



A, Kalamazoo River Near Battle Creek, Mich.



B, Huron River at Milan, Ohio



C, Genesee River at Portageville, N. Y.

FIGURE 1.—GAGING STATION STRUCTURES

table. No mention is made of occasional days of ice effect if the degree of accuracy of daily records is not changed.

The data herein presented generally comprise a description of the station, a skeleton rating table, and a table showing the daily discharge and monthly and yearly discharge and runoff of the stream. Records are published for the water year which begins on October 1 and ends on September 30. A calendar for the water year 1953 is shown on page IV for the purpose of finding the day of the week for any date.

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

Previously published records of some station have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual reports. In order to make it easier to find such revised records, a paragraph headed "Revisions (water years)" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1933 stands for the water year October 1, 1932, to September 30, 1933. If no daily, monthly, or annual figures of discharge are concerned in the revision, that fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches

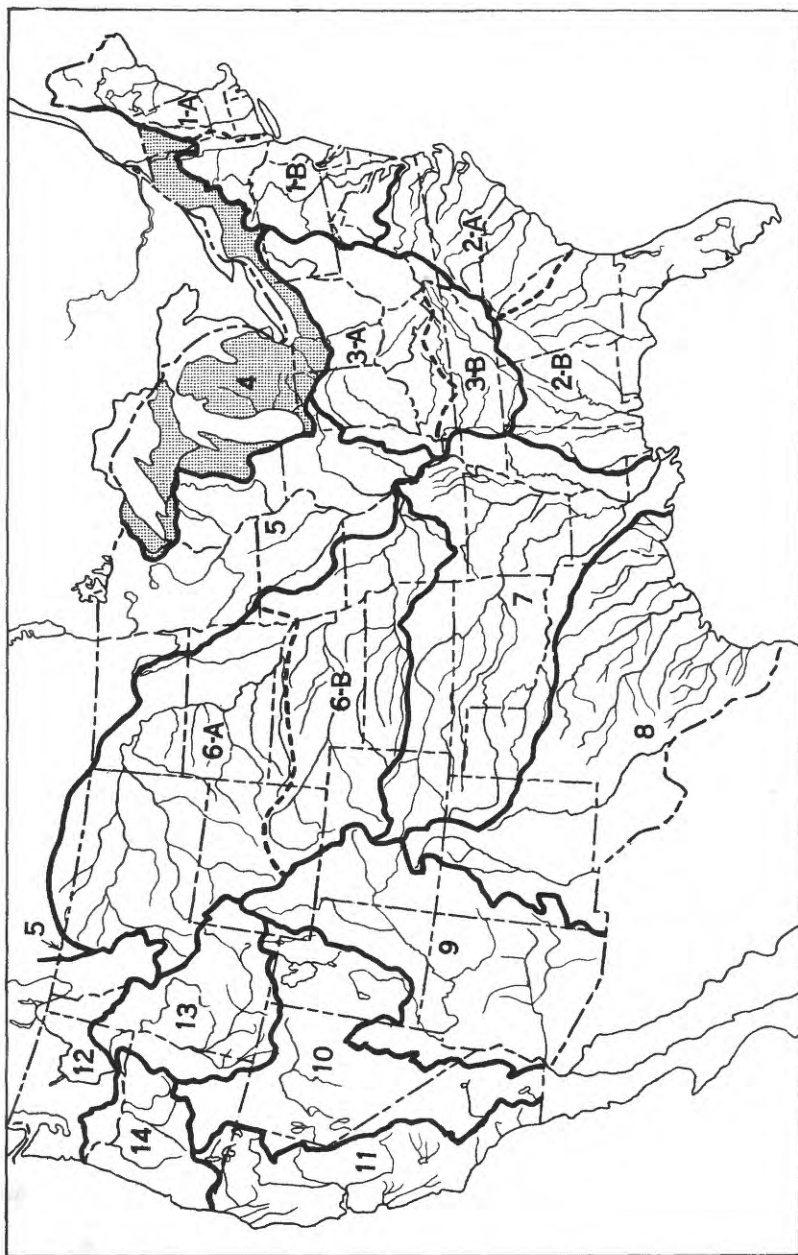


Figure 2. Map of the United States showing areas covered by the 18 annual volumes on surface water supply. The area covered by this report is shaded.

Part 1. North Atlantic slope basins, in two volumes:

- A, North Atlantic slope basins, Maine to Connecticut.
- B, North Atlantic slope basins, New York to York River.
2. South Atlantic slope and eastern Gulf of Mexico basins, in two volumes:
 - A, South Atlantic slope basins, James River to Savannah River.
 - B, South Atlantic slope and eastern Gulf of Mexico basins, Ogeechee River to Pearl River.
3. Ohio River basin, in two volumes:
 - A, Ohio River basin except Cumberland and Tennessee River basins.
 - B, Cumberland and Tennessee River basins.
4. St. Lawrence River basin.
5. Hudson Bay and upper Mississippi River basins.
6. Missouri River basin, in two volumes:
 - A, Missouri River basin above Sioux City, Iowa.
 - B, Missouri River basin below Sioux City, Iowa.
7. Lower Mississippi River basin.
8. Western Gulf of Mexico basins.
9. Colorado River basin.
10. The Great Basin.
11. Pacific slope basins in California.
12. Pacific slope basins in Washington and upper Columbia River basin.
13. Snake River basin.
14. Pacific slope basins in Oregon and lower Columbia River basin.

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

1. Copies may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., who will, on application, furnish lists giving prices. A list of Geological Survey publications may also be obtained by applying to the Director, Geological Survey, Washington, D. C.
2. Sets of the reports may be consulted in the libraries of the principal cities in the United States.
3. Sets are available for consultation in the offices of the Water Resources Division of the Geological Survey. Addresses of the offices in the area covered by this report are given on page 2.

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

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

(A = Annual Report; B = Bulletin)

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

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.

Records available.--March 1939 to September 1953.

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

Average discharge.--14 years, 33.9 cfs.

Extremes.--Maximum discharge during year, 745 cfs Mar. 15 (gage height, 3.70 ft); maximum gage height, 5.25 ft Feb. 20 (backwater from ice); minimum daily discharge, 1.0 cfs July 29.

1939-53: Maximum discharge, 2,140 cfs June 23, 1940 (gage height, 5.87 ft); maximum gage height, 10.74 ft Mar. 16, 1943 (ice jam), from floodmarks; no flow Jan. 17-29, 1940, Jan. 3, 1949.

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

Rating table, water year 1952-53, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 9, 10,
Aug. 3-25, Aug. 30 to Sept. 30)

0.9	1.0	1.5	34
1.0	2.8	1.7	61
1.1	5.8	2.0	127
1.2	10	2.5	273
1.3	16	3.0	453

Discharge, in cubic feet per second, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.5	5.8	8.5	6.9	5.2	90	49	58	9.1	5.8	2.3	4.3
2	5.2	5.8	9.1	6.8	5.8	72	48	348	9.1	5.2	18	4.6
3	5.8	5.8	9.6	6.7	7.0	57	41	453	9.1	4.6	74	4.9
4	5.8	5.5	10	6.6	10	48	42	263	10	4.3	273	8.6
5	6.3	*5.2	10	6.5	17	39	36	182	11	4.0	*146	8.6
6	6.7	4.9	10	6.4	42	30	33	130	10	4.0	55	5.8
7	6.7	a5.0	9.1	6.3	60	22	29	95	9.1	4.0	36	5.5
8	6.7	a5.2	8.6	6.3	72	*16	25	69	8.6	4.0	110	5.5
9	6.7	a5.2	9.2	6.2	80	12	26	50	9.1	3.7	91	5.2
10	6.7	a5.4	10	6.2	64	10	95	38	8.6	3.4	44	4.9
11	6.3	a5.4	11	6.1	56	63	107	31	*7.2	3.1	30	4.6
12	6.3	5.5	11	6.1	51	313	70	26	6.7	3.1	28	4.9
13	6.3	5.5	10	6.0	47	362	61	22	6.3	3.1	27	4.9
14	5.8	5.5	9.3	6.0	44	251	50	21	6.3	3.1	20	4.6
15	5.8	5.5	8.6	*6.3	39	362	60	20	5.8	3.4	15	4.9
16	a5.6	5.8	10	30	32	344	138	18	5.8	3.1	9.6	4.9
17	a5.4	8.2	9.1	45	14	238	74	17	5.8	3.7	11	4.9
18	a5.2	9.1	10	32	10	247	54	16	7.7	4.6	9.1	4.9
19	a5.0	7.2	9.1	17	9.1	202	45	15	9.1	4.6	8.2	5.2
20	4.3	5.5	9.1	9.0	250	143	41	14	7.2	4.3	7.2	5.2
21	5.2	4.9	10	8.4	225	188	35	14	5.8	4.0	7.2	4.9
22	5.5	4.6	12	8.0	195	202	*31	13	5.2	3.7	7.7	4.6
23	5.5	4.6	14	7.6	161	220	27	13	4.6	3.4	6.7	4.6
24	5.2	4.6	15	7.2	147	174	24	12	4.9	3.4	6.3	4.6
25	5.2	5.8	14	6.8	134	122	26	12	5.5	2.8	5.8	4.6
26	5.2	15	10	6.5	124	102	32	12	5.5	2.6	a5.8	4.6
27	5.5	18	9.2	6.1	116	93	34	12	5.2	2.3	a5.6	4.6
28	a5.6	19	8.6	5.8	108	76	30	10	17	1.4	a5.4	4.9
29	a5.7	19	8.1	5.6	-	58	35	9.6	18	1.0	a5.3	5.2
30	5.8	14	7.5	5.4	-	50	42	9.6	8.2	1.4	5.2	4.3
31	5.8	-	7.2	5.2	-	46	-	9.6	-	1.7	4.3	-
Total	178.9	226.5	306.9	301	2,126.9	4,252	1,440	2,010.8	241.5	106.8	1,079.7	153.8
Mean	5.77	7.55	9.90	9.71	76.0	137	48.0	64.9	8.05	3.45	34.8	5.13
Cfsm	0.077	0.101	0.132	0.129	1.01	1.83	0.640	0.865	0.107	0.046	0.464	0.068
In.	0.08	0.11	0.15	0.15	1.05	2.11	0.71	1.00	0.12	0.05	0.54	0.08

Calendar year 1952: Max 810 Min 4.6 Mean 48.2 Cfsm 0.643 In. 8.73
Water year 1952-53: Max 453 Min 1.0 Mean 34.0 Cfsm 0.453 In. 6.16

Peak discharge (base, 240 cfs).--Feb. 20 (time and discharge unknown); Mar. 12 (7 p.m.) 538 cfs (3.21 ft); Mar. 15 (1 p.m.) 745 cfs (3.70 ft); May 2 (9 to 11 p.m.) 589 cfs (3.33 ft); Aug. 4 (time unknown) 340 cfs (2.80 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of record for West Branch Fond du Lac River at Fond du Lac and Cedar Creek near Cedarburg.

Note.--Stage-discharge relation affected by ice Nov. 26 to Dec. 1, Dec. 9-14, Dec. 27 to Feb. 15, Feb. 20 to Mar. 8 (no gage-height record Nov. 27-30, Mar. 3-8).

STREAMS TRIBUTARY TO LAKE MICHIGAN

Lake de Neveu near Fond du Lac, Wis.

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

Drainage area.--2 sq mi, approximately.

Records available.--August 1936 to September 1953 (fragmentary).

Gage.--Staff gage and reference point in lakebed.

Extremes.--Maximum elevation observed during year, 97.90 ft Feb. 20; minimum, 97.25 ft July 24.
1936-53: Maximum elevation observed, 98.32 ft Mar. 27, 1950; minimum, 96.90 ft Aug. 15, 1936.

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

Elevation, in feet, water year October 1952 to September 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								7.86				7.30
2				7.50					7.41			
3					7.50	7.56	7.56			7.36		
4											7.61	7.33
5		7.38						7.79	7.40		7.59	
6				7.50	7.56	7.56						
7							7.55			7.33	7.58	
8								7.68				7.34
9				7.47		7.52			7.39			
10					7.55	7.60	7.59			7.30		
11									7.42		7.51	7.36
12								7.59	7.39			
13				7.46	7.55	7.69						
14							7.55			7.30	7.48	
15				7.47				7.53				7.31
16				7.47					7.39			
17					7.56	7.69	7.53			7.28		
18											7.40	7.33
19								7.51	7.39			
20					7.90	7.65						
21							7.46			7.29	7.37	
22							7.55	7.49				7.36
23									7.39			
24					7.80	7.67	7.51			7.25		
25											7.34	7.35
26								7.49	7.40			
27				7.49	7.63	7.62						
28							7.57			7.27	7.31	
29								7.44				7.35
30			7.51	7.48					7.42			
31										7.29		

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

