UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

FLOODS IN WISCONSIN MAGNITUDE AND FREQUENCY

By
D. W. Ericson

Prepared in cooperation with the
State Highway Commission of Wisconsin

Open-file report

Madison, Wisconsin
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ABSTRACT

Flood data from gaging stations on Wisconsin rivers and streams are listed in this report. From these data, composite frequency curves were defined which express the ratio of floods of various recurrence intervals to the mean annual flood. Multiple correlation techniques were used to obtain formulas that relate the basin parameters of drainage area, main channel slope, and lake and reservoir surface area to the mean annual flood. By combining the results from the mean annual flood formulas with the regional frequency curves, the flood-frequency relationship can be determined for most sites in the State where the drainage basin exceeds 20 square miles. The curves and formulas are not applicable to: main stem of several of the larger rivers, highly regulated streams where it is possible for man to alter flood peaks, and drainage basins under 70 square miles in a part of west-central Wisconsin.

INTRODUCTION

The engineering design of structures located within the boundaries of a river flood plain should consider the flood potential for that specific site. This report helps to define the flood potential by providing methods for determining the magnitude of floods for various frequencies which may be expected on Wisconsin rivers and streams.

For structures such as large dams where failure would endanger human life or cause serious economic losses, the maximum probable flood is generally selected as the design flood. When human lives or serious economic losses are not factors, the design becomes a problem of economics, and a flood of a specified frequency or probability should logically be the basis for the hydraulic aspects of the design.

The U. S. Geological Survey, through its cooperative programs has collected streamflow records at numerous sites throughout Wisconsin. These records contain the history of past floods which provides the basis for one of the more reliable methods of estimating the magnitude and frequency of future floods. An analysis was made to define composite relationships that give areal significance to the flood data. By correlating certain basin characteristics with the flood data, these composite relationships are projected to ungaged sites.

Acknowledgements

This report was prepared by the U. S. Geological Survey in accordance with a cooperative agreement with the State Highway Commission of Wisconsin, E. L. Roettiger, State highway engineer, and H. B. Schultz, engineer of bridges. The work was performed by Donald W. Ericson, hydraulic engineer, with assistance of Mark W. Busby and other district personnel in the Madison district office under the direction of F. T. Schaefer, district engineer. Technical assistance was furnished by the Washington office of the Geological Survey.

The flood data used in this report were collected by the Geological Survey through cooperative agreements with various organizations, particularly the Public Service Commission of Wisconsin, the Corps of Engineers, Department of the Army, the Wisconsin Valley Improvement Company, and the Northern States Power Company.

Description of the Area

Wisconsin is one of the Great Lakes States with more than 500 miles of shoreline on Lake Superior and Lake Michigan. The total area of the State is approximately 56,000 square miles of which 38,500 square miles is in the Mississippi River basin and the remaining 17,500 square miles is in the St. Lawrence River basin. The area of inland lakes is more than 1,400 square miles.

Topography

The movement of the great continental glaciers many thousands of years ago created Wisconsin's topography of gently rolling hills and level plains studded with thousands of lakes. The lakes were formed when the receding glaciers deposited drift in the valleys of existing drainage or left huge ice cakes imbedded in the glacial drift.

Approximately 15,000 square miles in southwestern Wisconsin is a part of an unglaciated region extending into Minnesota, Iowa, and Illinois which was completely surrounded but never covered by the glaciers, and is commonly known as the "driftless area." The topography of this region is generally rugged with relatively narrow but deeply entrenched river valleys. The greatest relief is along the Mississippi River where some of the bluffs rise 400 to 600 feet above the valley floor.

Climate

Wisconsin's location in the interior of a large continent in the temperate zone gives it an extremely variable climate. Winters are long and cold, particularly in the central and northern portions of the State, while summers can be very warm in the south. The mean annual temperature varies from 39° in the north to 48° in the south.

The low winter temperatures create heavy ice cover on most streams. The thickness varies, depending on conditions. It is not uncommon for ice to exceed 2 feet in depth. The spring breakup in southern Wisconsin generally starts in late February or early March while northern streams remain locked in ice until April. Ice jams can become severe on some streams during the spring breakup, but flooding from this cause is usually limited to relatively small areas.

The average annual precipitation of 31 inches for the State is distributed rather uniformly, ranging from 28 inches in some parts of the north to 34 inches along the southern and southwestern borders. The rainfall during the warm season from April through September averages over 20 inches. Thunderstorms, which are occasionally severe, occur frequently during this warm season.

There is considerable variation in the annual snowfall. Some sections of northern Wisconsin receive an average of 60 inches of snow each winter as compared to the average of 30 inches along the southern boundary of the State.

FLOOD-FREQUENCY ANALYSIS

Flood Frequency at a Gaging Station

Types of Series

The flood-frequency curve for the individual gaging station may be derived from two types of flood series: the annual flood series or the partial-duration series.

The annual flood series is based on the momentary maximum discharge during each water year. A water year is the period October 1 through September 30. One objection to the annual series is that only the highest peak discharge is considered in any one year whereas several other peaks during that same water year might exceed the annual maximum for other years.

The partial-duration series overcomes the objection of omitting some outstanding floods by including all peaks above a selected base discharge. However, the partial-duration series also has disadvantages, some of which are as follows:

1. Floods are not always fully independent events, as one flood may be partially induced by another.
2. The selection of the base discharge is arbitrary.
3. Some water years may have no flood above the base discharge.
4. Analysis is more laborious, as more events are involved.
5. Damages from several floods occurring within a short time period are frequently little greater than would have resulted from a single flood.

The results of both series are stated in terms of recurrence intervals in years although there is a significant difference in their meanings. The recurrence interval for the annual flood series is the average interval between annual maximums that equal or exceed a given magnitude. For the partial-duration series, the recurrence interval is the average interval within which a given flood will be equaled or exceeded once, regardless of the relationship to the water year or any other period of time. Langbein (1949) has shown by statistical principles that a definite relationship exists between the two series. This relationship is illustrated in the following table.

Recurrence intervals in years

Annual flood series	Partial-duration series
1.16	0.5
1.58	1.0
2.00	1.45
2.54	2.0
5.52	5.0
10.5	10
20.5	20
50.5	50

It will be noted that results are essentially the same from either series for recurrence intervals of more than 10 years. The annual flood series was used for this report. For those desiring information on the basis of the partial-duration series, it is suggested that methods outlined in this report be used to compute the values for the annual flood series, and conversions made by use of the above table.

Plotting Positions

Annual peak discharges were tabulated chronologically and arranged in order of magnitude, beginning with number 1 for the largest flood. A time scale or recurrence interval was fitted to the data using the formula $T = (n+1)/m$, where T is the recurrence interval in years, n is the number of years of record, and m is the order number. The annual flood discharges were plotted versus their respective recurrence intervals on a special grid developed by Powell (1943). A straight line on Powell's grid conforms with Gumbel's (1941) theory of extreme values.

Historical floods

Reliable historical flood data are valuable for determining recurrence intervals for extreme floods. Information on historical floods has been collected from local newspapers, files of State, Federal, and private organizations, and interviews with local residents. A search for additional flood information was made for this report and some useful observations on outstanding floods of the past were found, principally in the newspaper files of the State Historical Society in Madison.

Fitting Frequency Graphs

After the data were plotted on the special grid paper, a smooth curve was drawn to represent the magnitude-frequency relation. Various analytical methods have been proposed to eliminate the personal element when drawing the curves. Some absurd results can be obtained, however, by strict adherence to analytical functions, especially when only a short record is available. For this report the frequency curves were drawn as curves of best visual fit. Figure 16 is an example of a station frequency curve.

Regional Frequency Analysis

The use of the individual frequency curve in predicting future flood events is limited because of its random nature. The curve reflects the history of past flood events at the station, but being only a single sample from a huge population, it is subject to large sampling errors. Much of the chance sampling error can be eliminated, however, by combining all the station curves from a homogeneous flood-producing region. The resulting frequency curve based on records for a number of stations provides a much more reliable means for predicting the magnitude of future floods than a curve based on records for a single station, even at the site of that station. Furthermore, a regional curve provides means of determining frequency information for ungaged sites.

In order that station records be comparable in a regional frequency analysis, it is desirable that the flood events be referred to a common base time period. After examining the bar graph in table 1, two base periods were selected; 1940-56 for the short base period, and 1915-56 for the long base period. Computations were made first for the short base period and then adjusted to the long base period on the basis of the relation indicated by the long-term station records.

All appropriate records for gaging stations located in or adjacent to Wisconsin were used in the analysis if they had 5 or more years of record within the short base period. When the period of record did not extend through the base period, synthetic peaks were computed by correlating the records with those for adjacent stations. The synthetic peaks were used only in assigning order numbers to the peaks of record. If the drainage area for two stations on the same stream differed by less than 25 percent, only one of the records was used. If the records for these same two stations were not concurrent, they were combined to make one long record.

Regional Frequency Curves

The fact that station frequency curves from a homogeneous frequency region have similar slopes and shapes was used to determine the frequency regions in the State. After comparing the station curves, the State was divided into two frequency regions. A statistical test of homogeneity was then made for each frequency region. This test determined whether the variation in slopes of the individual station curves was greater than might occur by chance in random sampling. A 95 percent confidence limit was used which means that out of records for every 20 stations, 19 were required to meet the homogeneity requirements. Each of the frequency regions as outlined is homogeneous in accordance with the above criteria. The two frequency regions for Wisconsin have been designated as A and B and are shown in figure 1.

Before the individual station curves can be combined into a composite curve for each of the frequency regions, they must be in a dimensionless form. This was accomplished by dividing the floods of various recurrence intervals by an index flood; then the frequency curves became ratio curves which expressed all of the floods as a ratio to the index flood.

The mean annual flood was used as the index flood. It is the mean of all the floods in the annual series and should not be confused with the flood which has a yearly or annual recurrence interval. The arithmetic mean of the annual floods is unduly influenced by the chance inclusion of extremely high or low floods, especially when the period of record is short. The graphical mean is more stable and is used by the Geological Survey. The graphical mean annual flood has a recurrence interval of 2.33 years and it is obtained directly from the frequency curve. For an example, refer to figure 16. The mean annual flood for this station is 13,000 cfs (cubic feet per second).

After all the individual curves for a frequency region were in a ratio or dimensionless form, the median ratios were obtained for the recurrence intervals of 1.1, 2.33, 5, 10, 25, and 50 years. These median ratios were then plotted to their respective recurrence intervals to form the composite frequency curve for the region. The composite curves for frequency regions A and B are shown in figures 2 and 3.

There was a tendency for station frequency curves to flatten as the drainage areas became larger. A plot of the ratio of floods of selected recurrence intervals to mean annual flood versus the drainage area for the respective gaging station indicated adjustments according to drainage area size should be made for the 25 and 50-year recurrence intervals. The adjustment curves for each frequency region are shown in figures 4 and 5.

The regional frequency and adjustment curves are considered applicable to all streams within their respective regions with the following two exceptions: (1) The main stems of several of the larger streams were treated separately and are discussed in a later section of this report (p. 15). (2) These curves do not apply to highly regulated streams where it is possible to attenuate flood peaks by reservoir storage, or aggravate flood peaks by releasing additional water out of storage. If the drainage basin lies in both regions use an average ratio weighted by area.

Derivation of Mean Annual Flood

The application of flood-frequency relationships to ungaged areas involves an estimation of the mean annual flood for the site. This is accomplished

Table 1.--Period of record of annual peaks at gaging stations

Station number	Gaging station	Drainage area (sq mi)	Annual peak record, water years
			1900 1910 1920 1930 1940 1950 1956
	STREAMS TRIBUTARY TO LAKE SUPERIOR		
04-0255	Boise Brule River at Brule, Wis.	113	
0265	Bad River at Mellen, Wis.	101	
0270	Bad River near Odanah, Wis.	611	
0275	White River near Ashland, Wis.	269	
0280	Montreal River at Ironwood, Mich.	66	
0290	West Branch Montreal River at Gile, Wis.	78	
0300	Montreal River near Saxon, Wis.	281	
0315	Presque Isle River at Marenisco, Mich.	175	
0320	Presque Isle River near Tula, Mich.	260	
0330	Middle Branch Ontonagon River near Paulding, Mich.	175	
	STREAMS TRIBUTARY TO LAKE MICHIGAN		
0605	Iron River at Caspian, Mich.	84	
0610	Brule River near Florence, Wis.	380	
0615	Paint River at Crystal Falls, Mich.	616	
0630	Menominee River near Florence, Wis.	-	
0635	Menominee River at Twin Falls, near Iron Mountain, Mich.	1,790	
0640	Pine River near Florence, Wis.	500	
0645	Pine River at Pine River powerplant, near Florence, Wis.	528	
0650	Menominee River near Iron Mountain, Mich.	2,420	
0660	Menominee River near Pembine, Wis.	3,240	
0665	Pike River at Amberg, Wis.	253	
0670	Menominee River below(at)Koss, Mich.	3,790	
0675	Menominee River near McAllister, Wis.	4,020	
0680	Peshtigo River at High Falls, near Crivitz, Wis.	554	
0710	Oconto River near Gillett, Wis.	678	
0735	Fox River at Berlin, Wis.	1,430	a
0755	Wolf River above West Branch Wolf River, Wis.	633	
0770	Wolf River at Keshena Falls, Wis.	812	
0785	Embarrass River near Embarrass, Wis.	395	
0790	Wolf River at New London, Wis.	2,240	b
0800	Little Wolf River at Royalton, Wis.	485	
0810	Waupaca River near Waupaca, Wis.	305	
0830	West Branch Fond du Lac River at Fond du Lac, Wis.	88	
0835	East Branch Fond du Lac River at Fond du Lac, Wis.	75	
0845	Fox River at Rapide Croche Dam near Wrightstown, Wis.	6,150	
0860	Sheboygan River at(near)Sheboygan, Wis.	432	
0865	Cedar Creek near Cedarburg, Wis.	121	
0870	Milwaukee River at(near)Milwaukee, Wis.	686	
	RUM RIVER BASIN		
05-2860	Rum River near St. Francis, Minn.	1,360	
	ST. CROIX RIVER BASIN		
3325	Namekagon River near Trego, Wis.	503	
3335	St. Croix River near Danbury(at Swiss), Wis.	1,588	
3360	St. Croix River near Grantsburg, Wis.	2,820	
3395	St. Croix River near Rush City, Minn.	5,120	
3400	Sunrise River near Stacy, Minn.	94.7	
3405	St. Croix River at(near)St. Croix Falls, Wis.	5,930	
3415	Apple River near Somerset, Wis.	555	
3420	Kinnikinnic River near River Falls, Wis.	167	
	CHIPPEWA RIVER BASIN		
3560	Chippewa River at Bishops Bridge, near Winter, Wis.	787	
3565	Chippewa River near Bruce, Wis.	1,630	
3575	Flambeau River at Flambeau Flowage, Wis.	666	
3580	Flambeau River near Butternut, Wis.	737	
3585	Flambeau River at Babb's Island, near Winter, Wis.	1,000	
3595	South Fork Flambeau River near Phillips, Wis.	615	
3600	Flambeau River near(at)Ladysmith, Wis.	1,823	

Table 1.--Period of record of annual peaks at gaging stations--Continued

Station number	Gaging station	Drainage Area (sq mi)	Annual peak record, water years
	CHIPPEWA RIVER BASIN--Continued		
05-3605	Flambeau River near Bruce, Wis.	1,897	
3610	Chippewa River near Holcombe, Wis.	3,790	
3615	South Fork Jump River near Ogema, Wis.	328	
3620	Jump River at Sheldon, Wis.	574	
3625	Chippewa River at Holcombe, Wis.	4,700	
3640	Yellow River at Cadott, Wis.	351	
3645	Duncan Creek at Bloomer, Wis.	49.2	
3650	Duncan Creek at Chippewa Falls, Wis.	114	
3655	Chippewa River at Chippewa Falls, Wis.	5,600	c
3660	Eau Claire River near Augusta, Wis.	500	
3665	Eau Claire River near Fall Creek, Wis.	747	
3670	Chippewa River at(near)Eau Claire, Wis.	6,630	
3675	Red Cedar River near Colfax, Wis.	1,100	
3680	Hay River at Wheeler, Wis.	426	
3690	Red Cedar River at Menomonie, Wis.	1,760	
3695	Chippewa River at Durand, Wis.	9,010	d
3700	Eau Galle River at Spring Valley, Wis.	64.8	
3705	Eau Galle River at Elmwood, Wis.	91.9	
	BUFFALO RIVER BASIN		
3720	Buffalo River near Tell, Wis.	406	
	WHITEWATER RIVER BASIN		
3775	Whitewater River at Beaver, Minn.	288	
	GILMORE CREEK BASIN		
3790	Gilmore Creek at Winona, Minn.	8.95	
	TREMPEALEAU RIVER BASIN		
3795	Trempealeau River at Dodge, Wis.	643	
	BLACK RIVER BASIN		
3810	Black River at Neillsville, Wis.	756	
3820	Black River near Galesville, Wis.	2,120	
	LA CROSSE RIVER BASIN		
3825	Little La Crosse River near Leon, Wis.	77.1	
3830	La Crosse River near West Salem, Wis.	398	
	ROOT RIVER BASIN		
3845	Rush Creek near Rushford, Minn.	129	
3850	Root River near Houston, Minn.	1,270	
	COON CREEK BASIN		
3865	Coon Creek at Coon Valley, Wis.	72.2	
3870	Coon Creek near Stoddard, Wis.	119	
	YELLOW RIVER BASIN		
3890	Yellow River at Ion, Iowa	221	
	WISCONSIN RIVER BASIN		
3910	Wisconsin River at Rainbow Lake, near Lake Tomahawk, Wis.	750	
3920	Wisconsin River at Whirlpool Rapids, near Rhinelander, Wis.	1,200	
3924	Tomahawk River near Bradley, Wis.	422	
3930	Tomahawk River at Bradley(Tomahawk), Wis.	554	
3935	Spirit River at Spirit Falls, Wis.	82	
3945	Prairie River near Merrill, Wis.	181	
3950	Wisconsin River at Merrill, Wis.	2,780	
3960	Rib River at Rib Falls, Wis.	309	
3970	Eau Claire River near Antigo, Wis.	75	
3975	Eau Claire River at Kelly, Wis.	326	
3980	Wisconsin River at Rothschild, Wis.	4,000	
3985	Bull Creek Jr. near Rothschild, Wis.	26.4	
3990	Big Eau Pleine River near Colby, Wis.	79	
3995	Big Eau Pleine River near Stratford, Wis.	224	

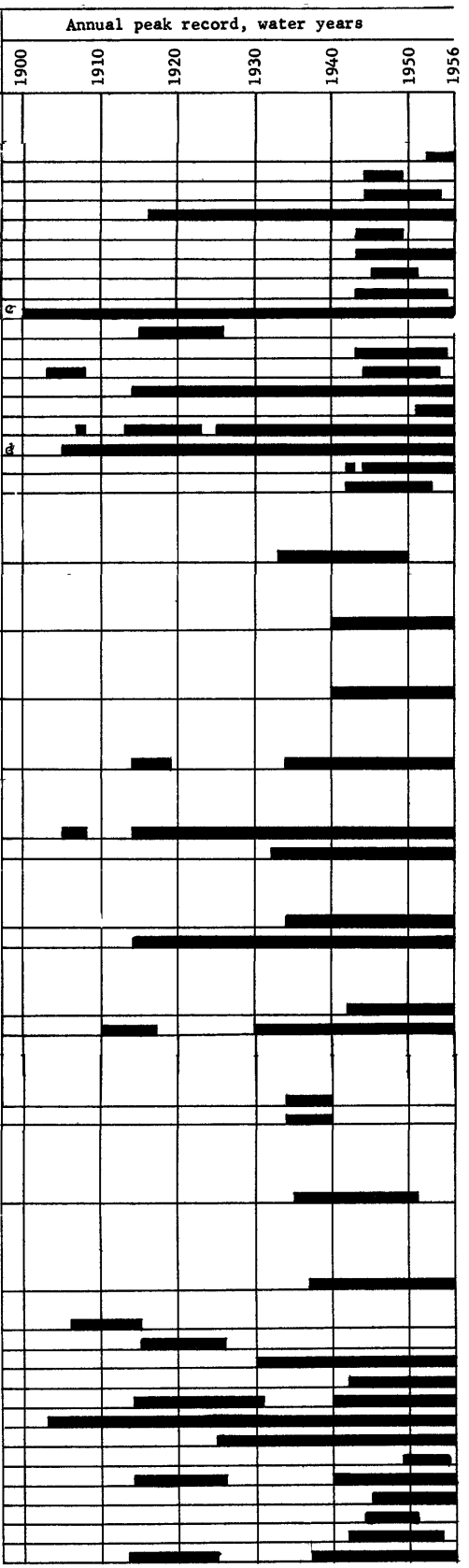

Table 1.--Period of record of annual peaks at gaging stations--Continued

Station number	Gaging station	Drainage area (sq mi)	Annual peak record, water years
	WISCONSIN RIVER BASIN--Continued		
05-4000	Wisconsin River at Knowlton, Wis.	4,520	
4005	Plover River near Stevens Point, Wis.	136	
4010	Wisconsin River near Nekoosa, Wis.	5,500	
4015	Wisconsin River near Necedah, Wis.	5,860	
4020	Yellow River at Babcock, Wis.	223	
4025	Yellow River at Sprague, Wis.	420	
4030	Yellow River at Necedah, Wis.	526	
4035	Lemonweir River at New Lisbon, Wis.	486	
4040	Wisconsin River near Wisconsin Dells, Wis.	7,830	
4050	Baraboo River near Baraboo, Wis.	650	
4060	Wisconsin River at Prairie du Sac, Wis.	8,950	
4070	Wisconsin River at Muscoda, Wis.	10,300	
4080	Kickapoo River at La Farge, Wis.	266	
4100	Kickapoo River at Gays Mills, Wis.	616	
4105	Kickapoo River at Steuben, Wis.	690	
	TURKEY RIVER BASIN		
4125	Turkey River at Garber, Iowa	1,545	
	GRANT RIVER BASIN		
4135	Grant River at Burton, Wis.	267	
	PLATTE RIVER BASIN		
4140	Platte River near Rockville, Wis.	139	
	LITTLE MAQUOKETA RIVER BASIN		
4145	Little Maquoketa River near Durango, Iowa	130	
	GALENA RIVER BASIN		
4150	Galena River at Buncombe, Wis.	128	
4155	East Fork Galena River at Council Hill, Ill.	20.1	
	MAQUOKETA RIVER BASIN		
4170	Maquoketa River near Manchester, Iowa	305	
4185	Maquoketa River near Maquoketa, Iowa	1,553	
	APPLE RIVER BASIN		
4190	Apple River near Hanover, Ill.	244	
	ROCK RIVER BASIN		
4230	West Branch Rock River near Waupun, Wis.	41.4	
4235	South Branch Rock River at Waupun, Wis.	62.8	
4240	East Branch Rock River near Mayville, Wis.	179	
4255	Rock River at Watertown, Wis.	971	
4260	Crawfish River at Milford, Wis.	732	
4265	Whitewater Creek near Whitewater, Wis.	7.2	
4270	Whitewater Creek at Whitewater, Wis.	16.7	
4295	Yahara River near McFarland, Wis.	351	
4305	Rock River at Afton, Wis.	3,300	
4315	Turtle Creek near Clinton, Wis.	186	
4325	Pecatonica River at Darlington, Wis.	274	
4330	East Branch Pecatonica River near Blanchardville, Wis.	221	
4340	Pecatonica River at Dill, Wis.	951	
4345	Pecatonica River at Martintown, Wis.	1,040	
4355	Pecatonica River at Freeport, Ill.	1,330	
4365	Sugar River near Brodhead, Wis.	527	
4370	Pecatonica River at Shirland, Ill.	2,540	
4375	Rock River at Rockton, Ill.	6,290	
4385	Kishwaukee River at Belvidere, Ill.	525	
	ILLINOIS RIVER BASIN		
5280	Des Plaines River near Gurnee, Ill.	215	
5465	Fox River at Wilmot, Wis.	880	

[a] 1898-1956
[b] 1888, 1896-1956
[c] 1888-1956
[d] 1884

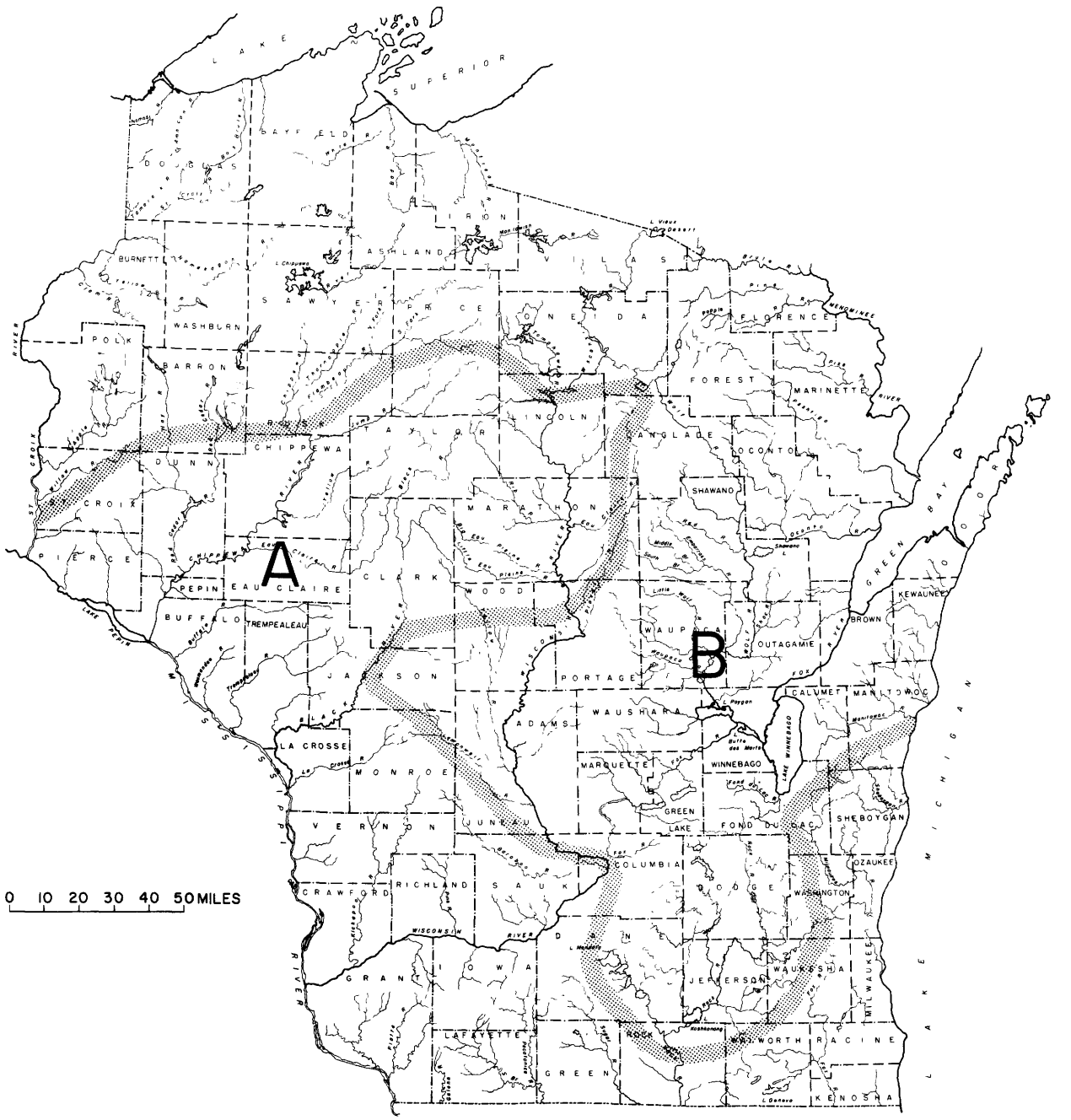

Figure 1.--Location of flood-frequency regions in Wisconsin.

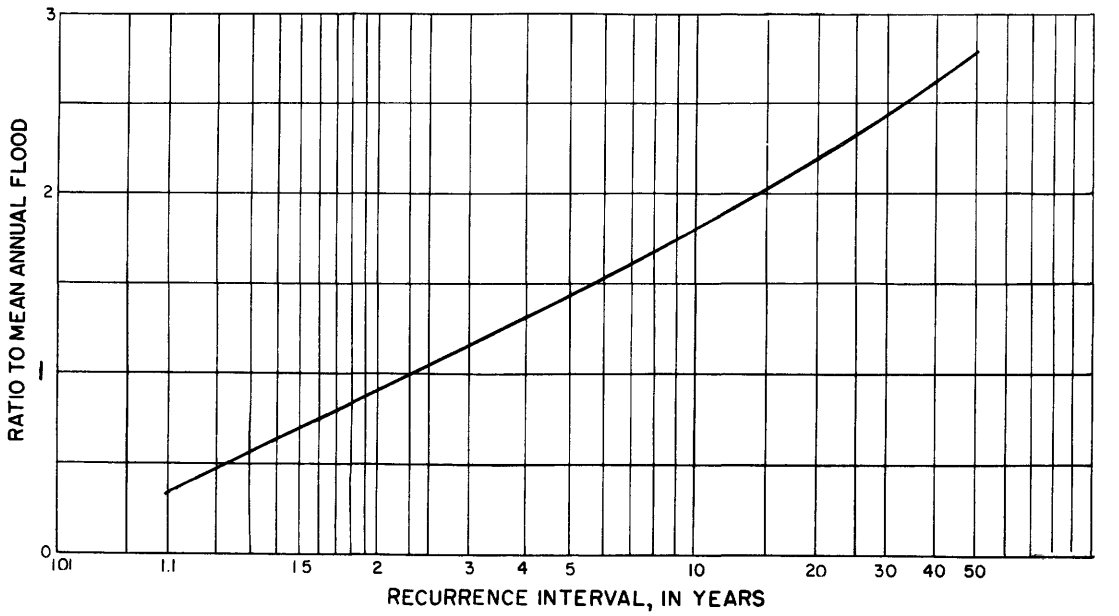

Figure 2.--Composite flood-frequency curve for region A.

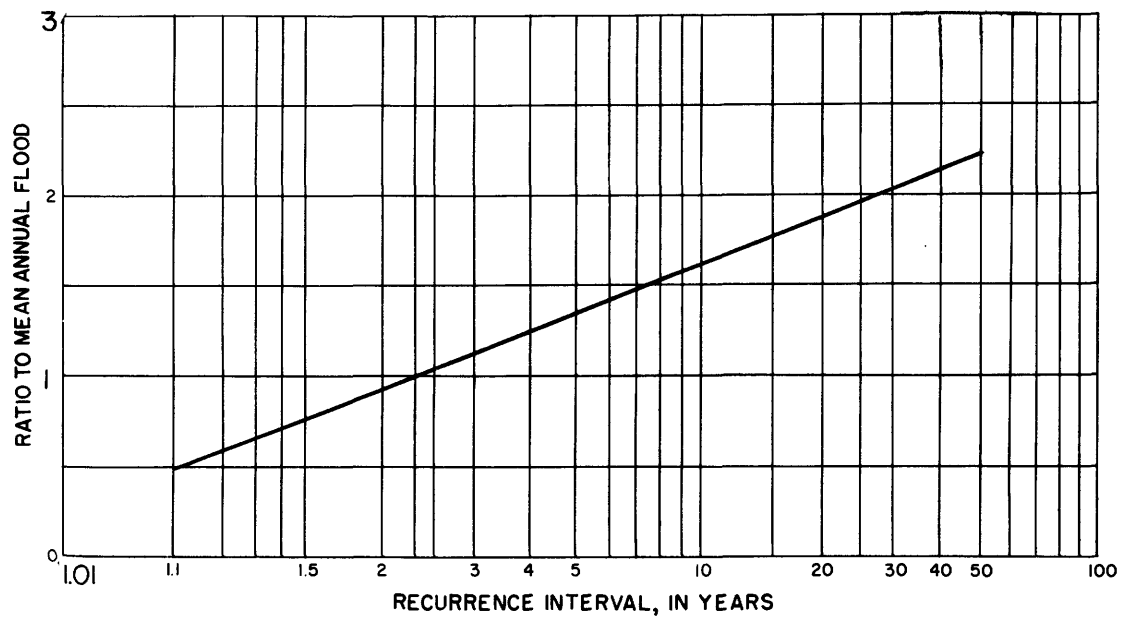

Figure 3.--Composite flood-frequency curve for region B.

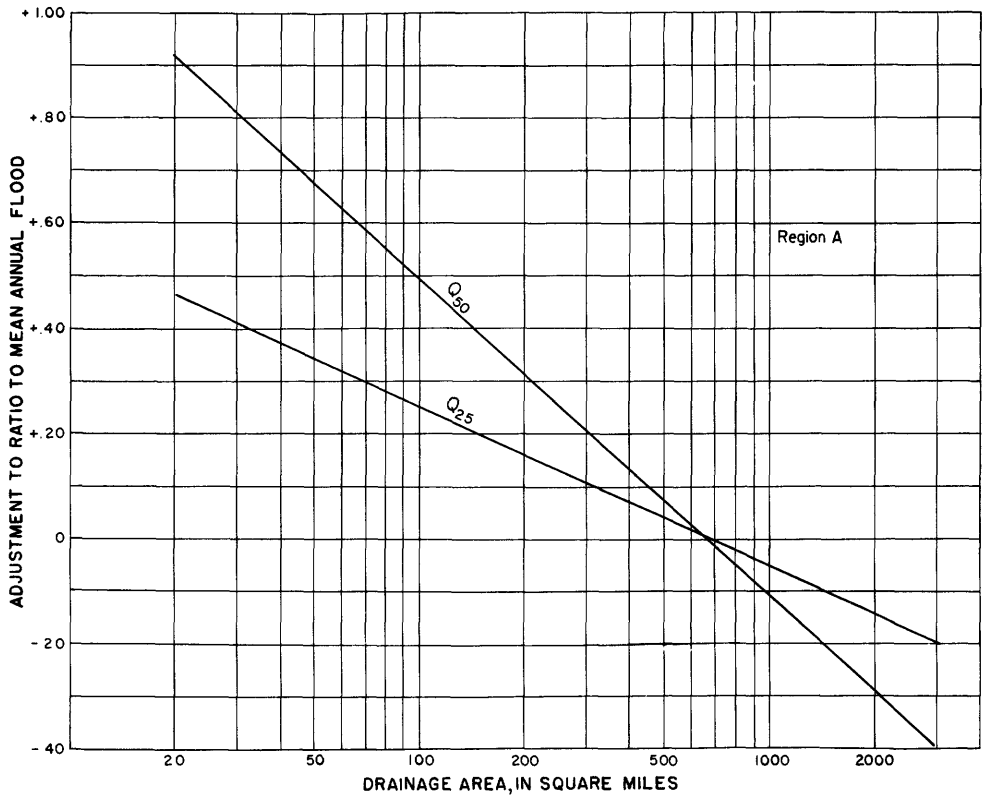

Figure 4.--Adjustment to ratio to mean annual flood far region A on basis of drainage area.

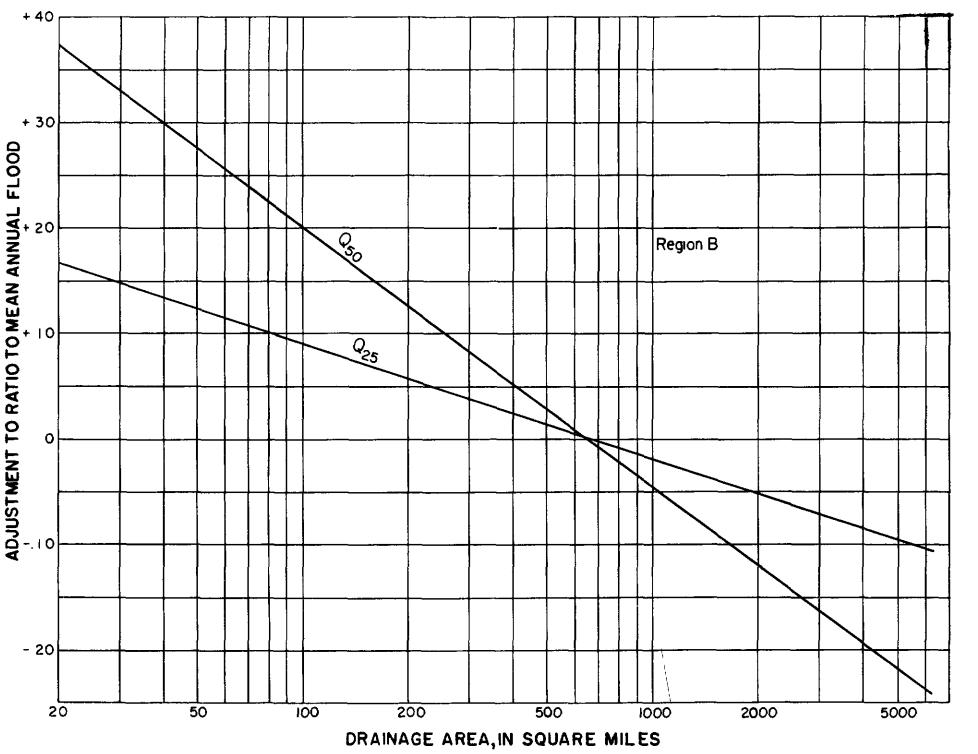

Figure 5--Adjustment to ratio to mean annual flood for region B on basis of drainage area.

by correlating the mean annual flood with some of the factors which influence it. Among the factors considered are drainage area, slope, basin shape, areal stream density, storage, elevation, soil, vegetal cover, temperature, and precipitation - its type, amount, and duration. The relative influences of these factors vary considerably. Some of the factors are easily defined and can be expressed mathematically while others are difficult to evaluate.

A study was made to determine the more important basin characteristics affecting mean annual floods in Wisconsin. Various parameters were plotted versus the mean annual floods, and those factors displaying a significant correlation were selected for a mathematical multiple linear correlation.

The size of the drainage basin was the first parameter included in the multiple correlation analysis. It is the most effective basin characteristic in defining the mean annual flood. Many of the flood studies made in other States found it sufficient to consider only drainage area in estimating mean annual floods for ungaged sites. In Wisconsin, drainage area correlation was adequate for some areas but not for the entire State.

The second factor selected for the correlation analysis was stream slope. It has an effect on the mean annual flood but its use has been hampered by the tedious computations generally necessary to determine it. M. A. Benson (1959) found during a study of floods in the New England States that stream slope could be expressed satisfactorily by the slope of the main channel in the reach between 10 and 85 percent of the river distance from the site to the basin divide. Using Benson's method of measurement, a significant correlation was found between mean annual flood and stream slope in Wisconsin.

The third factor included in the correlation analysis was the area of lakes and reservoirs. This factor, which reflects the attenuation of flood peaks caused by storage in lakes and reservoirs, is important because of the large number of these bodies of water in the State.

The mathematical multiple linear correlation was made using drainage area, slope, and lake and reservoir surface area as the independent variables and the mean annual flood as the dependent variable. These parameters are tabulated in table 2 for each of the 84 stations used in the correlation analysis. Various combinations of the three independent variables were studied, but all were found to be highly significant and were included in the final formula. The standard error of estimate for the correlation was 0.20211 log units which means that two-thirds of the data were within plus 59 percent and minus 37 percent of the regression curve.

There were a number of large residuals as evidenced by the rather high standard error of estimate. Some of these residuals were to be expected because of the inherent chance element when only a relatively few samples were available. Other causes for the large residuals may have been the omission of significant factors, poor definition of the parameters, errors in the basic data, and inadequate sampling.

The residuals were compared with temperature, precipitation, prevailing wind direction, and various edaphic elements; but no one parameter would correlate satisfactorily. When the residuals were plotted on a State map, however, it was apparent that a definite geographic effect existed because of the grouping of residuals. To include the geographical effect in the correlation, the State was divided into areas based on the groupings of the residuals. A geographical factor was computed for each group and included in the final correlation analysis. Figure 6 shows the geographical areas and their corresponding factors. The standard error of estimate for the formula including the geographical factor was 0.0754 log units or two-thirds of the data were within 18 percent of the regression curve.

Topographic maps, from which the slope parameter is obtained, are not available for portions of central and northern Wisconsin. A second correlation analysis was made for this area using only the drainage area and lake and reservoir surface area parameters. The residuals from this correlation grouped geographically, therefore a geographical factor was included in this formula also. These geographical areas and their respective factors are shown in figure 7. The standard error of estimate for this formula was 0.07204 log units or two-thirds of the data were within 17 percent of the regression curve.

The second formula is based on data from 40 gaging stations located within or immediately adjacent to the areas not covered by topographic maps and its use should be confined to this area.

Mean Annual Flood Formulas

Formula Including Slope Parameter

The mean annual flood formula derived from the first correlation is:

$$Q_{2.33} = 17.3\, A^{0.8}\, S^{0.4}\, L^{-0.5}\, G$$

where

$Q_{2.33}$ = Mean annual flood in cubic feet per second

A = Drainage area in square miles

S = Slope, in feet per mile, for that portion of the main channel reach located between 10 and 85 percent of the river mile distance from the site to the basin divide.

L = Lake and reservoir surface area in percent of total drainage area, plus 0.5 percent.

G = Dimensionless geographical factor determined from figure 6.

This formula is applicable for all drainage areas in Wisconsin exceeding 20 square miles except for:

Table 2.--Gaging stations in Wisconsin with factors used to relate mean annual flood to basin characteristics

Station number	Gaging station	Mean annual flood (cfs)	Drainage area (sq mi)	Main channel slope (ft/mi)	Percent of lake and reservoir surface area +0.5%	Geographical factor	
						Slope included	Slope excluded
	STREAMS TRIBUTARY TO LAKE SUPERIOR						
04-0255	Boise Brule River at Brule, Wis.	720	113	3.60	3.29	1.2	1.1
0265	Bad River at Mellen, Wis.	2,400	101	16.2	2.75	1.5	2.1
0270	Bad River near Odanah, Wis.	13,300	611	18.8	1.20	1.5	2.1
0275	White River near Ashland, Wis.	3,700	269	19.1	4.12	1.5	2.1
0315	Presque Isle River at Marenisco, Mich.	1,400	175	8.24	9.04	1.5	2.1
0320	Presque Isle River near Tula, Mich.	2,540	260	10.9	6.25	1.5	2.1
0330	Middle Branch Ontonagon River near Paulding, Mich.	1,120	175	6.25	5.36	1.1	1.0
	STREAMS TRIBUTARY TO LAKE MICHIGAN						
0605	Iron River at Caspian, Mich.	600	84	5.86	4.44	1.1	1.0
0610	Brule River near Florence, Wis.	1,900	380	7.92	2.88	0.54	0.60
0645.	Pine River at Pine River powerplant, near Florence, Wis.	2,120	528	8.78	2.73	0.54	0.60
0665	Pike River at Amberg, Wis.	1,070	253	12.6	2.18	0.54	0.60
0680	Peshtigo River at High Falls, near Crivitz,Wis.	2,090	554	6.53	2.25	0.54	0.60
0710	Oconto River near Gillett, Wis.	2,760	678	7.50	2.52	0.54	0.60
0770	Wolf River at Keshena Falls, Wis.	2,480	812	9.51	3.70	0.54	0.60
0785	Embarrass River near Embarrass, Wis.	2,460	395	11.9	0.78	0.54	0.60
0790	Wolf River at New London, Wis.	7,500	2,240	5.80	2.42	0.54	0.60
0800	Little Wolf River at Royalton, Wis.	3,600	485	8.77	1.72	0.54	0.60
0810	Waupaca River near Waupaca, Wis.	1,300	305	10.0	2.39	0.54	0.60
0830	West Branch Fond du Lac River at Fond du Lac, Wis.	920	88	6.86	0.50	0.54	-
0835	East Branch Fond du Lac River at Fond du Lac, Wis.	1,160	75	3.85	0.50	0.54	-
0860	Sheboygan River at(near)Sheboygan, Wis.	2,540	432	4.63	1.30	0.90	-
0865	Cedar Creek near Cedarburg, Wis.	1,420	121	9.90	2.58	0.90	-
0870	Milwaukee River at(near)Milwaukee, Wis.	4,800	686	5.32	1.48	0.90	-
	CHIPPEWA RIVER BASIN						
05-3595	South Fork Flambeau River near Phillips, Wis.	4,700	615	3.69	3.73	1.5	1.4
3615	South Fork Jump River near Ogema, Wis.	5,000	328	9.68	1.02	1.5	1.4
3620	Jump River at Sheldon, Wis.	9,000	574	8.30	1.04	1.5	1.4
3640	Yellow River at Cadott, Wis.	4,980	351	5.96	0.78	1.2	1.1
3650	Duncan Creek at Chippewa Falls, Wis.	1,880	114	6.75	0.69	1.2	1.1
3665	Eau Claire River near Fall Creek, Wis.	11,100	747	6.36	0.63	1.2	1.1
3675	Red Cedar River near Colfax, Wis.	6,100	1,100	4.17	3.54	1.5	1.1
3680	Hay River at Wheeler, Wis.	5,080	426	6.12	1.46	1.5	1.1
3690	Red Cedar River at Menomonie, Wis.	9,600	1,760	4.33	2.62	1.5	1.1
3700	Eau Galle River at Spring Valley, Wis.	2,720	64.8	17.6	0.50	1.2	-
3705	Eau Galle River at Elmwood, Wis.	3,060	91.9	15.7	0.50	1.2	-
	BUFFALO RIVER BASIN						
3720	Buffalo River near Tell, Wis.	3,670	406	6.30	0.56	0.60	-
	WHITEWATER RIVER BASIN						
3775	Whitewater River at Beaver, Minn.	4,700	288	13.3	0.50	0.60	-
	GILMORE CREEK BASIN						
3790	Gilmore Creek at Winona, Minn.	560	8.95	127	0.50	0.60	-
	TREMPEALEAU RIVER BASIN						
3795	Trempealeau River at Dodge, Wis.	4,600	643	3.64	0.56	0.60	-
	BLACK RIVER BASIN						
3810	Black River at Neillsville, Wis.	14,000	756	5.81	0.69	1.5	1.4
3820	Black River near Galesville, Wis.	22,600	2,120	5.51	0.78	1.5	-
	LA CROSSE RIVER BASIN						
3825	Little La Crosse River near Leon, Wis.	1,200	77.1	20.0	0.50	0.60	-
3830	La Crosse River near West Salem, Wis.	2,810	398	6.98	0.81	0.60	-

Table 2.--Gaging stations in Wisconsin with factors used to relate mean annual flood to basin characteristics--Continued

Station number	Gaging station	Mean annual flood (cfs)	Drainage area (sq mi)	Main channel slope (ft/mi)	Percent of lake and reservoir surface area +0.5%	Geographical factor	
						Slope included	Slope excluded
	YELLOW RIVER BASIN						
05-3890	Yellow River at Ion, Iowa	10,300	221	13.9	0.50	2.0	-
	WISCONSIN RIVER BASIN						
3935	Spirit River at Spirit Falls, Wis.	1,820	82	12.5	1.87	1.5	1.4
3945	Prairie River near Merrill, Wis.	1,600	181	10.4	2.02	1.5	1.4
3960	Rib River at Rib Falls, Wis.	8,300	309	11.8	0.77	1.5	1.4
3970	Eau Claire River near Antigo, Wis.	328	75	5.88	3.91	0.54	0.60
3975	Eau Claire River at Kelly, Wis.	4,000	326	8.28	1.74	1.5	1.4
3985	Bull Creek Jr. near Rothschild, Wis.	440	26.4	13.3	0.58	1.5	1.4
3990	Big Eau Pleine River near Colby, Wis.	2,720	79	9.29	0.50	1.5	1.4
3995	Big Eau Pleine River near Stratford, Wis.	8,400	224	10.1	0.50	1.5	1.4
4005	Plover River near Stevens Point, Wis.	830	136	5.64	1.74	0.54	0.60
4020	Yellow River at Babcock, Wis.	5,640	223	7.63	0.50	1.5	1.4
4030	Yellow River at Necedah, Wis.	6,440	526	6.07	1.50	1.5	1.4
4035	Lemonweir River at New Lisbon, Wis.	2,940	486	3.65	1.77	0.90	0.60
4050	Baraboo River near Baraboo, Wis.	3,180	650	2.02	0.64	0.60	-
4080	Kickapoo River at La Farge, Wis.	4,100	266	9.13	0.50	0.60	-
	TURKEY RIVER BASIN						
4125	Turkey River at Garber, Iowa	17,000	1,545	6.44	0.50	1.2	-
	GRANT RIVER BASIN						
4135	Grant River at Burton, Wis.	13,500	267	9.73	0.50	2.0	-
	PLATTE RIVER BASIN						
4140	Platte River near Rockville, Wis.	8,100	139	11.5	0.50	2.0	-
	LITTLE MAQUOKETA RIVER BASIN						
4145	Little Maquoketa River near Durango, Iowa	7,400	130	21.1	0.50	2.0	-
	GALENA RIVER BASIN						
4150	Galena River at Buncombe, Wis.	6,320	128	12.6	0.50	2.0	-
4155	East Fork Galena River at Council Hill, Ill.	2,900	20.1	41.5	0.50	2.0	-
	MAQUOKETA RIVER BASIN						
4170	Maquoketa River near Manchester, Iowa	5,600	305	6.55	0.50	1.2	-
4185	Maquoketa River near Maquoketa, Iowa	19,000	1,553	4.21	0.50	1.2	-
	APPLE RIVER BASIN						
4190	Apple River near Hanover, Ill.	5,900	244	11.8	0.50	1.2	-
	ROCK RIVER BASIN						
4230	West Branch Rock River near Waupun, Wis.	636	41.4	9.58	0.50	0.54	-
4235	South Branch Rock River at Waupun, Wis.	816	62.8	8.33	0.50	0.54	-
4240	East Branch Rock River near Mayville, Wis.	1,640	179	3.21	0.56	0.90	-
4255	Rock River at Watertown, Wis.	2,430	971	1.38	2.44	0.90	-
4260	Crawfish River at Milford, Wis.	2,750	732	2.50	2.73	0.90	-
4305	Rock River at Afton, Wis.	7,450	3,300	1.28	3.21	0.90	-
4315	Turtle Creek near Clinton, Wis.	3,050	186	5.58	0.90	1.2	-
4325	Pecatonica River at Darlington, Wis.	6,200	274	8.25	0.50	1.2	-
4330	East Branch Pecatonica River near Blanchardville, Wis.	3,750	221	8.25	0.50	0.90	-
4345	Pecatonica River at Martintown, Wis.	7,000	1,040	2.28	0.50	0.90	-
4355	Pecatonica River at Freeport, Ill.	7,300	1,330	1.62	0.50	0.90	-
4365	Sugar River near Brodhead, Wis.	4,900	527	3.90	0.54	0.90	-
4370	Pecatonica River at Shirland, Ill.	9,960	2,540	0.96	0.51	0.90	-
4375	Rock River at Rockton, Ill.	15,500	6,290	1.28	1.96	0.90	-
4385	Kishwaukee River at Belvidere, Ill.	5,720	525	5.26	0.50	0.90	-
	ILLINOIS RIVER BASIN						
5280	Des Plaines River near Gurnee, Ill.	1,360	215	1.90	1.30	0.90	-
5465	Fox River at Wilmot, Wis.	2,950	880	1.42	4.09	1.2	-

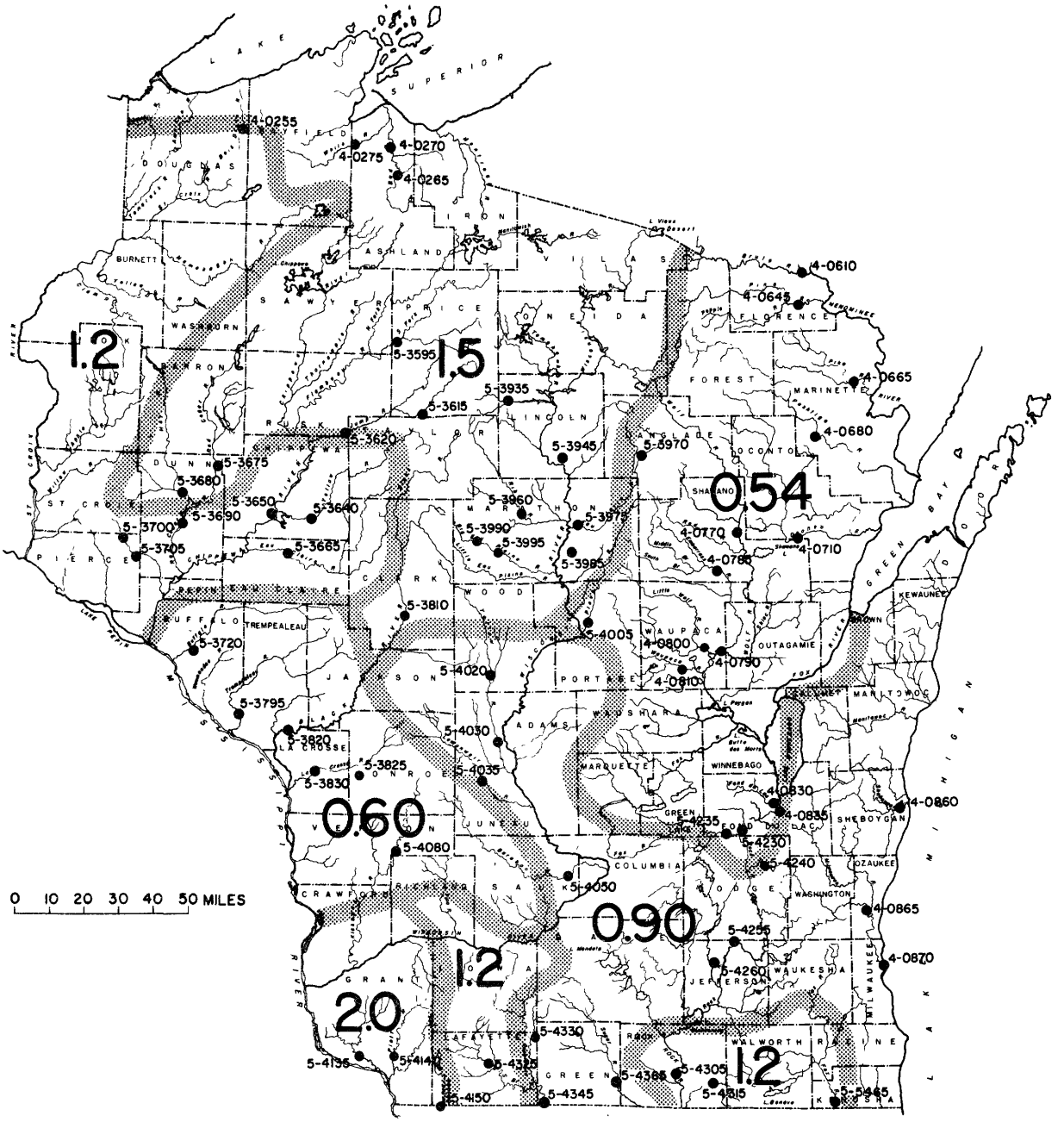

Figure 6.--Location of geographical areas for mean annual flood formula that includes the slope parameter.

1. Highly regulated streams.

2. Main stems of rivers given separate treatment in subsequent section of this report (p. 15).

3. The area in figure 6 that has a geographical factor of 0.60, where it is necessary to limit the formula to drainage areas exceeding 70 square miles.

Formula Excluding Slope Parameter

The mean annual flood formula derived for those areas where the slope parameter is not available is:

$$Q_{2.33} = 39.4\ A^{0.8}\ L^{-0.5}\ G$$

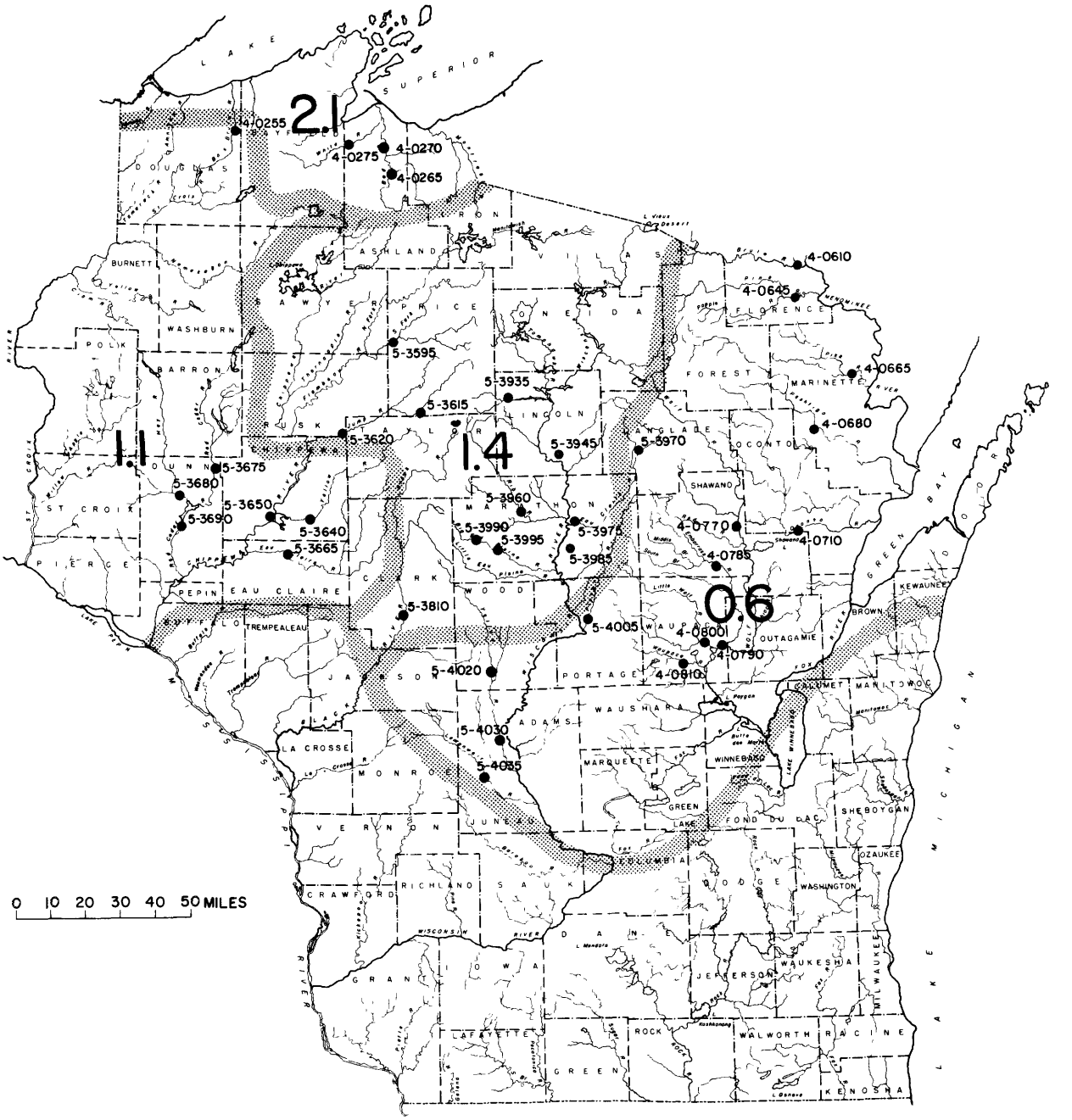

Figure 7.--Location of geographical areas for mean annual flood formula that does not include the slope parameter.

$Q_{2.33}$, A, L, and G remain as defined for the previous formula, except that the geographical factor G is determined from figure 7. This formula is applicable for all drainage areas over 20 square miles located within the area for which the geographical factors have been determined as shown in figure 7. It is intended that this formula be used only when the slope parameter cannot be determined for the stream.

Nomographs have been prepared to assist in the solution of the flood formulas. There are two nomographs for each formula and combined they cover a range in drainage area from 20 to 500 square miles. See figures 8, 9, 10, and 11. The solution for each nomograph is indicated by its key. For drainage areas exceeding 500 square miles, the use of slide rule or logarithms in solving the formulas is suggested.

Figure 8

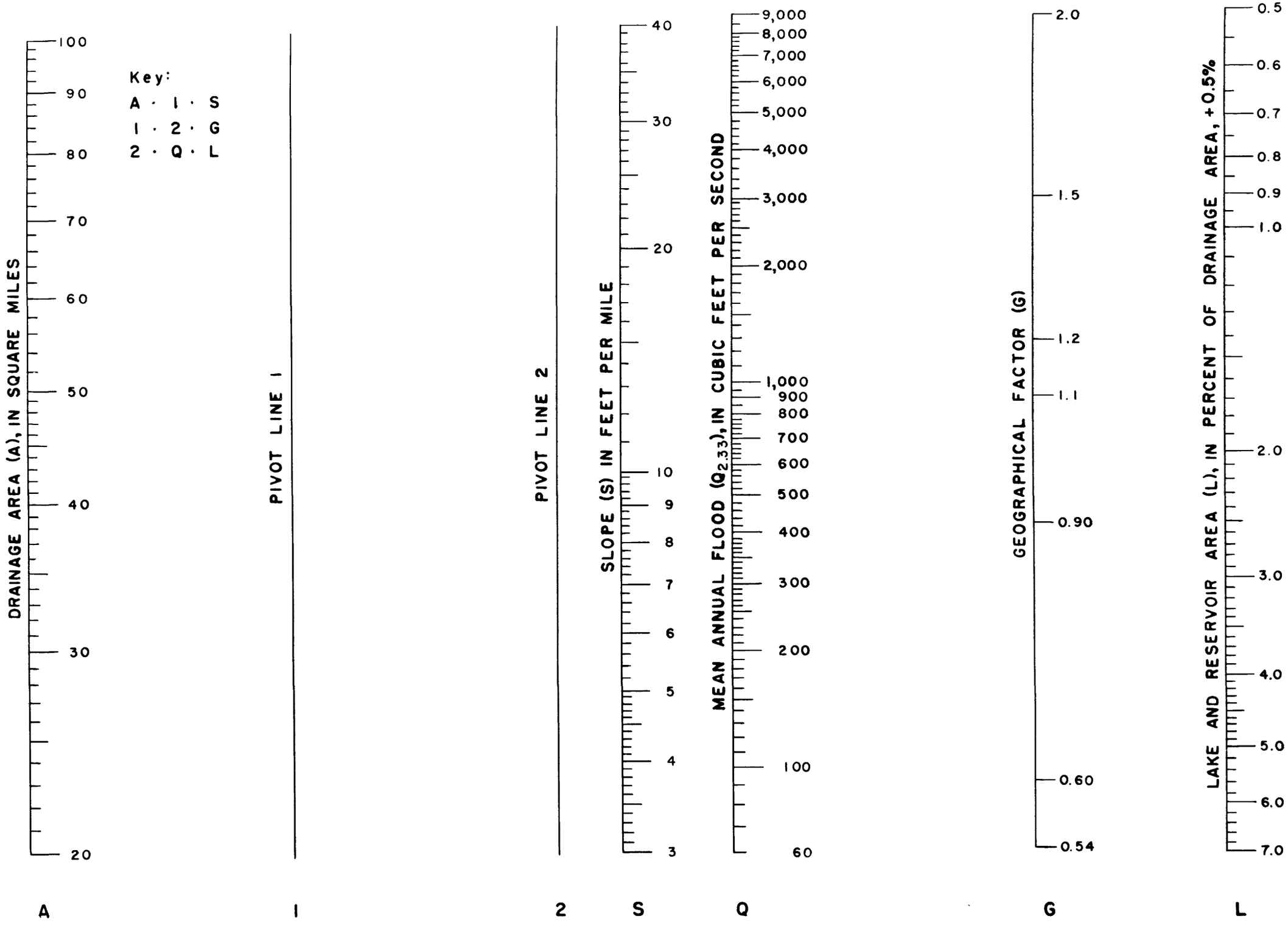

Figure 8.--Nomograph for mean annual flood formula that includes slope parameter for drainage areas of 20 to 100 square miles.

Figure 9

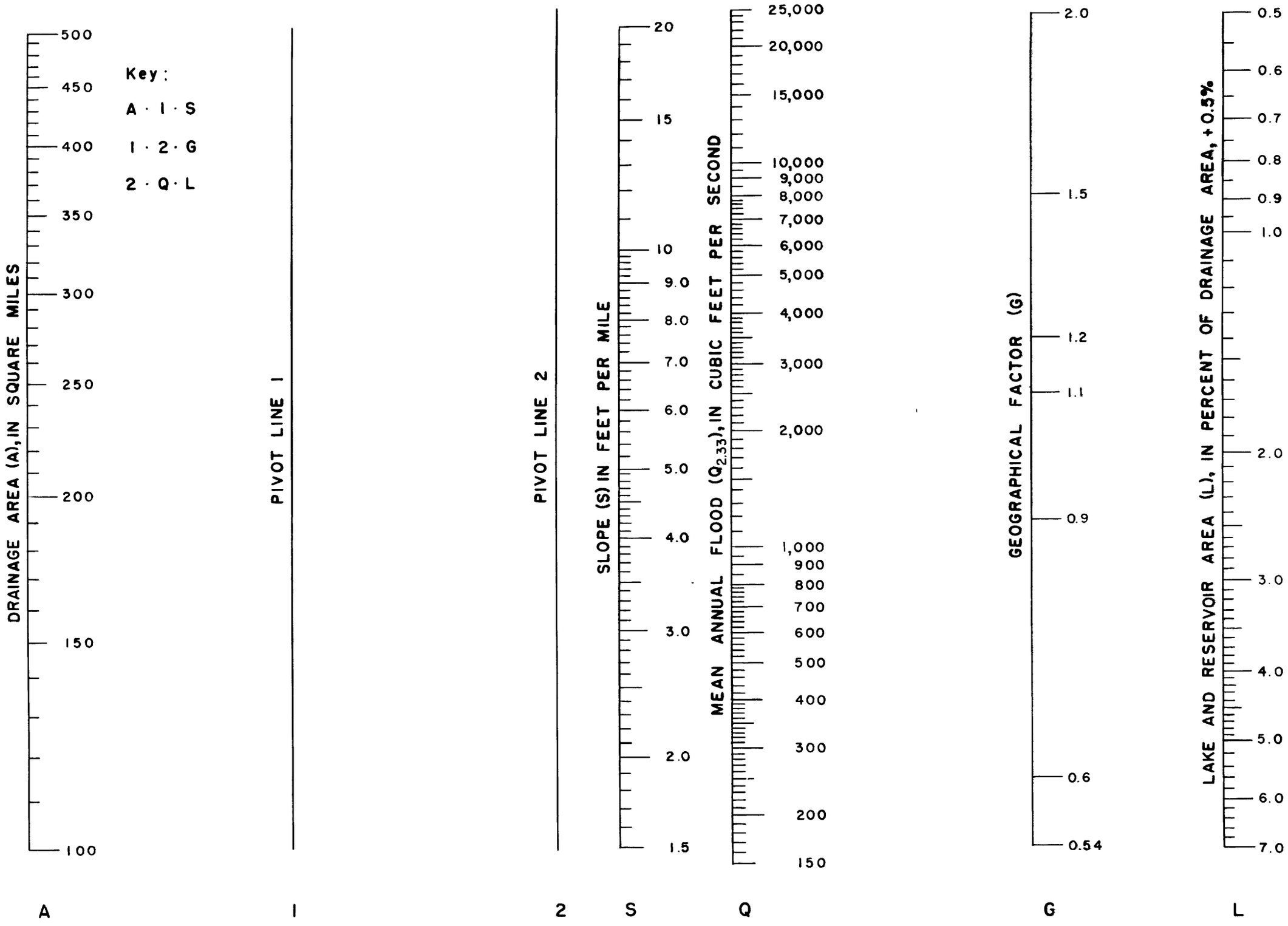

Figure 9.--Nomograph for mean annual flood formula that includes slope parameter for drainage areas of 100 to 500 square miles.

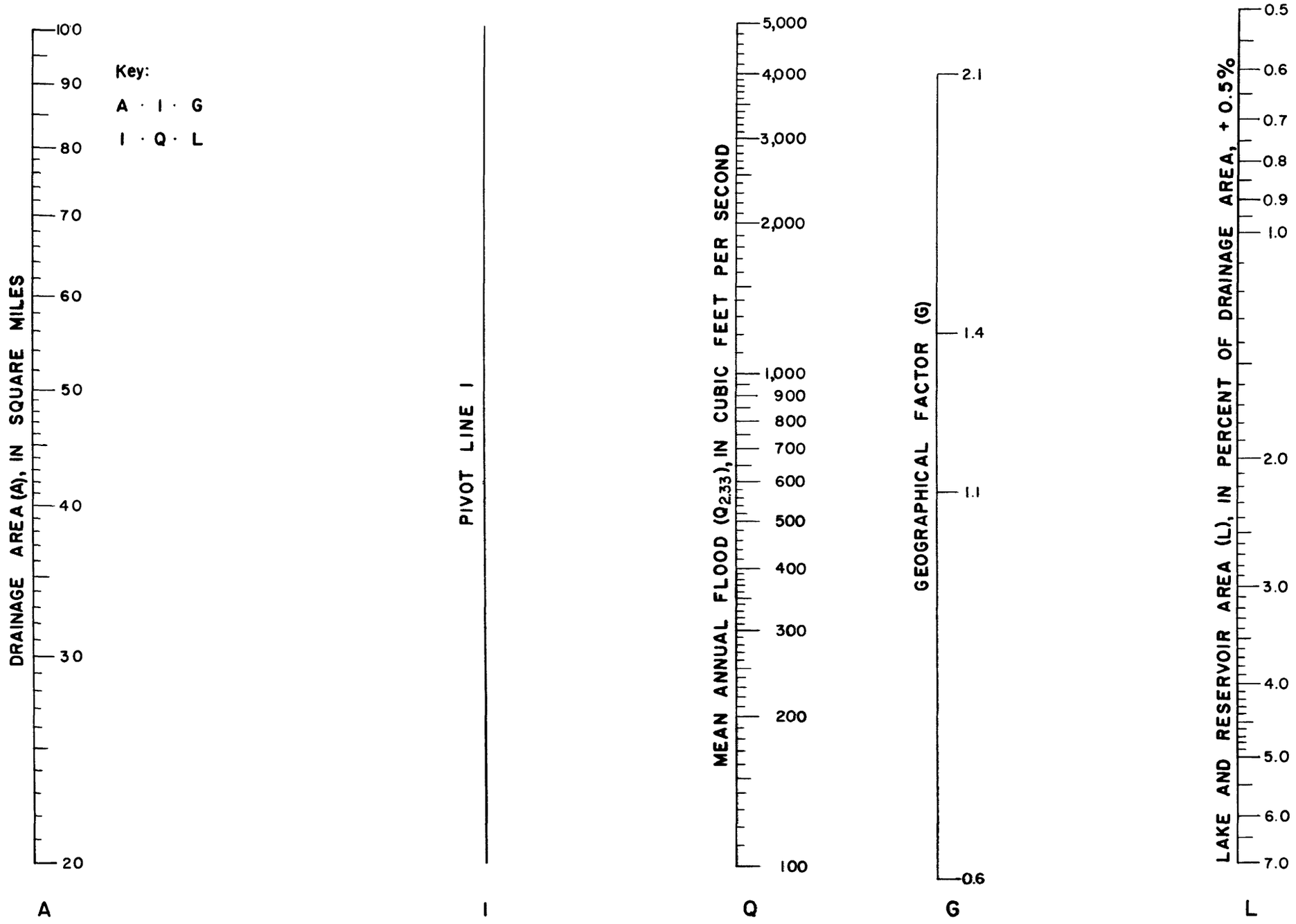

Figure 10.--Nomograph for mean annual flood formula that does not include slope parameter for drainage areas of 20 to 100 square miles.

Figure 11

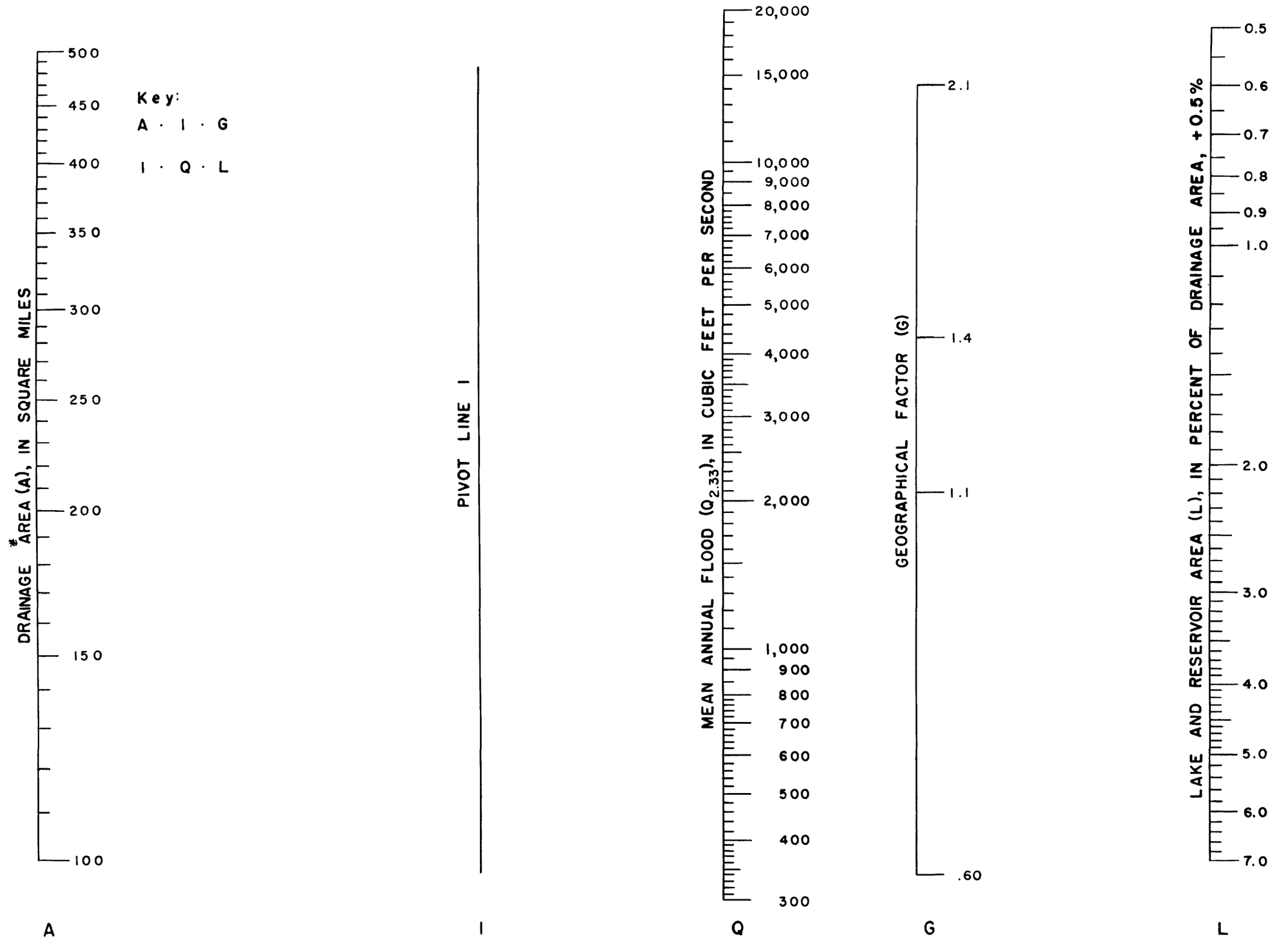

Figure 11.--Nomograph for mean annual flood formula that does not include slope parameter for drainage areas of 100 to 500 square miles.

Abstracting Basin Characteristics

All basin characteristics used in the flood formulas can be abstracted from topographic maps, and all basin characteristics except the slope parameters can be obtained from planimetric maps. Thus, availability of topographic or planimetric maps will generally determine which formula will be used.

The procedures used in abstracting the basin characteristics are discussed below.

Drainage Area

Outline the drainage basin on the most reliable map or maps available for the area. Determine the size of the basin in square miles by planimeter or by placing a grid over the basin and counting squares of a known size. Areas in the basin that do not contribute directly to surface runoff should be excluded from the drainage area of the basin.

Slope

The slope parameter is obtained from topographic maps in the following manner:

1. Measure the river mile distance from the site in question to the basin divide. Follow the general path of the main channel but omit those sharp meanders that a flood would by-pass.

2. Take 10 percent and 85 percent of this river mile distance above the site and locate these two points on the topographic maps. This places one point 10 percent of the river mile distance above the site and the other point 15 percent of the river mile distance down from the headwaters of the stream.

3. Obtain the elevation of the streambed at these two points by interpolation between contours.

4. Compute the slope between the 10 and 85 percent points, expressing it in feet per mile. If there are steep rapids or waterfalls within this reach, omit their effect from the slope computations.

If there are major branches or forks in the river system above the site, it may be necessary to modify the foregoing procedure. Generally, one of the branches can be considered as the main stem if it is appreciably longer. If, however, there are two branches of approximately equal length, compute the fall using each branch and then use an average, weighted on the basis of the respective drainage areas of the forks.

Lake and Reservoir Surface Area

The lake and reservoir surface area may be obtained from either topographic or planimetric maps in the following manner:

1. Measure in square miles, all the surface area of lakes, ponds, and reservoirs irrespective of their location within the drainage basin. This is the area that appears as a solid blue color on Geological Survey topographic and planimetric maps. Do not include swamp and marsh areas.

2. Compute what percent this area is of the total drainage area of the basin.

3. A base of 0.5 percent is used for this factor so 0.5 percent must be added to the percentage computed in step 2. If there are no lakes or reservoirs, L is 0.5 percent.

Geographical Factor

The geographical factor is determined from either figure 6 or 7 depending on which formula is being used. Outline the drainage basin in question on the proper map and use the factor listed for that particular geographical area.

The boundaries of the geographical areas are delineated by wide bands rather than sharp lines for two reasons. One, the boundaries will surely be altered in the future as more data becomes available, especially in those areas where presently there is a paucity of stations, and two, it is reasoned that the change between geographical areas probably occurs as a transition rather than at abrupt boundaries.

In the meantime, the user is afforded the choice of geographical areas for the smaller streams immediately adjacent to or on the boundaries. The selection should be based on the similarity of the basin in question to basins located on either side of the boundary.

For the larger drainage basins that have significant percentages of their area in more than one geographical area, an average factor weighted by area should be used.

Rivers Excepted from the Regional Analysis

The main stems of the following rivers are excepted from the regional analysis:

Menominee (Wis.-Mich.)
Wisconsin
Flambeau
Chippewa
Fox (Wis.)
St. Croix
Namekagon

The first four rivers on this list have substantial amounts of river development which allows man to alter flood peaks by his manipulation of power dams and storage reservoirs. From a statistical point of view, flood data for these rivers do not represent true random samplings. Therefore, they are not subject to analysis by methods used for the regional study.

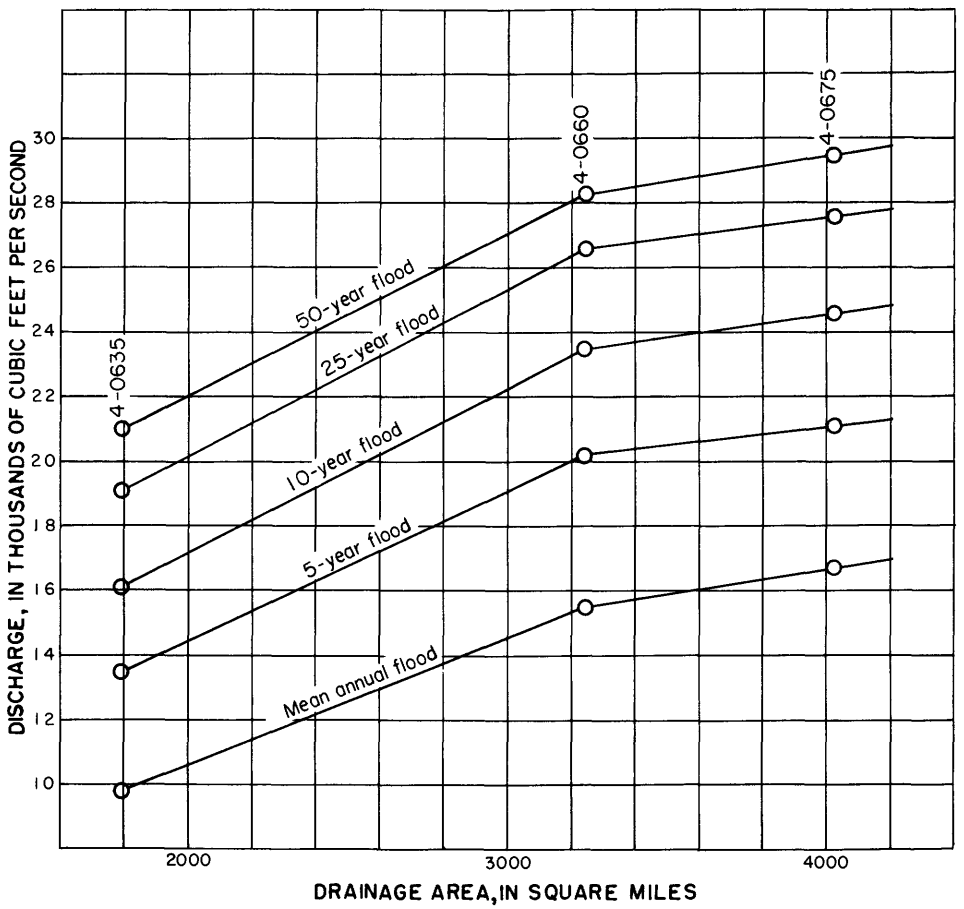

Figure 12.--Variation of floods of selected recurrence intervals with drainage area for main stem of Menominee River.

As much of the river development work was completed prior to 1910 there is now available a considerable fund of flood information under present conditions of development and regulation. Because the users of this report will be interested in practical applications of the flood frequency relationships, these rivers were treated individually for present conditions.

The Fox River, St. Croix River, and Namekagon River have also been treated individually though these streams, so far as major floods are concerned, are not appreciably affected by artificial regulation. They do not, however, correlate satisfactorily with streams in their general regions so separate relationships for their main stems have been defined.

Menominee River

The Menominee River is formed by the confluence of the Brule and Michigamme River and flows in a south-easterly direction to Lake Michigan. It is the boundary between Wisconsin and Michigan for its entire length.

Floods of selected recurrence intervals for the main stem are obtained from figure 12 on the basis of drainage area.

Wisconsin River

Floods of selected recurrence intervals for the main stem of the Wisconsin River from the mouth of the Pelican River, just south of Rhinelander, downstream to its mouth at Prairie du Chien are given in figure 13. For the main stem of the Wisconsin River upstream from the mouth of the Pelican River to Rainbow Lake consult the annual peak data for the Rainbow Lake near Tomahawk gaging station (5-3910) Above Rainbow Lake use the correlation formulas.

Chippewa River and Flambeau River

Determine the mean annual flood for any site on the main stem of the Chippewa River from its mouth upstream to Lake Chippewa in Sawyer County, or the main stem of the Flambeau River from its mouth upstream to Flambeau Flowage northeast of Park Falls, from figure 14. Above Lake Chippewa and Flambeau Flowage, and for the entire length of the South Fork Flambeau, use the correlation formulas.

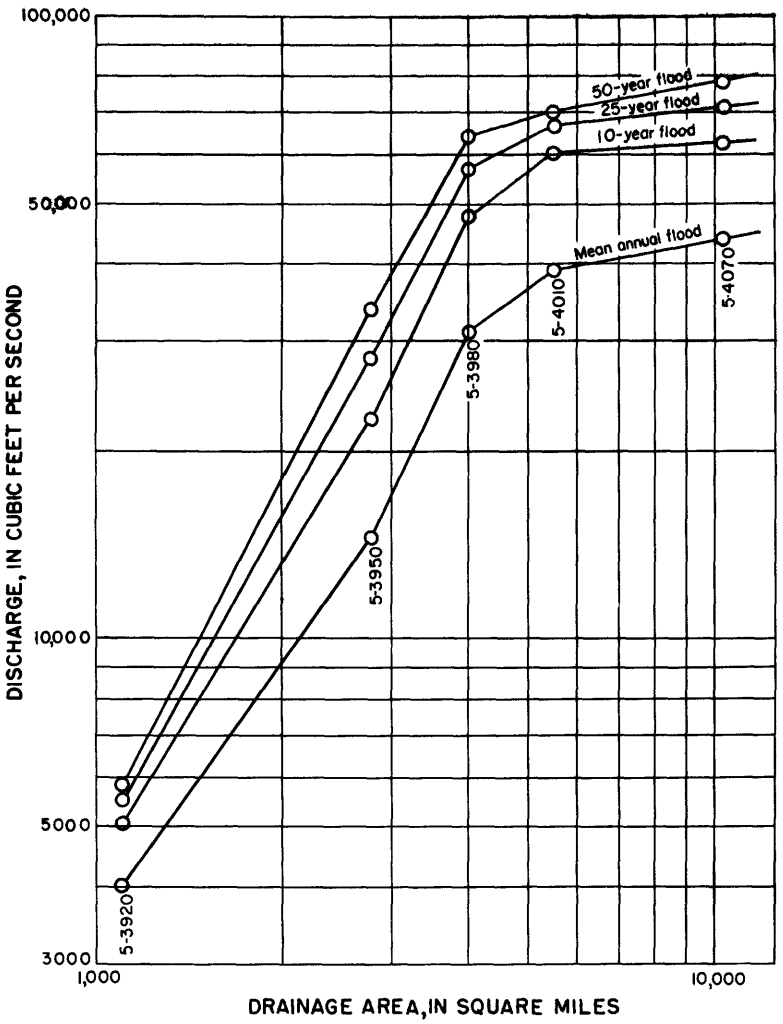

Figure 13.--Variation of floods of selected recurrence intervals with drainage area for main stem of Wisconsin River.

Use the frequency curve for Region B (fig. 3) without the drainage area adjustment to compute the floods of various recurrence intervals.

Fox River

Lake Winnebago divides the Fox River into two segments, the upper Fox River and the lower Fox River. For the main stem of the upper Fox River, from its confluence with the Wolf River upstream to the mouth of Puchyan River, use the frequency curve for the gaging station at Berlin (fig. 15) adjusted by the ratio of the drainage areas to the 0.8 power. The main stem upstream from the Puchyan River is considered as undefined except for the headwaters above Buffalo Lake where the correlation formulas are applicable.

Use the frequency curve for the Fox River at Rapide Croche near Wrightstown gaging station (fig. 16) for the entire reach of the lower Fox River between Lake Winnebago and Green Bay.

St. Croix River and Namekagon River

Determine the mean annual flood from figure 17 for any site on the main stem of the St. Croix River from its mouth upstream to its confluence with the Namekagon River or for the main stem of the Namekagon River from its mouth upstream to Hayward.

Use the mean annual flood in conjunction with the frequency curve for Region B (fig. 3) without the adjustment for drainage area size.

The correlation formulas may be used for the upper reaches of the St. Croix and Namekagon Rivers that have not been excepted; however, exclude all drainage area not contributing to direct runoff.

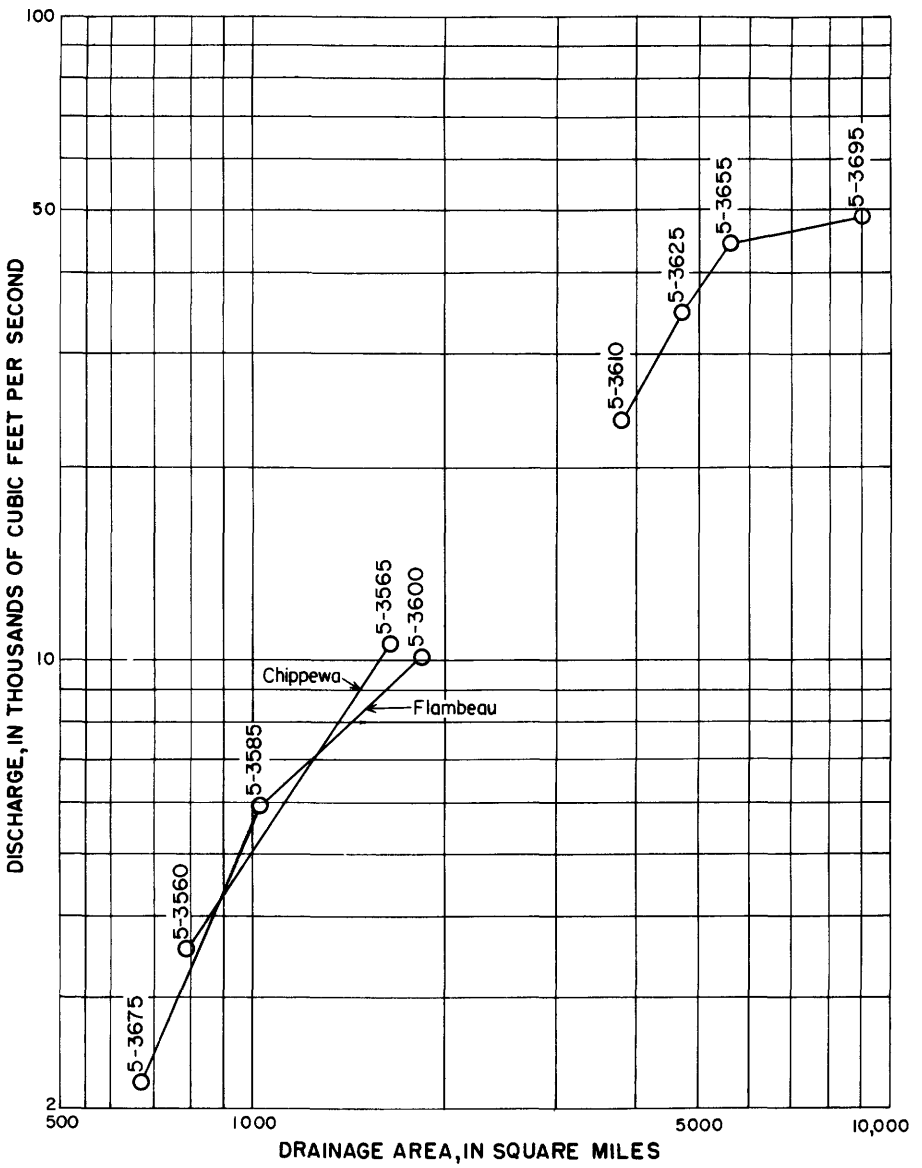

Figure 14.--Variation of mean annual flood with drainage area for main stem of Chippewa River and Flambeau River.

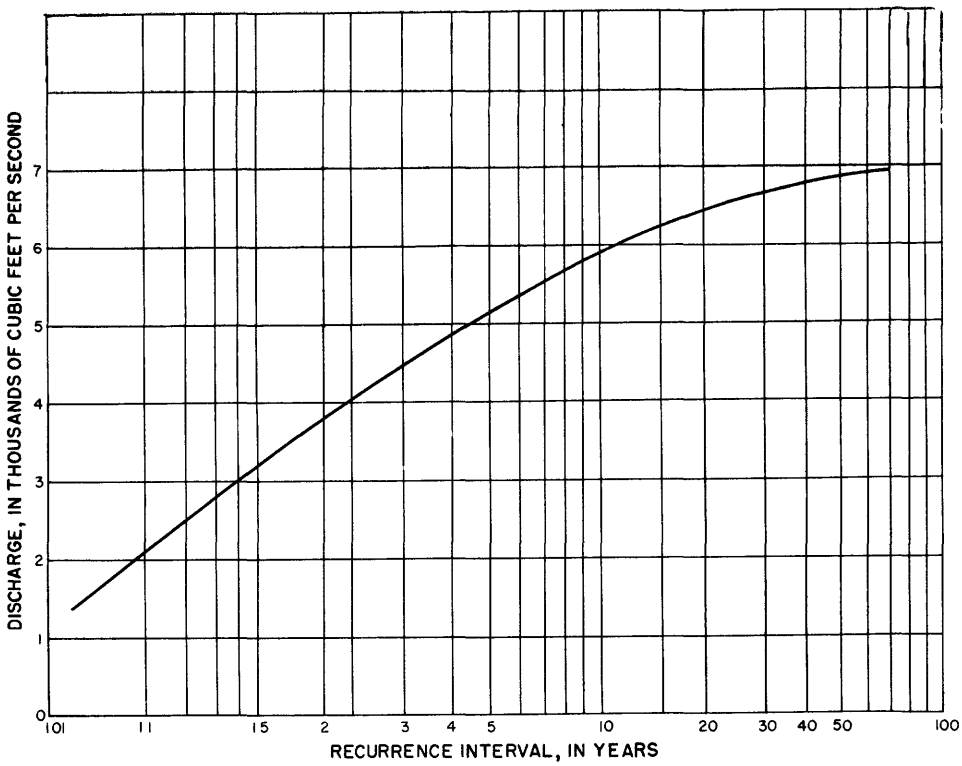

Figure 15--Frequency of annual floods, Fox River at Berlin, Wisconsin, period 1898-1956.

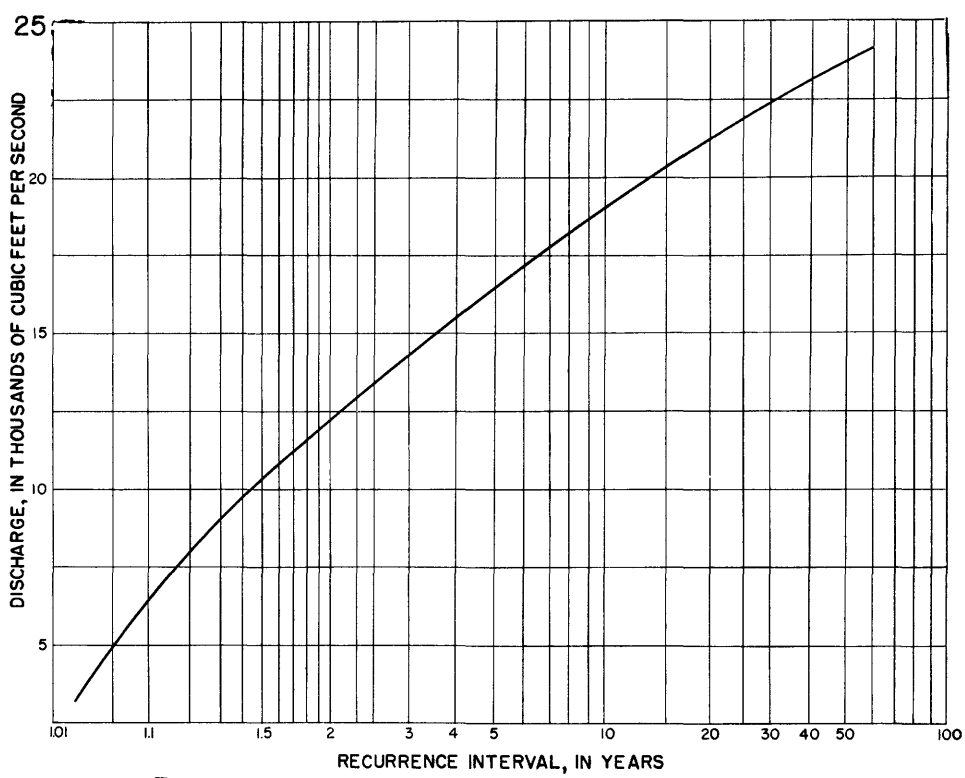

Figure 16 --Frequency of annual floods, Fox River at Rapid Croche Dam, near Wrightstown, Wisconsin, period 1896-1956.

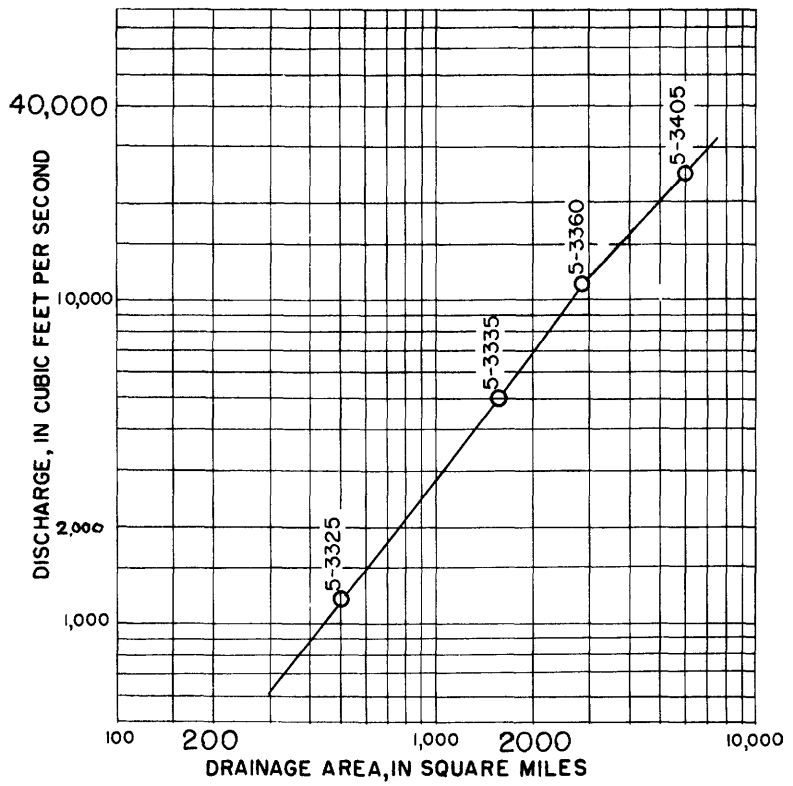

Figure 17.--Variation of mean annual flood with drainage area for main stem of St. Croix River and Namekagon River.

APPLICATION OF REPORT DATA TO A SPECIFIC SITE

The following steps are required to compute the flood discharge for a specified recurrence interval at a given site:

1. Determine if the site in question is located on any of the rivers excepted from the regional analysis (p. 15). If the stream is not excepted proceed to step 2.

2. Select the appropriate mean annual flood formula. Refer to "Mean Annual Flood Formulas" on page 10. The appropriate formula is contingent upon whether or not the stream slope can be computed.

3. Abstract those basin characteristics used in the formula selected in step 2. Refer to "Abstracting Basin Characteristics" on page 15.

4. Solve the mean annual flood formula. The nomographs in figures 8, 9, 10, and 11 may be used for most drainage areas under 500 square miles.

5. Locate the drainage basin on figure 1 to determine which regional frequency curve is applicable.

6. From the appropriate regional frequency curve in figure 2 or 3 select the ratio to the mean annual flood corresponding to the desired recurrence interval.

7. If the desired recurrence interval is 25 or 50 years, adjust the ratio obtained in step 6 by the amount determined from figure 4 or 5. No adjustments are necessary for intervals less than 25 years.

8. Multiply the mean annual flood computed in step 4 by the ratio determined in steps 6 and 7. The resulting figure will be the discharge for the flood of the desired recurrence interval.

If the complete frequency curve is desired for the site, repeat steps 6 through 8 for several recurrence intervals, plotting the resulting values versus their respective recurrence intervals, and constructing a smooth curve through the computed points.

To illustrate the procedure, two examples using gaging station sites are included.

Example 1.--Required: The magnitude of the 50-year flood on the Crawfish River at Milford in Jefferson County. This site is gaging station 5-4260.

1. The Crawfish River has not been excepted from the regional analysis, nor is it highly regulated.

2. The formula $Q_{2.33} = 17.3\ A^{0.8}\ S^{0.4}\ L^{-0.5}\ G$ is used as topographic maps are available for the drainage basin.

3. Determining A, S, L, and G for the formula, A = 732 square miles, S = 2.5 feet per mile, L = 2.23 + 0.5 or 2.73 percent, and G = 0.90 from figure 6.

4. Substituting the values from step 3 in the formula and using logarithms for the solution:

$$\log Q_{2.33} = 1.2380 + 0.8\ (2.8645) + 0.4\ (0.3979) + (-0.5)\ (0.4362) + (9.9542\text{-}10)$$

$$= 3.4249$$

$Q_{2.33} = 2661$; use 2660 cfs.

5. From figure 1, the site is located in frequency region B.

6. From figure 3, the ratio of the 50-year flood to the mean annual flood is 2.22.

7. From figure 5, the adjustment to the ratio for the 50-year flood for a drainage area of 732 square miles is -0.01.

8. The magnitude of the 50-year flood at the site is 2660 X (2.22 - 0.01) or 5,880 cfs.

Example 2.--Required: The magnitude of the 25-year flood on the White River at State Highway 112 south of Ashland. This site is gaging station 4-0275.

1. The White River is not one of the excepted rivers in the report. The site is immediately below a power dam but flood flows are not altered materially as the pool above the dam has little storage capacity.

2. Topographic maps are not available for the drainage basin so the formula $Q_{2.33} = 39.4\ A^{0.8}\ L^{-0.5}\ G$ is used.

3. The drainage area for the site is 269 square miles, the percent of lake and reservoir surface area is 3.62 to which 0.5 must be added, and G is 2.1 from figure 7.

4. Using the values obtained for A, L, and G in step 3 with the nomograph in figure 11, the mean annual flood for this site is 3,580 cfs.

5. From figure 1, the site is located in frequency region B.

6. From figure 3, the ratio of the 25-year flood to the mean annual flood is 1.96.

7. From figure 5, the adjustment to the ratio for the 25-year flood for a drainage area of 269 square miles is +0.04.

8. The magnitude of the 25-year flood at the site is 3,580 X (1.96 + 0.04) or 7,160 cfs.

MAXIMUM FLOODS KNOWN

A plot of maximum flood discharges per square mile that have occurred at gaging stations in Wisconsin is shown in figure 18. The use of these data is limited. It does not indicate the magnitude of the maximum possible flood for a particular drainage area but it is useful for a general comparison of an individual peak discharge with peak floods experienced in the State.

LIMITATIONS AND COMMENTS

The methods outlined in this report enable the user to compute the magnitude of a flood of a specified recurrence interval for a given site. Only with a full knowledge of the limitations of the report can the computed flood be used properly in predicting future flood events.

The recurrence interval of a flood is an average interval over a long period of time. Consider, for example, the 50-year flood for a site. A flood of this magnitude could occur there tomorrow, again next month, and again next year, but over a long period of time, the interval between occurrences of a flood of this magnitude or greater as the annual maximum will average 50 years. This can be expressed another way if the reciprocal of the recurrence interval or its probability is considered. Under the probability concept, it can be stated for the 50-year flood that in any one year there is a 2 percent chance that a flood of this magnitude or greater will occur as the annual maximum.

There are some drainage basins in the State that are unique with respect to their surrounding areas. Some of these unique basins are small and isolated while others, like the cranberry bog regions and some muck farming lands, cover relatively large areas. When such basins are encountered special studies should be made.

All curves in this report have been drawn to cover the range for which they are considered applicable. Extrapolation beyond these limits could result in serious errors, and is not recommended.

Flood records from small drainage basins are available at only a few sites in Wisconsin. As a result, it is necessary to limit the use of the mean annual flood formulas and regional frequency curves to drainage areas exceeding 20 square miles. To augment the flood data from small drainage basins, a network of crest-stage gages is being established in cooperation with the State Highway Commission of Wisconsin. When sufficient flood records are obtained from these gages, the flood-frequency relationships for small drainage basins can be determined.

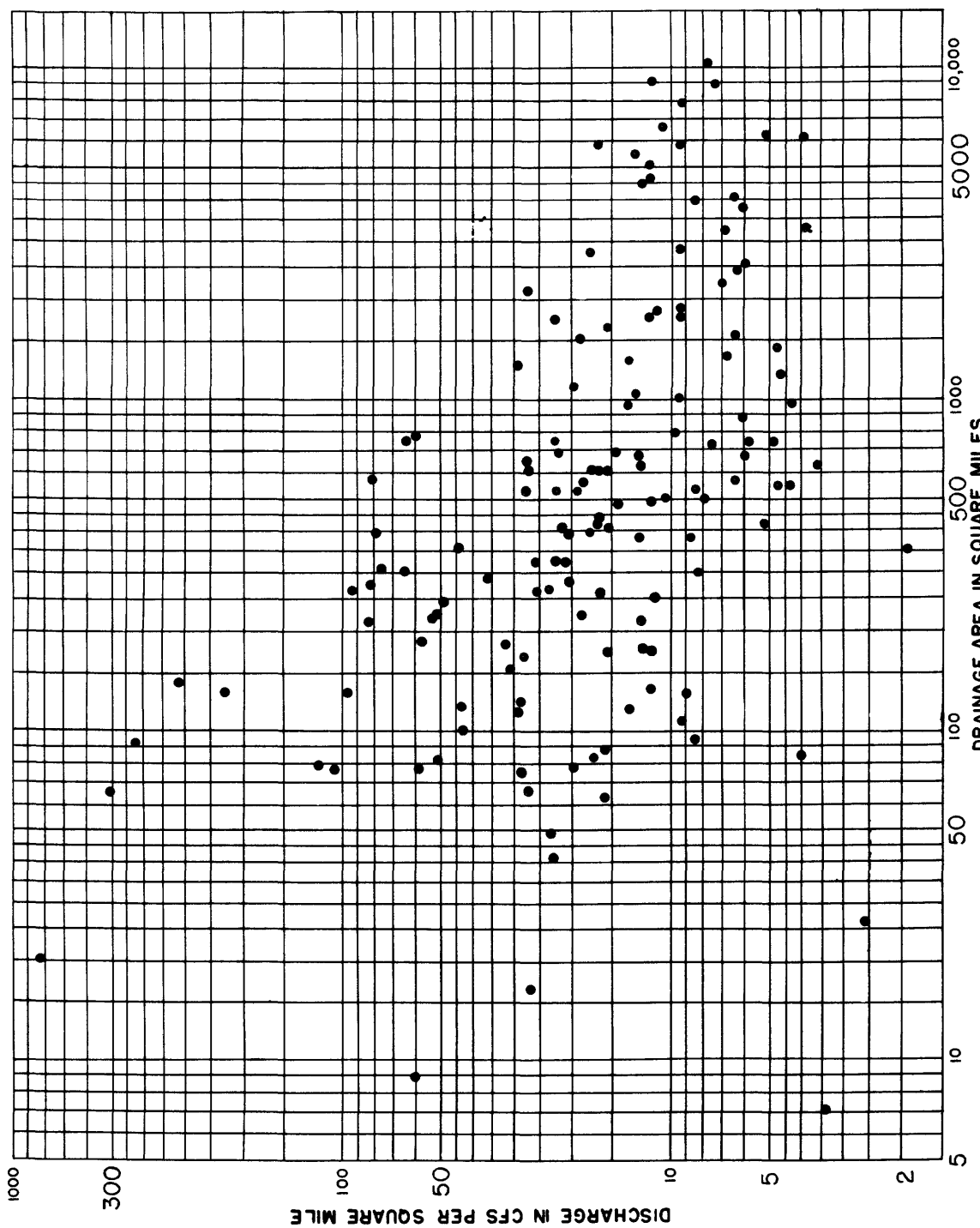

Figure 18.--Maximum discharge per square mile at gaging stations in Wisconsin.

GAGING STATION RECORDS

This section of the report contains the tabulation of flood data for all gaging stations in Wisconsin which have 5 or more years of record prior to 1957. These stations are located on the State map in figure 19 and are identified by their station numbers. The records of gaging stations located in adjacent States that were used in this study have been included in the tabulation of flood data but their sites are not shown on the map.

A brief description including pertinent information relating to floods is given for each station. The tabulated data contain the annual maximum discharge for each water year (October 1 through September 30) Whenever continuous recorder record was available, the peak stages resulting from ice jams have been included if they exceeded the stage for the annual maximum discharge for that particular year.

Underlines have been placed in the tabular data to denote significant changes. A line in the water year column denotes discontinuous record. If there has been a change in site and datum with continuous record, the underline extends from the date column through the discharge column. If there has been a change in datum only, the line extends from the gage height column through the discharge column.

There are some station records included in this section of the report that were not used in the flood-frequency study. These stations are listed below and unless otherwise noted their exclusion was because of insufficient record during the short base period from 1940 to 1956.

4-0280	Montreal River at Ironwood, Mich.
[a] 4-0290	West Branch Montreal River at Gile
[a] 4-0300	Montreal River near Saxon
[b] 4-0630	Menominee River near Florence
4-0650	Menominee River near Iron Mountain, Mich.
[b] 5-3395	St. Croix River near Rush City, Minn.
[a] 5-3415	Apple River near Somerset
5-3420	Kinnikinnic River near River Falls
5-3555	West Fork Chippewa River near Winter
5-3580	Flambeau River near Butternut
[b] 5-3605	Flambeau River near Bruce
5-3660	Eau Claire River near Augusta
5-3865	Coon Creek at Coon Valley
5-3870	Coon Creek near Stoddard
[a] 5-3910	Wisconsin River at Rainbow Lake near Lake Tomahawk
[a] 5-3924	Tomahawk River near Bradley
[a] 5-3930	Tomahawk River at Bradley
[b] 5-4000	Wisconsin River at Knowlton
[b] 5-4015	Wisconsin River near Necedah
[c] 5-4265	Whitewater Creek near Whitewater
[c] 5-4270	Whitewater Creek at Whitewater
[c] 5-4295	Yahara River near McFarland
5-4340	Pecatonica River at Dill

[a] Regulated.
[b] Drainage area within 25 percent of other stations on same river.
[c] No areal significance.

Figure 19.--Location of gaging stations in Wisconsin with 5 or more years of record.

255. Bois Brule River at Brule, Wis.

Location.--Lat 46°32'15", long 91°35'45", in NW¼SW¼ sec. 23, T. 47 N., R. 10 W., on right bank, 1.4 southwest of Brule post office, 1.4 miles downstream from Nebagamon Creek, and 1.7 miles upstream from Little Brule River.

Drainage area.--113 sq mi.

Gage.--Non-recording. Datum of gage is 948.49 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 740 cfs and extended above by logarithmic plotting.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	June 14, 1943	3.1	450	1951	June 24, 1951	3.66	779
1944	June 5, 1944	5.2	1,520	1952	July 18, 1952	4.22	1,020
1945	Mar. 27, 1945	3.1	501	1953	June 20, 1953	4.78	1,320
				1954	May 1, 1954	4.4	1,120
1946	Mar. 21, 1946	2.7	415	1955	July 30, 1955	2.65	394
1947	Apr. 23, 1947	2.7	387				
1948	Apr. 11, 1948	2.9	565	1956	Apr. 16, 1956	2.93	482
1949	May 6, 1949	3.9	870				
1950	May 6, 1950	4.7	1,270				

265. Bad River at Mellen, Wis.

Location.--Lat 46°19'30", long 90°39'35", in sec. 6, T. 44 N., R. 2 W., on upstream side of bridge on U. S. Highway 13 in Mellen, 0.4 mile upstream from Devils Creek and 3.1 miles downstream from Rocky Run.

Drainage area.--101 sq mi.

Gage.--Non-recording. Datum of gage is 1,217.49 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 3,800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	June 24, 1946	18.6	-	1951	Apr. 28, 1951	12.00	3,400
1949	July 4, 1949	14.0	4,340	1952	Apr. 19, 1952	9.50	2,270
1950	May 6, 1950	10.12	2,540	1953	July 1, 1953	8.11	1,650
				1954	May 1, 1954	11.30	3,050
				1955	Apr. 10, 1955	7.00	1,180

270. Bad River near Odanah, Wis.

Location.--Lat 46°29'15", long 90°41'45", in SE¼ sec. 2, T. 46 N., R. 3 W., at Elm Hoist Bridge, 5.0 miles downstream from Potato River and 8.5 miles south of Odanah.

Drainage area.--611 sq mi. Prior to Nov. 11, 1922, 618 sq mi, approximately.

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

Stage-discharge relation.--Defined by current-meter measurements below 15,700 cfs.

Historical data.--Flood of June 24, 1946, reached a stage of at least 22.2 ft (top of bridge which was submerged), from information by Indian Service.

270. Bad River near Odanah, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1915	May 16, 1915	-		3,900	1950	May 6, 1950	14.00		11,700
1916	Apr. 22, 1916	6.66		12,200	1951	Apr. 29, 1951	14.30		12,200
1917	Apr. 21, 1917	4.05		4,060	1952	Apr. 19, 1952	13.90		11,500
1918	June 1, 1918	5.61		8,590	1953	July 1, 1953	15.50		13,800
1919	Apr. 10, 1919	5.01		6,680	1954	May 1, 1954	16.05		14,600
1920	Mar. 24, 1920	5.5		8,230	1955	Apr. 3, 1955	10.77	1.7	-
						Apr. 10, 1955	10.18		6,770
1921	Apr. 28, 1921	5.43		8,010					
1946	June 24, 1946	22.2		-	1956	May 14, 1956	9.29		5,500
1949	July 4, 1949	17.3		16,500					

275. White River near Ashland, Wis.

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

Drainage area.--269 sq mi.

Gage.--Nonrecording. Datum of gage is 660.15 ft above mean sea level, datum of 1929 (Lake Superior District Power Co. benchmark).

Stage-discharge relation.--Defined by current-meter measurements below 3,000 cfs.

Remarks.--Slight regulation.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	May 5, 1949	5.53	3,720	1953	July 1, 1953	7.90	6,270
1950	Apr. 17, 1950	5.26	3,480	1954	May 1, 1954	5.60	3,800
				1955	Apr. 1, 1955	3.80	2,200
1951	July 4, 1951	5.29	3,480				
1952	June 24, 1952	7.10	5,390	1956	Apr. 3, 1956	3.90	2,060

280. Montreal River at Ironwood, Mich.

Location.--Lat 46°27'00", long 90°10'40", in sec. 24, T. 46 N., R. 2 E., at downstream side of main highway bridge on State line between Hurley, Wis., and Ironwood, Mich., 8 miles upstream from West Branch Montreal River.

Drainage area.--63.0 sq mi

Gage.--Nonrecording. Datum of gage is 1,464.13 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 1,100 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1918	June 2, 1918	3.2	610	1950	May 6, 1950	4.7	1,490
1919	Apr. 12, 1919	3.2	610				
1920	June 30, 1920	3.9	960	1951	June 25, 1951	4.20	1,110
				1952	Apr. 19, 1952	5.10	1,810
1921	Apr. 5, 1921	3.9	960	1953	May 21, 1953	4.36	1,220
1922	Apr. 10, 1922	3.8	910	1954	May 2, 1954	4.15	1,080
1925	Apr. 23, 1925	2.4	255				

290. West Branch Montreal River at Gile, Wis.

Location.--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.--72.2 sq mi.

Gage.--Nonrecording. Datum of gage is 1,468.0 ft above mean sea level, by Lake Superior Power Co. levels. Prior to Nov. 30, 1925, at site 1,600 ft downstream at different datum.

Stage-discharge relation.--Defined by current-meter measurements below 710 cfs.

Remarks.--Flow completely regulated by Gile Reservoir since 1941.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1919	Apr. 12, 1919	6.2	780	1943	Apr. 22, 1943	5.7	1,030
1920	Mar. 27, 1920	6.3	850	1944	June 6,7, 1944	6.4	1,220
				1945	June 14, 1945	5.58	1,000
1921	Apr. 5-7, 1921	-	900				
1922	Apr. 10, 1922	6.9	1,270	1946	June 28, 1946	-	975
1923	Apr. 21, 1923	7.3	1,550	1947	June 14,15, 1947	-	553
1924	Apr. 18, 1924	6.5	990				
1925	Mar. 27, 1925	4.9	270				

300. Montreal River near Saxon, Wis.

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

Drainage area.--262 sq mi, approximately.

Gage.--Recording. Altitude of gage is 760 ft (from power company data).

Stage-discharge relation.--Defined by current-meter measurements below 4,400 cfs.

Remarks.--Flow regulated by Gile Reservoir on West Branch Montreal River (capacity, 1.29 billion cu ft) since Apr. 1, 1941.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1939	Mar. 26, 1939	6.48	-1.4		1948	Mar. 26, 1948	4.82	-0.2	2,300
	Apr. 26, 1939	5.88		4,200		Apr. 5, 1948	5.13	-1.0	
1940	May 20, 1940	6.24		4,650	1949	July 6, 1949	5.41		3,460
					1950	May 6, 1950	5.42		3,460
1941	Aug. 31, 1941	6.25		4,650					
1942	July 18, 1942	6.93		5,700	1951	Apr. 29, 1951	6.53		5,100
1943	Oct. 3, 1942	5.54		[a]3,680	1952	Apr. 20, 1952	6.25		4,650
1944	June 5, 1944	5.60		3,750	1953	June 21, 1953	6.07		4,500
1945	Mar. 18, 1945	4.94		2,800	1954	May 1, 1954	6.10		4,500
					1955	Apr. 1, 1955	5.55	-2.0	
1946	June 25, 1946	6.62		5,250		May 2, 1955	5.16		3,100
1947	Dec. 28-29, 1946	4.85	-2.5						
	Apr. 23, 1947	4.48		2,140	1956	Dec. 18, 1955	5.35	-3.0	
						Apr. 11, 1956	5.20		3,160

[a]Result of regulation.

315. Presque Isle River at Marenisco, Mich.

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

Drainage area.--175 sq mi.

Gage.--Recording. Datum of gage is 1,789.30 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to May 27, 1949, nonrecording gage at site a quarter of a mile downstream at different datum.

Stage-discharge relation.--Defined by current-meter measurements below 2,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Mar. 27, 1945	7.34	1,140	1951	Apr. 29, 1951	9.84	2,600
				1952	Apr. 21, 1952	9.90	2,670
1946	June 26, 1946	9.4	1,860	1953	June 21, 1953	7.50	1,230
1947	Apr. 13, 1947	7.27	[a] 1,030	1954	Apr. 28, 1954	8.29	1,680
1948	Apr. 12, 1948	5.86	518	1955	Apr. 11, 1955	7.32	1,060
1949	May 7, 1949	7.77	1,350				
1950	May 7, 1950	8.45	1,750	1956	Apr. 12, 1956	6.35	648

[a] Ice affected.

320. Presque Isle River near Tula, Mich.

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

Drainage area.--260 sq mi.

Gage.--Nonrecording. Datum of gage is 1,299.66 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Stage-discharge relation.--Defined by current-meter measurements below 4,100 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Mar. 26, 1945	11.74	2,530	1951	Apr. 30, 1951	13.55	4,200
				1952	Apr. 22, 1952	13.63	4,130
1946	June 25, 1946	12.45	3,170	1953	June 22, 1953	10.06	1,700
1947	Apr. 25, 1947	10.35	1,940	1954	Apr. 16, 1954	12.09	2,870
1948	Apr. 12-13, 1948	8.82	1,030	1955	Apr. 11, 1955	11.58	2,610
1949	May 7, 1949	11.82	2,600				
1950	May 7, 1950	12.17	3,260	1956	Apr. 12, 1956	9.75	1,600

330. Middle Branch Ontonagon River near Paulding, Mich.

Location.--Lat 46°21'30", long 89°04'40", in sec. 29, T. 46 N., R. 38 W., on right bank 25 ft downstream from highway bridge, 2¼ miles upstream from Bond Falls Reservoir, and 5 3/4 miles southeast of Paulding.

Drainage area.--About 175 sq mi.

Gage.--Recording. Datum of gage is 1,485.66 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Stage-discharge relation.--Defined by current-meter measurements below 1,500 cfs.

330. Middle Branch Ontonagon River near Paulding, Mich.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	Apr. 26, 1943	8.08	1,040	1951	Apr. 30, 1951	10.0	2,050
1944	June 6, 1944	9.15	1,320	1952	Apr. 21, 1952	8.84	1,480
1945	May 23, 1945	7.37	872	1953	July 2, 1953	9.42	1,640
				1954	Apr. 28, 1954	8.00	1,120
1946	June 25, 1946	8.13	1,160	1955	Oct. 16, 1954	8.00	1,120
1947	Apr. 24, 1947	6.56	728				
1948	Apr. 28, 1948	5.04	343	1956	May 31, 1956	6.08	572
1949	May 6, 1949	6.16	596				
1950	May 7, 1950	9.09	1,400				

STREAMS TRIBUTARY TO LAKE MICHIGAN

605. Iron River at Caspian, Michigan

Location.--Lat 46°03'31", long 88°37'38", on line between SE¼ and SW¼ sec. 1, T. 42 N., R. 35 W., on downstream side of highway bridge in Caspian, 5¼ miles upstream from mouth.

Drainage area.--84 sq mi approximately.

Gage.--Nonrecording. Datum of gage is 1,438.78 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by discharge measurements below 1,100 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	Apr. 25, 1948	4.85	153	1953	July 2, 1953	10.20	1,430
1949	May 7, 1949	5.72	245	1954	Apr. 27, 1954	8.54	845
1950	May 6, 1950	8.02	680	1955	Apr. 10, 1955	7.24	478
1951	Apr. 8, 1951	8.03	695	1956	July 13, 1956	5.84	238
1952	July 23, 1952	8.59	695				

610. Brule River near Florence, Wis.

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

Drainage area.--380 sq mi.

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

Stage-discharge relation.--Defined by current-meter measurements below 4,300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1914	May 1, 1914		[a] 2,050	1950	May 7, 1950	4.81	2,290
1915	May 9, 1915		[a] 1,150				
1945	Apr. 25, May 23	3.83	1,260	1951	Apr. 13, 1951	4.82	2,290
				1952	July 24, 1952	4.66	2,110
1946	June 26, 1946	4.93	2,480	1953	July 2, 1953	6.57	4,700
1947	Apr. 25, 1946	3.73	1,270	1954	Apr. 28, 1954	4.92	2,510
1948	Apr. 25, 1948	2.98	712	1955	Apr. 11, 1955	3.89	1,490
1949	May 7, 1949	3.13	811				
				1956	July 9, 1956	3.53	1,150

[a] Maximum observed.

615. Paint River at Crystal Falls, Mich.

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

Drainage area.--616 sq mi.

Gage.--Recording. Datum of gage is 1,306.1 ft above mean sea level (Wisconsin-Michigan Power Co. benchmark).

Stage-discharge relation.--Defined by current-meter measurements below 9,700 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Mar. 29, 1945	5.58	4,160	1951	Apr. 11, 1951	7.85	6,900
				1952	Apr. 20, 1952	7.21	5,960
1946	Mar. 21, 1946	5.57	4,050	1953	July 2, 1953	9.70	10,700
1947	Sept. 16, 1947	5.61	4,160	1954	Apr. 28, 1954	7.45	6,260
1948	Oct. 8, 1947	4.81	2,610	1955	Apr. 15, 1955	6.88	5,420
1949	July 7, 1949	5.63	4,400				
1950	May 7, 1950	8.10	7,400	1956	Mar. 4, 1956	5.02	2,650

630. Menominee River near Florence, Wis.

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

Gage.--Recording. Altitude of gage is 1,140 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 11,000 cfs, and extended above by logarithmic plotting.

Remarks.--Flow regulated by powerplants and by Michigamme Reservoir (capacity, 119,950 acre-ft) and Peavy Pond (capacity, 33,000 acre-ft), and by smaller reservoirs upstream.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	May 8 or 9, 1950	11.52	14,300	1954	Apr. 28, 1954	10.92	12,900
				1955	Apr. 16, 1955	9.44	9,520
1951	Apr. 13, 1951	10.46	12,100				
1952	Apr. 21, 1952	9.77	10,400	1956	July 11, 1956	7.67	6,350
1953	July 2 or 3, 1953	13.81	20,500				

635. 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 powerplant of Wisconsin Michigan Power Co., 3½ miles north of city of Iron Mountain, and 4 miles upstream from Pine River.

Drainage area.--1,790 sq mi, approximately.

Gage.--Headwater and tailwater gage readings and generation data entered hourly in daily log sheet by company employees.

Stage-discharge relation.--Powerplant rating.

Remarks.--Flow regulated by powerplants, by Michigamme Reservoir (capacity, 119,950 acre-ft) since 1940, by Peavy Pond (capacity, 33,000 acre-ft) since 1943, and by smaller reservoirs upstream. Records of daily discharge furnished by Wisconsin Michigan Power Co.

635. Menominee River at Twin Falls, near Iron Mountain, Mich.--Continued

Maximum daily discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	May 11, 1915		4,290	1936	May 4, 1936		7,770
				1937	Apr. 27, 1937		8,530
1916	Apr. 23,24, 1916		16,700	1938	Apr. 1, 1938		11,900
1917	Apr. 22, 1917		8,740	1939	Apr. 28, 1939		10,600
1918	June 2, 1918		5,230	1940	May 2, 1940		9,630
1919	Apr. 13, 1919		7,080				
1920	Mar. 28, 1920		7,920	1941	Apr. 15, 1941		4,100
				1942	June 7, 1942		5,460
1921	Apr. 29, 1921		13,100	1943	June 18, 1943		10,100
1922	Apr. 11, 1922		9,560	1944	June 7, 1944		6,090
1923	Apr. 23, 1923		10,000	1945	May 24, 1945		6,540
1924	May 17, 1924		5,050				
1925	Apr. 25, 1925		3,500	1946	June 26, 1946		7,950
				1947	Apr. 25, 1947		5,320
1926	Apr. 23, 1926		7,280	1948	Apr. 29, 1948		4,590
1927	Mar. 19, 1927		7,400	1949	July 8, 1949		6,630
1928	May 6, 1928		10,600	1950	May 8, 1950		12,000
1929	Apr. 9, 1929		13,500				
1930	May 8, 1930		7,290	1951	Apr. 13, 1951		10,800
				1952	Apr. 21, 1952		10,300
1931	Apr. 23,25, 1931		2,270	1953	July 3, 1953		15,300
1932	Aug. 31, 1932		5,380	1954	Apr. 28, 1954		11,200
1933	Apr. 21, 1933		11,200	1955	Apr. 16, 1955		9,310
1934	May 3,4, 1934		10,000				
1935	Apr. 28, 1935		5,600	1956	July 11, 1956		4,560

640. Pine River near Florence, Wis.

Location.--Lat 45°50'20", long 88°20'20", in sec. 23, T. 39 N., R. 17 E., at highway bridge 200 ft downstream from Popple River, 8 miles southwest of Florence and 12 miles above mouth.

Drainage area.--500 sq mi, approximately.

Gage.--Nonrecording. Altitude of gage is 1,200 ft (from dam elevation 4 miles downstream).

Stage-discharge relation.--Defined by current-meter measurements below 1,600 cfs.

Remarks.--Powerplant 4 miles downstream was put in operation in February 1922.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1916	Apr. 23, 1916	9.3	4,570	1921	Apr. 28, 1921	7.5	3,000
1917	June 8, 1917	7.0	2,540	1922	Apr. 9, 1922	7.3	2,840
1918	May 31, 1918	6.0	1,840	1923	Apr. 23, 1923		[a] 2,220
1919	Apr. 13, 1919	5.17	1,530				
1920	Mar. 28, 1920	7.1	2,690				

[a] Maximum daily discharge.

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

Location.--Lat 45°49'40", long 88°14'55", in sec. 28, T. 39 N., R. 18 E., at powerplant of Wisconsin-Michigan Power Co., 5 miles downstream from Popple River and 6½ miles south of Florence.

Drainage area.--528 sq mi.

Remarks.--Discharge determined from powerplant records. Flow regulated by powerplant at station, but pondage is small. Records furnished by Wisconsin-Michigan Power Company.

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

Maximum daily discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1924	May 11, 1924		1,870	1941	Sept. 1, 1941		2,160
1925	June 5, 1925		1,320	1942	July 18, 1942		3,230
				1943	June 18, 1943		2,410
1926	May 3,4, 1926		1,840	1944	May 15, 1944		1,460
1927	Mar. 18, 1927		1,740	1945	Mar. 28, 1945		1,680
1928	May 5, 1928		2,730				
1929	Apr. 9, 1929		4,380	1946	June 27, 1946		1,830
1930	Apr. 19, 1930		1,220	1947	May 3, 1947		1,440
				1948	Apr. 28, 1948		866
1931	Sept. 28, 1931		819	1949	July 7, 1949		1,460
1932	May 11, 1932		1,380	1950	May 9, 1950		2,900
1933	May 19, 1933		2,070				
1934	May 3, 1934		1,600	1951	Apr. 13, 1951		3,440
1935	June 21,22, 1935		1,490	1952	Apr. 21, 1952		2,440
				1953	July 2, 1953		2,090
1936	May 8, 1936		1,960	1954	Apr. 28,29, 1954		2,420
1937	Apr. 27, 1937		2,110	1955	Apr. 14, 1955		2,340
1938	Mar. 31, 1938		2;590				
1939	Apr. 26, 1939		2,380	1956	July 9, 1956		1,340
1940	May 22, 1940		1,910				

650. Menominee River near Iron Mountain, Mich.
(Published as "at Lower Quinnessec Falls" prior to 1902)

Location.--Lat 45°47'10", long 88°05'00", in NE¼ sec. 11, T. 38 N., R. 19 E., Wisconsin meridian, at Homestead highway bridge, 3½ miles south of Iron Mountain, and 5 miles downstream from Pine River.

Drainage area.--2,420 sq mi, approximately.

Gage.--Nonrecording. Altitude of gage is 1,040 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 11,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1903	May 29, 1903	12.9	13,000	1909	July 25, 1909	9.9	8,950
1904	May 10, 1904	12.3	12,200	1910	May 22, 1910	7.7	6,400
1905	June 19, 1905	11.7	11,400				
				1911	May 23, 1911	11.5	10,900
1906	Apr. 21, 1906	14.4	15,200	1912	May 7, 1912	11.1	10,400
1907	May 17, 1907	14.8	15,100	1913	Mar. 24, 1913	12.4	12,000
1908	Apr. 28, 1908	13.0	12,800	1914	May 2, 1914	12.4	11,800

660. Menominee River near Pembine, Wis.

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

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

Gage.--Recording. Altitude of gage is 745 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 18,000 cfs.

Remarks.--Flow regulated by powerplants, by Michigamme Reservoir (capacity, 119,950 acre-ft) by Peavy Pond (capacity, 33,000 acre-ft), and by other reservoirs upstream.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1950	May 10, 1950	11.60		20,500	1953	July 3, 1953	13.06		25,500
					1954	Apr. 29, 1954	11.36		19,800
1951	Apr. 14, 1951	11.84		21,100	1955	Apr. 17, 1955	9.82		15,100
1952	Dec. 23, 1951	11.52	7.5	-					
	Apr. 22, 1952	10.50		17,100	1956	July 12, 1956	6.68		7,840

665. Pike River at Amberg, Wis.

Location.--Lat 45°29'50", long 87°59'40", in SW$\frac{1}{4}$ sec. 15, T. 35 N., R. 20 E., 500 ft upstream from Chicago, Milwaukee, St. Paul & Pacific Railroad bridge, 0.2 mile south of Amberg, and 1.2 miles downstream from confluence of North and South Branches.

Drainage area.--253 sq mi.

Gage.--Nonrecording prior to Oct. 7, 1946; recording thereafter. Prior to May 23, 1931, at railroad bridge at datum 1 ft higher. May 23, 1931, to Aug. 4, 1934, at highway bridge three-quarters of a mile downstream at different datum. Altitude of gage is 865 ft above mean sea level (from survey level line along railroad).

Stage-discharge relation.--Defined by current-meter measurements below 1,440 cfs and extended above by logarithmic plotting.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1914	July 14, 1914	4.7		1,220	1936	Apr. 15, 1936	3.9		785
1915	Apr. 11, 1915	3.7		778	1937	Apr. 26, 1937	4.3		970
					1938	Mar. 31, 1938	5.8		1,600
1916	June 3, 1916	4.7		1,200	1939	June 13, 1939	5.7		1,730
1917	June 8, 1917	4.6		1,160	1940	May 21, 1940	3.9		763
1918	May 28, 1918	3.9		862					
1919	Apr. 12, 1919	4.3		1,040	1941	Sept. 1, 1941	4.5		1,010
1920	Mar. 27, 1920	5.2		1,450	1942	Apr. 6, 1942	4.2		875
					1943	Apr. 10, 1943	4.1		837
1921	Mar. 21, 1921	5.8		1,750	1944	Apr. 25, 1944	3.7		691
1922	Apr. 10, 1922	7.8		2,800	1945	Mar. 20, 1945	4.6		1,060
1923	Apr. 21, 1923	6.2		1,950					
1924	May 11, 1924	4.8		1,250	1946	Mar. 17, 1946	4.1		837
1925	Apr. 24, 1925	3.2		582	1947	Apr. 7, 1947	4.79		1,160
					1948	Mar. 24, 1948	4.40	1.2	-
1926	Apr. 23, 1926	3.7		778		Mar. 26, 1948	3.51		619
1927	Mar. 18, 1927	4.3		1,040	1949	July 5, 1949	4.10		800
1928	Apr. 5, 1928	4.1		947	1950	Apr. 19, 1950	5.51		1,450
1929	Apr. 8, 1929	4.8		1,250					
1930	Apr. 19, 1930	3.2		582	1951	Apr. 9, 1951	6.50		1,980
					1952	July 22, 1952	4.77		1,080
1931	May 11, 1931	2.6		376	1953	Mar. 23, 1953	4.40	.8	-
1932	Apr. 10, 1932	6.2		1,410		Mar. 25, 1953	4.25		860
1933	June 7, 1933	6.4		1,480	1954	Apr. 28, 1954	4.85		1,120
1934	Apr. 10, 1934	5.5		1,160	1955	Apr. 15, 1955	4.23		852
1935	Mar. 25, 1935	4.2		920	1956	Aug. 5, 1956	4.24		856

670. Menominee River below Koss, Mich.
(Published as "at Koss" prior to 1913)

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

Drainage area.--3,790 sq mi, approximately. Prior to 1913, 3,780 sq mi, approximately.

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

Stage-discharge relation.--Powerplant rating.

Remarks.--Flow regulated by powerplants; by Michigamme Reservoir (capacity, 119,950 acre-ft) since 1940 and Peavy Pond (capacity, 33,000 acre-ft) since 1943, and by smaller reservoirs upstream. Records of daily discharge furnished by Wisconsin Public Service Corp. since July 1, 1913.

Maximum daily discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1908	May 1, 1908		14,600	1936	May 9, 1936		13,000
1914	May 3, 1914		20,800	1937	Apr. 29, 1937		13,800
1915	Apr. 13, 1915		8,650	1938	Apr. 2, 1938		20,700
				1939	May 30, 1939		16,900
1916	Apr. 23,25, 1916		23,200	1940	May 24, 1940		13,700
1917	Apr. 24, 1917		13,800				
1918	May 30, 1918		15,000	1941	Sept. 2, 1941		9,180
1919	Apr. 14, 1919		14,100	1942	Apr. 19, 1942		10,800
1920	Mar. 29, 1920		21,800	1943	June 20, 1943		18,900
				1944	May 16, 1944		8,380
1921	Apr. 30, 1921		20,300	1945	Mar. 23, 1945		10,800
1922	Apr. 12, 1922		20,500				
1923	Apr. 23, 1923		18,700	1946	Mar. 19, 1946		10,900
1924	May 11, 1924		11,800	1947	May 4, 1947		8,870
1925	Apr. 29, 1925		4,310	1948	Mar. 30, 1948		6,720
				1949	July 10, 1949		8,420
1926	Apr. 27, 1926		10,900	1950	May 11, 1950		16,900
1927	Mar. 20, 1927		13,500				
1928	May 8, 1928		16,900	1951	Apr. 15, 1951		19,000
1929	Apr. 11, 1929		19,700	1952	Apr. 21, 1952		14,700
1930	Apr. 21, 1930		9,380	1953	July 5, 1953		19,300
				1954	Apr. 30, 1954		16,700
1931	Apr. 25, 1931		4,060	1955	Apr. 18, 1955		14,800
1932	Apr. 12, 1932		11,100				
1933	Apr. 23, 1933		14,700	1956	Apr. 10, 1956		7,360
1934	Apr. 11, 1934		13,400				
1935	Mar. 28, 1935		13,600				

675. Menominee River near McAllister, Wis.

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

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

Gage.--Recording. Altitude of gage is 630 ft (from river-profile map). Nonrecording prior to May 15, 1945.

Stage-discharge relation.--Defined by current-meter measurements below 22,000 cfs.

Remarks.--Flow regulated by powerplants, by Michigamme Reservoir (capacity, 119,950 acre-ft) and Peavy Pond (capacity, 33,000 acre-ft) above station, and by other reservoirs upstream.

675. Menominee River near McAllister, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	June 4, 1945	13.82	11,700	1951	Apr. 15, 1951	17.83	25,700
				1952	Apr. 23, 1952	15.98	19,300
1946	June 28, 1946	14.33	12,800	1953	July 5, 1953	17.43	24,200
1947	Apr. 7, 1947	13.71	11,400	1954	Apr. 30, 1954	16.77	21,900
1948	Apr. 29, 1948	12.66	9,240	1955	Apr. 18, 1955	15.24	16,700
1949	July 8, 1949	13.42	10,800				
1950	May 11, 1950	16.70	21,600	1956	Apr. 10, 1956	13.35	10,800

680. Peshtigo River at High Falls, near Crivitz, Wis.

Location.--Lat 45°16'50", long 88°12'00", in sec. 1, T. 32 N., R. 18 E., at High Falls powerhouse of Wisconsin Public Service Corp., one mile above Thunder River and 10 miles west of Crivitz.

Drainage area.--554 sq mi, approximately.

Gage.--Headwater and tailwater gages and generation data entered hourly in daily log sheet by company employees. Altitude of tailwater gage is 810 ft (from river-profile map). Prior to Sept. 30, 1922, recording gage at site half a mile downstream at different datum.

Stage-discharge relation.--Powerplant rating.

Remarks.--Flow regulated by storage in High Falls service pond, which has an area of 1,750 acres, and by Caldron Falls service pond, which has an area of 1,212 acres. Records of daily discharge furnished by Wisconsin Public Service Corp. since 1923.

Maximum daily discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1913	Apr. 21, 1913		2,480	1936	May 9, 1936		1,550
1914	May 2, 1914		2,070	1937	Apr. 26, 1937		2,500
1915	Apr. 12, 1915		1,310	1938	Mar. 31, 1938		3,430
				1939	May 29, 1939		2,520
1916	June 5, 1916		2,850	1940	June 11, 1940		1,760
1917	June 9, 1917		2,590				
1918	May 31, 1918		2,140	1941	Apr. 17, 1941		2,030
1919	Apr. 12, 1919		2,290	1942	Apr. 6, 1942		2,060
1920	Apr. 3, 1920		1,830	1943	June 20, 1943		2,160
				1944	May 16,17, 1944		1,720
1921	Apr. 29, 1921		3,430	1945	Mar. 24, 1945		2,190
1922	Apr. 11, 1922		3,670				
1923	Apr. 26, 1923		2,330	1946	Mar. 20, 1946		2,280
1924	May 15, 1924		2,430	1947	Apr. 12, 1947		1,690
1925	Apr. 28, May 6		1,200	1948	Mar. 27, 1948		1,550
				1949	July 8, 9, 1949		1,820
1926	Apr. 27, 1926		1,980	1950	May 8, 1950		2,850
1927	Mar. 21, 1927		1,790				
1928	Sept. 15, 1928		2,510	1951	Apr. 14, 1951		3,280
1929	Apr. 9, 1929		3,380	1952	Apr. 23, 1952		2,120
1930	Aug. 20, 1930		1,440	1953	Mar. 28, 1953		1,610
				1954	Apr. 30, Sept. 21		1,610
1931	Nov. 20, 1930		905	1955	Apr. 22, 1955		1,720
1932	Apr. 12,13, 1932		1,270				
1933	Apr. 21, 1933		1,470	1956	Apr. 8, 1956		1,470
1934	Apr. 16, 1934		1,320				
1935	Apr. 1, 1935		1,410				

710. Oconto River near Gillett, Wis.

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

Drainage area.--678 sq mi, approximately.

Gage.--Recording. Altitude of gage is 735 ft (from river-profile map). Prior to March 1909, nonrecording gage at datum 4.0 ft lower. Jan. 6, 1914, to Aug. 24, 1938, nonrecording gage at present datum.

Stage-discharge relation.--Defined by current-meter measurements below 6,300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1907	May 26, 1907	8.2		2,570	1939	Mar. 26, 1939	9.31	4.0	-
1908	May 1, 1908	8.7		2,700		Mar. 28, 1939	7.8	1.6	4,200
1914	May 1, 1914	3.9		2,090	1940	June 10, 1940	3.17		1,540
1915	Apr. 14, June 21	3.5		1,790					
					1941	Apr. 4, 1941	4.95	2.0	-
1916	Apr. 25, 1916	5.4		3,310		Apr. 18, 1941	3.64		1,900
1917	Apr. 2, 1917	5.9	1.0	3,000	1942	Jan. 7, 1942	5.85	4.2	-
1918	May 30, 1918	4.5		2,550		Apr. 6, 7, 1942	4.16		2,340
1919	Apr. 13, 1919	4.3		2,390	1943	Mar. 31, 1943	8.22	2.0	-
1920	Mar. 28, 1920	5.4		3,310		Apr. 1, 1943	6.30		4,020
					1944	June 18, 1944	2.65		1,200
1921	Apr. 29, 1921	4.9		2,970	1945	Mar. 19, 1945	7.74	3.6	-
1922	Apr. 10, 1922	11.2		8,400		Mar. 20, 1945	5.00	0.9	2,300
1923	Apr. 22, 1923	6.2		4,010					
1924	Apr. 19, 1924	5.6		3,440	1946	Mar. 17, 1946	6.80		4,420
1925	June 24, 1925	3.3		1,640	1947	Apr. 8, 1947	3.30		1,660
					1948	Mar. 25, 1948	4.95		2,980
1926	Apr. 15, 1926	4.3		2,400	1949	Mar. 29, 1949	2.58		1,150
1927	Mar. 16, 1927	4.3		2,400	1950	Apr. 12, 1950	6.04	2.5	-
1928	Mar. 25, 1928	5.7		3,520		Apr. 21, 1950	3.87		2,060
1929	Apr. 9, 1929	6.9		4,490					
1930	Apr. 18, 1930	2.3		975	1951	Apr. 3, 1951	6.08	1.0	-
						Apr. 14, 1951	6.02		4,050
1931	Oct. 9, 1930	1.9		761	1952	Apr. 2, 1952	9.95		[a]4,000
1932	Apr. 10, 1932	3.8		1,870	1953	Mar. 23, 1953	8.39	.8	-
1933	Apr. 1, 1933	3.4		1,600		Mar. 23, 1953	7.75		5,630
1934	Apr. 5, 1934	7.0	2.1	3,000	1954	May 1, 1954	3.11		1,520
1935	Mar. 22, 1935	7.2	1.9	3,400	1955	Jan. 17, 1955	5.51	4.5	-
						Apr. 15, 1955	3.18		1,570
1936	Mar. 29, 1936	4.0	.2	2,100					
1937	Oct. 22, 1936	5.0		3,180	1956	Apr. 6, 1956	8.73	4.0	-
1938	Apr. 2, 1938	4.9		3,090		Apr. 8, 1956			[a]3,000

[a]About, ice affected.

735. Fox River at Berlin, Wis.

Location.--Lat 43°57'05", long 88°57'30", in sec. 16, T. 17 N., R. 13 E., at Government lock and dam, 1.1 mile south of bridge in Berlin, 2½ miles upstream from Barnes Creek, and at mile 33.0

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

Gage.--Recording. Datum of gage is 744.52 ft above mean tide at New York City (by Corps of Engineers). Prior to Oct. 7, 1954, non-recording gage at site 0.3 mile upstream at same datum.

Stage-discharge relation.--Defined by current-meter measurements below 5,100 cfs.

Historical.--The flood of Mar. 17-18, 1946, was the highest since 1888 according to the Berlin Journal-Courant. The Corps of Engineers lists the maximum stage as 16.2 feet in 1881.

Remarks.--Maximum daily discharges are listed. Records computed by Corps of Engineers and reviewed by Geological Survey 1898 to 1939.

735. Fox River at Berlin, Wis.--Continued

Maximum daily discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1881		16.2		1927	Mar. 12, 1927		3,170
1898	Mar. 16, 1898		2,730	1928	Mar. 23, 24, 1928		5,920
1899	Apr. 9, 11, 1899		2,800	1929	Mar. 21, 23, 1929		6,620
1900	Apr. 2, 1900		2,830	1930	Mar. 5, 1930		3,000
1901	Mar. 29, 1901		4,800	1931	Apr. 5, 8, 1931		1,140
1902	May 25, 1902		2,450	1932	Jan. 23, 1932		1,910
1903	Mar. 24, 25, 1903		2,670	1933	Apr. 11, 1933		2,600
1904	Mar. 27, 1904		5,400	1934	Apr. 6-8, 1934		1,910
1905	June 10, 11, 1905		5,920	1935	Mar. 21, 22, 1935		4,340
1906	Mar. 30, 1906		4,450	1936	Mar. 27, 1936		4,340
1907	Mar. 28-31, 1907		2,520	1937	Mar. 20, 1937		3,260
1908	Mar. 14, 15, 1908		4,020	1938	Sept. 21-23, 1938		6,190
1909	May 3-6, 1909		2,910	1939	Mar. 26, 1939		4,910
1910	Mar. 17, 1910		3,080	1940	June 28, 1940		4,720
1911	Feb. 26, 27, 1911		2,600	1941	Apr. 3-6, 1941		3,540
1912	Mar. 31, Apr. 1		4,100	1942	Mar. 20, 21, 1942	11.8	2,740
1913	Mar. 31, 1913		4,340	1943	Mar. 31, Apr. 1	14.7	5,080
1914	June 11, 12, 1914		2,750	1944	Apr. 28, 29, 1944	11.1	2,290
1915	Mar. 18, 1915		3,000	1945	Mar. 18, 19, 1945	12.8	3,460
1916	Mar. 28, 30, 1916		6,400	1946	Mar. 17, 18, 1946	15.5	6,900
1917	Mar. 27, 1917		5,650	1947	Apr. 12, 1947	12.2	3,160
1918	Mar. 21-23, 1918		6,050	1948	Mar. 22, 1948	13.7	4,540
1919	Mar. 20,21, 1919		2,670	1949	Apr. 4, 1949	11.6	2,600
1920	Mar. 29, 1920		5,150	1950	Mar. 28, 1950	13,85	4,780
1921	May 1, 2, 1921		2,450	1951	Apr. 10,11, 13-16	13.1	4,020
1922	Mar. 16, 1922		5,920	1952	Apr. 4-6, 1952	14.1	4,900
1923	Apr. 12, 1923		6,050	1953	Mar. 20, 1953	13.4	4,100
1924	Apr. 9, 10, 1924		4,020	1954	May 3-7, 1954	10.4	1,870
1925	Mar. 23, 25, 1925		2,520	1955	Oct. 10-12, 1954	12.20	3,020
1926	Apr. 1, 2, 1926		3,440	1956	Apr. 4, 1956	13.47	4,000

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

Location.--Lat 44°55', long 88°39', E½ sec. 3, T. 28 N., R. 15 E., on highway bridge, half a mile upstream from West Branch of Wolf River, 4 miles north of Keshena and at mile 140.1.

Drainage area.--633 sq mi, approximately.

Gage.--Nonrecording. Datum of gage is 856.57 ft above mean sea level (levels by Wisconsin Power and Light Co.).

Stage-discharge relation.--Defined by current-meter measurements below 2,300 cfs.

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

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1928	Mar. 29, 1928	4.67	1,740	1943	June 19, 20, 1943	4.90	1,830
1929	Apr. 8, 1929	6.2	2,640	1944	May 13, 1944	4.6	1,660
1930	Apr. 19, 1930	3.8	1,240	1945	Mar. 23, 1945	4.9	1,830
1931	June 14, 15, 1931	4.00	1,350	1946	Mar. 19, 1946	5.7	2,330
1932	Apr. 10, 1932	4.44	1,570	1947	Apr. 7, 1947	4.4	1,540
1933	May 2, 1933	3.90	1,290	1948	Mar. 27, 1948	4.3	1,480
1934	Apr. 10, 1934	4.6	1,680	1949	July 5, 1949	4.3	1,480
1935	Mar. 25, 1935	6.1	1,960	1950	Apr. 26, 1950	4.7	1,710
1936	May 7, 1936	4.52	1,620	1951	Apr. 13, 1951	5.65	2,340
1937	May 1, 1937	5.07	1,960	1952	Apr. 19-22, 1952	4.40	1,580
1938	Mar. 31, 1938	5.56	2,260	1953	Mar. 24, 1953	5.74	2,400
1939	Mar. 31, 1939	5.4	2,140	1954	Apr. 28, 1954	4.40	1,580
1940	June 9, 1940	4.44	1,540	1955	Apr. 15, 1955	4.18	1,450
1941	Apr. 16, 1941	5.8	2,390	1956	Apr. 7, 1956	4.60	1,680
1942	Apr. 6, 1942	4.57	1,660				

770. Wolf River at Keshena Falls, Wis.
(Published as "at Keshena" prior to April 1928)

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

Drainage area.--812 sq mi, approximately. Prior to Apr. 1, 1928, 826 sq mi, approximately.

Gage.--Recording. Datum of gage is 820.00 ft above mean sea level (levels by Wisconsin Power and Light Co.). May 1907 to March 1909, nonrecording gage, and February 1911 to March 1928, nonrecording gage, 1.7 miles downstream at datum 4.03 ft lower.

Stage-discharge relation.--Defined by current-meter measurements below 3,300 cfs.

Historical data.--The Shawano County Advocate states the April 10, 1922 flood was the highest in many years.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1908	Apr. 28, 1908	6.2		3,520	1926	Apr. 25, 1926	5.2		2,850
1911	June 2, 1911	-		1,720	1927	May 18, 1927	4.40		2,210
1912	Sept. 2, 1912	6.9		4,070	1928	Sept. 15, 1928	8.15		2,940
1913	Apr. 6, 21, 1913	4.7		2,400	1929	Apr. 8, 1929	-		4,100
1914	Apr. 30, 1914	4.2		2,060	1930	Apr. 19, 1930	-		1,620
1915	June 19, 1915	3.7		1,720					
					1931	June 14-16, 1931	6.90		1,530
1916	Apr. 21, 1916	6.0		3,370	1932	Apr. 9, 10, 1932	7.45		2,110
1917	June 8, 9, 1917	4.5		2,260	1933	May 2, 1933	7.04		1,710
1918	May 28, 1918	5.0		2,620	1934	Apr. 10, 1934	7.02		2,120
1919	Apr. 15, 1919	4.6		2,470	1935	Mar. 28, 1935	7.48		2,160
1920	Apr. 2, 1920	4.89		2,550					
					1936	May 8, 1936	7.65		2,320
1921	Apr. 28-30, 1921	6.5		3,760	1937	May 2, 1937	8.25		2,940
1922	Apr. 10, 1922	7.30		4,390	1938	Mar. 31, 1938	8.60		3,300
1923	Apr. 21, 1923	5.7		3,260	1939	Mar. 28, 1939	8.15	1.0	-
1924	May 15, 1924	5.78		3,320		May 29, 1939	7.73		2,640
1925	June 14, 1925	3.4		1,510	1940	June 9, 1940	7.50		2,250

770. Wolf River at Keshena Falls, Wis.--Continued
(Published as "at Keshena" prior to April 1928)

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1941	Sept. 1, 1941	8.50		3,400	1949	July 6, 1949	7.23		1,990
1942	Nov. 25, 1941	8.27	1.6	-	1950	Apr. 18, 1950	7.77	0.8	-
	(a)	7.51		2,250		May 6, 1950	7.56		2,300
1943	June 1, 1943	8.11		2,920					
1944	Nov. 17, 1943	13.83	7.5	-	1951	Apr. 13, 1951	8.76		3,590
	May 14, 1944	7.12		1,840	1952	Apr. 20, 1952	7.46		2,080
1945	Mar. 24, 1945	7.66		2,420	1953	Mar. 24, 1953	7.84		2,500
					1954	Apr. 29, 1954	7.26		1,890
1946	Nov. 27, 1945	9.70	3.5	-	1955	Apr. 7, 1955	7.29		1,920
	Mar. 18, 1946	7.67		2,420					
1947	Apr. 6, 1947	7.43		2,200	1956	Apr. 10, 1956	7.09		1,730
1948	Mar. 27, 1948	7.23		1,990					

[a] Nov. 2, 1941, Apr. 6, 1942.

785. Embarrass River near Embarrass, Wis.

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

Drainage area.--395 sq mi, approximately.

Gage.--Recording. Altitude of gage is 800 ft (from survey level line in vicinity). Prior to Aug. 23, 1938 nonrecording gage at same datum.

Stage-discharge relation.--Defined by current-meter measurements below 2,800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1920	Mar. 27, 1920	7.7		2,800	1941	May 31, 1941	6.38		2,030
					1942	June 1, 1942	6.84		2,310
1921	Mar. 21, 1921	8.4		3,600	1943	June 1, 1943	9.35		4,560
1922	Apr. 10, 1922	11.6		6,900	1944	June 14, 1944	6.95		2,460
1923	Apr. 22, 1923	8.8		3,970	1945	Mar. 18, 1945	7.38		2,760
1924	Apr. 18, 1924	7.3		2,570					
1925	June 15, 1925	5.3		1,290	1946	Mar. 16, 1946	7.55		2,920
					1947	Apr. 5, 1947	6.94		2,390
1926	Aug. 23, 1926	5.9		1,650	1948	Mar.19,20,21, 1948	6.10	1.0	-
1927	Mar. 15, 1927	5.8		1,590		Mar. 24, 1948	5.65		1,580
1928	Sept. 16, 1928	7.8		2,930	1949	Mar. 24, 1949	5.36		1,390
1929	Apr. 8, 1929	8.5		3,480	1950	Mar. 27, 1950	11.05	5.5	-
1930	Apr. 18, 1930	4.6		890		Apr. 12, 1950	5.64		1,490
1931	June 24, 1931	4.50		800	1951	Apr. 9, 1951	7.80		3,070
1932	Apr. 9, 1932	5.70		1,510	1952	Apr. 2, 1952	9.02		4,170
1933	Mar. 31, 1933	5.8		1,570	1953	Mar. 23, 1953	8.79		3,970
1934	Apr. 5, 1934	6.9		2,310	1954	Apr. 28, 1954	5.02		1,120
1935	Mar. 24, 1935	6.10		1,810	1955	Apr. 1, 1955	5.40		1,340
1936	Mar. 25, 1936	6.0		1,610	1956	Apr. 5, 1956	8.00		[a] 3,000
1937	Apr. 25, 1937	6.0		1,740					
1938	Mar. 22, 1938	8.1		3,130					
1939	Mar. 26, 1939	9.64	1.5	-					
	Mar. 27, 1939	8.76		3,970					
1940	June 9, 10, 1940	6.82		2,310					

[a] Affected by ice.

790. Wolf River at New London, Wis.

Location.--Lat 44°23', long 88°44', in sec. 12, T. 22 N., R. 14 E., on right bank 15 ft downstream from Pearl Street Bridge in New London, 0.2 mile downstream from Embarrass River, and at mile 56.3.

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

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

Stage-discharge relation.--Defined by current-meter measurements below 11,600 cfs.

Historical data.--The flood of April 13, 1922 was the highest since April 16, 1888 according to the New London Newspaper. The Corps of Engineers reported a gage height of 11.6 ft for the April 16, 1888 flood.

Remarks.--Daily maximums are listed prior to Oct. 4, 1951 with momentary maximums thereafter. Records for 1896 to 1913 computed by Corps of Engineers.

Maximum daily discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1888	Apr. 16, 1888	11.6		1926	May 1-3, 1926	7.6	4,470
1896	May 7-9, 1896		3,420	1927	Mar. 16-19, 1927	8.9	6,340
1897	Mar. 27, 1897		4,390	1928	Mar. 26,27, 1928	9.5	7,810
1898	Apr. 1-4, 26-28		2,865	1929	Mar. 21,22, 1929	11.0	11,300
1899	May 5, 6, 1899		5,430	1930	Mar. 18-21, 1930	5.6	2,900
1900	July 26,27,1900		2,750				
				1931	June 25,26, 1931	4.3	2,160
1901	Apr. 1, 1901		6,230	1932	Apr. 15, 1932	7.4	4,260
1902	May 13, 28, 1902		3,050	1933	Apr. 5, 6, 1933	7.9	5,320
1903	Mar. 26,27, 1903		5,100	1934	Apr. 8, 9, 1934	8.4	6,000
1904	June 1-4, 1904		5,160	1935	Mar. 25,26, 1935	9.6	9,570
1905	Apr. 1, 1905		6,470				
				1936	Mar. 28, 1936	8.8	7,450
1906	Apr. 1-6, 1906		7,250	1937	May 1-3, 1937	8.3	6,360
1907	Mar. 30,31, 1907		5,100	1938	Mar. 23-25, 1938	9.8	11,500
1908	Mar. 18,19, 1908		4,350	1939	Mar. 29,30, 1939	9.8	11,100
1909	May 16,17, 22-24		3,420	1940	July 1, 2, 1940	7.2	4,880
1910	May 1-4, 1910		3,500				
				1941	Apr. 6-8, 1941	8.6	7,140
1911	May 25, 26, 1911		3,120	1942	June 5, 7, 1942	9.0	7,940
1912	July 29,30, 1912		9,180	1943	Apr. 2, 3, 1943	9.9	11,700
1913	Mar. 19, 1913		8,170	1944	June 22, 1944	8.3	6,080
1914	June 9, 10, 1914	9.9	8,490	1945	Mar. 23, 1945	8.4	7,600
1915	Mar. 27, 1915	7.6	4,260				
				1946	Mar. 18, 1946	9.6	10,300
1916	(a)	9.7	8,960	1947	Apr. 12,13, 1947	8.1	5,970
1917	Apr. 1, 1917	9.45	8,060	1948	Mar. 23,24, 1948	7.8	5,460
1918	May 30, 31, 1918	9.5	7,270	1949	(b)	6.8	4,020
1919	Apr. 14,15, 1919	8.7	6,350	1950	Mar. 31, 1950	9.6	c 7,000
1920	Mar. 28,29, 1920	10.3	10,800				
				1951	Apr. 14-16, 1951	9.8	10,400
1921	May 3, 1921	8.8	6,560	1952	Apr. 5, 1952	11.0	15,200
1922	Apr. 13, 1922	11.4	15,500	1953	Mar. 26,27, 1953	9.80	10,400
1923	Apr. 24, 1923	10.2	10,100	1954	May 6, 7, 1954	6.61	3,980
1924	May 16-18, 1924	9.3	7,280	1955	Apr. 9, 1955	8.21	5,830
1925	June 19,20, 1925	7.4	4,270				
				1956	Apr. 9, 1956	8.86	7,470

[a] Apr. 4, 1916, June 12, 13, 1916.
[b] Mar. 31, Apr. 1, 7-9, 1949.
[c] Affected by ice.

800. Little Wolf River at Royalton, Wis.

Location.--Lat 44°24', long 88°51', in sec. 1, T. 22 N., R. 13 E., on right bank 50 ft upstream from highway bridge in Royalton and 4 miles upstream from mouth.

Drainage area.--485 sq mi, approximately.

Gage.--Recording. Datum of gage is 774.00 ft above mean sea level, datum of 1929. Prior to Aug. 20, 1915 nonrecording gage at datum 0.75 ft lower. Aug. 20, 1915, to Apr. 23, 1934, nonrecording gage at same datum.

Stage-discharge relation.--Defined by current-meter measurements below 3,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1914	June 7, 1914	7.6		5,470	1936	Mar. 25, 1936	5.00		3,420
1915	Apr. 8, 1915	3.3		1,300	1937	Mar. 7, 1937	4.90	0.6	2,500
					1938	Mar. 19, 1938	9.50	5.5	-
1916	Mar. 30, 1916	10.0	2.8	6,000		Sept. 11, 1938	5.75		4,380
1917	Mar. 26, 1917	8.5	2.2	4,800	1939	Mar. 25, 1939	10.33	3.0	-
1918	May 19, 1918	4.7		2,980		Mar. 25, 1939	9.50	2.0	6,500
1919	Mar. 16, 1919	5.9	1.0	3,100	1940	June 26, 1940	4.14		2,500
1920	Mar. 26, 1920	5.6		3,950					
					1941	Apr. 2, 1941	6.55	2.5	-
1921	Apr. 28, 1921	4.1		2,180		Apr. 3, 1941	4.04		2,390
1922	Apr. 11, 1922	7.0		5,900	1942	June 1, 1942	4.47		2,810
1923	Apr. 15, 1923	5.5		3,820	1943	Mar. 30, 1943	8.00		6,950
1924	Aug. 22, 1924	6.1		4,600	1944	June 20, 1944	4.55		2,860
1925	June 15, 1925	4.1		2,180	1945	Mar. 17, 1945	6.5		5,080
1926	Apr. 11, Sept. 25	3.6		1,670	1946	Mar. 15, 1946	9.21	2.1	-
1927	Mar. 11, 1927	3.9		1,970		Mar. 15, 1946	8.7	1.5	5,900
1928	Mar. 24, 1928	8.0	2.5	4,000	1947	Apr. 7, 1947	4.6		2,860
1929	Mar. 18, 1929	7.0		5,900	1948	Mar. 21, 1948	7.93	1.5	5,000
1930	Feb. 23, 1930	4.5	1.2	1,600	1949	Mar. 22, 1949	3.21		1,480
					1950	Mar. 28, 1950	11.95	4.0	6,800
1931	June 22, 1931	2.3		670					
1932	Apr. 9, 1932	3.1		1,250	1951	Apr. 9, 1951	4.61		2,860
1933	Apr. 2, 1933	4.5		2,660	1952	Apr. 2, 1952	7.00		5,690
1934	Apr. 4, 1934	5.2		3,500	1953	Mar. 23, 1953	6.28		4,840
1935	Mar. 22, 1935	7.82	2.5	3,500	1954	Mar. 15, 1954	2.62		1,010
					1955	Oct. 3, 1954	4.67		2,890
					1956	Apr. 5, 1956	7.30		6,000

810. Waupaca River near Waupaca, Wis.
(Published as "near Weyauwega" June 28, 1916 to Oct. 18, 1917)

Location.--Lat 44°21', long 88°59', near north line of sec. 1, T. 21 N., R. 12 E., on right bank 10 ft downstream from highway bridge, 1½ miles downstream from Crystal River, and 4 miles downstream from Waupaca.

Drainage area.--305 sq mi, approximately. Prior to Oct. 19, 1917, 308 sq mi, approximately.

Gage.--Recording. Altitude of gage is 780 ft (from survey level line along railroad). Prior to Oct. 19, 1917, nonrecording gage at site 1 mile downstream at different datum. Oct. 19, 1917, to Nov. 23, 1938, nonrecording gage at present site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 2,000 cfs.

810. Waupaca River near Waupaca, Wis.--Continued
(Published as "near Weyauwega" June 28, 1916 to Oct. 18, 1917)

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1917	Mar. 25, 1917	5.8		1,000	1941	Jan. 6, 1941	3.72	2.0	-
1918	Mar. 19, 1918	6.2		1,400		Apr. 3, 1941	2.92		665
1919	Mar. 17, 1919	5.7		1,900	1942	Jan. 3, 1942	4.17	2.5	-
1920	Mar. 26, 1920	3.7		1,080		June 7, 1942	3.49		960
					1943	Mar. 26, 1943	5.00		1,570
1921	Apr. 27, 1921	3.3		900	1944	Mar. 12, 1944	3.98		1,160
1922	Apr. 11, 1922	4.7		1,440	1945	Mar. 14, 1945	3.76	1.2	-
1923	Apr. 13, 1923	5.5		1,800		Mar. 16, 1945	3.60		1,000
1924	Aug. 22, 1924	4.7		1,440					
1925	July 9, 1925	3.2		784	1946	Mar. 7, 1946	5.70	2.0	-
						Mar. 14, 1946	4.48		1,360
1926	Mar. 24, 1926	5.1	1.3	1,100	1947	Dec. 4, 1946	3.76	1.5	-
1927	May 10, 1927	2.7		521		Apr. 6, 1947	3.45		855
1928	Mar. 23, 1928	5.0		1,490	1948	Mar. 20, 1948	6.90		2,520
1929	Mar. 16, 1929	6.1		[a]1,590	1949	Dec. 9, 1948	3.50	1.5	-
1930	Feb. 25, 1930	3.5		876		Mar. 15, 1949	3.90		1,120
					1950	Mar. 28, 1950	8.06	2.5	-
1931	Oct. 8, 1930	2.1		322		Mar. 28, 1950	7.92	1.9	2,100
1932	May 7, 1932	2.55		488					
1933	Apr. 2, 1933	4.9		1,490	1951	Mar. 19, 1951	3.23	1.0	-
1934	Apr. 4, 1934	5.9		2,040		Apr. 8, 1951	2.96		740
1935	June 19, 1935	3.1		710	1952	Apr. 2, 1952	4.67		1,440
					1953	Mar. 23, 1953	5.19		1,660
1936	Mar. 25, 1936	3.9		980	1954	Mar. 14, 1954	3.08	1.0	-
1937	Mar. 25, 1937	3.3		758		June 1, 1954	2.25		455
1938	Sept. 10, 1938	4.7		1,440	1955	Oct. 4, 1954	3.52		950
1939	Mar. 23, 1939	5.52		1,660		Mar. 12,22, 1955	4.45	1.5	-
1940	June 24, 1940	5.69		1,900					
					1956	Apr. 6, 1956	5.18		1,650

[a]Ice affected daily.

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

Location.--Lat 43°45'45", long 88°29'00", on line between secs. 17 and 20, T. 15 N., R. 17 E., on left bank 25 ft upstream from highway bridge, 0.7 mile west of Fond du Lac and 2.5 miles upstream from confluence with East Branch.

Drainage area.--88 sq mi, approximately.

Gage.--Recording. Datum of gage is 766.78 ft above mean sea level (Corps of Engineers benchmark).

Stage-discharge relation.--Defined by current-meter measurements below 870 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1939	Mar. 25, 1939	3.79		602	1948	Mar. 15, 1948	3.98	2.0	-
1940	June 22, 1940	5.28		1,000		Mar. 21, 1948	3.21		457
					1949	Mar. 14, 1949	4.49	3.0	-
1941	Mar. 27, 1941	5.29		1,000		Mar. 27, 1949	3.42		501
1942	May 31, 1942	6.16		1,320	1950	Mar. 25, 1950	5.41	2.5	-
1943	Mar. 27, 1943			[a]1,390		Mar. 27, 1950	4.51		642
1944	Mar. 23, 1944	2.70	1.5	-					
	June 23, 1944	2.02		202	1951	May 3, 1951	4.28		741
1945	June 1, 1945	4.31		686	1952	Mar. 21, 1952	5.60	1.5	-
						Mar. 24, 1952	4.58		894
1946	Mar. 14, 1946	5.78		1,210	1953	Mar. 17, 1953	5.10		1,040
1947	June 13, 1947	4.42		770	1954	Apr. 24, 1954	1.12		56

[a]Ice affected, daily discharge.

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

Location.--Lat 43°45'15", long 88°27'10", in sec. 22, T. 15 N., R. 17 E., on left bank at highway bridge, 0.1 mile west of U. S. Highway 41, 0.5 mile south of Fond du Lac, and 2.5 miles upstream from confluence with West Branch.

Drainage area.--75 sq mi, approximately.

Gage.--Recording. Datum of gage is 762.82 ft above mean sea level (Corps of Engineers benchmark).

Stage-discharge relation.--Defined by current-meter measurements below 1800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1939	Mar. 17, 1939	4.93	3.0	142	1948	Mar. 15, 1948	5.23	0.8	1,100
	Mar. 25, 1939	2.85		397	1949	Mar. 6, 1949	5.85	3.5	
1940	June 23, 1940	5.87		2,140		Mar. 27, 1949	2.87		403
					1950	Mar. 26, 1950	6.40	1.9	1,100
1941	Mar. 23, 1941	4.96		1,090					
	Mar. 26, 1941	6.13	2.5	-	1951	Mar. 6, 1951	5.46	2.0	
1942	May 31, 1942	4.12		920		Apr. 26, 1951	3.97		899
1943	Mar. 16, 1943	10.74	5.7	[a]1,500	1952	Mar. 19, 1952	5.85	2.5	
1944	Feb. 23, 1944	-		[b]170		Mar. 21, 1952	4.21		964
1945	Mar. 14, 1945	8.21	3.0	[a]1,600	1953	Feb. 20, 1953	5.25	2.0	
						Mar. 15, 1953	3.70		745
1946	Mar. 13, 1946	4.72		1,460	1954	Feb. 16, 1954	2.30	.8	
1947	June 13, 1947	4.65		1,220		July 7, 1954	1.93		110

[a] Not listed in other publications.
[b] Ice affected, daily discharge.

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

Location.--Lat 44°19', long 88°12', in sec. 4, T. 21 N., R. 19 E., at Rapide Croche Dam, 2 miles upstream from Wrightstown and 18 miles upstream from mouth.

Drainage area.--6,150 sq mi, approximately.

Gage.--Recording headwater and tailwater gages, and since 1925, electric generation data taken each half hour are used to compute discharge records.

Remarks.--Flow regulated by storage in Lake Winnebago pool, area 263 sq mi at elevation of Menasha Dam Crest. Figures of daily discharge furnished by Corps of Engineers.

Maximum daily discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1918	May 25, 1918		16,300	1931	Dec. 2, 1930		3,100
1919	Apr. 18, 1919		13,100	1932	Mar. 4, 1932		9,900
1920	Apr. 10, 1920		16,600	1933	May 19, 1933		8,900
				1934	Apr. 3, 1934		6,650
1921	Apr. 28, 1921		14,200	1935	Apr. 4, 6, 1935		11,100
1922	Apr. 23, 1922		20,100				
1923	May 1-3, 1923		13,700	1936	Apr. 4, 1936		6,290
1924	May 13, 1924		15,500	1937	May 4, 1937		13,500
1925	July 9, 1925		8,340	1938	Mar. 30, 1938		[a]11,500
				1939	Oct. 1, 1938		18,200
1926	June 17, 1926		9,060	1940	June 26, 1940		17,500
1927	Mar. 30, 1927		13,300				
1928	Apr. 11, 1928		15,100	1941	Apr. 20, 1941		16,600
1929	Apr. 4, 1929		20,600	1942	June 12, 1942		19,800
1930	Mar. 8, 1930		6,600	1943	June 6, 1943		21,300

[a] Discharge of 18,000 cfs Sept. 22, 1938 occurred as part of flood event which did not peak until Oct. 1, 1938.

845. Fox River at Rapide Croche Dam, near Wrightstown, Wis.--Continued

Maximum daily discharge

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	June 23, 1944		10,800	1951	Apr. 26, 1951		20,400
1945	June 6, 7, 1945		15,800	1952	Apr. 18, 1952		24,000
				1953	Apr. 22, 1953		12,000
1946	Mar. 27, 1946		21,300	1954	June 28, 1954		5,530
1947	June 16, 1947		11,000	1955	Oct. 8, 1954		12,800
1948	Apr. 3, 1948		10,300				
1949	Apr. 26, 1949		6,360	1956	May 14, 1956		10,900
1950	Apr. 18, 1950		10,900				

860. Sheboygan River at Sheboygan, Wis.
(Published as "near Sheboygan" June 1916 to September 1924)

Location.--Lat 43°44'25", long 87°45'35", in E½ sec. 29, T. 15 N., R. 23 E., on left bank near State Highway 28, 0.7 mile west of bridge over Sheboygan River on State Highway 28 and 4.2 miles upstream from mouth.

Drainage area.--432 sq mi.

Gage.--Recording. Datum of gage is 584.00 ft above mean sea level, datum of 1929. June 1916 to June 1924 nonrecording gage at site 0.7 mile downstream at different datum. November 1950 to June 1951 nonrecording gage at site 0.3 mile downstream at datum 3.15 ft lower.

Stage-discharge relation.--Defined by current-meter measurements below 3,300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1917	June 3, 1917	5.7	2,080	1951	Mar. 30, 1951	8.20	3,680
1918	Mar. 20, 1918	8.9	6,340	1952	July 20, 1952	8.61	3,100
1919	Mar. 16, 1919	7.1	3,670	1953	Mar. 13, 1953	6.27	1,810
1920	Mar. 26, 1920	9.4	7,140	1954	June 22, 1954	5.39	1,320
				1955	Apr. 25, 1955	8.92	3,260
1921	Apr. 26, 1921	8.1	5,140				
1922	Mar. 7, 1922	7.2	3,500	1956	May 6, 1956	7.66	2,540
1923	Apr. 6, 1923	7.9	4,200				

865. Cedar Creek near Cedarburg, Wis.

Location.--Lat 43°19'25", long 87°58'50", on line between secs. 14 and 23, T. 10 N., R. 21 E., on upstream side of highway bridge, 2 miles north of Cedarburg and 6 miles upstream from mouth.

Drainage area.--121 sq mi, approximately.

Gage.--Nonrecording. Altitude of gage is 790 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 3,200 cfs.

865. Cedar Creek near Cedarburg, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1931	June 23, 1931	5.9		177	1946	Mar. 7, 1946	11.0		3,140
1932	Nov. 25, 1931	6.7		450	1947	Mar. 25, 1947	8.2	0.9	a580
1933	Apr. 1, 1933	9.0		1,470	1948	Mar. 19, 1948	9.0		1,610
1934	Apr. 4, 1934	6.5		352	1949	Apr. 1, 1949	6.7		386
1935	Mar. 6, 1935	9.8	1.5	a1,100	1950	Mar. 27, 1950	11.10		3,230
1936	Mar. 14, 1936	9.0	1.6	a710	1951	Mar. 30, 1951	8.80		1,470
1937	Apr. 22, 1937	8.8		1,350	1952	Mar. 20, 1952	11.40		3,500
1938	Sept. 19, 1938	9.1		1,520	1953	June 6, 1953	8.86		1,540
1939	Mar. 24, 1939	7.4		702	1954	June 23, 1954	8.2		1,000
1940	June 23, 1940	11.05		3,180	1955	Oct. 4, 1954	9.45		1,920
1941	Mar. 24, 1941	8.9	2.1	a410	1956	July 13, 1956	6.85		433
1942	June 13, 1942	7.9		850					
1943	Mar. 25, 1943	8.9	.6	a1,100					
1944	Mar. 16, 1944	8.2	1.3	a440					
1945	Mar. 15, 1945	6.8		406					

aNot listed in other publications.

870. Milwaukee River at Milwaukee, Wis.
(Published as "near Milwaukee"prior to 1936)

Location.--Lat 43°06'00", long 87°54'30", in NE¼ sec. 5, T. 7 N., R. 22 E., on left bank near north limits of Milwaukee, 2,000 ft downstream from Port Washington Road Bridge, and 6 miles upstream from mouth.

Drainage area.--686 sq mi, approximately.

Gage.--Recording. Datum of gage is 607.3 ft above mean sea level, adjustment of 1912. Prior to Apr. 6, 1929, nonrecording gage near present site at different datum. Apr. 6, 1929, to Jan. 8, 1934, nonrecording gage at bridge half a mile upstream at different datum.

Stage-discharge relation.--Defined by current-meter measurements below 8,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	Feb. 24, 1915	5.7	5,460	1936	Mar. 24, 1936	4.62	2,990
				1937	Feb. 21, 1937	5.93	6,640
1916	Mar. 29, 1916	5.0	4,410	1938	Feb. 12, 1938	6.19	7,360
1917	Mar. 25, 1917	5.6	5,310	1939	Mar. 26, 1939	4.83	2,440
1918	Mar. 20, 1918	9.0	15,100	1940	June 24, 1940	7.10	6,570
1919	Mar. 18, 1919	5.6	5,310				
1920	June 17, 1920	6.6	7,050	1941	Mar. 27, 1941	4.85	2,500
				1942	Mar. 17, 1942	4.74	2,360
1921	Apr. 23, 1921	4.8	4,470	1943	Mar. 16, 1943	6.81	5,860
1922	Feb. 24, 1922	4.7	4,310	1944	Feb. 27, 1944	4.52	2,030
1923	Apr. 7, 1923	5.8	7,060	1945	Mar. 16, 1945	4.33	1,840
1924	Aug. 6, 1924	9.0	15,100				
1925	Feb. 11, 1925	3.4	3,350	1946	Mar. 15, 1946	7.00	6,330
				1947	Mar. 25, 1947	4.80	2,500
1926	Mar. 25, 1926	4.1	4,740	1948	Mar. 19, 1948	7.55	8,080
1927	Mar. 13, 1927	3.7	3,940	1949	July 28, 1949	4.10	1,620
1928	Mar. 15, 1928	4.4	5,350	1950	Mar. 28, 1950	6.42	5,540
1929	Mar. 15, 1929	7.1	11,000				
1930	Feb. 26, 1930	3.8	4,180	1951	Mar. 30, 1951	6.54	5,740
				1952	Mar. 22, 1952	7.13	7,010
1931	Apr. 7, 1931	2.0	945	1953	June 5, 1953	6.89	6,580
1932	Nov. 24, 1931	2.8	2,200	1954	June 22, 1954	5.62	4,030
1933	Apr. 2, 1933	4.5	6,370	1955	Oct. 4, 1954	5.92	4,590
1934	Apr. 4, 1934	5.46	2,260				
1935	Mar. 17, 1935	5.60	3,300	1956	May 10, 1956	5.65	3,940

2860. Rum River near St. Francis, Minn.

Location.--Lat 45°19'40", long 93°22'20", in SE¼ sec. 19, T. 33 N., R. 24 W., at upstream side of highway bridge, 4 miles south of St. Francis and 15 3/4 miles upstream from mouth.

Drainage area.--1,360 sq mi, approximately.

Gage.--Recording. Datum of gage is 861.12 ft above mean sea level, adjustment of 1912. Prior to Nov. 9, 1933, nonrecording gage at site 50 ft downstream at same datum.

Stage-discharge relation.--Defined by current-meter measurements below 7,800 cfs.

Remarks.--Flow regulated occasionally by Lille Lacs, Ogechie and Onamia Lakes.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	May 17, 1930	6.56	3,910	1944	June 19, 1944	9.35	6,780
				1945	Mar. 22, 1945	9.03	5,800
1931	Mar. 30, 1931	4.15	1,140				
1932	Apr. 12, 1932	4.53	1,520	1946	Mar. 23, 1946	7.66	4,300
1933	May 12-13, 1933	3.52	600	1947	Apr. 18, 1947	6.29	3,010
1934	Apr. 10, 1934	2.80	260	1948	Mar. 31, 1948	8.27	4,910
1935	Mar. 25, 1935	4.86	1,760	1949	Apr. 2, 1949	5.90	2,520
				1950	May 11, 1950	9.45	7,540
1936	Apr. 18, 1936	6.11	3,180				
1937	Apr. 10, 1937	4.33	1,200	1951	Apr. 16, 1951	8.30	5,650
1938	May 14, 1938	8.80	5,550	1952	Apr. 13, 1952	11.03	9,260
1939	Mar. 31, 1939	8.45	5,000	1953	June 26, 1953	6.73	3,760
1940	Apr. 12, 1940	5.94	2,630	1954	May 2, 1954	9.86	8,200
				1955	Apr. 7, 1955	6.39	3,500
1941	Apr. 12, 1941	7.89	4,530				
1942	May 21, 1942	6.42	3,100	1956	Apr. 11, 1956	9.48	7,560
1943	Apr. 6, 1943	8.46	5,100				

ST. CROIX RIVER BASIN

3325. Namekagon River near Trego, Wis.
(Published as "at Trego" prior to October 1927)

Location.--Lat 45°56'50", long 91°53'15", in SW¼ sec. 17, T. 40 N., R. 12 W., at powerhouse of the Wisconsin Hydroelectric Co., 4 miles downstream from Potato Creek and 5 miles northwest of Trego.

Drainage area.--503 sq mi; 460 sq mi prior to October 1927.

Gage.--Powerplant records. Prior to October 1927, nonrecording gage at site 5 miles upstream at different datum.

Remarks.--Discharge computed from powerplant records on basis of ratings developed by Geological Survey.

3325. Namekagon River near Trego, Wis.--Continued
(Published as "at Trego" prior to October 1927)

Maximum daily discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1914	July 1, 1914	2.7	1,090	1936	Apr. 15, 1936		1,340
1915	May 19, 1915	2.7	1,090	1937	Apr. 24, 1937		893
				1938	May 7-8, 1938		1,300
1916	Apr. 22-25, 1916	3.0	1,330	1939	Mar. 28, 1939		1,020
1917	Apr. 4, 1917	2.4	873	1940	May 21, 1940		773
1918	June 6, 1918	2.6	1,020				
1919	Apr. 13, 1919	2.35	838	1941	Sept. 2, 1941		5,200
1920	June 30, 1920	3.3	1,570	1942	June 7, 1942		1,280
				1943	June 6, 1943		1,190
1921	Apr. 10, 1921	2.4	873	1944	June 7, 1944		2,210
1922	Apr. 10,11, 1922	3.6	1,810	1945	June 17, 1945		1,760
1923	Apr. 23, 1923	2.7	1,090				
1924	May 13, 1924	2.4	873	1946	June 28, 1946		1,120
1925	Mar. 26, 1925	2.3	803	1947	Apr. 24, 1947		959
				1948	Mar. 27, 1948		957
1926	Apr. 14, 1926	2.2	733	1949	July 9, 1949		1,170
1927	Mar. 18, 1927	3.0	1,330	1950	Apr. 19,20, 1950		2,160
1928	Sept. 14, 1928		1,360				
1929	Oct. 20, 1928		1,150	1951	(a)		1,500
1930	Feb. 24, 1930		844	1952	July 22, 1952		1,480
				1953	May 23, 1953		1,330
1931	June 28, 1931		855	1954	May 4, 1954		2,140
1932	Apr. 11, 1932		727	1955	July 6, 1955		1,120
1933	May 1, 1933		751				
1934	Apr. 7, 1934		867	1956	June 16, 1956		1,630
1935	Mar. 28, 1935		957				

[a] Apr. 15, July 8, 1951

3335. St. Croix River near Danbury, Wis.
(Published as "at Swiss" prior to October 1933)

Location.--Lat 46°04'30", long 92°14'50", in sec. 33, T. 42 N., R. 15 W., 20 ft downstream from bridge on State Highway 35, 3.5 miles downstream from Namekagon River, 10 miles northeast of Danbury, and at mile 129.2.

Drainage area.--1,588 sq mi.

Gage.--Recording. Altitude of gage is 880 ft (from river-profile map). Prior to Jan. 5, 1939, nonrecording gage at present datum.

Stage-discharge relation.--Defined by current-meter measurements below 8,000 cfs.

3335. St. Croix River near Danbury, Wis.--Continued
(Published as "at Swiss" prior to October 1933)

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1915	June 19, 1915	4.47		4,640	1940	Apr. 10, 1940	4.55	1.8	
						May 16, 1940	3.01		2,930
1916	Apr. 22, 1916	6.73		8,480					
1917	July 21, 1917	3.05		2,840	1941	Sept. 4, 1941	7.16		8,630
1918	June 2, 1918	3.15		3,000	1942	Dec. 15, 1941	5.25	4.1	
1919	Apr. 11, 1919	3.50		3,330		May 3, 1942	3.45		3,480
1920	July 2, 1920	5.55		6,300	1943	Apr. 2, 1943	4.97	2.5	
						June 4, 1943	4.06		4,250
1921	Apr. 8, 1921	2.78		2,630	1944	June 6, 1944	7.47		8,990
1922	Apr. 11, 1922	6.15		7,380	1945	Mar. 19, 1945	7.95	2.5	
1923	Apr. 23, 1923	3.41		3,290		Mar. 19, 1945	5.50		5,600
1924	May 11, 1924	3.24		3,100					
1925	Mar. 28, 1925	3.12		2,970	1946	June 25, 1946	6.25		6,900
					1947	Dec. 15, 1946	4.03	2.5	
1926	Apr. 17,18, 1926	2.20		2,030		Apr. 13, 1947	3.73		3,530
1927	Mar. 19, 1927	5.70		6,540	1948	Mar. 27, 1948	4.52		4,450
1928	Sept. 17, 1928	3.80		3,690	1949	May 7, 1949	4.64		4,580
1929	Mar. 31, 1929	3.60		3,460	1950	May 6, 1950	8.22		10,200
1930	May 14, 1930	3.28		3,130					
					1951	Apr. 14, 1951	5.32		5,840
1931	June 24, 1931	3.25		3,080	1952	July 21, 1952	6.12		6,980
1932	Apr. 8, 1932	3.35		3,240	1953	May 22, 1953	6.05		6,540
1933	Apr. 3, 1933	3.55	0.6	3,160	1954	May 2, 1954	7.38		8,900
1934	Apr. 8, 1934	5.45	1.0	5,090	1955	Dec. 10, 1954	6.20	4.5	
1935	Mar. 23, 1935	5.50		5,630		Apr. 6, 1955	4.06		4,200
1936	Apr. 16, 1936	5.07		4,980	1956	Nov. 20, 1955	5.19	3.5	
1937	Apr. 22, 1937	3.46		3,400		Apr. 13, 1956	4.64		4,950
1938	May 7, 1938	4.12		4,000					
1939	Mar. 30, 1939	5.16	1.0						
	Mar. 31, 1939	4.67		4,920					

3360. St. Croix River near Grantsburg, Wis.

Location.--Lat 45°55'25", long 92°38'20", near center of sec. 30, T. 40 N., R. 18 W., at Norway Point, 0.5 mile downstream from Sand Creek, 10 miles north of Grantsburg, and at mile 102.4.

Drainage area.--2,820 sq mi, approximately.

Gage.--Recording. Datum of gage is 848.98 ft above mean sea level, adjustment of 1912 (levels by Northern States Power Co.); prior to Oct. 21, 1938, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 20,800 cfs.

Historical data.--Flood of May 7, 1950 highest in 40 years from information by local residents.

3360. St. Croix River near Grantsburg, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1923	Apr. 24,25, 1923	7.65		5,920	1941	Sept. 17, 1941	11.67		12,700
1924	May 4, 1924	8.25		7,000	1942	May 4, 1942	9.08		7,850
					1943	Apr. 3, 1943	10.75	2.4	
1925	Mar. 27, 1925	7.9		6,460		June 4, 1943	10.75		9,800
1926	Sept. 20, 1926	6.68		4,180	1944	June 7, 1944	12.79		15,900
1927	Mar. 18, 1927	11.4		13,300					
1928	Apr. 1, 1928	9.05		8,500	1945	Mar. 20, 1945	12.19		14,400
1929	Apr. 1, 1929	8.64		7,740	1946	June 27, 1946	12.5		15,100
1930	June 7, 1930	7.70		5,850	1947	Apr. 14-16, 1947	8.30		7,060
					1948	Mar. 29, 1948	9.56		8,700
1931	June 25, 1931	8.7		7,560	1949	May 8, 1949	11.44		13,400
1932	Apr. 10, 1932	9.06		8,280					
1933	Apr. 2, 1933	7.06		4,890	1950	May 7, 1950	15.06		26,300
1934	Apr. 9, 1934	7.84		6,020	1951	Apr. 15, 1951	11.78		14,500
1935	Mar. 24, 1935	11.24		12,600	1952	July 22, 1952	13.2		19,000
					1953	May 23, 1953	12.42		16,300
1936	Apr. 13,14, 1936	11.42		13,300	1954	May 3, 1954	13.81		21,100
1937	Apr. 16,24, 1937	8.20		6,730					
1938	May 8, 1938	11.08		12,600	1955	Apr. 3, 1955	9.64		9,660
1939	Mar. 29, 1939	11.14	0.8		1956	Apr. 6, 1956	11.31	.5	
	Mar. 30, 1939	10.50		10,500		Apr. 6, 1956	11.05		12,600
1940	Apr. 10, 1940	9.13		7,830					

3395. St. Croix River near Rush City, Minn.

Location.--Lat 45°42'15", long 92°52'20", in SW¼ sec. 8, T. 37 N., R. 20 W., 200 ft upstream from old site of Northern Pacific Railway bridge, 5 miles east of Rush City, 10 miles downstream from Snake River, and at mile 80.6.

Drainage area.--5,120 sq mi, approximately.

Gage.--Recording. Datum of gage is 772.47 ft above mean sea level, datum of 1929. Prior to Aug. 18, 1934, nonrecording 200 ft downstream at same datum. Aug. 18, 1934, to Feb. 22, 1950, nonrecording gage at present site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 46,000 cfs.

3395. St. Croix River near Rush City, Minn.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1923	Apr. 24,25, 1923	5.4	8,300	1940	Apr. 12, 1940	10.1	19,700
1924	May 14,15, 1924	6.3	9,320	1941	Apr. 10, 1941	11.49	24,200
				1942	May 16, 1942	8.96	16,400
1925	Apr. 25, 1925	4.6	5,700	1943	June 3, 1943	12.00	26,000
1926	(a)	4.5	4,780	1944	June 7, 1944	15.3	38,900
1927	Mar. 17, 1927	10.3	20,300				
1928	Mar. 27, 1928	9.9	19,100	1945	Mar. 20, 1945	15.0	37,600
1929	(b)	7.6	12,700	1946	June 27, 1946	13.24	30,500
				1947	Apr. 14, 1947	8.56	15,300
1930	May 15, 1930	8.36	15,900	1948	Apr. 8,9, 1948	8.64	15,300
1931	June 25, 1931	8.40	15,400	1949	May 8, 1949	10.46	20,900
1932	Apr. 9, 1932	8.2	14,600				
1933	May 3, 1933	4.44	5,610	1950	May 8, 1950	19.04	60,600
1934	Apr. 9, 1934	5.78	8,740	1951	Apr. 14, 1951	14.50	35,100
				1952	July 22, 1952	16.10	43,100
1935	Mar. 25, 1935	10.66	21,400	1953	June 22,23, 1953	12.25	26,700
1936	Apr. 14, 1936	12.44	27,700	1954	May 3, 1954	16.22	43,700
1937	Apr. 16, 1937	7.18	11,700				
1938	May 8, 1938	11.60	24,600	1955	Apr. 3, 1955	9.70	18,500
1939	Apr. 1, 1939	11.2	23,200	1956	Apr. 7, 1956	12.28	28,100

[a] Sept. 20,21, 1926
[b] Mar. 30,31, Apr. 1, 1929

3400. Sunrise River near Stacy, Minn.

Location.--Lat 45°24'30", long 92°55'50", in NW¼NW¼ sec. 26, T. 34 N., R. 21 W., at upstream side of highway bridge, 2½ miles northeast of Stacy and 2½ miles downstream from small tributary.

Drainage area.--94.7 sq mi.

Gage.--Recording. Altitude of gage is 855 ft (from topographic map). Prior to Nov. 10, 1949, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 630 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Mar. 29, 1949	5.24	168	1953	Mar. 24, 1953	6.65	322
				1954	May 3, 1954	7.54	481
1950	May 7, 1950	6.77	384				
1951	Apr. 15, 1951	6.85	325	1955	Apr. 3, 1955	5.77	202
1952	Apr. 12, 1952	7.88	806	1956	Apr. 7, 1956	6.64	296

3405. St. Croix River at St. Croix Falls, Wis.
(Published as "near St. Croix Falls" prior to Oct. 1939)

Location.--Lat 45°24'30", long 92°38'45", in NW¼ sec. 30, T. 34 N., R. 18 W., 1,800 ft downstream from powerplant of Northern States Power Co. in St. Croix Falls, and at mile 52.2.

Drainage area.--5,930 sq mi, approximately.

Gage.--Recording. Datum of gage is 690.47 ft above mean sea level, adjustment of 1912. Prior to July 1905, gage heights and discharge measurements were used by Loweth and Wolff, consulting engineers of St. Paul, Minn., to determine the flow. July 1905 to February 1940, records were computed from power generation at the St. Croix Falls powerplant.

Stage-discharge relation.--Defined by current-meter measurements below 50,000 cfs.

Historical data.--The May 8, 1950 flood was the highest since 1888 from newspaper files of the St. Croix Falls Standard-Press.

Remarks.--Flow regulated by powerplant upstream, and by Nevers Reservoir (capacity, 500,000,000 cu ft) 10 miles upstream from 1889 until spring of 1950. Peaks prior to 1940 are maximum daily discharge.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1902	July 10, 1902		12,900	1932	Apr. 10, 1932		18,500
1903	Apr. 12, 1903		[a] 20,200	1933	May 4, 1933		7,060
1904	Oct. 12, 1903		[b] 23,600	1934	Apr. 12, 1934		12,100
1905	Oct. 22, 1904		18,700				
				1935	Mar. 25, 1935		26,400
1910	Mar. 21, 1910		9,870	1936	Apr. 15, 1936		31,000
1911	May 23, 1911		7,500	1937	Apr. 15,16, 1937		12,500
1912	May 6, 1912		33,500	1938	May 9, 1938		30,000
1913	May 22, 1913		8,980	1939	Mar. 31, Apr. 1		24,800
1914	June 29, 1914		15,300				
				1940	May 18, 1940	7.12	14,300
1915	June 22, 1915		15,100	1941	Apr. 8, 1941	13.88	29,600
1916	Apr. 23, 1916		35,100	1942	May 16, 1942	8.97	18,600
1917	Apr. 5, 1917		17,700	1943	June 4, 1943	13.42	28,500
1918	June 3, 4, 1918		10,100	1944	June 7, 1944	17.20	37,100
1919	Apr. 12, 1919		14,900				
				1945	Mar. 20, 1945	20.53	44,600
1920	Mar. 26, 1920		35,800	1946	June 27, 1946	16.50	35,500
1921	Apr. 9, 1921		11,500	1947	Apr. 14, 1947	8.90	18,400
1922	Apr. 10,11, 1922		18,600	1948	Apr. 10-13, 1948	8.93	18,500
1923	Apr. 28, 1923		8,880	1949	May 8, 1949	11.26	23,800
1924	May 15, 1924		9,800				
				1950	May 8, 1950	25.19	54,900
1925	Apr. 26, 1925		[c] 5,860	1951	Apr. 15, 1951	15.70	33,700
1926	Sept. 22, 1926		6,140	1952	July 23, 1952	19.80	43,000
1927	Mar. 18, 1927		27,600	1953	May 24, 1953	15.20	32,600
1928	Mar. 30, 1928		21,800	1954	May 4, 1954	20.40	44,400
1929	Apr. 1, 2, 1929		16,900				
				1955	Apr. 4, 1955	10.48	22,000
1930	May 16, 1930		17,500	1956	Apr. 7, 1956	14.77	31,600
1931	June 26, 1931		16,600				

[a] Maximum day; may have been exceeded in September during period of missing record.

[b] Maximum day; may have been exceeded during 3-day period of missing record prior to this maximum day.

[c] On Oct. 1, 1924, the maximum daily discharge was 6,820 cfs, but from the falling stage of Sept. 30, 1924 peak.

3415. Apple River near Somerset, Wis.

Location.--Lat 45°09'30", long 92°43'00", in sec. 21, T. 31 N., R. 19 W., at powerplant of Northern States Power Co., 1.8 miles upstream from mouth and 3 miles northwest of Somerset.

Drainage area.--555 sq mi.

Gage.--Headwater and tailwater gages read hourly. Daily discharge computed from hourly records of gate openings, head, and plant efficiency.

Remarks.--Flow regulated by many powerplants upstream. Records of daily discharge furnished by Northern States Power Co.

Maximum daily discharge

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1905	June 1905		2,280	1931	Nov. 21, 1930		381
1906	May 1906		2,250	1932	Apr. 8, 1932		1,220
1907	March 1907		1,640	1933	Apr. 1, 1933		1,300
1908	May 1908		1,380	1934	Apr. 5, 1934		1,670
1909	June 1909		1,060				
				1935	Mar. 24, 1935		814
1910	December 1909		603	1936	Apr. 12, 1936		1,690
1911	Apr. 20, 1911		540	1937	May 27, 1937		558
1912	May 24, 1912		930	1938	Sept. 12, 1938		2,160
1913	Apr. 3,19, 1913		990	1939	Mar. 26, 1939		1,570
1914	June 29, 1914		870				
				1940	Apr. 9, 1940		1,010
1915	Apr. 7, 1915		824	1941	Apr. 4, 1941		1,400
1916	Apr. 23, 1916		1,800	1942	June 9, 1942		1,020
1917	Apr. 6, 1917		966	1943	June 17, 1943		2,460
1918	June 3, 1918		1,160	1944	June 7, 1944		1,930
1919	Apr. 12, 1919		1,120				
				1945	Mar. 18, 1945		1,890
1920	Mar. 26, 1920		1,370	1946	June 27, 1946		1,870
1921	Mar. 29, 1921		671	1947	Apr. 13, 1947		1,150
1922	Apr. 11, 1922		1,420	1948	Mar. 28, 1948		1,780
1923	Apr. 14, 1923		1,060	1949	Mar. 29, 1949		942
1924	Apr. 8, 1924		537				
				1950	Apr. 3, May 8		1,290
1925	Mar. 24, 1925		598	1951	Apr. 14-16, 1951		1,930
1926	Mar. 25, 1926		932	1952	Apr. 10, 1952		2,380
1927	Mar. 18, 1927		982	1953	Mar. 23, 1953		1,300
1928	Mar. 27, 1928		1,160	1954	May 5, 1954		2,200
1929	Mar. 20, 1929		1,140				
				1955	Apr. 7, 1955		760
1930	Feb. 26, 1930		919	1956	Apr. 8, 1956		1,540

3420. Kinnikinnic River near River Falls, Wis.

Location.--Lat 44°49'50", long 92°44'00", in sec. 18, T. 27 N., R. 19 W., at Clifton Hollow Bridge, a quarter of a mile downstream from abandoned plant of Clifton Falls Power Co., 1.9 miles upstream from mouth, and 5.5 miles west of River Falls.

Drainage area.--167 sq mi.

Gage.--Recording. Altitude of gage is 690 ft (by topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1917	Mar. 27, 1917	5.67	1,970	1920	Mar. 15, 1920	7.98	4,760
1918	June 5, 1918	6.60	3,080	1921	June 14, 1921	5.35	410
1919	Mar. 12, 1919	7.00	3,560				

3560. Chippewa River at Bishops Bridge, near Winter, Wis.

Location.--Lat 45°50'55", long 91°04'45", in sec. 23, T. 39 N., R. 6 W., 15 ft upstream from highway bridge, 3.2 miles downstream from Lake Chippewa Dam, and 3.7 miles northwest of Winter.

Drainage area.--787 sq mi.

Gage.--Recording. Altitude of gage is 1,270 ft (from Lake Chippewa data). Prior to Jan. 27, 1914, nonrecording gage at same site at datum 3.44 ft higher; Jan. 27, 1914, to July 22, 1930, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 6,500 cfs.

Remarks.--Flow completely regulated since 1923 by Lake Chippewa and Moose Lake.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1912	May 6-19, 1912	6.9	[a]2,820	1935	Jan. 18,19, 1935	6.30	[a]1,780
1913	Apr. 11, 1913	8.2	[a]4,410				
1914	May 3, 4, 1914	7.7	[a]3,280	1936	May 14,15, 1936	7.00	2,600
1915	June 9, 1915	7.7	3,680	1937	Nov. 20-25, 1936	5.75	[a]1,200
				1938	May 5, 1938	7.83	3,650
1916	Apr. 22, 1916	9.6	7,020	1939	June 15, 1939	8.55	4,660
1917	Apr. 21, 1917	7.4	3,260	1940	Sept. 5, 6, 1940	6.75	2,050
1918	June 1, 1918	7.3	3,120				
1919	Apr. 15, 1919	7.35	3,190	1941	Sept. 4, 5, 1941	11.05	7,520
1920	Mar. 31, 1920	7.7	[a]3,680	1942	June 6, 7, 1942	7.56	3,260
				1943	June 15, 1943	8.19	4,130
1921	Apr. 30, 1921	7.2	[a]2,980	1944	June 8-12, 1944	8.85	[a]5,060
1922	Apr. 12, 1922	9.3	6,420	1945	June 16, 1945	7.70	3,340
1923	Aug. 15, 1923	7.75	3,750				
1924	Sept. 14, 1924	6.7	2,310	1946	June 29, 1946	10.70	7,220
1925	Feb. 14, 1925	6.3	1,800	1947	June 17-23, 1947	6.52	[a]2,030
				1948	[d]	5.41	[a]919
1926	Sept. 20-24	8.5	[a]4,920	1949	Nov. 13,14, 1948	5.16	722
1927	Nov. 16, 1926	7.6	3,360	1950	May 11, 1950	10.07	6,650
1928	Sept. 17, 1928	7.9	3,810				
1929	Oct. 18, 1928	7.9	3,810	1951	July 9, 10, 1951	7.89	3,620
1930	Nov. 29, 1929	6.4	1,870	1952	July 22-25, 1952	7.72	3,340
				1953	July 5-7, 1953	8.18	4,070
1931	Dec. 12, 1930	5.95	[a]1,450	1954	Mar. 4, 1954	10.25	6,800
1932	[b]	5.80	[a]1,250	1955	Oct. 15, 1954	7.02	2,490
1933	[c]	5.20	[a]746				
1934	Aug. 3-6, 1934	5.30	[a]819	1956	Oct. 4, 1955	5.67	1,100

[a] Maximum daily discharge.
[b] Dec., 1931; Feb., 1932.
[c] Nov., Dec., 1932; June, July, 1933
[d] Oct. 27-31, 1947; Nov. 1, 2, 4, 5, 1947

3565. Chippewa River near Bruce, Wis.

Location.--Lat 45°27'05", long 91°15'40", in SE¼ sec. 5, T. 34 N., R. 7 W., 1 mile east of Bruce and 1 mile downstream from Thornapple River.

Drainage area.--1,630 sq mi, approximately.

Gage.--Recording. Datum of gage is 1,059.62 ft above mean sea level, datum of 1929. Prior to May 28, 1935, nonrecording gage at railroad bridge 0.8 mile upstream at datum 2.30 ft higher.

Stage-discharge relation.--Defined by current-meter measurements below 20,000 cfs.

Historical data.--The flood of September 1, 1941 was the highest for at least 40 years-----from the Ladysmith newspaper.

Remarks.--Flow regulated by Moose Lake since 1893 and by Lake Chippewa since 1923.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1914	Apr. 30, 1914	9.4	8,720	1936	Apr. 12, 1936	13.00	12,100
1915	May 18, 1915	7.1	6,000	1937	Apr. 22, 1937	8.38	5,890
				1938	May 6, 1938	12.94	12,000
1916	Apr. 22, 1916	12.4	13,600	1939	Mar. 27, 1939	13.18	12,400
1917	Apr. 21, 1917	8.2	7,240	1940	Apr. 10, 1940	9.15	7,040
1918	June 2, 1918	9.8	9,520				
1919	Apr. 11, 1919	9.2	8,680	1941	Sept. 1, 1941	20.46	25,800
1920	Mar. 27, 1920	12.7	14,100	1942	May 31, 1942	11.52	10,200
				1943	June 28, 1943	15.84	17,000
1921	Apr. 29, 1921	9.3	8,780	1944	Apr. 25, 1944	9.82	7,990
1922	Apr. 10, 1922	13.8	15,100	1945	June 3, 1945	14.04	13,900
1923	Apr. 21, 1923	10.0	9,060				
1924	Apr. 26, 1924	11.0	11,300	1946	June 28, 1946	12.12	11,000
1925	Mar. 28, 1925	4.9	3,620	1947	June 5, 1947	7.60	5,410
				1948	Mar. 27, 1948	8.09	5,960
1926	Sept. 19, 1926	12.0	12,900	1949	May 6, 1949	9.27	7,360
1927	Mar. 17, 1927	10.8	11,000	1950	Apr. 18, 1950	12.70	11,900
1928	Mar. 27, 1928	8.8	8,080				
1929	Oct. 19, 1928	7.9	6,920	1951	Apr. 12, 1951	13.06	12,500
1930	June 14, 1930	4.9	3,380	1952	Apr. 9, 1952	11.11	9,630
				1953	May 22, 1953	14.44	14,500
1931	June 11, 1931	5.0	3,480	1954	May 2, 1954	17.0	19,400
1932	Apr. 8, 1932	8.7	7,950	1955	Oct. 16, 1954	8.72	6,660
1933	Apr. 1, 1933	6.20	4,470				
1934	Apr. 6, 1934	8.7	7,950	1956	Apr. 6, 1956	12.72	11,900
1935	Mar. 24, 1935	12.5	13,800				

3575. Flambeau River at Flambeau Flowage, Wis.
(Published as "at Flambeau Reservoir" prior to 1956)

Location.--Lat 46°04'05", long 90°13'45", near north line of sec. 3, T. 41 N., R. 2 E., 0.5 mile downstream from Flambeau Flowage dam, 10.6 miles southwest of Mercer, and at mile 114.5.

Drainage area.--666 sq mi.

Gage.--Recording. Datum of gage is 1,540.0 ft above mean sea level (Northern States Power Co. benchmark). Prior to Oct. 25, 1947, nonrecording gage at same site and datum.

Stage-discharge realtion.--Defined by current-meter measurements below 3,500 cfs.

Remarks.--Flow completely regulated by Flambeau Flowage and Rest Lake which have a combined capacity of 6,560 million cubic feet. Peaks prior to 1948 are maximum observed.

3575. Flambeau River at Flambeau Flowage, Wis.--Continued
(Published as "at Flambeau Reservoir" prior to 1956)

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1928	Feb. 14, 1928	5.8	1,410	1943	June 15,16, 1943	7.92	3,000
1929	Oct. 21,22, 1928	6.76	2,140	1944	June 12,13, 1944	6.89	2,200
1930	Aug. 14-31, 1930	4.75	714	1945	June 8, 1945	6.75	2,420
1931	Oct. 4-7,10, 1930	4.58	616	1946	July 25, 1946	5.22	964
1932	Feb. 3-12, 15-21	4.80	727	1947	June 11-17, 1947	6.29	1,760
1933	Oct. 1,2, 1932	4.75	643	1948	May 24-27, 1948	4.64	585
1934	May 26, June 5, 10-18, 1934	4.52	565	1949	July 6, 1949	5.67	1,250
1935	July 6-8, 1935	7.00	2,300	1950	May 21,22, 1950	6.08	1,580
1936	May 8,9, 1936	7.37	2,600	1951	June 28, 1951	7.32	2,760
1937	Sept. 17,18, 1937	4.68	630	1952	July 22-27, 1952	8.40	3,930
1938	June 4-9, 1938	7.28	2,520	1953	July 2, 1953	7.10	2,200
1939	May 28, 1939	8.39	3,440	1954	May 3,4, 1954	8.38	3,420
1940	June 5-9, 1940	6.31	1,740	1955	Oct. 21, 1954	6.71	1,910
1941	Oct. 1-5, 1940	5.28	1,030	1956	Feb. 13,14, 1956	5.65	1,180
1942	July 22-25, 1942	8.25	3,260				

3580. Flambeau River near Butternut, Wis.

Location.--Lat 46°00'35", long 90°22'10", in lot 10, sec. 28, T. 41 N., R. 1 E., 2.5 miles downstream from Deer Creek and 6 miles east of Butternut.

Drainage area.--737 sq mi.

Gage.--Nonrecording. Altitude of gage is 1,500 ft above mean sea level (from elevation of dams)

Stage-discharge relation.--Defined by current-meter measurements below 3,000 cfs.

Remarks.--Flow regulated by Rest Lake (capacity 260 million cubic feet in summer and 660 million cubic feet in winter) since 1887 and by Flambeau Flowage (capacity, 5,900 million cubic feet) since March 1926.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	June 10, 1915	6.20	2,840	1926	July 10, 1926	3.60	1,170
				1927	July 17, 1927	5.2	2,160
1916	Apr. 22, 1916	9.1	5,530	1928	May 5, 1928	4.6	1,830
1917	Apr. 26, 1917	4.2	1,500	1929	Oct. 22, 1928	5.7	2,580
1918	June 3, 1918	4.55	1,720	1930	Nov. 2, 1929	2.7	808
1919	July 7, 1919	6.25	2,880				
1920	June 12, 1920	6.50	3,080	1931	Oct. 11, 1930	2.7	808
				1932	June 11, 1932	2.85	855
1921	Apr. 8, 1921	5.80	2,560	1933	Apr. 19, 1933	2.6	762
1922	Apr. 9, 1922	7.16	3,620	1934	June 26, 1934	2.8	808
1923	Apr. 25, 1923	6.9	3,400	1935	July 7, 1935	5.7	2,510
1924	May 14, 1924	5.25	2,180				
1925	Apr. 25, 1925	3.15	962	1936	May 9, 1936	6.5	3,370
				1937	Sept. 2, 1937	2.95	855
				1938	June 6, 1938	6.10	2,960

3585. Flambeau River at Babb's Island, near Winter, Wis.

Location.--Lat 45°46'10", long 90°45'45", in SE¼ sec. 17, T. 38 N., R. 3 W., 3.6 miles upstream from South Fork Flambeau River, 13 miles east of Winter, and at mile 61.9 (Geological Survey river-profile map).

Drainage area.--1,000 sq mi, approximately.

Gage.--Recording. Altitude of gage is 1,330 ft (from river-profile map). Prior to Oct. 1, 1934, at bridge 300 ft upstream at datum 9.0 ft lower. Oct. 1, 1934, to Sept. 8, 1938, at bridge 300 ft upstream at present datum.

Stage-discharge relation.--Defined by current-meter measurements below 8,000 cfs.

Remarks.--Flow regulated by Flambeau Flowage and Rest Lake.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1930	May 18, Sept. 27	11.3		1,170	1944	June 6, 1944	6.18		5,560
					1945	June 3, 1945	5.74		4,960
1931	June 27, 1931	12.40		2,010					
1932	Apr. 13, 1932	11.85		1,550	1946	June 25, 1946	9.45		9,440
1933	Apr. 20, 1933	12.37		2,010	1947	Apr. 6, 1947	5.70		[a]3,000
1934	Sept. 26, 1934	13.21		2,550	1948	Mar. 27, 1948			[a]2,200
1935	July 3, 1935	4.98		4,200		Mar. 28, 1948	3.86	0.8	
					1949	July 6, 1949	7.34		6,770
1936	Apr. 16, 1936	5.47		4,900	1950	Apr. 19, 1950	6.64		6,050
1937	Apr. 25, 1937	3.19		1,870					
1938	May 7, 1938	5.49		4,900	1951	Apr. 11, 1951	5.77		5,080
1939	June 12, 1939	6.52		6,400	1952	July 23, 1952	6.52		5,930
1940	Apr. 17, 1940	4.87	1.0		1953	May 22, 1953	7.26		6,890
	June 7, 1940	4.04		2,960	1954	May 1, 1954	6.70		6,170
					1955	Apr. 3, 1955	4.93		[a]3,600
1941	Sept. 1, 1941	7.08		7,250					
1942	Dec. 12, 1941	5.05	2.5		1956	Apr. 7, 1956	5.42	1.0	
	June 13, 1942	4.80		3,920		Apr. 8, 1956	4.66		3,700
1943	June 17, 1943	7.67		7,380					

[a]Ice affected.

3595. South Fork Flambeau River near Phillips, Wis.

Location.--Lat 45°42'10", long 90°37'00", in NW¼SW¼ sec. 10, T. 37 N., R. 2 W., on downstream side of bridge, 0.5 mile downstream from Big Elk River and 12 miles west of Phillips.

Drainage area.--615 sq mi.

Gage.--Nonrecording gage. Altitude of gage is 1,360 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 10,000 cfs.

3595. South Fork Flambeau River near Phillips, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	June 15, 1930	9.4	3,180	1944	June 7, 1944	10.8	4,500
				1945	June 3, 1945	11.36	5,140
1931	June 22, 1931	10.1	3,820				
1932	Apr. 11, 1932	10.7	4,380	1946	June 26, 1946	13.0	7,460
1933	Apr. 16, 1933	9.4	3,180	1947	Apr. 7, 1947	9.5	3,210
1934	Apr. 10, 1934	13.6	8,680	1948	Apr. 27, 1948	7.4	1,480
1935	Mar. 21-31, 1935		5,000	1949	July 6, 1949	10.9	4,600
				1950	Apr. 19, 1950	11.7	5,490
1936	Apr. 16, 1936	12.1	5,780				
1937	Apr. 16, 1937	9.3	2,870	1951	Apr. 12, 1951	11.88	5,750
1938	June 2, 1938	10.7	4,400	1952	Apr. 20, 1952	11.29	5,030
1939	Mar. 27, 1939	10.9	4,600	1953	May 22, 1953	9.30	3,020
1940	May 22, 1940	9.4	3,100	1954	May 3, 1954	12.4	6,230
				1955	Oct. 16, 1954	10.50	4,240
1941	Aug. 31, 1941	12.0	5,630				
1942	June 1, 1942	9.2	2,930	1956	Apr. 8, 1956	9.6	3,250
1943	June 18, 1943	14.32	10,200				

3600. Flambeau River near Ladysmith, Wis.

Location.--Lat 45°31'45", long 90°59'15", in SW¼ sec. 10, lot 4, T. 35 N., R. 5 W., at bridge on County Highway I, 0.7 mile upstream from Crooked Creek, 3.5 miles downstream from Big Falls powerplant, and 10.1 miles upstream from Ladysmith.

Drainage area.--1,823 sq mi.

Gage.--Headwater and tailwater gages read hourly. Feb. 15, 1903, to Dec. 2, 1906, nonrecording gage in Ladysmith at different datum. Jan. 1, 1914 to Sept. 30, 1923, nonrecording gage at site 8 miles downstream at different datum. Oct. 1, 1923, to Sept. 24, 1943, headwater and tailwater gages at present site. Sept. 25, 1943 to Sept. 30, 1950, recording gage at site 4 miles downstream with datum at 1,150.28 ft above mean sea level, datum of 1929 (levels by Fargo Engineering Co.).

Stage-discharge relation.--Defined by current-meter measurements below 20,000 cfs.

Historical data.--The flood of April 11, 1922 was the highest since June 1880.

Remarks.--Flow regulated by Rest Lake and since 1926 by Flambeau Flowage.

3600. Flambeau River near Ladysmith, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1903	May 28, 1903			13,500
1904	July 4, 1904			9,270
1905	June 7, 1905			9,000
1906	Apr. 15, 1906			11,000
1914	Apr. 29, 1914			12,200
1915	May 18, 1915			11,000
1916	Apr. 23, 1916			18,100
1917	June 8, 1917			8,400
1918	June 1, 1918			10,400
1919	Apr. 12, 1919			10,100
1920	Mar. 31, 1920			12,000
1921	Apr. 30, 1921			7,880
1922	Apr. 11, 1922			20,200
1923	Apr. 23, 1923			13,200
1924	Apr. 18, 1924			9,520
1925	Apr. 27, 1925			4,140
1926	Sept. 19, 1926			8,860
1927	Mar. 18, 19			8,350
1928	Apr. 6, 1928			8,120
1929	Apr. 7, 1929			7,240
1930	June 15, 1930			5,710
1931	June 22, 1931			[a]5,440
1932	Apr. 10, 1932			[a]7,460
1933	Apr. 20, 1933			[a]5,140
1934	Apr. 9, 1934			[a]7,080
1935	Mar. 27, 1935			[a]8,160
1936	Apr. 15, 1936			[a]10,900
1937	Apr. 14, 1937			[a]5,460
1938	June 2, 1938			[a]10,000
1939	Nov. 6, 1938			[a]9,900
1940	May 21, 1940			[a]5,490
1941	Aug. 31, 1941			[a]17,900
1942	Oct. 8, 1941			[a]6,000
1943	June 17, 1943			[a]17,800
1944	June 6, 1944			10,200
1945	Mar. 21, 1945	15.00	8.0	
	June 2, 1945			13,500
1946	June 25, 1946			18,600
1947	Apr. 7,9, 1947	9.75	3.0	
	Oct. 28, 1946			6,550
1948	Mar. 26, 1948	8.34	2.5	
	Apr. 28, 1948			4,440
1949	July 6, 1949			14,100
1950	Apr. 20, 1950			13,000
1951	Apr. 12, 1951			14,200
1952	Apr. 23, 1952			10,600
1953	May 22, 1953			10,600
1954	May 2, 1954			13,700
1955	Oct. 16, 1954			7,100
1956	Apr. 8, 1956			6,370

[a]Maximum daily discharge.

3605. Flambeau River near Bruce, Wis.

Location.--Lat 45°22'20", long 91°12'35", in lot 7 of NW¼ sec. 2, T. 33 N., R. 7 W., on right bank 2.5 miles downstream from Thornapple powerplant, 6 miles upstream from mouth, and 7 miles southeast of Bruce.

Drainage area.--1,897 sq mi.

Gage.--Recording. Altitude of gage is 1,060 ft (by river survey, WSP 417).

Stage-discharge relation.--Defined by current-meter measurements below 12,000 cfs.

Remarks.--Flow regulated by several powerplants above station and by Rest Lake and Flambeau Flowage.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1952	Apr. 23, 1952	8.36	11,000
1953	May 22, 1953	8.82	12,000
1954	May 1, 1954	10.90	17,400
1955	Oct. 16, 1954	7.33	8,100
1956	Apr. 10, 1956	6.81	7,170

3610. Chippewa River near Holcombe, Wis.

Location.--Lat 45°18'05", long 91°12'30", in NW¼ sec. 35, T. 33 N., R. 7 W., at Flambeau Store, 1.4 miles downstream from Flambeau River and 6.9 miles northwest of Holcombe.

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

Gage.--Nonrecording. Altitude of gage is 1,040 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 23,000 cfs.

Remarks.--Flow regulated by Lake Chippewa, Moose Lake, Flambeau Flowage and Rest Lake.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	June 7, 1944	11.0	18,100	1947	Apr. 8, 1947	11.0	18,100
1945	June 3, 1945	13.0	28,100	1948	Mar. 27, 1948	Ice Jam	[a]10,200
				1949	Apr. 1, 1949	11.9	22,300
1946	Mar. 17, 1946	13.8	32,500				

[a] Maximum daily discharge.

3615. South Fork Jump River near Ogema, Wis.

Location.--Lat 45°23'20", long 90°30'30", in NW¼ sec. 33, T. 34 N., R. 1 W., 2.1 miles downstream from Mondeaux River and 11 miles southwest of Ogema.

Drainage area.--328 sq mi.

Gage.--Nonrecording. Altitude of gage is 1,300 ft (from planimetric map).

Stage-discharge relation.--Defined by current-meter measurements below 8,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	May 13, 1944	9.4	3,600	1950	Apr. 18, 1950	12 6	6,760
1945	Mar. 19, 1945	11.7	6,160				
				1951	Apr. 12, 1951	11.96	6,100
1946	June 25, 1946	14.56	9,020	1952	Apr. 9, 1952	9.76	3,930
1947	Apr. 7, 1947	9.1	3,300	1953	June 21, 1953	10.14	4,200
1948	Mar. 28, 1948	8.6	2,850	1954	May 3, 1954	11.00	5,050
1949	July 7, 1949	9.4	3,570				

3620. Jump River at Sheldon, Wis.

Location.--Lat 45°18'30", long 90°57'20", in sec. 26, T. 33 N., R. 5 W., on downstream side of highway bridge in Sheldon, 1,500 ft upstream from Shoulder Creek and 11 miles upstream from mouth.

Drainage area.--574 sq mi.

Gage.--Nonrecording except recording gage from Feb. 9, 1939, to Aug. 31, 1941, at same site and datum. Datum of gage is 1,092 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 13,000 cfs and contracted opening measurement at 46,000 cfs.

3620. Jump River at Sheldon, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1916	Apr. 22, 1916	9.5	8,800	1936	May 7, 1936	9.9	10,800
1917	Apr. 22, 1917	7.0	4,200	1937	Apr. 14, 1937	7.4	4,490
1918	May 27, 1918	9.0	7,800	1938	Sept. 10, 1938	10.2	11,700
1919	Apr. 11, 1919	8.4	6,500	1939	Nov. 5, 1938	11.28	15,200
1920	Mar. 26, 1920	11.5	15,700	1940	May 21, 1940	8.26	6,150
1921	Mar. 20, 1921	9.0	7,800	1941	Aug. 31, 1941	18.8	46,000
1922	Apr. 10, 1922	9.4	8,600	1942	Sept. 18, 1942	12.8	14,900
1923	Apr. 21, 1923	10.7	13,300	1943	June 27, 1943	11.7	11,000
1924	Apr. 25, 1924	8.7	7,660	1944	June 5, 1944	10.16	6,900
1925	June 14, 1925	7.0	4,200	1945	Mar. 19, 1945	9.6	6,920
1926	Sept. 19, 1926	8.6	7,470	1946	June 25, 1946	12.9	17,200
1927	Mar. 16, 1927	10.1	11,500	1947	Apr. 6, 1947	9.89	7,430
1928	Mar. 26, 1928	9.5	9,800	1948	Mar. 27, 1948	8.4	4,250
1929	Mar. 18, 1929	8.7	7,720	1949	July 6, 1949	9.0	5,450
1930	June 14, 1930	9.3	9,260	1950	Apr. 18, 1950	11.5	12,000
1931	June 21, 1931	7.7	5,390	1951	Apr. 12, 1951	11.57	11,900
1932	Apr. 8, 1932	9.7	10,400	1952	Apr. 9, 1952	10.50	8,350
1933	May 2, 1933	8.9	8,220	1953	Mar. 23, 1953	10.2	7,600
1934	Apr. 8, 1934	8.4	6,650	1954	May 1, 1954	11.4	11,100
1935	Mar. 23, 1935	9.9	10,800	1955	Apr. 3, 1955	9.58	6,260
				1956	Apr. 6, 1956	10.4	8,090

3625. Chippewa River at Holcombe, Wis.

Location.--Lat 45°13'40", long 91°07'15", in sec. 28, T. 32 N., R. 6 W., 500 ft upstream from highway bridge at west edge of Holcombe, 3.6 miles upstream from Fisher River, and 3.6 miles downstream from Jump River.

Drainage area.--4,700 sq mi, approximately.

Gage.--Nonrecording. Datum of gage is 998.00 ft above mean sea level, datum of 1929. Prior to Dec. 14, 1944, nonrecording gage 500 ft downstream at same datum; used as auxiliary gage thereafter.

Stage-discharge relation.--Defined by current-meter measurements below 50,000 cfs.

Remarks.--Flow regulated by Lake Chippewa, Moose Lake, Flambeau Flowage and Rest Lake.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1943	June 28, 1943	16.60		55,000	1946	Mar. 17, 1946	22.2		51,000
1944	June 6, 1944	10.6		23,600	1947	Apr. 8, 1947	21.2		[a]24,000
1945	June 3, 1945	12.66		34,000	1948	Mar. 27, 1948	13.2		18,400
					1949	July 7, 1949	20.5		44,200

[a]Maximum daily discharge.

3640. Yellow River at Cadott, Wis.

Location.--Lat 44°57'10", 91°09'00", in center of E½ sec. 31, T. 29 N., R. 6 W., on upstream side of bridge, 200 ft downstream from Svetlik Dam at Cadott and 6.0 miles upstream from Drywood Creek.

Drainage area.--351 sq mi.

Gage.--Nonrecording and crest-stage indicator. Datum of gage is 946.54 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 16,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	June 28, 1943	12.2	15,900	1951	Apr. 9, 1951	8.12	5,850
1944	May 12, 1944	6.2	3,560	1952	Apr. 9, 1952	6.48	3,460
1945	Mar. 19, 1945	6.9	4,110	1953	Mar. 23, 1953	6.80	3,900
				1954	June 18, 1954	9.51	8,420
1946	Mar. 16, 1946	8.6	6,670	1955	Apr. 15, 1955	8.30	6,170
1947	Apr. 6, 1947	6.5	3,460				
1948	Mar. 27, 1948	4.7	1,410	1956	Apr. 5, 1956	7.1	4,350
1949	July 6, 1949	5.6	2,320				
1950	Apr. 11, 1950	6.9	4,050				

3645. Duncan Creek at Bloomer, Wis.

Location.--Lat 45°06'00", long 91°29'20", in sec. 8, T. 30 N., R. 9 W., 0.3 mile below Bloomer Dam at Bloomer.

Drainage area.--49.2 sq mi.

Gage.--Recording. Datum of gage is 979.46 ft above mean sea level, datum of 1929. Prior to June 24, 1945, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Mar. 15, 1945	7.7	1,130	1949	Mar. 24, 1949	7.38	1,050
				1950	June 13, 1950	7.40	1,050
1946	Mar. 16, 1946	7.18	990				
1947	Apr. 6, Sept. 1	6.7	846	1951	Sept. 12, 1951	8.01	1,220
1948	Mar. 20, 1948	7.43	1,050				

3650. Duncan Creek at Chippewa Falls, Wis.

Location.--Lat 44°56'50", long 91°24'00", in SW¼ sec. 31, T. 29 N., R. 8 W., on downstream side of bridge in Irvin Park at Chippewa Falls, 1.7 miles upstream from mouth.

Drainage area.--114 sq mi.

Gage.--Nonrecording. Datum of gage is 851.61 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 3,000 cfs.

Historical data.--Flood of Apr. 3, 1934 reached a stage of about 15.4 ft, from floodmarks.

3650. Duncan Creek at Chippewa Falls, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	Mar. 31, 1943	8.35	3,310	1950	Mar. 27, 1950	7.5	2,420
1944	Feb. 26, 1944	5.6	1,040				
1945	Mar. 16, 1945	7.94	2,810	1951	Apr. 8, 1951	6.42	1,560
				1952	Apr. 2, 1952	8.70	3,640
1946	Mar. 17, 1946	6.5	1,560	1953	Mar. 22, 1953	6.18	1,430
1947	Apr. 6, 1947	6.1	1,350	1954	June 18, 1954	8.31	3,220
1948	Mar. 21, 1948	7.1	2,080	1955	Oct. 15, 1954	4.00	459
1949	Mar. 25, 1949	6.5	1,630				

3655. Chippewa River at Chippewa Falls, Wis.

Location.--Lat 44°55'35", long 91°24'40", in lot 1, sec. 12, T. 28 N., R. 9 W., at Chippewa Falls, 1 mile downstream from Duncan Creek.

Drainage area.--5,600 sq mi, approximately.

Gage.--Recording. Datum of gage is 799.3 ft above mean sea level (Northern States Power Co. benchmark). Prior to January 1914 nonrecording gage and January 1914 to June 1932, recording gage at site 1 mile upstream at different datum.

Stage-discharge relation.--Defined by current meter measurements below 100,000 cfs.

Remarks.--Flow regulated by many powerplants above station especially Wissota powerplant since 1917 and Chippewa Falls powerplant since 1928 and by Moose Lake, Lake Chippewa, Rest Lake, Flambeau Flowage, and Lake Wissota.

Historical data.--The greatest known flood since 1838 occurred Sept. 10, 1884, stage 26.94 ft, site and datum in use to June 1932.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage heignt (feet)	Discharge (cfs)
1888	July 19, 1888	8.6	25,700	1911	May 24, 1911	4.8	12,800
1889	May 14, 1889	8.2	24,200	1912	Oct. 8, 1911	11.4	39,000
1890	Apr. 13, 1890	9.1	27,600	1913	Apr. 4, 1913	11.2	37,800
				1914	Apr. 30, 1914	11.0	36,700
1891	Apr. 24, 1891	9.2	28,000	1915	May 23, 1915	8.10	24,100
1892	May 21, 1892	11.3	38,400				
1893	May 13, 1893	12.1	43,400	1916	Apr. 23, 1916	13.45	52,400
1894	May 16, 1894	14.4	59,000	1917	Apr. 23, 1917	8.32	24,900
1895	June 13, 1895	7.2	20,500	1918	June 1, 1918	12.4	45,400
				1919	Apr. 13-18, 1919	10.7	45,000
1896	Apr. 19, 1896	12.1	43,400	1920	Mar. 27, 1920	17.0	78,000
1897	Apr. 2, 1897	17.1	78,800				
1898	May 28, 1898	7.0	19,800	1921	Apr. 29, 1921	10.41	33,600
1899	May 6, 1899	8.8	27,400	1922	Apr. 11, 1922	15.5	66,800
1900	Sept. 13, 1900	13.2	50,700	1923	Apr. 22, 1923	14.40	59,000
				1924	Apr. 26, 1924	14.40	59,000
1901	Oct. 5, 1900	13.5	52,800	1925	June 15, 1925	7.19	20,800
1902	Apr. 28, 1902	8.0	24,200				
1903	Sept. 16, 1903	13.4	52,100	1926	Sept. 20, 1926	12.55	46,400
1904	May 27, 1904	10.4	33,900	1927	Mar. 16, 1927	13.40	52,100
1905	June 6, 1905	17.5	82,000	1928	Mar. 26, 1928	12.86	48,700
				1929	Apr. 7, 1929	12.20	44,000
1906	Apr. 15, 1906	11.6	40,200	1930	Jan. 15, 1930	11.70	40,200
1907	Mar. 30, 1907	11.2	37,800				
1908	Apr. 29, 1908	9.0	28,200	1931	June 23, 1931	6.66	19,000
1909	May 18, 1909	8.6	26,600	1932	Apr. 9, 1932	13.1	50,100
1910	Nov. 15, 1909	7.8	23,000	1933	Apr. 6, 1933	11.80	24,300

3655. Chippewa River at Chippewa Falls, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1934	Sept. 27, 1934	13.5	33,700	1946	June 26, 1946	17.54	50,400
1935	Mar. 24, 1935	17.13	48,000	1947	Apr. 8, 1947	12.59	26,700
				1948	Apr. 1, 1948	7.6	9,860
1936	Apr. 14, 1936	16.0	43,400	1949	July 7, 1949	12.87	28,000
1937	Apr. 23, 1937	12.9	27,800	1950	Apr. 19, 1950	16.17	43,400
1938	Sept. 10, 1938	19.07	64,600				
1939	Nov. 6, 1938	17.93	55,900	1951	Apr. 13, 1951	18.50	56,200
1940	June 8, 1940	13.76	31,600	1952	Apr. 9, 1952	14.96	37,600
				1953	May 23, 1953	14.41	34,800
1941	Sept. 1, 1941	24.8	102,000	1954	May 2, 1954	20.65	69,400
1942	May 31, 1942	19.30	60,100	1955	Oct. 15, 1954	13.88	32,400
1943	June 28, 1943	22.20	81,000				
1944	May 13, 1944	13.32	29,900	1956	Apr. 7, 1956	13.92	32,600
1945	June 4, 1945	15.67	40,900				

3660. Eau Claire River near Augusta, Wis.

Location.--Lat 44°44'50", long 91°03'15", in sec. 12, T. 26 N., R. 6 W., at Trouble Water Bridge, 5.6 miles northeast of Augusta and 6 miles downstream from South Fork.

Drainage area.--500 sq mi, approximately.

Gage.--Nonrecording. Altitude of gage is 910 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 5,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	May 23, 1915	7.9	4,630	1921	Mar. 21, 1921	9.1	5,620
				1922	Apr. 10, 1922	10.9	7,510
1916	Apr. 1, 1916	10.7	7,290	1923	Apr. 14, 1923	7.3	3,900
1917	Apr. 3, 1917	7.2	3,800	1924	Apr. 26, 1924	10.1	6,740
1918	May 27, 1918	9.2	5,720	1925	June 13, 1925	8.4	4,940
1919	June 25, 1919	9.4	5,920				
1920	Mar. 27, 1920	12.2	8,940	1926	Apr. 1, 1926	9.0	5,520

3665. Eau Claire River near Fall Creek, Wis.

Location.--Lat 44°48'35", long 91°16'50", in NW¼ sec. 19, T. 27 N., R. 7 W., 0.7 mile downstream from Beaver Creek, 1.3 miles upstream from Big Falls, and 3.2 miles north of Fall Creek.

Drainage area.--747 sq mi.

Gage.--Recording. Altitude of gage is 830 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 17,000 cfs.

3665. Eau Claire River near Fall Creek, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	Apr. 1, 1943	15.87	16,800	1950	Mar. 29, 1950	8.32	4,750
1944	Apr. 25, 1944	7.15	3,620				
1945	Mar. 19, 1945	13.11	11,500	1951	Apr. 9, 1951	14.34	13,800
				1952	Apr. 3, 1952	15.28	15,700
1946	Mar. 16, 1946	12.28	10,100	1953	Mar. 23, 1953	11.67	9,140
1947	Apr. 7, 1947	10.96	8,100	1954	May 2, 1954	14.38	14,000
1948	Mar. 22, 1948	8.88	5,430	1955	May 30, 1955	16.11	17,200
1949	Mar. 29, 1949	6.98	3,430				

3670. Chippewa River at Eau Claire, Wis.
(Published as "near Eau Claire," 1902-9)

Location.--Lat 44°48'40", long 91°32'10", in NE¼ sec. 25, T. 27 N., R. 10 W., on downstream side of bridge on State Highways 37 and 85 at Eau Claire, 1.2 miles upstream from Lowes Creek and 2.8 miles downstream from Eau Claire River.

Drainage area.--6,630 sq mi, approximately.

Gage.--Nonrecording. Altitude of gage is 750 ft (from topographic map). Nov. 13, 1902, to Mar. 31, 1909, at different datum.

Stage-discharge relation.--Defined by current-meter measurements below 60,000 cfs.

Remarks.--Flow regulated by many powerplants above station and by Rest Lake since 1887, Moose Lake since 1893, Lake Wissota since 1917, Lake Chippewa since 1923, and by Flambeau Flowage since 1926.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1903	Sept. 15, 1903	19.0	53,700	1946	June 27, 1946	18.4	48,500
1904	May 28, 1904	13.7	33,300	1947	Apr. 7, 1947	15.0	33,100
1905	June 7, 1905	21.2	70,000	1948	Mar. 23, 1948	10.0	14,500
				1949	July 7, 1949	13.7	27,500
1906	Apr. 15, 1906	15.0	38,800	1950	Apr. 19, 1950	16.4	39,300
1907	Mar. 31, 1907	15.4	40,000				
1908	Apr. 29, 1908	12.8	29,600	1951	Apr. 13, 1951	19.35	63,800
				1952	Apr. 9, 1952	15.12	37,000
1944	May 14, 1944	14.8	32,200	1953	Mar. 24, 1953	14.40	33,900
1945	June 4, 1945	17.0	42,000	1954	May 2, 1954	22.00	80,000

3675. Red Cedar River near Colfax, Wis.

Location.--Lat 45°03'50", long 91°42'45", in SW¼ sec. 22, T. 30 N., R. 11 W., 3.2 miles downstream from Trout Creek and 4.7 miles north of Colfax.

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

Gage.--Recording. Altitude of gage is 940 ft (from topographic map). Mar. 19, 1914, to September 1925, nonrecording gage and September 1925 to Sept. 9, 1937, recording gage at site 1 mile downstream at different datum.

Stage-discharge relation.--Defined by current-meter measurements below 7,000 cfs.

Remarks.--Flow regulated by Birch, Red Cedar, Long, and Bear Lakes.

3675. Red Cedar River near Colfax, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1914	June 28, 1914	5.1		4,590	1936	Mar. 24, 1936	7.75		9,780
1915	Apr. 7, 1915	4.1		3,250	1937	Apr. 25, 1937	2.75		1,500
					1938	Sept. 9, 1938	8.04		14,700
1916	Mar. 31, 1916	6.9		7,520	1939	Mar. 23, 1939	7.17	1.5	
1917	Apr. 3, 1917	5.0		4,450		Mar. 27, 1939	6.32		7,760
1918	May 27, June 1	4.2		3,380	1940	Apr. 7, 1940	4.80		4,110
1919	Mar. 18, 1919	5.1		4,590					
1920	Mar. 26, 1920	7.0		7,700	1941	Sept. 6, 1941	4.82		4,110
					1942	Sept. 18, 1942	6.66		9,130
1921	Apr. 28, 1921	3.4		2,420	1943	June 16, 1943	7.12		10,900
1922	Apr. 11, 1922	5.4		5,010	1944	Feb. 27, 1944	5.81		6,400
1923	Apr. 14, 1923	5.2		4,730	1945	Mar. 16, 1945	6.98		10,500
1924	Apr. 5, 1924	4.3		3,510					
1925	Mar. 20, 1925	4.2		3,380	1946	Mar. 16, 1946	6.32	.7	5,850
					1947	Apr. 12, 1947	4.35		3,470
1926	Sept. 4, 1926	6.00		5,970	1948	Mar. 21, 1948	5.82		6,400
1927	Mar. 14, 1927	6.00		6,100	1949	Mar. 26, 1949	5.27		5,100
1928	Mar. 24, 1928	5.34		4,550	1950	Mar. 27, 1950	6.62		8,940
1929	Mar. 20, 1929	5.7		5,150					
1930	Feb. 23, 1930	6.5	1.5	4,120	1951	Apr. 12, 1951	6.00		6,970
					1952	Apr. 2, 1952	6.29		7,900
1931	Mar. 25, 1931	2.1		1,040	1953	Mar. 22, 1953	6.50		8,580
1932	Apr. 8, 1932	4.75		4,170	1954	June 18, 1954	6.95		10,300
1933	Apr. 1, 1933	5.44		4,700	1955	Mar. 13, 1955	4.69	2.0	
1934	Apr. 3, 1934	11.4		21,900		Apr. 1, 1955	3.17		1,990
1935	Mar. 24, 1935	5.60		5,000	1956	Apr. 5, 1956	6.25		7,740

3680. Hay River at Wheeler, Wis.

Location.--Lat 45°02'50", long 91°54'40", in SW¼ sec. 25, T. 30 N., R. 13 W., on right bank 25 ft downstream from highway bridge in Wheeler, 1.8 miles upstream from Otter Creek, and 2.4 miles downstream from South Fork Hay River.

Drainage area.--426 sq mi.

Gage.--Recording. Datum of gage is 893.66 ft above mean sea level, datum of 1929. Prior to Mar. 25, 1951, nonrecording gage at same datum.

Stage-discharge relation.--Defined by current-meter measurements below 3,500 cfs.

Historical data.--Maximum known stage since at least 1915, 16.6 ft in April 1934, from floodmarks.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	June 26, 1951	10.90	5,120	1955	Apr. 6, 1955	6.08	1,250
1952	Apr. 9, 1952	10.92	5,120	1956	Apr. 5, 1956	10.81	5,270
1953	Mar. 22, 1953	12.36	6,700				
1954	Apr. 15, 1954	12.31	6,600				

3690. Red Cedar River at Menomonie, Wis.

Location.--Lat 44°53'00", long 91°55'55", in sec. 26, T. 28 N., R. 13 W., at Menomonie, 900 ft downstream from powerhouse of Northern States Power Co., and 1,000 ft downstream from Wilson Creek.

Drainage area.--1,760 sq mi, approximately.

Gage.--Recording. Datum of gage is 780 ft above mean sea level (Northern States Power Co. benchmark). June 17, 1907, to Sept. 3, 1908, nonrecording gage at site 1 mile downstream at different datum. May 9, 1913, to Sept. 30, 1923, recording gage at present site at datum 0.42 ft lower.

Stage-discharge relation.--Defined by current-meter measurements below 14,000 cfs and extended above on basis of computed flow over Cedar Falls Dam, 6 miles upstream.

Historical data.--The flood of Apr. 4, 1934 was probably exceeded by floods of June 4-6, 1880 and June 4, 1905 according to the Dunn County News.

Remarks.--Flow regulated by powerplants at Menomonie and Cedar Falls and by Birch, Red Cedar, Long, and Bear Lakes.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1908	Apr. 27, 1908	6.1	5,260	1935	Mar. 23, 1935	5.5	7,880
1913	Apr. 3, 1913	6.0	8,660	1936	Mar. 24, 1936	8.50	14,900
1914	June 6, 1914	5.4	6,580	1937	Apr. 26, 1937	3.25	3,080
1915	Apr. 7, 1915	5.13	6,140	1938	Sept. 10, 1938	10.82	23,000
				1939	Mar. 28, 1939	5.27	7,440
1916	Mar. 31, Apr. 1	7.0	12,700	1940	Apr. 7, 1940	5.18	7,220
1917	Apr. 3, 1917	6.3	8,300				
1918	Mar. 20, 1918	6.05	7,570	1941	Apr. 3, 1941	4.78	6,390
1919	Mar. 17, 1919	-	6,000	1942	Sept. 18, 1942	9.77	24,400
1920	Mar. 26, 1920	8.0	14,000	1943	June 17, 1943	6.84	13,700
				1944	Apr. 8, 1944	4.33	5,620
1921	Mar. 28, 1921	4.50	4,520	1945	Mar. 17, 1945	7.67	16,800
1922	Apr. 11, 1922	5.35	6,880				
1923	Apr. 14, 1923	5.70	8,120	1946	Mar. 17, 1946	5.87	10,600
1924	-	-	-	1947	Apr. 13, 1947	4.14	5,120
1925	Mar. 25, 1925	-	3,140	1948	Mar. 22, 1948	4.80	6,850
				1949	Mar. 26, 1949	5.45	9,020
1926	Mar. 25, 1926	6.25	11,000	1950	Mar. 28, 1950	6.33	12,300
1927	Mar. 15, 1927	6.0	10,700				
1928	Mar. 23, 1928	5.5	8,950	1951	Apr. 13, 1951	6.20	11,700
1929	Mar. 21, 1929	6.7	12,500	1952	Apr. 3, 1952	6.30	12,000
1930	Feb. 24, 1930	4.5	6,050	1953	Mar. 23, 1953	6.54	12,600
				1954	June 19, 1954	6.54	12,700
1931	Apr. 20, 1931	2.60	1,920	1955	Apr. 2, 1955	2.91	2,520
1932	Apr. 8, 1932	4.80	6,890				
1933	Apr. 1, 1933	5.20	8,160	1956	Apr. 5, 1956	6.56	12,900
1934	Apr. 4, 1934	16.0	40,000				

3695. Chippewa River at Durand, Wis.

Location.--Lat 44°37'45", long 91°50'10", in SW¼ sec. 21, T. 25 N., R. 13 W., at Durand, 75 ft downstream from highway bridge and 9.5 miles downstream from Red Cedar River.

Drainage area.--9,010 sq mi, approximately.

Gage.--Recording. Datum of gage is 694.59 ft above mean sea level, datum of 1929. Prior to Dec. 9, 1930, nonrecording gage at bridge 400 ft downstream at same datum.

Stage-discharge relation.--Defined by current-meter measurements below 95,000 cfs.

Historical data.--Maximum stage known, 18.4 Sept. 12, 1884, from floodmarks (levels by Corps of Engineers).

Remarks.--Flow regulated by powerplants, Moose Lake, Lake Chippewa, Rest Lake, Flambeau Flowage, Lake Wissota, Birch Lake, Red Cedar Lake, Long Lake and Bear Lake.

3695 Chippewa River at Durand, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1884	-	18.39		[a]160,000	1943	June 30, 1943	14.42		80,700
					1944	May 15, 1944	9.47		31,600
1929	Mar. 21, 1929	11.9		49,000	1945	June 5, 1945	11.54		45,000
1930	June 17, 1930	10.6		37,700					
					1946	Mar. 19, 1946	12.36		56,400
1931	June 23, 1931	7.42		21,000	1947	Apr. 9, 1947	9.89		33,600
1932	Apr. 10, 1932	11.85		44,300	1948	Mar. 23, 1948	9.87	2.5	
1933	Apr. 8, 1933	8.52		26,200		Mar. 25, 1948	8.16		24,600
1934	Apr. 4, 1934	12.43		56,000	1949	July 8, 1949	8.72		25,900
1935	Mar. 25, 1935	12.56		59,500	1950	Apr. 20, 1950	11.58		46,200
1936	Apr. 14, 1936	12.27		54,400	1951	Apr. 14, 1951	13.66		71,800
1937	Apr. 24, 1937	8.32		24,200	1952	Apr. 11, 1952	11.95		50,500
1938	Sept. 11, 1938	15.16		91,000	1953	Mar. 25, 1953	10.57		37,500
1939	Nov. 7, 1938	13.07		67,400	1954	May 3, 1954	15.40		101,000
1940	June 10, 1940	10.82		38,900	1955	Oct. 18, 1954	9.50		31,500
1941	Sept. 2, 1941	15.43		93,600	1956	Apr. 8, 1956	11.29		42,800
1942	June 1, Sept. 19	14.04		75,600					

[a]Not previously published, estimated by logarithmic extension of rating curve.

3700. Eau Galle River at Spring Valley, Wis.

Location.--Lat 44°51'00", long 92°14'15", between secs. 5 and 6, T. 27 N., R. 15 W., on downstream side of bridge at Spring Valley, 0.1 mile upstream from Mines Creek, 0.5 mile downstream from Lousy Creek, and at mile 29.96.

Drainage area.--64.8 sq mi.

Gage.--Nonrecording and crest-stage indicator. Datum of gage is 912.45 ft above mean sea level, datum of 1929 (Corps of Engineers benchmark).

Stage-discharge relation.--Defined by current-meter measurements below 5,000 cfs.

Historical data.--Maximum stage known since at least 1894, 16.98 ft Sept. 18, 1942, from floodmarks (discharge of 33,000 cfs, estimated by Corps of Engineers on basis of slope-area measurement by Geological Survey of peak discharge of 39,000 cfs at Elmwood, drainage area, 91.9 sq mi.).

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1942	Sept. 18, 1942	16.98	[a]33,000	1950	Mar. 26, 1950	7.52	3,390
1944	June 5, 1944	6.98	2,880	1951	June 24, 1951	5.6	2,730
1945	Mar. 15, 1945	8.00	3,900	1952	Aug. 8, 1952	6.02	3,120
				1953	July 26, 1953	6.27	3,480
1946	Mar. 13, 1946	6.80	2,680	1954	Apr. 15, 1954	9.50	7,000
1947	Apr. 11, 1947	6.4	2,310	1955	Apr. 4, 1955	3.62	1,280
1948	Mar. 23, 1948	6.23	2,140				
1949	July 27, 1949	7.05	2,980	1956	Apr. 3, 1956	7.93	5,130

[a]Not previously published, from Corps of Engineers.

CHIPPEWA RIVER BASIN

3705. Eau Galle River at Elmwood, Wis.

Location.--Lat 44°46'40", long 92°09'55", in sec. 35, T. 27 N., R. 15 W., on downstream side of highway bridge in Elmwood, 2 miles upstream from Cady Creek.

Drainage area.--91.9 sq mi.

Gage.--Nonrecording and crest-stage indicator. Altitude of gage is 840 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,000 cfs and extended by slope-area method.

Historical.--Maximum stage known, 18.2 ft Sept. 18, 1942 from floodmarks.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1942	Sept. 18, 1942	18.2	[a]39,000	1948	Mar. 23, 1948	-	[b]1,300
1943	Mar. 30, 1943	10.71	4,220	1949	July 27, 1949	9.43	2,780
1944	June 5, 1944	9.78	3,320	1950	Mar. 26, 1950	10.66	4,220
1945	Mar. 15, 1945	11.3	4,900				
				1951	June 25, 1951	8.70	2,360
1946	Mar. 13, 1946	10.60	4,110	1952	Apr. 9, 1952	9.25	2,740
1947	Apr. 11, 1947	8.16	1,970	1953	Aug. 31, 1953	11.18	4,780

[a] Slope-area measurement.
[b] Maximum day.

BUFFALO RIVER BASIN

3720. Buffalo River near Tell, Wis.

Location.--Lat 44°23'30", long 91°50'55", in NW¼ sec. 16, T. 22 N., R. 12 W., on downstream side of bridge, 0.3 mile north of Tell School, 1 mile northeast of Tell, and 6 miles northeast of Alma.

Drainage area.--406 sq mi.

Gag.--Nonrecording. Datum of gage is 680.00 ft above mean sea level, adjustment of 1912. Prior to Mar. 13, 1936, datum 0.12 ft lower.

Stage-discharge relation.--Defined by current-meter measurements below 4,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1933	Mar. 31, 1933	6.31		1,970	1941	Apr. 1, 1941	6.3		1,750
1934	Apr. 4, 1934	8.48		8,650	1942	May 30, 1942	7.6		5,750
1935	Aug. 8, 1935	6.1		1,440	1943	Mar. 27, 1943	6.6		2,900
					1944	Mar. 13, 1944	5.6		995
1936	Mar. 21, 1936	6.9		3,270	1945	Mar. 15, 1945	7.60		5,750
1937	Apr. 3, 1937	5.6		1,060					
1938	Sept. 9, 1938	7.5		5,430	1946	Mar. 15, 1946	6.0	0.4	1,200
1939	Mar. 22, 1939	7.5		5,430	1947	July 29, 1947	6.75		2,720
1940	June 23, 1940	7.7		6,200	1948	Mar. 20, 1948	7.1		5,040
					1949	Mar. 26, 1949	5.3		1,080
					1950	Mar. 28, 1950	6.8		2,900

3775. Whitewater River at Beaver, Minn.

Location.--Lat 44°08'35", long 92°00'14", in sec. 15, T. 108 N., R. 10 W., 500 ft downstream from Beaver Creek and half a mile northeast of Beaver.

Drainage area.--288 sq mi.

Gage.--Recording. Datum of gage is 688.70 ft above mean sea level, adjustment of 1912 (levels by Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements below 2,700 cfs and extended by logarithmic plotting.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	July 11, 1940	8.25	4,760	1949	Mar. 4, 1949	9.01	4,330
				1950	June 13, 1950	10.75	10,500
1941	Sept. 16, 1941	6.49	1,690				
1942	June 28, 1942	7.64	3,330	1951	July 21, 1951	10.66	10,200
1943	Mar. 25, 1943	6.99	2,640	1952	Mar. 31, 1952	9.51	6,580
1944	Mar. 11,12, 1944	6.56	1,730	1953	July 27, 1953	9.55	6,680
1945	Mar. 14, 1945	8.40	4,140	1954	Mar. 25, 1954	7.14	2,210
				1955	Mar. 10, 1955	8.24	2,350
1946	Feb. 6, 1946	8.44	4,140				
1947	Apr. 5, 1947	8.96	5,350	1956	Apr. 2, 1956	9.50	4,720
1948	Mar. 19, 1948	8.34	3,380				

GILMORE CREEK BASIN

3790. Gilmore Creek at Winona, Minn.

Location.--Lat 44°02'40", long 91°41'25", in sec. 29, T. 107 N., R. 7 W., at west edge of Winona, 1,500 ft upstream from bridge on U. S. Highway 14, 2¼ miles upstream from Lake Winona, and 6½ miles upstream from mouth.

Drainage area.--8.95 sq mi.

Gage.--Recording. Datum of gage is 672.92 ft above mean sea level, adjustment of 1912. Prior to Nov. 4, 1939, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements to 260 cfs and extended above on basis of slope-area measurement at 2,200 cfs and logarithmic plotting.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	Mar. 29, 1940	2.57	137	1949	Aug. 17, 1949	3.20	333
				1950	Mar. 26, 1950	3.00	330
1941	Sept. 15, 1941	2.74	169				
1942	June 28, 1942	6.74	2,200	1951	July 21, 1951	9.47	5,360
1943	July 5, 1943	4.87	835	1952	July 19, 1952	2.50	156
1944	June 22, 1944	4.49	820	1953	May 25, Aug. 3		(a)
1945	July 31, 1945	5.58	1,370	1954	June 20, 1954	1.66	53
				1955	July 8, 1955	3.22	318
1946	Nov. 8, 1945	5.11	1,070				
1947	July 27, 1947	6.97	2,460	1956	Apr. 3, 1956	1.83	73
1948	Feb. 27, 1948	2.33	131				

[a]Not determined.

3795. Trempealeau River at Dodge, Wis.

Location.--Lat 44°07'55", long 91°33'10", in sec. 10, T. 19 N., R. 10 W., on downstream side of highway bridge in Dodge, 9 miles upstream from mouth.

Drainage area.--643 sq mi.

Gage.--Nonrecording. Datum of gage is 663.42 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 15,000 cfs.

Historical data.--The flood of March 17, 1919, was the highest since 1876, which was 8 inches higher from floodmarks in the Arcadia Hotel. The Arcadia News-Leader reported that the Apr. 4, 1956 flood was higher than the 1919 flood.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1914	June 9, 1914	8.5	3,700	1942	June 3, 1942	8.1	5,680
1915	Mar. 26, 1915	6.6	1,700	1943	Mar. 27, 1943	7.9	5,060
				1944	Feb. 29, 1944	5.8	2,040
1916	Mar. 26, 1916	8.2	3,360	1945	Mar. 16, 1945	9.1	8,120
1917	Apr. 3, 1917	6.5	1,650				
1918	Mar. 20, 1918	9.0	3,600	1946	Mar. 14, 1946	7.7	4,570
1919	Mar. 17, 1919	10.2	11,000	1947	Apr. 7, 1947	8.0	5,410
				1948	Mar. 21, 1948	7.8	4,840
1934	Sept. 28, 1934	6.8	2,570	1949	July 29, 1949	5.5	1,920
1935	July 29, 1935	7.6	4,490	1950	Mar. 29, 1950	7.3	3,600
1936	Mar. 22, 1936	8.7	7,180	1951	July 10, 1951	7.69	4,570
1937	Apr. 3, 1937	5.2	1,780	1952	Apr. 2, 1952	8.76	6,630
1938	Sept. 10, 1938	6.8	3,170	1953	Mar. 19, 1953	7.45	3,800
1939	Mar. 24, 1939	8.4	6,400	1954	June 21, 1954	7.85	5,710
1940	Apr. 1, 1940	6.9	3,120	1955	Oct. 4, 1954	8.80	10,400
1941	Apr. 2, 1941	6.7	2,890	1956	Apr. 4, 1956	10.35	17,400

BLACK RIVER BASIN

3810. Black River at Neillsville, Wis.

Location.--Lat 44°33'35", long 90°36'50", in sec. 15, T. 24 N., R. 2 W., at downstream side of bridge on U. S. Highway 10 in Neillsville, 1.0 mile downstream from O'Neill Creek and 2.6 miles upstream from Cunningham Creek.

Drainage area.--756 sq mi.

Gage.--Recording. Datum of gage is 962.77 ft above mean sea level, datum of 1929 (levels by U. S. Weather Bureau). Prior to Oct. 24, 1934, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 40,000 cfs.

Historical data.--The September 10, 1938 flood was the highest in the history of the community---from the Neillsville Press which published its first edition in 1861.

3810. Black River at Neillsville, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1905	June 6, 1905			41,100	1934	Apr. 5, 1934	15.7		19,300
1906	Apr. 3, 1906	12.3		11,300	1935	Mar. 23, 1935	15.6		19,300
1907	Mar. 27, 1907	12.7		12,200					
1908	Apr. 28, 1908	11.6		9,820	1936	Mar. 24, 1936	15.67		19,300
					1937	Apr. 8, 1937	8.44		3,860
1914	June 5, 1914	19.8		29,400	1938	Sept. 10, 1938	23.8		48,800
1915	May 21, 1915	10.0		6,600	1939	Mar. 26, 1939	14.42		16,000
					1940	June 22, 1940	13.02		12,800
1916	Mar. 31, 1916	13.0		12,100					
1917	Apr. 4, 1917	10.5		7,450	1941	Apr. 2, 1941	12.21	2.0	
1918	May 26, 1918	11.8		9,670		Sept. 1, 1941	11.8		10,200
1919	June 24, 1919	11.7		9,490	1942	Sept. 19, 1942	17.55		24,600
1920	Mar. 26, 1920	15.8		20,200	1943	June 28, 1943	22.49		41,600
					1944	June 18, 1944	11.03		8,620
1921	Mar. 20, 1921	13.2		12,900	1945	Mar. 17, 1945	14.88		17,200
1922	Apr. 9, 1922	13.8		14,300					
1923	Apr. 22, 1923	10.4		7,370	1946	Mar. 16, 1946	12.75		12,400
1924	Aug. 22, 1924	14.8		16,500	1947	Apr. 6, 1947	12.34		11,300
1925	June 14, 1925	8.6		4,420	1948	Mar. 20, 1948	11.48		9,620
					1949	Mar. 22, 1949	11.34	5.0	
1926	Apr. 11, 1926	12.2		10,800		Mar. 28, 1949	8.43		4,080
1927	Mar. 13, 1927	12.4		9,360	1950	Mar. 27, 1950	13.66		14,400
1928	Sept. 14, 1928	17.0		22,900					
1929	Mar. 19, 1929	12.8		12,400	1951	Apr. 8, 1951	16.41		21,300
1930	June 14, 1930	16.0		20,100	1952	Apr. 2, 1952	16.50		21,500
					1953	Mar. 23, 1953	14.22		15,500
1931	June 20, 1931	7.8		3,090	1954	May 2, 1954	14.00		15,100
1932	Apr. 7, 1932	14.6		16,500	1955	May 29, 1955	11.54		9,700
1933	Apr. 6, 1933	9.8		6,400					
					1956	Apr. 3, 1956	16.52		21,500

3820. Black River near Galesville, Wis.

Location.--Lat 44°03'45", long 91°17'30", in sec. 2, T. 18 N., R. 8 W., 30 ft downstream from bridge on State Highway 35, 4.5 miles southeast of Galesville, and 5 miles downstream from Fleming Creek.

Drainage area.--2,120 sq mi, approximately.

Gage.--Recording. Datum of gage is 658.43 ft above mean sea level. Prior to Apr. 2, 1941, nonrecording gage at same datum.

Stage-discharge relation.--Defined by current-meter measurements below 50,000 cfs.

Remarks.--Flow regulated by Hatfield Reservoir (Lake Arbutus) which has a storage capacity of 272 million cu ft and a drainage area of 1,290 sq mi.

3820. Black River near Galesville, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1932	Apr. 9, 1932	11.5		22,400	1945	Mar. 19, 1945	12.40		25,000
1933	Apr. 2, 1933	8.8		10,700					
1934	Sept. 28, 1934	11.9		25,500	1946	Mar. 17, 1946	12.11		22,500
1935	Mar. 23, 1935	12.4		30,000	1947	Apr. 8, 1947	10.66		15,800
					1948	Mar. 23, 1948	10.00		12,400
1936	Mar. 25, 1936	12.9		36,500	1949	Mar. 31, 1949	6.50		5,300
1937	Apr. 4, 1937	8.0		9,290	1950	Mar. 29, 1950	10.43		14,800
1938	Sept. 11, 1938	14.31		58,000					
1939	Mar. 26, 1939	12.60		30,500	1951	Apr. 9, 1951	13.15		29,100
1940	June 26, 1940	10.62		16,000	1952	Apr. 3, 1952	14.00		51,000
					1953	Mar. 25, 1953	12.56		26,900
1941	Apr. 4, 1941	10.66		15,700	1954	May 4, 1954	12.35		24,600
1942	Sept. 21, 1942	13.10		36,400	1955	May 31, 1955	11.90		20,500
1943	May 31,June 29	13.25		34,600					
1944	June 20, 1944	11.55		19,400	1956	Apr. 6, 1956	12.90		29,300
1945	Mar. 17, 1945	12.66	2.0						

LA CROSSE RIVER BASIN

3825. Little La Crosse River near Leon, Wis.

Location.--Lat 43°53'45", long 90°50'25", in NE¼ sec. 3, T. 16 N., R. 4 W., 1.1 miles downstream from Sand Creek, 1.5 miles northwest of Leon, and 4 miles upstream from mouth.

Drainage area.--77.1 sq mi.

Gage.--Recording. Datum of gage is 760.28 ft above mean sea level, adjustment of 1912.

Stage-discharge relation.--Defined by current-meter measurements below 1,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1934	July 6, 1934	9.84	1,370	1946	Jan. 6, 1946	9.88	1,400
1935	Aug. 6, 1935	14.43	4,620	1947	June 29, 1947	11.22	2,300
				1948	Feb. 28,Mar. 19	9.01	960
1936	Mar. 10, 1936	9.62	1,210	1949	Mar. 4,22, 1949	5.88	414
1937	Mar. 7, 1937	6.73	457	1950	Mar. 7, 1950	9.60	1,200
1938	Sept. 12, 1938	8.80	881				
1939	Mar. 19, 1939	7.17	580	1951	July 21, 1951	6.67	532
1940	Aug. 2, 1940	8.90	913	1952	July 20, 1952	8.0	1,190
				1953	Apr. 10, 1953	3.48	371
1941	Sept. 16, 1941	9.60	1,210	1954	July 3, 1954	7.83	1,160
1942	June 7, 1942	9.98	1,480	1955	June 2, 1955	9.80	2,100
1943	Mar. 26, 1943	6.82	520				
1944	Feb. 22, 1944	9.63	1,210	1956	Apr. 2, 1956	9.11	1,860
1945	May 22, 1945	9.76	1,330				

3830. La Crosse River near West Salem, Wis.

Location.--Lat 43°54'05", long 91°07'05", in SE¼ sec. 32, T. 17 N., R. 6 W., 30 ft upstream from highway bridge, 2 miles west of West Salem, and 6 miles downstream from Dutch Creek.

Drainage area.--398 sq mi.

Gage.--Recording. Datum of gage is 668.0 ft above mean sea level, adjustment of 1912. Prior to Oct. 19, 1938, nonrecording gage at site 30 ft downstream at same datum.

Stage-discharge relation.--Defined by current-meter measurements below 3,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1914	June 28, 1914	5.7		1,800	1936	Mar. 18, 1936	8.4		3,020
1915	Feb. 23, 1915	7.3	1.6	1,800	1937	Mar. 8, 1937	7.7	3.0	1,100
					1938	Sept. 11, 1938	8.8		3,490
1916	Jan. 29, 1916	5.7		1,850	1939	Mar. 20, 1939	7.66	1.7	1,510
1917	Mar. 24, 1917	7.6		2,990	1940	June 24, Aug. 4	4.81		1,140
1918	Mar. 18, 1918	7.8		3,130					
1919	Mar. 16, 1919	8.8		3,900	1941	Sept. 16, 1941	8.35		3,020
1920	June 16, 1920	7.0		2,600	1942	June 30, 1942	9.20		4,170
					1943	May 31, 1943	8.22		2,790
1921	June 10, 1921	4.1		1,150	1944	Mar. 13, 1944	7.51		2,150
1922	Feb. 24, 1922	8.5	1.0	2,920	1945	May 23, 1945	9.16		4,590
1923	Apr. 4, 1923	7.2		2,480					
1924	Aug. 20, 1924	7.0		2,600	1946	Jan. 7, 1946	9.27		4,170
1925	June 15, 1925	6.3		2,120	1947	June 30, 1947	8.29		2,900
					1948	Feb. 29, 1948	7.70		2,300
1926	Aug. 22, 1926	6.0		1,920	1949	Mar. 23, 1949	6.65		2,020
1927	July 21, 1927	4.7		1,370	1950	Mar. 7, 1950	8.32		2,900
1928	Sept. 15, 1928	10.2		5,160					
1929	June 19, 1929	4.7		1,170	1951	Mar. 29, 1951	6.13		1,630
1930	Feb. 21, 1930	8.8		3,270	1952	July 20, 1952	8.04		2,470
					1953	Mar. 19, 1953	5.23		1,320
1931	June 23, 1931	3.0		635	1954	July 5, 1954	6.67		1,730
1932	June 8, 1932	6.4		2,380	1955	June 3, 1955	8.92		3,650
1933	Mar. 31, 1933	9.4		4,310					
1934	Apr. 4, 1934	9.2		3,890	1956	Apr. 3, 1956	10.42		5,720
1935	Aug. 6, 1935	12.2		8,200					

ROOT RIVER BASIN

3845. Rush Creek near Rushford, Minn.

Location.--Lat 43°50'00", long 91°46'40", on line between secs. 3 and 10, T. 104 N., R. 8 W., at highway bridge, 1½ miles northwest of Rushford and 3 miles upstream from mouth.

Drainage area.--129 sq mi.

Gage.--Nonrecording. Datum of gage is 735.00 ft above mean sea level, adjustment of 1912. Prior to June 14, 1950, recording gage at site 100 ft upstream; at datum 5 ft higher Aug. 5, 1942, to Oct. 27, 1945; at datum 3 ft higher Oct. 28, 1945, to Aug. 3, 1949; at present datum thereafter.

Stage-discharge relation.--Defined by current-meter measurements below 2,000 cfs and extended above on basis of contracted-opening measurement.

Remarks.--Flood of June 28, 29, 1942, reached a discharge of 11,000 cfs (by slope-area measurement of peak flow).

3845. Rush Creek near Rushford, Minn.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	Mar. 25, 1943	6.74	3,600	1951	July 21, 1951	11.46	6,580
1944	Mar. 11, 1944	3.88	1,660	1952	Mar. 31, 1952	11.05	6,740
1945	July 21, 1945	5.74	4,000	1953	July 26, 1953	9.32	3,750
				1954	June 19, 1954	6.54	920
1946	Jan. 5, 1946	10.10	7,130	1955	July 8, 1955	6.80	1,180
1947	Apr. 5, 1947	5.93	2,590				
1948	Mar. 16, 1948	5.56	2,000	1956	Apr. 3, 1956	7.00	1,380
1949	Mar. 4, 1949	10.0	3,640				
1950	Mar. 26, 1950	13.54	11,600				

3850. Root River near Houston, Minn.

Location.--Lat 43°46'05", long 91°35'11", in sec. 32, T. 104 N., R. 6 W., 1 mile west of Houston and 2½ miles upstream from South Fork.

Drainage area.--1,270 sq mi, approximately.

Gage.--Recording. Datum of gage is 671.86 ft above mean sea level, datum of 1929. May 28, 1909, to Sept. 30, 1917, nonrecording gage at site 1½ miles downstream at different datum. May 4, 1929, to Sept. 27, 1953, nonrecording gage at present site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 30,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1910	Mar. 7,8, 1910		[a]2,500	1939	Mar. 21, 1939	8.89	6,620
				1940	Mar. 30, 1940	9.30	7,860
1911	Aug. 14, 1911	10.82	15,200				
1912	Mar. 30, 1912	10.0	10,600	1941	May 30, 1941	8.66	6,280
1913	Mar. 25, 1913	9.9	10,000	1942	June 30, 1942	13.62	23,700
1914	June 28, 1914	10.2	11,700	1943	Mar. 27, 1943	10.50	10,600
1915	Mar. 26, 1915	9.4	7,330	1944	Feb. 26, 1944	8.55	6,120
				1945	Mar. 17, 1945	13.39	23,900
1916	Mar. 26, 1916	9.8	7,970				
1917	Mar. 23, 1917	11.95	17,000	1946	Mar. 6, 1946	10.82	13,700
				1947	Apr. 6, 1947	10.31	9,300
1930	June 4, 1930	8.29	5,100	1948	Feb. 29, 1948	12.00	[b]11,700
				1949	Mar. 31, 1949		8,450
1931	July 15, 1931	8.00	4,580	1950	Mar. 27, 1950	14.15	26,200
1932	Mar. 27, 1932	9.31	6,900				
1933	Mar. 31, 1933	14.07	26,600	1951	July 22, 1951	11.58	14,800
1934	Apr. 4, 1934	12.56	19,000	1952	Apr. 1, 1952	13.90	37,000
1935	Aug. 6, 1935	10.81	11,700	1953	July 27, 1953	10.05	10,400
				1954	June 21, 1954	8.19	5,370
1936	May 1, 1936	11.17	14,000	1955	Mar. 10, 1955		3,760
1937	Mar. 7, 1937	11.40	14,500				
1938	Sept. 11, 1938	11.79	15,600	1956	Apr. 3, 1956	10.22	9,660

[a] Maximum daily discharge.
[b] Ice affected.

3865. Coon Creek at Coon Valley, Wis.

Location.--Lat 43°42'15", long 91°01'15", in NE¼ sec. 7, T. 14 N., R. 5 W., 350 ft upstream from abandoned dam in town of Coon Valley and 700 ft upstream from U. S. Highways 14 and 61.

Drainage area.--77.2 sq mi.

Gage.--Recording. Datum of gage is 716.16 ft above mean sea level, adjustment of 1912.

Stage-discharge relation.--Defined by current-meter measurements below 2,300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1934	Apr. 2, 1934	7.30	2,510	1937	Mar. 6, 1937	4.62	800
1935	Aug. 6, 1935	12.90	8,110	1938	Sept. 10, 1938	7.61	2,810
				1939	Mar. 19, 1939	4.12	747
1936	Mar. 10, 1936	6.11	1,400	1940	Aug. 14, 1940	8.21	3,410

3870. Coon Creek near Stoddard, Wis.

Location.--Lat 43°39'50", long 91°09'10", in NE¼ sec. 25, T. 14 N., R. 7 W., 0.7 mile northwest of Valley View School and 3.3 miles east of Stoddard.

Drainage area.--119 sq mi.

Gage.--Recording and Parshall flume. Datum of gage is 650.68 ft above mean sea level, adjustment of 1912.

Stage-discharge relation.--Defined by current-meter measurements below 3,300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1934	Apr. 3, 1934	9.18	2,800	1937	Mar. 7, 1937	8.72	1,100
1935	Aug. 6, 1935	10.70	5,160	1938	Sept. 10, 1938	9.42	2,530
				1939	Mar. 15, 1939	8.89	1,450
1936	Mar. 11, 1936	9.08	1,840	1940	Aug. 15, 1940	9.00	1,670

YELLOW RIVER BASIN

3890. Yellow River at Ion, Iowa

Location.--Lat 43°06'35", long 91°15'55", in SE¼SW¼ sec. 24, T. 96 N., R. 4 W., on downstream side of highway bridge at Ion, 7.5 miles northwest of McGregor, and 8.0 miles upstream from mouth.

Drainage area.--221 sq mi.

Gage.--Nonrecording. Datum of gage is 664.65 ft above mean sea level, adjustment of 1912.

Stage-discharge relation.--Defined by current-meter measurements below 7,300 cfs and extended above on basis of slope-area measurement.

3890. Yellow River at Ion, Iowa--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1935	Mar. 4, 1935	11.0	5,440	1944	June 16, 1944	13.5	12,200
				1945	June 1, 1945	13.0	11,600
1936	Mar. 10, 1936	10.2	4,560				
1937	Mar. 4, 1937	10.5	4,950	1946	Jan. 5, 1946	13.0	13,000
1938	Feb. 6, 1938	10.4	4,840	1947	June 13, 1947	10.4	6,900
1939	Feb. 19, 1939	8.2	2,730	1948	Mar. 19, 1948	12.5	13,000
1940	Aug. 3, 1940	9.7	4,100	1949	Mar. 4, 1949	10.0	6,520
				1950	Mar. 26, 1950	12.8	15,700
1941	May 29, 1941	15.2	21,200				
1942	Aug. 1, 1942	12.0	7,320	1951	Apr. 7, 1951	10.34	10,500
1943	Aug. 13, 1943	12.2	8,320				

WISCONSIN RIVER BASIN

3910. Wisconsin River at Rainbow Lake, near Lake Tomahawk, Wis.
(Published as "at Rainbow Reservoir," 1936-55)

Location.--Lat 45°50'00", long 89°32'50", in S½SW¼ sec. 30, T. 39 N., R. 8 E., 400 ft upstream from Gilmore Creek, 900 ft downstream from Rainbow Lake Dam, and 2.5 miles northeast of town of Lake Tomahawk. Records include flow of Gilmore Creek.

Drainage area.--750 sq mi, approximately, includes Gilmore Creek.

Gage.--Recording. Datum of gage is 1,570.05 ft above mean sea level (Public Service Commission of Wisconsin benchmark).

Stage-discharge relation.--Defined by current-meter measurements below 3,500 cfs.

Remarks.--Flow regulated by Rainbow Lake and 12 smaller reservoirs above station.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1937	May 11,12, 1937	4.10	1,130	1947	May 10, 1947	4.54	1,600
1938	Aug. 10, 1938	6.33	2,420	1948	Feb. 28, 1948	2.72	734
1939	June 30, 1939	6.43	2,650	1949	Aug. 26, 1949	5.96	1,320
1940	May 26, 1940	4.77	1,700	1950	May 12, 1950	6.00	2,500
1941	Sept. 5, 1941	7.59	3,570	1951	May 19, 1951	5.43	2,170
1942	July 18, 1942	7.23	3,430	1952	Oct. 5, 1951	5.46	2,300
1943	June 17, 1943	6.66	3,010	1953	June 22,23,1953	5.78	2,450
1944	May 17, 1944	4.67	1,770	1954	May 10, 1954	5.50	2,250
1945	Apr. 24, 1945	5.14	1,980	1955	Oct. 17, 1954	4.79	1,840
1946	June 26, 1946	6.68	3,010	1956	July 12,13,1956	4.02	1,440

3920. Wisconsin River at Whirlpool Rapids, near Rhinelander, Wis.
(Published as "near Rhinelander," 1905-15)

Location.--Lat 45°33'15", long 89°30'25", in NW¼ sec. 4, T. 35 N., R. 8 E., at head of Whirlpool Rapids, 0.6 mile downstream from outlet of Crescent Lake and 10 miles southwest of Rhinelander.

Drainage area.--1,200 sq mi, approximately. At site used prior to Oct. 1, 1915, 1,150 sq mi, approximately.

Gage.--Recording. Datum of gage is 1,492.14 ft above mean sea level, datum of 1929 (levels by Wisconsin Public Service Corp.). Prior to Oct. 1, 1915, nonrecording gage at highway bridge 3 miles upstream at different datum.

Stage-discharge relation.--Defined by current-meter measurements below 5,500 cfs.

Remarks.--Flow regulated by 12 reservoirs beginning in 1908; 13 reservoirs 1909-34; 15 reservoirs since 1935, and 3 powerplants above station.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1906	Apr. 22, 1906	4.8		3,460	1933	Apr. 19,22, 1933	4.64		[a]3,620
1907	Apr. 3, 1907	5.0		3,720	1934	Apr. 12, 1934	4.40		3,400
1908	May 2, 1908	5.0		3,720	1935	Mar. 27, 1935	4.80		4,030
1909	Apr. 29, 1909	4.3		2,820					
1910	Nov. 15, 1909	3.9		2,340	1936	May 10, 1936	4.82		4,030
					1937	May 3, 1937	4.05		2,780
1911	July 24, 1911	4.5		2,940	1938	May 8, 1938	4.86		3,950
1912	Aug. 11, 1912	6.1		5,020	1939	June 26, 1939	5.16		4,540
1913	July 29, 1913	4.7		2,940	1940	June 10, 1940	4.50		3,400
1914	July 2, 1914	4.8		3,160					
1915	July 18, 1915	4.9		3,060	1941	Sept. 6, 1941	5.91		5,590
					1942	Sept. 23, 1942	5.44		4,880
1916	Apr. 22, 1916	5.61		5,250	1943	June 18, 1943	5.59		5,230
1917	Apr. 25, 1917	4.15		2,900	1944	May 18, 1944	4.33		3,180
1918	June 1, 1918	4.2		3,030	1945	June 4, 1945	4.81		3,870
1919	Apr. 13, 1919	4.28		3,200					
1920	Apr. 1, 1920	5.2		4,520	1946	June 28, 1946	5.44		4,880
					1947	Jan. 1, 1947	4.35	2.0	
1921	Apr. 30, 1921	4.65		3,620		May 6, 1947	3.80		2,460
1922	Apr. 12, 1922	5.18		4,490	1948	Jan. 24, 1948	3.40	1.0	
1923	Apr. 23, 1923	5.24		4,590		Feb. 29, 1948	3.04		1,630
1924	Apr. 19, 1924	4.55		3,480	1949	July 6, 1949	3.34		1,940
1925	June 16, 1925	4.15		2,720	1950	May 13, 1950	5.36		4,880
1926	-	-		-	1951	May 21, 1951	4.96		4,200
1927	July 28, 1927	4.35		3,180	1952	July 25, 1952	4.70		3,710
1928	Sept. 18, 1928	5.13		4,350	1953	June 22, 1953	4.96		4,120
1929	Apr. 10, 1929	5.70		5,410	1954	May 8, 1954	5.07		4,320
1930	June 21, 1930	4.15		2,970	1955	Oct. 18, 1954	4.23		2,900
1931	June 12, 1931	3.75		2,460	1956	July 14, 1956	3.77		2,340
1932	Apr. 12, 1932	4.38		3,250					

[a]Peak discharge may have been exceeded as recorder was not in operation during parts of the year.

3924. Tomahawk River near Bradley, Wis.

Location.--Lat 45°36'15", long 89°45'10", in SW¼ sec. 16, T. 36 N., R. 6 E., 4.5 miles downstream from Bearskin Creek and 4.7 miles north of Bradley.

Drainage area.--422 sq mi.

Gage.--Recording. Altitude of gage is 1,460 ft (from river-profile map). Prior to Oct. 7, 1925, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 2,000 cfs.

Remarks.--Flow regulated by Minocqua and Squirrel Lakes, and since May 15, 1927 by Willow Reservoir.

3924. Tomahawk River near Bradley, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	July 18, 1915	4.25	904	1920	Mar. 30, 1920	6.17	1,820
1916	Apr. 24, 1916	6.9	2,200	1924	Apr. 20, 1924	4.9	1,170
1917	Apr. 21, 1917	4.31	927	1925	Apr. 25, 1925	3.7	713
1918	June 4, 1918	4.83	1,140				
1919	Apr. 11, 1919	5.11	1,270	1926	Apr. 18, 1926	4.82	1,120

3930. Tomahawk River at Bradley, Wis.
(Published as "at Tomahawk", 1930-51)

Location.--Lat 45°29'30", long 89°45'00", in sec. 28, T. 35 N., R. 6 E., at Jersey powerplant of Wisconsin Public Service Corporation at northwest corner of village of Tomahawk, 0.7 mile upstream from mouth.

Drainage area.--545 sq mi. Prior to October 1951, 554 sq mi.

Gage.--Nonrecording gage supplemented by frequent readings of taintor gate openings. Altitude of gage is 1,450. Prior to October 1951, powerplant records at site 4.0 miles downstream.

Remarks.--Flow completely regulated by four reservoirs operated by Wisconsin Valley Improvement Co. Records of lake elevations and gate openings furnished by Wisconsin Valley Improvement Company.

Maximum daily discharge

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Sept. 13, 1930		1,220	1944	July 4, 1944		1,100
				1945	June 5, 1945		1,860
1931	Sept. 7, 1931		890				
1932	Jan. 29, 1932		1,170	1946	June 25, 1946		1,840
1933	July 15, 1933		939	1947	July 31, 1947		1,310
1934	June 8, 1934		612	1948	Oct. 26, 1947		587
1935	July 6, 1935		1,890	1949	Feb. 13, 1948		759
				1950	June 1, 1950		976
1936	July 11, 1936		1,170				
1937	Aug. 23, 1937		912	1951	Sept. 15, 1951		1,460
1938	Sept. 13, 1938		1,760	1952	Oct. 7,8, 1951		1,640
1939	June 14,15, 1939		2,100	1953	July 2,3, 1953		1,570
1940	June 10, 1940		1,410	1954	Aug. 8, 1954		1,280
				1955	Oct. 24-26, 1954		1,240
1941	Sept. 15, 1941		1,790				
1942	May 31, 1942		2,100	1956	Sept. 8, 1956		778
1943	June 18, 1943		2,530				

3935. Spirit River at Spirit Falls, Wis.

Location.--Lat 45°26'55", long 89°58'50", in NW¼ sec. 10, T. 34 N., R. 4 E., on downstream side of bridge, 0.2 mile south of town of Spirit Falls, 0.6 mile upstream from Squaw Creek, and 2 miles downstream from Richie Creek.

Drainage area.--82 sq mi, approximately.

Gage.--Nonrecording. Altitude of gage is 1,450 ft (from dam and reservoir data).

Stage-discharge relation.--Defined by current-meter measurements below 2,000 cfs.

3935. Spirit River at Spirit Falls, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1942	Sept. 18, 1942	10.00		4,180	1950	Apr. 18, 1950	7.10		2,140
1943	Mar. 31, 1943	6.8		1,850					
1944	May 13, 1944	5.8		1,290	1951	Apr. 12, 1951	6.22		1,570
1945	Mar. 18, 1945	7.18		2,200	1952	Apr. 18, 1952	6.37		1,700
					1953	June 20, 1953	6.64		1,820
1946	Mar. 17, 1946	9.14		3,540	1954	May 3, 1954	5.60		1,210
1947	Apr. 6, 1947	6.08		1,510	1955	Oct. 15, 1954	6.1		1,510
1948	Mar. 27, 1948	4.3		624					
1949	Mar. 30, 1949	6.3		1,630	1956	Apr. 6, 1956	7.30	1.3	1,600

3945. Prairie River near Merrill, Wis.

Location.--Lat 45°14'10", long 89°38'50", on line between secs. 20 and 29, T. 32 N., R. 7 E., on downstream side of county highway bridge, 1.5 miles upstream from Meadow Creek, 4.5 miles northeast of Merrill, and 8 miles upstream from mouth.

Drainage area.--181 sq mi., approximately.

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

Stage-discharge relation.--Defined by current-meter measurements below 2,500 cfs and extended by logarithmic plotting.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1914	Apr. 30, 1914	4.5	1,160	1940	June 8, 1940	5.6	1,810
1915	May 22, 1915	3.8	781				
				1941	Aug. 31, 1941	9.45	5,800
1916	Apr. 22, 1916	6.2	2,380	1942	Sept. 18, 1942	6.6	2,550
1917	June 8, 1917	4.1	916	1943	June 2, 1943	5.1	1,400
1918	May 28, 1918	5.0	1,420	1944	May 13, 1944	4.5	1,050
1919	Apr. 11, 1919	4.8	1,280	1945	Mar. 18, 1945	4.7	1,160
1920	Mar. 28, 1920	5.8	2,020				
				1946	Mar. 17, 1946	4.8	1,280
1921	Apr. 28, 1921	5.6	1,860	1947	Apr. 6, 1947	4.7	1,220
1922	Apr. 11, 1922	5.9	2,110	1948	Mar. 27, 1948	3.3	515
1923	Apr. 22, 1923	6.2	2,380	1949	July 5, 1949	3.6	628
1924	Apr. 17, 1924	5.4	1,700	1950	Apr. 18, 1950	5.5	1,660
1925	June 5, 1925	4.0	870				
				1951	Apr. 12, 1951	5.37	1,590
1926	Aug. 21, 1926	7.6	3,780	1952	Apr. 11, 1952	4.40	995
1927	Mar. 18, 1927	5.6	1,860	1953	Mar. 23, 1953	5.36	1,590
1928	Sept. 15, 1928	5.0	1,420	1954	June 26, 1954	4.5	1,050
1929	Apr. 7, 1929	6.5	2,680	1955	Apr. 2, 1955	4.45	1,020
1930	June 16, 1930	4.5	1,110				
				1956	Apr. 7, 1956	4.5	1,050
1931	June 13, 1931	2.9	394				

3950. Wisconsin River at Merrill, Wis.

Location.--Lat 45°10'40", long 89°40'45", on line between secs. 12 and 13, T. 31 N., R. 6 E., 300 ft downstream from highway bridge at east end of Merrill and 0.5 mile downstream from Prairie River.

Drainage area.--2,780 sq mi, approximately.

Gage.--Recording. Datum of gage is 1,228.85 ft above mean sea level, datum of 1929. Prior to June 18, 1903, nonrecording gage at different datum. June 18, 1903, to Sept. 10, 1914, nonrecording gage at present site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 20,000 cfs.

Historical data.--The flood of August 31, 1941 was the highest since 1884.

Remarks.--Flow regulated by many reservoirs and powerplants above station.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1903	Sept. 16, 1903	11.7	21,800	1931	June 21, 1931	7.95	8,430
1904	May 27, 1904	11.0	19,500	1932	Apr. 11, 1932	8.87	11,000
1905	June 17, 1905	12.0	23,000	1933	May 2, 1933	8.89	11,000
				1934	Apr. 9, 1934	8.6	10,100
1906	Apr. 11,14, 1906	10.1	16,200	1935	Mar. 23, 1935	10.82	17,000
1907	Sept.20,21, 1907	9.2	13,000				
1908	Apr. 29, 1908	9.5	14,000	1936	May 6, 1936	9.65	14,400
1909	May 7, 1909	8.8	11,600	1937	Apr. 24, 1937	9.32	11,500
1910	Nov. 17, 1909	8.1	9,380	1938	May 5, 1938	10.96	17,400
				1939	Mar. 27, 1939	10.81	16,600
1911	May 23, 1911	7.7	8,140	1940	June 9, 1940	11.07	16,500
1912	July 24, 1912	17.5	45,000				
1913	Apr. 18, 1913	9.2	12,600	1941	Aug. 31, 1941	18.26	49,400
1914	Apr. 30, 1914	8.9	11,000	1942	Sept. 18, 1942	13.85	27,000
1915	Aug. 7, 1915	7.87	8,160	1943	June 27, 1943	10.58	14,900
				1944	May 13, 1944	9.49	11,700
1916	Apr. 22, 1916	12.60	23,400	1945	June 3, 1945	8.37	8,330
1917	Apr. 21, 1917	8.80	10,700				
1918	May 28, 1918	9.73	13,400	1946	June 25, 1946	11.49	18,100
1919	Apr. 11, 1919	9.51	12,900	1947	Apr. 6, 1947	8.20	8,440
1920	Mar. 27, 1920	11.8	20,500	1948	Mar. 26, 1948	6.88	5,520
				1949	July 6, 1949	7.95	7,950
1921	Apr. 29, 1921	10.28	15,400	1950	Apr. 19, 1950	11.52	18,100
1922	Apr. 11, 1922	11.2	18,400				
1923	Apr. 22, 1923	11.95	20,700	1951	Apr. 12, 1951	11.30	17,400
1924	Apr. 17, 1924	9.65	13,300	1952	July 23, 1952	10.45	14,600
1925	June 13, 1925	7.60	7,370	1953	July 2, 1953	9.55	12,200
				1954	May 3, 1954	10.16	13,500
1926	Aug. 21, 1926	10.86	17,400	1955	June 11, 1955	9.24	10,600
1927	Mar. 18, 1927	10.90	17,400				
1928	Sept. 14, 1928	11.00	17,700	1956	Apr. 6, 1956	8.48	8,650
1929	Apr. 7, 1929	12.2	21,900				
1930	June 15, 1930	8.05	10,700				

3960. Rib River at Rib Falls, Wis.

Location.--Lat 44°58'25", long 89°54'15", in NW$\frac{1}{4}$ sec. 27, T. 29 N., R. 5 E., on downstream side of highway bridge in village of Rib Falls, 6 miles downstream from Black Creek.

Drainage area.--309 sq mi.

Gage.--Nonrecording. Altitude of gage is 1,220 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 12,000 cfs and extended by logarithmic plotting.

Historical data.--The flood of August 31, 1938 was higher than the flood of 1905 according to some residents---from the Marathon Times.

3960. Rib River at Rib Falls, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1925	June 4, 1925	5.90	2,500	1941	Aug. 31, 1941	13.32	16,000
				1942	Sept. 18, 1942	14.50	19,100
1926	Aug. 21, 1926	10.8	15,200	1943	June 27, 1943	11.60	11,700
1927	Mar. 17, 1927	7.7	5,960	1944	May 12, 1944	6.73	2,860
1928	Mar. 26, 1928	9.4	10,400	1945	Mar. 17, 1945	9.41	6,620
1929	Apr. 7, 1929	9.4	10,400				
1930	June 14, 1930	8.4	7,660	1946	June 25, 1946	9.29	6,420
				1947	Apr. 6, 1947	7.94	4,180
1931	June 22, 1931	4.2	1,130	1948	Mar. 27, 1948	6.9	3,030
1932	Apr. 7, 1932	9.4	10,300	1949	Mar. 29, 1949	7.6	3,820
1933	Apr. 6, 1933	7.0	4,430	1950	Apr. 17, 1950	8.1	4,440
1934	Sept. 26, 1934	10.3	13,300				
1935	Mar. 23, 1935	9.7	11,300	1951	Apr. 7, 1951	10.53	9,400
				1952	Apr. 1, 1952	8.4	5,430
1936	May 6, 1936	11.5	18,000	1953	July 28, 1953	11.34	11,200
1937	Apr. 9, 1937	7.1	4,510	1954	May 3, 1954	8.10	4,960
1938	Aug. 31, 1938	16.2	23,800	1955	Oct. 14, 1954	7.9	4,750
1939	Mar. 26, 1939	9.7	7,590				
1940	June 8, 1940	10.2	8,580	1956	Apr. 5, 1956	9.0	6,500

3970. Eau Claire River near Antigo, Wis.

Location.--Lat 45,11'40", long 89°13'15", in E½ sec. 3, T. 31 N., R. 10 E., on downstream side of highway bridge, 4.6 miles upstream from West Branch and 4 miles northwest of Antigo.

Drainage area.--75 sq mi, approximately.

Gage.--Reference point at elevation 5.50 ft gage datum. Altitude of gage is 1,460 ft (from Chicago and North Western Railway elevation of river).

Stage-discharge relation.--Defined by current-meter measurements below 180 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	July 4, 1949	2.1	339	1952	Apr. 1, 1952	1.80	276
1950	Apr. 17, 1950	1.8	276	1953	Mar. 22, 1953	1.99	347
				1954	May 2, 1954	1.95	332
1951	Apr. 5, 1951	1.76	260	1955	Apr. 1, 1955	1.45	187

3975. Eau Claire River at Kelly, Wis.

Location.--Lat 44°55'05", long 89°33'00", on line between secs. 9, and 10, T. 28 N., R. 8 E., on downstream side of highway bridge, 0.7 mile northeast of Kelly, 1.3 miles upstream from Big Sandy Creek, 4.5 miles upstream from mouth, and 5 miles southeast of Wausau.

Drainage area.--326 sq mi.

Gage.--Recording. Datum of gage is 1177.88 ft above mean sea level, datum of 1929. Prior to Sept. 16, 1953, nonrecording gage at same site at datum 1.00 ft higher.

Stage-discharge relation.--Defined by current-meter measurements below 6,000 cfs.

3975. Eau Claire River at Kelly, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1914	June 4, 1914	4.8		2,910	1941	Sept. 1, 1941	7.42		5,980
1915	May 22, 1915	3.1		1,180	1942	May 31, 1942	4.91		3,090
					1943	June 27, 1943	7.01		5,740
1916	Apr. 21, 1916	5.3		3,520	1944	June 16, 1944	3.57		1,760
1917	Apr. 4, 1917	3.4		1,460	1945	Mar. 18, 1945	5.5		3,750
1918	May 27, 1918	4.4		2,450					
1919	June 26, 1919	4.5		2,560	1946	Mar. 14, 1946	5.99		4,330
1920	Mar. 26, 1920	6.5		5,080	1947	Apr. 6, 1947	3.93		2,020
					1948	Mar. 22, 1948	5.55		3,860
1921	Mar. 20, 1921	7.6		6,600	1949	Apr. 1, 1949	2.98		1,300
1922	Apr. 9, 1922	7.5		6,460	1950	Apr. 18, 1950	5.00		3,200
1923	Apr. 20, 1923	6.9		5,620					
1924	Apr. 17, 1924	5.7		4,130	1951	Apr. 7, 1951	5.69		4,090
1925	June 5, 1925	3.1		1,220	1952	Apr. 1, 1952	6.21		4,580
					1953	Mar. 23, 1953	7.07		5,280
1926	Aug. 21, 1926	8.4		8,300	1954	Apr. 27, 1954	5.33		2,430
					1955	Apr. 2, 1955	6.05		3,230
1940	June 8, 1940	6.6		5,020					
					1956	Apr. 6, 1956	8.39	3.0	
						Apr. 7, 1956	6.40		3,650

3980. Wisconsin River at Rothschild, Wis.

Location.--Lat 44°53'10", long 89°37'50", in sec. 26, T. 28 N., R. 7 E., at Rothschild, 0.5 mile downstream from Rothschild Dam, 2 miles downstream from Eau Claire River, 5 miles upstream from Black Creek, and 5.5 miles south of bridge on State Highway 29 in Wausau.

Drainage area.--4,000 sq mi, approximately.

Gage.--Recording. Datum of gage is 1,135.86 ft above mean sea level, datum of 1929. Auxiliary staff gage in Mosinee Pond 8 miles downstream.

Stage-discharge relation.--Defined by current-meter measurements below 45,000 cfs and extended above by logarithmic plotting.

Remarks.--Flow regulated by 20 reservoirs and 12 powerplants above station.

Historical.--The flood of Sept. 1, 1941, reached a stage of 22.3 ft, based on tailwater elevation at Rothschild Dam.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1941	Sept. 1, 1941	22.3	75,000	1951	Apr. 8, 1951	15.31	33,200
				1952	Apr. 2, 1952	14.80	31,400
1945	Mar. 18, 1945	14.04	28,600	1953	Mar. 23, 1953	15.06	32,500
				1954	May 3, 1954	13.70	27,600
1946	Mar. 18, 1946	13.98	28,600	1955	Apr. 3, 1955	11.20	19,200
1947	Apr. 6, 1947	12.43	23,200				
1948	Mar. 27, 1948	10.26	16,400	1956	Apr. 6, 1956	12.45	23,400
1949	Mar. 30, 1949	9.16	13,200				
1950	Apr. 19, 1950	13.68	27,600				

3985. Bull Creek Jr. near Rothschild, Wis.

Location.--Lat 44°50'00", long 89°36'25", in sec. 12, T. 27 N., R. 7 E., just downstream from bridge on county road X, 4 miles south of Rothschild and 5 miles upstream from mouth.

Drainage area.--26.4 sq mi.

Gage.--Nonrecording. Altitude of gage is 1,190 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 600 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	June 14, 1944	3.40	326	1948	Mar. 23, 1948	3.1	276
1945	Mar. 18, 1945	4.20	671	1949	Mar. 31, 1949	2.5	115
				1950	Apr. 12, 1950	2.90	214
1946	Mar. 15, 1946	3.70	484				
1947	Apr. 7, 1947	3.0	173	1951	Apr. 8, 1951	3.68	484

3990. Big Eau Pleine River near Colby, Wis.

Location.--Lat 44°54'10", long 90°12'45", in NW¼ sec. 24, T. 28 N., R. 2 E., on downstream side of bridge at Cherokee, 1.6 miles upstream from Randall Creek and 5 miles east of Colby.

Drainage area.--79 sq mi, approximately.

Gage.--Nonrecording. Altitude of gage is 1,270 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 8,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1942	May 30, 1942	7.9	3,580	1949	Mar. 27, 1949	5.48	1,150
1943	June 27, 1943	11.05	9,370	1950	Mar. 28, 1950	6.7	[a]1,900
1944	Apr. 7, 1944	5.00	843				
1945	Mar. 17, 1945	8.54	4,660	1951	Apr. 8, 1951	7.48	[b]3,160
				1952	Apr. 1, 1952	-	[b]1,500
1946	Mar. 14, 1946	8.0	3,880	1953	Mar. 22, 1953	7.30	2,900
1947	Apr. 6, 1947	6.8	2,310	1954	May 3, 1954	8.0	3,880
1948	Mar. 21, 1948	6.0	1,530				

[a]Ice affected.
[b]Maximum daily discharge.

3995. Big Eau Pleine River near Stratford, Wis.

Location.--Lat 44°49'15", long 90°04'35", on line between sec. 13, T. 27 N., R. 3 E., and sec. 18, T. 27 N., R. 4 E., 15 ft upstream from bridge on State Highway 97, 1 mile north of Stratford, and 1.4 miles downstream from small tributary.

Drainage area.--224 sq mi.

Gage.--Recording. Altitude of gage is 1,170 ft (from topographic map). July 24, 1914, to Dec. 31, 1925, nonrecording gage at site 0.5 mile upstream at different datum. Apr. 30, 1937, to Sept. 15, 1938, nonrecording gage at present site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 24,000 cfs and extended by logarithmic plotting.

3995. Big Eau Pleine River near Stratford, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1914	June 5, 1914	20.7		40,000	1943	June 27, 1943	20.5		18,500
1915	May 21, 1915	7.2		3,420	1944	Mar. 24, 1944	10.84	5.5	
						June 25, 1944	10.28		3,370
1916	Apr. 21, 1916	9.2		6,050	1945	Aug. 31, 1945	22.2		24,700
1917	Apr. 4, 1917	7.5		3,770					
1918	May 26, 1918	9.6		6,510	1946	Mar. 14, 1946	14.82		7,840
1919	Aug. 7, 1919	8.9		5,610	1947	Mar. 24, 1947	13.99		7,050
1920	Nov. 10, 1919	11.0		8,810	1948	Mar. 21, 1948	16.71	1.5	
						Mar. 21, 1948	15.16		8,460
1921	Apr. 27, 1921	10.6		8,150	1949	Mar. 22, 1949	14.34		7,380
1922	Apr. 9, 1922	11.6		9,900	1950	Mar. 27, 1950	16.63		10,500
1923	Apr. 18, 1923	6.4		2,510					
1924	Aug. 22, 1924	11.0		8,810	1951	Apr. 7, 1951	15.85		9,280
1925	June 17, 1925	6.6		2,710	1952	Apr. 1, 1952	17.31		11,500
					1953	Mar. 22, 1953	16.71		10,600
1937	May 1, 1937	7.6		1,650	1954	May 3, 1954	14.54		7,650
1938	Sept. 9, 1938	24.5		41,000	1955	Oct. 14, 1954	13.23		6,200
1939	Mar. 24, 1939	14.95		8,200		Mar. 15, 1955	13.67	2.5	
1940	June 24, 1940	16.35		10,200					
					1956	Apr. 5, 1956	16.60		10,500
1941	Sept. 16, 1941	14.10		7,160					
1942	May 30, 1942	16.08		9,710					

4000. Wisconsin River at Knowlton, Wis.

Location.--Lat 44°42', long 89°42', in N½ sec. 29, T. 26 N., R. 7 E., on combination railroad and highway bridge at Knowlton and 1.5 miles downstream from Big Eau Pleine River.

Drainage area.--4,520 sq mi, approximately.

Gage.--Nonrecording. Datum of gage is 1095.9 ft above mean sea level (U. S. Weather Bureau). Prior to Feb. 19, 1942, recording gage at site 50 ft downstream at same datum.

Stage-discharge relation.--Defined by current-meter measurements below 40,000 cfs.

Remarks.--Flow regulated by 16 reservoirs prior to 1923, 17 reservoirs 1923-26, 18 reservoirs 1927-34, 20 reservoirs 1935-36, 21 reservoirs since 1937, and many powerplants above station.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1921	Apr. 29, 1921	16.0	37,400	1932	Apr. 8, 1932	14.0	31,500
1922	Apr. 11, 1922	18.6	46,800	1933	Apr. 11, 1933	9.98	19,500
1923	Apr. 22, 1923	16.55	38,600	1934	Apr. 5, 1934	13.7	30,400
1924	Apr. 18, 1924	15.0	33,900	1935	Mar. 22, 1935	18.9	47,600
1925	June 14, 1925	8.72	14,100				
				1936	Mar. 24, 1936	17.25	41,800
1926	Aug. 22, 1926	18.6	46,600	1937	Apr. 25, 1937	10.75	20,800
1927	Mar. 18, 1927	12.92	28,000	1938	Sept. 11, 1938	19.91	51,900
1928	Sept. 16, 1928	17.35	42,500	1939	Mar. 27, 1939	15.90	37,000
1929	Apr. 8, 1929	16.80	40,500	1940	June 9, 1940	16.17	38,100
1930	June 15, 1930	15.80	37,200				
				1941	Sept. 2, 1941	20.5	54,300
1931	June 22, 1931	6.50	9,590	1942	May 31, 1942	18.65	46,800

4005. Plover River near Stevens Point, Wis.

Location.--Lat 44°35', long 89°29', in SW¼ sec. 6, T. 24 N., R. 9 E., at downstream side of town road bridge just east of county road Y, 5 miles northeast of Stevens Point and 9 miles upstream from mouth.

Drainage area.--136 sq mi.

Gage.--Nonrecording. Altitude of gage is 1,110 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 1,200 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1914	June 5, 1914	4.8	1,610	1945	Mar. 18, 1945	4.0	1,020
1915	Apr. 10, 1915	2.7	494				
				1946	Mar. 15, 1946	3.46	781
1916	Apr. 23, 1916	3.5	750	1947	Apr. 7, 1947	2.4	446
1917	May 1, 1917	2.6	466	1948	Mar. 22, 1948	3.18	680
1918	May 28, 1918	3.3	670	1949	Mar. 23, 1949	2.5	473
1919	June 27, 1919	4.4	1,300	1950	Mar. 29, 1950	4.2	1,160
1944	June 13, 1944	2.9	590	1951	Apr. 9, 1951	3.46	781

4010. Wisconsin River near Nekoosa, Wis.

Location.--Lat 44°18', long 89°53', in sec. 15, T. 21 N., R. 5 E., 1.5 miles downstream from Nekoosa and 4 miles upstream from Ten Mile Creek.

Drainage area.--5,500 sq mi, approximately.

Gage.--Recording. Altitude of gage is 910 ft (from river-profile map). Prior to Oct. 23, 1914, nonrecording gage at same site. Prior to Oct. 1, 1934, at datum 2.00 ft higher.

Stage-discharge relation.--Defined by current-meter measurements below 60,000 cfs.

Remarks.--Flow regulated by 16 reservoirs prior to 1923, 17 reservoirs 1923-26, 18 reservoirs 1927-34, 20 reservoirs 1935-26, 21 reservoirs since 1937, and many powerplants above station.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1914	June 8, 1914		54,000	1931	June 23, 1931	5.70	11,700
1915	May 24, 1915	8.68	20,200	1932	Apr. 9, 1932	12.82	37,000
				1933	Apr. 12, 1933	9.30	22,100
1916	Apr. 24, 1916	14.89	51,200	1934	Apr. 6, 1934	12.78	37,000
1917	Apr. 5, 1917	10.02	24,700	1935	Mar. 24, 1935	18.9	68,500
1918	May 30, 1918	12.22	34,000				
1919	June 27, 1919	10.6	26,900	1936	Mar. 26, 1936	16.50	48,100
1920	Mar. 28, 1920	15.1	52,900	1937	Apr. 26, 1937	11.55	23,700
				1938	Sept. 12, 1938	19.10	70,400
1921	Mar. 22,Apr. 30	13.2	39,400	1939	Mar. 28, 1939	16.61	48,900
1922	Apr. 12, 1922	16.1	61,000	1940	June 26, 1940	17.00	52,100
1923	Apr. 23, 1923	14.04	44,800				
1924	Apr. 19, 1924	13.00	38,200	1941	Sept. 3, 1941	18.09	59,600
1925	June 15, 1925	8.50	19,400	1942	Sept. 20, 1942	17.83	57,900
				1943	June 29, 1943	18.05	59,600
1926	Aug. 23, 1926	15.08	52,700	1944	June 15, 1944	10.88	21,300
1927	Mar. 15, 1927	13.10	38,800	1945	Mar. 19, 1945	14.21	34,300
1928	Mar. 26, 1928	15.0	52,100				
1929	Apr. 9, 1929	14.30	46,600	1946	Mar. 18, 1946	13.98	33,400
1930	June 16, 1930	13.4	40,600	1947	Apr. 7, 1947	11.40	22,900
				1948	Mar. 28, 1948	10.56	21,600
				1949	Mar. 31, 1949	8.82	15,200

4015. Wisconsin River near Necedah, Wis.

Location.--Lat 44°02', 90°01, in sec. 9, T. 18 N., R. 4 E., at bridge on State Highway 21, 5 miles northeast of Necedah and 5 miles upstream from Big Roche a Cri Creek.

Drainage area.--5,860 sq mi, approximately.

Gage.--Nonrecording. Altitude of gage is 880 ft (from river-profile map). Prior to June 30, 1914, at different datum.

Stage-discharge relation.--Defined by current-meter measurements below 50,000 cfs.

Remarks.--Flow regulated by 13 reservoirs beginning in 1908, 14 reservoirs 1909, 15 reservoirs 1910-11, 16 reservoirs 1912-14, 21 reservoirs since 1937, and many powerplants above station.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1903	Sept. 18, 1903	14.8	60,500	1913	Apr. 6, 1913	13.9	49,600
1904	May 30, 1904	12.6	35,900	1914	June 8, 1914	15.5	69,700
1905	June 10, 1905	17.2	96,400				
				1944	June 16, 1944	13.21	30,100
1906	Apr. 16, 1906	13.4	44,000	1945	Mar. 20, 1945	16.0	34,400
1907	Mar. 30, 1907	13.4	44,000				
1908	May 1, 1908	12.2	32,300	1946	Mar. 20, 1946	15.9	34,000
1909	Apr. 24, 1909	11.5	26,800	1947	Apr. 8, 1947	14.06	24,600
1910	Nov. 17, 1909	10.4	20,100	1948	Mar. 29, 1948	13.70	21,500
				1949	Apr. 2, 1949	11.10	11,700
1911	May 26, 1911	10.9	22,900	1950	Apr. 19, 1950	15.4	29,700
1912	Oct. 10, 1911	16.9	91,600				

4020. Yellow River at Babcock, Wis.

Location.--Lat 44°18', long 90°07', in sec. 14, T. 21 N., R. 3 E., at downstream side of highway bridge at Babcock, 2 miles upstream from Hemlock Creek.

Drainage area.--223 sq mi.

Gage.--Recording. Datum of gage is 954.75 ft above mean sea level, datum of 1929. Prior to Oct. 28, 1948, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 11,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	June 19, 1944	13.6	4,880	1951	Apr. 8, 1951	14.81	6,620
1945	Mar. 18, 1945	15.78	8,430	1952	Apr. 2, 1952	17.38	11,600
				1953	Mar. 22, 1953	15.06	7,130
1946	June 12, 1946	13.0	4,270	1954	May 3, 1954	12.24	3,760
1947	Apr. 6, 1947	11.2	2,700	1955	Oct. 4, 1954	12.90	4,180
1948	Mar. 21, 1948	12.88	4,180				
1949	Apr. 6, 1949	9.03	1,360	1956	Apr. 5, 1956	15.85	8,470
1950	Mar. 28, 1950	13.98	5,400				

4025. Yellow River at Sprague, Wis.

Location.--Lat 44°08', long 90°06', in NW$\frac{1}{4}$ sec. 11, T. 19 N., R. 3 E., 1 mile southeast of Sprague and 10 miles upstream from Necedah Dam.

Drainage area.--420 sq mi, approximately.

Gage.--Nonrecording. Altitude of gage is 910 ft (from elevation of gage at Necedah).

Stage-discharge relation.--Defined by current-meter measurements below 2,300 cfs and extended above by logarithmic plotting.

4025. Yellow River at Sprague, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1927	Mar. 15, 1927	12.2	3,740	1934	Apr. 6, 1934	10.4	1,420
1928	Sept. 17, 1928	14.0	7,030	1935	Mar. 23, 1935	12.4	4,080
1929	Mar. 20, 1929	12.8	4,800				
1930	June 16, 1930	12.8	4,800	1936	Mar. 25, 1936	13.0	5,160
				1937	Apr. 5, 1937	11.4	2,420
1931	June 24, 1931	7.4	602	1938	Sept. 11, 1938	13.38	5,920
1932	Apr. 8, 1932	13.2	5,540	1939	Apr. 20, 1939	11.8	3,060
1933	Apr. 3, 1933	10.4	1,450	1940	June 26, 1940	11.3	2,260

4030. Yellow River at Necedah, Wis.

Location.--Lat 44°03', long 90°04', in S½ sec. 18, T. 18 N., R. 4 E., at Necedah powerplant of Wisconsin Power and Light Co., 5 miles downstream from Cranberry Creek.

Drainage area.--526 sq mi.

Gage.--Nonrecording. Datum of gage is 884.08 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 12,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1941	Apr. 5, 1941	14.7	6,810	1950	Mar. 30, 1950	13.7	4,910
1942	June 2, 1942	15.50	8,400				
1943	Apr. 1, 1943	16.0	9,500	1951	Apr. 9, 1951	15.60	8,620
1944	June 22, 1944	13.38	4,500	1952	Apr. 3, 1952	17.10	12,800
1945	Mar. 19, 1945	15.8	9,060	1953	Mar. 24, 1953	15.24	8,020
				1954	May 6, 1954	13.20	4,120
1946	Mar. 17, 1946	14.52	6,300	1955	Oct. 6, 1954	13.50	4,600
1947	Apr. 10, 1947	12.2	2,760				
1948	Mar. 23, 1948	14.0	5,040	1956	Apr. 7, 1956	15.60	8,990
1949	Apr. 10, 1949	10.7	1,620				

4035. Lemonweir River at New Lisbon, Wis.

Location.--Lat 43°52'50", long 90°09'40", in sec. 8, T. 16 N., R. 3 E., on downstream side of bridge on State Highway 80 in New Lisbon, 200 ft downstream from recreation dam and 1 mile upstream from Webster Creek.

Drainage area.--486 sq mi.

Gage.--Nonrecording. Datum of gage is 867.05 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 5,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	June 20, 1944	8.2	1,610	1951	Apr. 10, 1951	11.32	3,620
1945	Mar. 17, 1945	11.28	3,850	1952	Apr. 3, 1952	12.28	5,160
				1953	Mar. 24, 1953	9.69	2,410
1946	Mar. 16, 1946	11.28	3,850	1954	July 8, 1954	11.0	3,140
1947	June 16, 1947	9.54	2,140	1955	Oct. 6, 1954	9.85	2,320
1948	Mar. 21, 1948	10.58	2,960				
1949	Apr. 4, 1949	6.3	920	1956	Apr. 5, 1956	12.60	5,580
1950	Mar. 28, 1950	9.8	2,360				

4040. Wisconsin River near Wisconsin Dells, Wis.

Location.--Lat 43°36'20", long 89°45'25", in extreme western part of sec. 14, T. 14 N., R. 6 E., 0.5 mile downstream from Dell Creek and 3 miles downstream from Wisconsin Dells.

Drainage area.--7,830 sq mi, approximately.

Gage.--Recording. Altitude of gage is 810 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 65,000 cfs.

Historical data.--The flood of September 14, 1938 was the highest since the dam was built in 1909---from the Wisconsin Dells Events.

Remarks.--Flow regulated by many reservoirs and powerplants above station.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1935	Mar. 27, 1935	17.80	64,600	1946	Mar. 19, 1946	13.63	45,600
				1947	Apr. 9, 1947	8.93	24,800
1936	Mar. 29, 1936	14.75	46,300	1948	Mar. 27, 1948	8.82	24,400
1937	Apr. 28, 1937	9.90	25,000	1949	Apr. 4, 1949	5.43	12,400
1938	Sept. 14, 1938	18.80	72,200	1950	Apr. 21,22, 1950	10.13	29,900
1939	Mar. 30, 1939	15.05	48,500				
1940	June 28, 1940	14.90	50,700	1951	Apr. 11, 1951	15.58	61,700
				1952	Apr. 14, 1952	9.76	28,600
1941	Sept. 5, 1941	13.53	43,600	1953	Apr. 13, 1953	8.74	24,000
1942	June 4, 1942	15.13	52,800	1954	May 5, 1954	10.47	31,600
1943	June 4, 1943	15.63	57,500	1955	June 13, 1955	10.06	29,700
1944	June 17, 1944	8.31	20,700				
1945	Mar. 22, 1945	13.08	43,000	1956	Apr. 11, 1956	10.00	29,500

4050. Baraboo River near Baraboo, Wis.

Location.--Lat 43°28'55", long 89°38'00", in NW¼ sec. 35, T. 12 N., R. 7 E., on upstream side of bridge on county highway X, 0.3 mile downstream from Rowley Creek and 4 miles east of Baraboo.

Drainage area.--650 sq mi. At site used 1913-22, 628 sq mi.

Gage.--Nonrecording. Datum of gage is 786.8 ft above mean sea level, unadjusted (University of Wisconsin benchmark). Dec. 18, 1913, to Mar. 31, 1922, at bridge 2.3 miles upstream at datum 7.6 ft higher.

Stage-discharge relation.--Defined by current-meter measurements below 6,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1914	June 25, 1914	7.4	1,030	1945	June 5, 1945	16.66	3,110
1915	Sept. 17, 1915	10.3	1,700				
				1946	Mar. 17, 1946	18.78	3,880
1916	Mar. 27, June 6	12.75	2,500	1947	June 14, 1947	18.02	3,400
1917	Mar. 26, 1917	17.5	7,900	1948	Mar. 21, 1948	20.63	4,540
1918	Mar. 20, 1918	15.1	4,170	1949	June 29, 1949	13.4	1,950
1919	Mar. 20, 1919	15.4	4,550	1950	Mar. 29, 1950	21.16	4,810
1920	June 22, 1920	17.08	7,360				
				1951	Apr. 30, 1951	17.93	3,550
1921	May 28, 1921	11.2	2,110	1952	Apr. 4, 1952	18.63	3,800
				1953	Mar. 23, 1953	13.31	2,020
1935	Aug. 6, 1935	15.8	5,100	1954	July 8, 1954	14.0	2,150
				1955	Apr. 25, 1955	12.95	1,800
1943	Mar. 29, 1943	16.4	3,000				
1944	Feb. 28, 1944	14.24	2,210	1956	Apr. 6, 1956	20.60	4,570

4060. Wisconsin River at Prairie du Sac, Wis.

Location.--Lat 43°17'25", long 89°42'55", in sec. 1, T. 9 N., R. 6 E., on downstream end of bridge on State Highway 60 in Prairie du Sac, 1.6 miles downstream from Prairie du Sac powerplant and 6.5 miles upstream from Honey Creek.

Drainage area.--8,950 sq mi, approximately.

Gage.--Recording. Datum of gage is 729.64 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 65,000 cfs.

Remarks.--Flow regulated by many reservoirs and powerplants above station.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	June 18, 1944	10.8	25,000	1949	Apr. 4, 1949	7.70	13,400
1945	Mar. 23, 1945	15.8	52,300	1950	Apr. 24, 1950	12.66	34,900
1946	Mar. 19, 1946	15.79	52,300	1951	Apr. 12, 1951	16.82	65,500
1947	Apr. 10, 1947	12.23	32,700	1952	Apr. 11,15, 1952	12.00	32,300
1948	Mar. 30, 1948	11.20	28,100	1953	Apr. 14, 1953	11.10	27,300

4070. Wisconsin River at Muscoda, Wis.

Location.--Lat 43°12'00", long 90°26'25", in W½ sec. 1, T. 8 N., R. 1 W., at highway bridge, 0.5 mile upstream from Eagle Mill Creek and 1 mile north of Muscoda.

Drainage area.--10,300 sq mi, approximately.

Gage.--Recording. Datum of gage is 667.05 ft above mean sea level, datum of 1929. Prior to Nov. 22, 1929, nonrecording gage 200 ft upstream at same datum. Nov. 22, 1929, to Mar. 15, 1930, nonrecording gage at present site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 78,000 cfs.

Historical data.--Flood of June 11, 1881, reached a stage of 11.1 feet.

Remarks.--Flow regulated by many reservoirs and powerplants above station.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1914	June 13, 1914	8.6		45,700	1935	Mar. 29, 1935	9.90		62,200
1915	Apr. 17, 1915	6.1		24,200					
					1936	Mar. 31, 1936	8.70		48,100
1916	Apr. 29, 1916	9.2		54,300	1937	Mar. 7, 1937	6.68	2.0	
1917	Apr. 11, 1917	7.0		33,200		May 2, 1937	6.30		27,900
1918	June 5, 1918	8.1		40,800	1938	Sept. 16, 1938	11.48		80,800
1919	Apr. 16, 1919	7.98		42,500	1939	Apr. 2, 1939	8.87		50,700
1920	Apr. 2, 1920	10.10		63,300	1940	July 1, 1940	9.15		50,700
1921	May 6, 1921	7.8		39,500	1941	Sept. 8, 1941	8.28		44,300
1922	Apr. 16, 1922	10.60		72,100	1942	June 7, 1942	9.30		54,600
1923	Apr. 27, 1923	8.7		52,500	1943	June 6, 1943	9.64		57,900
1924	Apr. 24, 1924	8.0		42,500	1944	June 19, 1944	6.15		27,200
1925	June 22, 1925	6.00		25,100	1945	Mar. 25, 1945	8.48		46,300
1926	Aug. 29, 1926	8.28		43,800	1946	Mar. 10, 1946	9.68	5.0	
1927	Mar. 20, 1927	8.20		43,000		Mar. 21, 1946	9.00		51,300
1928	Sept. 22, 1928	9.5		52,600	1947	Apr. 12, 1947	6.70		30,700
1929	Apr. 14, 1929	9.3		51,800	1948	Feb. 28, 1948	7.62	4.5	
1930	June 22, 1930	7.60		38,400		Mar. 28, 1948	6.27		27,900
					1949	Mar. 6, 1949	4.81	2.0	
1931	June 29, 1931	3.28		11,300		Apr. 7, 1949	3.70		13,200
1932	Apr. 14, 1932	8.00		40,800	1950	Mar. 8, 1950	7.07	3.5	
1933	Apr. 7, 1933	6.54		30,000		Apr. 24, 1950	6.70		30,700
1934	Apr. 12, 1934	7.50		36,800					

4070. Wisconsin River at Muscoda, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1951	Apr. 14, 1951	9.95		64,800	1955	June 16, 1955	6.07		25,600
1952	Apr. 16, 1952	6.80		31,500					
1953	Apr. 15, 16, 1953	5.82		24,600	1956	Apr. 15, 1956	6.81		31,600
1954	May 9, 1954	6.85		31,900					

4080. Kickapoo River at La Farge, Wis.

Location.--Lat 43°34'30", long 90°38'35", on east-west quarter section line, in W½ sec. 29, T. 13 N., R. 2 W., 10 ft upstream from bridge on State Highway 82 in La Farge, 0.3 miles upstream from Otter Creek, and 1 mile downstream from powerplant.

Drainage area.--266 sq mi.

Gage.--Recording. Datum of gage is 782.00 ft above mean sea level, adjustment of 1912. Prior to Dec. 4, 1939, nonrecording gage at same datum.

Stage-discharge relation.--Defined by current-meter measurements below 6,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1939	Sept. 4, 1939	7.44		1,610	1949	Mar. 5, 1949	9.12	3.5	
1940	June 23, 1940	10.26		2,860		Mar. 22, 1949	7.29		1,370
					1950	Mar. 8, 1950	12.90	3.5	
1941	Apr. 18, 1941	8.44		1,810		Mar. 27, 1950	11.90		5,460
1942	Sept. 18, 1942	7.89		1,630					
1943	Mar. 26, 1943	9.52		2,210	1951	July 21, 1951	12.32		6,600
1944	Mar. 12, 1944	10.58		3,180	1952	Apr. 1, 1952	10.95		3,480
1945	May 22, 1945	10.72		3,290	1953	Aug. 2, 1953	7.77		1,560
					1954	July 3, 1954	11.44		4,370
1946	Jan. 6, 1946	12.03		5,730	1955	June 3, 1955	9.82		2,510
1947	June 14, 1947	9.95		2,470					
1948	Mar. 19, 1948	11.75		5,200	1956	Apr. 4, 1956	12.35		6,750

4100. Kickapoo River at Gays Mills, Wis.

Location.--Lat 43°19'10", long 90°51'10", in sec. 28, T. 10 N., R. 4 W., at highway bridge 300 ft downstream from dam and powerplant of Interstate Power Co. in Gays Mills, 3.3 miles downstream from Taintor Creek.

Drainage area.--616 sq mi.

Gage.--Nonrecording. Datum of gage is 685.75 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 6,000 cfs.

Remarks.--Flood of 1913 reached a stage of 15.2 ft from floodmark (backwater from ice probable).

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1914	June 23, 1914	5.6	1,370	1919	Mar. 17, 1919	12.0	4,710
1915	July 30, 1915	6.9	1,910	1920	June 17, 1920	10.65	3,460
1916	June 4, 1916	10.1	3,510	1921	Sept. 6, 1921	9.5	2,520
1917	Mar. 24, 1917	15.05	9,800	1922	Mar. 6, 1922	9.2	2,650
1918	Mar. 18, 1918	10.35	3,000	1923	Apr. 3, 1923	12.6	5,510

4100. Kickapoo River at Gays Mills, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1924	Aug. 4, 1924	11.0	3,800	1930	Feb. 23, 1930	9.8	[a]2,800
1925	June 15, 1925	9.25	2,620				
				1931	June 22, 1931	4.0	874
1926	Aug. 24, 1926	9.0	2,140	1932	July 12, 1932	11.5	4,350
1927	Sept. 11, 1927	11.8	3,220	1933	Mar. 31, 1933	14.1	7,470
1928	Mar. 13, 1928	12.8	5,840	1934	Apr. 5, 1934	12.95	5,790
1929	Mar. 15, 1929	12.9	6,020				

[a]Ice affected.

4105. Kickapoo River at Steuben, Wis.

Location.--Lat 43°11'25", long 90°52'30", in NW¼ sec. 8, T. 8 N., R. 4 W., 0.8 mile upstream from Duffy Creek, 1 mile northwest of Steuben, and 14 miles upstream from mouth.

Drainage area.--690 sq mi.

Gage.--Recording. Datum of gage is 657.82 ft above mean sea level, adjustment of 1912. Prior to Oct. 20, 1938, nonrecording gage at site 1 mile upstream at datum 1.3 ft higher.

Stage-discharge relation.--Defined by current-meter measurements below 10,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1934	Apr. 5, 1934	10.32		5,830	1946	Mar. 8, 1946	10.25		7,630
1935	Aug. 8, 1935	12.30		8,600	1947	June 17, 1947	8.70		2,570
					1948	Mar. 19, 1948	9.92		5,640
1936	Mar. 12, 1936	10.1		3,650	1949	Mar. 5, 1949	8.42		1,790
1937	Mar. 8, 1937	10.10		4,340	1950	Mar. 27, 1950	10.06		6,160
1938	Sept. 11, 1938	10.18		3,400					
1939	Mar. 15, 1939	8.19		1,860	1951	July 22, 1951	13.66		10,300
1940	Mar. 31, 1940	8.38		2,230	1952	Apr. 3, 1952	9.75		4,470
					1953	Aug. 5, 1953	8.06		1,430
1941	Apr. 4, 1941	8.14		1,800	1954	July 7, 1954	9.25		2,570
1942	Sept. 21, 1942	8.59		2,540	1955	June 7, 1955	8.78		1,670
1943	Mar. 28, 1943	8.62		2,570					
1944	Mar. 15, 1944	8.92	0.5		1956	Apr. 5, 1956	10.88		6,310
	June 19, 1944	8.78		3,050					
1945	June 3, 1945	9.03		3,370					

TURKEY RIVER BASIN

4125. Turkey River at Garber, Iowa

Location.--Lat 42°44'20", long 91°15,45", in NE¼SW¼ sec. 36, T. 92 N., R. 4 W., at highway bridge at Garber, 800 ft upstream from Wayman Creek, 2,000 ft downstream from Elk Creek, and 1 mile downstream from Volga River.

Drainage area.--1,545 sq mi.

Gage.--Recording. Datum of gage is 635.34 ft above mean sea level, adjustment of 1912. Prior to Feb. 7, 1935, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 26,100 cfs.

Historical data.--Stage of Feb. 23, 1922 maximum known since 1890.

4125. Turkey River at Garber, Iowa--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1914	June 15, 1914	13.2	8,960	1936	Mar. 11, 1936	-	15,000
1915	Aug. 4, 1915	14.7	10,900	1937	Mar. 6, 1937	20.8	18,900
				1938	Sept. 13, 1938	21.1	19,600
1916	June 2, 1916	22.0	[a]20,300	1939	Mar. 14, 1939	-	9,200
				1940	July 27, 1940	25.3	26,100
1919	June 4, 1919	16.8	[b]13,100				
1920	Mar. 12, 1920	15.1	[a]11,000	1941	June 12, 1941	23.3	22,100
				1942	June 30, 1942	17.5	12,000
1921	May 31, 1921	14.5	10,400	1943	Mar. 16, 1943	21.0	17,600
1922	Feb. 23, 1922	28.1	32,300	1944	June 16, 1944	20.6	16,900
1923	Apr. 3, 1923	24.2	[a]25,900	1945	June 2, 1945	18.2	13,000
1924	July 21, 1924	17.4	[a]14,600				
1925	June 15, 1925	24.7	26,200	1946	Jan. 5, 1946	24.3	24,100
				1947	June 13, 1947	26.6	29,000
1926	Aug. 20, 1926	12.0	[a]7,130	1948	Mar. 19, 1948	21.7	19,000
1927	Oct. 3, 1926	16.8	13,100	1949	Mar. 4, 1949	20.5	16,800
				1950	Mar. 7, 1950	23.7	23,700
1929	July 13, 1929	-	[c]7,630				
1930	June 13, 1930	-	14,500	1951	Mar. 28, 1951	22.79	21,900
				1952	Apr. 1, 1952	15.88	9,840
1933	Mar. 30, 1933	22.5	20,600	1953	July 27, 1953	20.62	16,900
1934	Jan. 22, 1934	11.5	[a]6,230	1954	June 21, 1954	19.94	16,400
1935	Mar. 4, 1935	19.9	17,100	1955	June 3, 1955	15.32	9,840
				1956	Mar. 28, 1956	17.00	12,300

[a]Maximum observed.
[b]Maximum observed during period May to September 1919.
[c]Maximum observed during period April to September 1929.

GRANT RIVER BASIN

4135. Grant River at Burton, Wis.

Location.--Lat 42°43'10", long 90°49'10", in sec. 23, T. 3 N., R. 4 W., on downstream side of highway bridge at Burton, 6 miles northwest of Potosi and 9.5 miles upstream from mouth.

Drainage area.--267 sq mi. At site 6 miles upstream, 257 sq mi.

Gage.--Recording. Datum of gage is 606.89 ft above mean sea level, adjustment of 1912. Oct. 17, 1934, to Sept. 30, 1947, nonrecording gage at site 6 miles upstream at datum 33.18 ft higher. Mar. 18, 1947, to July 27, 1949, nonrecording gage at present site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 18,000 cfs and extended above on basis of slope-area measurement.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1935	Mar. 4, 1935	10.0		6,820	1946	Jan. 5, 1946	12.0		11,600
					1947	June 13, 1947	15.54		21,400
1936	Mar. 4, 1936	9.0		5,420	1948	Feb. 28, 1948	20.24		10,200
1937	Feb. 20, 1937	9.6		6,260	1949	June 25, 1949	21.5		14,100
1938	Feb. 5, 1938	10.37		7,350	1950	July 16, 1950	24.82		25,000
1939	Mar. 4, 1939	7.44		2,060					
1940	July 27, 1940	16.3		23,800	1951	July 8, 1951	20.67		11,700
					1952	Mar. 10, 1952	19.18		7,280
1941	Mar. 21, 1941	6.6		2,490	1953	Feb. 20, 1953	20.92		12,300
1942	June 29, 1942	7.8		3,860	1954	June 22, 1954	24.45		23,800
1943	Aug. 13, 1943	12.30		12,300	1955	Feb. 20, 1955	23.30	5.0	
1944	Mar. 14, 1944	11.33		9,820		Feb. 20, 1955			8,000
1945	June 28, 1945	9.4		6,010					
					1956	Mar. 2 or 3	20.23		6,000

4140. Platte River near Rockville, Wis.

Location.--Lat 42°44'00", long 90°38'25", in SW¼ sec. 17, T. 3 N., R. 2 W., 0.8 mile upstream from Blakely Branch, 2.5 miles northeast of Rockville, 5 miles northeast of Potosi, and 15.2 miles upstream from mouth.

Drainage area.--139 sq mi. Prior to Oct. 1, 1941, 137 sq mi.

Gage.--Recording. Datum of gage is 642.95 ft above mean sea level, adjustment of 1912. Prior to Oct. 1, 1941, nonrecording gage at site 1.3 miles upstream at datum 12.55 ft higher. Oct. 1, 1941, to June 29, 1949, nonrecording gage at present site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 7,000 cfs and extended above on basis of slope-area measurement.

Historical data.--The flood of July 16, 1950 was the highest since 1876---from the Grant County News.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1935	Mar. 4, 1935	8.67	3,980	1946	Jan. 5, 1946	11.4	8,700
				1947	June 13, 1947	12.30	11,000
1936	Mar. 10, 1936	8.0	2,730	1948	Feb. 28, 1948	11.1	7,980
1937	Mar. 4, 1937	10.6	8,560	1949	Mar. 4, 1949	9.40	4,150
1938	Feb. 6, 1938	9.6	5,980	1950	July 16, 1950	17.26	43,500
1939	Jan. 5, 1939	8.2	3,060				
1940	July 26, 1940	12.4	13,100	1951	July 8, 1951	12.41	12,300
				1952	Mar. 10, 1952	7.63	1,660
1941	Mar. 3, 1941	8.8	4,180	1953	Feb. 20, 1953	10.79	7,290
1942	June 29, 1942	9.1	3,670	1954	June 21, 1954	13.33	16,400
1943	June 2, 1943	12.1	10,400	1955	Feb. 20, 1955	8.85	3,080
1944	Mar. 14, 1944	10.44	6,310				
1945	June 28, 1945	9.10	3,660	1956	Mar. 1, 1956	8.3	2,400

LITTLE MAQUOKETA RIVER BASIN

4145. Little Maquoketa River near Durango, Iowa

Location.--Lat 42°33'25", long 90°44'45", in NW¼NE¼ sec. 5, T. 89 N., R. 2 E., 10 ft upstream from highway bridge, 1½ miles east of Durango, 5 miles northwest of Dubuque, and 7.0 miles upstream from mouth.

Drainage area.--130 sq mi.

Gage.--Recording. Datum of gage is 612.03 ft above mean sea level, datum of 1929. Prior to Jan. 5, 1939, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 6,300 cfs and extended above on basis of slope-area measurements at gage heights 17.05, 19.82, 20.75, and 22.1 ft.

Historical data.--Maximum known stage, about 22.1 ft June 15, 1925 (discharge, about 29,000 cfs, computed by Corps of Engineers).

4145. Little Maquoketa River near Durango, Iowa--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1925	June 15, 1925	22.1	[a]29,000	1946	Mar. 6, 1946	17.0	10,400
				1947	June 13, 1947	21.2	23,000
1935	Mar. 4, 1935	13.63	5,430	1948	Feb. 27, 1948	17.4	11,300
				1949	Mar. 4, 1949	13.9	5,790
1936	Mar. 10, 1936	6.11	791	1950	Mar. 5, 1950	14.8	6,550
1937	June 21, 1937	20.75	21,000				
1938	Feb. 5, 1938	15.73	7,850	1951	July 8, 1951	19.98	14,800
1939	July 7, 1939	13.20	5,000	1952	Aug. 20, 1952	14.22	6,180
1940	Aug. 15, 1940	13.33	5,130	1953	Feb. 20, 1953	18.40	11,100
				1954	June 1, 1954	14.35	6,460
1941	Mar. 22, 1941	11.9	3,840	1955	Feb. 20, 1955	12.93	5,120
1942	June 29, 1942	11.6	3,640				
1943	Aug. 13, 1943	14.95	6,820	1956	July 8, 1956	10.67	3,490
1944	June 13, 1944	19.8	18,000				
1945	July 21, 1945	12.6	4,720				

[a]Computed by the Corps of Engineers.

GALENA RIVER BASIN

4150. Galena River at Buncombe, Wis.

Location.--Lat 42°30'50", long 90°22'40", near center of sec. 33, T. 1 N., R. 1 E., at Buncombe, 1.5 miles upstream from Scrabble Branch, 2 miles upstream from Wisconsin-Illinois State line, and 3.5 miles southeast of Hazel Green.

Drainage area.--128 sq mi.

Gage.--Recording. Datum of gage is 682.77 ft above mean sea level, adjustment of 1912 (Corps of Engineers benchmark). Prior to Dec. 1, 1939, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 8,100 cfs and extended above by logarithmic plotting and on basis of slope-area measurement at gage height 15.86 ft.

Historical data.--The flood of February 20, 1937 was 3 ft higher in Galena than any known flood ---from the Benton Advocate.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1937	February 1937	17.1	18,000	1948	Feb. 27, 1948	14.3	8,960
				1949	Mar. 4, 1949	13.2	6,600
1940	Mar. 18, 1940	11.6	3,860	1950	July 1, 1950	13.4	7,000
1941	Mar. 20, 1941	9.86	2,760	1951	July 8, 1951	13.86	6,800
1942	Aug. 2, 1942	12.8	5,820	1952	Mar. 10, 1952	12.97	6,200
1943	Aug. 13, 1943	13.58	7,420	1953	Feb. 20, 1953	15.68	12,400
1944	Mar. 14, 1944	12.09	4,640	1954	June 22, 1954	12.35	5,010
1945	June 28, 1945	11.94	4,370	1955	Feb. 20, 1955	13.52	7,250
1946	Jan. 5, 1946	13.9	8,080	1956	Feb. 24, 1956	11.32	3,390
1947	June 13, 1947	12.8	5,820				

4155. East Fork Galena River at Council Hill, Ill.

Location.--Lat 42°28'05", long 90°20'20", in W½ sec. 31, T. 29 N., R. 2 E., at Council Hill, 3 miles upstream from mouth and 6 miles northeast of Galena. Records include flow of unnamed Creek which enters just downstream from gage.

Drainage area.--20.1 sq mi, includes that of unnamed creek.

Gage.--Recording. Datum of gage is 686.59 ft above mean sea level, adjustment of 1912 (Corps of Engineers benchmark). Prior to Dec. 1, 1939, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 1,500 cfs and extended above on basis of slope-area measurements at gage heights 9.33 and 15.3 ft and a contracted-opening measurement at gage height 15.3 ft.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1940	Aug. 10, 1940	5.83		565	1949	Aug. 11, 1949	10.35		5,250
					1950	July 1, 1950	9.33		3,590
1941	Sept. 8, 1941	6.80		942					
1942	June 11, 1942	9.50		3,860	1951	July 8, 1951	9.60		4,000
1943	Aug. 13, 1943	12.10		8,620	1952	Oct. 20, 1951	6.31		842
1944	June 12, 1944	8.56		2,060	1953	Feb. 20, 1953	8.65		2,770
1945	May 27, 1945	10.26		5,080	1954	June 20, 1954	5.84		652
					1955	Feb. 19, 1955	6.87	1.0	
1946	Jan. 5, 1946	7.05		1,540		Feb. 20, 1955	5.92		634
1947	Apr. 29, 1947	15.3		16,600					
1948	Feb. 27, 1948	8.77		2,890	1956	Aug. 30, 1956	7.66		1,740

MAQUOKETA RIVER BASIN

4170. Maquoketa River near Manchester, Iowa

Location.--Lat 42°27'25", long 91°25'55", in NW¼NE¼ sec. 9, T. 88 N., R. 5 W., 2 miles southeast of Manchester and 4.7 miles downstream from Honey and Prairie Creeks.

Drainage area.--305 sq mi.

Gage.--Recording. Concrete control since June 1, 1935. Datum of gage is 895.06 ft above mean sea level, adjustment of 1912.

Stage-discharge relation.--Defined by current-meter measurements below 10,000 cfs and extended above by velocity-area studies.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1925	June 15, 1925	-	25,400	1945	Aug. 14, 1945	9.91	3,060
1933	May 20, 1933	9.2	2,850	1946	Jan. 6, 1946	14.9	9,130
1934	Jan. 22, 1934	6.2	695	1947	June 13, 1947	21.4	20,000
1935	Mar. 5, 1935	10.4	4,880	1948	Feb. 28, 1948	13.5	7,340
				1949	Mar. 5, 1949	12.3	6,020
1936	Mar. 10, 1936	10.5	4,280	1950	Mar. 7, 1950	14.7	8,920
1937	Mar. 4, 1937	14.2	8,150				
1938	Feb. 6, 1938	12.1	5,860	1951	July 9, 1951	19.65	16,800
1939	May 27, 1939	7.7	1,790	1952	Mar. 11, 1952	9.12	2,780
1940	June 23, 1940	8.9	2,770	1953	Feb. 20, 1953	10.66	4,260
				1954	May 1, 1954	9.60	3,230
1941	Sept. 8, 1941	14.6	8,880	1955	Feb. 20, 1955	9.32	[a]2,500
1942	Nov. 1, 1941	12.4	6,140				
1943	Mar. 16, 1943	11.7	5,320	1956	May 28, 1956	8.21	2,060
1944	June 16, 1944	14.0	8,010				

[a]About.

4185. Maquoketa River near Maquoketa, Iowa
(Published as "below North Fork Maquoketa River near Maquoketa" prior to 1940)

Location.--Lat 42°05'05", long 90°37'55", in SW¼NE¼ sec. 17, T. 84 N., R. 3 E., 20 ft upstream from bridge on State Highway 62, 1,200 ft upstream from Prairie Creek, 2.0 miles northeast of Maquoketa, and 2.2 miles downstream from North Fork.

Drainage area.--1,553 sq mi.

Gage.--Recording. Datum of gage is 636.52 ft above mean sea level, adjustment of 1912. Prior to July 14, 1924, nonrecording gage at site 40 ft downstream at same datum.

Stage-discharge relation.--Defined by current-meter measurements below 45,000 cfs.

Historical data.--A flood probably in 1903, reached a stage of about 23.5 ft (discharge, 43,000 cfs).

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1914	Sept. 15, 1914	17.0	13,700	1936	Mar. 11, 1936	14.1	10,000
1915	Sept. 28, 1915	19.6	18,400	1937	Mar. 6, 1937	20.1	27,500
				1938	Feb. 6, 1938	-	13,600
1916	Mar. 27, 1916	22.6	39,100	1939	July 17, 1939	13.2	8,610
1917	June 13, 1917	16.9	16,300	1940	June 23, 1940	18.3	17,600
1918	Feb. 15, 1918	15.8	13,000				
1919	Mar. 17, 1919	16.8	16,000	1941	Sept. 9, 1941	22.1	25,600
1920	Mar. 23, 1920	15.5	12,300	1942	Aug. 2, 1942	11.9	7,060
				1943	Mar. 16, 1943	18.3	21,200
1921	Sept. 17, 1921	15.2	11,000	1944	June 27, 1944	24.7	48,000
1922	Feb. 24, 1922	18.9	23,400	1945	Aug. 15, 1945	15.9	12,600
1923	Apr. 4, 1923	20.6	30,300				
1924	Aug. 20, 1924	19.8	19,300	1946	Jan. 6, 1946	22.2	37,100
1925	June 17, 1925	19.7	26,600	1947	June 14, 1947	20.0	28,000
				1948	Feb. 28, 1948	20.0	28,200
1926	Mar. 1, 1926	12.9	8,320	1949	Mar. 5, 1949	18.3	21,600
1927	May 24, 1927	16.0	12,900	1950	Mar. 7, 1950	18.2	21,000
1928	Feb. 7, 1928	-	18,700				
1929	Mar. 14, 1929	20.6	30,300	1951	Feb. 26, 1951	18.20	21,200
1930	Feb. 20, 1930	12.9	8,320	1952	Mar. 11, 1952	15.57	14,000
				1953	Feb. 20, 1953	21.61	33,900
1931	Sept. 25, 1931	11.0	6,090	1954	Aug. 18, 1954	8.52	4,980
1932	Mar. 26, 1932	15.0	11,400	1955	Feb. 20, 1955	15.04	13,000
1933	May 21, 1933	13.5	9,130				
1934	July 6, 1934	13.8	7,680	1956	Aug. 30, 1956	11.70	8,170
1935	Mar. 5, 1935	15.5	12,200				

APPLE RIVER BASIN

4190. Apple River near Hanover, Ill.

Location.--Lat 42°15'05", long 90°17'10", in NE¼NW¼ sec. 16, T. 26 N., R. 2 E., 0.3 mile southwest of Hanover and 12 miles upstream from mouth.

Drainage area.--244 sq mi.

Gage.--Recording. Datum of gage is 591.00 ft above mean sea level, adjustment of 1912. Prior to Oct. 1, 1945, nonrecording gage at site 3.5 mile downstream at datum 9.48 ft lower.

Stage-discharge relation.--Defined by current-meter measurements.

4190. Apple River near Hanover, Ill.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1935	Mar. 5, 1935	18.0		3,970	1946	Jan. 5, 1946	26.1	0.8	12,000
					1947	June 13, 1947	17.6		5,970
1936	Mar. 4, 1936	15.0		2,760	1948	Feb. 28, 1948	22.8		9,620
1937	Feb. 21, 1937	30.7		11,300	1949	Jan. 16, 1949	17.6	1.8	
1938	Feb. 6, 1938	24.7		7,590		Feb. 24, 1949	16.3		5,250
1939	Mar. 10, 1939	13.7		2,200	1950	Mar. 6, 1950	18.2	3.6	
1940	June 23, 1940	16.4		3,170		Sept. 21, 1950	16.1		5,150
1941	Mar. 21, 1941	19.5		4,700	1951	July 9, 1951	23.17		9,980
1942	Aug. 8, 1942	12.8		1,930	1952	Nov. 13, 1951	14.94		4,550
1943	Mar. 16, 1943	25.0		7,770	1953	Feb. 20, 1953	22.36		9,300
1944	Apr. 24, 1944	18.6		4,240	1954	Apr. 25, 1954	11.26		3,000
1945	June 28, 1945	19.7		4,770	1955	Feb. 20, 1955	21.18		8,380
					1956	Feb. 25, 1956	12.46		3,480

ROCK RIVER BASIN

4230. West Branch Rock River near Waupun, Wis.

Location.--Lat 43°40', long 88°39', in sec. 24, T. 14 N., R. 15 E., 40 ft downstream from bridge on U. S. Highway 151, about 3 miles upstream from South Branch, and 3.5 miles northeast of Waupun.

Drainage area.--41.4 sq mi.

Gage.--Recording. Datum of gage is 870.53 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Mar. 27, 1949	4.11	246	1953	Mar. 16, 1953	5.22	509
1950	Mar. 27, 1950	6.56	949	1954	May 31, 1954	2.91	80
				1955	Oct. 4, 1954	4.58	332
1951	Mar. 29, 1951	4.73	386				
1952	Mar. 21, 1952	5.48	602	1956	Apr. 1, 1956	5.76	600

4235. South Branch Rock River at Waupun, Wis.

Location.--Lat 43°38', long 88°43', in sec. 33, T. 14 N., R. 15 E., 100 ft upstream from bridge on U. S. Highway 151 at Waupun and 2 miles upstream from mouth.

Drainage area.--62.8 sq mi.

Gage.--Recording. Datum of gage is 863.46 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 700 cfs.

4235. South Branch Rock River at Waupun, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Mar. 27, 1949	5.24	398	1953	Feb. 21, 1953	5.70	507
1950	Mar. 27, 1950	6.56	818	1954	July 7, 1954	4.00	168
				1955	Oct. 4, 1954	5.91	570
1951	Mar. 29, 1951	5.95	584				
1952	Mar. 21, 1952	6.96	1,000	1956	Apr. 2, 1956	6.65	753

4240. East Branch Rock River near Mayville, Wis.

Location.--Lat 43°32', long 88°34', in NW¼ sec. 10, T. 12 N., R. 16 E., 500 ft downstream from Kekoskee Dam, 0.3 mile upstream from Gill Creek, and 2 miles northwest of Mayville.

Drainage area.--179 sq mi.

Gage.--Recording. Datum of gage is 857.20 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 2,100 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Mar. 29, 1950	8.80	2,160	1954	July 7, 1954	6.12	773
				1955	Oct. 3, 1954	8.02	1,600
1951	Mar. 30, 1951	7.94	1,530				
1952	Mar. 21, 1952	8.74	2,080	1956	Apr. 3, 1956	6.85	1,010
1953	Feb. 21, 1953	-	700				

4255. Rock River at Watertown, Wis.

Location.--Lat 43°11'25", long 88°43'35", in sec. 4, T. 8 N., R. 15 E., at Watertown, 700 ft downstream from Milwaukee Street Bridge and 1.1 miles downstream from Silver Creek.

Drainage area.--971 sq mi, approximately.

Gage.--Recording. Datum of gage is 792.58 ft above mean sea level, datum of 1929. Prior to Sept. 26, 1933, nonrecording gage at site 700 ft upstream at different datum.

Stage-discharge relation.--Defined by current-meter measurements below 5,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1932	Jan. 13, 1932	2.39		1,570	1945	Dec. 21, 1944	3.58	1.0	
1933	May 20, 1933	3.90		3,390		Mar. 25,26, 1945	3.23		1,040
1934	Apr. 4, 1934	3.08		1,010					
1935	Mar. 20, 1935	3.94		1,980	1946	Mar. 14, 1946	5.27		3,600
					1947	Apr. 11, 1947	3.74		1,580
1936	Mar. 22, 1936	3.80		1,810	1948	Mar. 21, 1948	5.05		3,290
1937	Feb. 21, 1937	4.50		2,800	1949	Mar. 15, 1949	3.55		1,380
1938	Feb. 6, 1938	5.31	1.5		1950	July 20, 1950	4.43		2,430
	Feb. 13, 1938	4.84		3,340					
1939	Apr. 5, 1939	3.57		1,460	1951	Apr. 29, 1951	5.10		3,340
1940	June 28, 1940	4.76		2,800	1952	Mar. 24, 1952	5.69		4,180
					1953	Mar. 27, 1953	3.90		1,810
1941	Apr. 20, 1941	3.82		1,670	1954	July 7, 1954	3.94		1,640
1942	June 12, 1942	3.35		1,170	1955	Aug. 2, 1955	4.13		2,090
1943	Mar. 16, 1943	5.36		3,760					
1944	Mar. 14, 1944	4.18		2,000	1956	May 13, 1956	3.87		1,770

4260. Crawfish River at Milford, Wis.

Location.--Lat 43°06'00", long 88°51'00", in sec. 4, T. 7 N., R. 14 E., on upstream side of highway bridge in Milford, 1 mile downstream from Rock Creek and 8 miles upstream from mouth.

Drainage area.--732 sq mi, approximately.

Gage.--Nonrecording. Altitude of gage is 780 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 6,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1932	Nov. 26, 1931	4.44	1,370	1945	Mar. 16, 1945	5.00	1,690
1933	Apr. 3, 1933	6.46	2,650				
1934	Apr. 6, 1934	4.06	1,140	1946	Mar. 17, 1946	8.88	4,260
1935	Mar. 14, 1935	6.6	2,720	1947	June 18, 1947	5.23	1,810
				1948	Mar. 22, 1948	8.3	3,850
1936	Mar. 18, 1936	6.08	2,240	1949	Mar. 11,12, 1949	5.29	1,870
1937	Mar. 9, 1937	7.24	3,110	1950	July 24, 1950	7.78	3,310
1938	Sept. 22, 1938	7.6	3,370				
1939	Jan. 12, 1939	5.3	1,720	1951	Mar. 10, 1951	6.98	2,970
1940	June 28, 1940	5.26	1,840	1952	Mar. 25, 1952	8.76	3,940
				1953	Aug. 8, 1953	5.44	1,870
1941	Mar. 27, 1941	6.4	2,560	1954	July 10, 1954	5.75	2,070
1942	Mar. 22, 1942	4.16	1,180	1955	Mar. 16, 1955	4.88	1,520
1943	Mar. 22, 1943	8.2	3,780				
1944	Mar. 18, 1944	6.5	2,640	1956	Apr. 3, 1956	5.20	1,700

4265. Whitewater Creek near Whitewater, Wis.

Location.--Lat 42°46'40", long 88°41'40", in NW¼ sec. 26, T. 4 N., R. 15 E., at downstream end of highway culvert, 3,000 ft downstream from Whitewater Lake and 4 miles south of Whitewater.

Drainage area.--7.2 sq mi.

Gage.--Nonrecording gage and Cippoletti weir control. Altitude of gage is 865 ft (from topographic map). Prior to July 3, 1946, nonrecording gage 15 ft upstream from culvert with different control at datum 0.20 ft lower.

Stage-discharge relation.--Defined by current-meter measurements below 16 cfs.

Remarks.--Entire flow from 6.6 sq mi of drainage area impounded in Whitewater Lake Jan. 29 to Feb. 3, 1928, and since Jan. 29, 1947, but there may be considerable seepage from the lake.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1926	Apr. 9, 1926	1.45	12.8	1950	June 13, 1950	2.2	16.3
1927	May 28, 1927	2.0	24.8				
1928	July 3, 1928	1.2	8.4	1951	Feb. 26, 1951	1.54	8.20
				1952	(a)	1.92	12.6
1947	Mar. 23, 1947	1.2	4.8	1953	Feb. 20, 1953	1.54	8.29
1948	Mar. 19, 1948	1.74	10.5	1954	June 3, 1954	1.34	6.24
1949	Feb. 24, 1949	1.8	11.2				

[a] Nov. 13, 1951 and Mar. 18, 1952.

4270. Whitewater Creek at Whitewater, Wis.

Location.--Lat 42°49'00", long 88°42'30", in SW¼ sec. 10, T. 4 N., R. 15 E., at upstream side of highway bridge, 0.5 mile upstream from Tripp Lake pond and 1 mile southeast of Whitewater.

Drainage area.--16.7 sq mi.

Gage.--Nonrecording. Altitude of gage is 825 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 400 cfs.

Remarks.--Entire flow from 6.6 sq mi of drainage area impounded in Whitewater Lake Jan. 29 to Feb. 3, 1928, and since Jan. 29, 1947.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1927	May 28, 1927	4.3	445	1950	June 13, 1950	5.1	451
1928	July 3, 1928	3.1	176				
				1951	Mar. 30, 1951	2.43	98
1947	June 2, 1947	2.7	113	1952	Nov. 13, 1951	4.15	300
1948	Mar. 19, 1948	4.2	330	1953	Feb. 21, 1953	2.83	132
1949	Mar. 4, 1949	2.3	89	1954	July 7, 1954	2.8	127

4295. Yahara River near McFarland, Wis.

Location.--Lat 43°00'30", long 89°18'15", in SW¼ sec. 3, T. 6 N., R. 10 E., just upstream from bridge on U. S. Highway 51, 400 ft downstream from outlet of Lake Waubesa and 1 mile southwest of McFarland.

Drainage area.--351 sq mi.

Gage.--Recording. Datum of gage is 840.2 ft above mean sea level (Public Service Commission of Wisconsin benchmarks). Prior to Dec. 23, 1934, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 800 cfs.

Remarks.--Flow regulated by dams at outlets of Lake Mendota and Lake Waubesa.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1931	Oct. 8-16, 1930	-	211	1945	Mar. 19-27, 1945	-	255
1932	Nov. 24-29, 1931	-	353				
1933	May 21, 1933	5.89	655	1946	Mar. 19-21,24,25	5.56	613
1934	Apr. 11,12, 1934	3.94	223	1947	Apr. 11, 1947	4.66	404
1935	Apr. 12,13, 1935	4.48	370	1948	Mar. 23,24, 1948	5.2	531
				1949	Apr. 1-3, 1949	4.6	350
1936	Apr. 7,8, 10-20	5.00	347	1950	July 20-22, 1950	-	600
1937	Mar. 13-18, 21	6.10	672				
1938	(a)	5.81	508	1951	Apr. 30, 1951	4.70	416
1939	Oct. 1, 1938	5.46	439	1952	Apr. 3, 1952	5.19	531
1940	Apr. 11, 1940	4.01	258	1953	Mar. 16, 1953	5.03	496
				1954	July 11, 1954	6.21	500
1941	Apr. 4-7, 1941	4.88	416	1955	Apr. 25, 1955	4.59	391
1942	June 10, 1942	4.53	350				
1943	Mar. 26-29, 1943	5.05	462	1956	May 18, 1956	4.36	338
1944	Apr. 3,4, 1944	4.88	462				

[a] Feb. 18-25, Sept. 21-24, 1938.

4305. Rock River at Afton, Wis.

Location.--Lat 42°36'40", long 89°04'10", in sec. 27, T. 2 N., R. 12 E., 20 ft downstream from highway bridge in Afton and 0.8 mile upstream from Bass Creek.

Drainage area.--3,300 sq mi, approximately.

Gage.--Recording. Datum of gage is 742.36 ft above mean sea level, datum of 1929. Prior to Aug. 21, 1932, nonrecording gage at same site. Prior to Oct. 1, 1933, at datum 1 ft higher.

Stage-discharge relation.--Defined by current-meter measurements below 12,000 cfs.

Historical data.--The flood of March 23-24, 1929 was higher than the flood in 1905, which was previous high, by about 0.1 ft----from the Janesville Gazette.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1914	Sept. 15, 1914	7.6		7,050	1936	Mar. 26, 1936	7.07		4,600
1915	Sept. 13, 1915	10.0		10,500	1937	Feb. 21, 1937	12.77	3.0	
						Mar. 4, 1937	10.23		8,510
1916	Apr. 1, 1916	9.14		9,270	1938	Jan. 24, 1938	10.44		9,190
1917	Apr. 1, 1917	9.0		9,050		Feb. 6, 1938	11.90	2.0	
1918	Mar. 24-26, 1918	10.46		12,700	1939	Oct. 1, 1938	9.10		7,460
1919	Mar. 15, 1919	4.9		3,560	1940	Aug. 26, 1940	10.80		10,700
1920	Apr. 1, 1920	9.3		10,100					
					1941	Apr. 4, 1941	7.43		4,990
1921	May 2, 1921	8.28		8,200	1942	Mar. 25, 1942	5.94		3,300
1922	Apr. 11, 1922	8.65		8,640	1943	Mar. 16, 1943	11.04		11,100
1923	Apr. 12, 1923	9.55		10,400	1944	Mar. 14, 1944	9.19		7,620
1924	Aug. 20, 1924	7.7		7,100	1945	Mar. 21, 1945	6.31		3,830
1925	Feb. 23, 1925	6.04		4,720					
					1946	Mar. 23, 1946	10.46		10,000
1926	Mar. 31, 1926	6.39		5,180	1947	Apr. 16, 1947	6.98		4,490
1927	Mar. 20, 1927	6.77		5,750	1948	Mar. 19,27, 1948	10.2		9,390
1928	Apr. 14, 1928	7.42		6,670	1949	Mar. 5, 1949	7.79		5,520
1929	Mar. 23,24, 1929	10.81		13,000	1950	Apr. 4,July 26-28	8.2		6,350
1930	Mar. 4, 1930	5.96		4,620					
					1951	May 4, 1951	9.16		7,850
1931	Mar. 28, 1931	2.50		1,380	1952	Mar. 29, 1952	10.39		9,810
1932	Mar. 27, 1932	5.8		4,380	1953	Feb. 20, 1953	8.06		6,200
1933	May 20, 1933	9.03		8,990	1954	July 14, 1954	6.93		4,620
1934	Apr. 11, 1934	5.36		2,890	1955	Oct. 11, 1954	6.82		4,480
1935	Mar. 10, 1935	8.52		6,350					
					1956	May 16, 1956	6.80		4,460

4315. Turtle Creek near Clinton, Wis.

Location.--Lat 42°35'55", long 88°51'50", in SE¼ sec. 29, T. 2 N., R. 14 E., 15 ft downstream from highway bridge, 2.5 miles north of Clinton, 11 miles northeast of Beloit, and 14 miles upstream from mouth.

Drainage area.--186 sq mi.

Gage.--Recording. Datum of gage is 817.00 ft above mean sea level (levels by the Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements below 5,500 cfs and extended above by logarithmic plotting.

Historical.--Maximum stage known, 12.09 ft in February 1938, from floodmarks (discharge, 10,700 cfs).

4315. Turtle Creek near Clinton, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1940	Aug. 26, 1940	7.18		2,020	1949	Feb. 24, 1949	10.22		6,560
					1950	Mar. 6, 1950	9.5		4,150
1941	Mar. 3, 1941	7.70	2.0						
	Mar. 21, 1941	5.97		1,120	1951	Feb. 26, 1951	9.56	3.0	
1942	Sept. 3, 1942	7.10		1,950		Mar. 3, 1951	6.93		2,060
1943	Mar. 16, 1943	9.29		3,950	1952	Mar. 12, 1952	6.81		1,930
1944	Mar. 14, 1944	8.34		2,980	1953	Feb. 20, 1953	7.23		2,350
1945	Sept. 28, 1945	8.19		3,380	1954	Apr. 25, 1954	4.84		756
					1955	Feb. 20, 1955	7.17		2,270
1946	Jan. 5, 1946	9.88		5,850					
1947	Mar. 12, 1947	5.86		1,270	1956	June 21, 1956	4.5		590
1948	Mar. 19, 1948	9.46		5,350					

4325. Pecatonica River at Darlington, Wis.

Location.--Lat 42°40'30", long 90°06'55", in NE¼ sec. 3, T. 2 N., R. 3 E ., in Darlington, 3 miles upstream from Otter Creek.

Drainage area.--274 sq mi.

Gage.--Recording. Datum of gage is 801.90 ft above mean sea level, adjustment of 1912. Prior to Dec. 19, 1939, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 11,000 cfs and extended above on basis of slope-area measurement.

Historical data.--The flood of July 16, 1950 was the highest ever recorded---from the Republican Journal and the highest in history----from the Lafayette County News. Flood of Feb. 21, 1937, reached a stage of 17.6 ft, from floodmarks.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	Aug. 27, 1940	11.00	1,930	1949	Mar. 5, 1949	14.70	5,240
				1950	July 16, 1950	20.71	22,000
1941	Mar. 23, 1941	11.05	1,910				
1942	Aug. 2, 1942	14.96	3,460	1951	July 8, 1951	16.61	7,750
1943	Mar. 16, 1943	15.73	5,780	1952	Mar. 19, 1952	13.38	3,650
1944	Mar. 15, 1944	15.26	6,020	1953	Feb. 20, 1953	17.47	8,380
1945	June 30, 1945	11.39	2,040	1954	June 22, 1954	15.79	6,930
				1955	Feb. 21, 1955	13.05	3,340
1946	Jan. 6, 1946	17.18	8,300				
1947	June 14, 1947	14.05	3,860	1956	Mar. 3, 1956	10.70	[a]1,500
1948	Feb. 28, 1948	17.65	9,540				

[a]Peak ice affected, 1.4 ft backwater.

4330. East Branch Pecatonica River near Blanchardville, Wis.

Location.--Lat 42°47'10", long 89°51'40", in SE¼ sec. 26, T. 4 N., R. 5 E., at downstream side of bridge on State Highway 78, 1.5 miles south of Blanchardville, and 3.5 miles upstream from Sawmill Creek.

Drainage area.--221 sq mi.

Gage.--Recording. Datum of gage is 796.8 ft above mean sea level (unadjusted). Prior to Dec. 20, 1939, nonrecording gage at bridge 50 ft upstream at same datum. Auxiliary staff gage 2.7 miles upstream at same datum since Apr. 6, 1949.

Stage-discharge relation.--Defined by current-meter measurements below 10,000 cfs.

Historical data.--The flood of Feb. 28, 1948 was the worst since 1915----according to the Blanchardville Blade.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1940	Aug. 27, 1940	9.76		965	1950	July 17, 1950	15.73		7,150
1941	Mar. 23, 1941	11.34		1,310	1951	Apr. 29, 1951	10.06		1,070
1942	Aug. 2, 1942	12.98		2,550	1952	Mar. 19, 1952	12.62		3,250
1943	Mar. 16, 1943	14.04		5,450	1953	Feb. 20, 1953	15.25		8,750
1944	Mar. 15, 1944	14.00		5,440	1954	June 22, 1954	13.10		3,300
1945	June 29, 1945	11.24		1,690	1955	Oct. 11, 1954	11.29		1,830
						Feb. 21, 1955	13.55	2.5	
1946	Jan. 6, 1946	14.37		6,500					
1947	June 13, 1947	12.12		2,980	1956	Feb. 25, 1956	11.85	2.5	
1948	Feb. 28, 1948	15.74		11,700		Mar. 7, 1956	9.80		1,070
1949	Mar. 5, 1949	13.18		4,260					

4340. Pecatonica River at Dill, Wis.

Location.--Lat 42°35'10", long 89°49'30", in sec. 6, T. 1 N., R. 6 E., at Illinois Central Railroad bridge at Dill (Ramona Post Office), 1.3 miles downstream from East Branch and 9 miles upstream from Wisconsin-Illinois State line.

Gage.--Nonrecording. Datum of gage is 768.52 ft above mean sea level, unadjusted.

Stage-discharge relation.--Defined by current-meter measurements below 5,800 cfs and extended above on basis of velocity-area study.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1914	Sept. 15, 1914	11.9	5,080	1916	Mar. 27, 1916	19.1	13,100
1915	Sept. 14, 1915	15.0	6,830	1917	Mar. 15, 1917	12.7	5,520
				1918	Mar. 28, 1918	13.4	5,970
				1919	Mar. 17, 1919	13.7	6,770

4345. Pecatonica River at Martintown, Wis.

Location.--Lat 42°30'35", long 89°48'00", in SE¼ sec. 32, T. 1 N., R. 6 E., 20 ft downstream from highway bridge in Martintown, 0.3 mile upstream from Wisconsin-Illinois State line, and 9 miles downstream from Skinner Creek.

Drainage area.--1,040 sq mi, approximately.

Gage.--Recording. Datum of gage is 757.9 ft above mean sea level, datum of 1929. Prior to Jan. 6, 1940, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 14,000 cfs.

Historical data.--From floodmarks the stage for the Mar. 27, 1916 flood was 20.8 ft (discharge 14,000).

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1940	Aug. 26, 1940	13.11		3,680	1949	Mar. 8, 1949	17.86	2.0	6,500
					1950	July 19, 1950			9,380
1941	Mar. 24, 1941	14.88		5,820					
1942	Aug. 4, 1942	15.66		5,660	1951	July 11, 1951	18.56		8,580
1943	Mar. 18, 1943	17.12		7,900	1952	Mar. 13, 1952	16.52		7,250
1944	Feb. 28, 1944	16.48		7,240	1953	Feb. 23, 1953	18.80		10,600
1945	June 28, 1945	13.67		4,700	1954	June 25, 1954	13.12		4,180
					1955	Feb. 21, 1955	13.40		[a]3,700
1946	Jan. 7, 1946	18.77		11,000		Feb. 24, 1955	16.00	4.0	
1947	June 16, 1947	14.78		5,520					
1948	Feb. 29, 1948	20.24		13,400	1956	Feb. 29, 1956	12.0	2.7	2,280

[a]Maximum daily, 1.2 ft backwater from ice.

4355. Pecatonica River at Freeport, Ill.

Location.--Lat 42°18'13", long 89°36'57", in SE¼ sec. 30, T. 27 N., R. 8 E., on property of Public Service Co. of Northern Illinois in Freeport, 0.3 mile upstream from Stephenson Street Bridge and 5 miles upstream from Yellow Creek.

Drainage area.--1,330 sq mi, approximately.

Gage.--Recording. Datum of gage is 743.18 ft above mean sea level, datum of 1929. Prior to Jan. 15, 1935, nonrecording gage at site 0.9 mile downstream at datum 4.2 ft lower. Since July 13, 1943, auxiliary wire-weight gage 0.9 mile downstream at present datum.

Stage-discharge relation.--Defined by current-meter measurements to maximum discharge at present site, and below 17,000 cfs at former site.

Historical data.--Floods of March 1916 and 1929 were the greatest known in history of Pecatonica Valley.

4355. Pecatonica River at Freeport, Ill.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1914	Sept. 16, 1914	18.4		13,000	1936	Mar. 16, 1936	12.0		4,190
1915	Feb. 27, 1915	17.3		9,070	1937	Mar. 8, 1937	17.0	0.4	15,700
					1938	Feb. 9, 1938	16.3	.9	12,300
1916	Mar. 28, 1916	19.4		17,000	1939	Mar. 15, 1939	11.4		3,350
1917	Mar. 16, 1917	16.1		6,310	1940	Aug. 29, 1940	10.7		3,080
1918	Feb. 15, 1918	16.4		6,880					
1919	Mar. 16, 1919	17.6		10,000	1941	Mar. 25, 1941	12.8		4,840
1920	Mar. 16, 1920	15.5		5,380	1942	Aug. 3, 1942	13.8		5,820
					1943	Mar. 16, 1943	14.1		7,890
1921	Aug. 20, 1921	12.1		2,720	1944	Feb. 27, 1944	13.8		7,110
1922	Feb. 25, 1922	18.8		14,500	1945	June 29, 1945	12.7		5,170
1923	Apr. 6, 1923	18.4		13,100					
1924	Aug. 23, 1924	14.9		4,830	1946	Jan. 9, 1946	15.5		10,500
1925	Feb. 24, 1925	14.3		4,090	1947	June 13, 1947	12.3		4,570
					1948	Mar. 1, 1948	16.4		13,700
1926	June 14, 1926	15.1		4,040	1949	Mar. 9, 1949	14.6		8,640
1927	Feb. 5, 1927	14.9		4,400	1950	July 22, 1950	14.5		8,450
1928	Mar. 16, 1928	16.8		8,070					
1929	Mar. 16, 1929	19.8		18,400	1951	July 12, 1951	14.59		7,820
1930	Feb. 24, 1930	16.3		6,150	1952	Mar. 14, 1952	14.13		7,220
					1953	Feb. 24, 1953	15.04		8,820
1931	Sept. 27, 1931	11.0		2,280	1954	June 27, 1954	11.21		2,730
1932	Mar. 29, 1932	16.3		5,650	1955	Feb. 21, 1955	13.23		5,700
1933	Apr. 3, 1933	17.4		8,600					
1934	Jan. 14, 1934	12.2		2,660	1956	Feb. 28, 1956	10.10		2,600
1935	Mar. 9, 1935	12.5	0.5	4,600					

4365. Sugar River near Brodhead, Wis.

Location.--Lat 42°36'40", long 89°23'50", in SW¼ sec. 26, T. 2 N., R. 9 E., on downstream side of highway bridge 2 miles upstream from Jordan Creek and 2 miles southwest of Brodhead.

Drainage area.--527 sq mi.

Gage.--Recording. Datum of gage is 768.14 ft above mean sea level, datum of 1929. Prior to Oct. 17, 1938, nonrecording gage at same site and datum.

Stage-discharge relation.--Defined by current-meter measurements below 8,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1914	Sept. 15, 1914	8.98		7,670	1931	Sept. 28, 1931	2.8		823
1915	Sept. 13, 1915	11.40		14,800	1932	Mar. 27, 1932	7.38		4,350
					1933	Mar. 31, 1933	9.06		7,940
1916	Mar. 26, 1916	9.3		8,500	1934	Apr. 4, 1934	3.22		943
1917	June 13, 1917	7.2		3,310	1935	Mar. 12, 1935	5.58		2,180
1918	Mar. 14, 1918	8.3		5,900					
1919	Mar. 16, 1919	9.2		9,100	1936	Mar. 12, 1936	6.2		2,630
1920	Oct. 5, 1919	6.6		2,710	1937	Mar. 5, 1937	10.07	1.4	8,780
					1938	Feb. 6, 1938	9.9	.9	7,290
1921	Sept. 24, 1921	3.9		1,110	1939	Jan. 7, 1939	6.12		2,540
1922	Feb. 23, 1922	9.78		10,000	1940	Aug. 26, 1940	7.80		4,480
1923	Apr. 4, 1923	8.7		7,580					
1924	June 26, 1924	5.7		2,380	1941	Mar. 23, 1941	6.60		2,990
1925	Feb. 10, 1925	5.4		2,150	1942	Aug. 4, 1942	4.52		1,530
					1943	Mar. 16, 1943	9.86	1.1	7,000
1926	Mar. 20, 1926	5.3		2,140	1944	Mar. 15, 1944	7.92		4,640
1927	Feb. 6, 1927	7.7		4,650	1945	Mar. 6, 1945	3.40		1,060
1928	Mar. 13, 1928	7.6		4,440					
1929	Mar. 14, 1929	10.0		11,400	1946	Jan. 6, 1946	9.06		7,640
1930	Feb. 21, 1930	7.4		4,080	1947	June 15, 1947	4.84		1,830

4365. Sugar River near Brodhead, Wis.--Continued

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1948	Feb. 28, 1948	9.80		10,000	1953	Feb. 21, 1953	9.30		8,500
1949	Mar. 6, 1949	7.63		4,380	1954	July 9, 1954	4.55		1,760
1950	July 18, 1950	8.21		5,700	1955	Feb. 21, 1955	7.51		4,400
1951	Feb. 28, 1951	5.68		2,400	1956	Feb. 26, 1956	3.40	1.0	
1952	Mar. 19, 1952	7.52		4,380		Apr. 29, 1956	2.41		775

4370. Pecatonica River at Shirland, Ill.

Location.--Lat 42°26'10", long 89°11'50", in SW¼ sec. 11, T. 28 N., R. 11 E., at mouth of Sugar River, half a mile south of Shirland and 7½ miles upstream from mouth.

Drainage area.--2,540 sq mi, approximately.

Gage.--Nonrecording. Datum of gage is 711.79 ft above mean sea level, datum of 1929 (levels by Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements below 15,000 cfs.

Remarks.--Gage readings furnished by Corps of Engineers.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	Aug. 28, 1940	13.5	7,900	1949	Mar. 8, 1949	15.0	11,800
				1950	July 23, 1950	13.4	7,930
1941	Mar. 25, 1941	13.1	7,800				
1942	Aug. 7, 1942	11.7	6,290	1951	July 15-16, 1951	13.33	8,600
1943	Mar. 18, 1943	15.4	12,600	1952	Mar. 21, 1952	14.91	11,600
1944	Mar. 17, 1944	14.9	11,600	1953	Feb. 23, 1953	14.18	10,200
1945	July 2, 1945	10.8	5,400	1954	June 6, 1954	9.90	4,610
				1955	Feb. 22, 1955	13.50	8,960
1946	Jan. 8, 1946	16.8	15,400				
1947	Mar. 17, 1947	11.2	5,770	1956	Mar. 1, 1956	10.20	[a]3,600
1948	Mar. 21, 1948	16.7	15,200				

[a]Ice affected.

4375. Rock River at Rockton, Ill.
(Published as "below mouth of Pecatonica River, at Rockton", 1903-9; as "at Rockford" 1914-19)

Location.--Lat 42°27'05", long 89°04'20", in SE¼NW¼ sec. 24, T. 46 N., R. 1 E., on upstream side of bridge on State Highway 2 in Rockton and three-quarters of a mile downstream from Pecatonica River.

Drainage area.--6,290 sq mi, approximately. August 1914 to September 1919, 6,520 sq mi, approximately.

Gage.--Recording. Datum of gage is 707.94 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Oct. 1, 1906, nonrecording gage at same site at datum about 2 ft higher. July 30, 1914, to Apr. 30, 1919, nonrecording gage at site at Rockford about 21 miles downstream at different datum.

Stage-discharge relation.--Defined by current-meter measurements below 25,000 cfs at Rockton, and below 31,000 cfs at Rockford.

Historical data.--Flood of February 1937 reached a stage of 14.6 (backwater from ice) from painted floodmark.

4375. Rock River at Rockton, Ill.--Continued
(Published as "below mouth of Pecatonica River, at Rockton", 1903-9; as "at Rockford" 1914-19)

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1904	Mar. 22, 1904	13.8	28,500	1943	Mar. 16, 1943	12.9	22,800
1905	Mar. 26, 1905	11.6	23,000	1944	Mar. 15, 1944	10.9	17,300
				1945	Sept. 28, 1945	6.8	8,020
1906	Mar. 3, 1906	11.3	22,300				
1907	Jan. 20, 1907	8.1	16,200	1946	Jan. 9, 1946	12.2	20,900
1908	Mar. 10, 1908	7.8	16,000	1947	Apr. 11, 1947	7.4	9,200
				1948	Mar. 20, 1948	13.8	25,700
1915	Sept. 16, 1915	9.7	18,000	1949	Mar. 9, 1949	10.6	16,500
				1950	Mar. 27, July 26	9.5	13,800
1916	Mar. 30, 1916	13.1	32,500				
1917	June 23, 1917	7.9	13,900	1951	Mar. 4, 1951	9.57	14,000
1918	Mar. 14, 1918	11.4	24,600	1952	Mar. 22, 1952	11.82	19,800
1919	Mar. 19, 1919	11.5	24,600	1953	Feb. 24, 1953	9.57	14,000
				1954	July 11, 1954	6.36	7,450
1940	Aug. 27, 1940	10.5	15,800	1955	Feb. 20, 1955	8.91	12,400
1941	Mar. 25, 1941	8.5	11,500	1956	May 11, 1956	5.92	6,340
1942	Sept. 3, 1942	6.5	7,760				

4385. Kishwaukee River at Belvidere, Ill.

Location.--Lat 42°15'20", long 88°51'45", near southeast corner of sec. 27, T. 44 N., R. 3 E., at Belvidere sewage-treatment plant, 1¼ miles downstream from State Street Bridge in Belvidere and 3.0 miles downstream from Piscasaw Creek.

Drainage area.--525 sq mi.

Gage.--Nonrecording. Datum of gage is 738.34 ft above mean sea level, datum of 1929 (Corps of Engineers benchmark). Prior to Oct. 1, 1942, nonrecording gage at site 1¼ miles upstream at datum 3.99 ft higher.

Stage-discharge relation.--Defined by current-meter measurements below 9,000 cfs.

Historical.--Flood of January 24, 1938, reached a stage of 16.9 ft (backwater from ice), from information by sewage-plant employees.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	June 19, 1940	10.00	1,330	1949	Feb. 25, 1949	10.5	5,750
				1950	Apr. 26, 1950	10.1	5,240
1941	Mar. 22, 1941	10.6	2,240				
1942	Oct. 24, 1941	10.9	3,230	1951	Feb. 26, 1951	11.00	6,410
1943	Mar. 16, 1943	13.1	10,300	1952	Mar. 12, 1952	11.24	6,690
1944	Mar. 15, 1944	12.6	9,200	1953	June 12, 1953	5.58	1,850
1945	May 18, 1945	5.9	1,850	1954	Apr. 26, 1954	8.00	3,290
				1955	Feb. 21, 1955	6.08	2,140
1946	Jan. 6, 1946	12.9	9,830				
1947	June 2, 1947	6.2	2,170	1956	Apr. 30, 1956	3.87	935
1948	Mar. 20, 1948	12.0	8,000				

5280. Des Plaines River near Gurnee, Ill.

Location.--Lat 42°20'40", long 87°56'30", in SW¼ sec. 27, T. 45 N., R. 11 E., at upstream side of bridge on State Highway 120, 2½ miles southwest of Gurnee and 6 miles downstream from Mill Creek.

Drainage area.--215 sq mi.

Gage.--Recording. Datum of gage is 650.3 ft above mean sea level, datum of 1929 (Corps of Engineers benchmark). Prior to May 26, 1946, nonrecording gage on downstream side of bridge at same datum.

Stage-discharge relation.--Defined by current-meter measurements.

Peak stages and discharges

Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Ice effect (feet)	Discharge (cfs)
1946	Jan. 11, 1946	7.9		1,580	1951	Feb. 28, 1951	8.42		1,600
1947	June 3, 1947	5.8		931	1952	Apr. 15, 1952	8.36		1,830
1948	Mar. 21, 1948	9.2		2,620	1953	Mar. 16, 1953	3.97		391
1949	Feb. 25, 1949	7.4	0.2	1,300	1954	July 8, 1954	6.57		960
1950	Apr. 25-27, 1950	8.2		1,780	1955	Jan. 9, 1955	6.96		1,100
					1956	May 1-3, 1956	4.33		420

5465. Fox River at Wilmot, Wis.

Location.--Lat 42°30'40", long 88°10'45", in SW¼ sec. 30, T. 1 N., R. 20 E., on downstream side of highway bridge, 400 ft upstream from Wilmot Dam, 1 mile north of Wisconsin-Illinois State line, and 6 miles upstream from Fox chain of Lakes.

Drainage area.--880 sq mi, approximately.

Gage.--Nonrecording gage and concrete control. Datum of gage is 735.0 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 5,500 cfs.

Remarks.--Control is a broad-crested concrete dam. November 1941 to Apr. 13, 1949, 3 stop-log gates, and since Apr. 14, 1949, 3 lift gates, all 6 ft wide, in Wilmot Dam have been in operation; discharge through gates computed by weir and orifice formulas and added to flow over dam.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	Aug. 29, 1940	7.84	3,150	1949	Mar. 10, 1949	7.01	2,400
				1950	Mar. 29, 1950	7.00	2,400
1941	Mar. 23, 1941	7.28	2,130				
1942	Mar. 18, 1942	6.92	1,610	1951	Mar. 1, 1951	7.59	3,660
1943	Mar. 17, 1943	8.7	5,700	1952	Mar. 20, 1952	7.73	4,010
1944	Mar. 16, 1944	7.6	3,100	1953	Feb. 24, 1953	6.60	1,780
1945	June 29, 1945	6.81	2,130	1954	June 5, 1954	6.70	2,050
				1955	June 13, 1955	6.54	1,810
1946	Jan. 7, 1946	7.90	4,170				
1947	June 3, 1947	6.9	2,070	1956	May 12, 1956	6.35	1,680
1948	Mar. 21, 1948	8.3	5,000				

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