650	398	172	292
11	210	1,020	1,500	f980	1,040	460	3,570	1,720	1,380	358	163	271
12	276	2,120	980	1,160	1,020	400	3,570	1,510	1,220	352	180	249
13	1,000	1,390	1,120	*1,000	780	480	f2,860	1,450	1,040	340	172	230
14	866	900	1,500	f922	740	2,100	f2,340	7,260	860	395	176	225
15	565	700	1,100	3,680	1,180	5,200	1,900	4,890	1,350	710	184	236
16	449	880	960	4,910	1,180	f2,780	f3,010	3,160	1,250	539	668	276
17	408	940	940	f2,820	1,120	f2,020	f4,670	2,610	920	464	610	235
18	772	980	*980	1,850	1,060	1,540	2,660	3,150	740	532	488	220
19	1,840	900	660	f1,470	940	f1,180	2,480	3,870	680	639	358	211
20	1,030	840	490	1,990	500	1,130	3,190	3,080	620	732	1,020	197
21	679	540	760	f5,140	*410	1,160	12,600	2,800	560	609	1,360	188
22	582	440	840	f1,500	740	1,160	7,970	5,660	480	689	1,120	382
23	557	720	840	f1,080	800	1,220	5,520	3,680	440	1,050	699	529
24	502	740	900	f1,900	820	6,690	3,820	2,580	410	1,120	503	480
25	463	740	920	4,820	840	10,200	3,140	2,310	370	766	392	320
26	1,360	1,120	820	4,210	820	f4,350	4,330	4,310	421	520	729	249
27	1,700	3,070	600	f4,790	500	2,790	4,300	3,070	385	419	609	206
28	1,140	1,620	a4,200	3,130	360	2,210	3,890	2,520	364	426	495	188
29	960	1,080	a4,500	f2,330	-	2,110	2,700	2,740	327	456	371	193
30	920	1,100	a2,350	f2,700	-	1,630	2,290	4,020	303	371	461	220
31	700	-	a1,350	f12,200	-	*1,350	-	2,240	-	385	1,080	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	20,833	1,840	210	672	-	-
November	28,140	3,070	390	938	-	-
December	35,490	4,500	490	1,145	-	-
Calendar year 1946	435,794	19,400	176	1,194	1.17	15.92
January	82,566	12,200	900	2,663	-	-
February	31,770	4,310	360	1,135	-	-
March	59,770	10,200	350	1,928	-	-
April	161,760	24,300	1,900	5,392	-	-
May	102,180	7,260	1,450	3,296	-	-
June	49,960	10,600	303	1,665	-	-
July	15,329	1,120	244	494	-	-
August	14,243	1,360	163	459	-	-
September	10,568	1,060	188	352	-	-
Water year 1946-47	612,609	24,300	163	1,678	1.65	22.42

Peak discharge.- Mar. 25 (2:15 p.m.) 12,300 sec.-ft.; Apr. 6 (6:15 a.m.) 30,700 sec.-ft.; Apr. 21 (11:30 a.m.) 14,000 sec.-ft.; June 3 (5 p.m.) 14,800 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and record for station at Portageville.

f Fragmentary gage-height record; discharge computed on basis of partial gage-height record, weather records, and record for station at Portageville.

Note.- Stage-discharge relation affected by ice Jan. 13, Feb. 7 to Mar. 15 (fragmentary gage-height record Jan. 13, Feb. 8, 9, 14, Mar. 9-13; no gage-height record Feb. 15 to Mar. 8). Stage-discharge relation affected by ice and/or intake partially obstructed Dec. 1-27; intake partially obstructed Oct. 28 to Nov. 11, Nov. 14-26, 29, 30, June 14-25; discharge computed on basis of gage-height record, discharge measurements, outside gage readings, weather records, and records for upstream stations.

Genesee River at Jones Bridge, near Mount Morris, N. Y.

Location.- Water-stage recorder, lat. 42°45'55", long. 77°50'25", at Jones Bridge, 3½ miles northeast of Mount Morris, Livingston County. Datum of gage is 540.00 feet above mean sea level (levels by New York State Conservation Commission).

Drainage area.- 1,419 square miles.

Records available.- May 1903 to April 1906; August 1908 to April 1914, July 1915 to September 1947.

Average discharge.- 37 years (1908-13, 1915-47), 1,600 second-feet.

Extremes.- Maximum discharge during year, 30,600 second-feet Apr. 6 (gage height, 24.40 feet); minimum, 82 second-feet (regulated) Oct. 8 (gage height, 0.41 feet); minimum daily, 205 second-feet (regulated) Aug. 12.
1903-6, 1908-14, 1915-47: Maximum discharge, 55,100 second-feet May 17, 1916 (gage height, 25.44 feet); minimum, 18 second-feet (regulated) Aug. 29, 1909; minimum daily, 30 second-feet (regulated) Aug. 8, 1909.

Remarks.- Records excellent except those for periods of partially obstructed intake or fragmentary gage-height record, which are good, and those for periods of ice effect, which are fair. Diurnal fluctuation at low flow caused by power plants. Slight seasonal regulation by Caneadea Reservoir (capacity, 1,106,000,000 cubic feet).

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	959	854	1,350	1,350	7,210	800	2,400	3,120	2,300	415	446	877
2	794	931	1,180	1,400	4,290	1,250	5,910	4,150	2,100	355	386	762
3	610	983	800	4,700	3,100	1,300	9,870	7,770	10,100	360	327	1,090
4	520	909	720	5,600	2,600	1,250	6,420	5,480	10,600	435	329	948
5	477	859	720	2,700	1,750	1,200	10,300	4,080	5,340	345	338	729
6	441	804	700	2,100	1,200	860	26,600	3,860	3,780	337	263	664
7	423	693	920	1,700	1,300	520	18,200	3,870	3,180	490	281	553
8	209	535	1,000	1,450	1,300	580	*9,580	3,960	3,400	680	258	468
9	311	554	980	1,250	1,250	860	6,400	3,220	3,020	741	218	415
10	277	767	1,020	1,180	1,250	900	5,140	2,670	2,200	633	240	390
11	261	921	1,590	1,250	1,300	760	4,720	2,250	1,850	514	241	356
12	328	2,810	1,480	1,500	1,350	580	4,530	2,000	1,600	468	205	330
13	1,220	2,150	1,280	1,400	1,140	660	3,670	1,900	1,400	446	228	315
14	1,350	1,450	1,690	1,250	1,000	2,350	2,980	6,400	1,220	410	219	295
15	800	1,080	1,340	4,000	1,250	6,600	2,350	6,520	1,500	767	223	292
16	600	1,060	1,140	5,800	1,550	3,890	3,400	4,020	1,700	729	f546	341
17	540	1,160	*1,160	3,800	1,500	2,590	5,960	3,240	1,300	664	946	322
18	920	1,180	1,180	*2,700	1,400	2,030	3,550	3,260	1,060	656	609	285
19	2,330	1,120	920	1,950	1,250	1,600	3,220	4,740	940	798	478	278
20	1,650	1,020	620	2,300	760	1,550	3,400	3,680	860	887	740	246
21	1,080	840	800	6,400	*600	1,550	13,500	3,580	780	826	1,770	250
22	864	600	1,090	2,200	780	1,600	11,200	5,930	680	904	1,600	389
23	735	720	1,040	1,500	980	1,700	8,410	4,960	620	1,180	1,090	622
24	657	900	1,120	2,000	1,040	6,290	6,020	3,340	580	1,310	792	598
25	600	860	1,130	5,800	1,060	12,400	4,700	2,910	520	1,020	625	484
26	1,400	1,240	1,020	6,090	1,060	6,940	5,390	4,790	540	787	1,000	382
27	2,360	3,760	740	6,000	800	*3,840	5,480	3,880	577	593	876	298
28	1,520	2,500	3,200	4,240	520	3,110	5,310	3,130	514	529	756	242
29	1,250	1,600	7,290	3,390	-	2,890	3,770	3,330	468	593	569	274
30	1,140	1,400	3,800	2,950	-	2,350	3,140	5,160	427	529	537	265
31	1,040	-	1,950	11,300	-	1,950	-	3,070	-	454	1,130	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	27,666	2,360	209	892	-	-
November	36,260	3,760	535	1,209	-	-
December	44,970	7,290	620	1,451	-	-
Calendar year 1946	547,964	16,500	209	1,501	1.06	14.36
January	101,250	11,300	1,180	3,266	-	-
February	44,590	7,210	520	1,592	-	-
March	76,750	12,400	520	2,476	-	-
April	205,520	26,600	2,350	6,851	-	-
May	124,270	7,770	1,900	4,009	-	-
June	65,156	10,600	427	2,172	-	-
July	19,851	1,310	337	640	-	-
August	18,266	1,770	205	589	-	-
September	13,760	1,090	242	459	-	-
Water year 1946-47	778,309	26,600	205	2,132	1.50	20.41

Peak discharge.- Jan. 31 (11 a.m.) 15,400 sec.-ft.; Mar. 25 (5 p.m.) 14,100 sec.-ft.; Apr. 6 (2 p.m.) 30,600 sec.-ft.; Apr. 21 (5 p.m.) 16,500 sec.-ft.

* Winter discharge measurement made on this day.

f Fragmentary gage-height record; discharge computed on basis of partial recorder record, recorded range in stage, and records for other stations in basin.

Note.- Stage-discharge relation affected by ice Dec. 16-21, 26-28, Dec. 30 to Jan. 25, Feb. 3 to Mar. 15 (doubtful gage-height record Jan. 4-8, Feb. 10, 11). Intake partially obstructed Oct. 14-18, Nov. 13-26, Nov. 28 to Dec. 10, Mar. 19-23, Mar. 30 to Apr. 1, Apr. 15, 16, May 11-14, June 1, 2, 10-26; discharge computed on basis of discharge measurements, outside-gage readings, gage-height record, and records for upstream stations. Shifting-control method used Mar. 15.

Genesee River at Driving Park Avenue, Rochester, N. Y.

Location.- Water-stage recorder, lat. 43°11'05", long. 77°37'40", in Rochester, Monroe County, 40 feet downstream from plant 5 of Rochester Gas & Electric Corp. and 100 feet upstream from Driving Park Avenue Bridge.

Drainage area.- 2,467 square miles.

Records available.- December 1919 to September 1947.

Average discharge.- 27 years (1920-47), 2,790 second-feet.

Extremes.- Maximum discharge during year, 23,800 second-feet (regulated) Apr. 8 (gage height, 11.03 feet); minimum, 92 second-feet (regulated) Dec. 24 (gage height, -1.08 feet); minimum daily, 782 second-feet (regulated) Mar. 2.

1919-47: Maximum discharge, 33,500 second-feet Apr. 2, 1940 (gage height, 14.08 feet); minimum, less than 10 second-feet, occurred during low-water periods in some years when power plant was shut down; minimum daily, 219 second-feet (regulated) Aug. 14, 1927.

Maximum discharge known, about 54,000 second-feet sometime in March 1835.

Remarks.- Records good except those between 3,500 second-feet and 5,500 second-feet and those for period of no gage-height record, which are fair. Diurnal fluctuation by power plants above station. New York State Barge Canal crosses river near southern boundary of Rochester. Water diverted by the canal from Lake Erie is discharged into river from the west, the canal again diverting a smaller amount of water from river to the east. Additional regulation is provided by Caneadea Reservoir.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,240	1,750	2,380	2,540	14,200	1,040	4,610	5,160	4,970	1,410	1,460	1,780
2	1,640	1,630	2,540	2,170	10,300	782	7,210	6,120	4,860	1,400	1,460	1,850
3	1,470	1,760	2,380	2,480	6,510	1,560	13,400	11,100	12,400	1,280	1,260	1,640
4	1,280	1,800	1,760	3,790	5,270	1,530	14,600	13,400	17,100	1,270	1,280	1,910
5	1,210	1,660	1,720	5,260	4,160	1,520	13,100	9,850	15,800	1,410	1,240	1,680
6	1,050	1,640	1,760	3,580	3,010	1,620	19,000	7,650	10,000	1,270	1,180	1,530
7	1,120	1,530	1,950	2,850	2,620	1,600	22,000	6,980	6,930	1,510	1,190	1,330
8	1,010	1,520	1,020	2,700	2,650	1,010	22,800	8,300	5,470	1,550	1,140	1,310
9	821	1,400	1,870	2,410	2,550	875	19,600	7,510	5,700	1,670	1,140	1,220
10	975	1,250	1,700	2,150	2,480	1,470	12,600	5,540	4,890	1,770	1,020	1,220
11	953	1,710	1,680	2,180	2,680	1,540	7,870	5,020	4,210	1,620	1,040	1,140
12	1,220	2,190	2,390	2,650	2,790	1,630	7,870	4,590	3,750	1,550	1,070	1,160
13	1,020	3,800	2,740	3,230	2,820	1,880	6,860	3,770	3,090	1,560	1,030	1,160
14	2,170	2,970	2,080	3,220	2,830	3,220	5,200	3,980	3,030	1,510	1,060	1,120
15	1,860	2,170	2,300	5,960	2,720	9,090	5,000	10,600	3,000	1,450	1,090	1,070
16	1,470	1,800	2,060	9,910	2,890	10,400	4,890	8,640	3,510	1,830	1,120	1,100
17	1,240	1,900	2,090	9,650	3,230	6,100	9,450	5,560	3,420	1,930	1,380	1,090
18	1,370	1,930	2,200	6,600	3,100	4,850	9,650	5,180	2,640	1,860	1,670	1,070
19	2,090	1,860	1,770	4,610	2,880	4,740	7,090	5,830	2,360	1,890	1,420	1,080
20	3,000	1,820	1,420	5,190	2,520	3,980	6,580	a6,100	2,140	1,940	1,450	996
21	2,280	1,770	1,160	9,590	2,200	3,670	9,430	6,200	1,960	1,920	2,200	984
22	1,760	1,740	1,270	9,690	1,850	3,920	15,500	8,280	1,890	2,540	3,710	1,170
23	1,550	1,500	1,910	4,980	1,520	4,170	16,000	11,100	1,750	3,850	3,050	1,270
24	1,490	1,490	1,950	3,840	2,080	6,360	14,200	7,670	1,640	3,380	2,110	1,330
25	1,440	1,730	1,930	5,140	2,040	15,000	9,780	5,590	1,630	3,150	1,590	1,250
26	1,500	1,810	1,860	9,680	2,040	16,200	8,110	5,770	1,540	2,550	1,530	1,210
27	2,500	3,330	1,570	10,200	1,730	10,000	8,970	7,600	1,550	2,240	1,770	1,130
28	2,820	5,190	1,680	9,880	1,550	6,530	9,160	5,680	1,570	2,050	1,650	1,010
29	2,190	3,780	5,660	6,970	-	5,130	8,130	5,100	1,470	1,830	1,450	1,010
30	2,010	2,670	6,610	4,720	-	4,710	5,540	7,450	1,480	1,830	1,410	1,070
31	1,960	-	4,040	8,400	-	4,780	-	7,380	-	1,740	1,350	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	49,709	3,000	821	1,604	-	-
November	63,100	5,190	1,250	2,103	-	-
December	69,450	6,610	1,020	2,240	-	-
Calendar year 1946	949,204	18,400	458	2,601	1.05	14.31
January	166,220	10,200	2,150	5,362	-	-
February	97,220	14,200	1,520	3,472	-	-
March	140,907	16,200	782	4,545	-	-
April	324,200	22,800	4,610	10,807	-	-
May	218,700	13,400	3,770	7,055	-	-
June	135,750	17,100	1,470	4,525	-	-
July	58,760	3,850	1,270	1,895	-	-
August	46,520	3,710	1,020	1,501	-	-
September	37,890	1,910	984	1,263	-	-
Water year 1946-47	1,408,426	22,800	782	3,859	1.56	21.24

a No gage-height record; discharge computed on basis of power-plant records.
Note.- Shifting-control method used Nov. 13, 27-29, Dec. 12, Jan. 4-6, 12-14, Mar. 16 to Sept. 30.

Canaseraga Creek near Dansville, N. Y.

Location.- Water-stage recorder, lat. 42°33'40", long. 77°42'55", just downstream from Ossian Street Bridge, half a mile downstream from Mill Creek, and 1 mile west of Dansville, Livingston County. Datum of gage is 640.00 feet above mean sea level (levels by New York State Conservation Commission).
Drainage area.- 153 square miles.
Records available.- July 1910 to December 1912, July 1915 to June 1917, March 1919 to September 1947. October 1917 to September 1919 at Cumminsville, 1¼ miles downstream, published as Canaseraga Creek at Cumminsville.
Average discharge.- 27 years (1920-47), 150 second-feet.
Extremes.- Maximum discharge during year, 4,910 second-feet Apr. 5 (gage height, 11.02 feet), from rating curve extended above 1,700 second-feet on basis of contracted-opening determination at gage height 13.1 feet; minimum, 30 second-feet Aug. 14 (gage height, 6.355 feet).
1910-12, 1915-47: Maximum discharge at present site, 8,830 second-feet July 23, 1940 (gage height, 13.1 feet, from floodmark), by contracted-opening method; maximum at former site, 9,110 second-feet July 23, 1940 (gage height, 9.93 feet), by slope-area method; minimum, 10 second-feet Aug. 9, 1934, Sept. 27, 28, 1941.
Remarks.- Records good except those for periods of ice effect or partially obstructed intake, which are fair.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 5						Apr. 6 to Sept. 30					
6.7	33	7.4	213	8.4	765	6.3	22	7.2	201	8.6	1,100
6.8	48	7.6	294	8.8	1,120	6.4	36	7.4	265	9.0	1,550
7.0	88	7.8	387	9.3	1,820	6.6	68	7.6	348	9.4	2,090
7.2	144	8.0	495	9.9	2,830	6.8	107	7.8	452		
						7.0	150	8.2	735		

Discharge, in second-feet, water year October 1946 to September 19'7

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	112	86	120	b155	581	b72	334	322	251	72	46	72
2	79	77	b94	b190	387	77	1,570	582	255	70	43	82
3	61	73	b82	382	b300	75	1,100	556	1,640	70	42	66
4	52	68	91	221	265	b68	627	436	528	74	42	59
5	45	64	91	b165	b200	70	2,790	377	353	68	42	80
6	40	61	96	b140	b210	75	2,050	363	281	64	39	85
7	39	59	91	123	b195	75	890	432	240	126	37	63
8	38	61	86	117	b175	b74	*463	387	377	107	36	58
9	38	64	81	b110	b165	77	388	322	245	93	47	56
10	37	70	84	b108	b155	77	313	269	201	87	43	50
11	35	142	120	123	b140	77	292	231	177	78	38	48
12	147	353	106	181	b125	b90	250	210	162	76	35	48
13	224	213	114	b130	117	139	215	259	152	70	33	52
14	104	160	106	160	117	586	195	895	160	70	32	59
15	79	132	b86	604	129	497	180	507	172	62	74	50
16	64	111	b88	377	138	285	440	377	148	67	119	52
17	86	108	91	256	b125	b245	401	317	132	91	70	43
18	276	101	*86	199	b118	195	296	339	124	85	52	42
19	229	91	b70	170	b104	b165	248	313	118	93	116	38
20	138	86	b62	501	b94	174	380	317	111	76	111	42
21	109	81	88	511	b100	*174	1,370	372	105	74	198	40
22	93	81	88	*b200	b96	181	1,350	865	99	109	170	107
23	79	79	86	b225	b90	255	1,080	419	93	107	115	72
24	73	75	96	269	*b88	1,020	640	328	89	85	97	58
25	72	73	88	553	b90	1,260	514	381	89	72	129	49
26	261	157	b78	554	84	494	648	472	87	64	132	48
27	144	327	b70	527	b78	344	520	344	83	59	103	44
28	111	188	702	377	b74	269	441	296	81	64	85	42
29	98	147	394	298	-	260	348	493	78	59	74	42
30	91	126	b250	826	-	213	322	413	76	52	106	50
31	88	-	b170	1,650	-	196	-	288	-	49	87	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	3,122	278	35	101	0.660	0.76
November	3,512	353	59	117	.765	.85
December	3,955	702	62	128	.837	.96
Calendar year 1946	48,716	2,040	26	133	.869	11.84
January	10,402	1,650	108	336	2.20	2.53
February	4,540	581	74	162	1.06	1.10
March	7,859	1,260	68	254	1.66	1.91
April	20,635	2,790	180	688	4.50	5.02
May	12,480	895	210	403	2.63	3.03
June	6,707	1,640	76	224	1.46	1.63
July	2,396	126	49	77.3	.505	.58
August	2,393	198	32	77.2	.505	.58
September	1,697	107	38	56.6	.370	.41
Water year 1946-47	79,698	2,790	32	218	1.42	19.36

Peak discharge.- Jan. 30 (11:30 p.m.) 3,940 sec.-ft.; Apr. 2 (6 p.m.) 3,820 sec.-ft.; Apr. 5 (3 p.m.) 4,910 sec.-ft.; Apr. 21 (7:45 p.m.) 1,960 sec.-ft.; Apr. 22 (6:45 p.m.) 2,020 sec.-ft.; June 3 (4 a.m.) 3,580 sec.-ft.
* Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.- Intake partially obstructed Apr. 12-16; discharge computed on basis of gage-height record, outside gage readings, and records for nearby stations.

Honeoye Creek at Honeoye Falls, N. Y.

Location.- Water-stage recorder, lat. 42°57'25", long. 77°35'20", 25 feet downstream from highway bridge in Honeoye Falls, Monroe County, and 13 miles upstream from mouth.

Drainage area.- 197 square miles.

Records available.- October 1945 to September 1947.

Extremes.- Maximum discharge during year, 1,740 second-feet June 3 (gage height, 4.71 feet); minimum, 6.5 second-feet Oct. 12 (gage height, 0.98 foot).
1946-47: Maximum discharge, that of June 3, 1947; minimum, 4.0 second-feet Sept. 4, 5, 1946 (gage height, 0.89 foot).

Remarks.- Records good except those for periods of ice effect, which are fair. Flow regulated by diversion from Hemlock and Canadice Lakes for water supply of city of Rochester, and, to a lesser extent, by Honeoye Lake. Diurnal flucutation at low flow by mills above station.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Mar. 14

1.0	7.1	1.6	46	2.4	217
1.1	11	1.8	70	2.6	297
1.2	16	2.0	105	2.8	392
1.4	28	2.2	153	3.1	551

Mar. 15 to Sept. 30

1.0	6.4	1.8	67	2.8	361
1.1	9.8	2.0	99	3.0	460
1.2	14	2.2	142	3.5	760
1.4	26	2.4	200	4.0	1,130
1.6	43	2.6	274	4.4	1,460

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr	May	June	July	Aug.	Sept.
1	16	56	73	98	475	54	278	424	316	39	16	38
2	19	54	56	86	329	60	417	518	332	36	14	37
3	25	47	50	*175	272	58	601	816	1,460	34	12	34
4	19	40	58	130	215	47	398	694	1,240	32	12	32
5	17	35	56	106	135	41	743	492	747	31	11	25
6	14	31	62	90	125	43	1,400	395	560	30	9.6	23
7	12	28	62	80	130	47	*715	452	445	46	8.9	21
8	11	28	58	72	120	58	434	760	409	77	8.2	22
9	8.6	28	55	66	110	62	375	595	325	103	9.7	20
10	8.8	27	54	62	96	62	352	440	207	94	9.6	19
11	8.3	30	68	70	88	64	316	308	166	85	11	18
12	9.6	110	76	210	94	82	295	254	142	82	9.2	16
13	30	117	78	160	96	118	258	228	121	61	8.5	15
14	41	81	72	140	94	500	221	287	121	35	7.5	13
15	35	61	54	440	100	840	197	445	142	30	7.8	13
16	26	50	44	342	110	457	252	445	121	29	28	14
17	22	46	*41	*211	114	270	420	419	101	32	55	15
18	28	44	34	143	108	190	262	325	87	35	35	14
19	79	40	29	118	98	155	243	325	78	30	27	12
20	62	39	28	272	*86	150	320	308	68	27	75	12
21	51	37	27	510	78	160	419	333	63	25	216	12
22	36	36	29	270	70	180	749	1,100	58	34	450	14
23	32	37	31	160	62	210	1,140	891	54	42	226	16
24	26	36	34	150	54	580	908	601	50	37	107	15
25	21	33	36	168	58	872	837	390	45	29	58	13
26	52	44	34	193	62	360	681	542	50	23	45	10
27	81	314	32	232	60	260	465	419	53	22	41	8.7
28	62	206	80	225	56	250	498	348	45	28	38	7.5
29	46	121	270	177	-	240	371	375	44	22	34	6.8
30	37	86	200	153	-	210	330	703	40	20	33	7.0
31	42	-	135	457	-	*200	-	424	-	18	37	-

Month	Observed					Adjusted†		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Runoff in inches
October	977.3	81	8.3	31.5		70.6	0.358	0.41
November	1,942	314	27	64.7		119	.604	.67
December	2,016	270	27	65.0		98.6	.501	.58
Calendar year 1946	31,202.7	1,020	4.4	85.5		127	.645	8.77
January	5,766	510	62	186		303	1.54	1.77
February	3,495	475	54	125		181	.919	.96
March	6,880	872	41	222		351	1.78	2.06
April	14,895	1,400	197	496		693	3.52	3.92
May	15,056	1,100	228	486		550	2.79	3.22
June	7,690	1,460	40	256		280	1.42	1.59
July	1,268	103	18	40.9		48.6	.247	.28
August	1,660.0	450	7.5	53.5		106	.538	.62
September	523.0	38	6.8	17.4		17.2	.087	.10
Water year 1946-47	62,168.3	1,460	6.8	170		235	1.19	16.18

* Winter discharge measurement made on this day.
† Adjusted for diversion from and change in contents in Hemlock and Canadice Lakes; no data available concerning change in contents in Honeoye Lake.
Note.- Stage-discharge relation affected by ice Dec. 2-4, Dec. 14 to Jan. 15, Jan. 22-24, Feb. 4 to Mar. 15, Mar. 17-24, 27-31.

Canadice Lake Outlet near Hemlock, N. Y.

Location.- Hook gage, lat. 42°44'25", long. 77°34'15", upstream from weir at outlet of Canadice Lake, Ontario County, 4 miles southeast of Hemlock, Livingston County.

Drainage area.- 12.6 square miles.

Records available.- April 1903 to September 1947.

Average discharge.- 44 years, 11.8 second-feet (unadjusted).

Cooperation.- Records furnished by Department of Public Works, city of Rochester, N. Y.

Monthly discharge, water year October 1946 to September 1947

Month	Mean elevation of lake above low-water mark (feet)	Observed discharge in second-feet	Adjusted†‡		
			Discharge in second-feet		Runoff in inches
		Mean	Mean	Per square mile	
October	+0.554	0.038	6.775	0.538	0.620
November	+1.196	6.277	11.630	.923	1.030
December	+1.403	8.553	7.961	.632	.728
Calendar year 1946	+1.858	10.228	9.464	.751	10.197
January	+1,900	8.287	27.253	2.163	2.494
February	+2.965	13.740	8.645	.686	.714
March	+2.986	13.590	29.264	2.323	2.678
April	+4.839	39.903	51.162	4.060	4.530
May	+4.910	37.243	36.685	2.912	3.357
June	+4.450	34.374	12.610	1.000	1.117
July	+1.018	37.329	-3.871	-.307	-.354
August	-.784	7.797	6.293	.499	.576
September	-1.116	1.818	-3.965	-.315	-.351
Water year 1946-47	+2.016	17.408	15.908	1.263	17.139

† Adjusted for change in contents in Canadice Lake.
‡ Negative figures indicate that natural losses from Canadice Lake exceeded inflow.
Note.- Elevation of Canadice Lake: 1,093.38 feet at 12 p.m. Sept. 30, 1946, and 1,091.66 feet at 12 p.m. Sept. 30, 1947; 1,095.22 feet at 12 p.m. Dec. 31, 1945, and 1,094.42 feet 12 p.m. Dec. 31, 1946.

Oatka Creek at Garbutt, N. Y.

Location.- Water-stage recorder, lat. 43°00'30", long. 77°47'25", 40 feet downstream from highway bridge at Garbutt, Genesee County, and 3½ miles upstream from mouth.

Drainage area.- 208 square miles.

Records available.- October 1945 to September 1947.

Extremes.- Maximum discharge during year, 3,680 second-feet Apr. 6 (gage height, 6.80 feet); minimum, 19 second-feet Oct. 12, 17; minimum gage height, 2.15 feet Oct. 7, 1946-47: Maximum discharge, that of Apr. 6, 1947; minimum, that of Oct. 12, 17, 1946; minimum gage height, 2.12 feet Sept. 21, 1946.

Remarks.- Records good except those for periods of backwater from debris, which are fair.

Rating tables, water year 1946-47, except periods of ice effect or backwater from debris (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Jan. 21						Jan. 22 to Sept. 30			
2.0	17	2.7	125	3.6	550	2.8	153	4.5	1,150
2.1	25	2.8	154	4.0	780	3.0	225	5.0	1,570
2.2	36	2.9	191	4.3	980	3.2	320	5.5	2,070
2.4	64	3.0	236			3.6	540	6.0	2,640
2.6	102	3.2	336			4.0	790	6.7	3,540

Note.- Same as preceding table at and below 2.7 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	35	109	b140	727	96	612	546	310	100	125	70
2	30	46	b84	b125	708	100	930	715	359	94	116	80
3	31	42	b72	128	480	102	1,220	1,120	1,760	92	109	84
4	29	34	80	222	400	b88	1,240	1,200	1,880	90	104	86
5	27	29	77	b175	b250	75	1,670	811	1,150	88	102	74
6	26	26	78	128	230	71	3,430	612	618	88	98	66
7	25	25	84	111	238	75	*2,990	522	492	100	96	62
8	23	25	86	104	217	92	1,650	666	426	104	94	58
9	21	24	78	94	194	104	*923	642	400	116	92	54
10	20	23	77	88	163	104	811	516	350	107	90	48
11	20	26	125	a90	147	104	748	410	315	107	88	46
12	24	34	272	f163	153	114	804	350	258	109	84	42
13	31	60	218	a264	156	139	776	320	234	141	80	41
14	32	58	b260	f176	156	265	565	367	266	109	76	41
15	28	50	*b150	851	160	667	456	480	385	98	76	43
16	23	45	b102	966	173	708	610	380	355	125	78	48
17	21	42	94	*678	183	696	1,310	330	266	136	76	47
18	30	38	b74	420	179	612	1,160	355	221	125	82	44
19	37	37	b60	285	163	510	776	370	194	142	96	41
20	50	37	b58	404	*145	462	846	365	176	150	94	42
21	38	35	b54	976	b135	474	825	405	163	125	90	45
22	29	34	58	b680	b120	498	1,090	685	150	561	94	54
23	26	35	61	b390	b110	528	1,370	594	142	917	102	88
24	24	34	63	370	b98	1,220	1,230	405	136	474	82	66
25	24	36	68	522	102	2,470	755	350	125	270	76	60
26	30	54	b70	867	107	*1,610	582	375	120	198	118	56
27	34	259	b62	860	107	993	573	370	116	179	100	54
28	31	357	71	672	100	839	832	320	111	202	78	52
29	29	265	290	528	-	748	769	325	107	179	68	52
30	28	143	b340	355	-	624	516	432	102	156	76	54
31	31	-	b260	529	-	552	-	410	-	139	80	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	881	50	20	28.4	0.137	0.16
November	1,988	357	23	66.3	.319	.36
December	3,635	340	54	117	.562	.65
Calendar year 1946	59,299	2,530	20	162	.779	10.62
January	12,361	976	88	399	1.92	2.21
February	6,101	727	98	218	1.05	1.09
March	15,740	2,470	71	508	2.44	2.81
April	32,069	3,430	456	1,069	5.14	5.73
May	15,748	1,200	320	508	2.44	2.82
June	11,687	1,880	102	390	1.88	2.09
July	5,621	917	88	181	.870	1.01
August	2,820	125	68	91.0	.438	.50
September	1,678	86	41	55.9	.269	.30
Water year 1946-47	110,329	3,430	20	302	1.45	19.73

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of recorder record available for adjacent days and records for nearby stations.
b Stage-discharge relation affected by ice.
f Fragmentary gage-height record; discharge computed on basis of partial recorder record and records for nearby stations.
Note.- Backwater from debris Oct. 1 to Nov. 26, Aug. 12 to Sept. 30 (no gage-height record Aug. 26 to Sept. 2, Sept. 21-23).

Black Creek at Churchville, N. Y.

Location.- Water-stage recorder, lat. 43°06'00", long. 77°53'00", at east end of Carrol Street in Churchville, Monroe County, 60 feet downstream from main line tracks of New York Central Railroad.

Drainage area.- 123 square miles.

Records available.- October 1945 to September 1947.

Extremes.- Maximum discharge during year, 1,940 second-feet Apr. 6 (gage height, 6.76 feet); minimum, 4.6 second-feet Oct. 12 (gage height, 1.17 feet).
1945-47: Maximum discharge, that of Apr. 6, 1947; minimum, 2.4 second-feet (regulated) July 23, 1946 (gage height, 1.005 feet).

Remarks.- Records good except those for periods of ice effect, which are fair. New York Central System diverted approximately 16,100,000 gallons each month from a point just above station for use by locomotives, equivalent to a mean discharge of 0.8 second-foot at station. Slight regulation by pumping operations above station.

Rating table, water year 1946-47, except periods of ice effect or backwater from weeds (gage height, in feet, and discharge, in second-feet)

1.1	4.6	2.2	106	4.0	660
1.2	7.9	2.4	144	4.5	880
1.4	18	2.6	190	5.0	1,080
1.6	32	3.0	300	5.5	1,310
1.8	51	3.2	362	6.0	1,560
2.0	76	3.6	503	6.6	1,860

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.2	34	48	68	390	37	250	188	166	42	66	28
2	10	35	33	58	450	38	500	283	323	39	49	36
3	11	37	30	60	360	39	840	656	992	37	41	49
4	9.2	36	28	66	290	33	900	720	1,310	36	36	40
5	7.6	28	30	80	160	29	1,120	447	802	35	33	30
6	7.6	22	33	78	130	27	1,820	330	390	35	35	28
7	7.2	21	33	74	130	29	*1,370	280	261	59	32	25
8	6.4	23	31	66	114	37	778	297	232	93	29	22
9	5.6	20	29	54	94	42	507	327	224	95	28	21
10	5.2	17	29	49	74	43	444	268	195	77	28	18
11	4.9	27	48	52	60	43	365	208	159	63	26	17
12	7.6	43	74	94	62	47	309	164	126	71	23	14
13	21	44	82	125	64	60	271	136	104	82	20	14
14	25	36	56	120	64	150	230	138	139	72	19	14
15	16	28	*43	520	70	450	198	155	274	68	22	15
16	12	22	34	700	84	*500	256	166	303	70	26	19
17	10	20	31	500	94	500	539	148	219	90	27	19
18	28	16	27	300	96	420	555	146	146	106	27	17
19	48	15	19	210	90	300	378	176	111	82	30	14
20	41	14	17	300	*80	240	426	298	92	79	44	21
21	29	14	16	560	66	220	470	396	80	83	44	24
22	22	16	16	500	58	220	441	477	72	296	38	36
23	18	12	18	340	46	270	402	511	66	409	38	49
24	14	11	22	291	37	700	306	338	61	580	39	36
25	15	13	25	423	38	1,240	240	254	57	476	30	28
26	24	28	27	620	39	*540	200	321	55	219	34	23
27	32	80	25	824	39	380	185	352	53	122	34	21
28	27	125	32	553	38	330	200	274	50	166	30	19
29	25	116	39	423	-	300	216	273	47	233	24	21
30	24	64	54	291	-	260	185	254	44	222	28	23
31	28	-	64	294	-	240	-	211	-	117	34	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	547.5	48	4.9	17.7	0.144	0.17
November	1,017	125	11	33.9	.276	.31
December	1,093	82	16	35.3	.287	.33
Calendar year 1946	28,502.1	1,610	3.4	78.1	.635	8.64
January	8,493	700	49	274	2.23	2.57
February	3,317	450	37	118	.959	1.00
March	7,764	1,240	27	250	2.03	2.35
April	14,901	1,820	185	497	4.04	4.51
May	9,192	720	138	297	2.41	2.78
June	7,153	1,310	44	238	1.93	2.16
July	4,284	580	35	138	1.12	1.30
August	1,014	66	19	32.7	.266	.31
September	741	49	14	24.7	.201	.22
Water year 1946-47	59,516.5	1,820	4.9	163	1.33	18.01

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 15, 16, Dec. 27 to Jan. 7, Jan. 9-23, Feb. 1-25, Feb. 27 to Apr. 4 (doubtful gage-height record Feb. 6-12). Backwater from weeds Oct. 1 to Nov. 29, Dec. 9, 10, 12-14.

Oswego River at lock 7, Oswego, N. Y.

Location.- Water-stage recorders, lat. 43°27'00", long. 76°30'25", at lock 7 in Oswego, Oswego County, three-quarters of a mile upstream from mouth. Datum of gage is 246.00 feet above mean sea level (New York State Barge Canal datum).

Drainage area.- 5,121 square miles.

Records available.- November 1933 to September 1947. April 1897 to December 1901 and, of doubtful accuracy, October 1927 to September 1928 at High Dam, about three-quarters of a mile upstream.

Average discharge.- 13 years (1934-47), 6,663 second-feet.

Extremes.- Maximum discharge during year, 25,100 second-feet (regulated) Apr. 8 (gage height, 11.07 feet), includes mean daily discharge of canals; minimum (river only), 98 second-feet (regulated) Oct. 9 (gage height, 1.30 feet); minimum daily discharge, 1,240 second-feet (regulated) Sept. 28.

1933-47: Maximum discharge, 37,500 second-feet Mar. 28, 1936, includes mean daily discharge of canals; maximum gage height, 13.46 feet Apr. 10, 1940; minimum discharge (river only), 30 second-feet (regulated) Nov. 6, 1944; minimum gage height, 0.97 foot Aug. 24, 1934; minimum daily discharge, 465 second-feet (regulated) Aug. 12, 1934.

Remarks.- Records excellent except those for periods of no river gage-height record or backwater from Lake Ontario, which are good. This record represents total discharge at Oswego and includes flow in Hydraulic and Barge Canals. A large amount of natural storage and some artificial regulation is afforded by the many large lakes and the Barge Canal system in river basin. Large diurnal fluctuations at low and medium flow by power plants above station. Oswego River Basin receives water from Erie division of Barge Canal through lock 32 near Pittsford. Small diversion from basin is occasionally made from tributary streams through summit level of Barge Canal at New London into Mohawk River Basin. During part of year entire flow from 45 square miles of drainage area of Mud Creek may be diverted from Chemung River Basin into Lake Keuka in Oswego River Basin. Nearly all of flow from 15.7 square miles of the Tioughnioga River Basin may be diverted into DeRuyter Reservoir, in Oswego River Basin.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,800	5,440	6,570	a5,800	17,000	9,180	13,500	13,500	16,700	6,000	6,600	2,100
2	2,820	5,610	6,700	a6,000	16,000	8,840	13,700	13,900	16,900	5,200	6,200	3,400
3	2,910	5,000	6,860	a6,200	14,700	8,520	14,800	15,300	19,500	5,200	5,200	3,000
4	3,020	5,570	6,380	a6,200	13,500	9,150	16,400	15,200	21,400	3,700	5,200	3,300
5	2,760	5,270	6,200	a5,900	10,900	8,060	18,800	15,900	22,200	3,700	4,900	3,300
6	2,170	5,380	6,300	a6,100	12,100	8,040	22,800	16,400	22,700	3,400	5,200	2,700
7	2,800	5,180	7,060	a6,300	12,400	7,870	23,700	16,500	22,800	4,300	4,000	1,650
8	2,970	5,630	6,870	a6,000	11,300	7,750	23,400	16,600	23,700	4,700	4,800	2,600
9	2,690	4,860	6,730	a6,300	10,200	7,180	23,100	16,700	23,400	4,700	3.800	2,800
10	2,420	4,400	7,420	a6,200	9,780	7,270	22,600	a16,800	23,200	5,200	3,100	2,800
11	2,410	5,450	7,010	a5,600	9,850	5,940	22,200	a16,400	22,400	4,900	4,000	2,800
12	2,740	5,750	7,040	5,800	10,900	6,470	21,500	a16,400	21,400	4,600	4,300	2,700
13	1,940	5,990	7,230	6,110	10,700	6,800	21,000	a15,600	20,700	3,900	3.800	2,600
14	3,640	5,980	7,350	6,170	10,800	7,090	20,900	a15,200	20,200	5,400	3.900	2,000
15	3,970	6,100	6,770	6,890	10,700	8,740	20,600	a15,400	19,600	5,600	3.900	2,700
16	3,770	5,900	7,050	8,200	10,200	9,910	20,600	a14,800	18,700	5,600	3.600	2,900
17	3,940	5,420	7,070	9,000	10,400	10,800	20,500	a14,200	18,000	5,200	2,900	2,700
18	4,420	5,530	6,870	9,340	10,500	11,400	20,000	a14,000	17,200	5,200	3.200	2,700
19	5,110	5,880	6,360	9,110	10,400	11,300	19,700	a13,400	16,000	5,000	3.400	2,600
20	4,450	5,760	a6,300	9,490	10,400	11,100	19,200	a14,400	15,200	4,800	3.500	2,200
21	4,810	5,600	a6,100	12,100	9,640	10,700	18,200	a15,400	13,900	5,400	3,400	1,750
22	5,280	6,420	6,140	11,100	9,510	10,600	17,100	a18,000	13,100	5,400	3.500	2,600
23	4,980	4,920	6,310	12,100	9,070	10,700	15,100	a20,600	12,000	5,400	3,000	2,450
24	4,750	4,170	a6,100	11,400	9,290	11,600	14,100	a20,600	11,200	5,600	2,450	2,450
25	4,640	4,540	a5,300	11,800	9,530	16,400	14,200	a19,800	11,200	5,600	2,900	2,400
26	4,760	5,060	a5,300	12,400	9,560	18,900	14,100	a19,400	10,400	5,600	3.100	2,500
27	4,230	5,800	a7,000	13,700	9,320	18,200	13,700	19,500	10,000	5,200	3.000	2,150
28	4,980	6,270	a6,100	14,300	9,270	16,300	12,900	19,100	9,400	6,400	3.000	1,240
29	6,220	6,510	a5,500	13,800	-	15,000	13,000	18,100	9,000	7,400	3,100	2,050
30	5,340	7,110	a6,000	12,900	-	13,900	13,300	17,500	7,800	7,400	2,500	a2,250
31	5,260	-	a6,000	15,400	-	13,300	-	17,200	-	6,600	2,600	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	118,980	6,220	1,940	3,838	0.749	0.86
November	166,500	7,110	4,170	5,550	1.08	1.21
December	201,990	7,420	5,300	6,516	1.27	1.47
Calendar year 1946	2,025,746	20,500	833	5,550	1.08	14.70
January	277,710	15,400	5,600	8,958	1.75	2.02
February	307,920	17,000	9,070	11,000	2.15	2.24
March	327,010	18,900	5,940	10,550	2.06	2.37
April	544,700	23,700	12,900	18,160	3.55	3.95
May	511,800	20,600	13,400	16,510	3.22	3.72
June	509,900	23,700	7,800	17,000	3.32	3.70
July	162,300	7,400	3,400	5,235	1.02	1.18
August	118,050	6,600	2,450	3,808	.744	.86
September	75,390	3,400	1,240	2,513	.491	.55
Water year 1946-47	3,322,250	23,700	1,240	9,102	1.78	24.13

a No gage-height record; discharge computed on basis of power-plant records at Fulton and High Dam.

Note.- Backwater from Lake Ontario June 23 to Sept. 29.

Fall Creek near Ithaca, N. Y.

Location.- Water-stage recorder and concrete control, lat. 42°27'20", long. 76°28'30", in Forest Home, Tompkins County, half a mile upstream from Cornell University Dam and 1½ miles northeast of Ithaca. Datum of gage is 794.81 feet above mean sea level, adjustment of 1912 (levels by Corps of Engineers).
Drainage area.- 124 square miles.
Records available.- February 1925 to September 1947. July 1908 to June 1909 at site 1½ miles downstream.
Average discharge.- 22 years, 189 second-feet.
Extremes.- Maximum discharge during year, 5,180 second-feet June 3; maximum gage height, 6.00 feet Mar. 14 (ice jam); minimum discharge, 28 second-feet Sept. 29 (gage height, 0.55 foot).

1925-47: Maximum discharge, 15,500 second-feet July 8, 1935 (gage height, 9.52 feet), from average of computed flow over each of four dams; minimum, about 3 second-feet Aug. 25, 1927 (gage height, 0.18 foot).

Remarks.- Records excellent except those for periods of ice effect or fragmentary or no gage-height record, which are fair. Cornell University diverted 408,825,000 gallons during year from a point about a mile above station for water supply, equivalent to a mean discharge at station of 1.73 second-feet.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

0.5	24	1.4	150	2.8	1,010
.6	32	1.6	225	3.2	1,390
.8	49	1.8	319	3.6	1,830
1.0	70	2.0	428	4.0	2,340
1.2	98	2.4	683	4.7	3,410

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	232	209	81	68	439	50	388	381	275	a108	66	48
2	205	147	58	86	275	52	700	309	261	a146	51	147
3	160	127	62	330	229	46	913	285	3,380	95	48	104
4	103	116	80	310	205	42	734	358	1,130	78	174	61
5	82	107	80	170	140	46	2,140	387	556	74	71	50
6	71	96	86	150	170	47	2,420	599	394	70	52	45
7	63	92	90	112	190	48	a1,360	565	314	565	44	42
8	58	103	82	114	155	47	a800	677	361	910	41	39
9	54	110	77	94	135	50	a640	452	299	352	122	43
10	50	107	75	94	145	52	a510	335	234	193	205	37
11	47	107	104	110	130	50	a410	256	193	147	82	33
12	131	223	95	195	118	49	*389	217	164	a116	48	39
13	956	157	121	*135	104	60	314	212	150	a100	49	81
14	275	127	96	140	100	460	261	561	189	a87	44	f55
15	164	110	60	680	110	947	*225	423	437	a81	100	f40
16	127	96	64	806	114	614	225	266	230	a84	697	37
17	110	93	*78	372	98	434	248	234	168	85	223	35
18	169	95	74	252	94	314	205	269	144	80	110	33
19	315	85	64	200	*84	261	193	340	127	112	84	31
20	178	82	37	400	64	280	285	293	114	98	75	38
21	130	80	70	880	68	324	735	242	a100	78	92	39
22	112	84	90	210	66	378	496	2,360	a96	104	81	48
23	103	98	86	175	64	316	346	719	a93	110	68	64
24	95	81	86	225	62	1,440	256	411	a92	81	59	44
25	90	77	78	422	62	*2,490	248	755	a104	67	51	37
26	473	82	62	463	60	857	406	1,340	a86	60	48	33
27	288	133	39	499	56	556	324	560	a78	58	47	31
28	168	112	86	389	54	475	319	389	a66	68	44	30
29	144	92	92	294	-	422	225	576	a58	63	41	28
30	217	81	90	297	-	330	201	860	a54	74	64	31
31	201	-	78	*1,000	-	282	-	367	-	80	78	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	5,571	956	47	180	1.45	1.67
November	3,309	223	77	110	.887	.99
December	2,421	121	37	78.1	.630	.73
Calendar year 1946	57,982	1,910	21	159	1.28	17.38
January	9,672	1,000	68	312	2.52	2.90
February	3,591	439	54	128	1.03	1.08
March	11,819	2,490	42	381	3.07	3.54
April	16,916	2,420	193	564	4.55	5.07
May	15,998	2,360	212	516	4.16	4.80
June	9,947	3,380	54	332	2.68	2.98
July	4,422	910	58	143	1.15	1.33
August	3,057	697	41	98.6	.795	.92
September	1,423	147	28	47.4	.382	.43
Water year 1946-47	88,146	3,380	28	241	1.94	26.44

Peak discharge.- Mar. 25 (3:15 p.m.) 3,270 sec.-ft.; Apr. 5 (9:30 p.m.) 4,170 sec.-ft.; May 22 (9:15 a.m.) 3,560 sec.-ft.; June 3 (11 a.m.) 5,180 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of partial gage-height record, recorded range in stage, normal recession pattern, weather records, and records for nearby stations.

f Fragmentary gage-height record; discharge computed as explained in footnote a.

Note.- Stage-discharge relation affected by ice Dec. 2-7, Dec. 14 to Jan. 15, Jan. 19-23, Feb. 4 to Mar. 14, Mar. 30.

Cayuga Inlet near Ithaca, N. Y.

Location.- Water-stage recorder and concrete control, lat, 42°23'35", long. 76°32'40", half a mile upstream from Butternut Creek and 5 miles south of Ithaca, Tompkins County. Datum of gage is 437.16 feet above mean sea level (levels by Corps of Engineers).

Drainage area.- 36.7 square miles.

Records available.- March 1937 to September 1947.

Average discharge.- 10 years, 40.5 second-feet.

Extremes.- Maximum discharge during year, 2,690 second-feet June 3 (gage height, 6.28 feet); minimum, 4.8 second-feet Dec. 20; minimum gage height, 0.58 foot Dec. 19, Sept. 18, 19.

1937-47: Maximum discharge, 4,110 second-feet Aug. 13, 1942 (gage height, 7.58 feet), from rating curve extended above 650 second-feet on basis of slope-area determinations at gage heights 5.5 and 7.58 feet; minimum, 1.8 second-feet Aug. 30, 31, Sept. 1, 2, 1939 (gage height, 0.42 foot).

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

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	19	12	b13	70	b17	54	72	72	19	9.0	8.8
2	13	16	b9.0	17	b54	b18	102	86	91	22	8.5	37
3	10	15	b9.6	43	b46	b17	104	79	1,040	17	8.2	17
4	8.8	14	10	31	b43	b16	77	71	230	16	14	12
5	7.8	14	11	b24	b29	b17	407	134	135	18	10	10
6	7.4	13	12	b23	b35	b18	278	193	98	17	8.8	10
7	7.0	13	14	b19	40	18	147	203	90	67	8.2	9.0
8	6.8	14	15	20	b37	b17	104	155	96	51	7.6	8.5
9	6.6	14	12	b17	b28	b18	95	112	72	30	14	8.2
10	6.6	14	12	b17	b31	18	79	89	60	24	11	7.8
11	6.6	14	11	20	b30	18	69	76	52	20	9.2	7.3
12	48	16	*11	26	b28	22	*65	65	44	23	8.8	12
13	62	15	12	*b18	b26	b33	54	70	39	18	8.2	12
14	24	14	11	21	b26	183	50	123	72	16	8.0	8.8
15	17	13	b9.0	104	*b29	132	45	92	78	14	12	7.6
16	14	12	b9.4	73	32	84	51	74	49	16	41	7.1
17	14	12	11	50	b26	64	47	66	44	16	23	6.5
18	26	11	b9.4	40	b25	b52	42	88	44	14	14	6.3
19	24	11	b8.0	33	b20	b47	39	76	35	16	12	6.3
20	17	11	b7.0	94	b18	*50	54	76	30	14	11	6.5
21	15	11	b10	81	b20	b54	118	99	28	13	12	6.5
22	14	13	12	b33	b20	56	97	514	25	23	11	10
23	13	12	11	36	b19	62	72	160	24	17	10	8.2
24	13	11	11	46	b19	191	65	112	24	13	9.2	7.6
25	12	11	11	54	b19	291	76	257	25	11	10	7.1
26	46	13	b8.8	56	b18	b110	102	191	23	10	10	6.9
27	26	16	b7.2	57	b18	b80	84	112	21	10	9.2	6.7
28	21	13	b13	49	b17	69	71	91	19	12	8.2	6.5
29	19	12	b14	42	-	65	60	152	18	10	7.6	6.7
30	18	11	b12	61	-	b54	59	127	18	10	16	7.6
31	19	-	b11	*122	-	b47	-	86	-	11	11	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	556.6	62	6.6	18.0	0.490	0.56
November	398	19	11	13.3	.362	.40
December	336.4	15	7.0	10.9	.297	.34
Calendar year 1946	13,055.5	923	5.0	35.8	.975	13.22
January	1,340	122	13	43.2	1.18	1.36
February	823	70	17	29.4	.801	.83
March	1,938	291	16	62.5	1.70	1.96
April	2,767	407	39	92.2	2.51	2.80
May	3,901	514	65	126	3.43	3.95
June	2,696	1,040	18	89.9	2.45	2.73
July	588	67	10	19.0	.518	.60
August	363.7	41	7.6	11.7	.319	.37
September	282.5	37	6.3	9.42	.257	.29
Water year 1946-47	15,990.2	1,040	6.3	43.8	1.19	16.19

Peak discharge.- Apr. 5 (1:30 p.m.) 955 sec.-ft.; May 22 (1 a.m.) 1,680 sec.-ft.; June 3 (4 a.m.) 2,690 sec.-ft.

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.- Intake partially obstructed Feb. 14, 15, June 3 to July 1; discharge computed on basis of discharge measurements, appearance of gage-height graph, outside-gage readings, and records for nearby stations. Shifting-control method used Jan. 30.

Canandaigua Lake at Canandaigua, N. Y.

Location.- Water-stage recorder, lat. 42°52'20", long. 77°16'20", at south end of City Pier at northern end of Canandaigua Lake, 1 mile southeast of Canandaigua, Ontario County. Datum of gage is 680.76 feet above mean sea level (levels by Corps of Engineers).

Drainage area.- 189 square miles.

Records available.- November 1939 to September 1947. Records previously collected at site on west outlet on west side of E. T. Waldorf's boathouse by Oswego River Watershed Corp. of Fulton, N. Y.

Extremes.- Maximum gage height during year, 7.89 feet May 2; minimum, 5.55 feet Mar. 13. 1939-47: Maximum gage height observed, 9.09 feet Apr. 12, 13, 1940; minimum observed, 4.45 feet Jan. 30, 1942.

Remarks.- Elevation of lake surface regulated by stop logs on east and west outlets. West outlet, which usually carries most of lake outflow, is an artificial canal 1¼ miles long which discharges into Canandaigua Lake Outlet; spillway consists of permanent stop log 9.8 feet long with top at elevation 683.96 feet extending across a masonry arch opening under roadway. East outlet is at head of natural outlet channel from lake; spillway consists of 40 feet of detachable stop logs mounted in six courses on concrete footing. The city engineer, Canandaigua, N. Y., regulates storage in lake for Oswego River Watershed Corp., Fulton, N. Y., by operation of stop logs on both spillways. Capacity of lake not determined. Area of water surface is about 16.57 square miles at elevation 686 feet.

Gage height, in feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.08	6.24	d6.21	5.93	6.35	5.76	6.50	7.54	7.37	6.55	6.50	6.64
2	6.09	6.25	d6.18	5.94	6.36	5.77	6.56	7.57	7.33	6.53	6.50	6.65
3	6.09	6.22	d6.15	5.98	6.41	5.81	6.70	7.68	7.51	6.53	6.48	6.63
4	6.09	6.21	d6.12	6.00	6.36	5.80	6.77	7.69	7.62	6.51	6.47	6.61
5	6.08	6.17	d6.09	5.99	6.33	5.76	6.95	7.69	7.64	6.51	6.46	6.60
6	6.07	6.17	6.09	5.96	6.31	5.73	7.27	7.72	7.58	6.49	6.46	6.59
7	6.06	6.16	6.12	5.96	6.26	5.71	7.36	7.72	7.54	6.53	6.45	6.59
8	6.05	6.17	6.05	5.94	6.23	5.69	7.35	7.78	7.55	6.57	6.44	6.57
9	6.06	6.13	6.05	5.92	6.22	5.67	7.33	7.76	7.49	6.60	6.42	6.58
10	6.03	6.16	6.05	5.92	6.18	5.65	7.34	7.72	7.45	6.60	6.43	6.59
11	6.05	6.17	6.05	5.91	6.14	5.64	7.32	7.67	7.42	6.61	6.42	6.58
12	6.06	6.20	6.14	5.90	6.09	5.63	7.24	7.62	7.34	6.63	6.42	6.55
13	6.14	6.20	6.04	5.94	6.07	5.64	7.20	7.57	7.31	6.63	6.41	6.53
14	6.14	6.18	6.01	5.99	6.04	5.75	7.16	7.56	7.29	6.64	6.41	6.52
15	6.13	6.18	5.99	5.97	6.03	5.95	7.11	7.58	7.24	6.64	6.40	6.52
16	6.14	6.20	5.98	6.03	6.02	6.02	7.14	7.55	7.16	6.63	6.48	6.50
17	6.11	6.19	6.01	6.05	6.01	6.05	7.16	7.50	7.10	6.64	6.53	6.49
18	6.19	6.15	5.92	6.02	5.99	6.05	7.16	7.49	7.05	6.65	6.54	6.47
19	6.20	6.15	5.91	6.04	5.96	6.03	7.12	7.44	6.98	6.64	6.52	6.42
20	6.20	6.13	5.92	6.11	5.93	6.03	7.15	7.42	6.93	6.63	6.54	6.44
21	6.20	6.15	5.94	6.16	5.91	6.04	7.22	7.43	6.87	6.61	6.65	6.52
22	6.20	6.16	5.92	6.14	5.90	6.06	7.32	7.51	6.82	6.61	6.70	6.40
23	6.19	6.12	5.93	6.16	5.88	6.08	7.52	7.53	6.77	6.61	6.72	6.40
24	6.18	6.16	5.90	6.14	5.86	6.21	7.60	7.50	6.73	6.58	6.72	6.37
25	6.21	6.09	5.88	6.15	5.84	6.48	7.61	7.50	6.67	6.56	6.72	6.33
26	6.22	6.13	5.85	6.18	5.83	6.53	7.62	7.52	6.62	6.56	6.69	6.31
27	6.22	6.20	5.86	6.17	5.81	6.57	7.63	7.49	6.57	6.57	6.69	6.29
28	6.22	6.22	5.89	6.17	5.79	6.56	7.63	7.44	6.55	6.57	6.68	6.30
29	6.23	6.19	5.97	6.18	-	6.57	7.61	7.44	6.54	6.56	6.65	6.30
30	6.24	6.23	5.94	6.21	-	6.56	7.57	7.45	6.55	6.57	6.69	6.22
31	6.24	-	5.94	6.32	-	6.51	-	7.41	-	6.54	6.64	-

d Doubtful gage-height record; mean daily gage heights estimated on basis of record for Canandaigua Lake Outlet at Chapin, and by interpolation.

Monthly gage height, in feet, water year October 1946 to September 1947

Month	Maximum	Minimum	Mean	Change in contents during month (equivalent, second-feet)
October	6.24	6.03	6.14	+27.6
November	6.25	6.09	6.18	+1.77
December	6.21	5.85	6.00	-56.9
Calendar year 1946	7.5	5.85	6.45	-15.7
January	6.32	5.90	6.05	+72.5
February	6.41	5.79	6.08	-109
March	6.57	5.63	6.01	+128
April	7.63	6.50	7.24	+185
May	7.78	7.41	7.56	-27.6
June	7.64	6.54	7.12	-152
July	6.65	6.49	6.58	-6.90
August	6.72	6.40	6.54	+22.4
September	6.65	6.22	6.48	-71.3
Water year 1946-47	7.78	5.63	6.50	+2.20

Canandaigua Lake Outlet at Chapin, N. Y.

Location.- Water-stage recorder, lat. 42°55'00", long. 77°14'00", in Chapin, Ontario County, 500 feet upstream from highway bridge and 3 miles downstream from Canandaigua Lake. Datum of gage is 673.6 feet above mean sea level (levels by Corps of Engineers).

Drainage area.- 199 square miles.

Records available.- November 1939 to September 1947.

Extremes.- Maximum discharge during year, 792 second-feet June 3 (gage height, 3.93 feet); minimum, 16 second-feet Sept. 30; minimum gage height, 1.42 feet Oct. 8.
1939-47: Maximum discharge, 1,100 second-feet Mar. 17, 1948 (gage height, 4.64 feet); minimum, 11 second-feet Sept. 28, 1943; minimum gage height, 1.32 feet Feb. 1, 1942.

Remarks.- Records excellent except those for periods of ice effect or backwater from weeds, which are good, and those for period of no gage-height record, which are fair. Flow regulated by Canandaigua Lake (see preceding page).

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct	Nov	Dec	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	52	44	86	282	157	328	451	476	52	28	41
2	35	52	54	94	278	154	366	502	500	46	28	44
3	33	50	106	114	240	165	366	493	664	41	28	42
4	32	49	116	140	235	171	353	475	560	39	28	42
5	32	49	114	150	230	160	529	517	556	36	28	41
6	31	47	108	135	260	149	444	575	545	34	28	41
7	32	47	110	135	245	146	468	604	527	39	29	41
8	31	47	102	130	235	144	488	616	531	39	27	41
9	32	46	100	125	225	141	485	597	513	38	26	40
10	30	46	102	124	220	138	*467	579	492	36	27	40
11	31	58	106	140	215	138	478	560	478	36	28	40
12	36	64	110	155	215	144	451	545	468	38	27	40
13	42	54	*108	*140	215	167	428	527	451	36	28	39
14	35	47	92	200	210	286	414	524	451	35	28	38
15	34	46	80	235	219	a249	405	524	437	35	28	38
16	34	46	86	180	219	a210	424	517	418	34	33	38
17	34	48	94	170	210	a213	421	508	401	33	32	36
18	47	44	86	190	*202	210	411	493	385	34	33	34
19	44	43	82	190	195	210	408	492	369	a33	35	32
20	38	43	68	320	190	215	411	485	357	a32	36	31
21	34	42	62	242	180	216	454	502	341	a31	41	30
22	33	44	86	112	180	219	510	545	328	a30	42	28
23	40	42	84	210	175	228	485	510	316	a30	41	22
24	52	42	84	193	174	267	475	502	304	a29	40	21
25	52	42	80	202	171	294	468	489	294	a28	40	19
26	60	62	76	237	168	240	468	513	282	a28	40	18
27	54	82	68	240	165	280	482	489	276	a30	41	17
28	52	54	94	219	163	310	478	492	228	a31	41	17
29	52	50	96	234	-	310	471	422	87	a30	40	17
30	52	47	90	243	-	310	461	493	55	a29	44	17
31	52	-	90	285	-	*316	-	488	-	a28	42	-

Month	Observed				Adjusted†‡		
	Second-foot-days	Maximum	Minimum	Mean	Mean	Per square mile	Runoff in inches
October	1,228	60	30	39.6	67.2	0.338	0.39
November	1,484	82	42	49.5	51.2	.257	.29
December	2,768	116	44	89.3	32.4	.163	.19
Calendar year 1946	44,084	498	17	121	105	.528	7.17
January	5,570	320	86	180	252	1.27	1.46
February	5,914	282	163	211	102	.513	.54
March	8,557	316	138	212	339	1.70	1.96
April	13,312	529	328	444	629	3.16	3.53
May	16,135	616	451	520	493	2.48	2.86
June	12,096	684	59	403	252	1.27	1.41
July	1,070	52	28	34.5	27.6	.139	.16
August	1,037	44	26	33.5	55.9	.281	.32
September	987	44	17	32.9	-38.4	-.193	-.22
Water year 1946-47	68,158	684	17	187	189	.950	12.89

* Winter discharge measurement made on this day.
† Adjusted for change in contents in Canandaigua Lake.
‡ Negative figures indicate that natural losses from Canandaigua Lake exceeded inflow.
a No gage-height record; discharge computed from reconstructed gage-height graph based on recorded range in stage, weather records, and elevations of Canandaigua Lake.

Note.- Stage-discharge relation affected by ice Jan. 22, 23, Feb. 3-13, 17, 19-23, Mar. 26-28, 30 (doubtful gage-height record Feb. 7-12). Backwater from ice and/or weeds Dec. 15 to Jan. 20. Backwater from weeds Oct. 1 to Dec. 14, July 1 to Sept. 30.

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Owasco Lake Outlet near Auburn, N. Y.

Location.- Water-stage recorder and concrete control, lat. 42°56'45", long. 76°36'05", 2½ miles downstream from center of Auburn, Cayuga County, and 4 miles downstream from State dam at outlet of Owasco Lake.
Drainage area.- 208 square miles.
Records available.- November 1912 to September 1947.
Average discharge.- 34 years (1913-47), 288 second-feet.
Extremes (regulated).- Maximum discharge during year, 1,420 second-feet June 7; maximum gage height, 3.98 feet Apr. 8 (backwater from tree on control); minimum discharge, 13 second-feet Sept. 29 (gage height, 1.47 feet); minimum daily, 27 second-feet Aug. 7.
1912-47: Maximum discharge, 2,090 second-feet Mar. 19, 1936, Apr. 9, 1940 (gage height, 4.88 feet); minimum, about 2 second-feet Dec. 5, 1936 (gage height, 1.36 feet); minimum daily, 5 second-feet Nov. 11, 1934.
Remarks.- Records good except those for periods of backwater from tree or control or fragmentary or no gage-height record, which are fair. Diurnal fluctuation caused by mills in Auburn; seasonal regulation at State dam. Water supply for Auburn taken from Owasco Lake, part of which returns as sewage to outlet above gaging station.

Rating tables, water year 1946-47, except periods of backwater from weeds or tree on control
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Jan. 30)

Oct. 1 to Jan. 30				Jan. 30 to Sept. 30					
1.7	49	2.2	187	1.5	17	2.2	191	3.0	700
1.8	70	2.4	272	1.6	31	2.4	283	3.4	1,050
1.9	94	2.6	378	1.8	70	2.6	401	3.8	1,420
2.0	121	2.8	508	2.0	122	2.8	542		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	c130	240	a230	171	491	339	862	430	820	283	200	148
2	c128	232	a230	184	476	339	879	420	830	283	190	145
3	c124	186	a228	180	491	339	906	420	1,020	285	185	148
4	c120	215	a227	184	527	267	924	410	1,320	259	188	148
5	c110	227	232	191	557	301	1,040	435	1,380	234	173	f144
6	c116	227	223	191	535	249	1,200	450	1,310	249	131	f140
7	c124	227	223	187	520	244	1,260	470	1,250	283	27	138
8	c104	232	219	184	469	223	1,240	500	1,200	254	112	169
9	125	223	223	184	455	254	1,180	550	1,100	249	179	154
10	123	233	217	184	449	253	1,120	560	1,050	244	171	154
11	120	249	223	187	455	258	1,060	570	987	244	180	153
12	125	236	222	191	449	258	1,000	570	924	230	176	a152
13	146	227	208	191	449	268	950	570	888	212	172	f150
14	152	223	211	195	442	311	900	570	879	228	172	151
15	156	245	203	227	449	283	840	570	828	239	177	152
16	170	222	195	211	449	229	820	560	794	244	176	144
17	175	232	191	215	455	242	770	510	751	249	176	138
18	187	f250	187	232	374	244	740	485	692	248	172	138
19	201	227	187	232	345	244	710	485	588	249	176	a130
20	203	234	180	260	345	268	690	510	491	239	176	f118
21	207	227	176	254	345	393	710	540	476	230	180	108
22	204	242	173	172	335	428	700	860	454	233	169	118
23	211	225	173	258	328	400	710	1,040	440	230	169	107
24	203	232	173	282	339	525	690	1,020	437	225	165	97
25	198	239	173	301	339	813	610	1,000	428	221	165	100
26	205	236	173	287	345	980	550	1,000	421	218	162	98
27	211	236	173	292	351	996	550	980	407	212	169	93
28	197	a234	184	350	345	987	530	930	389	204	172	93
29	50	a232	176	415	-	969	470	900	370	200	a164	82
30	68	a232	173	457	-	933	415	890	317	202	f156	82
31	214	-	173	506	-	897	-	860	-	178	148	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	4,807	214	50	155	-	-
November	6,922	250	186	231	-	-
December	6,179	232	173	199	-	-
Calendar year 1946	98,867	940	50	271	1.30	17.68
January	7,555	506	171	244	-	-
February	11,909	557	328	425	-	-
March	13,734	996	223	443	-	-
April	25,026	1,260	415	834	-	-
May	20,065	1,040	410	647	-	-
June	23,241	1,380	317	775	-	-
July	7,290	283	178	235	-	-
August	5,128	200	27	165	-	-
September	3,892	169	82	130	-	-
Water year 1946-47	135,748	1,380	27	372	1.79	24.28

a No gage-height record; discharge interpolated.
c Backwater from weeds.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights or by interpolation.
Note.- Backwater from tree on control Apr. 6 to June 4. Shifting-control method used Jan. 30. Decrease in contents in Owasco Lake during calendar year 1946, about 470,900,000 cubic feet (equivalent mean discharge, 14.9 sec.-ft.; runoff, 0.98 inch); decrease in elevation, 1.64 feet. Decrease in contents during water year 1946-47, about 106,200,000 cubic feet (equivalent mean discharge, 3.37 sec.-ft.; runoff, 0.22 inch); decrease in elevation, 0.37 foot.

Onondaga Creek at Syracuse, N. Y.

Location.- Water-stage recorder and steel plate weir, lat. 43°00'35", long. 76°09'00", 75 feet upstream from end of channel improvement, 300 feet upstream from Ballantyne Road Bridge, and 2 miles south of center of Syracuse, Onondaga County. Datum of gage is 401.25 feet above mean sea level, datum of 1929.
Drainage area.- 98.2 square miles.
Records available.- November 1939 to September 1947.
Extremes.- Maximum discharge during year, 2,540 second-feet June 3 (gage height, 7.81 feet); minimum, 4.8 second-feet (regulated) Sept. 10 (gage height, 1.97 feet); minimum daily, 21 second-feet (regulated) Sept. 11.
1939-47: Maximum discharge, 3,980 second-feet Dec. 30, 1942 (gage height, 9.58 feet); minimum, 1.2 second-feet (regulated) Sept. 12, 1941 (gage height, 1.85 feet); minimum daily, 8.5 second-feet (regulated) Sept. 6, 1942.
Remarks.- Records excellent except those for periods of backwater from leaves, which are good, and those for periods of ice effect, which are fair. Diurnal fluctuation at low and medium flow caused by mills.

Rating tables, water year 1946-47, except periods of ice effect or backwater from leaves
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Mar. 15)

Oct. 1 to Mar. 15						Mar. 16 to Sept. 30					
2.2	18	2.8	91	4.0	382	2.2	18	3.0	135	5.0	786
2.3	26	3.0	127	4.5	547	2.3	28	3.2	176	5.5	1,010
2.4	37	3.2	170	5.1	778	2.4	40	3.6	273	6.0	1,280
2.6	62	3.6	268			2.6	66	4.0	390	6.5	1,590
						2.8	98	4.5	572		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	71	c56	b94	474	76	265	195	208	90	55	30
2	91	64	c52	b92	261	78	391	187	213	165	49	39
3	68	65	c47	172	b205	b72	689	187	1,540	94	48	43
4	44	61	c50	160	b205	b66	502	170	1,040	76	49	34
5	34	56	c54	b112	b130	b74	614	178	463	93	44	28
6	29	53	c60	b110	b145	78	1,280	221	325	151	42	31
7	26	50	c60	b92	150	78	782	215	282	218	40	28
8	26	54	c56	b100	b135	76	433	302	352	432	41	26
9	24	54	c52	b90	b125	76	349	259	309	222	54	29
10	23	50	*c52	b86	123	73	310	202	247	146	116	31
11	23	53	c108	b84	b118	72	*286	174	207	117	58	21
12	32	90	83	126	b114	71	286	159	180	105	48	27
13	c195	78	82	b102	*112	89	247	149	170	107	43	39
14	c92	68	b68	107	111	299	222	183	181	92	40	31
15	c52	70	b56	330	117	753	205	179	217	84	39	28
16	c43	62	b56	510	129	*576	203	151	180	77	47	33
17	c39	63	58	261	b102	368	223	144	150	78	48	31
18	c58	65	67	198	108	268	191	143	134	79	42	28
19	c92	58	b52	155	b92	230	198	205	124	107	39	29
20	c62	54	b49	231	b74	237	208	178	113	124	38	29
21	c48	53	b52	672	88	244	273	188	110	87	37	28
22	c42	54	65	b250	b76	286	309	1,220	102	94	37	41
23	c38	56	61	b180	b74	260	266	798	94	98	36	42
24	37	53	67	210	b78	549	211	358	97	76	35	33
25	34	50	69	404	80	1,340	193	311	120	66	34	30
26	104	55	b60	369	80	878	204	494	123	62	35	29
27	106	107	b56	336	77	413	187	331	133	60	35	29
28	65	86	b102	280	77	322	194	260	95	98	32	28
29	59	c68	b145	224	-	297	168	268	81	81	31	28
30	82	c56	b130	226	-	273	159	406	77	70	30	32
31	81	-	b110	706	-	240	-	252	-	62	34	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,825	195	23	58.9	0.600	0.69
November	1,877	107	50	62.6	.637	.71
December	2,135	145	47	68.9	.702	.81
Calendar year 1946	33,718	791	17	92.4	.941	12.77
January	7,069	706	84	228	2.32	2.68
February	3,660	474	74	131	1.33	1.39
March	8,812	1,340	66	284	2.89	3.34
April	10,048	1,280	159	335	3.41	3.81
May	8,667	1,220	143	280	2.85	3.28
June	7,667	1,840	77	256	2.61	2.90
July	3,511	432	60	113	1.15	1.33
August	1,356	116	30	43.7	.445	.51
September	935	43	21	31.2	.318	.35
Water year 1946-47	57,562	1,540	21	158	1.61	21.80

Peak discharge.- Mar. 25 (9:30 p.m.) 1,600 sec.-ft.; Apr. 6 (7:15 a.m.) 1,530 sec.-ft.; May 22 (2:30 p.m.) 1,970 sec.-ft.; June 3 (4 p.m.) 2,540 sec.-ft.
* Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice.
c Backwater from leaves.
Note.- Shifting-control method used Mar. 15.

East Branch Fish Creek at Taberg, N. Y.

Location.- Water-stage recorder, lat. 43°18'05", long. 75°37'10", at highway bridge in Taberg, Oneida County, just downstream from Furnace Creek. Datum of gage is 491.12 feet above mean sea level, datum of 1929.

Drainage area.- 189 square miles.

Records available.- April 1932 to September 1947.

Average discharge.- 24 years, 549 second-feet (unadjusted).

Extremes.- Maximum discharge during year, 9,060 second-feet Apr. 12 (gage height, 8.04 feet); minimum, 14 second-feet (regulated) Sept. 12; minimum gage height, -0.16 foot Oct. 12.

1923-47: Maximum discharge, 13,000 second-feet Oct. 2, 1945 (gage height, 10.90 feet); minimum, 5.4 second-feet (regulated) June 28, 1941.

Remarks.- Records good except those for periods of ice effect, which are fair. Diversion above station for water supply for city of Rome. Diurnal fluctuation at low flow caused by this diversion and small power operations above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct	Nov	Dec.	Jan.	Feb.	Mar	Apr	May	June	July	Aug	Sept
1	429	717	917	473	2,400	230	680	4,340	696	221	364	72
2	469	755	410	483	1,620	221	701	5,080	1,870	236	254	127
3	459	1,560	350	568	1,080	225	897	4,690	4,810	174	209	128
4	547	850	368	522	885	216	1,100	3,410	2,070	134	202	101
5	449	806	350	476	822	211	1,520	3,040	1,160	123	181	76
6	324	454	342	419	520	225	3,190	3,140	940	115	162	52
7	242	373	316	*385	520	225	4,410	2,700	771	677	142	48
8	167	432	355	372	460	225	3,260	2,100	1,910	1,360	118	63
9	128	734	526	320	410	234	2,790	1,480	1,850	913	142	54
10	120	858	1,990	310	384	231	2,560	1,190	1,130	474	188	32
11	119	755	2,100	330	*704	222	4,110	1,200	780	293	164	50
12	397	1,380	1,470	372	368	219	7,910	1,380	601	279	128	102
13	2,690	989	2,340	355	355	*221	6,073	1,540	487	322	95	146
14	1,300	890	1,230	353	348	435	3,310	1,410	858	223	108	99
15	624	811	*860	596	333	796	2,830	1,070	1,910	172	76	95
16	397	559	*640	744	330	1,080	3,700	959	1,560	156	99	90
17	316	773	772	701	300	1,120	2,980	737	979	169	99	65
18	1,040	827	714	614	290	933	2,060	806	658	198	112	56
19	1,340	563	641	527	270	801	1,950	922	501	706	116	53
20	1,130	*444	559	969	259	701	1,600	2,830	423	557	88	47
21	593	307	580	2,140	254	623	1,240	1,390	337	296	112	40
22	422	472	634	1,620	245	562	1,190	5,370	327	1,440	113	83
23	332	384	680	1,210	240	510	1,720	2,140	267	1,440	82	129
24	280	444	622	1,220	230	716	3,280	1,190	242	644	70	90
25	248	487	544	1,810	235	1,700	2,850	1,380	327	325	83	59
26	845	1,220	434	2,200	234	2,010	1,870	2,500	370	216	71	52
27	664	2,220	390	2,170	220	1,740	3,630	1,430	271	564	50	52
28	422	1,570	490	1,750	220	1,500	3,390	1,030	202	3,810	46	52
29	337	890	573	1,350	-	1,220	2,160	1,110	169	1,910	42	49
30	563	671	573	1,210	-	956	3,640	1,330	166	850	63	73
31	734	-	516	3,940	-	779	-	904	-	586	102	-

Month	Observed				Diversion (second-feet)†	Adjusted for diversion		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Runoff in inches
October	15,578	2,680	113	599	+23.	-	-	-
November	24,248	2,220	373	808	+22.9	-	-	-
December	23,359	2,100	313	772	+22.5	-	-	-
Calendar year 1946	191,443	2,790	16	525	+23.0	548	2.90	39.42
January	29,689	2,840	314	958	+23.2	-	-	-
February	13,971	2,400	320	499	+23.2	-	-	-
March	21,088	2,010	212	680	+22.7	-	-	-
April	41,778	7,910	680	2,726	+22.8	-	-	-
May	64,276	5,370	797	2,073	+21.9	-	-	-
June	28,440	4,810	166	948	+22.5	-	-	-
July	10,583	3,310	115	632	+24.1	-	-	-
August	3,886	364	42	125	+24.9	-	-	-
September	2,231	148	32	74.4	+23.6	-	-	-
Water year 1946-47	331,709	7,910	32	909	+23.2	932	4.93	66.93

Peak discharge.- Apr 7 (2 a.m.) 5,510 sec.-ft.; Apr. 12 (10 p.m.) 9,060 sec.-ft.; May 2 (10 p.m.) 7,020 sec.-ft.; May 22 (9:15 a.m.) 7,180 sec.-ft.; June 3 (8 and 9 a.m.) 6,120 sec.-ft.

* Winter discharge measurement made on this day.

† Records of diversion furnished by Department of Public Works, Bureau of Water, Rome, N. Y.

Note.- Stage-discharge relation affected by ice Dec. 2, 5, 15, 18, 21, 27, 28, Jan. 9-11, Feb. 6-9, 17-25, Feb. 27 to Mar. 1.

Limestone Creek at Fayetteville, N. Y.

Location.- Water-stage recorder, lat. 43°01'45", long. 76°00'50", 100 feet downstream from Genesee Street Bridge in Fayetteville, Onondaga County, and 8 miles upstream from mouth. Datum of gage is 427.62 feet above mean sea level (levels by Corps of Engineers).

Drainage area.- 85.7 square miles, not including 15.7 square miles of Middle Branch Tioughnioga Creek Basin, flow from which may be completely diverted into Limestone Creek Basin through DeRuyter Reservoir.

Records available.- November 1939 to September 1947.

Extremes.- Maximum discharge during year, 5,170 second-feet June 3 (gage height, 7.00 feet); minimum, 27 second-feet Sept. 29 (gage height, 1.46 feet).

1939-47: Maximum discharge, 6,500 second-feet Dec. 30, 1942 (gage height, 7.18 feet), from rating curve extended above 5,000 second-feet by logarithmic plotting; minimum, 14 second-feet (regulated) Aug. 10, 1940, Aug. 17, 1941; minimum gage height, 1.365 feet Aug. 17, 1941.

Remarks.- Records excellent except those for periods of ice effect or backwater from debris, which are good. Canal diverts from Limestone Creek about 3 miles above station and returns water to creek about 400 feet above station. Flow regulated by DeRuyter Reservoir.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.
1	84	89	72	b96	378	89	296	241	203	90	71	39
2	91	84	b60	101	251	b98	604	299	290	137	64	44
3	86	81	64	159	b210	b90	758	321	e3,000	84	62	53
4	62	75	70	154	b195	b62	512	228	e820	69	56	41
5	52	72	72	b122	b155	78	1,180	258	422	65	61	39
6	48	68	81	111	b180	84	1,570	308	350	62	56	37
7	47	67	81	b98	169	87	763	317	289	318	53	36
8	44	70	74	98	b150	89	592	440	591	771	52	36
9	43	72	69	*92	b140	89	354	333	304	339	54	36
10	43	68	*70	91	b135	87	*308	247	247	180	70	35
11	42	76	113	91	130	86	304	212	209	142	58	34
12	52	105	89	b120	128	87	326	180	180	125	52	35
13	149	81	98	b100	125	106	251	169	169	137	48	49
14	78	79	b62	101	*125	461	218	209	180	106	44	40
15	61	87	b52	389	130	898	197	178	246	95	42	36
16	55	72	b62	371	134	*622	212	156	175	86	47	33
17	54	74	76	198	b114	447	218	156	149	116	52	34
18	66	76	78	160	116	b330	186	180	139	104	44	30
19	61	67	b60	b130	b102	b280	209	239	132	108	42	30
20	68	65	b52	382	b90	b280	222	186	128	103	41	32
21	60	64	b68	666	b104	b300	326	216	132	84	39	31
22	57	64	79	b175	b98	338	293	1,850	114	323	39	46
23	55	67	75	b160	b90	306	234	528	93	259	39	52
24	55	59	79	193	b94	*926	212	296	99	130	38	37
25	54	57	75	459	93	1,900	203	434	125	97	37	33
26	109	67	b64	321	93	628	221	584	168	86	41	32
27	96	117	b60	309	91	b360	239	315	123	119	41	31
28	73	87	b116	245	98	319	215	258	91	259	39	30
29	72	74	158	198	-	289	183	306	78	114	39	29
30	147	67	b120	306	-	244	183	338	73	93	41	29
31	106	-	b106	912	-	224	-	231	-	82	43	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	2,200	149	42	71.0	-	-
November	2,251	117	57	75.0	-	-
December	2,455	158	52	79.2	-	-
Calendar year 1946	38,902	1,010	36	107	1.25	16.88
January	7,106	912	91	229	-	-
February	3,909	378	89	140	-	-
March	10,234	1,900	62	331	-	-
April	11,253	1,570	183	379	-	-
May	10,245	1,850	156	330	-	-
June	9,119	3,000	73	304	-	-
July	4,884	771	62	158	-	-
August	1,515	71	37	48.9	-	-
September	1,105	53	29	36.8	-	-
Water year 1946-47	66,414	3,000	29	182	2.12	28.83

Peak discharge.- Mar. 25 (12 m.) 2,410 sec.-ft.; Apr. 5 (11:45 p.m.) 2,360 sec.-ft.; May 22 (8:30 a.m.) 3,130 sec.-ft.; June 3 (6 a.m.) 5,170 sec.-ft.

* Winter discharge measurement made on this day.

b Backwater from ice.

e Backwater from debris.

Note.- Shifting-control method used Nov. 12, Dec. 11, Jan. 30, 31.

Black River near Boonville, N. Y.

Location.- Water-stage recorder, lat. 43°30'35", long. 75°18'25", at highway bridge, three-quarters of a mile upstream from Sugar River and 2 miles northeast of Boonville, Oneida County.

Drainage area.- 295 square miles.

Records available.- February 1911 to September 1947.

Average discharge.- 36 years, 677 second-feet (unadjusted).

Extremes.- Maximum discharge during year, 8,650 second-feet June 3 (gage height, 10.62 feet, corrected for draw-down); minimum, 137 second-feet (regulated) Sept. 12 (gage height, 3.93 feet).

1911-47: Maximum discharge, 12,400 second-feet (revised) Mar. 28, 1913 (gage height, about 12.5 feet, former site, from floodmarks); minimum, about 5 second-feet (regulated) Aug. 26, 1918 (gage height, 2.40 feet).

Revisions.- The figures of maximum discharge for some years have been revised, as shown in the following table. They supersede those published in the water-supply papers indicated.

Water-Supply Paper	Water year	Date	Gage height (feet)	Discharge (second-feet)
	1911-12	Apr. 17	10.4	6,800
354, 847....	1912-13	Mar. 23	12.5	12,400
454.....	1916-17	June 12	9.8	5,600
474.....	1917-18	Oct. 31	9.6	5,230
504.....	1918-19	Apr. 13	10.2	6,380
544.....	1921-22	Apr. 12	9.9	5,790
584.....	1923-24	Jan. 12	10.3	6,590
624.....	1925-26	Apr. 25	10.6	7,240
664.....	1927-28	Apr. 8	10.5	7,020
699.....	1929-30	Jan. 9	10.0	5,980
744.....	1932-33	Oct. 7	10.5	7,020

Remarks.- Records excellent except those for periods of ice effect or doubtful or no gage-height record, which are good. Flow partly regulated by several headwater reservoirs. Forestport feeder diverts water from State Pond at Forestport. That portion of diverted water which does not pass down Black River Canal (flowing south) returns to Black River below station through Mill Creek sluiceway.

Revisions.- Revised figures of discharge, in second-feet, for the high-water period in the water year 1913, superseding those published in Water-Supply Papers 354 and 847, are given herewith:

Mar. 26.....7,240
27.....7,240
28.....7,700
29.....4,380

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
March.....	7,700	410	2,090	7.08	8.19
Water year 1912-13,	7,700	28	749	2.54	34.45
Calendar year 1913.	7,700	28	710	2.41	32.65

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 12				Apr. 13 to Sept. 30					
4.0	165	4.7	372	4.1	176	5.3	639	8.0	3,200
4.2	212	5.0	493	4.3	231	5.6	810	9.0	4,900
4.4	270	5.3	639	4.5	295	6.0	1,080	9.7	6,370
Note.- Same as following table above 5.3 feet.				4.7	367	6.5	1,490		
				5.0	491	7.0	1,970		

Discharge, in second-feet, of Black River near Boonville, N. Y., water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	544	693	a760	560	3,800	360	856	3,420	1,220	406	882	269
2	607	661	a620	520	2,400	370	927	3,740	1,350	572	704	324
3	901	*951	a480	600	1,400	380	1,110	3,840	e5,500	505	603	451
4	816	996	a480	660	1,200	380	1,230	3,070	e6,350	398	708	345
5	780	792	a540	640	900	370	1,530	2,480	3,170	348	644	256
6	671	655	a520	580	760	370	2,830	2,170	2,110	345	519	216
7	539	578	a470	540	720	370	4,410	2,060	1,620	654	451	192
8	358	583	a470	520	720	380	3,130	2,230	1,730	1,890	410	179
9	226	644	a500	490	620	380	2,290	1,910	1,880	1,520	398	222
10	192	668	a620	450	600	380	1,930	1,530	1,450	1,040	418	202
11	185	639	*1,370	*470	600	400	2,760	1,250	1,150	744	390	176
12	404	774	1,350	460	560	*406	5,190	1,110	1,010	634	356	226
13	1,020	804	1,740	410	*520	402	5,570	989	914	567	337	615
14	931	744	1,820	390	520	1,000	3,600	996	1,030	510	320	406
15	671	*739	1,280	620	520	2,190	3,360	901	1,750	465	298	323
16	446	650	989	1,120	500	2,360	3,400	804	1,660	500	306	323
17	361	629	894	1,250	480	1,930	3,100	816	1,300	482	316	352
18	499	661	823	1,020	480	1,400	2,550	792	1,020	543	309	265
19	629	593	693	780	460	1,140	2,180	856	914	793	295	211
20	489	539	d620	880	430	968	1,840	1,330	836	940	292	197
21	391	511	d580	2,400	420	894	1,590	2,120	894	768	278	184
22	340	502	d760	2,600	390	856	1,430	e6,110	750	1,420	275	310
23	302	521	d820	1,900	370	733	1,480	e5,780	650	1,990	262	487
24	280	507	d740	1,450	370	756	2,180	3,010	587	1,220	246	356
25	270	502	d660	1,400	380	1,510	2,600	2,160	597	816	237	282
26	345	686	539	1,550	380	2,300	2,170	2,520	597	613	228	240
27	422	a1,410	470	1,600	350	2,000	2,340	2,290	519	752	205	214
28	361	a1,450	500	1,450	350	1,500	3,090	1,780	491	2,750	194	199
29	350	a1,060	620	1,240	-	1,140	2,380	1,520	443	3,070	179	194
30	434	a820	660	1,140	-	947	2,310	1,760	410	1,930	208	192
31	589	-	600	3,220	-	798	-	1,510	-	1,180	298	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	15,353	1,020	185	495	1.68	1.94
November	21,960	1,450	502	732	2.48	2.77
December	23,988	1,820	470	774	2.62	3.02
Calendar year 1946	237,298	3,800	124	650	2.20	29.93
January	32,910	3,220	390	1,062	3.60	4.15
February	21,200	3,800	350	757	2.57	2.67
March	29,370	2,360	360	947	3.21	3.70
April	75,363	5,570	856	2,512	8.52	9.50
May	66,854	6,110	792	2,157	7.31	8.43
June	43,902	6,350	410	1,463	4.96	5.53
July	30,365	3,070	345	980	3.32	3.83
August	11,566	882	179	373	1.26	1.46
September	8,408	615	176	280	.949	1.06
Water year 1946-47	381,239	6,350	176	1,044	3.54	48.06

Peak discharge.- Feb. 1 (2 a.m.) 4,300 sec.-ft.; Apr. 7 (10 a.m.) 4,580 sec.-ft.; Apr. 13 (4 a.m.) 6,280 sec.-ft.; May 3 (10:30 a.m.) 4,080 sec.-ft.; May 22 (9 p.m.) 8,230 sec.-ft.; June 3 (11:30 p.m.) 8,650 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of gage-height record at Forestport feeder dam.

d Doubtful gage-height record; discharge computed on basis of gage-height record at Forestport feeder dam.

e Variable draw-down conditions; discharge computed on basis of adjusted gage heights.

Note.- Stage-discharge relation affected by ice Dec. 27 to Jan. 30, Feb. 3 to Mar. 11 (no gage-height record Dec. 27 to Jan. 10).

Black River at Watertown, N. Y.

Location.- Water-stage recorder, lat. 43°59'05", long. 75°55'30", at Vanduzee Street Bridge, in Watertown, Jefferson County.
Drainage area.- 1,876 square miles.
Records available.- July 1920 to September 1947.
Average discharge.- 27 years, 3,941 second-feet.
Extremes.- Maximum discharge during year, 33,200 second-feet Apr. 19 (gage height, 9.88 feet); minimum, 63 second-feet (regulated) Aug. 17 (gage height, 0.05 foot); minimum daily, 934 second-feet (regulated) Aug. 17.
1920-47: Maximum discharge, 33,900 second-feet Apr. 9, 1928 (gage height, 10.6 feet); minimum, 10 second-feet (estimated, regulated) Sept. 2, 1934 (gage height, -0.19 foot); minimum daily, 137 second-feet (regulated) Sept. 4, 1939.
Maximum discharge known, about 39,700 second-feet in April 1869.
Remarks.- Records excellent except those for periods of ice effect, which are fair. Flow partly regulated by Stillwater Reservoir, Fulton Chain of Lakes, and other reservoirs. During canal season water is diverted out of basin through Forestport feeder and Black River Canal (flowing south). Extensive d[illegible]nal fluctuation at low and medium flow caused by mills and power plants in and [illegible]ve Watertown.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 12

1.7	1,400
2.0	1,850
2.5	2,730
3.0	3,760

Note.- Same as following table above 3.0 feet.

Apr. 13 to Sept. 30

1.2	541	3.0	3,760	6.0	12,600
1.6	1,300	3.5	4,810	7.0	16,800
2.0	1,880	4.0	5,930	8.0	21,600
2.5	2,740	5.0	8,880	9.4	29,300

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.
1	2,88[illegible]	4,240	6,100	3,830	14,000	2,880	7,520	13,500	8,540	1,900	9,370	1,000
2	3,320	4,500	4,930	3,900	16,000	2,300	8,320	14,700	8,810	2,250	7,670	1,410
3	3,540	5,420	3,400	3,730	15,500	2,800	6,680	17,300	12,500	2,320	5,680	1,600
4	3,720	5,690	3,400	3,800	12,800	2,720	6,990	18,800	12,500	2,210	4,390	1,740
5	3,680	5,510	3,540	4,000	10,300	2,760	8,510	17,600	24,100	1,900	3,470	1,780
6	3,340	5,170	3,500	4,100	8,410	3,450	13,700	15,800	20,100	1,750	2,940	2,250
7	2,980	4,540	3,440	4,000	7,110	3,240	21,300	14,300	15,600	1,850	2,550	1,090
8	2,877	3,940	3,490	3,800	5,880	3,050	23,100	13,000	14,000	4,240	2,290	1,310
9	2,380	4,080	3,700	3,600	5,160	3,100	22,000	12,100	12,000	6,600	2,050	1,610
10	1,810	4,410	4,090	*3,400	4,630	*2,860	19,000	11,200	10,700	6,790	1,820	1,630
11	1,500	4,310	6,970	3,100	4,280	2,620	17,600	9,980	9,830	6,060	1,950	1,570
12	1,490	5,690	*7,310	3,200	4,360	2,960	21,600	8,340	9,440	5,130	2,130	1,690
13	3,820	6,180	*7,830	3,100	4,180	3,200	23,000	7,020	7,250	4,370	1,990	1,740
14	5,950	6,580	6,180	3,040	4,050	3,710	23,100	6,410	6,630	3,350	1,990	2,020
15	5,820	6,770	8,310	3,230	4,040	4,970	23,200	5,680	6,390	2,470	2,170	1,980
16	4,850	*5,930	7,200	3,930	*3,850	6,340	19,600	5,310	6,600	3,020	2,360	1,840
17	3,540	5,170	4,900	4,610	3,920	8,660	18,100	4,680	6,790	2,660	334	2,080
18	3,07[illegible]	5,110	5,120	5,130	3,520	7,240	18,700	4,350	6,860	2,770	1,730	2,060
19	4,990	4,790	5,170	5,230	3,300	7,700	15,100	3,880	6,440	2,930	1,840	2,170
20	5,370	4,240	4,940	5,240	3,100	7,770	13,300	4,160	5,870	2,810	1,960	2,300
21	4,930	3,950	4,530	6,600	2,800	7,370	11,300	5,830	5,020	4,220	2,050	958
22	4,060	3,640	4,280	7,460	3,000	6,770	9,780	9,910	4,540	4,220	2,030	1,610
23	3,160	3,620	4,140	8,440	2,450	6,210	8,410	17,000	3,660	5,620	1,920	1,780
24	2,600	3,420	4,690	9,940	2,800	6,360	7,800	22,500	3,250	5,980	1,270	2,270
25	2,300	3,200	4,840	11,400	2,700	8,380	8,230	18,700	3,190	5,580	1,550	2,280
26	2,630	4,030	4,500	11,900	2,790	9,230	9,370	15,500	3,280	4,730	1,490	2,160
27	3,550	6,670	4,100	12,300	2,850	10,300	11,000	13,500	3,060	3,700	1,520	1,870
28	3,270	7,580	4,100	12,600	2,840	11,600	11,300	12,000	2,790	5,600	1,620	1,490
29	2,980	7,490	3,700	11,800	-	11,900	12,100	10,900	2,390	7,830	1,530	1,520
30	3,140	7,140	3,800	10,500	-	10,700	12,900	10,800	2,100	9,200	1,540	1,630
31	3,450	-	3,700	10,100	-	9,020	-	9,620	-	10,300	1,390	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	106,400	5,930	1,490	3,432	-	-
November	143,010	7,580	3,200	5,100	-	-
December	151,900	9,310	3,400	4,900	-	-
Calendar year 1946	1,429,961	18,700	246	3,917	2.09	28.33
January	132,100	12,800	3,040	4,229	-	-
February	160,470	15,600	2,450	5,731	-	-
March	181,220	11,300	2,720	5,846	-	-
April	441,740	24,100	3,680	14,720	-	-
May	358,180	22,500	3,890	11,460	-	-
June	247,040	24,100	2,100	8,235	-	-
July	136,360	10,300	1,750	4,399	-	-
August	79,194	9,370	934	2,555	-	-
September	52,438	2,300	958	1,748	-	-
Water year 1946-47	2,258,652	29,100	934	6,186	3.30	44.76

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 3, 16, 17, Dec. 26 to Jan. 2, Jan. 4-13, Feb. 19-25.

Black River Canal (flowing south) near Boonville, N. Y.

Location.- Two water-stage recorders and concrete controls, lat. 43°27'20", long. 75°19'25", gage 1 at lock 69, 2 miles south of Boonville, Oneida County, and gage 2 on Lansingkill spillway, 100 feet downstream from spillway head gates, 600 feet upstream from lock 70, and half a mile upstream from lock 69. Datum of gage 1 is 1,105.56 feet above mean sea level, datum of 1929.

Records available.- September 1915 to September 1942 (canal seasons only), October 1942 to September 1947.

Extremes.- Maximum daily discharge during year, 75 second-feet Sept. 17, 25; minimum daily, 0.4 second-foot May 15-18.
1915-47: Maximum daily discharge recorded, 323 second-feet Nov. 30, 1915; practically no flow at times when no water is being diverted.

Remarks.- Records good except those for periods of ice effect at gage 1, which are fair. Record shows combined flow at gages 1 and 2 and represents total diversion from Black River at Forestport, through Forestport feeder, into Mohawk River Basin. Discharge during periods Nov. 5 to Aug. 25, when no water was diverted, made up of leakage through head gates and runoff from area drainage into canal above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	48	2.0	0.8	1.2	0.7	0.7	0.7	0.8	2.9	2.9	35
2	41	47	1.9	.9	1.0	.6	.8	.8	1.0	2.8	2.5	45
3	35	57	1.8	.9	.9	.6	.8	.8	11	2.8	2.5	40
4	34	52	1.7	.9	.9	.7	.8	.7	.8	2.9	2.3	54
5	41	33	1.6	.9	.8	.8	1.0	.7	.8	2.9	2.4	55
6	43	18	1.4	.9	.8	.9	8.2	.6	.7	2.7	3.5	54
7	42	10	1.4	*.9	.8	.9	5.8	.6	.8	14	3.8	54
8	41	4.0	1.4	.9	.8	.9	1.2	.7	.8	16	3.6	53
9	41	4.1	1.3	.9	.8	.9	1.3	.6	.7	2.8	3.8	52
10	41	3.7	1.3	.9	.8	.8	1.5	.6	.6	2.7	4.5	52
11	40	3.7	*1.2	.9	.8	.8	3.5	.6	.5	12	3.7	55
12	54	4.9	1.1	.8	.8	*.8	2.8	.5	.5	21	3.2	66
13	66	3.8	1.2	.8	.8	.8	1.3	.5	.5	9.0	3.0	55
14	41	3.8	1.1	.8	.9	1.0	1.1	.5	.8	3.0	2.8	54
15	46	*3.7	1.1	.9	.9	.9	1.0	.4	.8	2.7	2.8	70
16	48	3.3	1.0	.9	.9	.9	.9	.4	.8	3.0	2.8	74
17	48	4.1	1.0	.9	.9	.8	.9	.4	.8	3.2	2.4	75
18	62	3.7	1.0	.9	.9	.8	.8	.4	.7	3.4	1.9	73
19	53	3.1	1.0	.9	.8	.9	.8	.5	.6	3.8	1.6	72
20	48	3.1	1.0	1.0	.8	.9	.8	1.0	.6	3.6	1.9	70
21	50	3.3	1.0	.9	.8	.9	.8	.8	.6	3.2	2.1	70
22	43	3.0	.9	1.0	.7	.9	.7	19	.7	8.2	2.2	74
23	48	3.8	.9	.9	.7	.8	.7	.9	.7	4.2	2.2	43
24	48	3.1	.9	.9	.7	.9	.8	.8	.7	3.1	2.3	64
25	48	3.7	.9	1.0	.7	.9	.8	.8	.6	2.6	2.4	75
26	55	12	.8	1.0	.6	.9	.8	.9	.7	2.6	12	74
27	54	17	.8	1.0	.6	.8	.9	.3	.6	13	24	74
28	50	8.9	.8	1.0	.7	.8	.8	.9	2.6	51	35	73
29	49	6.0	.8	1.0	-	.8	.7	1.0	3.4	6.2	38	73
30	50	3.3	.8	1.1	-	.8	.7	1.0	3.2	3.1	44	73
31	54	-	.8	1.8	-	.7	-	.9	-	3.2	40	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	1,453	66	33	46.9		
November	377.7	57	2.9	12.6		
December	35.9	2.0	.8	1.16		
Calendar year 1946	5,828.2	81	.8	16.0		
January	29.3	1.8	.8	.95		
February	22.8	1.2	.6	.81		
March	25.6	1.0	.8	.83		
April	43.7	8.2	.7	1.46		
May	39.9	19	.4	1.29		
June	38.4	11	.5	1.28		
July	217.6	51	2.6	7.02		
August	262.1	44	1.6	8.45		
September	1,851	75	35	61.7		
Water year 1946-47	4,397.0	75	.4	12.0		

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 1, 2, 16, Dec. 26 to Jan. 7, Jan. 30-23, Feb. 1 to Mar. 22, Mar. 25-27 (no gage-height record Dec. 31 to Jan. 6). No gage-height record at gage 2 Sept. 7-9; discharge computed on basis of reconstructed gage-height record and record at gage 1.

Moose River at McKeever, N. Y.

Location.- Water-stage recorder, lat. 43°36'40", long. 75°06'35", half a mile west of McKeever, Herkimer County, and 2 miles downstream from South Branch. Datum of gage is 1,479.92 feet above mean sea level, datum of 1929.
Drainage area.- 365 square miles.
Records available.- May 1922 to September 1947. June 1900 to December 1922 at site at Moose River, 2½ miles downstream.
Average discharge.- 39 years (1907-13, 1914-47), 843 second-feet (unadjusted).
Extremes.- Maximum discharge during year, 18,700 second-feet June 3 (gage height, 17.45 feet, from floodmark), result of failure of dam; minimum, 184 second-feet (regulated) Aug. 30 (gage height, 2.31 feet).
1900-1947: Maximum discharge, that of June 3, 1947; minimum, about 42 second-feet (regulated) July 21, 23, 25-27, 1913.
Remarks.- Records good except those for periods of ice effect, backwater from logs, partially obstructed intake, or fragmentary or no gage-height record, which are fair. Flow regulated to some extent by Fulton Chain of Lakes. Occasional diurnal fluctuation during low and medium flow caused by paper mill at McKeever, prior to June 3.

Rating tables, water year 1946-47, except periods of ice effect or backwater from logs (gage height, in feet, and discharge, in second-feet)

Oct. 1 to June 3						June 3 to Sept. 30					
2.4	328	4.0	1,070	7.0	3,320	2.3	182	4.0	862	7.0	3,080
2.6	403	4.6	1,430	8.0	4,300	2.6	260	4.6	1,220	8.0	4,040
3.0	566	5.3	1,910	9.5	6,070	3.0	392	5.3	1,700	10.0	6,300
3.5	800	6.0	2,470	10.8	7,800	3.5	602	6.0	2,230	11.9	8,880

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	745	878	863	540	4,400	540	1,290	4,670	1,710	426	1,130	201
2	664	821	721	520	3,000	520	1,240	4,930	1,820	446	926	219
3	511	1,190	680	540	2,400	520	1,250	4,910	8,840	458	695	260
4	623	1,360	650	620	2,050	540	1,100	4,020	6,750	434	534	345
5	905	1,120	614	600	1,750	540	1,140	4,360	3,510	388	466	430
6	836	910	575	580	1,550	560	1,900	3,970	2,700	339	411	422
7	664	775	540	560	1,350	560	3,800	3,720	2,400	590	360	403
8	532	726	523	*540	1,200	540	3,300	3,280	2,280	1,290	329	400
9	434	780	536	520	1,120	*540	2,620	2,650	2,290	1,320	349	396
10	376	894	732	500	1,060	520	2,090	2,180	2,100	1,180	370	400
11	343	868	2,140	490	1,020	520	2,640	1,880	1,800	908	336	415
12	380	1,190	1,880	480	960	500	6,800	1,620	1,650	730	303	396
13	954	1,300	2,040	470	900	520	6,640	1,550	1,410	1,060	284	483
14	1,110	1,170	*2,170	470	*860	900	4,160	1,550	1,200	752	266	516
15	810	1,090	1,450	540	820	a1,950	3,750	1,360	1,850	612	229	521
16	637	938	1,240	740	800	a2,480	3,550	1,110	1,900	538	227	538
17	549	857	1,180	940	760	a2,150	2,980	1,030	1,510	512	246	516
18	688	836	1,100	880	720	a1,830	2,490	971	1,210	516	252	491
19	1,440	785	940	840	700	a1,570	2,180	998	1,140	710	249	458
20	1,330	721	840	940	660	a1,390	1,800	2,530	1,070	1,050	249	474
21	971	674	760	2,600	620	a1,310	1,570	3,850	956	806	257	466
22	780	637	840	3,000	600	1,250	1,380	7,800	840	957	260	534
23	674	637	840	2,450	580	1,170	1,440	5,760	742	1,550	257	584
24	565	601	780	2,100	620	1,170	2,270	3,460	640	1,100	229	579
25	536	614	720	2,080	620	f1,760	3,340	2,740	650	760	211	521
26	579	733	660	2,130	580	f2,290	2,630	2,850	665	597	209	483
27	836	1,780	520	2,050	560	f2,440	2,880	2,650	612	710	204	458
28	790	1,730	520	1,870	560	2,180	4,270	2,230	547	2,530	194	442
29	678	1,250	600	1,660	-	1,850	2,940	2,060	495	2,450	189	430
30	726	960	660	1,550	-	1,560	2,930	2,580	438	1,770	187	430
31	852	-	640	4,300	-	1,380	-	2,170	-	1,370	196	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per scuare mile	Runoff in inches
October	22,518	1,440	343	726	-	-
November	28,825	1,780	601	961	-	-
December	28,954	2,170	520	934	-	-
Calendar year 1946	291,236	5,000	112	798	2.19	29.67
January	38,100	4,300	470	1,229	-	-
February	32,820	4,400	560	1,172	-	-
March	37,560	2,490	500	1,212	-	-
April	82,370	6,800	1,100	2,746	-	-
May	91,239	7,800	971	2,943	-	-
June	55,725	8,840	438	1,858	-	-
July	28,859	2,530	339	931	-	-
August	10,604	1,130	187	342	-	-
September	13,211	584	201	440	-	-
Water year 1946-47	470,785	8,840	187	1,290	3.53	47.97

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of reconstructed gage-height graph and records for Middle Branch Moose River at Old Forge and near McKeever.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.
Note.- Stage-discharge relation affected by ice Dec. 3, Dec. 15 to Jan. 24, Jan. 31 to Mar. 14 (no gage-height record Feb. 23-26, Mar. 3-5, 10-14; doubtful gage-height record Jan. 22, 23). Backwater from logs Apr. 4-7, 12. Partially obstructed intake June 6, 7, 12, 14-16, July 23-25, 29; discharge computed on basis of gage heights, outside-gage readings, and records for Middle Branch Moose River at Old Forge and near McKeever.

Middle Branch Moose River at Old Forge, N. Y.

Location.- Staff gage, lat. 43°42'50", long. 74°58'10", at Old Forge, Herkimer County, 400 feet downstream from State dam. Datum of gage is 1,690.63 feet above mean sea level, datum of 1929.
Drainage area.- 52 square miles.
Records available.- November 1911 to September 1947.
Average discharge.- 35 years (1912-47), 106 second-feet (unadjusted).
Extremes (regulated).- Maximum daily discharge during year, 600 second-feet May 23; maximum gage height observed, 5.04 feet May 23, 24 (backwater from North Branch); minimum discharge observed, 14 second-feet Aug. 4 (gage height, 1.82 feet); minimum daily, 14 second-feet.
1911-47: Maximum daily discharge, 862 second-feet Mar. 23, 1921, from rating curve extended above 450 second-feet by logarithmic plotting; minimum daily, about 0.1 second-foot many times during 1938-39, 1944, 1945, when gates in dam were closed.
Remarks.- Records good except those for periods of backwater from North Branch Moose River or debris, which are fair. On days when gate openings are changed, discharge is computed on basis of gage readings and record of gate operations. Gage read twice daily. Flow regulated by Fulton Chain of Lakes.

Rating table, water year 1946-47, except periods of backwater from debris or from North Branch Moose River
(gage height, in feet, and discharge, in second-feet)

1.8	12	2.6	116
1.9	19	3.0	204
2.0	28	3.4	310
2.2	52	3.8	437
2.4	81	4.2	583

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	190	82	76	86	255	205	255	16	240	118	265	15
2	84	82	76	86	280	205	255	90	192	109	134	15
3	84	82	76	86	280	205	198	250	553	109	39	100
4	84	82	76	86	282	200	180	390	580	109	14	268
5	84	80	76	86	282	195	168	450	580	43	15	268
6	84	80	76	86	268	195	168	440	540	16	15	268
7	84	80	76	86	268	190	168	440	540	53	15	268
8	84	78	76	86	268	190	168	430	520	289	15	268
9	84	78	76	86	268	190	168	420	508	340	15	268
10	84	78	78	86	268	190	168	403	398	270	15	255
11	84	76	80	86	268	190	132	276	204	106	15	255
12	84	76	80	86	268	180	100	163	192	37	15	255
13	84	76	82	86	268	180	104	72	155	37	15	279
14	84	76	82	86	268	180	106	72	93	37	15	325
15	84	76	82	86	268	180	94	72	100	37	15	325
16	84	76	82	86	268	180	56	72	147	38	15	310
17	84	76	86	86	268	180	60	72	157	39	15	310
18	84	76	86	86	255	238	135	64	157	39	15	294
19	84	76	86	130	255	282	60	100	157	82	43	325
20	84	76	82	229	255	282	114	465	157	95	69	325
21	84	76	80	229	240	282	113	540	157	95	69	325
22	84	76	80	229	240	268	113	580	157	136	69	310
23	84	76	80	229	240	268	108	600	107	146	42	310
24	84	76	82	229	230	268	107	580	58	135	15	310
25	84	76	82	229	230	255	111	560	63	102	15	310
26	84	76	82	229	215	255	100	540	63	102	15	296
27	84	76	84	229	215	255	15	520	64	100	15	296
28	84	76	84	229	215	268	15	500	66	209	15	296
29	84	76	84	229	-	268	16	480	82	320	15	282
30	84	76	86	229	-	268	16	460	116	310	15	282
31	84	-	86	229	-	268	-	408	-	310	15	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	2,710	190	84	87.4	-	-
November	2,322	82	76	77.4	-	-
December	2,500	86	76	80.6	-	-
Calendar year 1946	38,472.8	296	4.8	105	2.02	27.51
January	4,426	229	86	143	-	-
February	7,185	282	215	257	-	-
March	6,960	282	180	225	-	-
April	3,571	255	15	119	-	-
May	10,525	600	16	340	-	-
June	7,103	580	58	237	-	-
July	3,968	340	16	128	-	-
August	1,074	265	14	34.6	-	-
September	8,013	325	15	267	-	-
Water year 1946-47	60,357	600	14	165	3.17	43.18

Note.- Backwater from debris Nov. 1 to Jan. 19 (doubtful gage-height record Dec. 10-17). Backwater from North Branch Moose River Feb. 2, 3, Feb. 21 to Mar. 11, Apr. 12-17, Apr. 28 to May 8, May 21-30, June 4-8, July 29, 30. Decrease in combined storage in Old Forge and Sixth Lake Reservoirs during calendar year 1946, about 149,000,000 cubic feet (equivalent mean discharge, 4.7 sec.-ft.; runoff, 1.23 inches); decrease during water year 1946-47, about 111,100,000 cubic feet (equivalent mean discharge, 3.5 sec.-ft.; runoff, 0.91 inch).

Middle Branch Moose River near McKeever, N. Y.

Location.- Water-stage recorder, lat. 43°37'45", long. 75°04'55", half a mile upstream from confluence with South Branch and 1½ miles northeast of McKeever, Herkimer County. Datum of gage is 1,530.29 feet above mean sea level, datum of 1929.

Drainage area.- 148 square miles.

Records available.- October 1925 to September 1947.

Average discharge.- 22 years, 333 second-feet (unadjusted).

Extremes.- Maximum discharge during year, 1,860 second-feet May 22 (gage height, 6.28 feet); minimum, 75 second-feet (regulated) Aug. 15, 16 (gage height, 2.29 feet).
1925-47: Maximum discharge, 2,100 second-feet Apr. 27, 1926; maximum gage height, 7.15 feet Jan. 18, 1938 (ice jam); minimum discharge, 27 second-feet (regulated) Aug. 18, 1946 (gage height, 1.73 feet).

Remarks.- Records good except those for periods of ice effect, backwater from logs, or no gage-height record, which are fair. Flow partly regulated by Fulton Chain of Lakes.

Rating table, water year 1946-47, except periods of ice effect or backwater from logs
(gage height, in feet, and discharge, in second-feet)

2.3	76	3.0	187	4.5	718
2.5	101	3.4	290	5.5	1,300
2.7	131	3.9	462	6.2	1,800

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	341	a360	402	270	920	330	600	1,030	943	250	699	86
2	263	a360	390	260	880	320	580	1,120	834	261	592	89
3	200	a420	370	280	820	310	540	1,340	1,300	264	409	93
4	205	a400	350	290	780	320	500	1,500	1,560	261	299	215
5	219	a380	328	280	740	320	520	1,540	1,690	224	250	334
6	226	a350	309	270	700	330	680	1,490	1,620	187	214	344
7	242	a340	287	260	660	330	900	1,450	1,500	253	189	341
8	237	a340	276	250	640	320	800	1,400	1,430	488	175	338
9	216	a360	276	*245	600	320	760	1,300	1,320	704	167	334
10	202	a370	318	240	560	310	700	1,200	1,210	752	159	351
11	191	a380	420	235	540	310	900	1,090	997	587	152	354
12	224	a410	462	230	520	300	1,200	849	787	424	145	338
13	318	a440	*558	225	*490	300	1,250	658	704	371	138	368
14	321	a493	558	225	470	420	1,450	558	600	338	120	395
15	315	497	490	280	460	640	1,450	505	566	324	78	406
16	293	474	470	350	450	660	1,340	470	562	293	86	410
17	278	458	460	410	440	620	1,200	439	592	264	104	402
18	296	432	440	380	420	640	1,080	398	575	218	107	381
19	341	402	420	360	410	660	1,000	299	549	190	108	378
20	354	374	400	540	400	640	840	1,020	533	318	129	399
21	361	354	380	940	380	620	780	1,230	509	321	146	392
22	344	334	400	900	370	600	700	1,770	482	338	152	417
23	a324	328	400	860	360	580	685	1,720	447	388	146	410
24	a290	306	380	840	360	600	718	1,720	378	374	117	402
25	a280	296	360	820	370	660	738	1,600	351	312	96	388
26	a300	331	340	840	350	700	782	1,500	347	256	89	378
27	a350	420	270	800	340	704	823	1,400	331	324	86	368
28	a360	424	270	760	340	700	839	1,280	312	617	81	357
29	a330	428	310	720	-	680	949	1,230	290	733	78	351
30	a360	417	330	700	-	660	1,000	1,180	250	792	78	347
31	a370	-	310	960	-	640	-	1,100	-	782	84	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	8,951	370	191	289	-	-
November	11,678	497	296	389	-	-
December	11,734	558	270	379	-	-
Calendar year 1946	119,808	985	27	328	2.22	30.11
January	15,020	960	225	485	-	-
February	14,770	920	340	528	-	-
March	15,544	704	300	501	-	-
April	26,504	1,450	500	877	-	-
May	35,396	1,770	299	1,142	-	-
June	23,569	1,690	250	786	-	-
July	12,168	792	167	393	-	-
August	5,473	699	78	177	-	-
September	10,166	417	86	339	-	-
Water year 1946-47	190,773	1,770	78	523	3.53	47.93

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for Middle Branch Moose River at Old Forge and Moose River at McKeever.
Note.- Stage-discharge relation affected by ice Dec. 2-4, Dec. 15 to Jan. 31, Feb. 9 to Mar. 8 (no gage-height record Feb. 20 to Mar. 8; doubtful gage-height record Jan. 12-15; fragmentary gage-height record Jan. 7, 8, Feb. 12). Backwater from logs Feb. 1-8, Mar. 9-26, Mar. 28 to Apr. 15, Apr. 17-22, May 7-10, 25, 26.

Independence River at Donnattsburg, N. Y.

Location.- Wire-weight gage, lat. 43°44'50", long. 75°20'05", at highway bridge at Donnattsburg, Lewis County, 1¼ miles downstream from Chase Lake Outlet and 5 miles upstream from mouth.

Drainage area.- 91.7 square miles.

Records available.- July 1942 to September 1947. December 1927 to June 1942 at site 3½ miles upstream, published as Independence River at Sperryville.

Extremes.- Maximum discharge during year, 3,290 second-feet Apr. 12 (gage height, 8.7 feet, from floodmark); minimum observed, 31 second-feet Sept. 30 (gage height, 3.04 feet).

1942-47: Maximum discharge, 3,410 second-feet Oct. 2, 1945 (gage height, 8.8 feet, from graph based on gage readings); minimum observed, 19 second-feet Aug. 24, 1945 (gage height, 2.87 feet).

Remarks.- Records fair. Gage read twice daily Oct. 1 to Dec. 11, once daily Jan. 9 to Sept. 30.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

3.0	27	3.8	137	5.5	775
3.1	36	4.1	210	6.0	1,050
3.3	57	4.5	338	7.0	1,740
3.5	83	5.0	537	8.4	2,950

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	171	320	224	145	1,460	74	239	827	286	d64	183	49
2	171	254	159	150	829	70	171	775	445	76	137	53
3	129	547	141	195	452	82	196	725	1,620	73	125	55
4	159	604	145	210	356	84	239	725	1,420	70	94	56
5	224	338	137	210	239	80	516	880	628	65	91	58
6	270	270	125	170	210	84	896	725	412	66	70	56
7	239	210	131	160	196	80	1,530	393	356	88	65	41
8	171	171	133	145	171	80	1,180	432	338	d295	62	38
9	123	270	148	*135	148	83	880	374	412	d412	70	36
10	93	393	258	118	159	86	935	286	303	320	93	43
11	75	412	*761	125	171	*88	1,140	224	196	d254	85	37
12	104	676	d725	160	159	83	2,960	d196	125	d210	68	39
13	642	775	494	118	150	99	2,240	159	148	183	56	45
14	628	537	360	110	137	150	935	148	157	157	50	52
15	356	452	270	110	*129	224	880	108	303	112	45	43
16	210	*320	250	125	122	356	827	117	320	150	52	42
17	159	254	290	210	118	374	775	127	239	135	49	35
18	210	239	300	290	114	374	604	137	148	171	57	37
19	338	210	240	250	110	338	537	150	148	224	56	39
20	254	183	210	290	104	224	412	370	117	270	46	33
21	239	155	210	450	96	171	393	654	99	159	46	32
22	183	146	250	560	92	159	393	1,630	88	224	56	36
23	146	171	270	450	88	159	320	1,420	61	393	50	82
24	113	159	240	390	90	239	612	648	75	286	48	59
25	103	159	210	430	84	452	890	356	89	139	45	52
26	171	196	185	680	82	628	628	412	148	101	39	41
27	320	537	150	600	78	676	581	356	112	226	46	37
28	286	628	185	430	76	725	880	286	88	1,010	43	34
29	239	432	195	390	-	494	604	254	75	1,210	45	32
30	320	286	170	360	-	239	537	432	69	522	46	31
31	393	-	150	780	-	224	-	356	-	286	45	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	7,239	642	75	234	2.55	2.94
November	10,304	775	146	343	3.74	4.18
December	7,716	761	125	249	2.72	3.13
Calendar year 1946	75,334	1,460	23	206	2.25	30.55
January	8,946	780	110	289	3.15	3.63
February	6,220	1,460	76	222	2.42	2.52
March	7,279	725	70	235	2.56	2.95
April	23,820	2,860	171	794	8.66	9.66
May	14,682	1,630	108	474	5.17	5.95
June	9,025	1,620	61	301	3.28	3.66
July	7,953	1,210	64	257	2.80	3.23
August	2,063	163	39	66.5	.725	.84
September	1,323	82	31	44.1	.481	.54
Water year 1946-47	106,570	2,860	31	292	3.18	43.23

* Winter discharge measurement made on this day.

d Doubtful gage-height record; discharge computed on basis of reconstructed gage-height record, weather records, and records for stations on nearby streams.

Note.- Stage-discharge relation affected by ice Dec. 4, Dec. 14 to Jan. 31, Feb. 13, Feb. 16 to Mar. 8 (no gage-height record Dec. 14-31, Jan. 2-8, 19-25; doubtful gage-height record Jan. 14, 27-29).

Stillwater Reservoir near Beaver River, N. Y.

Location.- Float-tape gage, lat. 43°53'50", long. 75°03'05", at Stillwater Dam, 7½ miles west of Beaver River post office, Herkimer County. Datum of gage is at mean sea level, adjustment of 1912.

Drainage area.- 172 square miles.

Records available.- February 1925 to September 1947.

Extremes.- Maximum elevation during year, 1,679.73 feet June 3 (contents, 4,748,000,000 cubic feet); minimum, 1,664.90 feet Oct. 1 (contents, 1,412,000,000 cubic feet).
1925-47: Maximum elevation, that of June 3, 1947; minimum since first filling, 1,644.80 feet Mar. 25-27, 1940 (reservoir empty).

Remarks.- Records good. Reservoir originally formed about 1885; enlarged at various times and in 1924 enlarged to a usable capacity of 4,623,000,000 cubic feet between elevations 1,650.3 and 1,679.3 feet above mean sea level. Elevation of gate sill of lowest outlet, 1,642.3 feet. Capacity below elevation 1,650.3 feet, about 90,000,000 cubic feet. Reservoir is used to regulate flow of Beaver and Black Rivers for control of floods, for power development, and for general welfare of the public. Records of contents given herein represent those above elevation 1,650.3 feet. Daily observations made about 8 a.m.

Cooperation.- Records furnished by Board of Black River Regulating District.

Elevation, in feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	64.90	70.54	74.84	74.79	74.84	72.24	67.96	79.58	79.30	79.34	79.29	76.47
2	64.92	70.76	74.99	74.72	75.12	72.04	67.93	79.66	79.35	79.30	79.26	76.52
3	65.00	71.10	74.94	74.68	75.26	71.89	68.09	79.60	79.73	79.25	79.21	76.33
4	65.15	71.43	74.85	74.62	75.32	71.65	68.29	79.45	79.63	79.21	79.16	76.16
5	65.32	71.64	74.76	74.52	75.38	71.37	68.46	79.30	79.51	79.16	79.12	75.99
6	65.51	71.78	74.67	74.43	75.41	71.03	68.78	79.45	79.33	79.15	79.08	75.83
7	65.69	71.88	74.58	74.32	75.40	70.66	69.43	79.52	79.35	79.17	79.02	75.65
8	65.85	71.98	74.47	74.23	75.38	70.29	70.09	79.47	79.41	79.47	78.98	75.54
9	65.93	72.11	74.38	74.11	75.36	69.91	70.59	79.44	79.45	79.38	78.99	75.38
10	66.00	72.37	74.34	73.98	75.34	69.51	70.95	79.37	79.46	79.39	78.97	75.20
11	66.07	72.55	74.68	73.85	75.32	69.11	71.32	79.35	79.45	79.36	78.91	75.02
12	66.21	72.85	74.93	73.73	75.25	68.70	72.35	79.35	79.35	79.35	78.87	74.85
13	66.65	73.22	75.08	73.59	75.09	68.28	73.78	79.36	79.35	79.37	78.76	74.73
14	67.08	73.48	75.37	73.45	74.97	67.94	74.59	79.41	79.34	79.36	78.64	74.56
15	67.32	73.66	75.55	73.34	74.87	67.70	75.14	79.36	79.38	79.33	78.53	74.40
16	67.48	73.80	75.64	73.28	74.77	67.49	75.68	79.32	79.44	79.28	78.44	74.24
17	67.61	73.90	75.62	73.22	74.67	67.26	76.14	79.37	79.39	79.23	78.35	74.07
18	67.81	74.04	75.60	73.14	74.48	67.19	76.48	79.37	79.35	79.20	78.21	73.90
19	68.17	74.13	75.55	73.05	74.28	67.10	76.79	79.39	79.34	79.21	78.11	73.79
20	68.51	74.13	75.48	72.96	74.08	66.98	77.00	79.45	79.34	79.21	78.14	73.56
21	68.73	74.10	75.48	73.15	73.89	66.85	77.17	79.50	79.32	79.18	78.17	73.37
22	68.89	74.07	75.42	73.36	73.69	66.70	77.30	79.63	79.29	79.21	78.04	73.23
23	69.03	74.05	75.37	73.46	73.48	66.56	77.47	79.59	79.26	79.23	77.82	73.09
24	69.15	74.03	75.33	73.51	73.29	66.42	77.73	79.48	79.25	79.18	77.62	72.91
25	69.27	73.95	75.28	73.59	73.10	66.51	78.21	79.43	79.30	79.15	77.41	72.74
26	69.44	73.92	75.21	73.65	72.88	67.08	78.57	79.37	79.34	79.12	77.20	72.56
27	69.60	74.05	75.11	73.72	72.68	67.49	78.92	79.40	79.41	79.14	77.03	72.37
28	69.73	74.31	75.08	73.76	72.47	67.76	79.48	79.39	79.39	79.38	76.87	72.30
29	69.85	74.52	75.04	73.78	-	67.88	79.53	79.42	79.36	79.56	76.70	72.30
30	70.10	74.70	74.99	73.81	-	67.96	79.45	79.50	79.32	79.45	76.52	72.13
31	70.31	-	74.89	74.25	-	67.97	-	79.41	-	79.33	76.46	-

Note.- Add 1,600 feet to obtain elevations above mean sea level.

Monthly elevation and contents, water year October 1946 to September 1947

Date	Elevation (feet)†	Contents (millions of cubic feet)	Change in contents during month (equivalent, mean second-feet)
Sept. 30	1,664.92	1,415	-
Oct. 31	1,670.46	2,436	+381
Nov. 30	1,674.79	3,414	+377
Dec. 31	1,674.82	3,422	+2.99
Calendar year 1946	-	-	-.28
Jan. 31	1,674.64	3,378	-16.4
Feb. 28	1,672.32	2,836	-224
Mar. 31	1,667.96	1,943	-333
Apr. 30	1,679.56	4,698	+1,063
May 31	1,679.34	4,635	-23.5
June 30	1,679.33	4,632	-1.16
July 31	1,679.30	4,623	-3.35
Aug. 31	1,676.47	3,840	-292
Sept. 30	1,672.02	2,769	-413
Water year 1946-47	-	-	+42.9

† Elevations at 12 p.m., obtained by interpolation.

Beaver River below Stillwater Dam, near Beaver River, N. Y.

Location.- Float-tape gage, lat. 43°53'50", long. 75°03'05", at outlet of Stillwater Reservoir, 7½ miles west of Beaver River post office, Herkimer County.

Drainage area.- 172 square miles.

Records available.- May 1908 to September 1947.

Average discharge.- 39 years, 367 second-feet (unadjusted).

Extremes (regulated).- Maximum daily discharge during year, 2,260 second-feet May 2; minimum daily, 8 second-feet Aug. 20.
1908-47: Maximum discharge, 3,700 second-feet May 3, 1926; practically no flow at times when gates in dam are closed.

Remarks.- Records good. Flow completely regulated by Stillwater Reservoir (see preceding page). Discharge determined from ratings for gates and spillway of Stillwater Dam. Gage read once daily.

Cooperation.- Records of gate openings and reservoir elevations furnished by Board of Black River Regulating District.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	467	15	16	618	620	808	395	2,210	889	310	481	16
2	217	15	365	616	620	805	193	2,260	984	304	437	389
3	14	15	620	616	624	868	58	2,180	2,080	304	435	574
4	14	15	620	616	624	1,010	58	2,010	2,160	303	347	572
5	14	109	618	616	624	1,060	58	1,490	1,540	302	301	572
6	14	156	616	314	625	1,080	60	1,330	946	302	304	572
7	14	157	616	614	625	1,080	60	1,570	905	527	311	569
8	14	157	614	612	625	1,070	60	1,560	942	1,530	292	569
9	14	157	614	610	624	1,060	62	1,300	967	911	345	567
10	14	158	544	610	624	1,060	62	1,080	987	631	300	564
11	14	159	391	609	624	1,050	62	844	935	533	299	564
12	14	159	394	606	757	1,040	64	682	762	488	337	564
13	14	161	394	605	846	1,030	66	641	690	493	581	561
14	14	161	397	604	735	1,020	221	657	690	484	478	561
15	14	162	398	603	620	1,020	407	636	709	474	531	557
16	14	162	533	603	618	1,010	411	465	937	360	387	556
17	14	163	628	601	766	761	413	400	704	303	573	554
18	14	163	628	600	838	589	414	400	690	303	382	554
19	14	337	628	599	938	586	418	416	590	303	198	554
20	15	498	625	599	833	586	419	702	540	303	8	552
21	15	498	625	600	831	584	419	1,130	504	303	253	549
22	15	498	625	603	828	583	317	1,900	471	303	787	547
23	15	498	624	604	825	581	237	1,910	360	303	724	547
24	15	498	624	605	823	579	241	1,150	236	303	780	547
25	15	563	624	605	818	272	247	1,110	188	302	774	544
26	15	610	622	606	818	117	252	906	200	301	653	544
27	15	386	620	606	813	251	318	827	296	301	485	426
28	15	224	620	608	810	316	942	827	331	674	630	15
29	15	166	620	608	-	395	1,530	856	317	1,110	579	361
30	15	16	620	608	-	395	1,790	1,080	307	1,060	415	539
31	15	-	620	612	-	395	-	1,110	-	721	16	-

Month	Observed				Adjusted†		
	Second-foot-days	Maximum	Minimum	Mean	Mean	Per square mile	Runoff in inches
October	1,102	467	14	35.5	417	2.42	2.79
November	7,036	610	15	235	612	3.56	3.97
December	17,097	626	16	552	555	3.23	3.72
Calendar year 1946	146,133	658	14	400	400	2.33	31.56
January	18,836	618	599	608	591	3.44	3.96
February	20,276	846	618	724	500	2.91	3.03
March	23,061	1,080	117	744	410	2.38	2.75
April	10,254	1,790	58	342	1,405	8.17	9.11
May	35,619	2,260	400	1,149	1,125	6.54	7.54
June	22,837	2,160	188	761	760	4.42	4.93
July	15,149	1,530	301	489	485	2.82	3.25
August	13,423	787	8	433	141	.820	.94
September	15,160	574	15	505	92.1	.535	.60
Water year 1946-47	199,850	2,260	8	548	590	3.43	46.59

† Adjusted for change in contents in Stillwater Reservoir.

Beaver River at Croghan, N. Y.

Location.- Water-stage recorder, lat. 43°53'50", long. 75°24'15", about 1,000 feet upstream from Black Creek and half a mile west of Croghan, Lewis County.

Drainage area.- 394 square miles.

Records available.- September 1930 to September 1947.

Average discharge.- 17 years, 579 second-feet.

Extremes (regulated).- Maximum discharge during year, 3,820 second-feet May 2 (gage height, 6.12 feet); minimum, 39 second-feet Oct. 27 (gage height, 1.02 feet); minimum daily, 122 second-feet Oct. 6.

1930-47: Maximum discharge, 4,310 second-feet May 13, 1943 (gage height, 6.47 feet); minimum, about 18 second-feet Feb. 24, 1936 (gage height, 0.89 foot); minimum daily, 35 second-feet May 13, 1934.

Remarks.- Records excellent except those for periods of shifting control or doubtful or no gage-height record, which are good. Flow almost completely regulated by Stillwater Reservoir (see p. 230). Between Stillwater Dam and this station flow is further regulated by nine power-plant ponds. Diurnal fluctuation at low and medium flow.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Nov. 14 to Mar. 6)

1.5	115	2.6	466	4.5	1,860
1.7	159	3.0	664	5.0	2,410
2.0	243	3.5	979	5.5	3,000
2.3	345	4.0	1,370	6.1	3,790

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	623	626	590	800	1,550	794	741	2,940	1,080	590	1,490	255
2	795	853	739	721	1,070	769	851	3,680	1,330	620	1,180	487
3	703	670	653	788	1,100	763	605	3,72	2,600	610	735	496
4	713	628	615	757	1,090	800	632	3,430	3,440	321	546	506
5	390	750	615	751	1,180	1,180	496	2,960	3,360	227	501	540
6	122	731	632	745	d1,100	1,300	847	2,340	2,430	242	490	437
7	335	696	626	733	d1,200	1,070	1,210	1,970	1,760	664	482	144
8	401	740	626	733	d1,120	1,120	980	2,010	1,520	1,490	447	401
9	399	456	870	806	993	975	1,020	1,840	1,160	1,850	a340	492
10	278	135	739	751	806	878	1,360	1,800	1,340	1,130	a130	513
11	258	395	787	733	924	877	1,490	1,300	1,300	959	a520	539
12	286	629	924	715	1,020	1,270	1,560	994	1,280	895	a560	659
13	236	861	1,000	653	924	1,290	1,930	1,250	1,250	422	a680	665
14	480	1,070	944	704	924	1,530	1,770	1,320	1,100	613	645	326
15	724	838	965	715	812	1,450	1,820	909	1,000	719	633	445
16	446	727	812	917	806	1,200	1,630	791	932	615	315	595
17	280	600	897	721	851	967	1,610	791	1,140	527	381	712
18	408	664	864	819	769	1,070	1,670	331	1,270	640	605	725
19	319	642	831	783	794	1,160	1,340	448	1,220	687	615	652
20	132	710	806	870	844	1,160	979	537	922	453	611	547
21	255	715	864	1,100	794	1,000	923	894	865	677	680	331
22	266	715	903	895	745	1,020	770	2,290	221	776	657	630
23	266	704	857	1,120	670	848	463	2,990	481	856	514	695
24	258	323	787	897	670	870	390	2,590	465	770	310	669
25	351	757	670	1,120	704	1,130	673	2,010	538	651	514	744
26	461	751	715	1,120	806	1,140	1,390	1,950	437	641	662	741
27	181	924	775	1,090	800	1,170	955	1,750	403	546	643	402
28	227	751	769	1,040	800	d1,650	936	1,550	358	883	661	174
29	273	757	344	1,060	-	1,140	1,570	1,520	133	912	607	565
30	307	687	819	1,280	-	904	2,080	1,520	184	1,420	570	526
31	416	-	819	1,780	-	745	-	963	-	1,280	173	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	11,589	795	122	374	-	-
November	20,483	1,070	135	683	-	-
December	24,157	1,000	590	779	-	-
Calendar year 1946	227,466	1,440	116	623	2.12	28.79
January	27,770	1,780	653	896	-	-
February	25,856	1,550	670	923	-	-
March	33,238	1,650	745	1,072	-	-
April	34,691	2,080	390	1,156	-	-
May	55,388	3,720	331	1,787	-	-
June	35,519	3,440	133	1,184	-	-
July	23,786	1,850	227	767	-	-
August	17,897	1,490	130	577	-	-
September	15,613	744	144	520	-	-
Water year 1946-47	325,987	3,720	122	893	3.04	41.24

a No gage-height record; discharge computed on basis of power-plant records.
d Doubtful gage-height record; discharge computed on basis of power-plant records and reconstructed gage-height graph.
Note.- Shifting-control method used Nov. 14 to Mar. 6.

Deer River at Copenhagen, N. Y.

Location.- Water-stage recorder, lat. 43°53'55", long. 75°39'40", at power plant half a mile northeast of Copenhagen, Lewis County. Datum of gage is 963.41 feet above mean sea level, datum of 1929.
Drainage area.- 99 square miles.
Records available.- September 1929 to September 1947.
Average discharge.- 18 years, 223 second-feet.
Extremes.- Maximum discharge during year, 4,380 second-feet Apr. 12; maximum gage height, 13.18 feet Jan. 31 (ice jam); minimum discharge, 3.6 second-feet (regulated) Sept. 21, 22 (gage height, 0.36 foot); minimum daily, 8.7 second-feet (regulated) Sept. 21.
1929-47: Maximum discharge, 14,400 second-feet Sept. 1, 1941, by computation of flow over dam; maximum gage height, that of Jan. 31, 1947; minimum discharge, 0.7 second-foot (regulated) Aug. 12, 1940 (gage height, 0.17 foot); minimum daily, 0.8 second-foot (regulated) July 22 to Aug. 2, 1938.
Remarks.- Records excellent except those below 35 second-feet, which are good, and those for periods of ice effect, which are fair. Diurnal fluctuation at low and medium flow caused by power plant.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Sept. 4-30)

Oct. 1 to Jan. 30						Jan. 31 to Sept. 30					
1.1	45	2.6	384	0.5	8.0	1.0	40	2.2	277	4.0	1,080
1.3	70	3.0	542	.6	12	1.2	62	2.6	405	4.5	1,440
1.5	104	3.5	787	.7	18	1.5	110	3.0	561	5.5	2,310
1.8	162	4.0	1,080	.8	24	1.8	173	3.5	801	6.4	3,260
2.2	257	4.4	1,360								

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	196	334	246	142	1,300	60	361	1,380	222	30	120	16
2	166	473	114	152	800	60	378	1,350	1,090	32	70	22
3	221	646	116	192	480	52	483	1,130	2,060	35	54	32
4	384	374	138	210	320	68	532	754	723	26	46	27
5	317	260	146	200	225	74	804	782	349	20	41	20
6	212	185	144	175	200	64	2,710	675	310	20	37	17
7	148	158	152	165	195	66	2,410	561	273	251	37	16
8	99	192	250	140	180	66	1,620	570	870	523	32	16
9	69	492	315	130	110	68	1,320	398	586	279	28	16
10	55	420	1,190	*125	114	*68	1,200	289	337	132	34	17
11	47	501	1,280	124	122	66	2,570	220	207	81	37	17
12	307	902	*617	130	112	64	3,260	185	147	78	29	15
13	1,320	462	1,050	122	130	66	1,930	169	118	57	23	16
14	524	886	430	120	136	124	1,310	171	219	45	20	22
15	257	503	310	240	*136	440	1,340	147	385	37	104	18
16	160	308	260	360	128	600	1,170	122	310	31	159	18
17	147	*428	289	330	*116	620	1,090	126	202	29	72	18
18	629	377	277	310	114	640	895	124	134	30	47	17
19	759	252	210	270	101	561	783	136	106	60	60	16
20	376	205	195	400	88	479	557	231	84	94	47	11
21	223	190	135	1,000	80	419	388	519	115	56	45	8.7
22	162	231	241	740	80	364	374	1,980	74	274	44	9.4
23	134	247	254	620	76	335	573	610	52	383	37	31
24	114	210	210	560	70	520	1,230	313	44	167	28	20
25	102	287	185	1,200	68	1,650	966	453	85	78	22	17
26	345	880	150	1,000	70	1,550	587	1,240	79	51	19	17
27	279	1,140	140	1,200	64	1,160	1,440	503	54	374	19	14
28	187	704	160	900	62	877	984	310	43	1,360	18	13
29	212	396	185	660	-	680	596	794	43	603	17	14
30	324	257	183	560	-	519	1,180	726	33	241	17	25
31	464	-	162	1,800	-	427	-	340	-	164	16	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	8,939	1,320	47	288	3.24	3.74
November	12,900	1,140	158	430	4.83	5.39
December	9,794	1,280	114	316	3.55	4.09
Calendar year 1946	85,723.3	2,240	4.9	235	2.64	35.84
January	14,277	1,800	120	461	5.18	5.97
February	5,657	1,300	62	202	2.27	2.36
March	12,807	1,650	52	413	4.64	5.35
April	35,101	3,260	361	1,170	13.15	14.67
May	17,308	1,980	122	558	6.27	7.23
June	9,334	2,060	33	311	3.49	3.90
July	5,639	1,360	20	182	2.04	2.36
August	1,379	159	16	44.5	.500	.58
September	536.1	32	8.7	17.9	.201	.22
Water year 1946-47	133,671.1	3,260	8.7	366	4.11	55.86

Peak discharge.- Apr. 6 (4 p.m.) 4,260 sec.-ft.; Apr. 12 (3:15 a.m.) 4,380 sec.-ft.; May 22 (4:15 a.m.) 2,800 sec.-ft.; June 3 (7 a.m.) 3,080 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 2, 3, 14-16, 19-21, 24-29, Jan. 4 to Feb. 6, Feb. 8-15, Feb. 20 to Mar. 18, Mar. 24, 25 (doubtful gage-height record Feb. 2-4; fragmentary gage-height record Mar. 2-5, 8, 9). Intake partially obstructed Aug. 27 to Sept. 1; discharge computed on basis of gage-height record and 1 discharge measurement. Shifting-control method used Sept. 4-30.

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East Branch Oswegatchie River at Cranberry Lake, N. Y.

Location.- Water-stage recorder, lat. 44°13'15", long. 74°51'00", in village of Cranberry Lake, St. Lawrence County, 900 feet downstream from dam at outlet of Cranberry Lake. Datum of gage is 1,458.23 feet above mean sea level, datum of 1929.

Drainage area.- 144 square miles.

Records available.- May 1923 to September 1947.

Average discharge.- 24 years, 298 second-feet (unadjusted).

Extremes (regulated).- Maximum discharge during year, 1,850 second-feet May 7 (gage height, 7.59 feet); minimum, 62 second-feet Oct. 3-7 (gage height, 3.71 feet); minimum daily, 62 second-feet Oct. 4-7.
1923-47: Maximum daily discharge, 1,910 second-feet May 13, 1943; minimum daily, about 3 second-feet Apr. 9-16, 1931.

Remarks.- Records excellent except those for periods of fragmentary or no gage-height record, which are good. Flow completely regulated by Cranberry Lake Reservoir.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second feet)

3.7	61	4.5	185	6.0	742
3.8	72	4.8	258	6.5	1,030
4.0	97	5.1	349	7.0	1,390
4.2	128	5.5	505	7.6	1,860

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	151	248	323	278	463	716	443	1,490	828	301	439	183
2	135	248	326	278	467	711	381	f1,670	701	301	367	290
3	106	245	326	278	480	706	353	1,830	1,140	269	323	336
4	62	245	326	278	600	701	353	1,830	1,440	250	323	332
5	62	245	355	a278	676	696	353	1,820	1,470	249	319	329
6	62	245	419	a278	671	691	360	1,840	1,430	249	316	323
7	62	248	415	a367	662	691	367	1,760	1,360	245	316	323
8	63	248	415	a443	657	686	371	1,770	1,340	242	313	323
9	63	248	415	a443	647	681	374	1,710	1,310	245	313	319
10	63	248	415	439	637	671	378	f1,010	1,190	249	313	319
11	63	250	419	514	637	666	385	a691	817	249	313	316
12	63	253	419	590	633	763	408	f488	691	250	332	313
13	a64	255	550	590	633	873	459	342	595	250	385	310
14	a64	255	595	586	628	850	505	367	531	250	381	310
15	a65	255	497	497	623	844	540	367	523	250	381	307
16	a65	255	444	431	618	834	628	371	518	250	378	269
17	a66	258	329	435	637	817	806	374	492	249	378	235
18	a68	258	326	435	681	800	1,060	360	435	245	374	235
19	a68	261	323	435	676	784	1,180	342	435	245	374	235
20	a68	264	323	431	671	763	1,170	339	393	245	374	232
21	a68	280	323	439	666	742	1,150	336	349	245	371	230
22	a69	323	319	439	666	722	1,120	421	349	249	367	230
23	a69	323	319	439	662	a706	1,100	774	319	249	363	230
24	a70	316	316	435	657	a691	1,090	1,030	304	245	360	261
25	a70	316	316	435	652	a686	1,040	1,040	304	245	360	319
26	70	316	316	435	647	a686	967	1,040	304	245	381	316
27	70	319	292	439	647	a590	f1,030	999	301	245	447	229
28	71	319	278	443	686	a467	1,200	890	301	249	443	143
29	72	323	278	447	-	a467	1,380	884	301	250	439	206
30	72	323	278	447	-	471	1,480	878	301	253	270	242
31	112	-	278	455	-	471	-	878	-	334	185	-

Month	Observed				Adjusted†		
	Second-foot-days	Maximum	Minimum	Mean	Mean	Per square mile	Runoff in inches
October	2,296	151	62	74.1	344	2.39	2.76
November	8,190	323	245	273	456	3.17	3.54
December	11,273	595	278	364	355	2.47	2.84
Calendar year 1946	101,896	595	62	279	295	2.05	27.80
January	13,157	590	278	424	429	2.98	3.43
February	17,680	686	463	631	413	2.87	2.99
March	21,643	873	467	698	419	2.91	3.35
April	22,431	1,480	353	748	1,245	8.65	9.65
May	29,941	1,840	336	966	1,003	6.97	8.03
June	20,772	1,470	301	692	645	4.48	5.00
July	7,886	334	242	254	296	2.06	2.37
August	10,998	447	185	355	92.7	.644	.74
September	8,245	336	143	275	93.1	.647	.72
Water year 1946-47	174,512	1,840	62	478	482	3.35	45.42

† Adjusted for change in contents in Cranberry Lake Reservoir.
a No gage-height record; discharge computed on basis of daily record of gate openings and reservoir elevations.
f Fragmentary gage-height record; discharge computed on basis of partial gage-height record and record of gate openings.

Note.- Elevation of surface of Cranberry Lake Reservoir, 1,481.57 feet at 12 p.m., Sept. 30, 1946; 1,482.07 feet at 12 p.m., Sept. 30, 1947; 1,484.33 feet at 12 p.m., Dec. 31, 1945; 1,486.12 feet at 12 p.m., Dec. 31, 1946.

East Branch Oswegatchie River near Oswegatchie, N. Y.

Location.- Water-stage recorder, lat. 44°13'25", long. 75°04'35", at Flat Rock hydroelectric plant of Central New York Power Corp., 2¾ miles north of Oswegatchie, St. Lawrence County.

Drainage area.- 263 square miles.

Records available.- October 1924 to September 1947.

Average discharge.- 22 years (1925-47), 533 second-feet (unadjusted).

Extremes (regulated).- Maximum discharge during year, 4,090 second-feet Apr. 12 (gage height, 6.98 feet), from rating curve extended above 1,900 second-feet by logarithmic plotting; minimum, 5.0 second-feet July 14 (gage height, 0.85 foot); minimum daily, 202 second-feet Sept. 21.

1924-47: Maximum discharge, that of Apr. 12, 1947; maximum gage height, 7.1 feet Apr. 6, 1928; minimum discharge, probably less than 1 second-foot during complete shutdown of power plant; minimum daily, 1 second-foot July 25, 1926.

Remarks.- Records excellent. Extensive diurnal fluctuation at low and medium flow by power plant; seasonal flow partly regulated by Cranberry Lake Reservoir (see preceding page).

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 11		Dec. 12 to Sept. 30			
2.8	300	2.4	188	4.5	1,260
3.2	445	2.8	300	5.0	1,690
3.6	635	3.2	445	5.5	2,190
4.0	870	3.6	635	6.0	2,760
4.4	1,140	4.0	883	6.8	3,820

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	561	561	700	553	1,900	849	799	2,230	1,510	385	912	304
2	456	524	697	732	1,530	703	1,050	2,290	1,220	602	526	297
3	421	521	625	678	1,250	909	1,000	2,460	2,700	570	308	411
4	428	650	635	540	1,290	1,070	720	2,330	2,800	437	300	367
5	443	616	658	741	1,040	830	856	2,270	2,490	384	398	422
6	411	534	633	622	1,170	811	813	2,290	2,100	473	398	304
7	417	637	510	615	1,120	822	2,150	2,370	2,050	535	361	338
8	444	554	562	652	961	807	1,740	2,380	2,220	775	461	476
9	394	610	723	663	455	861	1,620	2,170	2,120	757	338	371
10	431	530	628	629	800	864	1,560	1,880	1,940	744	347	443
11	328	516	1,020	425	926	824	2,140	1,630	1,740	542	326	435
12	522	995	1,320	331	918	878	3,790	1,130	1,570	524	331	307
13	816	915	844	667	802	878	3,140	654	1,050	274	352	324
14	489	836	895	600	916	925	2,020	612	1,190	502	412	304
15	768	863	655	685	814	1,390	1,780	466	770	491	438	332
16	735	753	665	576	713	1,470	1,770	576	641	497	588	363
17	560	904	956	598	735	1,280	1,860	462	764	543	288	329
18	478	679	878	661	1,020	1,380	1,730	383	809	619	415	319
19	876	672	883	638	1,030	1,220	1,920	687	912	555	565	314
20	301	664	844	673	947	1,200	1,910	732	809	471	513	246
21	369	690	907	1,090	1,030	1,060	1,760	693	770	527	768	202
22	338	672	324	981	1,050	1,070	1,650	1,730	733	644	482	210
23	332	543	650	1,000	500	1,020	1,620	1,640	599	934	441	314
24	453	655	611	979	941	1,260	1,880	1,530	327	663	321	294
25	339	731	455	1,160	870	1,350	2,140	1,420	351	657	474	297
26	381	662	792	1,280	838	1,630	1,850	1,460	385	372	596	288
27	338	820	725	1,090	840	1,560	1,730	1,540	498	364	483	386
28	328	1,120	582	1,140	761	1,540	2,300	1,610	559	716	620	376
29	331	780	409	1,160	-	1,440	2,230	1,760	454	1,040	479	330
30	415	929	680	1,280	-	782	2,090	1,950	455	838	446	377
31	347	-	646	1,520	-	971	-	1,650	-	857	320	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	14,250	876	301	460	-	-
November	21,136	1,120	516	705	-	-
December	22,112	1,320	324	713	-	-
Calendar year 1946	201,224	1,980	203	551	2.10	28.47
January	24,689	1,520	331	796	-	-
February	27,167	1,900	455	970	-	-
March	33,654	1,630	703	1,086	-	-
April	53,618	3,790	720	1,787	-	-
May	46,985	2,460	383	1,516	-	-
June	36,536	2,800	327	1,218	-	-
July	18,292	1,040	274	590	-	-
August	14,007	912	288	452	-	-
September	10,080	476	202	336	-	-
Water year 1946-47	322,526	3,790	202	884	3.36	45.62

Oswegatchie River near Heuvelton, N. Y.

Location.- Water-stage recorder, lat. 44°36'00", long. 75°22'45", 1½ miles downstream from Beaver Creek and 2½ miles upstream from Heuvelton, St. Lawrence County.
Drainage area.- 973 square miles.
Records available.- June 1916 to September 1947.
Average discharge.- 31 years, 1,706 second-feet (unadjusted).
Extremes.- Maximum discharge during year, 15,800 second-feet Apr. 9; maximum gage height, 9.33 feet Apr. 9 (ice jam); minimum discharge, 396 second-feet (regulated) Sept. 21 (gage height, 1.03 feet).
1916-47: Maximum discharge, that of Apr. 9, 1947; minimum, 200 second-feet (regulated) Aug. 18, 1934 (gage height, 0.65 foot).
Remarks.- Records excellent except those for periods of ice effect or doubtful or no gage-height record, which are good. Seasonal flow slightly regulated by Cranberry Lake Reservoir; slight diurnal fluctuation at low and medium flow by power plants. During high stages on Grass River, part of flow of that stream may pass through Upper Lake, Indian Creek, and Lower Lake and enter Oswegatchie River at Rensselaer Falls, 4½ miles above station.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Jan. 28				Jan. 29 to Sept. 30					
1.2	484	3.0	2,300	1.1	440	2.5	1,730	6.0	7,420
1.6	780	4.0	3,750	1.3	581	3.0	2,360	7.5	10,800
2.0	1,150	5.0	5,450	1.6	823	4.0	3,800	9.2	15,600
2.5	1,680	6.2	7,840	2.0	1,190	5.0	5,480		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct	Nov.	Dec.	Jan.	Feb	Mar	Apr.	May	June	July	Aug	Sept.
1	518	1,610	3,170	d1,350	5,800	1,380	4,220	5,020	5,590	1,070	3,340	620
2	685	1,760	2,800	d1,350	5,970	1,330	3,990	5,170	5,590	1,000	2,800	612
3	1,200	2,700	2,100	d1,350	6,330	1,380	4,180	5,820	7,090	1,000	2,400	674
4	1,340	3,080	*1,940	d1,450	6,140	1,270	4,560	6,260	9,160	1,090	1,670	764
5	1,370	2,990	1,980	d1,450	5,200	1,400	5,100	6,330	10,100	1,110	1,320	723
6	1,370	2,840	1,850	d1,350	4,200	1,500	6,730	6,160	10,000	1,010	1,110	731
7	1,370	2,540	1,780	d1,240	3,300	1,420	10,000	5,860	9,320	1,010	1,040	698
8	1,390	2,270	1,840	d1,350	2,900	1,380	13,500	5,590	8,340	1,780	1,000	559
9	1,380	2,200	1,930	d1,250	2,600	1,380	15,400	5,320	7,900	2,660	756	515
10	1,360	2,180	2,080	d1,180	2,200	*1,350	13,30	4,970	7,210	3,060	893	650
11	1,130	2,180	2,790	*d1,250	1,700	1,390	11,200	4,440	6,810	3,220	731	612
12	1,070	2,510	3,230	1,200	1,850	1,410	9,950	3,850	5,700	2,800	747	574
13	1,290	2,910	4,010	1,060	*1,900	1,390	9,670	3,230	4,640	2,220	698	635
14	1,750	3,420	4,280	937	1,850	1,490	10,300	2,530	3,830	1,830	698	643
15	2,140	3,700	3,780	1,210	1,730	2,320	10,700	2,090	3,320	1,440	627	508
16	2,160	3,460	3,170	1,920	1,800	3,520	10,500	1,800	3,320	1,230	643	454
17	2,140	3,110	2,570	2,460	1,730	4,090	9,550	1,590	3,140	1,240	866	530
18	2,030	2,720	2,700	2,560	1,600	4,200	8,600	1,670	2,850	1,340	781	530
19	2,640	2,440	2,700	2,540	1,550	4,250	8,010	1,510	2,660	1,480	806	537
20	2,890	2,160	2,150	2,460	1,650	4,120	7,400	1,530	2,480	1,960	674	523
21	2,720	1,900	1,780	3,760	1,650	3,820	6,650	1,940	2,270	2,060	858	440
22	2,310	1,850	1,900	6,420	1,550	3,530	5,840	3,620	1,970	1,960	875	523
23	1,980	1,720	2,320	7,060	1,550	3,240	4,930	5,070	1,780	2,100	875	523
24	1,690	1,650	1,700	6,140	1,540	3,300	4,280	5,570	1,600	2,430	832	488
25	1,470	1,520	1,880	5,540	1,290	4,750	3,900	5,640	1,440	2,530	723	467
26	1,450	1,580	1,400	a6,090	1,370	6,430	3,990	5,590	1,280	2,230	552	589
27	1,620	2,290	1,250	a7,080	1,430	7,170	4,260	5,280	1,120	2,140	643	566
28	1,570	2,930	1,190	a7,740	1,390	7,090	4,340	4,730	1,080	3,110	823	559
29	1,530	3,320	d1,340	7,880	-	6,670	4,510	4,630	1,200	4,540	747	454
30	1,570	3,360	d1,340	7,380	-	6,030	4,810	5,250	1,270	4,340	739	584
31	1,500	-	d1,120	6,260	-	5,170	-	5,610	-	3,910	747	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	50,633	2,890	518	1,633	1.68	1.94
November	74,900	3,700	1,520	2,497	2.57	2.86
December	70,070	4,280	1,120	2,260	2.32	2.68
Calendar year 1946	622,114	8,070	319	1,704	1.75	23.77
January	102,267	7,880	937	3,299	3.39	3.91
February	73,770	6,330	1,290	2,635	2.71	2.82
March	99,150	7,170	1,270	3,198	3.29	3.79
April	224,350	15,400	3,900	4,478	7.69	8.57
May	133,670	6,330	1,510	4,312	4.43	5.11
June	134,440	10,100	1,060	4,481	4.61	5.14
July	64,980	4,540	1,000	2,096	2.15	2.48
August	32,014	3,340	552	1,033	1.06	1.22
September	17,285	764	440	576	.592	.66
Water year 1946-47	1,077,529	15,400	440	2,952	3.03	41.18

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of record for adjacent days.
d Doubtful gage-height record; discharge computed on basis of records for upstream stations.
Note.- Stage-discharge relation affected by ice Dec. 2, 3, 18-20, 26, 27, Jan. 12, 13, Feb. 5-13, 19-23, Apr. 8, 9.

West Branch Oswegatchie River near Harrisville, N. Y.

Location.- Water-stage recorder, lat. 44°11'10", long. 75°19'55", at highway bridge, half a mile northeast of Geers Corners and 4 miles downstream from Harrisville, Lewis County. Datum of gage is 738.51 feet above mean sea level, datum of 1929.

Drainage area.- 258 square miles.

Records available.- July 1916 to September 1947.

Average discharge.- 31 years, 519 second-feet.

Extremes.- Maximum discharge during year, 6,180 second-feet Apr. 13 (gage height, 9.03 feet); minimum, 51 second-feet (regulated) Sept. 18, 19 (gage height, 1.18 feet).
1916-47: Maximum discharge, 6,920 second-feet Jan. 9, 1930 (gage height, 9.6 feet), from rating curve extended above 3,000 second-feet; minimum, 25 second-feet Sept. 1, 1934 (gage height, 0.86 foot).

Remarks.- Records excellent except those for periods of ice effect, which are good. Diurnal fluctuations, principally during low flow, pulp mill at Harrisville.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Feb. 1				Feb. 2 to Sept. 30					
2.4	257	4.0	1,070	1.2	53	2.5	289	5.0	1,880
2.7	353	5.0	1,840	1.4	76	3.0	487	6.0	2,730
3.0	476	6.0	2,730	1.7	118	3.5	775	7.4	4,210
3.5	740	6.7	3,440	2.0	172	4.0	1,130	8.8	5,890

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	319	605	1,010	380	3,380	270	1,050	1,630	1,570	274	855	94
2	428	694	760	389	3,410	259	815	1,950	1,490	292	588	132
3	472	826	*600	357	2,400	276	795	2,140	3,060	291	413	168
4	533	992	541	341	1,760	258	882	2,040	4,090	261	331	135
5	626	1,040	479	340	1,360	261	1,110	1,740	2,870	236	264	133
6	723	944	435	343	1,020	264	1,870	1,480	1,980	238	240	99
7	783	777	394	325	801	269	4,260	1,310	1,460	357	205	100
8	752	632	403	308	680	268	4,010	1,240	1,300	793	206	118
9	643	600	439	301	576	264	3,180	1,200	1,390	1,120	190	100
10	500	728	525	*287	528	274	2,600	1,070	1,420	1,180	189	83
11	387	877	848	276	482	*265	2,570	903	1,240	946	164	85
12	312	992	1,260	271	454	261	4,770	782	996	711	178	84
13	555	1,190	1,420	270	431	258	5,820	660	782	538	138	56
14	992	1,320	1,390	275	*423	374	4,520	630	762	420	140	64
15	1,180	1,280	1,200	376	414	711	3,150	601	987	322	160	92
16	1,010	1,140	980	563	389	910	2,490	531	1,150	274	131	84
17	789	937	814	688	385	1,180	2,460	498	1,120	253	166	75
18	694	770	652	740	369	1,160	2,480	460	996	284	168	59
19	864	660	539	688	350	1,120	2,120	479	834	532	169	73
20	1,030	578	439	694	332	980	1,840	503	687	744	123	55
21	1,050	509	396	992	315	840	1,550	610	570	646	131	59
22	877	467	402	1,290	305	693	1,310	1,190	481	518	133	93
23	688	445	415	1,450	284	604	1,140	2,640	404	749	118	118
24	533	412	404	1,380	299	668	1,080	2,270	335	882	114	142
25	432	403	380	1,470	287	1,070	1,380	1,700	338	737	110	115
26	428	468	350	1,760	287	1,540	1,640	1,350	395	518	108	95
27	578	828	320	2,030	281	2,080	1,620	1,220	397	415	106	86
28	621	1,260	310	1,940	281	1,900	1,780	1,140	345	657	105	95
29	558	1,580	505	1,660	-	1,600	1,910	1,150	311	1,050	107	83
30	514	1,240	368	1,370	-	1,360	1,690	1,680	305	1,260	82	94
31	538	-	396	1,730	-	1,310	-	2,000	-	1,120	111	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	20,389	1,180	312	658	2.55	2.94
November	24,994	1,380	403	833	3.23	3.60
December	19,174	1,420	305	619	2.40	2.78
Calendar year 1946	184,810	3,370	51	506	1.98	26.63
January	25,264	2,030	270	815	3.16	3.64
February	22,283	3,410	281	796	3.09	3.21
March	23,547	3,080	258	760	2.95	3.39
April	67,892	5,820	795	2,263	8.77	9.79
May	38,797	2,640	460	1,252	4.85	5.59
June	34,045	4,090	305	1,135	4.40	4.91
July	18,618	1,260	236	601	2.33	2.68
August	6,243	855	82	201	.779	.90
September	2,869	168	55	95.6	.371	.41
Water year 1946-47	304,115	5,820	55	833	3.23	43.82

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 2, 3, 15, 16, 26, 27, Jan. 1, 13 Mar. 17-21, 28.

Grass River at Pyrites, N. Y.

Location.- Water-stage recorder, lat. 44°31'30", long. 75°11'50", 1,000 feet downstream from lower bridge in Pyrites, St. Lawrence County, and half a mile upstream from Harrison Creek.
Drainage area.- 335 square miles.
Records available.- August 1924 to September 1947.
Average discharge.- 23 years, 599 second-feet.
Extremes.- Maximum discharge during year, 6,780 second-feet Apr. 13 (gage height, 11.50 feet); minimum, 145 second-feet Sept. 19 (gage height, 1.505 feet).
1924-47: Maximum discharge, about 8,300 second-feet Nov. 18, 1927 (gage height, 13.0 feet), from rating curve extended above 2,100 second-feet by logarithmic plotting; minimum, 37 second-feet (regulated by power plant then in operation) July 15, 1933; minimum daily, 59 second-feet Aug. 29 to Sept. 1, 1934.
Remarks.- Records good except those for period of ice effect or doubtful or no gage-height record, which are fair.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Apr. 7, 8)

Oct. 1 to Apr. 7

2.1	317	5.0	1,760	9.0	4,780
2.5	477	6.0	2,440	10.0	5,600
3.0	705	7.0	3,180	10.9	6,410
4.0	1,200	8.0	3,980		

Apr. 8 to Sept. 30

1.5	144	3.0	703	8.0	3,800
1.7	198	4.0	1,230	9.0	4,580
1.9	260	5.0	1,780	10.0	5,410
2.1	327	6.0	2,380	11.2	6,490
2.5	481	7.0	3,060		

Discharge in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	669	1,010	1,100	440	3,300	390	1,070	2,030	1,500	352	588	213
2	851	1,240	780	470	3,500	400	1,180	2,250	1,880	390	465	434
3	822	1,800	720	480	2,600	420	1,450	2,340	4,940	436	393	584
4	871	1,980	*760	450	2,050	400	1,600	2,000	5,380	397	352	502
5	1,020	1,600	660	420	1,600	380	2,020	1,740	3,470	356	327	356
6	1,150	1,220	600	440	1,300	410	3,780	1,740	2,300	345	286	267
7	1,200	960	580	420	1,020	370	6,330	1,850	2,160	652	260	222
8	1,120	802	658	410	840	*390	4,780	1,860	2,490	1,250	267	195
9	950	817	a797	390	640	380	3,680	1,660	3,090	1,410	276	178
10	705	1,170	a1,210	330	600	370	2,980	1,400	2,650	1,110	247	170
11	503	1,350	a1,580	390	600	360	3,090	1,160	1,880	771	225	162
12	418	1,560	1,800	*410	580	370	5,210	994	1,370	570	213	152
13	1,120	1,820	a1,780	350	*560	400	6,470	872	1,100	469	201	152
14	1,870	1,870	1,570	360	580	520	4,790	851	1,120	401	195	173
15	1,520	1,650	1,180	540	580	1,350	3,240	771	1,880	409	333	184
16	1,070	1,340	780	880	560	1,700	2,920	689	1,920	610	831	181
17	797	1,080	800	860	520	1,600	3,080	661	1,600	568	820	167
18	878	890	840	840	540	1,400	2,980	656	1,230	477	584	154
19	1,460	758	700	740	500	1,200	2,640	698	956	830	386	149
20	1,670	658	600	720	470	1,060	2,240	820	810	1,070	307	160
21	1,320	603	520	1,250	440	1,000	1,840	1,190	703	867	267	165
22	990	575	540	1,400	420	940	1,500	2,580	615	760	244	222
23	768	589	560	1,300	410	900	1,310	3,160	540	1,040	225	324
24	612	544	560	1,350	430	1,350	1,360	2,310	485	858	207	303
25	512	539	540	1,900	470	3,560	1,940	1,650	519	647	192	241
26	598	681	500	2,300	450	d3,860	2,120	1,580	656	523	181	204
27	768	1,370	460	2,700	430	d3,000	1,980	1,510	601	745	178	184
28	743	1,840	520	2,500	400	d2,300	2,410	1,280	502	1,810	173	178
29	621	1,610	520	2,050	-	d1,800	2,370	1,710	448	1,580	184	178
30	562	1,210	500	1,650	-	d1,450	1,940	2,400	386	1,200	204	204
31	696	-	460	2,050	-	1,210	-	2,070	-	800	213	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	28,854	1,870	418	931	2.78	3.20
November	35,136	1,980	539	1,171	3.50	3.90
December	25,175	1,800	460	812	2.42	2.79
Calendar year 1946	231,410	3,400	89	634	1.89	25.68
January	30,790	2,700	330	993	2.96	3.42
February	26,390	3,500	400	942	2.81	2.93
March	35,240	3,860	360	1,137	3.39	3.91
April	84,300	6,470	1,070	2,810	8.39	9.36
May	48,462	3,160	656	1,563	4.67	5.38
June	49,181	5,380	386	1,639	4.89	5.46
July	23,783	1,810	345	767	2.29	2.64
August	9,824	831	173	317	.946	1.09
September	6,958	584	149	232	.693	.77
Water year 1946-47	404,093	6,470	149	1,107	3.30	44.85

Peak discharge.- Mar. 25 (9 p.m.) 4,520 sec.-ft.; Apr. 7 (2:30 p.m.) 6,580 sec.-ft.; Apr. 13 (6 a.m.) 6,780 sec.-ft.; May 23 (7:30 a.m.) 3,350 sec.-ft.; June 4 (1 a.m.) 5,980 sec.-ft.; June 9 (3 p.m.) 3,190 sec.-ft.
* Winter discharge measurement made on this day.
a No gage-height record; discharge computed from reconstructed gage-height graph based on records for St. Regis River at Brasher Center.
d Doubtful gage-height record; discharge computed on basis of weather records and records for St. Regis River at Brasher Center.
Note.- Stage-discharge relation affected by ice Dec. 2-7, Dec. 15 to Mar. 23 (doubtful gage-height record Dec. 28 to Jan. 11, Jan. 22-25, Jan. 30 to Feb. 12; fragmentary gage-height record Jan. 19, 27, 28, Feb. 14, 15, 26).

Raquette River at Piercefield, N. Y.

Location.- Water-stage recorder, lat. 44°14'05", long. 74°34'20", half a mile downstream from dam of International Paper Co. at Piercefield, St. Lawrence County.

Drainage area.- 722 square miles.

Records available.- August 1908 to September 1947.

Average discharge.- 39 years, 1,297 second-feet.

Extremes.- Maximum discharge during year, 7,300 second-feet May 8 (gage height, 11.60 feet); minimum, 34 second-feet (regulated) Sept. 30 (gage height, 1.47 feet); minimum daily, 52 second-feet (regulated) Sept. 30.
1908-47: Maximum discharge, 8,240 second-feet May 16, 1943 (gage height, 12.09 feet); minimum, about 10 second-feet (regulated) Sept. 2, 1913 (gage height, 0.85 foot); minimum daily, 11 second-feet (regulated) Sept. 2, 1913.

Remarks.- Records excellent except those for periods of fragmentary or no gage-height record, which are good. Seasonal distribution of flow appreciably modified by natural storage in lakes and ponds above station. Some regulation at low flow by Raquette Pond, 2 miles upstream, and by power plant at Piercefield.

Rating table, water year 1946-47 (gage height, in feet, and discharge in second-feet)

1.7	49	3.6	354	7.0	1,960
2.0	76	4.0	464	8.0	2,800
2.4	123	4.4	590	9.0	3,810
2.8	182	5.0	818	10.0	5,010
3.2	260	6.0	1,300	11.6	7,300

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	482	1,080	1,760	1,330	1,960	1,100	1,600	5,660	4,470	1,430	f1,760	476
2	470	1,130	1,720	1,310	2,120	1,080	1,580	5,920	4,530	1,130	1,620	578
3	458	1,180	1,670	1,310	2,260	1,100	1,620	6,170	5,050	1,160	1,570	654
4	479	1,430	1,590	1,280	2,380	1,160	1,670	6,460	5,400	1,180	1,510	608
5	500	1,560	1,550	1,250	2,470	1,240	1,750	6,760	5,660	1,180	1,320	513
6	506	1,410	1,530	1,220	2,460	1,200	1,890	6,960	5,770	1,180	1,140	479
7	587	1,470	1,490	1,190	2,420	1,180	2,180	7,170	a5,810	1,220	1,130	441
8	625	1,440	1,450	1,170	2,390	1,140	2,320	7,200	a5,680	1,340	1,100	303
9	629	1,440	1,430	1,140	2,350	1,110	2,400	7,090	5,560	1,680	1,060	239
10	611	1,460	1,460	1,120	2,290	1,080	2,480	6,880	5,450	1,950	1,020	294
11	604	1,490	1,550	1,090	2,200	1,050	2,710	6,470	5,240	1,900	993	282
12	654	1,560	1,690	1,070	2,100	1,060	3,320	5,980	4,970	1,840	952	296
13	818	1,730	1,820	1,040	2,010	1,100	3,880	5,540	4,700	1,760	929	315
14	957	1,870	1,880	1,020	1,910	1,160	4,250	5,140	4,440	1,690	907	296
15	1,110	1,860	1,900	1,110	1,840	1,250	4,620	4,820	4,170	1,500	894	296
16	1,090	1,850	1,870	1,290	1,780	1,340	4,960	4,520	3,960	1,140	890	298
17	1,040	1,820	1,840	1,060	1,710	1,390	5,460	4,200	3,840	1,160	877	298
18	1,080	1,770	1,810	726	1,630	1,370	5,680	3,980	3,670	1,200	856	296
19	1,140	1,740	1,820	952	1,550	1,310	5,710	3,780	3,490	1,260	826	298
20	1,170	1,690	1,810	979	1,470	1,270	5,640	3,710	3,350	1,280	806	303
21	1,230	1,650	1,810	1,030	1,380	1,220	5,410	3,810	3,180	1,280	789	296
22	1,390	1,630	1,780	1,040	1,340	1,200	5,170	4,230	3,000	1,290	798	353
23	1,260	1,540	1,740	1,060	1,280	1,170	4,840	4,620	2,840	1,280	877	584
24	1,060	1,520	1,700	1,080	1,240	1,180	4,680	4,930	2,670	1,260	860	672
25	1,040	1,470	1,640	1,120	1,200	1,260	4,650	5,180	2,520	1,240	826	594
26	1,060	1,460	1,600	1,160	1,170	1,370	4,680	5,270	2,410	f1,200	798	567
27	1,030	1,610	1,510	1,240	1,140	1,470	4,870	5,230	2,290	f1,200	773	547
28	1,030	1,670	1,490	1,330	1,130	1,550	5,170	5,170	1,970	f1,310	741	535
29	1,030	1,750	1,440	1,390	-	1,590	5,340	5,040	1,690	f1,490	698	316
30	1,040	1,780	1,410	1,470	-	1,610	5,430	4,800	1,670	f1,760	608	52
31	1,060	-	1,360	1,790	-	1,620	-	4,580	-	f1,780	479	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	27,240	1,390	458	879	1.22	1.40
November	47,060	1,870	1,080	1,569	2.17	2.42
December	51,120	1,900	1,360	1,649	2.28	2.63
Calendar year 1946	461,574	3,180	359	1,265	1.75	23.75
January	36,367	1,790	726	1,173	1.62	1.87
February	51,180	2,470	1,130	1,828	2.53	2.64
March	38,930	1,620	1,050	1,256	1.74	2.01
April	115,960	5,710	1,580	3,865	5.35	5.97
May	167,270	7,200	3,710	5,396	7.47	8.62
June	119,450	5,810	1,670	3,982	5.52	6.15
July	43,270	1,950	1,130	1,396	1.93	2.23
August	30,407	1,760	479	981	1.36	1.57
September	12,079	672	52	403	.558	.62
Water year 1946-47	740,333	7,200	52	2,028	2.81	38.13

a No gage-height record; discharge computed on basis of reconstructed gage-height record.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

Raquette River at Raymondville, N. Y.

Location.- Water-stage recorder, lat. 44°50'20", long. 74°58'45", 250 feet upstream from old highway bridge at Raymondville, St. Lawrence County, 0.3 mile downstream from Trout Brook, 0.4 mile downstream from power plant of Central New York Power Corp., and 18 miles upstream from mouth. Datum of gage is 183.33 feet above mean sea level, datum of 1929.

Drainage area - 1,131 square miles.

Records available.- November 1943 to September 1947. September to October 1903 and April 1904 to November 1916 at site at Massena Springs, 8 miles downstream (drainage area, 1,147 square miles), published as Raquette River at Massena Springs; records not comparable.

Extremes.- Maximum discharge during year, 10,300 second-feet June 8 (gage height, 7.57 feet); minimum, 30 second-feet (regulated) Oct. 1 (gage height, 0.67 foot); minimum daily, 50 second-feet Sept. 21.

1943-47: Maximum discharge, that of June 8, 1947; minimum, 20 second-feet (regulated) Jan. 21, Feb. 20, 24, 1944 (gage height, 0.54 foot); minimum daily, 40 second-feet Jan. 1, 28, 1945.

Remarks.- Records good except those for periods of ice effect or fragmentary or no gage-height record, which are fair. Extensive diurnal fluctuation by power and industrial operations. Seasonal distribution of flow appreciably modified by natural storage in lakes and ponds above station.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

0.8	49	1.7	356	4.0	2,820
.9	68	2.0	535	5.0	4,800
1.0	90	2.5	935	6.0	6,750
1.2	146	3.0	1,450	7.3	9,700
1.4	218	3.5	2,080		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.
1	834	1,760	2,930	2,150	4,800	1,650	3,190	7,860	6,290	2,150	2,460	254
2	1,510	2,360	3,060	2,150	5,000	1,650	f2,800	8,300	6,820	2,080	2,560	904
3	1,680	2,790	2,620	2,050	4,500	1,700	3,220	8,900	9,560	2,050	2,360	1,430
4	1,580	3,220	2,210	2,000	4,100	1,750	3,530	8,410	9,420	1,780	2,210	1,720
5	1,540	3,040	*2,400	1,950	3,800	1,800	3,860	8,410	8,830	1,680	2,090	1,630
6	a1,660	2,660	2,400	1,900	3,600	1,800	f4,780	9,310	7,910	1,560	2,040	299
7	a1,660	2,620	2,310	1,850	3,400	1,700	f6,490	9,260	8,500	1,660	1,700	373
8	a1,660	2,510	2,290	1,800	3,300	*1,650	5,800	9,120	9,190	2,890	1,580	716
9	a1,720	2,420	2,770	1,750	3,100	1,650	5,520	8,850	9,650	3,110	1,590	1,030
10	1,560	2,460	3,450	1,750	2,900	1,600	5,670	8,530	8,410	3,000	1,020	948
11	1,650	2,850	4,500	1,700	2,800	1,600	f5,940	8,140	7,520	2,660	1,530	852
12	1,530	3,120	3,700	1,600	*2,600	1,600	f6,400	7,720	6,900	3,080	1,200	1,040
13	1,350	3,340	3,820	*1,600	2,500	1,650	7,880	7,280	6,440	2,740	1,120	450
14	1,630	3,460	3,520	1,700	2,400	1,800	8,900	6,950	6,200	2,230	1,170	206
15	1,950	3,480	3,310	1,800	2,350	2,200	8,460	6,440	6,730	2,210	1,170	653
16	2,120	3,520	3,040	1,950	2,450	2,700	7,100	5,960	6,420	2,250	1,370	503
17	2,040	2,900	2,790	2,150	2,350	3,100	8,320	5,580	5,940	2,420	1,150	774
18	2,040	2,740	1,950	1,950	2,150	3,100	8,760	5,350	5,520	2,760	1,700	f700
19	2,4.0	2,630	2,450	1,900	2,050	3,080	8,320	5,200	4,290	2,220	1,610	602
20	2,800	3,090	2,540	2,100	1,950	2,850	7,810	5,350	4,340	2,290	1,410	84
21	2,600	3,930	2,420	2,500	1,900	2,690	7,450	5,980	4,130	2,390	1,410	50
22	2,160	3,800	2,450	2,800	1,850	2,600	7,150	7,340	4,080	2,280	1,530	643
23	2,220	3,220	2,570	2,700	1,800	2,460	6,710	7,080	3,610	2,210	1,480	723
24	2,220	2,460	2,210	2,500	1,800	2,760	5,760	6,950	2,580	2,090	629	642
25	2,020	2,010	2,450	2,400	1,750	4,100	6,050	6,660	3,450	2,040	1,080	645
26	1,850	1,580	2,450	3,200	1,750	4,600	6,550	6,930	3,000	1,980	1,200	634
27	1,850	1,740	2,400	3,700	1,700	4,100	6,900	6,750	2,950	1,830	1,160	569
28	1,850	1,920	2,350	3,500	1,650	4,000	7,300	6,550	2,960	3,210	1,110	306
29	1,830	2,120	2,250	3,200	-	3,700	7,540	6,860	2,790	3,500	1,060	585
30	1,830	2,950	2,100	3,100	-	3,450	7,390	7,300	2,230	3,000	1,040	620
31	1,820	-	2,000	3,300	-	3,340	-	6,860	-	2,510	464	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	57,174	2,800	834	1,844	1.63	1.88
November	82,700	3,930	1,580	2,757	2.44	2.72
December	83,710	4,500	1,950	2,700	2.39	2.75
Calendar year 1946	722,958	5,780	230	1,981	1.75	23.77
January	70,700	3,700	1,600	2,281	2.02	2.32
February	76,300	5,000	1,650	2,725	2.41	2.51
March	78,430	4,600	1,600	2,530	2.24	2.58
April	191,550	8,900	*2,800	6,385	5.65	6.30
May	226,180	9,310	5,200	7,296	6.45	7.44
June	176,660	9,650	2,230	5,889	5.21	5.81
July	73,880	3,500	1,560	2,383	2.11	2.43
August	45,203	2,560	464	1,458	1.29	1.49
September	20,585	1,720	50	686	.607	.68
Water year 1946-47	1,183,072	9,650	50	3,241	2.87	38.91

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of power-plant records and records for station at Piercefield.

f Fragmentary gage-height record; discharge computed on basis of reconstructed gage-height graph or power-plant records.

Note.- Stage-discharge relation affected by ice Dec. 18, 19, Dec. 26 to Mar. 18, Mar. 18-25.

St. Regis River at Brasher Center, N. Y.

Location.- Water-stage recorder, lat. 44°51'50", long. 74°46'45", 600 feet upstream from highway bridge at Brasher Center, St. Lawrence County, and 6½ miles downstream from confluence of East and West Branches at Winthrop. Datum of gage is 217.23 feet above mean sea level, datum of 1929.

Drainage area.- 816 square miles.

Records available.- August 1910 to November 1917, January 1919 to September 1947.

Average discharge.- 34 years (1910-13, 1914-17, 1919-47), 1,072 second-feet.

Extremes.- Maximum discharge during year, 9,540 second-feet Apr. 13; maximum gage height, 12.5 feet Apr. 7, from floodmark (ice jam); minimum discharge, 294 second-feet (regulated) Sept. 12 (gage height, 5.97 feet).

1910-17, 1919-47: Maximum discharge, 16,800 second-feet Apr. 6, 1937, from rating curve extended above 8,300 second-feet by logarithmic plotting; maximum gage height recorded, about 15.3 feet Apr. 6, 1937 (ice jam); minimum discharge observed, about 34 second-feet (regulated) Aug. 8, 1917 (gage height, 5.25 feet).

Remarks.- Records excellent except those for periods of ice effect, which are fair. Slight diurnal fluctuation by power operations above station.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

6.0	314	7.0	1,340	9.0	5,000
6.2	469	7.5	2,050	9.8	6,960
6.4	650	8.0	2,910	10.6	9,210
6.6	857	8.5	3,900		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,260	2,070	1,800	820	5,000	720	2,000	4,290	2,150	880	936	388
2	1,840	1,980	1,600	860	4,700	740	2,150	5,000	2,760	914	814	865
3	1,670	2,570	1,400	880	4,000	700	2,500	5,280	7,200	970	660	1,430
4	1,880	2,550	1,340	820	3,300	680	2,700	4,150	6,620	880	641	936
5	2,000	2,230	*1,290	760	2,700	700	3,500	3,980	6,390	836	584	730
6	2,080	1,930	1,220	800	2,200	760	5,200	4,590	4,200	793	622	521
7	2,070	1,820	1,180	760	1,800	680	8,000	4,260	4,890	1,650	512	445
8	1,880	1,460	1,210	760	1,500	680	5,200	3,840	4,590	3,370	495	437
9	1,550	1,470	1,900	720	1,180	*700	4,550	3,250	5,250	2,690	486	373
10	1,240	1,690	3,590	600	1,100	680	4,110	2,750	4,150	1,960	461	366
11	970	1,750	4,400	720	*1,100	660	4,620	2,360	3,230	1,620	437	344
12	868	2,080	3,730	740	1,060	680	7,770	2,070	2,620	1,610	366	351
13	2,420	2,360	3,310	660	1,040	740	9,210	1,920	2,260	1,300	388	373
14	2,820	2,300	2,730	*660	1,120	940	7,120	2,100	2,210	1,070	373	453
15	2,080	2,180	2,070	1,000	1,060	2,000	5,560	1,880	3,530	982	406	469
16	1,610	1,880	1,450	1,550	1,040	2,350	5,090	1,750	3,160	1,110	631	437
17	1,290	1,650	1,550	1,550	940	2,250	4,910	1,680	2,640	1,240	836	388
18	1,220	1,480	1,700	1,500	1,000	2,150	4,980	1,650	2,260	1,610	793	358
19	2,160	1,330	1,600	1,350	920	2,000	4,200	1,820	2,070	1,390	868	373
20	2,240	1,220	1,350	1,300	860	1,850	3,390	2,240	1,920	1,580	804	420
21	1,840	1,130	1,250	2,150	800	1,750	2,870	2,820	1,650	1,310	680	388
22	1,550	1,070	1,200	2,400	760	1,650	2,480	4,810	1,440	1,190	622	579
23	1,330	1,070	1,300	2,200	760	1,600	2,280	4,550	1,280	1,300	539	836
24	1,110	982	1,180	2,300	780	2,300	2,400	3,710	1,140	1,290	530	641
25	970	947	1,120	3,100	840	4,300	3,590	2,970	1,040	1,020	388	469
26	1,010	1,070	920	3,600	840	4,300	3,800	2,800	1,100	891	396	453
27	1,100	2,130	860	4,100	800	3,600	3,550	2,460	1,070	946	388	453
28	1,050	2,710	900	3,900	740	3,200	4,530	2,100	982	1,630	351	404
29	959	2,380	960	3,300	-	2,700	4,200	2,430	902	1,920	366	366
30	1,040	1,880	920	2,700	-	2,400	3,650	2,910	750	1,400	366	453
31	1,540	-	840	3,300	-	2,100	-	2,500	-	1,130	412	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	48,647	2,820	868	1,569	2.55	2.94
November	53,169	2,710	947	1,772	2.88	3.21
December	51,930	4,400	840	1,675	2.72	3.14
Calendar year 1946	398,683	5,250	178	1,092	1.77	24.07
January	51,860	4,100	600	1,673	2.72	3.13
February	43,940	5,000	740	1,569	2.55	2.65
March	52,560	4,300	660	1,695	2.75	3.17
April	130,110	9,210	2,000	4,337	7.04	7.85
May	94,320	5,280	1,650	3,062	4.97	5.73
June	85,454	7,200	750	2,848	4.62	5.16
July	42,292	3,370	793	1,364	2.21	2.55
August	17,151	936	351	553	.898	1.04
September	15,499	1,430	344	517	.839	.94
Water year 1946-47	687,532	9,210	344	1,884	3.06	41.51

Peak discharge.- Apr. 13 (5:30 a.m.) 9,540 sec.-ft.; May 3 (2:30 a.m.) 5,630 sec.-ft.; June 3 (10 a.m.) 7,530 sec.-ft.; June 9 (12:30 a.m.) 5,840 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 1-3, 6, 7, Dec. 16 to Apr. 8.

Salmon River at Chasm Falls, N. Y.

Location.- Water-stage recorder, lat. 44°45'20", long. 74°13'10", at Chasm Falls, Franklin County, a quarter of a mile downstream from power plant of Central New York Power Corp.

Drainage area.- 132 square miles.

Records available.- July 1925 to September 1947.

Average discharge.- 22 years, 230 second-feet.

Extremes.- Maximum discharge during year, 2,620 second-feet Apr. 12 (gage height, 4.75 feet); minimum, 15 second-feet (regulated) Oct. 18 (gage height, 0.53 foot, backwater from debris); minimum daily, 143 second-feet Jan. 13.
1925-47: Maximum discharge, 2,890 second-feet Apr. 25, 1926 (gage height, 5.0 feet); minimum, 14 second-feet (regulated) Feb. 12, 1943 (gage height, 0.44 foot); minimum daily, 28 second-feet Sept. 4, 1934.

Remarks.- Records excellent except those for periods of backwater from debris, which are good. Diurnal fluctuation at low and medium flow caused by power plant. A small diversion from tributary stream above station is used as water supply for village of Malone.

Rating table, water year 1946-47, except periods of backwater from debris
(gage height, in feet, and discharge, in second-feet)

1.4	138	2.0	336	3.2	1,080
1.6	193	2.4	534	3.8	1,590
1.8	259	2.8	784	4.4	2,210

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	260	280	320	218	684	210	249	1,070	373	390	245	192
2	180	220	240	221	798	212	249	1,080	514	320	225	223
3	155	390	260	215	905	199	261	918	1,460	295	208	289
4	205	380	240	208	664	199	266	808	1,500	270	196	221
5	260	330	215	207	424	193	300	806	992	245	196	213
6	270	280	201	202	326	190	480	777	698	228	190	215
7	230	245	191	199	292	184	960	853	623	392	183	206
8	185	230	210	193	259	184	1,010	867	648	867	171	215
9	165	270	420	175	238	179	791	691	711	757	178	217
10	185	390	893	180	222	175	610	546	558	492	160	226
11	215	340	1,030	164	215	169	900	448	454	394	164	222
12	220	380	834	155	204	171	2,030	390	399	362	155	222
13	270	380	638	143	219	171	2,190	394	348	418	156	222
14	230	360	498	160	220	232	1,460	540	475	416	154	222
15	180	320	387	197	196	316	1,140	433	764	553	188	210
16	155	260	292	223	204	263	1,000	371	730	378	285	220
17	150	245	304	209	196	236	875	358	585	350	212	219
18	165	235	281	202	220	245	750	371	470	448	196	204
19	410	215	235	178	197	240	592	448	457	496	230	216
20	300	195	212	224	198	247	518	481	431	490	228	207
21	260	205	212	341	181	234	428	598	354	371	183	206
22	270	230	208	362	184	245	367	823	308	385	184	179
23	210	220	206	317	204	239	385	896	274	390	177	198
24	205	180	233	300	212	243	580	641	252	324	160	220
25	200	200	196	316	227	427	925	496	296	285	158	223
26	220	250	182	316	223	429	832	479	390	259	156	206
27	230	600	191	308	217	418	853	443	308	262	152	195
28	195	540	224	296	213	376	1,100	344	270	385	157	188
29	195	370	242	278	-	304	875	466	274	371	175	179
30	235	280	245	177	-	278	798	577	285	297	173	188
31	250	-	227	452	-	250	-	450	-	281	238	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	6,860	410	150	221	1.67	1.93
November	9,020	600	180	301	2.28	2.54
December	10,267	1,030	182	331	2.51	2.89
Calendar year 1946	84,097	1,070	77	230	1.74	23.68
January	7,336	452	143	237	1.80	2.07
February	8,542	905	181	305	2.31	2.41
March	7,658	429	169	247	1.87	2.16
April	23,774	2,190	249	792	6.00	6.70
May	18,863	1,080	344	608	4.61	5.31
June	16,201	1,500	252	540	4.09	4.56
July	12,172	867	228	393	2.98	3.43
August	5,833	285	152	188	1.42	1.64
September	6,363	289	179	212	1.61	1.79
Water year 1946-47	132,889	2,190	143	364	2.76	37.43

Note.- Backwater from debris Oct. 1 to Dec. 5, Apr. 6, 7.

Chateaugay River near Chateaugay, N. Y.

Location.- Water-stage recorder, lat. 44°54'35", long. 74°05'10", 150 feet downstream from dam of International Hydroelectric Corp. and 1 mile south of Chateaugay, Franklin County.

Drainage area.- 112 square miles.

Records available.- September to December 1908, October 1926 to September 1947.

Average discharge.- 21 years (1926-47), 178 second-feet.

Extremes (regulated).- Maximum discharge during year, 1,060 second-feet Apr. 14 (gage height, 5.03 feet); minimum, 55 second-feet Sept. 21 (gage height, 1.20 feet); minimum daily, 55 second-feet Sept. 21.

1908, 1926-47: Maximum discharge, 2,060 second-feet Apr. 8, 1928 (gage height, 7.3 feet), from rating curve extended above 970 second-feet by logarithmic plotting; minimum, 6 second-feet Nov. 20, 1928 (gage height, 0.23 foot); minimum daily, 26 second-feet July 8, 1934.

Remarks.- Records good except those for periods of ice effect or doubtful gage-height record, which are fair. Flow regulated by Upper and Lower Chateaugay Lakes. Considerable diurnal fluctuation at all stages by power operations.

Rating table, water year 1946-47, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

1.2	55	2.1	172	3.5	479
1.5	86	2.5	240	4.0	643
1.8	125	3.0	345	5.0	1,040

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	103	111	250	220	250	290	d245	722	410	201	239	122
2	88	125	240	215	250	280	242	752	536	205	211	149
3	101	121	230	210	290	280	238	730	882	201	203	139
4	120	144	220	205	280	280	242	704	996	226	178	129
5	128	140	210	205	280	280	256	711	932	211	179	125
6	121	140	*199	200	280	*270	561	689	834	208	160	124
7	117	138	213	200	270	270	379	693	782	394	159	125
8	116	145	236	195	*270	270	314	668	737	687	143	124
9	116	184	318	195	270	280	315	606	657	758	143	124
10	97	167	434	195	270	245	326	555	616	708	141	124
11	96	160	510	190	260	225	481	549	529	666	138	124
12	105	176	555	190	260	210	670	545	424	653	134	134
13	123	167	507	195	260	195	924	568	402	388	126	122
14	102	175	466	205	270	212	1,020	555	498	404	121	105
15	100	173	420	230	300	236	937	466	515	383	124	103
16	99	182	390	*209	330	235	914	164	488	304	122	101
17	101	178	370	201	350	230	870	158	473	354	120	101
18	117	167	340	180	340	220	850	175	441	322	121	101
19	117	172	310	185	330	210	756	183	421	369	126	107
20	106	165	290	195	320	200	719	215	418	389	122	83
21	108	162	270	215	310	190	689	213	405	382	121	55
22	108	166	252	190	310	185	643	297	378	399	122	67
23	107	151	254	195	310	186	555	318	251	386	121	60
24	107	157	244	210	290	205	578	321	251	379	121	68
25	106	156	245	240	260	328	599	349	255	372	118	118
26	111	186	240	257	290	d273	623	340	204	348	121	119
27	107	221	235	269	280	d250	685	310	191	276	121	125
28	105	235	220	259	280	d245	650	309	160	285	121	125
29	123	242	250	245	-	d245	654	340	161	267	122	125
30	123	249	230	250	-	d250	682	437	177	261	125	130
31	136	-	225	260	-	d250	-	426	-	265	141	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	3,414	136	88	110	-	-
November	5,055	249	111	168	-	-
December	9,373	555	199	302	-	-
Calendar year 1946	63,070	555	68	173	1.54	20.94
January	6,610	269	180	213	-	-
February	8,060	350	250	288	-	-
March	7,505	328	185	242	-	-
April	17,617	1,020	238	587	-	-
May	14,068	752	158	454	-	-
June	14,424	996	160	481	-	-
July	11,651	758	201	376	-	-
August	4,364	239	118	141	-	-
September	3,358	149	55	112	-	-
Water year 1946-47	105,499	1,020	55	289	2.58	35.03

* Winter discharge measurement made on this day.

d Doubtful gage-height record; discharge computed on basis of weather records and record of gate openings at Forge Dam.

Note.- Stage-discharge relation affected by ice Dec. 2-4, 15-20, Dec. [illegible] Jan. 15, Jan. 18-25, Jan. 29 to Mar. 13, Mar. 16-22 (doubtful gage-height record Jan. 4-15, Feb. 5-15). Increase in storage in Chateaugay Lakes during calendar year 1946, about 43,700,000 cubic feet (equivalent mean discharge, 1.39 sec.-ft.; runoff, 0.17 inch); increase in elevation, 0.33 feet. Increase in storage during water year 1946-47, about 245,000,000 cubic feet (equivalent mean discharge, 7.77 sec.-ft.; runoff, 0.94 inch); increase in elevation, 1.95 feet.

Richelieu River (Lake Champlain) at Rouses Point, N. Y.

Location.- Water-stage recorder, lat. 44°59'45", long. 73°21'40", in Rouses Point, Clinton County, at outlet of Lake Champlain, 30 feet north of Rutland Railroad bridge and 1 mile south of Fort Montgomery. Datum of gage is 92.00 feet above mean sea level, datum of 1929.

Drainage area.- 8,377 square miles.

Records available.- October 1863 to December 1870 (maximum and minimum monthly gage heights at St. Johns, Quebec, published in Water-Supply Paper 97) and March 1871 to September 1947 (daily gage heights; those for 1871-1907 published in Water-Supply Paper 894). January 1875 to September 1916 (monthly discharge) at Chambly, Quebec, published in Water-Supply Paper 424. Gage heights prior to Oct. 1, 1925, published as Richelieu River at Fort Montgomery Rouses Point.

Extremes.- Maximum gage height during year, 8.23 feet June 5; minimum, 0.51 foot Oct. 1. 1871-1947: Maximum gage height observed, 8.80 feet Mar. 30, 1903; minimum observed, -0.88 foot Oct. 23, 1941.

Observations at St. Johns, Quebec, indicate a maximum gage height of 8.83 feet (computed) during April 1869.

Gage height, in feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.98	1.71	2.34	2.70	3.54	3.29	4.86	6.17	6.72	6.32	4.51	2.46
2	1.01	1.92	2.26	2.73	3.73	3.25	4.84	6.36	6.63	6.19	4.48	2.50
3	1.13	1.90	2.55	2.70	3.92	3.28	4.82	6.43	7.01	6.07	4.47	2.44
4	1.22	1.97	2.39	2.76	3.86	3.27	4.85	6.45	7.64	5.93	4.35	2.40
5	1.27	1.90	2.40	2.79	3.90	3.23	4.91	6.55	8.02	5.84	4.25	2.33
6	1.32	2.07	2.37	2.88	3.96	3.20	4.97	6.65	7.88	5.80	4.15	2.32
7	1.35	2.05	2.67	2.77	3.92	3.17	5.17	6.76	7.87	5.64	4.13	2.28
8	1.15	2.18	2.34	2.64	3.94	3.14	5.41	6.86	7.90	5.75	4.00	2.15
9	1.33	2.12	2.47	2.65	3.99	3.11	5.56	6.90	7.84	5.83	3.85	2.19
10	1.29	2.30	2.50	2.65	3.93	3.08	5.62	6.93	7.83	5.80	3.78	2.22
11	1.37	2.30	2.59	2.69	3.87	3.05	5.86	6.89	7.82	5.75	3.80	2.21
12	1.38	2.28	3.18	2.59	3.85	3.04	5.82	6.85	7.65	5.69	3.73	2.13
13	1.30	2.41	2.85	2.58	3.83	3.02	6.13	6.66	7.59	5.69	3.62	2.05
14	1.35	2.36	2.88	2.65	3.80	3.06	6.54	6.60	7.63	5.61	3.57	2.06
15	1.38	2.38	2.85	2.59	3.76	3.22	6.38	6.70	7.68	5.57	3.48	2.03
16	1.50	2.57	2.87	2.57	3.72	3.46	6.49	6.68	7.71	5.46	3.38	1.91
17	1.27	2.53	3.23	2.62	3.70	3.63	6.51	6.44	7.69	5.36	3.41	1.90
18	1.40	2.36	2.83	2.56	3.69	3.75	6.59	6.44	7.61	5.31	3.45	1.89
19	1.38	2.58	2.84	2.61	3.62	3.82	6.47	6.33	7.52	5.23	3.20	1.70
20	1.51	2.36	2.87	2.64	3.59	3.86	6.52	6.32	7.44	5.18	3.12	1.74
21	1.59	2.26	2.84	2.61	3.54	3.88	6.31	6.44	7.37	5.13	3.17	2.28
22	1.61	2.47	2.85	2.69	3.54	3.93	6.42	6.47	7.25	5.03	3.03	1.62
23	1.60	2.15	2.97	2.74	3.49	3.99	6.56	6.68	7.13	5.01	2.97	1.67
24	1.59	2.59	2.84	2.94	3.46	4.04	6.39	6.66	7.04	5.00	2.93	1.76
25	1.79	2.31	2.75	2.79	3.44	4.23	6.15	6.68	6.96	4.92	2.88	1.48
26	1.64	3.07	2.76	2.68	3.42	4.51	6.20	6.82	6.86	4.87	2.68	1.51
27	1.62	2.29	2.70	2.92	3.36	4.73	6.08	6.50	6.73	4.90	2.68	1.47
28	1.66	2.35	2.70	3.02	3.32	4.85	6.10	6.44	6.64	4.75	2.69	1.49
29	1.68	2.40	2.82	3.09	-	4.88	6.17	6.43	6.51	4.75	2.54	1.64
30	1.70	2.55	2.70	3.19	-	4.88	6.13	6.55	6.39	4.77	2.81	1.26
31	1.70	-	2.73	3.38	-	4.88	-	6.69	-	4.59	2.49	-

Monthly gage height, in feet, water year October 1946 to September 1947

Month	Maximum	Minimum	Mean
October	1.79	0.98	1.42
November	2.59	1.71	2.26
December	3.23	2.26	2.71
Calendar year 1946	5.37	.61	2.71
January	3.38	2.56	2.75
February	3.99	3.32	3.70
March	4.88	3.02	3.70
April	6.89	4.82	5.89
May	6.93	6.17	6.58
June	8.02	6.39	7.35
July	6.32	4.59	5.41
August	4.51	2.49	3.47
September	2.50	1.26	1.97
Water year 1946-47	8.02	.98	3.93

Lake Champlain at Burlington, Vt.

Location.- Water-stage recorder, lat. 44°29'00", long. 73°13'30", in Burlington, Chittenden County, 0.6 mile north of railroad station. Datum of gage is 93.86 feet above mean sea level, datum of 1929.

Records available.- May 1907 to September 1947.

Extremes.- Maximum gage height during year, 8.02 feet June 6, affected by seiche; minimum not determined.

1907-47: Maximum gage height observed, 8.65 feet Mar. 27, 28, 1936; minimum observed, -0.35 foot Dec. 4, 1909.

Gage height, in feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a0.92	1.80	2.51	2.78	3.68	3.36	4.96	6.30	6.73	6.37	4.61	2.51
2	a1.08	1.85	2.54	2.80	3.82	3.35	4.97	6.47	6.78	6.27	4.58	2.49
3	a1.16	1.96	2.49	2.84	3.87	3.37	4.97	6.53	7.24	6.16	a4.48	2.48
4	1.22	2.09	2.47	2.81	3.90	3.33	4.96	6.57	7.76	6.04	a4.38	2.44
5	1.28	2.14	2.45	2.76	4.00	3.30	4.97	6.66	7.93	5.91	a4.32	2.42
6	1.34	2.15	2.45	2.76	3.99	3.27	5.04	6.79	7.94	5.78	a4.19	2.36
7	1.37	2.15	2.36	2.74	4.01	3.24	5.27	6.90	7.96	5.78	4.13	2.31
8	1.40	2.15	2.38	2.75	4.03	3.22	5.52	6.98	7.94	5.88	4.06	2.28
9	1.36	2.20	2.40	2.73	4.02	3.19	5.65	7.04	7.96	5.94	3.98	2.25
10	1.55	2.25	2.53	2.72	3.98	3.16	5.69	7.03	7.92	5.90	3.92	2.17
11	1.32	2.24	2.67	2.70	3.97	3.13	5.67	6.96	7.85	5.81	3.81	2.10
12	1.32	2.36	2.76	2.70	3.94	3.10	5.91	6.87	7.77	5.74	3.70	2.07
13	1.38	2.42	2.90	2.67	3.90	3.08	6.25	6.83	7.71	5.70	3.64	2.08
14	1.40	2.48	2.96	2.61	3.87	3.12	6.43	6.84	7.63	5.64	3.57	2.04
15	f1.41	2.52	3.00	2.62	3.85	3.28	6.53	6.75	7.76	5.56	3.51	2.02
16	1.37	2.50	2.99	2.65	3.83	3.53	6.58	6.62	7.82	5.45	3.48	1.99
17	f1.39	2.45	2.87	2.68	3.73	3.72	6.62	6.55	7.80	5.37	3.40	1.94
18	a1.36	2.47	2.92	2.64	3.74	3.83	6.60	6.45	7.75	5.31	3.24	1.89
19	a1.50	2.38	2.92	2.64	3.71	3.89	6.63	6.41	7.64	5.28	3.21	1.88
20	a1.58	2.38	2.90	2.63	3.68	3.94	6.62	6.36	7.56	5.24	3.22	1.85
21	a1.66	2.39	2.95	2.70	3.64	3.98	6.61	6.41	7.46	5.19	3.12	1.66
22	a1.64	2.32	2.91	2.78	3.61	4.03	6.52	6.55	7.34	f5.12	3.06	1.66
23	1.64	2.22	2.86	2.82	3.57	4.06	6.36	6.75	7.22	5.12	3.01	1.68
24	1.64	2.22	2.85	2.82	3.54	4.13	6.20	6.79	7.09	5.04	2.94	1.63
25	1.58	2.12	2.84	2.86	3.52	4.30	6.27	6.76	7.00	4.94	2.86	1.63
26	1.60	2.23	2.81	2.91	3.47	4.58	6.26	6.68	6.90	4.86	2.82	1.62
27	1.65	2.35	2.78	2.98	3.44	4.81	6.22	6.62	6.81	4.78	2.77	1.58
28	1.67	2.45	2.86	3.08	3.40	4.92	6.22	6.54	6.69	4.78	2.70	1.55
29	1.65	2.50	2.82	3.20	-	4.98	6.22	6.53	6.56	4.78	2.62	1.45
30	1.70	2.50	2.82	3.32	-	5.01	6.17	6.66	6.44	4.74	2.54	1.46
31	1.74	-	2.80	3.47	-	4.98	-	6.76	-	4.66	2.52	-

a Computed on basis of records for Richelieu River (Lake Champlain) at Rouses Point, N. Y., adjusted for wind direction and velocity.
f Fragmentary gage-height record.

Monthly gage height, in feet, water year October 1946 to September 1947

Month	Maximum	Minimum	Mean
October	1.74	0.92	1.44
November	2.52	1.80	2.28
December	3.00	2.36	2.73
Calendar year 1946	5.44	.78	2.75
January	3.47	2.61	2.81
February	4.03	3.40	3.78
March	5.01	3.08	3.78
April	6.63	4.96	5.96
May	7.04	6.30	6.66
June	7.96	6.44	7.43
July	6.37	4.66	5.46
August	4.61	2.52	3.50
September	2.51	1.45	1.98
Water year 1946-47	7.96	.92	3.98

Great Chazy River at Perry Mills, N. Y.

Location.- Water-stage recorder, lat. 45°00'00", long. 73°30'05", 500 feet upstream from highway bridge at Perry Mills, Clinton County.

Drainage area.- 247 square miles.

Records available.- September 1928 to September 1947.

Average discharge.- 19 years, 275 second-feet.

Extremes.- Maximum discharge during year, 4,840 second-feet Apr. 7 (gage height, 8.86 feet); minimum, 31 second-feet (regulated) Aug. 25 (gage height, 1.93 feet); minimum daily, 58 second-feet (regulated) Aug. 25.
1928-47: Maximum discharge, 6,000 second-feet Apr. 7, 1937; maximum gage height, 11.5 feet, from floodmark, Mar. 9, 1946 (ice jam); minimum discharge, about 0.8 second-foot (regulated) Sept. 18, 1932 (gage height, 1.33 feet); minimum daily, 10 second-feet (regulated) Sept. 18, 1932.

Remarks.- Records good except those for periods of ice effect, which are fair, and those for period of no gage-height record, which are poor. Diurnal fluctuation at low and medium flow caused by saw mill. Partial regulation by Chazy Lake. Clinton Prison at Dannemora obtains water supply from Chazy Lake.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 3				Nov. 4 to Sept. 30							
2.2	64	2.9	221	2.1	50	3.0	245	4.2	727	6.5	2,320
2.4	99	3.3	344	2.4	98	3.4	380	4.8	1,060	7.5	3,270
2.6	143	3.8	541	2.7	164	3.8	541	5.5	1,540	8.4	4,290

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	351	338	312	310	1,200	245	420	2,320	427	512	298	156
2	286	287	240	310	1,000	260	450	2,170	591	412	258	128
3	226	508	280	350	780	270	520	1,380	3,560	232	243	372
4	222	421	297	340	640	260	640	1,140	2,730	246	243	219
5	185	338	288	330	540	260	1,000	2,570	1,080	214	206	146
6	135	242	279	310	460	*260	1,500	2,030	689	207	182	115
7	86	211	*282	320	410	250	4,200	1,620	621	768	162	102
8	81	231	324	330	*380	245	2,460	1,250	815	2,700	177	66
9	105	312	723	310	340	240	1,380	908	1,680	1,720	157	99
10	97	635	1,290	310	290	235	996	675	997	1,090	97	93
11	87	501	1,360	310	260	240	1,610	557	685	621	109	94
12	81	550	747	320	240	245	2,830	471	520	1,340	168	94
13	122	504	608	290	260	250	2,350	478	422	2,020	168	185
14	146	399	460	310	270	310	1,040	1,040	1,370	1,000	160	163
15	163	344	320	320	280	370	856	693	2,390	a594	182	99
16	103	274	320	*340	270	560	789	517	1,400	a420	177	114
17	110	247	360	370	270	520	791	493	795	a300	106	110
18	102	220	320	370	250	460	1,260	486	614	a600	76	101
19	218	211	266	340	245	400	1,220	675	518	a980	237	108
20	232	205	259	360	230	370	805	745	495	a1,350	150	124
21	164	202	280	460	240	340	621	997	430	a900	108	102
22	143	149	330	540	235	320	505	1,290	362	a680	99	91
23	92	169	340	480	230	310	482	1,080	291	a1,250	95	180
24	77	103	320	460	250	350	549	654	262	a1,100	92	147
25	82	135	300	460	260	620	999	558	309	a660	58	123
26	89	194	290	500	250	940	667	509	394	a400	98	112
27	130	948	310	540	245	840	757	415	f323	a290	96	102
28	118	752	350	560	240	680	1,550	385	f267	a620	94	93
29	89	475	380	560	-	560	914	434	230	a1,200	92	93
30	144	291	320	540	-	470	1,140	928	302	a680	94	118
31	300	-	360	620	-	410	-	586	-	a376	151	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	4,566	351	77	147	0.595	0.69
November	10,396	948	103	347	1.40	1.57
December	12,915	1,360	240	417	1.69	1.94
Calendar year 1946	97,275	2,100	24	267	1.08	14.65
January	12,270	620	290	396	1.60	1.85
February	10,565	1,200	230	377	1.53	1.59
March	12,090	940	235	390	1.58	1.82
April	35,301	4,200	420	1,177	4.77	5.32
May	30,054	2,570	385	969	3.92	4.53
June	25,569	3,560	230	852	3.45	3.85
July	25,522	2,700	207	823	3.33	3.84
August	4,633	298	58	149	.603	.70
September	3,849	372	66	128	.518	.58
Water year 1946-47	187,730	4,200	58	514	2.08	28.28

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of power-plant records, weather records, and records for nearby stations.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.
[illegible] Stage-discharge relation affected by ice Dec. 2, 3, 14-18, Dec. 21 to Apr. 6.

Saranac River at Plattsburg, N. Y.

Location.- Water-stage recorder, lat. 44°40'50", long. 73°28'20", in Plattsburg, Clinton County, 600 feet downstream from Imperial Paper & Color Corp. dam and 3 miles upstream from mouth.

Drainage area.- 608 square miles.

Records available.- October 1943 to September 1947. March 1903 to September 1930 at site 1.5 miles upstream, published as Saranac River near Plattsburg.

Average discharge.- 29 years (1905-30, 1943-47), 841 second-feet.

Extremes.- Maximum discharge during year, 9,250 second-feet June 3 (gage height, 9.57 feet); minimum, 41 second-feet (regulated) Sept. 29 (gage height, 1.82 feet); minimum daily, 149 second-feet Oct. 13.
1903-30, 1943-47: Maximum discharge, 11,500 second-feet Apr. 8, 1928, by computation of flow over dam, and through waste gates and power plant; minimum daily, 15 second-feet (regulated) Aug. 4, 1908.

Remarks.- Records excellent except those for periods of ice effect or doubtful gage-height record, which are fair. Flow partly regulated by Lower Saranac Lake. Considerable diurnal fluctuation by power and industrial operations.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

2.4	133	3.4	461	6.0	2,710
2.6	179	3.6	555	7.0	4,160
2.8	234	4.0	774	8.0	5,930
3.0	300	4.5	1,120	9.0	7,960
3.2	375	5.0	1,560		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	375	921	1,140	880	2,330	844	1,110	3,660	2,230	d3,100	1,250	548
2	662	860	1,200	1,000	1,900	885	1,170	3,770	2,620	d1,150	1,180	886
3	406	1,440	784	800	1,650	899	1,220	3,410	7,830	d850	999	790
4	353	1,240	1,070	740	1,550	*840	1,270	3,260	5,910	d800	1,110	742
5	321	1,140	1,020	700	1,350	946	1,250	4,240	4,420	d850	938	573
6	315	998	1,020	860	*1,240	1,060	1,740	3,930	3,740	902	820	495
7	250	899	*881	840	1,200	1,030	3,930	3,870	3,420	1,530	762	544
8	331	907	826	800	1,160	993	2,940	3,830	3,600	4,000	779	318
9	367	964	1,320	780	1,120	988	2,500	3,200	4,050	2,670	616	424
10	273	1,100	1,810	860	1,140	960	2,290	2,830	3,120	2,090	702	470
11	274	1,130	2,160	938	1,100	1,060	3,230	2,410	d2,850	1,700	774	468
12	163	1,220	1,660	920	1,080	1,080	7,120	2,300	d2,450	2,610	708	470
13	149	1,560	1,660	900	1,070	1,090	6,940	2,180	2,140	4,560	669	387
14	571	1,430	1,620	880	1,070	1,400	4,680	2,390	2,830	d2,390	676	414
15	388	1,370	1,160	956	1,070	1,760	4,540	2,120	4,000	1,790	647	433
16	351	1,030	1,400	1,040	1,040	1,690	4,180	1,880	3,180	1,620	945	544
17	273	932	1,150	*1,030	1,070	1,460	3,700	1,800	2,870	1,570	739	631
18	320	1,100	1,040	953	971	1,310	3,410	1,670	3,000	1,930	565	644
19	556	952	957	830	963	1,100	3,130	1,850	2,880	1,870	673	493
20	839	933	957	862	800	1,080	2,660	1,860	2,280	1,740	685	337
21	870	925	868	1,060	820	1,010	2,330	2,300	1,980	1,490	624	418
22	581	896	884	1,160	760	972	2,160	2,830	1,550	1,730	499	421
23	608	874	959	1,000	780	928	2,090	2,920	1,420	1,960	378	640
24	785	652	911	950	920	1,070	2,460	2,620	1,380	1,600	368	516
25	628	756	895	1,030	880	1,470	3,540	2,320	1,460	1,360	492	476
26	651	916	834	1,100	859	1,700	2,910	2,350	1,650	1,190	492	552
27	569	2,070	700	1,150	836	1,440	3,120	2,160	1,550	1,080	715	435
28	715	1,350	629	1,180	910	1,310	4,140	1,970	816	1,600	630	360
29	653	1,420	671	1,190	-	1,250	3,220	2,250	508	1,650	702	359
30	756	1,210	935	1,110	-	1,170	3,120	2,890	984	1,650	665	568
31	822	-	740	1,490	-	1,140	-	2,400	-	1,400	604	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	15,175	870	149	490	0.806	0.93
November	33,195	2,070	652	1,106	1.82	2.03
December	33,861	2,160	629	1,092	1.80	2.07
Calendar year 1946	307,406	4,600	149	842	1.38	18.80
January	29,989	1,490	700	967	1.59	1.83
February	31,639	2,330	760	1,130	1.86	1.94
March	35,935	1,760	840	1,159	1.91	2.20
April	92,100	7,120	1,110	3,070	5.05	5.63
May	83,470	4,240	1,670	2,693	4.43	5.11
June	82,718	7,830	508	2,757	4.53	5.06
July	56,432	4,560	800	1,820	2.99	3.45
August	22,406	1,250	368	723	1.19	1.37
September	15,362	886	318	512	.842	.94
Water year 1946-47	532,282	7,830	149	1,458	2.40	32.56

* Winter discharge measurement made on this day.
d Doubtful gage-height record; discharge computed on basis of reconstructed gage-height graph and power-plant records at Kents Falls, 7 miles upstream.
Note.- Stage-discharge relation affected by ice Dec. 27, Dec. 31 to Jan. 10, Jan. 12-14, 21-23, Feb. 3-12, 20-24.

West Branch Ausable River near Newman, N. Y.

Location.- Water-stage recorder, lat. 44°18'40", long. 73°55'00", 4 miles northeast of Newman, Essex County, and 4 miles downstream from Lake Placid Outlet.

Drainage area.- 116 square miles.

Records available.- June 1916 to December 1917, July 1919 to September 1947.

Average discharge.- 28 years (1919-47), 321 second-feet.

Extremes.- Maximum discharge during year, 4,550 second-feet May 22 (gage height, 8.53 feet); minimum, 41 second-feet (regulated) Sept. 12 (gage height, 2.48 feet); minimum daily, 59 second-feet Sept. 11.

1916-17, 1919-47: Maximum discharge, 10,800 second-feet Sept. 23, 1938 (gage height, 12.20 feet), from rating curve extended above 3,200 second-feet by logarithmic plotting; practically no flow Sept. 13, 1930 (gage height, 1.60 feet), caused by closing gates in logging dam; minimum daily, 7.5 second-feet (regulated) July 29, 1920.

Remarks.- Records excellent except those for periods of ice effect or no gage-height record, which are fair. Diurnal fluctuation at low and medium flow by mills above station.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to July 7						July 8 to Sept. 30					
2.7	72	3.5	261	5.0	1,020	2.5	48	3.2	179	4.5	726
2.9	105	4.0	465	6.0	1,740	2.7	74	3.5	269	5.0	1,020
3.2	172	4.5	724	7.1	2,790	2.9	110	4.0	475	5.8	1,580

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	367	278	235	104	843	74	202	2,030	437	424	238	93
2	235	242	155	100	523	80	202	1,680	789	275	190	100
3	191	465	160	102	363	83	188	1,470	2,580	208	164	142
4	437	379	164	100	300	104	196	1,270	1,370	172	147	95
5	647	311	160	98	*230	108	217	1,530	764	150	138	82
6	512	245	150	96	190	106	840	1,810	579	143	125	75
7	320	211	136	94	180	104	1,180	1,300	631	408	118	68
8	211	202	134	96	165	102	680	907	605	1,580	118	65
9	154	278	*176	94	145	100	460	631	568	753	219	64
10	129	397	433	88	125	100	370	489	447	466	138	68
11	115	342	876	92	125	96	a920	406	358	321	112	59
12	185	519	460	98	116	*92	a1,240	401	434	330	100	65
13	819	424	719	90	114	92	a1,750	729	789	447	97	118
14	398	334	460	88	118	135	898	728	511	582	88	116
15	239	282	320	112	118	400	839	442	932	425	95	98
16	180	235	240	160	112	320	770	424	599	311	123	81
17	162	223	210	145	106	250	620	518	447	273	112	81
18	388	226	185	*125	104	210	489	529	342	252	99	73
19	802	196	165	112	96	190	419	631	296	444	111	66
20	405	180	145	125	82	185	354	1,780	268	442	79	68
21	258	162	140	300	84	180	300	1,360	232	296	95	86
22	202	162	150	230	86	170	264	3,740	202	520	86	124
23	175	178	145	190	82	160	289	1,110	172	510	77	172
24	157	150	130	160	84	191	818	696	160	321	74	114
25	138	154	112	185	86	406	1,040	543	160	236	70	88
26	161	191	100	190	84	728	669	708	183	195	70	81
27	191	655	96	200	80	470	1,200	484	160	235	71	73
28	162	484	100	195	78	375	1,210	384	140	556	65	76
29	150	319	120	175	-	286	713	753	140	475	76	71
30	164	235	124	175	-	251	654	1,220	282	381	76	76
31	243	-	112	1,140	-	217	-	599	-	283	95	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	8,897	819	115	287	2.47	2.85
November	8,856	655	150	295	2.54	2.84
December	7,002	876	96	226	1.95	2.24
Calendar year 1946	79,029	1,160	46	217	1.87	25.33
January	5,279	1,140	88	170	1.47	1.69
February	4,851	843	78	173	1.49	1.55
March	6,368	728	74	205	1.77	2.04
April	21,967	3,240	188	732	6.31	7.04
May	30,302	2,740	384	977	8.42	9.71
June	14,773	2,580	140	492	4.24	4.74
July	12,333	1,560	143	398	3.43	3.95
August	3,464	236	85	112	.966	1.11
September	2,610	172	59	87.0	.750	.84
Water year 1946-47	126,682	3,240	59	347	2.99	40.60

Peak discharge - Apr. 12 (about 10 a.m.) 3,890 sec.-ft.; May 1 (8 a.m.) 2,150 sec.-ft.; May 6 (4:45 p.m.) 2,250 sec.-ft.; May 20 (4 p.m.) 3,030 sec.-ft.; May 22 (10:15 a.m.) 4,550 sec.-ft.; June 3 (3 p.m.) 3,450 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of recorded range in stage, weather records, and records for nearby stations.

Note.- Stage-discharge relation affected by ice Nov. 23, 24, Nov. 30 to Dec. 3, Dec. 14 to Jan. 28, Jan. 31, Feb. 4 to Mar. 23, Apr. 8-10.

Ausable River near Ausable Forks, N. Y.

Location.- Water-stage recorder, lat. 44°27'05", long. 73°38'35", 1¾ miles downstream from confluence of East and West Branches and Ausable Forks, Clinton County. Datum of gage is 505.65 feet above mean sea level, datum of 1929.

Drainage area.- 448 square miles.

Records available.- September 1924 to September 1947. August 1910 to September 1925 at Ausable Forks, 1½ miles upstream.

Average discharge.- 23 years (1924-47), 688 second-feet.

Extremes.- Maximum discharge during year, 12,900 second-feet June 3; maximum gage height, 12.29 feet Jan. 31 (ice jam); minimum discharge, 174 second-feet (regulated) Sept. 10 (gage height, 1.38 feet).

1910-47: Maximum discharge, 24,200 second-feet Sept. 22, 1938, from rating curve extended above 9,100 second-feet by logarithmic plotting; maximum gage height, about 14.0 feet Mar. 27, 1934 (ice jam); practically no flow July 21, 1912.

Remarks.- Records excellent except those for periods of ice effect, which are fair. Flow partly regulated, principally by Taylor Pond and Fern Lake. Diurnal fluctuations at low and medium flow by power plants above station.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 6				Apr. 7 to Sept. 30					
1.5	214	3.0	1,100	1.5	214	3.0	1,140	6.0	5,600
1.7	291	3.5	1,600	1.7	291	3.5	1,640	7.0	7,960
2.0	429	4.3	2,610	2.0	432	4.0	2,250	7.8	10,300
2.5	720			2.5	740	5.0	3,730		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	861	688	618	310	2,300	230	582	5,620	1,570	1,790	813	321
2	606	612	464	300	1,450	240	606	4,700	2,480	1,160	652	339
3	471	1,120	357	310	1,080	260	600	4,110	9,480	798	550	521
4	748	1,030	476	300	953	290	649	4,100	4,900	619	498	376
5	1,350	847	434	290	*660	310	754	5,330	2,690	521	459	304
6	1,080	668	404	280	580	320	2,210	6,650	1,980	498	427	287
7	720	553	395	280	540	320	4,620	5,080	2,040	1,590	367	275
8	492	520	380	290	500	320	2,540	3,410	2,420	6,330	343	255
9	375	594	*486	280	430	310	1,880	2,260	2,530	2,850	654	244
10	317	922	925	260	390	320	1,490	1,720	1,820	1,650	481	236
11	275	803	2,230	270	370	310	3,050	1,420	1,440	1,140	367	232
12	263	1,150	1,310	280	350	*300	10,200	1,320	1,270	1,420	325	232
13	1,410	1,080	1,690	270	330	290	5,770	2,080	1,080	2,390	291	304
14	876	869	1,290	270	330	360	3,010	2,430	1,180	1,700	275	358
15	588	734	839	330	340	1,100	2,700	1,600	3,780	1,430	275	304
16	439	600	620	450	330	1,110	2,460	1,370	2,450	1,120	362	279
17	375	553	580	430	310	796	2,120	1,540	1,730	986	334	275
18	572	553	500	420	300	660	1,740	1,450	1,320	921	291	263
19	1,940	498	430	340	270	560	1,530	1,920	1,180	1,210	291	271
20	1,050	465	380	*350	235	520	1,300	3,950	1,060	1,240	271	279
21	694	434	360	740	*250	500	1,100	4,370	905	929	267	267
22	525	424	410	720	245	500	945	7,490	762	1,530	283	321
23	434	455	400	540	240	470	986	3,850	658	1,890	263	427
24	385	375	370	520	245	618	2,100	2,320	575	1,270	247	386
25	348	409	330	540	240	1,720	3,190	1,760	573	905	244	312
26	352	472	290	560	235	2,310	2,060	2,310	699	706	232	283
27	434	1,990	280	580	240	1,350	3,310	1,740	612	717	244	275
28	390	1,380	290	580	235	1,030	3,800	1,350	515	1,480	247	247
29	352	922	330	560	-	839	2,260	2,320	454	1,450	251	240
30	390	655	340	560	-	720	2,310	4,290	764	1,470	263	244
31	512	-	330	2,500	-	606	-	2,280	-	1,040	358	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	19,624	1,940	263	633	1.41	1.63
November	22,375	1,990	375	746	1.67	1.86
December	18,518	2,230	280	597	1.33	1.54
Calendar year 1946	226,401	4,370	155	620	1.38	18.81
January	14,710	2,500	260	475	1.06	1.22
February	13,978	2,300	235	499	1.11	1.16
March	19,589	2,310	230	632	1.41	1.63
April	71,872	10,200	582	2,396	5.35	5.97
May	96,140	7,490	1,320	3,101	6.92	7.98
June	54,917	9,480	454	1,831	4.09	4.56
July	44,750	6,330	498	1,444	3.22	3.71
August	11,225	813	232	362	.808	.93
September	8,957	521	232	299	.667	.74
Water year 1946-47	396,655	10,200	230	1,087	2.43	32.93

Peak discharge.- Apr. 12 (3:30 p.m.) 12,100 sec.-ft.; May 1 (9 a.m.) 6,050 sec.-ft.; May 6 (2:30 p.m.) 8,460 sec.-ft.; May 22 (12:15 p.m.) 10,700 sec.-ft.; June 3 (12:15 p.m.) 12,900 sec.-ft.; July 8 (5 a.m.) 8,500 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 16 to Feb. 2, Feb. 5 to Mar. 15, Mar. 18-23.

Black Brook at Black Brook, N.Y.

Location.- Water-stage recorder, lat. 44°26'50", long. 73°45'100 feet downstream from abandoned hydroelectric plant of New York State Electric & Gas Corp. and three-quarters of a mile south of hamlet of Black Brook, Clinton County.

Drainage area.- 49.4 square miles.

Records available.- September 1924 to September 1947.

Average discharge.- 23 years, 50.5 second-feet.

Extremes.- Maximum discharge during year, 961 second-feet July 13 (gage height, 6.47 feet); minimum, 8.4 second-feet (regulated) Oct. 11, 12 (gage height, 1.53 feet).
1924-47: Maximum discharge, 1,050 second-feet Apr. 6, 1937 (gage height, 6.95 feet), from rating curve extended above 450 second-feet by logarithmic plotting; minimum, 0.8 second-foot (regulated) July 2, Aug. 29, 1931.

Remarks.- Records excellent except those above 200 second-feet, which are good, and those for periods of ice effect, which are fair. Flow regulated by Fern Lake and Taylor Pond.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used June 3)

Oct. 1 to June 3								June 3 to Sept. 30			
1.5	7.3	2.1	41	3.0	140	4.5	400	3.0	140	4.5	420
1.7	15	2.3	59	3.5	211	5.0	512	3.5	217	5.0	540
1.9	26	2.6	90	4.0	299	5.8	710	4.0	311	5.6	700

Note.- Same as preceding table below 3.0 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55	41	43	31	49	25	50	237	1.7	185	118	74
2	31	38	33	31	48	25	52	253	155	120	101	76
3	25	65	31	30	48	28	55	211	664	79	94	81
4	20	60	30	29	49	*30	58	193	480	66	88	50
5	16	46	29	28	48	29	68	276	284	57	82	41
6	12	36	28	28	47	28	101	307	227	55	78	61
7	11	30	26	29	*47	28	263	352	236	100	40	64
8	9.8	28	26	28	46	27	280	284	283	427	33	63
9	9.2	31	*39	28	45	26	208	219	338	251	121	62
10	9.0	37	77	27	42	26	159	175	242	147	57	62
11	8.9	34	109	29	40	26	229	150	189	112	37	61
12	8.9	44	93	28	37	26	700	135	166	195	31	68
13	9.7	54	80	27	39	28	516	127	148	634	27	94
14	19	58	70	46	52	40	242	141	156	332	25	90
15	14	53	58	56	42	63	229	112	282	278	27	86
16	12	45	52	38	37	70	224	95	247	214	45	83
17	12	40	46	*35	36	68	202	91	168	178	37	80
18	23	37	41	35	36	60	177	91	143	181	26	79
19	59	32	36	34	34	52	192	96	136	181	28	83
20	41	31	32	34	33	47	170	110	139	172	29	82
21	25	30	35	46	32	48	143	157	106	146	40	79
22	19	30	35	43	31	46	122	192	82	168	47	88
23	16	28	35	41	30	44	118	199	68	210	44	87
24	13	26	34	48	29	48	145	134	61	174	43	82
25	13	25	33	52	28	78	211	107	71	135	41	79
26	13	35	33	53	28	74	171	104	84	110	38	76
27	14	95	32	54	26	62	171	94	74	118	58	58
28	14	100	31	54	26	58	246	84	61	189	63	48
29	13	68	33	52	-	56	184	118	54	168	65	48
30	17	48	33	50	-	54	197	201	77	189	66	48
31	35	-	32	50	-	52	-	159	-	160	89	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	597.5	59	8.9	19.3	-	-
November	1,325	100	25	44.2	-	-
December	1,345	109	26	43.4	-	-
Calendar year 1946	18,747.5	436	8.9	51.4	1.04	14.12
January	1,194	56	27	38.5	-	-
February	1,085	52	26	38.8	-	-
March	1,372	78	25	44.3	-	-
April	5,883	700	50	196	-	-
May	5,204	352	84	168	-	-
June	5,538	664	54	185	-	-
July	5,821	694	55	188	-	-
August	1,718	121	25	55.4	-	-
September	2,133	94	41	71.1	-	-
Water year 1946-47	33,215.5	700	8.9	91.0	1.84	25.01

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 1-3, 13-17, Dec. 25 to Jan. 24, Jan. 29 to Mar. 4, Mar. 14, 17-21, Mar. 25 to Apr. 1.

East Branch Ausable River at Ausable Forks, N. Y.

Location.- Water-stage recorder, lat. 44°26'20", long. 73°40'55", 700 feet upstream from upper highway bridge in Ausable Forks, Essex County, and half a mile upstream from confluence with West Branch. Datum of gage is 545.37 feet above mean sea level, datum of 1929.

Drainage area.- 198 square miles.

Records available.- September 1924 to September 1947.

Average discharge.- 23 years, 313 second-feet.

Extremes.- Maximum discharge during year, 7,590 second-feet June 3; maximum gage height, 10.37 feet Jan. 31 (ice jam); minimum discharge, 60 second-feet Sept. 12 (gage height, 1.22 feet):

1924-47: Maximum discharge, 20,100 second-feet Sept. 22, 1938 (gage height, 12.91 feet), from rating curve extended above 6,500 second-feet on basis of velocity-area studies and logarithmic plotting; minimum observed, 20 second-feet Aug. 11, 14, 28, 1934.

Remarks.- Records excellent except those for periods of ice effect, which are fair. Diurnal fluctuation at low flow by power plants above station.

Oct. 1 to Apr. 12

1.4	84	2.5	421	5.0	2,400
1.6	122	3.0	689	5.5	3,020
1.8	169	3.6	1,090	6.0	3,720
2.1	259	4.3	1,680	6.9	5,190

Apr. 13 to Sept. 30

1.2	57
1.4	86
1.6	122

Note.- Same as preceding table above 1.6 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	334	239	246	122	984	94	284	2,740	744	787	307	94
2	236	214	165	118	630	96	291	2,090	1,350	510	236	105
3	191	459	112	120	455	108	295	1,800	5,050	322	199	226
4	378	412	220	118	408	*120	314	2,070	1,990	239	174	142
5	654	338	182	116	295	130	368	2,690	1,110	191	156	111
6	472	249	164	112	249	135	1,510	3,720	808	187	144	93
7	299	202	155	110	*235	135	2,240	2,380	821	1,040	126	83
8	199	185	146	112	210	130	1,060	1,540	1,010	3,280	120	76
9	149	221	193	110	190	130	840	976	1,070	1,240	191	68
10	120	342	*341	102	170	130	683	726	769	720	154	68
11	102	295	993	108	160	125	1,730	591	574	469	133	64
12	103	500	547	118	150	124	5,190	574	489	692	118	61
13	692	435	886	106	140	130	2,320	1,040	385	843	109	85
14	376	338	608	102	145	170	1,300	1,140	458	536	100	93
15	249	273	372	135	145	640	1,160	769	2,050	469	101	77
16	188	220	249	190	140	580	1,020	654	1,160	394	120	72
17	154	202	215	165	135	420	867	707	756	326	105	70
18	297	208	190	145	130	320	701	689	552	311	96	63
19	977	182	160	*130	120	270	608	900	474	450	94	65
20	474	166	140	145	100	260	500	2,260	394	390	89	71
21	303	152	135	360	102	245	421	1,930	342	295	88	63
22	223	149	160	290	104	230	363	4,060	284	642	86	84
23	182	164	155	220	102	215	385	1,710	242	821	78	101
24	156	137	145	210	102	235	995	1,060	211	494	74	84
25	137	149	130	220	100	1,020	1,330	834	229	347	71	77
26	137	168	116	225	100	1,380	840	1,240	249	263	68	71
27	166	1,020	112	230	98	680	1,640	860	208	263	68	70
28	144	613	116	235	96	480	1,490	654	177	580	65	68
29	135	403	135	220	-	400	921	1,300	156	596	67	68
30	146	273	145	225	-	351	1,050	2,080	228	708	71	70
31	187	-	135	1,350	-	299	-	1,070	-	408	107	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	8,560	977	102	276	1.39	1.61
November	8,888	1,020	137	296	1.49	1.67
December	7,768	993	112	251	1.27	1.46
Calendar year 1946	98,908	1,890	34	271	1.37	18.60
January	6,269	1,350	102	202	1.02	1.18
February	5,995	984	96	214	1.08	1.13
March	9,782	1,380	94	316	1.60	1.84
April	32,716	5,190	284	1,091	5.51	6.15
May	46,854	4,060	574	1,511	7.63	8.80
June	24,340	5,050	156	811	4.10	4.57
July	18,811	3,280	187	607	3.07	3.53
August	3,715	307	65	120	.606	.70
September	2,543	226	61	84.8	.428	.48
Water year 1946-47	176,241	5,190	61	483	2.44	33.12

Peak discharge.- Apr. 12 (10 a.m.) 6,340 sec.-ft.; May 6 (1:30 p.m.) 5,330 sec.-ft.; May 22 (8:45 a.m.) 6,910 sec.-ft.; June 3 (11 a.m.) 7,590 sec.-ft.; July 8 (3 a.m.) 5,460 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 2, 3, 7, Dec. 17 to Jan. 31, Feb. 7 to Mar. 25, Mar. 27-29.

Bouquet River at Willsboro, N. Y.

Location.- Water-stage recorder, lat. 44°21'30", long. 73°23'50", at Willsboro, Essex County (revised), 2½ miles downstream from North Branch Bouquet River.
Drainage area.- 275 square miles.
Records available.- August and September 1904 (gage heights and discharge measurements only), August to November 1908, July 1923 to September 1947.
Average discharge.- 24 years (1923-47), 304 second-feet.
Extremes.- Maximum discharge during year, 5,420 second-feet Apr. 13; maximum gage height, 7.59 feet Feb. 1 (ice jam); minimum discharge, 73 second-feet (result of formation of anchor ice upstream) Nov. 24 (gage height, 2.41 feet).
1923-47: Maximum discharge, about 11,800 second-feet Oct. 1, 1924 (gage height, 10.85 feet), from rating curve extended above 4,600 second-feet by logarithmic plotting; minimum, 10 second-feet Nov. 26, 1941 (gage height, 1.87 feet).
Remarks.- Records good except those for periods of ice effect, which are fair. Occasional slight diurnal fluctuation at low flow by power plants above station.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Jan. 31				Feb. 1 to Sept. 30			
2.4	71	3.1	319	3.1	319	5.0	1,800
2.6	118	3.4	493	3.5	568	5.5	2,410
2.8	184	3.6	629	4.0	957	6.0	3,020
				4.5	1,400	6.8	4,150

Note.- Same as preceding table below 3.1 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	349	152	238	175	1,200	120	420	1,420	819	2,160	258	127
2	275	180	160	180	900	122	440	1,450	934	819	224	127
3	170	258	135	165	640	140	430	1,080	3,340	489	200	177
4	146	279	210	160	540	150	520	1,060	2,740	382	184	143
5	205	233	190	155	400	*165	700	1,790	1,310	330	177	121
6	196	192	165	155	*340	170	1,150	1,750	965	358	170	110
7	149	170	155	155	310	165	2,680	2,050	859	829	156	102
8	105	177	*145	160	280	165	1,670	1,510	1,040	1,660	149	92
9	97	180	177	155	250	160	1,220	991	1,510	957	163	95
10	90	208	233	145	230	160	982	748	999	612	174	92
11	88	212	396	150	215	155	1,470	634	811	460	140	92
12	88	362	368	160	200	155	4,010	568	891	705	134	90
13	335	346	351	150	190	160	3,810	590	590	811	134	102
14	336	264	450	140	195	290	1,580	664	640	513	130	110
15	200	233	260	150	195	640	1,320	527	1,930	460	134	97
16	152	204	200	185	190	800	1,210	454	1,310	363	146	92
17	130	184	225	225	175	560	1,130	454	843	324	143	88
18	184	177	230	205	170	430	974	434	671	346	127	86
19	506	170	210	165	160	360	867	480	717	422	140	88
20	366	163	180	*150	135	350	733	589	634	374	160	92
21	238	156	170	270	140	330	634	1,090	513	289	140	92
22	188	156	200	360	140	300	540	1,730	422	334	124	110
23	170	163	195	290	135	280	534	1,450	341	756	118	130
24	149	133	185	270	135	330	619	827	314	546	110	110
25	134	149	170	280	135	1,500	1,070	664	398	368	100	100
26	140	181	155	290	130	1,550	764	1,200	466	284	95	95
27	163	615	145	300	125	1,060	747	949	410	305	92	95
28	160	546	145	310	122	740	1,210	679	319	575	95	92
29	143	351	170	290	-	580	740	1,180	269	440	95	88
30	143	256	180	290	-	500	649	2,130	550	352	97	92
31	149	-	185	490	-	440	-	1,230	-	304	137	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	5,944	506	88	192	0.698	0.80
November	7,048	615	133	235	.855	.95
December	6,578	450	135	212	.771	.89
Calendar year 1946	94,676	2,570	50	259	.942	12.80
January	6,705	490	140	216	.785	.91
February	7,977	1,200	122	285	1.04	1.08
March	13,027	1,550	120	420	1.53	1.76
April	34,823	4,010	420	1,161	4.22	4.71
May	32,372	2,130	434	1,044	3.80	4.38
June	27,555	3,340	269	918	3.34	3.73
July	18,027	2,160	289	582	2.12	2.44
August	4,444	256	92	143	.520	.60
September	3,127	177	86	104	.378	.42
Water year 1946-47	167,627	4,010	86	459	1.67	22.67

Peak discharge.- Apr. 7 (11:45 a.m.) 3,120 sec.-ft.; Apr. 13 (1:45 a.m.) 5,420 sec.-ft.; May 7 (2:30 a.m.) 2,530 sec.-ft.; May 30 (12:15 p.m.) 2,480 sec.-ft.; June 3 (10 p.m.) 4,410 sec.-ft.; July 1 (6:45 a.m.) 3,140 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 2-8, Dec. 15 to Apr. 5 (doubtful gage-height record Jan. 1-4, Feb. 7-22).

Lake George at Rogers Rock, N. Y.

Location.- Water-stage recorder, lat. 43°48'10", long. 73°27'25", about 500 feet north of Hooper's dock, on south side of Stones Bay, Rogers Rock, Essex County. Datum of gage is 315.93 feet above mean sea level, adjustment of 1912.

Records available.- July 1913 to September 1947.

Extremes.- Maximum gage height during year, 4.81 feet June 6; minimum, 1.74 feet Dec. 28. 1913-47: Maximum gage height observed, 5.09 feet Apr. 9, 1936; minimum, 0.64 foot Dec. 20, 1941.

Remarks.- Elevation of lake surface regulated by power plant and flood gates at Ticonderoga. Lake George has been controlled by a dam at its outlet for more than 100 years.

Gage height, in feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.85	2.49	2.12	1.93	2.29	2.35	3.21	3.75	4.05	3.87	3.56	3.05
2	2.77	2.47	2.10	1.98	2.35	2.35	3.20	3.79	4.00	3.89	3.55	3.07
3	2.72	2.50	2.11	1.96	2.37	2.51	3.22	3.81	4.40	3.85	3.53	3.04
4	2.71	2.51	2.07	2.02	2.39	2.50	3.24	3.84	4.69	3.82	3.53	3.03
5	2.70	2.47	2.04	2.04	2.45	2.49	3.28	3.93	4.75	3.86	3.51	2.99
6	2.69	2.45	2.02	1.99	2.43	2.47	3.36	4.05	4.69	3.87	3.50	2.97
7	2.68	2.42	2.02	2.03	2.44	2.46	3.53	4.11	4.62	3.85	3.48	2.96
8	2.56	2.41	2.00	1.98	2.49	2.44	3.58	4.16	4.63	3.81	3.46	2.86
9	2.60	2.39	2.00	2.96	2.55	2.45	3.66	4.12	4.60	3.82	3.40	2.90
10	2.58	2.39	1.99	1.93	2.54	2.44	3.72	4.08	4.58	3.83	3.40	2.89
11	2.57	2.39	1.98	1.96	2.52	2.43	3.80	4.05	4.55	3.83	3.42	2.88
12	2.58	2.41	2.01	1.94	2.49	2.43	3.93	4.02	4.52	3.82	3.39	2.87
13	2.59	2.38	2.03	1.94	2.49	2.42	3.99	3.92	4.45	3.85	3.37	2.79
14	2.58	2.35	2.02	1.95	2.48	2.53	4.02	3.87	4.46	3.84	3.35	2.80
15	2.57	2.30	1.98	1.98	2.47	2.62	3.99	3.90	4.53	3.83	3.31	2.80
16	2.58	2.32	1.94	2.00	2.46	2.68	3.97	3.90	4.49	3.83	3.27	2.76
17	2.48	2.32	2.01	2.02	2.46	2.72	4.00	3.85	4.45	3.83	3.31	2.71
18	2.57	2.26	1.94	1.96	2.47	2.74	4.02	3.89	4.42	3.85	3.32	2.71
19	2.59	2.27	1.91	1.94	2.44	2.74	3.94	3.91	4.38	3.81	3.30	2.58
20	2.56	2.25	1.89	1.99	2.42	2.73	3.92	3.95	4.33	3.78	3.29	2.60
21	2.58	2.21	1.93	2.09	2.40	2.72	3.82	3.95	4.28	3.78	3.29	2.66
22	2.57	2.24	1.98	2.08	2.42	2.75	3.85	4.00	4.22	3.74	3.25	2.61
23	2.56	2.19	1.98	2.06	2.42	2.76	3.85	3.99	4.17	3.81	3.27	2.55
24	2.55	2.19	1.99	2.09	2.42	2.79	3.83	3.94	4.11	3.80	3.25	2.54
25	2.57	2.19	1.94	2.10	2.41	2.91	3.77	3.93	4.11	3.76	3.24	2.37
26	2.54	2.13	1.93	2.12	2.41	3.05	f3.78	3.96	4.05	3.73	3.15	2.39
27	2.54	2.20	1.90	2.15	2.38	3.10	f3.79	3.89	4.00	3.71	3.17	2.36
28	2.53	2.19	1.91	2.19	2.36	3.11	3.80	3.88	3.95	3.72	3.18	2.34
29	2.56	2.16	1.99	2.18	-	3.15	3.79	3.93	3.91	3.67	3.05	2.35
30	2.55	2.14	2.01	2.20	-	3.20	3.77	4.09	3.86	3.68	3.11	2.26
31	2.54	-	2.00	2.27	-	3.20	-	4.06	-	3.65	3.07	-

f Fragmentary gage-height record; gage heights interpolated.

Monthly gage height, in feet, water year October 1946 to September 1947

Month	Maximum	Minimum	Mean
October	2.85	2.48	2.60
November	2.51	2.13	2.32
December	2.12	1.89	1.99
Calendar year 1946	3.96	1.89	3.18
January	2.27	1.93	2.03
February	2.55	2.29	2.44
March	3.20	2.35	2.69
April	4.02	3.20	3.72
May	4.16	3.75	3.95
June	4.75	3.86	4.34
July	3.89	3.65	3.80
August	3.56	3.05	3.33
September	3.07	2.26	2.72
Water year 1946-47	4.75	1.89	3.00

Lake George Outlet at Ticonderoga, N. Y.

Location.- Water-stage recorder and concrete control on river channel, lat. 43°50'35", long. 73°26'00", at Ticonderoga, Essex County, 250 feet downstream from "C" Mill dam of International Paper Co., 250 feet upstream from Trout Brook, and half a mile downstream from upper dam ("A" Mill dam) of International Paper Co. Turbine gate-opening recorder, 250 feet upstream, on tailrace. Datum of gage on river channel is 190.41 feet above mean sea level, datum of 1929.

Drainage area.- 234 square miles.

Records available.- October 1942 to September 1947. August 1904 to December 1905 at site at "B" Mill, 2,000 feet upstream.

Extremes (regulated).- Maximum daily discharge during year, 1,290 second-feet June 5, 6; minimum daily, 7.2 second-feet Dec. 25.
1942-47: Maximum daily discharge, that of June 5, 6, 1947; minimum daily, that of Dec. 25, 1946.

Remarks.- Records excellent. Discharge in tailrace determined from rating for turbine gates developed from discharge measurements. Records represent total discharge from Lake George and include flow in river channel and in tailrace. Flow regulated by Lake George and three power plants.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	277	263	126	206	177	254	305	392	943	483	306	17
2	273	262	197	206	64	88	295	390	948	321	304	224
3	272	89	251	211	175	198	295	448	952	261	121	270
4	272	209	237	209	208	249	297	225	1,150	73	241	269
5	272	262	247	70	210	250	303	497	1,290	100	289	269
6	114	261	247	131	231	250	178	910	1,290	194	274	267
7	226	261	246	216	251	248	301	1,050	1,260	407	289	220
8	269	261	83	217	251	245	354	1,070	1,180	370	276	248
9	271	261	203	209	85	89	358	1,060	1,230	320	265	271
10	271	87	236	210	197	195	361	1,050	1,250	294	94	265
11	268	238	236	212	253	247	396	966	1,250	301	216	264
12	247	271	229	70	253	247	652	1,010	1,250	301	263	264
13	100	269	223	167	252	248	839	962	1,220	203	263	263
14	204	268	218	212	252	258	1,010	929	1,220	261	286	272
15	268	267	79	219	252	262	1,010	826	1,190	292	278	258
16	269	267	183	215	91	87	991	499	1,180	295	278	257
17	269	92	233	203	210	202	1,020	327	1,190	293	96	252
18	272	209	227	206	288	290	1,020	203	1,170	301	229	244
19	266	266	234	76	263	308	999	297	1,150	291	278	243
20	92	266	235	167	258	308	936	345	1,140	190	268	241
21	206	265	236	206	258	311	919	481	1,130	264	272	217
22	260	264	102	229	258	308	940	877	1,140	310	277	228
23	260	264	185	206	96	173	801	1,020	1,130	314	272	238
24	263	147	144	207	206	276	708	980	1,100	317	98	242
25	258	225	7.2	205	260	317	556	845	1,110	317	227	247
26	263	248	191	68	254	260	424	939	1,100	314	272	242
27	90	241	244	161	254	259	232	650	1,080	229	272	238
28	206	240	241	213	254	259	372	370	1,030	278	269	196
29	263	243	99	212	-	259	439	357	913	308	278	218
30	263	244	195	210	-	134	434	804	803	306	271	227
31	263	-	218	198	-	250	-	1,040	-	306	87	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	7,367	277	90	238	-	-
November	7,010	271	87	234	-	-
December	6,032.2	251	7.2	195	-	-
Calendar year 1946	113,934.2	1,010	7.2	312	1.33	18.09
January	5,747	229	68	185	-	-
February	6,061	288	64	216	-	-
March	7,329	317	87	236	-	-
April	17,745	1,020	178	592	-	-
May	21,819	1,070	203	704	-	-
June	33,989	1,290	803	1,133	-	-
July	8,825	488	73	285	-	-
August	7,509	306	87	242	-	-
September	7,171	272	17	239	-	-
Water year 1946-47	136,604.2	1,290	7.2	374	1.60	21.69

Note.- No gage-height record for river channel Nov. 17 to Dec. 6; discharge computed on basis of flow over "C" Millpond spillway. No gate-opening record Oct. 15-18, Sept. 16-17; discharge computed on basis of reconstructed gate-opening graph, and graphs for "C" Mill pond and river channel gages.

Poultney River below Fair Haven, Vt.

Location.- Water-stage recorder, lat. 43°37'40", long. 73°18'50", a third of a mile downstream from Carver Falls, 1.9 miles upstream from Hubbardton River, and 3¼ miles northwest of Fair Haven, Rutland County.

Drainage area.- 187 square miles.

Records available.- October 1928 to September 1947.

Average discharge.- 19 years, 250 second-feet.

Extremes.- Maximum discharge during year, 6,190 second-feet June 3 (gage height, 16.89 feet), from rating curve extended above 2,400 second-feet on basis of computations of flow over dam at gage heights 16.10, 21.40, and 24.36 feet; minimum, 10 second-feet (regulated) Sept. 30; minimum daily, 17 second-feet (regulated) Sept. 27.
1928-47: Maximum discharge, 14,800 second-feet July 20, 1945 (gage height, 24.36 feet, from high-water mark in gage well), from rating curve extended above 1,900 second-feet by method explained above; minimum, 2.3 second-feet (regulated) July 18, 1937; minimum daily, 2.9 second-feet (regulated) Oct. 13, 1935.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by power plant above station and by Lake Bomoseen.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	269	99	152	75	1,200	105	533	255	465	188	96	25
2	240	83	168	94	700	105	546	262	453	230	87	80
3	171	108	106	94	540	170	622	184	4,090	156	72	63
4	146	127	139	85	540	153	557	214	3,230	152	101	73
5	131	117	152	75	680	181	673	332	1,740	142	80	65
6	99	109	140	115	380	181	a800	418	1,250	148	102	31
7	110	106	76	105	410	188	a940	463	968	148	91	29
8	77	112	97	105	380	171	a880	968	909	140	94	68
9	80	89	123	100	260	185	a780	774	788	145	71	74
10	113	84	107	a90	260	169	a690	625	665	139	37	75
11	111	126	125	a80	260	a150	687	407	579	103	84	70
12	78	173	126	a65	260	189	993	343	649	161	79	70
13	41	182	132	a105	280	a200	766	359	552	183	90	20
14	102	157	156	a100	290	a750	600	392	562	126	73	23
15	100	151	*75	a105	a320	*2,340	614	348	695	130	74	60
16	100	164	136	a125	280	1,540	557	342	560	116	94	77
17	105	109	107	a175	260	890	668	257	495	155	103	52
18	143	146	106	a180	250	604	576	249	451	188	76	63
19	163	113	96	a110	220	461	490	251	472	166	87	65
20	147	108	96	170	210	449	381	265	426	184	88	18
21	110	111	82	500	200	502	376	291	413	142	80	19
22	92	144	82	400	200	566	360	703	383	172	82	73
23	109	117	128	310	200	488	340	697	320	256	57	62
24	126	103	118	290	190	762	297	541	304	207	26	50
25	110	137	88	310	190	a1,500	259	465	418	182	86	57
26	53	123	120	340	190	a1,350	240	484	371	181	82	60
27	71	184	90	580	180	898	218	402	400	134	84	17
28	96	188	100	650	170	783	222	396	275	226	80	20
29	110	177	92	520	-	689	190	502	212	162	90	60
30	106	132	110	440	-	611	177	872	196	145	59	56
31	107	-	105	1,000	-	538	-	599	-	129	22	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	3,616	269	41	117	0.626	0.72
November	3,879	188	83	129	.690	.77
December	3,530	168	75	114	.610	.70
Calendar year 1946	70,953	2,600	16	194	1.04	14.10
January	7,493	1,000	65	242	1.29	1.49
February	9,480	1,200	170	339	1.81	1.89
March	17,868	2,340	105	576	3.08	3.55
April	16,032	993	177	534	2.86	3.19
May	13,660	968	184	441	2.36	2.72
June	23,291	4,090	196	776	4.15	4.63
July	5,036	256	103	162	.866	1.00
August	2,427	103	22	78.3	.419	.48
September	1,575	80	17	52.5	.281	.31
Water year 1946-47	107,887	4,090	17	296	1.58	21.45

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of weather records, recorded range in stage, power-plant records, and records for Otter Creek at Center Rutland.
Note.- Stage-discharge relation affected by ice Dec. 26 to Mar. 3.

Otter Creek at Center Rutland, Vt.

Location.- Water-stage recorder, lat. 43°36'15", long. 73°00'50", at highway bridge in Center Rutland, Rutland County, 200 feet downstream from dam, 1.2 miles downstream from East Creek, and 1½ miles west of Rutland.

Drainage area.- 307 square miles.

Records available.- May 1928 to September 1947.

Average discharge.- 19 years, 554 second-feet.

Extremes.- Maximum discharge during year, 10,100 second-feet June 3 (gage height, 11.51 feet), from rating curve extended above 2,700 second-feet on basis of computation of flow over dam at peak stage; minimum daily, 45 second-feet (regulated) Sept. 21.

1928-47: Maximum discharge, 13,700 second-feet Sept. 22, 1938 (gage height, 12.45 feet), by computation of flow over dam; minimum daily, that of Sept. 21, 1947.

Revisions.- The maximum discharge and gage height for the water year 1929 have been revised to 5,630 second-feet Apr. 26, 1929 (gage height, 8.45 feet, from graph based on gage readings), superseding figures published in Water-Supply Paper 684.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by power plants and by Chittenden and East Pittsford Reservoirs on East Creek.

Revisions.- Revised figures of discharge, in second-feet, for high-water periods in the water year 1929, superseding those published in Water-Supply Paper 684, are given herewith:

Mar. 16	4,140	Apr. 30	3,810
Apr. 26	4,690	Sept. 10	1,740
27	4,910	11	1,540
29	4,140	15	1,330

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
March	4,140	213	1,380	4.50	5.19
April	4,910	819	1,970	6.42	7.16
September	1,740	62	413	1.35	1.51
Water year 1928-29	4,910	62	676	2.20	29.92
Calendar year 1929	4,910	62	666	2.17	29.50

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1, Jan. 21, 31, Feb. 1, Mar. 14-16, Apr. 7, 8, 12)

Oct. 1 to Apr. 12				Apr. 13 to Sept. 30					
1.0	161	3.0	880	0.15	43.	1.2	220	4.0	1,690
1.3	230	4.0	1,440	.2	48	1.6	332	5.0	2,460
1.6	314	5.0	2,120	.3	58	1.8	405	6.5	3,840
2.0	450	6.0	2,890	.5	84	2.4	680	8.5	6,050
2.5	645	7.1	3,880	.8	133	3.0	1,020		

Discharge, in second-feet, of Otter Creek at Center Rutland, Vt., water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,130	259	255	189	1,710	287	1,000	1,820	918	481	245	80
2	765	237	314	250	961	260	1,000	1,790	1,060	746	226	98
3	643	368	228	310	703	315	1,050	1,420	4,910	437	208	97
4	716	421	293	260	718	336	1,100	1,210	5,800	342	199	94
5	657	327	309	220	897	375	1,250	1,430	2,750	295	190	90
6	468	304	296	290	797	374	1,900	1,420	1,670	279	184	75
7	390	278	219	270	649	370	2,320	1,600	1,430	260	166	62
8	321	309	189	270	612	338	2,260	1,980	1,620	265	157	83
9	277	341	314	270	447	268	1,800	1,670	1,610	265	160	92
10	256	290	339	250	517	361	1,500	1,240	1,330	262	148	110
11	245	334	474	185	548	342	1,600	936	1,190	418	151	109
12	166	504	413	178	504	347	3,880	918	1,870	316	137	102
13	184	455	554	250	474	378	5,090	822	1,460	332	134	82
14	311	401	*513	240	493	*1,240	3,040	948	1,400	273	130	66
15	259	376	270	301	*467	3,110	2,240	798	1,960	391	130	87
16	243	283	290	552	366	2,590	1,940	680	1,680	450	150	88
17	245	240	290	530	440	1,600	1,750	680	1,340	353	184	78
18	341	343	320	395	412	1,300	1,530	576	1,240	336	164	71
19	752	295	290	*317	416	1,150	1,420	680	1,270	485	146	80
20	437	291	240	429	348	1,100	1,160	680	1,180	660	138	70
21	387	289	215	1,200	359	1,050	1,110	705	1,160	371	125	45
22	333	324	318	923	297	1,000	1,000	1,370	996	500	120	106
23	301	312	404	594	257	1,000	918	1,350	781	924	101	100
24	272	225	386	566	273	1,200	1,010	966	828	606	88	92
25	272	316	253	778	318	1,800	1,380	755	1,350	405	101	99
26	219	341	290	851	312	1,700	1,190	1,370	1,060	314	121	88
27	212	485	270	939	331	1,500	1,130	1,150	1,180	254	106	77
28	285	436	270	872	321	1,350	1,420	864	798	467	102	63
29	257	363	184	763	-	1,200	1,090	970	610	469	98	85
30	268	306	270	635	-	1,100	1,080	1,730	504	333	89	100
31	285	-	310	1,540	-	1,050	-	1,400	-	278	88	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches	Change in reservoir contents†
October	11,897	1,130	166	384	1.25	1.44	-8.81
November	10,053	504	225	335	1.09	1.22	-4.24
December	9,578	554	184	309	1.01	1.16	-18.2
Calendar year 1946	170,178	3,850	70	466	1.52	20.62	-4.80
January	15,617	1,540	178	504	1.64	1.89	-18.2
February	14,947	1,710	257	534	1.74	1.81	-19.2
March	30,391	3,110	260	980	3.19	3.68	-8.77
April	50,158	5,090	918	1,672	5.45	6.08	+107
May	35,928	1,980	576	1,159	3.78	4.35	+82.5
June	46,955	5,800	504	1,565	5.10	5.69	-319
July	12,567	924	254	405	1.32	1.52	-17.4
August	4,486	245	88	145	.472	.54	-27.2
September	2,569	110	45	85.6	.279	.31	-19.6
Water year 1946-47	245,146	5,800	45	672	2.19	29.69	-22.3

Peak discharge.- Mar. 15 (6 p.m.) 4,050 sec.-ft.; Apr. 12, 13 (11 p.m. to 1 a.m.) 5,980 sec.-ft.; June 3 (10 p.m.) 10,100 sec.-ft.

* Winter discharge measurement made on this day.

† Change in contents, equivalent in second-feet, in Chittenden and East Pittsford Reservoirs.

Note.- No gage-height record Mar. 17 to Apr. 6, Apr. 9-11, Sept. 21; discharge computed on basis of 1 discharge measurement, weather records, recorded upper limit of range in stage, and records for Otter Creek at Middlebury, White River near Bethel, and East Creek at Rutland. Stage-discharge relation affected by ice Dec. 15-20, 26-28, 30, 31, Jan. 2-11, 13, 14, Mar. 2, 3.

Otter Creek at Middlebury, Vt.

Location.- Water-stage recorder, lat. 44°00'45", long. 73°10'05", 150 feet upstream from highway bridge in Middlebury, Addison County, and 3½ miles downstream from Middlebury River.

Drainage area.- 628 square miles.

Records available.- April 1903 to May 1907, October 1910 to January 1920, October 1928 to September 1947.

Average discharge.- 31 years (1903-6, 1910-19, 1928-47), 986 second-feet.

Extremes.- Maximum discharge during year, 4,770 second-feet June 8 (gage height, 6.13 feet); minimum, 148 second-feet Sept. 22.
1903-7, 1910-20, 1928-47: Maximum discharge, 11,000 second-feet Mar. 20, 21, 1936 (gage height, 10.3 feet); minimum, 93 second-feet Mar. 5, 1929.
Maximum discharge known, 13,600 second-feet Nov. 4, 1927 (gage height, 13.3 feet, present datum, at chain-gage site, 1,800 feet upstream), from rating curve extended above 9,000 second-feet by logarithmic plotting.

Remarks.- Records good. Some regulation by Chittenden and East Pittsford Reservoirs on East Creek.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,600	580	636	540	2,000	640	2,480	1,820	2,170	1,010	636	183
2	1,850	545	580	461	2,010	570	2,220	1,990	2,290	1,040	580	187
3	1,750	720	517	489	2,000	520	2,060	2,040	3,480	1,100	482	228
4	1,640	797	587	566	1,950	550	2,000	2,020	3,630	885	381	219
5	1,520	804	580	552	1,920	622	1,980	2,060	3,580	692	475	200
6	1,280	706	573	489	1,840	685	2,170	2,090	3,950	622	412	185
7	960	636	559	510	1,730	706	2,480	2,130	4,540	777	376	173
8	776	615	524	538	1,600	706	2,440	2,350	4,740	2,210	358	187
9	671	643	482	540	1,380	643	2,520	2,350	4,600	1,700	358	197
10	594	685	650	530	1,140	580	2,590	2,360	4,300	1,220	314	197
11	545	685	840	500	1,120	657	2,740	2,310	3,960	990	252	192
12	510	1,040	848	420	1,070	692	3,090	2,140	3,780	975	300	192
13	538	1,100	811	350	1,000	720	3,150	1,910	3,530	1,100	296	187
14	475	960	892	454	982	1,090	3,110	1,660	3,420	1,040	271	173
15	566	855	811	531	982	2,120	3,220	1,510	3,400	892	263	175
16	559	755	*545	804	*930	*2,220	3,470	1,270	3,220	900	242	185
17	524	636	503	1,020	800	2,300	3,650	1,140	3,090	990	267	200
18	650	566	640	998	800	2,460	3,690	1,080	2,970	832	263	208
19	1,080	622	610	804	830	2,700	3,570	1,080	2,840	811	292	205
20	1,180	615	520	699	830	3,000	3,420	1,260	2,730	892	271	178
21	922	587	524	1,150	810	3,280	3,190	1,580	2,610	930	252	156
22	797	580	559	1,550	740	3,310	3,010	1,910	2,480	885	239	175
23	713	622	566	1,450	610	3,050	2,820	2,180	2,290	1,190	217	228
24	857	559	685	1,300	545	2,900	2,610	2,130	2,050	1,300	200	228
25	608	517	657	1,350	629	3,040	2,420	2,010	2,090	1,040	211	203
26	643	573	510	1,550	664	3,040	2,240	1,870	2,110	797	292	208
27	643	915	500	1,720	664	2,940	2,070	1,870	2,080	650	263	203
28	538	997	460	1,820	657	2,940	1,940	1,750	1,940	797	228	171
29	573	862	480	1,810	-	2,920	1,850	1,690	1,830	939	205	169
30	615	734	450	1,710	-	2,850	1,700	2,320	1,270	848	197	205
31	622	-	550	1,930	-	2,690	-	2,210	-	715	240	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches	Change in reservoir contents†
October	26,579	1,850	475	857	1.36	1.57	-8.81
November	21,511	1,100	517	717	1.14	1.27	-4.24
December	18,649	892	450	602	.959	1.10	-18.2
Calendar year 1946	335,450	4,690	195	919	1.46	19.85	-4.80
January	29,135	1,930	350	940	1.50	1.73	-18.2
February	32,233	2,010	545	1,151	1.83	1.91	-19.2
March	57,141	3,310	520	1,843	2.93	3.38	-8.77
April	79,880	3,690	1,700	2,663	4.24	4.73	+107
May	58,070	2,360	1,080	1,873	2.98	3.44	+82.5
June	90,750	4,740	1,270	3,025	4.82	5.37	-319
July	30,766	2,210	622	992	1.58	1.82	-17.4
August	9,633	636	197	311	.495	.57	-27.2
September	5,797	228	156	193	.307	.34	-19.6
Water year 1946-47	460,144	4,740	156	1,261	2.01	27.23	-22.3

* Winter discharge measurement made on this day.
† Change in contents, equivalent in second-feet, in Chittenden and East Pittsford Reservoirs.
Note.- Stage-discharge relation affected by ice Dec. 18-20, Dec. 26 to Jan. 1, Jan. 9-13, 22-26, Feb. 12, 13, 17-23, Mar. 1-4.

East Creek at Rutland, Vt.

Location.- Water-stage recorder, lat. 43°37'40", long. 72°59'20", at Rutland, Rutland County, on grounds of Rutland Country Club, 280 feet downstream from Grove Street covered bridge and 2 miles upstream from mouth.
Drainage area.- 51.1 square miles.
Records available.- August 1940 to September 1947.
Extremes.- Maximum discharge during year, 36,500 second-feet June 3 (gage height, 20.3 feet, from high-water mark in gage house), mean of two slope-area determinations; minimum daily, 12 second-feet (regulated) Sept. 6, 7.
1940-47: Maximum discharge, that of June 3, 1947; minimum daily, 9.6 second-feet (regulated) Nov. 26, 1944.
Remarks.- Records excellent except those below 30 second-feet, those above 500 second-feet, and those for periods of shifting control, which are good, and those for periods of no gage-height record, which are fair. Diversion above station from Mendon Brook for municipal supply of Rutland. Flow regulated by power plants and prior to June 3 by Chittenden and East Pittsford Reservoirs (combined usable capacity, 969,800,000 cubic feet), after June 3 by Chittenden Reservoir (capacity, 819,800,000 cubic feet)

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet (Shifting-control method used June 4 to Sept. 30)

0.9	14	1.3	53	1.8	177	5.0	1,970
1.0	21	1.4	69	2.1	282	7.0	3,370
1.1	30	1.5	89	2.5	435	7.5	3,810
1.2	40	1.6	114	3.0	680	8.1	4,600

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	210	105	18	16	144	96	150	230	115	100	78	15
2	149	75	117	99	39	79	165	154	296	170	73	34
3	133	50	100	119	141	141	164	146	4,490	90	70	28
4	152	95	108	45	143	145	175	97	1,470	80	74	29
5	81	125	115	19	173	163	127	154	762	70	90	28
6	51	110	108	110	135	158	207	133	620	64	63	12
7	98	100	37	92	97	160	284	145	610	61	61	12
8	100	130	17	89	90	135	160	247	645	61	56	16
9	93	70	130	108	24	72	120	178	605	61	54	33
10	93	18	99	99	134	154	133	156	575	70	45	38
11	94	85	112	31	134	141	231	58	580	99	48	37
12	16	125	113	16	148	145	583	147	645	95	35	38
13	36	110	133	106	147	146	276	130	575	70	38	20
14	125	120	38	100	145	323	223	136	635	60	36	15
15	100	125	19	109	112	297	224	106	610	82	41	43
16	115	40	116	156	20	154	222	99	555	92	18	36
17	110	18	107	70	130	180	140	101	518	77	22	27
18	150	129	100	35	140	118	175	44	504	72	45	27
19	110	96	103	34	140	144	170	107	495	110	41	32
20	15	102	99	143	136	144	70	98	464	130	42	17
21	109	102	44	243	132	145	141	102	423	80	38	15
22	107	129	36	136	75	132	147	255	392	100	35	46
23	95	63	137	117	30	38	125	239	344	170	17	31
24	90	18	107	118	88	164	110	191	332	120	15	32
25	70	118	20	93	98	307	100	118	264	80	45	39
26	28	135	137	50	107	222	81	192	200	80	41	28
27	16	117	149	178	112	168	70	182	220	70	34	24
28	120	49	116	137	119	145	121	176	140	220	33	17
29	140	70	16	133	-	121	64	217	130	105	16	40
30	90	64	95	127	-	36	134	206	110	85	20	43
31	110	-	129	368	-	130	-	205	-	76	19	-

Month	Observed				Change in contents and diversion (equivalent, second-feet)†	Adjusted		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Runoff in inches
October	3,006	210	15	97.0	-3.88	93.1	1.82	2.10
November	2,693	135	18	89.8	+.69	90.5	1.77	1.98
December	2,775	149	16	89.5	-13.3	76.2	1.49	1.72
Calendar year 1946	36,416	654	14	99.8	+.30	100	1.96	26.59
January	3,296	368	16	106	-13.3	93.0	1.82	2.10
February	3,133	173	20	112	-14.3	97.6	1.91	1.99
March	4,703	323	36	152	-3.85	148	2.90	3.34
April	5,092	583	64	170	+111	281	5.50	6.14
May	4,749	255	44	153	+87.4	241	4.72	5.43
June	18,324	4,490	110	611	-317	294	5.75	6.42
July	2,900	220	60	93.5	-12.4	81.1	1.59	1.83
August	1,343	90	15	43.3	-22.3	21.1	.413	.48
September	852	46	12	28.4	-14.7	13.7	.268	.30
Water year 1946-47	52,866	4,490	12	145	-17.5	127	2.49	33.83

† Change in contents in Chittenden and East Pittsford Reservoirs and diversion from Mendon Brook for municipal supply of Rutland.

Note.- No gage-height record Oct. 15-19, Oct. 23 to Nov. 16, June 26 to Aug. 6, Aug. 16 to Sept. 20; discharge computed on basis of 4 discharge measurements, recorded range in stage, weather, reservoir and power-plant records, and records for Otter Creek at Center Rutland and White River near Bethel.

Winooski River at Montpelier, Vt.

Location.- Water-stage recorder, lat. 44°15'25", long. 72°35'35", three-eighths of a mile upstream from Dog River and 1 mile downstream from depot in Montpelier, Washington County. Datum of gage is 499.99 feet above mean sea level, datum of 1929.
Drainage area.- 397 square miles.
Records available.- May 1909 to September 1923, August 1928 to September 1947.
Average discharge.- 28 years (1914-23, 1928-47), 599 second-feet (adjusted for change in reservoir contents since October 1938).
Extremes.- Maximum discharge during year, 11,300 second-feet June 3 (gage height, 13.90 feet), from rating curve extended above 6,900 second-feet on basis of computations of flow over dam at gage heights 13.90 and 14.11 feet and slope-area determination at gage height 13.90 feet; minimum daily, 64 second-feet (regulated) Sept. 14.

1909-23, 1928-47: Maximum discharge, 20,200 second-feet Apr. 7, 1912 (gage height, about 16.7 feet, present datum), from rating curve extended above 6,900 second-feet on basis of slope-area determination at gage height 27.1 feet; minimum, 6 second-feet (regulated) Sept. 30, 1921 (gage height, 2.58 feet); minimum daily, 17 second-feet (regulated) Sept. 3, 1933.

Maximum discharge known, 57,000 second-feet Nov. 3, 1927 (gage height, 27.1 feet), by slope-area method.

Remarks.- Records excellent except those for period of ice effect, which are fair. Flow regulated by several small power plants above station, by Peacham Pond and Mollys Falls Reservoir (combined usable capacity, 492,000,000 cubic feet) which regulate runoff from 24 square miles, and by East Barre and Wrightsville Detention Reservoirs (combined usable capacity, 1,379,500,000 cubic feet; see p. 262).

Rating tables, water year 1946-47, except period of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 10				Dec. 11 to Sept. 30					
3.6	203	5.0	1,030	3.0	64	3.7	253	6.5	2,470
3.8	276	5.6	1,540	3.1	80	3.9	340	8.5	4,670
4.0	365	6.3	2,210	3.2	99	4.2	500	12.2	9,060
4.4	595			3.3	122	4.8	900		
				3.5	180	5.5	1,480		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,130	518	469	380	1,250	400	976	2,100	1,520	380	480	134
2	1,350	530	451	350	900	360	995	1,930	2,460	394	329	128
3	1,100	1,520	376	400	780	370	1,070	1,730	9,000	346	208	192
4	815	1,180	463	390	820	440	1,250	1,930	4,340	355	193	196
5	580	966	407	350	1,050	430	1,370	2,050	2,930	284	236	220
6	457	800	424	350	870	410	2,390	1,940	2,450	302	237	146
7	352	702	365	370	780	420	3,240	1,900	2,180	1,130	215	86
8	304	603	342	380	720	400	2,500	2,250	2,010	793	220	195
9	288	767	619	370	670	360	2,300	1,750	1,850	538	198	164
10	288	800	1,250	370	640	360	2,160	1,480	1,590	395	125	156
11	247	714	1,770	370	640	460	3,140	1,280	1,590	355	133	142
12	231	1,000	1,230	320	600	450	5,380	1,170	2,420	332	183	146
13	329	926	1,230	310	580	470	4,280	1,070	1,540	303	181	137
14	346	790	1,120	360	580	900	3,030	1,010	1,620	350	155	64
15	300	744	900	400	560	1,800	2,770	823	2,000	300	181	98
16	280	624	620	690	470	1,570	2,610	690	1,500	269	142	122
17	288	517	*590	600	460	1,210	2,520	725	1,290	273	122	132
18	608	*487	560	500	540	*978	2,340	655	1,160	322	139	106
19	1,180	487	480	400	*520	890	2,130	858	1,260	394	169	124
20	772	475	400	520	460	846	1,910	1,050	1,180	305	176	126
21	561	475	420	1,150	450	820	1,760	1,500	1,070	235	188	92
22	448	469	440	*910	440	865	1,610	1,620	888	439	176	116
23	397	621	450	720	440	837	1,490	1,540	730	1,030	154	185
24	354	435	490	650	420	1,090	1,620	1,090	667	682	97	145
25	346	424	420	900	440	2,780	1,730	837	980	432	125	140
26	356	523	320	950	430	2,610	1,520	876	988	330	184	148
27	397	846	350	900	440	1,820	1,480	789	868	231	171	143
28	365	868	370	880	450	1,580	1,530	669	592	464	160	70
29	348	674	380	840	-	1,240	1,380	1,250	468	551	158	110
30	522	529	370	760	-	1,080	1,450	2,720	420	412	137	125
31	589	-	390	1,200	-	952	-	1,810	-	386	107	-

Month	Observed				Change in contents (equivalent, second-feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Runoff in inches
October	16,928	2,130	231	546	-1.47	545	1.37	1.58
November	21,014	1,520	424	700	+6.70	707	1.78	1.99
December	18,466	1,770	320	596	-14.9	581	1.46	1.69
Calendar year 1946	235,641	6,600	18	646	-1.32	644	1.62	22.03
January	18,040	1,200	310	582	-15.7	566	1.43	1.64
February	17,400	1,250	420	621	-60.6	561	1.41	1.47
March	29,198	2,780	360	942	-25.7	916	2.31	2.66
April	63,931	5,380	976	2,131	+110	2,241	5.64	6.30
May	43,092	2,720	655	1,390	+93.7	1,484	3.74	4.31
June	53,561	9,000	420	1,785	-76.4	1,709	4.30	4.80
July	13,312	1,130	231	429	-4.45	425	1.07	1.23
August	5,679	480	97	183	-39.4	144	.363	.42
September	4,088	220	64	136	-37.3	98.9	.249	.28
Water year 1946-47	304,709	9,000	64	835	-5.06	830	2.09	28.37

Peak discharge.- Mar. 25 (7 p.m.) 4,430 sec.-ft.; Apr. 6 (8:30 p.m.) 4,150 sec.-ft.; Apr. 12 (12:30 p.m.) 5,970 sec.-ft.; May 30 (2:30 a.m.) 3,360 sec.-ft.; June 3 (12 m.) 11,300 sec.-ft.

* Winter discharge measurement made on this day.

† Change in contents in Peacham Pond, Mollys Falls Reservoir, and East Barre and Wrightsville Detention Reservoirs.

Note.- Stage-discharge relation affected by ice Dec. 15 to Mar. 14 (no gage-height record Dec. 27 to Jan. 21; discharge computed on basis of weather records, power-plant records, and records for other stations in basin).

Winooski River near Essex Junction, Vt.

Location.- Water-stage recorder, lat. 44°28'40", long. 73°08'20", half a mile downstream from Muddy Brook and 2 miles southwest of Essex Junction, Chittenden County.
Drainage area.- 1,044 square miles.
Records available.- October 1928 to September 1947.
Average discharge.- 19 years, 1,685 second-feet (adjusted for change in reservoir contents since October 1938).
Extremes.- Maximum discharge during year, 28,900 second-feet June 4 (gage height, 16.27 feet); minimum daily, 130 second-feet (regulated) Sept. 21.

1928-47: Maximum discharge, 45,300 second-feet Mar. 19, 1936 (gage height, 23.54 feet), from rating curve extended above 25,000 second-feet on basis of slope-area determination and computations of flow over dam at gage heights 18.72, 23.54, and 50.4 feet; minimum daily, 70 second-feet (regulated) Sept. 25, 1937.

Maximum discharge known, 113,000 second-feet Nov. 4, 1927 (gage height, 50.4 feet, from floodmarks), by slope-area determination and computation of flow over dam.

Remarks.- Records excellent except those for periods of ice effect, which are fair. Flow regulated by power plants above station, by Peacham Pond and Mollys Falls Reservoir (combined usable capacity, 492,000,000 cubic feet), by Waterbury Reservoir (see p. 267), and by East Barre and Wrightsville Detention Reservoirs (see p. 262)

Rating tables, water year 1946-47, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Jan. 31				Feb. 1 to Sept. 30					
1.3	505	3.1	2,450	0.4	125	1.7	800	6.0	8,400
1.7	780	3.7	3,500	.6	183	2.1	1,160	8.0	12,100
2.2	1,230	4.5	5,180	.8	256	2.5	1,630	10.0	16,000
2.6	1,690	5.1	6,380	1.0	350	3.0	2,380	12.1	20,200
				1.3	515	4.0	4,300		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,800	1,590	1,370	1,100	4,100	1,200	2,490	6,780	5,060	1,010	1,370	255
2	3,520	1,550	1,720	1,200	2,900	850	2,540	6,130	6,180	1,160	1,230	766
3	2,510	6,260	1,200	1,300	2,300	1,500	2,210	5,690	20,100	1,420	682	722
4	2,530	4,890	1,350	1,150	2,500	1,500	2,840	5,370	19,700	966	1,190	690
5	2,730	3,700	1,310	860	2,700	1,400	3,270	6,300	7,640	740	992	658
6	1,890	2,610	1,350	1,100	3,000	1,350	4,790	6,080	6,300	644	992	582
7	1,460	1,800	1,230	1,250	2,700	1,300	11,200	6,150	5,640	1,940	982	296
8	993	1,570	914	1,350	2,600	970	6,740	6,980	5,560	4,720	936	807
9	687	2,020	1,710	1,200	2,400	900	5,540	5,580	5,480	2,930	618	678
10	725	2,800	2,880	1,100	2,500	1,200	4,700	4,820	4,180	2,180	552	544
11	687	2,800	5,480	1,000	2,400	1,200	6,610	4,140	3,370	1,760	864	520
12	552	3,520	4,340	840	2,100	1,300	18,000	3,370	7,030	979	874	532
13	1,260	3,500	3,860	1,050	2,100	1,350	14,100	3,080	4,720	1,200	847	320
14	1,080	2,950	*3,220	1,150	1,900	1,800	6,820	2,890	3,480	1,240	811	158
15	956	2,780	2,610	1,000	1,500	5,400	5,770	2,430	5,750	1,200	780	578
16	823	1,960	1,730	1,150	1,300	5,200	*5,540	1,710	4,620	1,130	719	539
17	959	1,560	1,280	1,800	1,700	4,500	5,010	1,640	3,820	1,100	610	506
18	1,040	1,410	1,880	1,500	1,900	3,600	5,240	1,480	3,080	1,170	745	478
19	3,080	1,330	2,000	1,100	1,800	3,000	4,930	1,950	3,060	1,530	842	489
20	2,290	1,210	1,430	1,500	1,700	*2,600	4,400	2,340	3,100	1,760	800	213
21	1,620	1,330	1,070	2,400	1,600	2,650	4,040	4,550	2,850	1,220	611	130
22	1,250	1,330	1,110	3,200	1,700	2,900	3,720	5,350	2,670	1,050	754	516
23	1,160	1,720	1,250	2,000	1,650	2,520	3,520	5,060	2,370	1,500	502	664
24	1,150	1,550	1,350	1,650	1,600	3,120	3,860	3,620	1,620	1,840	482	586
25	1,050	1,180	1,350	1,700	1,500	6,950	4,780	2,890	2,720	1,370	778	516
26	1,140	1,250	1,100	3,000	1,600	9,600	3,500	3,100	3,400	992	776	490
27	1,430	2,700	1,400	2,700	1,500	5,700	3,310	2,840	2,560	904	868	225
28	1,180	2,850	1,400	2,700	1,400	4,500	4,100	1,930	1,800	1,520	782	184
29	1,270	2,400	900	2,500	-	3,700	3,620	3,290	1,360	1,820	745	445
30	1,430	1,700	1,150	1,900	-	2,850	3,620	12,700	1,580	1,390	548	421
31	1,730	-	1,300	3,600	-	2,280	-	5,690	-	1,310	422	-

Month	Observed				Change in contents (equivalent, second-feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Runoff in inches
October	48,882	4,800	552	1,577	+209	1,786	1.71	1.97
November	69,820	6,260	1,180	2,327	-15.0	2,312	2.21	2.47
December	56,244	5,480	900	1,814	-80.8	1,733	1.66	1.91
Calendar year 1946	651,941	17,000	77	1,786	-2.38	1,784	1.71	23.19
January	51,050	3,600	840	1,647	+40.5	1,687	1.62	1.86
February	58,650	4,100	1,300	2,095	-417	1,677	1.61	1.67
March	88,890	9,600	850	2,867	-187	2,681	2.57	2.96
April	160,810	18,000	2,210	5,360	+642	6,002	5.75	6.41
May	135,930	12,700	1,480	4,385	+133	4,517	4.33	4.99
June	150,800	20,100	1,360	5,027	-130	4,897	4.69	5.23
July	45,695	4,720	644	1,474	-7.61	1,466	1.40	1.62
August	24,904	1,370	422	803	-312	492	.471	.54
September	14,548	807	130	485	-166	319	.306	.34
Water year 1946-47	906,223	20,100	130	2,483	-22.2	2,461	2.36	31.97

Peak discharge.- Mar. 26 (4 a.m.) 13,200 sec.-ft.; Apr. 7 (7 a.m.) 13,500 sec.-ft.; Apr. 12 (8 p.m.) 20,900 sec.-ft.; May 30 (10:30 a.m.) 17,000 sec.-ft.; June 4 (2:30 a.m.) 28,900 sec.-ft.
* Winter discharge measurement made on this day.
† Change in contents in Peacham Pond, Mollys Falls Reservoir, East Barre and Wrightsville Detention Reservoirs, and Waterbury Reservoir.
Note.- Stage-discharge relation affected by ice Dec. 23 to Mar. 22, Mar. 26-29.

Reservoirs in Winooski River Basin above Montpelier, Vt.

East Barre Detention Reservoir.- Staff gage, lat. 44°09'20", long. 72°26'40", at reservoir on Jail Branch at East Barre, Washington County, 4½ miles upstream from mouth of Jail Branch. Datum of gage is 1,127.9 feet above mean sea level (levels by Corps of Engineers). Drainage area, 38.8 square miles. Records available, March and April 1936, September 1938 to September 1947. Maximum gage height observed during year, 19.0 feet Apr. 13; minimum observed, 0.2 foot Sept. 6, 7. Maximum gage height observed during period 1936, 1938-47, 36.0 feet Mar. 22, 1936; minimum observed, 0.1 foot several days in August and September 1939.

Reservoir is formed by earth-fill dam completed by Corps of Engineers in 1935 for flood control. Capacity of reservoir, 506,000,000 cubic feet between gage heights 0.0 foot (bottom of outlet opening) and 37.1 feet (crest of spillway). Dam has no gates; below gage height 37.1 feet outflow from reservoir is dependent on capacity of outlet opening, 4 feet square, near base of dam. Gage read once daily by employee of State of Vermont Water Conservation Board.

Wrightsville Detention Reservoir.- Staff gage, lat. 44°18'35", long. 72°34'30", at reservoir on North Branch Winooski River at Wrightsville, Washington County, a third of a mile downstream from Long Meadow Brook and 4¼ miles upstream from mouth. Datum of gage is 612.75 feet above mean sea level (levels by Corps of Engineers). Drainage area, 66.5 square miles. Records available, March and April 1936, September 1938 to September 1947. Maximum gage height observed during year, 46.0 feet Apr. 13; minimum observed, 0.4 foot Sept. 19-22. Maximum gage height during period 1936, 1938-47, 63.7 feet Mar. 22, 1936, from graph based on gage readings; minimum observed, 0.3 foot several days in August and September 1942, and Sept. 9, 1945.

Reservoir is formed by earth-fill dam completed by Corps of Engineers in 1935 for flood control. Capacity of reservoir, 873,500,000 cubic feet between gage heights 0.0 foot (bottom of outlet opening) and 72.25 feet (crest of spillway). Dam has no gates; below gage height 72.25 feet outflow from reservoir is dependent on capacity of outlet opening, 5½ feet square, near base of dam. Gage read once daily by employee of State of Vermont Water Conservation Board.

Gage height and contents, water year October 1946 to September 1947

Date	East Barre Detention Reservoir			
	Gage height (feet)†	Contents (millions of cubic feet)	Change in contents during month	
			Millions of cubic feet	Equivalent, second-feet
Sept. 30	12.5	26.4	-	-
Oct. 31	2.6	1.56	-24.84	-9.27
Nov. 30	3.0	1.86	+.30	+.12
Dec. 31	2.5	1.48	-.38	-.14
Calendar year 1946	-	-	+1.03	+.03
Jan. 31	4.8	3.58	+2.10	+.78
Feb. 28	1.9	1.05	-2.53	-1.05
Mar. 31	3.0	1.86	+.81	+.30
Apr. 30	7.5	7.57	+5.71	+2.20
May 31	7.9	8.33	+.76	+.28
June 30	1.7	.93	-7.40	-2.85
July 31	.9	.45	-.48	-.18
Aug. 31	.6	.30	-.15	-.06
Sept. 30	.7	.35	+.05	+.02
Water year 1946-47	-	-	-26.05	-.83

Date	Wrightsville Detention Reservoir			
Sept. 30	6.2	18.1	-	-
Oct. 31	4.4	11.9	-6.2	-2.31
Nov. 30	4.1	10.9	-1.0	-.39
Dec. 31	2.1	5.05	-5.85	-2.18
Calendar year 1946	-	-	+.80	+.03
Jan. 31	7.6	23.4	+18.35	+6.85
Feb. 28	2.0	4.8	-18.6	-7.69
Mar. 31	4.7	12.9	+8.1	+3.02
Apr. 30	18.3	79.5	+66.6	+25.7
May 31	28.4	163.9	+64.4	+31.5
June 30	2.0	4.8	-159.1	-61.4
July 31	3.4	8.75	+3.95	+1.47
Aug. 31	.9	2.0	-6.75	-2.52
Sept. 30	.6	1.35	-.65	-.25
Water year 1946-47	-	-	-16.75	-.53

† Gage height at 12 p.m. determined from graph based on observer's readings and graph for station on river below reservoir.

Jail Branch at East Barre, Vt.

Location.- Water-stage recorder, lat. 44°09'40", long. 72°27'00", at East Barre, Washington County, just downstream from highway bridge, 0.6 mile downstream from East Barre Detention Reservoir and 3.9 miles upstream from mouth. Datum of gage is 1,071.59 feet above mean sea level (levels by Corps of Engineers).
Drainage area.- 40.4 square miles.
Records available.- August 1920 to September 1923, November 1933 to September 1947.
Average discharge.- 17 years, 59.3 second-feet (adjusted).
Extremes.- Maximum discharge during year, 394 second-feet Apr. 12; maximum gage height, 2.59 feet Mar. 14 (ice jam); minimum discharge not determined.
1920-23, 1933-47: Maximum discharge observed, 1,350 second-feet Apr. 10, 1922 (gage height, 8.38 feet, site and datum then in use), from rating curve extended above 900 second-feet; minimum observed, 0.5 second-foot Sept. 11, 1921.
Remarks.- Records good except those below 10 second-feet and those for periods of ice effect, which are fair. High flow controlled by East Barre Detention Reservoir (see p. 262). Diurnal fluctuation at low flow caused by mill above station. Diversion from reservoir on Orange Brook, a tributary above station, for city of Barre.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Backwater from debris July 23 to Aug. 13, Aug. 20, 21, Sept. 24-30)

-0.8	1.5	-0.3	3.4	0.2	9.0	0.7	41	1.2	185
-.7	2.0	-.2	3.6	.3	12	.8	57	1.3	233
-.6	2.4	-.1	4.2	.4	16	.9	79	1.4	290
-.5	2.8	0	5.4	.5	23	1.0	108	1.5	360
-.4	3.0	.1	6.9	.6	31	1.1	143	1.6	445

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	325	45	46	25	130	29	73	223	103	27	11	3.0
2	297	51	46	26	100	31	74	204	156	36	8.4	3.0
3	244	158	43	27	90	32	98	190	380	23	6.2	3.9
4	128	82	45	26	80	33	132	214	346	22	6.3	3.2
5	75	64	45	26	75	33	141	244	339	20	5.6	2.8
6	51	47	43	25	70	33	199	239	318	24	5.4	2.5
7	40	47	42	24	60	34	304	244	297	57	4.7	2.7
8	35	46	44	25	55	34	304	279	279	26	4.8	21
9	31	56	120	24	50	35	290	239	250	27	14	8.0
10	29	66	132	23	45	35	284	156	147	22	7.0	6.2
11	28	62	201	23	42	35	304	98	81	21	5.5	5.6
12	28	114	70	24	40	37	368	84	216	19	4.8	5.4
13	68	74	98	22	40	40	386	77	81	16	4.5	4.9
14	52	54	104	23	40	80	377	75	108	14	4.0	4.3
15	39	49	50	30	41	180	368	57	142	12	4.0	3.8
16	37	44	55	60	44	120	360	54	86	15	6.7	3.6
17	34	44	40	45	*40	85	353	74	61	13	7.9	3.1
18	127	40	29	40	38	*67	339	77	57	18	6.2	2.8
19	225	36	*22	40	36	60	325	106	81	13	5.5	3.2
20	73	*37	22	50	34	54	304	113	80	10	4.7	3.3
21	51	36	30	*180	33	50	262	151	85	9.6	3.4	3.2
22	44	50	42	140	34	64	169	200	68	63	3.0	10
23	40	62	38	110	32	66	120	212	43	157	2.8	12
24	38	37	34	60	31	105	178	92	36	31	2.5	7.2
25	36	38	31	70	31	265	199	70	117	20	2.4	5.5
26	50	46	29	80	31	320	152	91	79	14	2.4	4.7
27	49	114	27	75	31	290	160	56	70	13	2.8	4.3
28	39	65	28	75	30	233	144	50	38	23	2.4	4.1
29	38	44	29	70	-	114	112	177	32	25	a1.9	4.0
30	70	41	27	66	-	74	123	284	25	13	a1.8	4.6
31	63	-	26	150	-	68	-	238	-	11	3.1	-

Month	Observed				Change in contents (equivalent, second-feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Runoff in inches
October	2,484	325	28	80.1	-9.27	70.8	1.75	2.02
November	1,749	158	36	58.3	+.12	58.4	1.45	1.61
December	1,638	201	22	52.8	-.14	52.7	1.30	1.50
Calendar year 1946	21,343.9	325	2.3	58.5	+.03	58.5	1.45	19.65
January	1,684	180	22	54.3	+.78	55.1	1.36	1.57
February	1,403	130	30	50.1	-1.05	49.1	1.22	1.26
March	2,736	320	29	88.3	+.30	88.5	2.19	2.53
April	7,002	386	73	233	+2.20	236	5.84	6.51
May	4,668	284	50	151	+.28	151	3.74	4.31
June	4,181	360	25	139	-2.86	136	3.37	3.77
July	812.6	157	9.6	26.2	-.18	26.0	.644	.74
August	155.7	14	1.8	5.02	-.06	4.97	.123	.14
September	155.7	21	2.5	5.19	+.02	5.21	.129	.14
Water year 1946-47	28,669.0	386	1.8	78.5	-.83	77.7	1.92	26.10

* Winter discharge measurement made on this day.
† Change in contents in East Barre Detention Reservoir.
a No gage-height record; discharge computed on basis of weather records, upper limit of range in stage, and records for North Branch Winooski River at Wrightsville.
Note.- Stage-discharge relation affected by ice Nov. 24, 30, Dec. 2-7, Dec. 15 to Mar. 26, Mar. 31, Apr. 1.

North Branch Winooski River at Wrightsville, Vt.

Location.- Water-stage recorder and concrete control, lat. 44°18'00", long. 72°34'45", at Wrightsville, Washington County, three-quarters of a mile downstream from Wrightsville Detention Reservoir and 3½ miles upstream from mouth. Datum of gage is 550.53 feet above mean sea level (levels by Corps of Engineers).
Drainage area.- 69.2 square miles.
Records available.- October 1933 to September 1947.
Average discharge.- 14 years, 137 second-feet (adjusted).
Extremes.- Maximum discharge during year, 833 second-feet Apr. 13 (gage height, 3.66 feet); minimum daily, 5.4 second-feet Sept. 19.
1933-47: Maximum discharge, 2,170 second-feet Apr. 12, 1934 (gage height, 6.53 feet), from rating curve extended above 920 second-feet; minimum daily, 0.2 second-foot Aug. 13, 1941.
Maximum discharge known, 17,200 second-feet Nov. 3, 1927, by computation of flow over dam three-quarters of a mile above gage.
Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. High flow controlled by Wrightsville Detention Reservoir (see p. 262). Diurnal fluctuation at low flow by small mill above station.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Backwater from debris Dec. 11-18)

0.1	3.3	0.6	24	1.5	145
.2	6.5	.7	30	2.1	271
.3	9.8	.8	40	2.7	419
.4	14	.9	50	3.1	561
.5	18	1.2	92	3.7	855

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	315	145	132	54	320	56	151	561	627	50	100	15
2	319	147	113	56	300	54	141	618	632	40	65	16
3	300	407	84	56	240	56	139	613	775	30	40	18
4	285	450	84	55	200	54	165	604	780	30	35	18
5	235	411	84	54	195	54	223	627	755	28	30	16
6	151	348	80	54	185	54	324	622	725	40	25	14
7	100	273	74	56	165	54	525	609	680	176	20	11
8	67	181	71	56	145	54	565	600	636	86	16	13
9	50	223	128	54	135	54	565	574	591	60	16	12
10	40	271	328	53	115	54	545	533	537	50	14	11
11	30	234	491	52	105	53	595	484	491	40	14	9.8
12	35	282	491	52	95	54	780	425	477	40	14	9.8
13	60	292	470	50	90	56	828	368	425	30	13	9.8
14	80	245	444	48	90	80	*822	312	378	25	13	9.4
15	65	210	386	53	86	221	800	212	408	22	13	9.4
16	50	169	308	90	86	300	790	147	397	21	15	8.2
17	45	141	179	110	82	270	775	132	355	25	14	6.5
18	150	128	*136	90	*75	*200	750	121	301	33	11	5.5
19	310	*112	110	84	74	155	720	153	212	67	11	5.4
20	300	100	83	88	70	140	680	242	169	57	13	5.5
21	210	92	75	185	68	130	636	365	149	45	13	5.5
22	130	94	80	205	67	139	587	363	137	45	12	8.5
23	95	151	74	*150	66	149	545	358	108	195	13	13
24	77	132	70	125	64	157	529	312	89	195	11	15
25	66	113	65	135	62	295	557	229	98	70	9.7	16
26	66	112	60	170	60	464	545	212	108	50	13	14
27	83	202	57	175	58	450	537	196	95	45	12	12
28	78	245	54	185	57	400	541	155	75	123	11	10
29	71	198	56	173	-	340	514	236	55	149	10	9.5
30	100	147	58	151	-	280	488	632	50	106	9.8	10
31	143	-	56	250	-	170	-	655	-	110	14	-

Month	Observed				Change in contents (equivalent, second-feet)+	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Runoff in inches
October	4,106	319	30	132	-2.31	130	1.88	2.17
November	6,255	450	92	208	-.39	208	3.01	3.36
December	4,981	491	54	161	-2.18	158	2.28	2.64
Calendar year 1946	50,047.3	690	8.9	137	+.03	137	1.98	26.92
January	3,169	250	48	102	+6.85	109	1.58	1.82
February	3,355	320	57	120	-7.69	112	1.62	1.69
March	5,047	464	53	163	+3.02	166	2.40	2.76
April	16,362	828	139	545	+25.7	571	8.25	9.21
May	12,270	655	121	396	+31.5	427	6.17	7.12
June	11,315	780	50	377	-61.4	316	4.57	5.09
July	1,833	149	21	59.1	+1.47	60.6	.876	1.01
August	620.5	100	9.7	20.0	-2.52	17.5	.253	.29
September	336.8	18	5.4	11.2	-.25	11.0	.159	.18
Water year 1946-47	69,650.3	828	5.4	191	-.53	190	2.75	37.34

* Winter discharge measurement made on this day.
† Change in contents in Wrightsville Detention Reservoir.
Note.- Stage-discharge relation affected by ice Dec. 20 to Jan. 28, Jan. 31 to Feb. 15, Feb. 17 to Mar. 9, Mar. 13, 14, 16-21, 27-29, 31. No gage-height record Oct. 1, 3-5, 7, 10-21, June 27 to July 4, July 6, 9-14, 21-27, July 31 to Aug. 9, Sept. 5, 6, 12-15; discharge computed on basis of 1 discharge measurement, recorded range in stage when available, weather records, records for Wrightsville Detention Reservoir, and records for other stations in Winooski River Basin.

Dog River at Northfield Falls, Vt.

Location.- Water-stage recorder, lat. 44°10'55", long. 72°38'30", 1 mile downstream from Northfield Falls, Washington County, and 1½ miles downstream from Cox Branch. Datum of gage is 603.00 feet above mean sea level (levels by Corps of Engineers).
Drainage area.- 76.1 square miles.
Records available.- November 1934 to September 1947.
Average discharge.- 13 years, 128 second-feet.
Extremes.- Maximum discharge during year, 6,450 second-feet June 3 (gage height, 8.96 feet), from rating curve extended above 1,500 second-feet on basis of computation of flow over dam at gage height 8.49 feet and determinations of discharge by slope-area method at gage heights 8.96 and 11.53 feet; minimum, 7.8 second-feet (regulated) Sept. 14, 20, 21, 25.
1934-47: Maximum discharge, 9,750 second-feet Sept. 21, 1938 (gage height, 11.53 feet), by slope-area method; minimum, 4.3 second-feet (regulated) Aug. 31, Sept. 7, 1942.
Remarks.- Records excellent except those for periods of ice effect or no gage-height record, which are fair. Some regulation at low flow caused by power plant above station.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet

Oct. 1 to June 2				June 3 to Sept. 30					
1.0	32	2.3	333	0.6	7.4	1.2	53	2.8	570
1.2	52	2.7	498	.7	12	1.3	68	3.5	920
1.4	82	3.4	860	.8	17	1.4	86	4.5	1,530
1.6	123	4.5	1,530	.9	24	1.6	130	5.5	2,320
1.9	201	5.3	2,140	1.0	32	1.9	215	6.5	3,350
				1.1	41	2.3	360		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	241	95	105	76	270	66	184	444	225	77	60	22
2	150	118	85	81	200	68	179	352	597	81	53	25
3	125	304	76	79	190	74	190	270	3,290	66	51	23
4	123	193	82	71	185	69	226	282	763	62	48	18
5	88	152	79	69	200	68	253	318	a440	56	44	17
6	69	128	77	69	170	68	732	315	a360	58	42	15
7	59	116	72	64	165	68	989	309	a310	366	37	15
8	53	119	72	66	150	66	595	378	356	258	36	32
9	47	130	113	61	140	66	471	270	305	153	85	19
10	44	135	183	63	135	66	442	222	245	116	49	22
11	41	133	317	66	120	66	1,410	193	223	105	44	18
12	39	241	173	64	120	66	2,200	168	353	92	40	16
13	82	204	222	58	120	74	935	152	218	86	34	14
14	62	168	160	60	115	214	565	142	274	79	33	8.2
15	52	147	132	73	110	403	507	125	339	77	31	20
16	48	128	105	132	105	316	453	116	235	91	25	17
17	48	119	112	98	*100	*228	403	112	196	132	33	13
18	146	110	*110	85	95	187	363	114	187	119	39	14
19	279	*99	91	78	90	171	326	128	209	102	31	12
20	137	95	82	113	86	166	280	169	196	84	30	9.0
21	101	90	90	330	84	168	244	184	178	71	27	7.8
22	90	108	102	179	81	181	219	303	151	116	26	21
23	80	119	93	155	79	179	219	225	125	196	16	19
24	74	92	93	150	77	222	339	176	115	150	20	19
25	69	92	86	240	74	902	346	157	225	103	29	13
26	77	99	70	210	71	662	266	207	170	84	22	14
27	79	157	70	220	69	371	301	155	133	81	21	11
28	71	130	76	210	68	280	256	135	109	101	18	13
29	69	116	78	195	-	241	216	380	94	102	17	19
30	108	97	80	170	-	213	237	678	79	77	16	14
31	110	-	78	380	-	190	-	294	-	67	22	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	2,861	279	39	92.3	1.21	1.40
November	4,034	304	90	134	1.76	1.97
December	3,364	317	70	109	1.43	1.64
Calendar year 1946	42,354.7	1,350	8.0	116	1.52	20.68
January	3,965	380	58	128	1.68	1.94
February	3,469	270	68	124	1.63	1.70
March	6,179	902	66	199	2.61	3.02
April	14,346	2,200	179	478	6.28	7.01
May	7,473	678	112	241	3.17	3.65
June	10,700	3,290	79	357	4.69	5.23
July	3,408	366	56	110	1.45	1.67
August	1,079	85	16	34.8	.457	.53
September	500.0	32	7.8	16.7	.219	.24
Water year 1946-47	61,378.0	3,290	7.8	168	2.21	30.00

Peak discharge.- Apr. 6 (8:30 p.m.) 1,730 sec.-ft.; Apr. 12 (7:30 a.m.) 2,810 sec.-ft.; June 3 (9:30 a.m.) 6,450 sec.-ft.
* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of recorded range in stage and records for Mad River near Moretown.
Note.- Stage-discharge relation affected by ice Dec. 15-17, 19-22, Dec. 26 to Jan. 21, Jan. 23 to Feb. 14, Feb. 17 to Mar. 2.

Mad River near Moretown, Vt.

Location.- Water-stage recorder and concrete control, lat. 44°16'40", long. 72°44'35", at highway bridge, 2.4 miles downstream from Moretown, Washington County, and 3.8 miles upstream from mouth.

Drainage area.- 139 square miles.

Records available.- July to November 1910, November 1928 to September 1947.

Average discharge.- 19 years (1928-47), 256 second-feet.

Extremes.- Maximum discharge during year, 10,100 second-feet June 3 (gage height, 11.51 feet), from rating curve extended above 2,500 second-feet on basis of computations of flow over dam at gage heights 9.98, 11.51, 16.34, and 19.4 feet; minimum, 8.8 second-feet (regulated) Aug. 29; minimum daily, 15 second-feet (regulated) Sept. 21.

1910, 1928-47: Maximum discharge, 18,400 second-feet Sept. 22, 1938 (gage height, 16.34 feet, from floodmarks), from rating curve extended above 2,500 second-feet by method explained above; minimum, 1.4 second-feet (regulated) Oct. 1, 1930.

Maximum discharge known, 23,000 second-feet Nov. 3, 1927 (gage height, 19.4 feet, from floodmarks), by computation of flow over dam.

Remarks.- Records excellent except those for periods of ice effect, which are fair. Regulation at low flow by mill in Moretown.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

3.1	14	3.5	72	4.2	350	6.5	2,530
3.2	24	3.6	98	4.5	540	7.5	3,780
3.3	36	3.7	129	5.0	980	8.5	5,170
3.4	51	3.9	205	5.5	1,460	9.4	6,540

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	538	275	262	140	520	120	295	1,630	533	173	129	48
2	345	353	193	150	380	125	300	1,120	2,060	173	107	41
3	328	1,020	156	150	350	130	338	836	6,410	143	93	51
4	513	500	189	135	330	130	419	836	1,620	140	85	43
5	553	386	173	130	350	125	446	935	899	117	80	34
6	321	315	165	130	290	120	1,860	1,070	665	127	72	25
7	210	285	165	120	280	120	1,860	971	580	653	68	29
8	154	275	158	125	280	120	1,010	944	846	880	62	122
9	126	397	347	115	270	120	782	629	656	380	114	46
10	108	458	670	120	250	120	720	505	477	265	70	36
11	95	362	849	125	230	120	2,220	434	677	205	59	32
12	88	754	416	130	230	120	4,460	416	1,280	177	55	30
13	194	523	470	115	220	125	*1,810	458	533	161	50	25
14	143	434	320	110	200	400	1,040	422	694	143	45	21
15	117	380	260	130	190	850	953	330	944	126	60	36
16	104	310	170	270	180	580	854	305	572	120	77	27
17	99	295	*180	220	160	*370	737	315	446	165	66	24
18	373	*285	170	180	*150	300	629	314	451	225	56	24
19	646	246	160	160	*145	290	548	380	619	567	50	22
20	302	228	150	220	145	280	458	730	533	348	50	22
21	223	205	170	*800	145	290	398	658	452	205	41	15
22	185	225	190	350	140	300	356	964	380	234	37	44
23	161	256	170	295	140	290	392	617	290	310	35	85
24	143	185	165	290	135	405	743	434	253	223	32	46
25	133	189	150	480	130	1,710	801	356	761	165	39	40
26	191	219	130	420	130	1,120	588	473	508	136	92	31
27	201	480	130	400	125	580	692	350	374	146	50	28
28	161	325	140	390	125	470	572	305	280	288	38	24
29	162	270	145	360	-	390	464	1,180	228	310	32	37
30	396	223	150	320	-	335	707	2,350	189	185	28	32
31	350	-	145	770	-	305	-	791	-	158	54	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	7,663	646	88	247	1.78	2.05
November	10,658	1,020	185	355	2.55	2.85
December	7,308	849	130	236	1.70	1.96
Calendar year 1946	96,340	4,000	17	264	1.90	25.77
January	7,650	770	110	247	1.78	2.05
February	6,220	520	125	222	1.60	1.66
March	10,860	1,710	120	350	2.52	2.91
April	27,452	4,460	295	915	6.58	7.34
May	22,058	2,350	305	712	5.12	5.90
June	25,210	6,410	189	840	6.04	6.75
July	7,648	880	117	247	1.78	2.05
August	1,926	129	28	62.1	.447	.52
September	1,120	122	15	37.3	.268	.30
Water year 1946-47	135,773	6,410	15	372	2.68	36.34

Peak discharge.- Apr. 12 (8 a.m.) 5,620 sec.-ft.; May 30 (1 a.m.) 5,710 sec.-ft.; June 3 (10:30 a.m.) 10,100 sec.-ft.

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 7, Dec. 14 to Jan. 22, Jan. 25 to Mar. 23, Mar. 27-29.

Waterbury Reservoir near Waterbury, Vt.

Location.- Water-stage recorder, lat. 44°22'55", long. 72°46'15", at dam on Waterbury River, 2 2/3 miles upstream from mouth and 3½ miles north of Waterbury, Washington County. Datum of gage is at mean sea level (levels by Corps of Engineers).

Drainage area.- 109 square miles.

Records available.- September 1938 to September 1947.

Extremes.- Maximum elevation during year, 598.72 feet June 4; minimum, 528.06 feet Mar. 29. 1938-47: Maximum elevation, 613.45 feet May 4, 1940; minimum observed, 501.3 feet Oct. 16, 1938.

Remarks.- Reservoir is formed by earth-fill dam completed by Corps of Engineers during summer of 1937 for conservation and flood control. Total usable capacity for flood control, 2,812,300,000 cubic feet between elevations 500.0 feet (bottom of lowest outlet) and 617.5 feet (crest of spillway) above mean sea level. Usable capacity for conservation, 1,582,700,000 cubic feet between elevations 500.0 and 592.0 feet (sill of taintor gate) above mean sea level.

Elevation at 12 p.m., water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	576.32	592.37	589.79	584.98	590.75	558.94	530.50	594.80	592.30	590.54	590.78	565.61
2	577.32	592.31	589.63	584.21	591.40	557.72	531.48	595.12	592.51	589.88	590.61	564.39
3	578.20	592.40	588.85	584.05	590.87	555.66	532.69	594.13	597.40	589.64	590.07	563.64
4	579.97	590.54	588.31	584.38	590.01	553.51	534.54	593.63	598.38	589.86	589.22	562.58
5	581.85	589.26	588.15	584.06	589.17	552.30	537.55	593.31	596.52	590.04	588.36	562.09
6	582.82	589.40	587.97	583.79	588.05	551.05	544.00	592.66	594.49	589.76	587.44	561.54
7	583.36	589.98	588.31	582.33	586.93	550.80	551.97	591.73	592.27	591.41	586.50	560.83
8	583.58	590.73	588.12	581.78	585.77	551.38	553.81	590.60	590.37	591.97	585.91	559.92
9	583.20	592.15	589.37	580.84	584.46	550.95	556.54	588.74	588.80	591.07	586.04	559.42
10	583.45	592.20	592.57	580.61	583.17	549.62	559.02	586.50	587.96	589.92	585.23	558.78
11	583.63	591.56	593.64	580.94	581.81	548.29	566.74	585.36	588.36	589.67	584.23	557.88
12	583.92	591.55	591.64	580.58	580.37	546.96	581.57	584.95	588.25	589.38	583.21	556.96
13	585.04	590.90	590.95	579.60	578.90	546.74	585.58	585.45	587.76	588.63	582.18	557.26
14	585.49	590.27	590.21	579.11	578.43	548.34	587.46	585.48	588.89	588.46	581.12	557.46
15	585.81	589.96	589.73	578.79	578.91	551.25	589.11	586.08	589.76	587.68	580.78	556.58
16	585.53	590.52	590.16	578.81	578.80	549.64	590.60	586.92	589.36	586.85	580.61	555.69
17	585.30	591.09	589.79	579.32	577.28	545.08	591.27	587.67	588.66	586.06	579.54	554.49
18	586.35	591.60	588.69	579.74	575.69	541.06	590.78	588.48	588.95	586.00	578.47	553.36
19	588.10	592.05	588.03	579.78	574.06	538.01	590.19	589.40	589.68	586.47	577.47	552.66
20	588.76	591.70	588.11	579.73	572.36	535.78	589.45	591.14	590.33	586.84	576.37	552.84
21	589.20	591.70	588.58	580.97	570.68	533.43	588.59	590.86	590.92	587.07	575.17	552.99
22	589.55	591.82	589.10	581.65	568.95	532.78	587.69	591.95	590.40	587.21	574.74	552.28
23	589.28	591.51	588.95	582.13	567.15	531.87	587.01	591.63	590.38	587.90	574.15	552.38
24	589.08	591.93	588.84	582.63	565.29	531.34	587.50	590.95	590.80	588.37	573.27	551.77
25	588.78	591.85	588.61	583.42	563.44	537.65	588.86	590.15	590.83	588.64	572.08	551.58
26	589.49	591.51	587.32	584.16	561.52	539.04	590.17	589.61	591.02	588.85	570.17	551.31
27	589.99	591.14	586.09	584.96	559.57	534.86	591.63	589.31	591.02	588.74	568.87	551.50
28	590.07	590.30	586.54	585.68	558.45	530.46	591.57	588.77	591.34	589.38	567.60	551.69
29	589.83	589.86	586.27	586.28	-	529.94	591.11	591.46	591.03	590.34	566.54	551.31
30	590.59	590.29	585.47	586.90	-	530.83	591.75	595.36	590.87	590.72	566.22	550.29
31	591.74	-	585.32	589.58	-	531.31	-	594.42	-	590.65	566.23	-

Monthly elevation and contents, water year October 1946 to September 1947

Date	Elevation (feet)†	Contents (millions of cubic feet)	Change in contents during month	
			Millions of cubic feet	Equivalent, second-feet
Sept.30	574.43	1,008.6	-	-
Oct. 31	591.74	1,572.6	+564.0	+?11
Nov. 30	590.29	1,516.2	-56.4	-21.8
Dec. 31	585.32	1,339.5	-176.7	-66.0
Calendar year 1946	-	-	-33.5	-1.06
Jan. 31	589.58	1,490.1	+150.6	+56.2
Feb. 28	558.45	626.8	-863.3	-357
Mar. 31	531.31	195.5	-431.3	-161
Apr. 30	591.75	1,573.0	+1,377.5	+531
May 31	594.42	1,677.1	+104.1	+38.9
June 30	590.87	1,538.7	-138.4	-53.4
July 31	590.65	1,530.2	-8.5	-3.17
Aug. 31	566.23	800.6	-729.6	-272
Sept.30	550.29	467.1	-333.5	-129
Water year 1946-47	-	-	-541.5	-17.2

† Elevation at 12 p.m.

Waterbury River near Waterbury, Vt.

Location.- Water-stage recorder and concrete control, lat. 44°22'10", long. 72°46'10", 1 mile downstream from Waterbury Reservoir, 1 2/3 miles upstream from mouth, and 2½ miles north of Waterbury, Washington County. Datum of gage is 428.00 feet above mean sea level (levels by Corps of Engineers).

Drainage area.- 111 square miles.

Records available.- July to October 1910 (gage heights only), December 1935 to September 1947

Average discharge.- 11 years, 239 second-feet (adjusted for change in reservoir contents).

Extremes.- Maximum discharge during year, 1,580 second-feet (regulated) May 1 (gage height, 9.66 feet); minimum daily, 1.4 second-feet (regulated) Sept. 21.
1935-47: Maximum discharge, 6,520 second-feet Mar. 18, 1936 (gage height, 19.38 feet); minimum daily, 0.6 second-foot (regulated) several times during summers of 1938, 1939, 1941, and 1944.

Remarks.- Records excellent except those below 25 second-feet, which are good. Flow completely regulated by Waterbury Reservoir (see preceding page)

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

4.8	1.2	5.1	7.0	5.8	49	7.1	301
4.85	1.8	5.2	10	6.0	71	7.5	450
4.9	2.6	5.3	14	6.2	98	8.0	665
4.95	3.4	5.4	19	6.5	150	9.4	1,450
5.0	4.4	5.6	32	6.8	216		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.3	8.2	428	208	8.4	b3.6	324	864	1,380	229	100	210
2	5.3	637	235	429	b5.2	377	172	989	1,180	381	168	399
3	4.5	1,440	441	221	453	575	154	1,380	51	209	327	297
4	3.5	1,380	398	3.2	675	570	179	1,380	299	2.4	444	319
5	2.6	933	222	209	670	367	9.4	1,380	1,400	2.3	441	177
6	2.1	254	232	221	665	367	236	1,380	1,390	246	436	184
7	2.0	5.7	3.6	629	665	189	26	1,380	1,380	221	434	219
8	41	6.2	225	314	665	3.8	390	1,370	1,380	432	309	279
9	222	9.7	236	420	660	178	13	1,360	1,110	675	2.6	175
10	1.8	401	16	216	660	369	14	1,360	675	675	352	185
11	1.6	680	702	b3.1	656	369	36	883	209	268	429	246
12	2.0	685	1,380	216	652	363	63	665	485	229	435	241
13	4.6	680	917	422	652	189	23	430	476	451	425	2.2
14	2.3	680	685	261	328	10	15	428	10	211	423	1.7
15	2.0	461	487	261	4.7	11	14	153	462	393	196	237
16	197	6.5	5.7	219	211	713	12	9.1	680	435	124	239
17	210	6.0	360	3.8	634	1,110	223	5.0	675	435	419	288
18	7.2	5.2	670	3.2	634	894	675	5.7	215	200	417	278
19	6.6	5.0	454	101	629	704	680	5.7	7.9	3.6	423	186
20	3.9	337	129	221	624	518	675	226	6.2	2.9	420	1.9
21	3.2	170	5.2	8.6	616	510	670	670	5.7	2.7	417	1.4
22	5.1	209	4.7	b4.7	611	341	665	675	452	84	186	229
23	208	457	231	b4.4	611	326	660	680	215	4.5	211	90
24	233	4.4	217	b4.4	602	376	665	680	4.6	3.2	309	187
25	223	221	221	6.3	598	321	235	675	242	2.9	405	90
26	6.0	437	665	5.5	593	705	7.9	670	211	2.6	611	93
27	3.8	675	619	7.0	588	1,040	235	426	205	246	398	1.
28	109	675	b4.4	6.5	397	856	680	462	3.8	201	389	1.
29	385	447	221	5.7	-	374	675	235	236	4.3	320	116
30	229	5.0	432	6.3	-	168	680	76	211	3.1	122	241
31	5.7		215	19	-	164	-	960	-	238	185	-

Month	Observed				Change in contents (equivalent, second-feet)†	Adjusted for change in reservoir contents		
	Second-foot-days	Maximum	Minimum	Mean		Mean	Per square mile	Runoff in inches
October	2,142.1	385	1.6	69.1	+211	280	2.52	2.90
November	11,909.9	1,440	4.4	397	-21.8	375	3.38	3.77
December	11,061.6	1,380	3.6	357	-66.0	291	2.62	3.02
Calendar year 1946	90,010.0	1,440	.9	247	-1.06	246	2.22	30.03
January	4,659.7	629	3.1	150	+56.2	207	1.86	2.15
February	14,767.3	675	4.7	527	-357	171	1.54	1.60
March	13,061.4	1,110	3.6	421	-161	260	2.34	2.70
April	9,106.3	680	7.9	304	+531	835	7.52	8.39
May	21,862.5	1,380	5.0	705	+38.9	744	6.70	7.73
June	15,257.2	1,400	3.8	509	-53.4	455	4.10	4.58
July	6,493.5	675	2.3	209	-3.17	206	1.86	2.14
August	10,277.6	611	2.6	332	-272	59.1	.532	.61
September	5,215.7	399	1.4	174	-129	45.2	.407	.45
Water year 1946-47	125,814.8	1,440	1.4	345	-17.2	328	2.95	40.04

† Change in contents in Waterbury Reservoir.
b Stage-discharge relation affected by ice.

Lamoille River at Johnson, Vt.

Location.- Water-stage recorder, lat. 44°37'20", long. 72°40'50", at falls 0.9 mile upstream from bridge in Johnson, Lamoille County, and 1 1/8 miles upstream from Gihon River.

Drainage area.- 310 square miles.

Records available.- July 1910 to December 1913, September 1928 to September 1947.

Average discharge.- 19 years (1928-47), 531 second-feet.

Extremes.- Maximum discharge during year, 8,980 second-feet Apr. 12 (gage height, 13.77 feet); minimum, 22 second-feet (regulated) Sept. 21; minimum daily, 52 second-feet (regulated) Sept. 21.
1910-13, 1928-47: Maximum discharge, 13,000 second-feet Mar. 18, 1936 (gage height, 16.48 feet), by computation of flow over dam; minimum, 11 second-feet (regulated) Sept. 2, 1935; minimum daily, 20 second-feet (regulated) Aug. 18, 1940.

Remarks.- Records good except those for periods of ice effect, which are fair. Flow regulated by power plant above station.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feat, and discharge, in second-feet)

1.3	51	2.3	276	8.0	3,280
1.4	65	2.6	384	10.0	4,850
1.6	98	3.0	544	12.0	6,860
1.8	138	4.0	980	13.3	8,380
2.0	186	6.0	2,030		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,860	730	494	350	1,350	300	603	3,180	1,050	271	534	124
2	1,150	665	440	300	820	282	641	2,740	1,370	226	330	194
3	752	1,960	335	320	740	332	725	2,020	5,480	222	252	200
4	664	1,170	381	310	650	312	840	1,940	3,020	154	275	194
5	489	758	392	230	660	314	1,060	2,170	1,550	204	250	184
6	374	567	355	330	680	319	1,480	1,860	1,160	174	155	164
7	372	473	295	320	*580	307	2,830	1,770	952	539	142	124
8	283	462	288	290	490	313	2,540	2,260	920	497	162	207
9	255	970	1,030	310	420	251	1,950	1,490	1,020	322	142	162
10	198	1,020	1,950	330	480	320	1,530	1,140	838	277	125	183
11	187	734	2,700	280	440	308	3,740	929	710	261	155	157
12	186	1,140	1,200	220	420	305	*8,320	804	634	243	147	193
13	597	*870	*1,130	320	400	*354	5,920	777	557	211	164	192
14	486	710	870	270	410	440	2,580	875	652	263	140	121
15	297	668	600	310	380	1,250	2,060	714	1,510	241	180	178
16	285	489	480	320	370	1,320	2,250	576	1,090	205	190	181
17	265	476	390	400	400	971	1,550	522	803	209	152	172
18	434	504	420	370	390	690	1,440	523	612	228	184	166
19	1,480	373	370	*300	370	570	1,410	708	627	243	180	159
20	828	346	330	420	360	510	1,170	1,130	614	189	171	130
21	565	326	320	800	360	500	1,000	1,420	550	259	158	52
22	415	382	350	760	360	516	879	1,450	536	216	160	224
23	355	531	400	620	340	594	985	1,260	481	271	167	270
24	291	377	400	560	360	636	1,600	884	346	328	90	279
25	273	395	300	560	340	1,400	2,260	725	349	306	166	236
26	353	459	320	680	340	2,680	1,740	756	248	276	174	201
27	396	1,120	350	750	330	1,480	1,910	667	403	272	126	174
28	360	920	340	700	320	1,080	1,940	568	353	678	156	95
29	376	693	300	620	-	822	1,330	512	296	746	146	180
30	666	449	360	580	-	747	1,500	4,070	279	374	109	202
31	817	-	340	1,150	-	662	-	1,740	-	494	144	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	16,311	1,860	187	526	1.70	1.96
November	20,737	1,960	326	691	2.23	2.49
December	18,230	2,700	288	588	1.90	2.19
Calendar year 1946	191,227	4,420	41	524	1.69	22.95
January	14,080	1,150	220	454	1.46	1.69
February	13,560	1,350	320	484	1.56	1.83
March	20,885	2,680	251	674	2.17	2.51
April	59,783	8,320	603	1,993	6.43	7.17
May	42,180	4,070	512	1,361	4.39	5.06
June	29,010	5,480	248	967	3.12	3.48
July	9,398	746	154	303	.977	1.13
August	5,626	534	90	181	.584	.67
September	5,278	279	52	176	.568	.63
Water year 1946-47	255,078	8,320	52	699	2.25	30.61

Peak discharge.- Apr. 12 (5 p.m.) 8,980 sec.-ft.; May 30 (10:30 a.m.) 8,230 sec.-ft.; June 3 (5 p.m.) 8,800 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 2, 3, 6, 7, Dec. 14 to Mar. 1, Mar. 14, 15, 18-21, 25.

Lamoille River at East Georgia, Vt.

Location.- Water-stage recorder, lat. 44°40'45", long. 73°04'20", at East Georgia, Franklin County, 0.5 mile upstream from railroad bridge and 1 mile downstream from Beaver Meadow Brook.
Drainage area.- 686 square miles.
Records available.- October 1937 to September 1947. August 1929 to November 1937 at site near Milton, 3½ miles downstream, published as Lamoille River near Milton.
Average discharge.- 18 years, 1,250 second-feet, adjusted to present drainage area.
Extremes.- Maximum discharge during year, 16,100 second-feet Apr. 13, from rating curve extended above 11,000 second-feet on basis of computation of flow over dam at gage height 11.76 feet; maximum gage height, 14.22 feet Jan. 31 (ice jam); minimum discharge, 77 second-feet (regulated) Aug. 29; minimum daily, 252 second-feet (regulated) Aug. 25. 1929-47: Maximum discharge, 23,200 second-feet Mar. 19, 1936, by computation of flow over dam; maximum gage height, 15.86 feet Mar. 11, 1946 (ice jam); minimum discharge, 49 second-feet (regulated) July 30, 1933; minimum daily, 91 second-feet (regulated) July 30, 1933.
Remarks.- Records excellent except those for periods of ice effect, which are fair. Low flow regulated by power plants above station.

Rating tables, water year 1946-47, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to July 28						July 29 to Sept. 30			
3.2	493	5.0	2,000	8.0	7,150	2.6	231	3.9	850
3.5	661	5.5	2,620	9.0	9,700	2.8	296	4.3	1,170
4.0	1,020	6.0	3,350	10.0	12,900	3.1	410	4.9	1,770
4.5	1,470	7.0	5,050	10.4	14,500	3.5	605	5.5	2,520

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,990	2,820	1,390	780	2,700	650	1,500	5,600	2,820	739	1,490	520
2	4,190	1,970	1,200	740	1,800	630	1,750	6,730	3,380	838	906	354
3	2,770	4,580	1,000	760	1,500	640	1,950	4,890	8,630	732	717	458
4	2,760	3,840	1,050	750	1,400	660	2,100	3,970	9,060	595	638	472
5	2,800	2,480	1,100	700	1,500	640	2,700	4,850	4,230	513	548	363
6	1,870	1,750	1,050	650	1,400	640	4,070	4,130	2,770	535	500	310
7	1,210	1,460	970	660	1,300	640	8,040	4,240	2,230	659	381	260
8	972	1,330	900	720	1,100	630	6,390	5,610	2,070	2,720	380	288
9	773	2,420	2,420	680	1,000	620	4,420	3,940	2,400	1,320	350	332
10	674	3,020	5,010	640	880	620	3,350	2,800	1,930	918	278	282
11	522	2,120	6,530	660	*880	640	4,630	2,300	1,620	745	342	261
12	493	2,950	3,950	640	850	620	11,500	1,980	1,440	619	395	290
13	2,080	2,560	*2,770	600	850	620	14,300	2,000	1,290	851	369	492
14	1,720	*2,110	2,300	640	820	820	*7,020	2,840	1,380	725	345	512
15	1,120	1,990	1,550	650	820	3,100	4,090	2,050	4,720	625	368	294
16	888	1,560	1,250	740	800	3,300	4,120	1,590	3,640	579	510	392
17	807	1,350	1,100	860	800	2,200	3,560	1,490	2,520	551	404	361
18	1,220	1,310	1,150	820	800	1,700	3,000	1,390	1,760	725	304	306
19	3,730	1,160	1,000	720	780	1,500	2,770	1,860	1,550	1,030	342	280
20	2,700	1,070	850	680	780	1,300	2,410	2,620	1,630	1,010	372	292
21	1,590	988	800	1,700	740	1,250	2,080	4,400	1,440	719	380	262
22	1,240	1,000	850	1,600	780	1,250	1,810	5,940	1,430	706	286	448
23	1,030	1,470	970	1,300	760	1,450	1,840	4,860	1,210	793	312	774
24	854	1,170	970	1,100	760	1,550	2,360	2,800	1,000	1,090	305	672
25	786	1,030	870	1,200	740	4,000	4,170	2,010	1,150	836	252	583
26	1,590	1,330	800	1,400	720	7,000	3,370	2,240	1,340	706	329	461
27	1,900	3,300	750	1,600	700	4,500	3,180	1,960	1,080	704	322	354
28	1,280	2,650	780	1,600	670	3,000	4,400	1,490	972	1,210	284	336
29	1,120	1,890	820	1,300	-	2,150	2,990	2,430	843	2,440	268	318
30	2,220	1,400	860	1,100	-	1,900	2,730	6,630	706	1,300	295	392
31	3,340	-	800	2,400	-	1,600	-	5,780	-	1,010	360	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	55,239	4,990	493	1,782	2.60	2.99
November	60,078	4,580	988	2,003	2.92	3.26
December	47,810	6,530	750	1,542	2.25	2.59
Calendar year 1946	482,165	9,000	173	1,321	1.93	26.14
January	30,390	2,400	600	980	1.43	1.65
February	28,630	2,700	670	1,022	1.49	1.55
March	51,820	7,000	620	1,672	2.44	2.81
April	122,600	14,300	1,500	4,087	5.96	6.65
May	107,420	6,730	1,390	3,465	5.05	5.82
June	72,241	9,060	706	2,408	3.51	3.92
July	28,541	2,720	513	921	1.34	1.55
August	13,332	1,490	252	430	.627	.72
September	11,719	774	260	391	.570	.64
Water year 1946-47	629,820	14,300	252	1,726	2.52	34.15

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 2-8, Dec. 14 to Apr. 4.

Missisquoi River near North Troy, Vt.

Location.- Water-stage recorder, lat. 44°58'20", long. 72°23'15", just upstream from Big Falls, 1½ miles downstream from Jay Branch and 2¼ miles upstream from North Troy, Troy County.
Drainage area.- 131 square miles.
Records available.- August 1931 to September 1947.
Average discharge.- 16 years, 274 second-feet.
Extremes.- Maximum discharge during year, 4,900 second-feet Apr. 12 (gage height, 10.05 feet); minimum, 22 second-feet (regulated) Aug. 30 (gage height, 1.12 feet); minimum daily, 31 second-feet (regulated) Aug. 30.
1931-47: Maximum discharge, 7,980 second-feet May 3, 1940 (gage height, 12.87 feet), from rating curve extended above 3,600 second-feet by logarithmic plotting; verified by computation of flow over dam at gage height 11.70 feet; minimum, 10 second-feet (regulated) Aug. 22, 1934 (gage height, 0.81 foot); minimum daily, 12 second-feet (regulated) Sept. 24, 1941.
Remarks.- Records excellent except those for periods of ice effect, which are fair. Some regulation from small power plant above station.

Rating table, water year 1946-47, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

1.3	31	2.3	166	6.0	1,700
1.4	38	2.6	239	7.0	2,350
1.6	56	3.0	352	8.0	3,100
1.8	77	4.0	729	9.7	4,580
2.0	107	5.0	1,170		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	836	448	250	120	750	110	245	2,190	385	94	332	121
2	402	452	190	125	420	120	360	1,520	1,070	94	146	78
3	309	801	155	130	300	125	470	1,080	3,530	90	109	112
4	420	446	185	125	260	115	490	1,020	1,320	76	90	87
5	374	336	175	125	270	120	567	1,240	563	76	73	62
6	196	242	165	130	260	120	1,310	1,300	402	77	73	53
7	125	202	160	120	220	115	2,430	1,130	327	191	67	49
8	94	196	189	120	185	115	1,070	1,190	399	426	61	35
9	78	527	803	110	145	115	745	693	454	183	57	36
10	72	432	1,990	115	160	120	654	541	318	127	52	35
11	67	304	1,940	105	160	115	1,710	487	252	96	49	33
12	63	677	623	110	*155	115	4,500	506	202	105	44	200
13	346	404	755	100	155	120	*2,490	949	173	112	39	422
14	214	330	485	105	150	250	824	1,270	323	87	40	118
15	133	309	270	155	145	*710	737	552	1,440	73	59	77
16	105	232	180	260	150	680	696	427	657	68	60	112
17	102	232	180	230	150	480	614	446	442	66	59	80
18	330	*234	195	200	145	350	673	549	309	104	43	62
19	1,220	187	170	170	135	270	610	810	449	233	41	56
20	408	168	155	190	130	240	438	1,380	330	172	47	65
21	229	162	150	*470	130	230	352	1,300	239	110	50	58
22	171	176	175	400	130	250	306	1,070	229	102	36	223
23	141	255	170	280	125	270	378	717	173	178	36	467
24	121	152	165	240	125	310	973	442	147	173	37	244
25	109	187	150	330	115	840	1,170	346	158	107	40	169
26	163	370	130	350	115	1,350	653	431	226	79	34	119
27	234	998	120	380	110	700	1,190	318	148	167	40	76
28	151	509	130	360	105	450	1,270	265	118	326	34	81
29	218	309	130	290	-	340	701	522	99	350	32	79
30	566	215	135	250	-	290	1,470	1,800	105	167	31	91
31	788	-	130	800	-	240	-	606	-	340	410	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	8,785	1,220	63	283	2.16	2.49
November	10,492	998	152	350	2.67	2.98
December	10,800	1,990	120	348	2.66	3.07
Calendar year 1946	100,670	2,570	26	276	2.11	28.58
January	6,995	800	100	226	1.73	1.99
February	5,400	750	105	193	1.47	1.53
March	9,775	1,350	110	315	2.40	2.78
April	30,096	4,500	245	1,003	7.66	8.54
May	27,097	2,190	265	874	6.67	7.69
June	14,987	3,530	99	500	3.82	4.25
July	4,649	426	66	150	1.15	1.32
August	2,321	410	31	74.9	.572	.66
September	3,500	467	33	117	.893	.99
Water year 1946-47	134,897	4,500	31	370	2.82	38.29

Peak discharge.- Apr. 12 (3 p.m.) 4,900 sec.-ft.; June 3 (8 p.m.) 4,190 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 30 to Dec. 7, Dec. 15 to Apr. 4.

Missisquoi River near Richford, Vt.

Location.- Water-stage recorder, lat. 44°57'30", long. 72°41'55", 1 2/3 miles upstream from Trout River, 3 miles south of Richford, Franklin County, and 3½ miles downstream from North Branch.
Drainage area.- 479 square miles.
Records available.- July 1911 to September 1923, October 1928 to September 1947.
Average discharge.- 27 years (1911-19, 1928-47), 942 second-feet.
Extremes.- Maximum discharge during year, 10,800 second-feet June 3 (gage height, 12.58 feet); minimum, 81 second-feet Aug. 29 (gage height, 2.58 feet).
1911-23, 1928-47: Maximum discharge, 17,200 second-feet May 4, 1940 (gage height, 15.15 feet), from rating curve extended above 9,300 second-feet on basis of computation of flow over dam at gage height 14.70 feet, slope-area determination at gage height 12.90 feet, and study of discharge per foot of width at measuring section; maximum gage height, 18.92 feet Mar. 15, 1946 (ice jam); minimum discharge, 8 second-feet July 14, 1911.
Maximum discharge known, 45,000 second-feet during flood of November 1927 (gage height, 23.1 feet, from floodmarks), from rating curve extended above 9,300 second-feet by method explained above.
Remarks.- Records excellent except those for periods of ice effect, which are fair. Slight diurnal fluctuation at low flow.

Rating table, water year 1946-47, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

2.6	85	3.5	360	6.0	2,240
2.8	129	3.8	504	7.5	3,810
3.0	181	4.2	745	9.5	6,250
3.2	244	5.0	1,360	12.2	10,200

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,530	2,620	1,100	440	2,800	420	920	5,640	1,650	311	1,020	496
2	2,230	1,700	830	460	2,100	430	1,350	5,430	3,010	340	610	248
3	1,460	2,550	700	470	1,300	440	1,700	4,170	10,200	307	395	288
4	1,380	2,180	700	450	1,100	450	1,800	3,190	8,180	284	323	262
5	1,260	1,610	690	440	1,000	440	2,000	3,220	4,040	248	280	211
6	764	1,160	660	430	960	440	4,600	3,620	2,050	262	241	176
7	494	896	630	420	870	430	7,470	3,700	1,460	1,610	221	149
8	364	866	700	420	720	430	6,440	4,280	1,630	2,430	205	132
9	303	1,810	2,610	410	600	420	4,380	3,040	2,020	1,220	190	127
10	269	1,860	5,930	400	*570	420	3,100	2,070	1,450	758	168	113
11	231	1,360	6,600	400	560	420	4,850	1,680	1,330	602	152	106
12	218	1,940	3,700	410	550	420	9,630	1,460	960	566	170	115
13	772	1,820	2,800	390	540	440	9,980	2,130	758	549	144	833
14	838	1,470	2,000	380	520	*840	*6,060	3,340	1,070	418	136	647
15	521	*1,380	1,100	510	500	2,300	3,600	2,240	4,920	356	142	304
16	386	1,070	720	840	520	2,400	2,800	1,410	3,830	327	178	244
17	352	904	720	810	520	2,000	2,540	1,290	2,280	307	173	258
18	684	873	700	700	520	1,500	2,660	1,440	1,600	428	144	205
19	3,300	752	670	610	510	1,200	2,470	2,420	1,580	1,220	154	193
20	2,280	662	630	*620	490	980	1,850	3,520	1,490	1,130	136	181
21	1,060	608	590	1,550	480	860	1,480	4,500	1,090	608	122	173
22	726	658	640	1,400	480	940	1,250	6,610	817	433	129	386
23	584	810	620	1,100	470	1,000	1,220	3,930	680	728	120	1,110
24	499	630	600	860	450	1,100	1,900	2,460	543	852	108	833
25	428	608	540	1,150	440	3,000	3,350	1,730	521	554	106	494
26	1,050	1,230	470	1,200	430	4,500	2,560	1,500	650	378	104	356
27	968	3,420	440	1,350	420	3,000	3,040	1,320	578	360	98	280
28	706	2,650	480	1,250	420	2,000	4,090	984	447	626	89	237
29	941	1,580	480	1,100	-	1,400	3,110	1,420	369	960	87	205
30	2,210	1,050	490	940	-	1,200	3,730	4,690	319	644	102	290
31	3,600	-	470	2,600	-	1,000	-	3,370	-	898	561	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	33,408	3,600	218	1,078	2.25	2.59
November	42,727	3,420	608	1,424	2.97	3.32
December	40,010	6,600	440	1,291	2.70	3.11
Calendar year 1946	357,614	9,400	64	980	2.05	27.77
January	24,510	2,600	380	791	1.65	1.90
February	20,840	2,800	420	744	1.55	1.62
March	36,820	4,500	420	1,188	2.48	2.86
April	105,930	9,980	920	3,531	7.37	8.22
May	91,804	6,610	984	2,961	6.18	7.13
June	61,522	10,200	319	2,051	4.28	4.78
July	20,714	2,430	248	668	1.39	1.61
August	6,808	1,020	87	220	.459	.53
September	9,652	1,110	106	322	.672	.75
Water year 1946-47	494,745	10,200	87	1,355	2.83	38.42

Peak discharge.- Dec. 11 (1 a.m.) 8,380 sec.-ft.; Apr. 6 (9:30 p.m.) 8,410 sec.-ft.; Apr. 13 (4 a.m.) 10,700 sec.-ft.; May 22 (10:30 a.m.) 9,380 sec.-ft.; June 3 (10 a.m.) 10,800 sec.-ft.
* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 23, 24, Nov. 30 to Dec. 8, Dec. 11 to Apr. 6 (no gage-height record Feb. 1-8, Mar. 26-28; discharge computed on basis of weather records and records for station near North Troy).

Lake Memphremagog at Newport, Vt.

Location.- Chain gage, lat. 44°56'10", long. 72°12'15", on concrete highway bridge in Newport, Orleans County. Datum of gage is 673.00 feet above mean sea level, datum of 1929.

Records available.- May 1931 to September 1947.

Extremes.- Maximum gage height observed during year, 10.85 feet June 4; minimum observed, 7.22 feet Oct. 1.
1931-47: Maximum gage height observed, 12.92 feet Apr. 20, 1933; minimum observed, 6.69 feet Nov. 4, 1934.

Remarks.- Gage read twice daily.

Gage height, in feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.23	8.27	9.41	10.15	10.30	10.29	8.97	10.18	10.20	9.99	9.93	8.83
2	7.32	8.27	9.47	10.19	10.29	10.31	8.91	10.28	10.26	9.97	9.93	8.75
3	7.42	8.41	9.41	10.23	10.31	10.29	9.07	10.29	10.68	9.93	9.97	8.76
4	7.33	8.47	9.37	10.25	10.34	10.27	9.11	10.30	10.84	9.91	9.97	8.73
5	7.31	8.57	9.39	10.29	10.34	10.25	9.09	10.31	10.74	9.88	9.94	8.65
6	7.32	8.58	9.40	10.30	10.31	10.25	8.94	10.31	10.64	9.88	9.89	8.58
7	7.45	8.61	9.37	10.29	10.31	10.22	9.32	10.39	10.44	9.84	9.87	8.57
8	7.49	8.56	9.41	10.31	10.33	10.21	9.51	10.48	10.40	9.91	9.86	8.58
9	7.40	8.65	9.49	10.29	10.31	10.20	9.58	10.40	10.33	9.90	9.83	8.46
10	7.37	8.71	9.73	10.28	10.33	10.15	9.64	10.36	10.16	9.89	9.84	8.41
11	7.39	8.79	9.99	10.27	10.32	10.11	9.69	10.33	9.99	9.85	9.74	8.34
12	7.34	8.92	10.04	10.29	10.30	10.12	10.03	10.13	9.94	9.74	9.67	8.27
13	7.51	8.96	10.26	10.28	10.30	9.50	10.31	10.08	9.80	9.74	9.65	8.27
14	7.50	8.98	10.23	10.28	10.32	9.28	10.43	10.12	9.81	9.81	9.57	8.49
15	7.45	9.03	10.17	10.26	10.32	9.27	10.39	10.02	9.89	9.84	9.55	8.48
16	7.42	8.85	10.12	10.24	10.30	9.26	10.45	9.96	9.90	9.92	9.53	8.49
17	7.49	9.09	10.02	10.22	10.28	9.21	10.41	9.95	9.93	9.69	9.45	8.49
18	7.54	9.11	9.94	10.24	10.31	9.19	10.36	9.93	9.92	9.67	9.43	8.41
19	7.76	9.05	9.93	10.24	10.29	9.13	10.29	10.03	9.98	9.71	9.41	8.37
20	7.83	9.05	9.86	10.22	10.31	9.07	10.18	10.02	10.00	9.69	9.37	8.21
21	7.86	9.03	9.98	10.18	10.29	8.99	10.14	10.06	9.98	9.64	9.35	8.18
22	7.86	9.01	9.98	10.03	10.28	8.93	9.92	10.16	9.96	9.67	9.23	8.33
23	7.89	9.02	10.02	10.03	10.31	8.85	9.84	10.08	10.00	9.65	9.15	8.21
24	7.90	8.97	10.07	10.02	10.31	8.85	9.84	10.07	10.01	9.65	9.12	8.07
25	7.87	8.93	10.08	10.18	10.29	8.80	9.79	9.91	9.98	9.65	9.08	8.19
26	7.91	9.02	10.13	10.16	10.29	8.84	9.80	9.85	10.00	9.64	9.07	8.16
27	7.96	9.15	10.14	10.15	10.28	9.07	9.69	9.83	10.02	9.67	8.94	8.11
28	7.98	9.29	10.11	10.17	10.30	9.11	9.86	9.81	10.00	9.69	8.85	8.05
29	7.97	9.37	10.15	10.09	-	9.09	9.98	9.83	9.98	9.77	8.85	7.91
30	8.06	9.32	10.11	10.17	-	9.07	10.04	10.10	9.98	9.80	8.75	8.01
31	8.17	-	10.25	10.24	-	9.00	-	10.20	-	9.86	8.85	-

Note.- Gage heights for Dec. 26 to Jan. 21, Jan. 30 to Mar. 12 were taken to top of ice. Ice removed at gage Jan. 22 and Mar. 13.

Clyde River at Newport, Vt.

Location.- Water-stage recorder, lat. 44°56'20", long. 72°11'25", in Newport, Orleans County, just downstream from unnamed tributary entering from north and 1 mile upstream from mouth. Datum of gage is 682.36 feet above mean sea level, datum of 1929.

Drainage area.- 142 square miles.

Records available.- September 1938 to September 1947. May 1909 to September 1924 and November 1928 to May 1936 at site 0.65 mile upstream.

Average discharge.- 25 years (1909-19, 1929-35, 1938-47), 251 second-feet.

Extremes.- Maximum discharge during year, 1,510 second-feet Apr. 14 (gage height, 6.64 feet); minimum daily, 63 second-feet (regulated) Nov. 24.
1909-24, 1928-36, 1938-47: Maximum discharge, 3,900 second-feet Mar. 20, 1936 (gage height, 5.76 feet, site and datum then in use), by computation of flow over dam; minimum daily, 3.0 second-feet (regulated) Oct. 27, 1930; practically no flow at times because of regulation.

Remarks.- Records excellent except those for periods of ice effect, which are good. Flow regulated by power plant and reservoirs above station.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 13				Apr. 14 to Sept. 30			
2.8	58	4.0	315	2.8	61	4.5	495
3.0	85	4.5	475	3.0	89	5.0	695
3.3	137	5.3	800	3.3	140	6.0	1,165
3.6	203	6.1	1,190	3.6	204	6.5	1,430
				4.0	315		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	249	231	240	200	270	180	409	845	668	230	257	165
2	240	237	270	247	300	170	388	924	723	220	268	149
3	235	223	260	219	310	204	378	1,020	1,020	206	281	104
4	230	252	250	191	300	203	373	1,060	1,120	120	294	107
5	222	309	210	130	280	195	387	1,080	1,140	159	249	105
6	223	314	180	190	280	179	450	1,120	1,030	106	236	87
7	264	297	190	180	270	166	581	1,210	884	178	231	78
8	236	291	200	177	260	176	613	1,300	777	122	235	114
9	204	313	270	170	230	134	639	1,230	720	116	203	128
10	178	311	299	170	260	177	647	1,080	654	126	158	126
11	144	304	311	150	260	171	687	916	603	200	181	144
12	149	338	410	80	250	172	858	796	553	176	178	140
13	101	329	480	180	*240	185	1,150	746	511	80	175	156
14	114	324	488	160	231	214	1,390	781	479	172	174	184
15	111	310	468	167	180	*236	1,270	770	467	157	189	185
16	156	293	441	166	136	219	1,080	762	406	152	156	189
17	176	*269	*414	170	190	250	934	718	296	140	91	167
18	216	266	385	159	*219	272	862	685	430	149	131	155
19	214	258	363	120	245	291	796	675	419	137	145	149
20	170	246	352	215	200	326	714	662	401	100	128	206
21	236	254	324	212	180	331	651	662	370	180	129	175
22	242	269	310	190	160	314	601	665	347	138	164	161
23	257	166	332	210	130	298	560	671	333	119	115	110
24	245	63	318	228	180	320	552	644	312	170	83	128
25	224	121	284	209	156	334	520	615	301	216	132	133
26	231	179	283	153	168	417	514	590	281	192	65	140
27	217	267	260	238	164	524	555	553	283	175	72	134
28	220	256	240	248	176	532	625	530	258	227	65	162
29	168	259	180	247	-	508	697	573	169	246	71	158
30	201	250	240	258	-	473	781	625	232	225	82	160
31	251	-	240	250	-	443	-	618	-	262	164	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October	6,324	264	101	204	1.44	1.66
November	7,799	338	63	260	1.83	2.04
December	9,492	488	180	306	2.15	2.49
Calendar year 1946	91,253	786	30	250	1.76	23.90
January	5,884	258	80	190	1.34	1.54
February	6,225	310	130	222	1.56	1.63
March	8,614	532	134	278	1.96	2.26
April	20,662	1,390	373	689	4.85	5.41
May	25,126	1,300	530	811	5.71	6.58
June	16,187	1,140	169	540	3.80	4.24
July	5,190	262	80	167	1.18	1.36
August	5,102	294	65	165	1.16	1.34
September	4,299	206	78	143	1.01	1.13
Water year 1946-47	120,904	1,390	63	331	2.33	31.68

* Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 30 to Dec. 9, Dec. 27 to Jan. 1, Jan. 5-7, 9-14, 19, 22, 23, Feb. 1-13, 17, 20-23, Mar. 1. Discharge in second-feet per square mile and runoff in inches may not represent natural flow because of regulation.

Measurements of stream flow in the St. Lawrence River Basin made at points other than gaging stations are given in the following table:

Miscellaneous discharge measurements in St. Lawrence River Basin during water year October 1946 to September 1947

Date	Stream	Tributary to or diverting from--	Locality	Discharge (sec.-ft.)
Streams tributary to Lake Superior				
Apr. 28	Montreal River.....	Lake Superior.....	At Hurley, Wis.....	320
July 22	....do.....	....do.....	....do.....	14.3
Sept.13	....do.....	....do.....	....do.....	2.52
May 23	Little Gratiot River.	Lac La Belle.....	At Gratiot Lake outlet sec. 3, T. 57 N., R. 30 W., near Phoenix, Mich.	61.5
July 14	Pilgrim River.....	Portage River.....	On line between secs. 22 and 23, T. 54 N., R. 34 W., near South Range, Mich.	5.33
May 30	Iron River.....	Lake Superior.....	Sec. 13, T. 51 N., R. 27 W., near Big Bay, Mich.	164
Sept.24	....do.....	....do.....	....do.....	72.5
June 30	Tahquamenon River..	....do.....	On line between secs. 23 and 24, T. 46 N., R. 10 W., near Newberry, Mich.	148
Streams tributary to Lake Michigan				
Nov. 15	McDonald Lake outlet.	Lake Michigan.....	SW¼ sec. 4, T. 41 N., R. 13 W., at bridge on State Highway 99 near Gulliver, Mich.	26.8
Mar. 5	....do.....	....do.....	....do.....	5.42
Apr. 17	....do.....	....do.....	....do.....	127
Aug. 14	....do.....	....do.....	....do.....	.255
Nov. 15	Gulliver Lake outlet.	....do.....	SW¼ sec. 2, T. 41 N., R. 14 W., near Gulliver, Mich.	10.8
Mar. 5	....do.....	....do.....	....do.....	3.53
Apr. 17	....do.....	....do.....	....do.....	29.2
Aug. 14	....do.....	....do.....	....do.....	.794
Nov. 15	North Manistique Lake outlet.	Manistique Lake....	Sec. 20, T. 45 N., R. 11 W., Luce County at bridge on State Highway 98, ¼ mile east of Helmer, Mich.	6.30
Mar. 5	....do.....	....do.....	....do.....	13.3
Apr. 18	Holland Creek.....	Manistique River...	NW¼ sec. 34, T. 46 N., R. 14 W., at site of former gaging station near Seney, Mich.	112
18	Driggs River.....	....do.....	N½ sec. 36, T. 46 N., R. 15 W., at site of former gaging station near Seney, Mich.	167
18	Walsh Creek.....	Driggs River.....	NW¼ sec. 34, T. 46 N., R. 15 W., at site of former gaging station near Seney, Mich.	132
18	Marsh Creek.....	Manistique River...	NW¼ sec. 31, T. 46 N., R. 15 W., at site of former gaging station near Shingleton, Mich.	81.9
18	Creighton River....	West Branch Manistique Branch	NW¼ sec. 35, T. 46 N., R. 16 W., at site of former gaging station near Shingleton, Mich.	237
Nov. 21	Iron River.....	Brule River.....	Sec. 17, T. 43 N., R. 35 W., at county bridge near Iron River, Mich.	29.6
June 10	....do.....	....do.....	....do.....	38.7
Nov. 21	....do.....	....do.....	SE¼NW¼ sec. 16, T. 43 N., R. 35 W., near Iron River, Mich.	30.1
June 10	....do.....	....do.....	....do.....	39.9
Nov. 21	....do.....	....do.....	NW¼ sec. 22, T. 43 N., R. 35 W., at railroad bridge near Iron River, Mich.	33.8
June 10	....do.....	....do.....	....do.....	43.4
July 26	....do.....	....do.....	SW¼ sec. 25, T. 43 N., R. 35 W., at Iron River, Mich.	48.7
Nov. 21	....do.....	....do.....	SE¼ sec. 27, T. 43 N., R. 35 W., at county bridge near Iron River, Mich.	49.1
June 10	....do.....	....do.....	....do.....	66.2
Nov. 21	....do.....	....do.....	At 7th St. Bridge, Iron River, Mich..	50.2
June 10	....do.....	....do.....	....do.....	70.3
Nov. 21	....do.....	....do.....	At U. S. Highway 2, Iron River, Mich.	59.2
June 10	....do.....	....do.....	....do.....	66.8
Nov. 26	....do.....	....do.....	NW¼NW¼ sec. 1, T. 42 N., R. 35 W., above Caspian, Mich.	58.0
June 11	....do.....	....do.....	....do.....	76.9
Nov. 26	....do.....	....do.....	At East Caspian Ave. Bridge, Caspian, Mich.	58.1
June 11	....do.....	....do.....	....do.....	80.8
Nov. 26	....do.....	....do.....	SE¼SE¼ sec. 1, T. 42 N., R. 35 W., Caspian, Mich.	62.3
June 11	....do.....	....do.....	....do.....	89.6
Nov. 26	....do.....	....do.....	Near E. ¼ corner sec. 13, T. 42 N., R. 35 W., below Caspian, Mich.	69.3
June 11	....do.....	....do.....	....do.....	94.9
Nov. 26	....do.....	....do.....	Above mouth, sec. 29 T. 42 N., R. 34 W., below Caspian, Mich.	71.0
June 11	....do.....	....do.....	....do.....	98.1
Nov. 21	Stanley Creek.....	Iron River.....	Sec. 27, T. 43 N., R. 35 W., at U. S. Highway 2, near Iron River, Mich.	2.14
June 10	....do.....	....do.....	....do.....	2.72

Miscellaneous discharge measurements in St. Lawrence River Basin during water year October 1946 to September 1947--Continued

Streams tributary to Lake Michigan--Continued

Date	Stream	Tributary to or diverting from--	Locality	Discharge (sec.-ft.)
Jan. 2	Chicagoan Creek....	Paint River.....	Chicagon Lake outlet, NW¼ sec. 25, T. 43 N., R. 34 W., at U. S. Highway 2, near Crystal Falls, Mich.	9.44
June 9	....do.....	....do.....	....do.....	10.3
Aug. 5	....do.....	....do.....	....do.....	3.28
Feb. 20	Briar Hill Creek...	....do.....	Fortune Lake outlet, SW¼ sec. 24, T. 43 N., R. 33 W., at New Bristol location, near Crystal Falls, Mich.	9.58
June 10	....do.....	....do.....	....do.....	11.6
Aug. 5	....do.....	....do.....	....do.....	5.30
Apr. 13	Little Cedar River.	Menominee River....	At Ingalls, Mich.....	638
Nov. 13	St. Joseph River...	Lake Michigan.....	SE¼SW¼ sec. 5, T. 37 N., R. 3 E, at Mishawaka, Ind.	848
14	....do.....	....do.....	....do.....	886
Apr. 10	....do.....	....do.....	....do.....	11,600
18	....do.....	....do.....	....do.....	7,490
23	....do.....	....do.....	....do.....	11,700
23	....do.....	....do.....	....do.....	12,100
24	....do.....	....do.....	....do.....	11,300
24	....do.....	....do.....	....do.....	11,000
24	....do.....	....do.....	....do.....	12,000
25	....do.....	....do.....	....do.....	11,100
May 13	....do.....	....do.....	....do.....	6,100
13	....do.....	....do.....	....do.....	5,940
14	....do.....	....do.....	....do.....	4,480
15	....do.....	....do.....	....do.....	5,040
June 26	....do.....	....do.....	....do.....	5,890
26	....do.....	....do.....	....do.....	1,020
27	....do.....	....do.....	....do.....	1,080
Sept.30	....do.....	....do.....	....do.....	3,040
Apr. 7	....do.....	....do.....	At Berrien Springs, Mich.....	14,300
11	....do.....	....do.....	....do.....	12,700
19	....do.....	....do.....	....do.....	8,610
Jan. 24	Rose Lake outlet...	Coldwater River....	SW¼ sec. 18, T. 7 S., R. 6 W., near Coldwater, Mich.	3.58
Apr. 16	....do.....	....do.....	....do.....	36.4
May 5	....do.....	....do.....	....do.....	38.5
Sept.19	....do.....	....do.....	....do.....	1.76
Jan. 9	Portage River.....	St. Joseph River...	SW¼ sec. 16, T. 4 S., R. 10 W., near Vicksburg, Mich.	24.7
May 7	....do.....	....do.....	....do.....	104
Apr. 17	Austin Lake outlet.	Portage River.....	SE¼NW¼ sec. 36, T. 3 S., R. 11 W., near Kalamazoo, Mich.	16.6
May 7	....do.....	....do.....	....do.....	22.5
Feb 7	Lake George outlet.	Crooked Creek.....	SE¼ sec. 15, T. 38 N., R. 13 E., at Jamestown, Ind.	9.74
Apr. 18	....do.....	....do.....	....do.....	33.0
23	....do.....	....do.....	....do.....	46.6
May 8	....do.....	....do.....	....do.....	26.7
Nov. 23	Jimerson Lake outlet.	....do.....	SW¼NW¼ sec. 30, T. 38 N., R. 13 E., at Nevada Mills, Ind.	3.92
Feb. 14	....do.....	....do.....	....do.....	46.6
7	Crooked Lake outlet	....do.....	SE¼NE¼ sec. 8, T. 37 N., R. 13 E., at Crooked Lake, Ind.	.55
Nov. 22	Lake Gage outlet...	....do.....	NW¼ sec. 5, T. 38 N., R. 12 E., at Panama, Ind.	.03
Dec. 17	....do.....	....do.....	....do.....	.08
Jan. 15	....do.....	....do.....	....do.....	.86
Feb. 7	....do.....	....do.....	....do.....	3.03
19	....do.....	....do.....	....do.....	2.50
Mar. 26	....do.....	....do.....	....do.....	5.34
Apr. 11	....do.....	....do.....	....do.....	17.2
23	....do.....	....do.....	....do.....	26.4
May 8	....do.....	....do.....	....do.....	19.1
15	....do.....	....do.....	....do.....	21.7
Jan. 9	Klinger Lake outlet	Pawn River.....	SE¼ sec. 35, T. 7 S., R. 11 W., near White Pigeon, Mich.	24.6
Apr. 17	....do.....	....do.....	....do.....	44.1
May 7	....do.....	....do.....	....do.....	29.8
Feb. 14	Bower Lake outlet..	Pigeon Creek.....	NW¼ sec. 8, T. 38 N., R. 13 E., near Pleasant Lake, Ind.	31.9
Apr. 24	....do.....	....do.....	....do.....	436
Feb. 19	Fox Lake outlet....	....do.....	NW¼NE¼ sec. 34, T. 37 N., R. 13 E., near Angola, Ind.	.55
Apr. 17	....do.....	....do.....	....do.....	7.39
24	....do.....	....do.....	....do.....	11.1
Nov. 22	Silver Lake outlet.	....do.....	SE¼SW¼ sec. 30, T. 37 N., R. 13 E., near Angola, Ind.	.36
Dec. 17	....do.....	....do.....	....do.....	1.07
Jan. 16	....do.....	....do.....	....do.....	1.65
Feb. 14	....do.....	....do.....	....do.....	5.61
Apr. 17	....do.....	....do.....	....do.....	6.62
24	....do.....	....do.....	....do.....	11.7
July 31	....do.....	....do.....	....do.....	.19
Feb. 15	Big Turkey Lake outlet.	Turkey Creek.....	SW¼SE¼ sec. 12, T. 36 N., R. 11 E., at Stroh, Ind.	37.5
Apr. 25	....do.....	....do.....	....do.....	136
Feb. 15	Little Turkey Lake outlet.	....do.....	SE¼NE¼ sec. 11, T. 36 N., R. 11 E., at Elmira, Ind.	39.5
Apr. 25	....do.....	....do.....	....do.....	240
18	Fish Lake outlet...	Little Fly Creek...	SW¼NW¼ sec. 36, T. 37 N., R. 13 E., near Plato, Ind.	15.6
24	....do.....	....do.....	....do.....	39.6

Miscellaneous discharge measurements in St. Lawrence River Basin during water year October 1946 to September 1947--Continued

Streams tributary to Lake Michigan--Continued

Date	Stream	Tributary to or diverting from--	Locality	Discharge (sec.-ft.)
Feb. 19	Indiana Lake outlet	Mud River.....	NE¼SE¼ sec. 9, T. 38 N., R. 6 E., near Bristol, Ind.	0.72
19	Heaton Lake outlet.	Meyers ditch.....	SE¼NE¼ sec. 23, T. 38 N., R. 5 E., near Elkhart, Ind.	5.38
Apr. 16	....do.....	....do.....	....do.....	30.6
Feb. 19	Simonton Lake outlet.	St. Joseph River...	NW¼SE¼ sec. 17, T. 38 N., R. 5 E., near Elkhart, Ind.	6.44
15	Adams Lake outlet..	North Branch Elkhart River.	SE¼SW¼ sec. 36, T. 36 N., R. 10 E., near Wolcottville, Ind.	1.99
Apr. 23	....do.....	....do.....	....do.....	22.4
Oct. 30	Waldron Lake outlet	....do.....	SW¼NE¼ sec. 14, T. 35 N., R. 9 E., near Cosperville, Ind.	51.6
Jan. 28	Bixler Lake outlet.	Dieble Creek.....	NW¼ sec. 4, T. 34 N., R. 11 E., at Kendallville, Ind.	.42
Feb. 6	....do.....	....do.....	....do.....	6.14
13	....do.....	....do.....	NW¼ sec. 4, T. 34 N., R. 11 E., at Kendallville, Ind.	1.73
20	....do.....	....do.....	....do.....	1.60
Mar. 27	....do.....	....do.....	....do.....	9.64
Apr. 12	....do.....	....do.....	....do.....	17.8
19	....do.....	....do.....	....do.....	12.4
Feb. 15	Sylvan Lake outlet.	North Branch Elkhart River.	SE¼SW¼ sec. 9, T. 35 N., R. 10 E., at Rome City, Ind.	49.2
15	Sand Lake outlet...	South Branch Elkhart River.	SW¼NW¼ sec. 9, T. 33 N., R. 10 E., near Burr Oak, Ind.	10.1
Apr. 24	....do.....	....do.....	....do.....	73.9
Feb. 13	Skinner Lake outlet	Croft ditch.....	NE¼SE¼ sec. 16, T. 34 N., R. 10 E., near Albion, Ind.	4.03
16	Lower Long Lake outlet.	Kirkpatrick ditch..	NE¼NW¼ sec. 28, T. 34 N., R. 8 E., near Albion, Ind.	2.67
Apr. 24	....do.....	....do.....	....do.....	34.1
Feb. 16	Eagle Lake outlet..	Willets ditch.....	SW¼SW¼ sec. 6, T. 34 N., R. 9 E., near Kimmel, Ind.	2.34
16	Diamond Lake outlet	....do.....	SW¼SE¼ sec. 31, T. 35 N., R. 8 E., near Wawaka, Ind.	3.70
Apr. 24	Sparta Lake outlet.	Sparta Lake ditch..	SE¼SE¼ sec. 14, T. 34 N., R. 8 E., at Kimmel, Ind.	2.76
Oct. 17	Syracuse Lake outlet.	Turkey Creek.....	SW¼SW¼ sec. 5, T. 34 N., R. 7 E., at Syracuse, Ind.	1.27
17	....do.....	....do.....	....do.....	25.6
Apr. 2	Dewart Lake outlet.	....do.....	SE¼SW¼ sec. 25, T. 34 N., R. 8 E., near Laesburg, Ind.	.08
22	....do.....	....do.....	....do.....	5.55
July 1	....do.....	....do.....	....do.....	.57
Oct. 17	Wabee Lake outlet..	....do.....	SW¼SE¼ sec. 16, T. 36 N., R. 6 E., near Milford, Ind.	.65
Feb. 12	....do.....	....do.....	....do.....	7.90
Apr. 1	....do.....	....do.....	....do.....	5.16
22	....do.....	....do.....	....do.....	13.2
July 1	....do.....	....do.....	....do.....	7.14
Aug. 8	....do.....	....do.....	....do.....	2.09
Nov. 15	West Branch of Twin Branch.	St. Joseph River...	NW¼NW¼ sec. 13, T. 37 N., R. 3 E., at Mishawaka, Ind.	4.26
Apr. 9	....do.....	....do.....	....do.....	13.8
May 13	....do.....	....do.....	....do.....	8.17
June 26	....do.....	....do.....	....do.....	1.23
27	....do.....	....do.....	....do.....	7.15
Nov. 14	Willow Creek.....	....do.....	SW¼SW¼ sec. 12, T. 37 N., R. 3 E., at Mishawaka, Ind.	1.74
Apr. 9	....do.....	....do.....	....do.....	19.40
May 13	....do.....	....do.....	....do.....	12.91
June 26	....do.....	....do.....	....do.....	8.51
Apr. 8	Paw Paw River.....	....do.....	NW¼ sec. 18, T. 4 S., R. 18 W., at Benton Harbor, Mich.	4,080
9	....do.....	....do.....	....do.....	3,460
10	....do.....	....do.....	....do.....	2,810
8	Ox Creek.....	Paw Paw River.....	NE¼NE¼ sec. 30, T. 4 S., R. 18 W., at Benton Harbor, Mich.	28.1
8	Kalamazoo River....	Lake Michigan.....	NW¼ sec. 17, T. 5 N., R. 15 W., at New Richmond, Mich.	10,800
Oct. 8	Portage Creek.....	Kalamazoo River....	S½ sec. 22, T. 2 S., R. 11 W., at Lake St. Bridge, Kalamazoo, Mich.	43.6
Nov. 21	....do.....	....do.....	....do.....	51.4
Dec. 17	....do.....	....do.....	....do.....	55.2
Jan. 28	....do.....	....do.....	....do.....	58.2
Feb. 19	....do.....	....do.....	....do.....	45.9
Mar. 12	....do.....	....do.....	....do.....	71.1
Aug. 20	....do.....	....do.....	....do.....	58.4
Sept.16	....do.....	....do.....	....do.....	64.3
Oct. 8	....do.....	....do.....	N½ sec. 22, T. 2 S., R. 11 W., at Vine St. Bridge, Kalamazoo, Mich.	41.1
Nov. 21	....do.....	....do.....	....do.....	47.4
Dec. 17	....do.....	....do.....	....do.....	53.4
Jan. 29	....do.....	....do.....	....do.....	54.4
Feb. 19	....do.....	....do.....	....do.....	42.7
Mar. 12	....do.....	....do.....	....do.....	59.7
Aug. 20	....do.....	....do.....	....do.....	53.8
Sept.16	....do.....	....do.....	....do.....	63.9
Oct. 8	Axtell Creek.....	Portage Creek.....	NE¼ sec. 28, T. 2 S., R. 11 W., at Maple St. Bridge, Kalamazoo, Mich.	.541
Nov. 21	....do.....	....do.....	....do.....	.568
Dec. 17	....do.....	....do.....	....do.....	.436
Jan. 29	....do.....	....do.....	....do.....	.444

Miscellaneous discharge measurements in St. Lawrence River Basin during water year October 1946 to September 1947--Continued

Streams tributary to Lake Michigan--Continued

Date	Stream	Tributary to or diverting from--	Locality	Discharge (sec.-ft.)
Feb. 19	Axtell Creek.....	Portage Creek.....	NE¼ sec. 28, T. 2 S., R. 11 W., at Maple St. Bridge, Kalamazoo, Mich.	0.567
Mar. 15	....do.....	....do.....	....do.....	.705
Aug. 20	....do.....	....do.....	....do.....	.354
Sept.16	....do.....	....do.....	....do.....	.826
16	....do.....	....do.....	SW¼ sec. 22, T. 2 S., R. 11 W., 50 feet above mouth, in Upjohn Park, Kalamazoo, Mich.	.374
Oct. 8	Gun River.....	Kalamazoo River....	SE¼ sec. 14, T. 2 N., R. 11 W., near Martin, Mich.	13.5
Nov. 20	....do.....	....do.....	....do.....	38.2
Dec. 10	....do.....	....do.....	....do.....	36.7
Jan. 28	....do.....	....do.....	....do.....	71.6
Feb. 17	....do.....	....do.....	....do.....	59.8
Mar. 13	....do.....	....do.....	....do.....	59.5
Apr. 9	....do.....	....do.....	....do.....	360
24	....do.....	....do.....	....do.....	232
29	....do.....	....do.....	....do.....	153
May 6	....do.....	....do.....	....do.....	115
June 12	....do.....	....do.....	....do.....	91.7
Nov. 20	Gun Lake outlet....	Gun River.....	NW¼ sec. 6, T. 2 N., R. 10 W., near Shelbyville, Mich.	11.4
Dec. 10	....do.....	....do.....	....do.....	14.8
Jan. 29	....do.....	....do.....	....do.....	26.9
Feb. 17	....do.....	....do.....	....do.....	27.6
Mar. 13	....do.....	....do.....	....do.....	20.6
Apr. 9	....do.....	....do.....	....do.....	170
17	....do.....	....do.....	....do.....	104
29	....do.....	....do.....	....do.....	67.4
May 6	....do.....	....do.....	....do.....	69.3
June 12	....do.....	....do.....	....do.....	48.5
Apr. 8	Swan Creek.....	Kalamazoo River....	SE¼ sec. 17, T. 2 N., R. 14 W., near Allegan, Mich.	348
8	Rabbit River.....	....do.....	NW¼ sec. 10, T. 3 N., R. 15 W., near New Richmond, Mich.	1,800
Jan. 23	Portage River.....	Grand River.....	SW¼ sec. 21, T. 1 S., R. 2 E., near Munith, Mich.	4.17
Mar. 21	....do.....	....do.....	....do.....	31.5
Apr. 4	....do.....	....do.....	....do.....	195
11	....do.....	....do.....	....do.....	165
15	....do.....	....do.....	....do.....	126
May 17	....do.....	....do.....	....do.....	59.6
Mar. 21	.. .do.....	....do.....	On line between secs. 25 and 36, T. 1 S., R. 1 E., near Munith, Mich.	134
Apr. 4	....do.....	....do.....	....do.....	539
11	....do.....	....do.....	....do.....	824
15	....do.....	....do.....	....do.....	489
Jan. 23	Trist Branch Portage River.	Portage River.....	SW¼ sec. 33, T. 1 S., R. 2 E., near Munith, Mich.	12.6
Mar. 21	....do.....	....do.....	....do.....	18.9
Apr. 4	....do.....	....do.....	....do.....	72.4
11	....do.....	....do.....	....do.....	75.4
15	....do.....	....do.....	....do.....	42.5
May 17	....do.....	....do.....	....do.....	45.0
Mar. 21	Portage Lake inlet.	....do.....	SE¼ sec. 6, T. 2 S., R. 2 E., rear Munith, Mich.	3.78
Apr. 4	....do.....	....do.....	....do.....	6.40
11	....do.....	....do.....	....do.....	8.73
15	....do.....	....do.....	....do.....	2.78
24	Lake Lansing outlet	Cedar River.....	NW¼ sec. 2, T. 4 N., R. 1 W., rear Haslett, Mich.	13.0
Jan. 27	Morrison Lake outlet.	Grand River.....	N½ sec. 36, T. 6 N., R. 8 W., rear Clarksville, Mich.	7.13
Apr. 9	....do.....	....do.....	....do.....	74.2
18	....do.....	....do.....	....do.....	46.4
May 12	....do.....	....do.....	....do.....	14.3
Jan. 27	Jordon Lake outlet.	Thornapple River...	NW¼ sec. 9, T. 4 N., R. 7 W., rear Lake Odessa, Mich.	16.5
Apr. 18	....do.....	....do.....	....do.....	88.0
May 12	....do.....	....do.....	....do.....	37.4
Dec. 6	Backus Creek.....	Houghton Lake.....	Sec. 5, T. 22 N., R. 2 W., near Prudenville, Mich.	1.07
Apr. 8	....do.....	....do.....	....do.....	49.5
July 10	....do.....	....do.....	....do.....	1.14
Sept.30	....do.....	....do.....	....do.....	2.62
Oct. 7	Clam River.....	Muskegon River.....	Sec. 21, T. 22 N., R. 8 W., near Jennings, Mich.	10.2
Nov. 13	....do.....	....do.....	....do.....	12.2
Dec. 9	....do.....	....do.....	....do.....	12.3
Jan. 14	....do.....	....do.....	....do.....	11.2
Feb. 11	....do.....	....do.....	....do.....	48.0
Mar. 11	....do.....	....do.....	....do.....	18.8
Apr. 7	....do.....	....do.....	....do.....	61.5
May 21	....do.....	....do.....	....do.....	129
June 11	....do.....	....do.....	....do.....	40.0
July 9	....do.....	....do.....	....do.....	21.3
Aug. 13	....do.....	....do.....	....do.....	12.8
Sept.10	....do.....	....do.....	....do.....	11.9
Oct. 15	Fremont Lake outlet	....do.....	NW¼ sec. 15, T. 12 N., R. 14 W., near Fremont, Mich.	2.47
Feb. 7	....do.....	....do.....	....do.....	15.6
Apr. 24	....do.....	....do.....	....do.....	43.5
May 13	....do.....	....do.....	....do.....	24.7
13	Silver Lake outlet.	Lake Michigan.....	NE¼ sec. 36, T. 15 N., R. 19 W., near Mears, Mich.	19.0

Miscellaneous discharge measurements in St. Lawrence River Basin during water year October 1946 to September 1947--Continued

Streams tributary to Lake Michigan--Continued

Date	Stream	Tributary to or diverting from--	Locality	Discharge (sec.-ft.)
Aug. 19	Silver Lake outlet.	Lake Michigan....	NE¼ sec. 36, T. 15 N., R. 19 W., near Mears, Mich.	8.71
Dec. 31	North Branch Manistee River.	Manistee River...	Sec. 3, T. 7 N., R. 6 W., near Kalkaska, Mich.	3.74
Apr. 14	....do.....	....do.....	....do.....	6.40
July 8	....do.....	....do.....	....do.....	3.03
Sept.30	....do.....	....do.....	....do.....	2.48
Dec. 11	Fife Lake outlet...	....do.....	Fife Lake, Mich.....	3.46
May 29	....do.....	....do.....	....do.....	14.4
July 8	....do.....	....do.....	....do.....	4.17
Oct. 28	Betsie River.....	Lake Michigan....	Sec. 5, T. 25 N., R. 12 W., near Karlin, Mich.	33.7
Dec. 30	....do.....	....do.....	....do.....	43.4
May 16	....do.....	....do.....	....do.....	133
July 28	....do.....	....do.....	....do.....	44.3
Jan. 23	Crystal Lake outlet	Betsie River.....	Beulah, Mich.....	0
May 16	....do.....	....do.....	....do.....	35.6
July 28	....do.....	....do.....	....do.....	28.0
June 24	Platte River.....	Lake Michigan....	Sec. 27, T. 27 N., R. 15 W., near Beulah, Mich.	172
July 28	....do.....	....do.....	....do.....	132
Jan. 23	Crystal River.....	....do.....	Sec. 24, T. 29 N., R. 14 W., near Cedar, Mich.	47.6
May 16	....do.....	....do.....	....do.....	83.7
July 9	....do.....	....do.....	....do.....	68.9
Dec. 16	Bear River.....	....do.....	Walloon Lake, Mich.....	7.20
Apr. 29	....do.....	....do.....	....do.....	46.4
July 23	....do.....	....do.....	....do.....	21.4
Dec. 16	Carp Lake River....	....do.....	Carp Lake, Mich.....	14.3
Apr. 28	....do.....	....do.....	....do.....	76.6
July 23	....do.....	....do.....	....do.....	4.33
Dec. 16	East Branch Maple River.	Maple River.....	Pellston, Mich.....	2.00
Apr. 29	....do.....	....do.....	....do.....	43.9
July 23	....do.....	....do.....	....do.....	19.7

Streams tributary to Lake Huron

Dec. 3	Grand Lake outlet..	Lake Huron.....	Rogers City, Mich.....	0.10
May 6	....do.....	....do.....	....do.....	183
Aug. 5	....do.....	....do.....	....do.....	7.92
6	Thunder Bay River..	....do.....	Norway Dam near Alpena, Mich.....	3.42
Dec. 2	McCormick Lake outlet.	Thunder Bay River	Atlanta, Mich.....	19.0
May 7	....do.....	....do.....	....do.....	31.0
Aug. 6	....do.....	....do.....	....do.....	19.5
Sept.29	....do.....	....do.....	....do.....	24.1
Dec. 5	Hunt Creek.....	....do.....	Sec. 25, T. 29 N., R. 2 E., near Lewiston, Mich.	23.7
Apr. 18	....do.....	....do.....	....do.....	34.7
July 30	....do.....	....do.....	....do.....	20.4
Sept.29	....do.....	....do.....	....do.....	23.7
Dec. 5	Fuller Creek.....	Hunt Creek.....	S½NE¼ sec. 35, T. 29 N., R. 2 E., near Lewiston, Mich.	7.87
Apr. 18	....do.....	....do.....	....do.....	9.83
July 30	....do.....	....do.....	....do.....	8.17
Sept.29	....do.....	....do.....	....do.....	7.59
Dec. 5	East Fish Lake outlet.	Fuller Creek.....	NE¼ sec. 34, T. 29 N., R. 2 E., near Lewiston, Mich.	1.44
Apr. 18	....do.....	....do.....	....do.....	2.06
July 30	....do.....	....do.....	....do.....	1.48
Sept.29	....do.....	....do.....	....do.....	1.64
Oct. 2	Wolf Creek.....	Lower South Branch Thunder Bay River.	Sec. 28, T. 30 N., R. 7 E., near Alpena, Mich.	64.7
Nov. 4	....do.....	....do.....	....do.....	51.1
Dec. 3	....do.....	....do.....	....do.....	39.7
Jan. 6	....do.....	....do.....	....do.....	76.6
Feb. 3	....do.....	....do.....	....do.....	92.5
Apr. 16	....do.....	....do.....	....do.....	435
19	....do.....	....do.....	....do.....	495
19	....do.....	....do.....	....do.....	400
May 7	....do.....	....do.....	....do.....	562
June 4	....do.....	....do.....	....do.....	154
July 1	....do.....	....do.....	....do.....	58.4
Aug. 6	....do.....	....do.....	....do.....	36.2
Sept. 3	....do.....	....do.....	....do.....	35.8
Dec. 6	Lake St. Helen outlet.	Au Sable River...	St. Helen, Mich.....	7.35
May 22	....do.....	....do.....	....do.....	134
July 31	....do.....	....do.....	....do.....	7.70
Sept.30	....do.....	....do.....	....do.....	26.4
Jan. 16	Au Gres River.....	Lake Huron.....	Sec. 28, T. 23 N., R. 4 E., near Lupton, Mich.	2.13
May 13	....do.....	....do.....	....do.....	60.7
July 22	....do.....	....do.....	....do.....	.02
Jan. 16	East Branch Au Gres River.	Au Gres River....	E½ sec. 8, T. 22 N., R. 6 E., near Whittemore, Mich.	20.5
May 12	....do.....	....do.....	....do.....	66.0
July 24	....do.....	....do.....	....do.....	22.7
Jan. 16	Quiley Creek.....	East Branch Au Gres River.	W½ sec. 9, T. 22 N., R. 6 E., near Whittemore, Mich.	11.4
May 12	....do.....	....do.....	....do.....	23.6
July 24	....do.....	....do.....	....do.....	13.3

Miscellaneous discharge measurements in St. Lawrence River Basin during water year October 1946 to September 1947--Continued

Streams tributary to Lake Huron--Continued

Date	Stream	Tributary to or diverting from--	Locality	Discharge (sec.-ft.)
Oct. 3	Rifle River.....	Lake Huron.....	Devoe Dam, near Lupton, Mich.....	25.6
Nov. 6	....do.....	....do.....	....do.....	37.0
Dec. 13	....do.....	....do.....	....do.....	39.4
Jan. 16	....do.....	....do.....	....do.....	32.1
Feb. 6	....do.....	....do.....	....do.....	27.1
Mar. 11	....do.....	....do.....	....do.....	28.5
Apr. 17	....do.....	....do.....	....do.....	92.8
May 13	....do.....	....do.....	....do.....	45.7
June 3	....do.....	....do.....	....do.....	44.3
July 22	....do.....	....do.....	....do.....	23.5
Aug. 14	....do.....	....do.....	....do.....	19.3
Sept. 9	....do.....	....do.....	....do.....	18.8
Oct. 3	....do.....	....do.....	The Ranch, near Lupton, Mich.....	69.1
Nov. 6	....do.....	....do.....	....do.....	77.3
May 13	....do.....	....do.....	....do.....	112
July 22	....do.....	....do.....	....do.....	61.2
Oct. 3	Gamble Creek.....	Rifle River.....	Devoe Lake, near Lupton, Mich.....	25.2
Nov. 6	....do.....	....do.....	....do.....	30.5
May 13	....do.....	....do.....	....do.....	45.6
July 22	....do.....	....do.....	....do.....	24.4

Streams tributary to Lake St. Clair

Jan. 16	Loon Lake outlet...	Clinton River....	SW¼ sec. 10, T. 3 N., R. 9 E., at Drayton Plains, Mich.	31.0
Apr. 16	....do.....	....do.....	....do.....	228
May 13	....do.....	....do.....	....do.....	107
July 17	....do.....	....do.....	....do.....	43.3
Mar. 27	Red Run.....	....do.....	On line between secs. 1 and 12, T. 1 N., R. 11 E., near Warren, Mich.	84.7
Apr. 1	....do.....	....do.....	....do.....	109
29	....do.....	....do.....	....do.....	37.3
Sept. 15	....do.....	....do.....	....do.....	25.8
23	....do.....	....do.....	On line between secs. 1 and 12, T. 1 N., R. 11 E., near Warren, Mich.	15.3
Mar. 27	Bear Creek.....	Red Run.....	On line between secs. 3 and 10, T. 1 N., R. 12 E., near Warren, Mich.	34.9
Apr. 1	....do.....	....do.....	....do.....	37.3
29	....do.....	....do.....	....do.....	6.29

Streams tributary to Lake Erie

July 30	Huron River.....	Lake Erie.....	NW¼ sec. 6, T. 1 N., R. 7 E., near New Hudson, Mich.	159
Oct. 22	Union Lake outlet..	Huron River.....	SE¼ sec. 1, T. 2 N., R. 8 E., near Commerce, Mich.	.098
Nov. 5	....do.....	....do.....	....do.....	.099
Dec. 6	....do.....	....do.....	....do.....	.120
Jan. 17	....do.....	....do.....	....do.....	2.03
Feb. 18	....do.....	....do.....	....do.....	3.57
Mar. 10	....do.....	....do.....	....do.....	1.99
31	....do.....	....do.....	....do.....	7.12
Apr. 3	....do.....	....do.....	....do.....	9.80
9	....do.....	....do.....	....do.....	16.8
17	....do.....	....do.....	....do.....	20.1
May 13	....do.....	....do.....	....do.....	1.05
June 19	....do.....	....do.....	....do.....	9.32
July 17	....do.....	....do.....	....do.....	3.16
Aug. 26	....do.....	....do.....	SE¼ sec. 1, T. 2 N., R. 8 E., near Commerce, Mich.	5.16
Sept. 24	....do.....	....do.....	....do.....	5.22
Jan. 17	Proud Lake outlet..	....do.....	SE¼ sec. 18, T. 2 N., R. 8 E., near Commerce, Mich.	35.5
Apr. 17	....do.....	....do.....	....do.....	209
May 13	....do.....	....do.....	....do.....	139
July 18	....do.....	....do.....	....do.....	63.7
Jan. 21	Horseshoe Lake outlet.	....do.....	SW¼ sec. 8, T. 1 S., R. 6 E., near Whitmore Lake, Mich.	3.10
Apr. 4	....do.....	....do.....	....do.....	93.2
10	....do.....	....do.....	....do.....	161
17	....do.....	....do.....	....do.....	41.8
May 14	....do.....	....do.....	....do.....	13.4
Oct. 23	Hiland Lake outlet.	....do.....	NE¼ sec. 32, T. 1 N., R. 4 E., near Pickney, Mich.	5.77
Dec. 10	....do.....	....do.....	....do.....	16.2
Jan. 22	....do.....	....do.....	....do.....	37.0
22	Portage Creek.....	Portage River....	NW¼ sec. 34, T. 1 N., R. 3 E., near Unadilla, Mich.	20.2
Mar. 20	....do.....	....do.....	....do.....	47.0
Apr. 18	....do.....	....do.....	....do.....	93.1
May 14	....do.....	....do.....	....do.....	44.9
Sept. 25	....do.....	....do.....	....do.....	22.6
Jan. 22	North Fork Mill Creek.	Mill Creek.....	T. 2 S., on line between sec. 1, R. 3 E., and sec. 6, R. 4 E., near Chelsea, Mich.	5.62
Mar. 21	....do.....	....do.....	....do.....	10.4
Jan. 22	....do.....	....do.....	NE¼ sec. 8, T. 2 S., R. 4 E., near Chelsea, Mich.	24.2
Mar. 21	....do.....	....do.....	....do.....	58.3
Jan. 22	Four Mile Lake outlet.	North Fork Mill Creek.	NW¼ sec. 9, T. 2 S., R. 4 E., near Chelsea, Mich.	.528
Feb. 6	Round Lake outlet..	West Branch St. Joseph River.	SW¼SW¼ sec. 17, T. 38 N., R. 15 E., at Clear Lake, Ind.	7.62
19	....do.....	....do.....	....do.....	1.77

Miscellaneous discharge measurements in St. Lawrence River Basin during water year October 1946 to September 1947--Continued

Streams tributary to Lake Erie--Continued

Date	Stream	Tributary to or diverting from--	Locality	Discharge (sec.-ft.)
Apr. 17	Round Lake outlet..	West Branch St. Joseph River.	SW¼SW¼ sec. 17, T. 38 N., R. 15 E., at Clear Lake, Ind.	24.4
23	....do.....	....do.....	....do.....	35.0
29	....do.....	....do.....	....do.....	22.6
Feb. 14	Hamilton Lake outlet.	Fish Creek.....	SE¼ sec. 33, T. 36 N., R. 14 E., at Hamilton, Ind.	5.87
Apr. 1	Miami & Erie Canal.	Auglaise River...	NE¼ sec. 23, T. 4 S., R. 4 E., 1 mile north of Kossuth, Ohio.	6.84
Nov. 19	....do.....	....do.....	Florida, Ohio.....	24.8
Dec. 18	....do.....	....do.....	....do.....	25.7
Jan. 29	....do.....	....do.....	....do.....	26.8
Feb. 26	....do.....	....do.....	....do.....	14.4
Apr. 1	....do.....	....do.....	....do.....	20.2
May 1	....do.....	....do.....	....do.....	24.4
28	....do.....	....do.....	....do.....	28.0
July 17	....do.....	....do.....	....do.....	26.0
Aug. 6	....do.....	....do.....	....do.....	25.8
Sept.10	....do.....	....do.....	....do.....	26.1
Nov. 19	....do.....	....do.....	Delphos, Ohio.....	15.0
Dec. 17	....do.....	....do.....	....do.....	4.47
Jan. 28	....do.....	....do.....	....do.....	2.75
Mar. 25	....do.....	....do.....	....do.....	1.24
Apr. 30	....do.....	....do.....	....do.....	5.96
July 2	....do.....	....do.....	....do.....	.54
Aug. 2	....do.....	....do.....	....do.....	0
13	....do.....	....do.....	....do.....	13.4
Sept.11	....do.....	....do.....	....do.....	28.3
24	....do.....	....do.....	....do.....	17.2
Apr. 16	Devils Lake outlet.	Bean Creek.....	NE¼ sec. 4, T. 6 S., R. 1 E., near Manitou Beach, Mich.	45.9
May 5	....do.....	....do.....	....do.....	38.2
Sept. 5	Wolf Creek.....	Sandusky River...	NW¼ sec. 28, T. 2 N., R. 13 E., at culvert on State Highway 587, 4.4 miles southeast of Fostoria, Ohio. Drainage area, 5.74 square miles.	*631
5	Unnamed stream.....	Wolf Creek.....	SW¼ sec. 27, T. 2 N., R. 13 E., at culvert on State Highway 587, 5 miles southeast of Fostoria, Ohio. Drainage area, 1.54 square miles.	*248
5	....do.....	....do.....	NE¼ sec. 14, T. 2 N., R. 13 E., at culvert on State Highway 18, 2½ miles west of Bascom, Ohio. Drainage area, 5.70 square miles.	†785

* Flow at crest stage; computed by contracted-opening method plus road overflow.
† Flow at crest stage; computed by contracted-opening method.

Streams tributary to Lake Ontario

Nov. 8	Seneca River.....	Oswego River.....	Waterloo, N. Y.....	2,180
18	....do.....	....do.....	....do.....	1,900
Dec. 12	....do.....	....do.....	....do.....	1,970
Mar. 21	....do.....	....do.....	....do.....	2,120
Apr. 9	....do.....	....do.....	....do.....	2,110
May 8	....do.....	....do.....	....do.....	2,500
June 6	....do.....	....do.....	....do.....	2,540
July 24	....do.....	....do.....	....do.....	2,000
24	....do.....	....do.....	....do.....	1,720
24	....do.....	....do.....	....do.....	2,220
Aug. 4	....do.....	....do.....	....do.....	2,080
Sept.11	....do.....	....do.....	....do.....	1,790
Oct. 29	....do.....	....do.....	Baldwinsville, N. Y.....	2,840
Nov. 18	....do.....	....do.....	....do.....	2,670
Dec. 11	....do.....	....do.....	....do.....	2,650
Jan. 10	....do.....	....do.....	....do.....	1,940
Feb. 14	....do.....	....do.....	....do.....	5,200
Mar. 22	....do.....	....do.....	....do.....	4,060
Apr. 10	....do.....	....do.....	....do.....	8,460
May 9	....do.....	....do.....	....do.....	8,110
15	....do.....	....do.....	....do.....	7,570
June 10	....do.....	....do.....	....do.....	12,700
16	....do.....	....do.....	....do.....	10,300
Aug. 4	....do.....	....do.....	....do.....	1,440
21	....do.....	....do.....	....do.....	1,730
27	....do.....	....do.....	....do.....	1,880
Sept.11	....do.....	....do.....	....do.....	1,660
Oct. 29	Seneca River feeder canal.	....do.....	....do.....	41.7
Dec. 11	....do.....	....do.....	....do.....	11.6

Streams tributary to St. Lawrence River

July 13	True Brook.....	Saranac River....	½ mile west of Moffitsville, Clinton County, N. Y. Drainage area, 22.7 square miles.	‡5,700
13	Behan Brook.....	....do.....	1 mile northeast of Picketts Corners, Clinton County, N. Y. Drainage area, 9.9 square miles.	†890
Nov. 16	East Branch Ausable River.	Ausable River....	Near Keene Valley, N. Y.....	115
June 3	Furnace Brook.....	Otter Creek.....	At North Chittenden, Vt. Drainage area, 16.5 square miles.	†1,500

† Flow at crest stage; computed by contracted-opening method.
‡ Flow at crest stage computed by slope-area method.

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Miscellaneous discharge measurements in St. Lawrence River Basin during water year October 1946 to September 1947--Continued

Streams tributary to St. Lawrence River--Continued

Date	Stream	Tributary to or diverting from--	Locality	Discharge (sec.-ft.)
June 3	Billings Brook.....	East Creek.....	Near Chittenden, Vt. Drainage area, 1.2 square miles.	‡160
3	Hewitt Brook.....	....do.....	Near Chittenden, Vt. Drainage area, 2.0 square miles.	†380
3	Wardwell Brook.....	....do.....	Near Chittenden, Vt. Drainage area, 0.8 square mile.	**21

** Flow at crest stage; computed by contracted-opening method and by computation of flow over dam.
† Flow at crest stage; computed by contracted-opening method.
‡ Flow at crest stage computed by slope-area method.