



A. Otselic River at Upper Lisle, N. Y.



B. Clark Creek near Carsonville, Pa.



C. Mattaponi River near Bowling Green, Va.

FIGURE 1.—GAGING-STATION STRUCTURES

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

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

The data herein presented generally comprise a description of the station, a skeleton rating table, and a table showing the daily discharge and monthly and yearly discharge 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 1956 is shown on page IV for the purpose of finding the day of the week for any date.

The description of the station gives the location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, general remarks, and notations of revisions of the previously published record. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "Location" for some stations, is that determined and used by the Corps of Engineers unless otherwise noted. Under "Records available" are given the periods for which there are published records generally equivalent to those at the present site. Under "Gage" are given the type of gage currently in use and the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of records available. Under "Average discharge" is given the average discharge for the number of years indicated. It is not given for stations having fewer than five complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. Under "Extremes" are given the maximum discharge and gage height; the minimum discharge if there is little or no regulation; the minimum daily discharge if there is extensive regulation (also the minimum discharge if useful); and the minimum gage height (unless it is of no importance). In the first paragraph, the data given are for the complete current water year unless otherwise specified. In the second paragraph, the data given are for the periods of record within the calendar year dates in the heading (not necessarily those for the complete years indicated by the heading dates). Reliable information concerning major floods that have occurred outside the period of record are given in the third or last paragraph under "Extremes." Unless otherwise qualified, the maximum discharge corresponds to the crest stage obtained by use of a water-stage recorder, a crest-stage indicator, or a nonrecording gage read at the time of the crest. If the

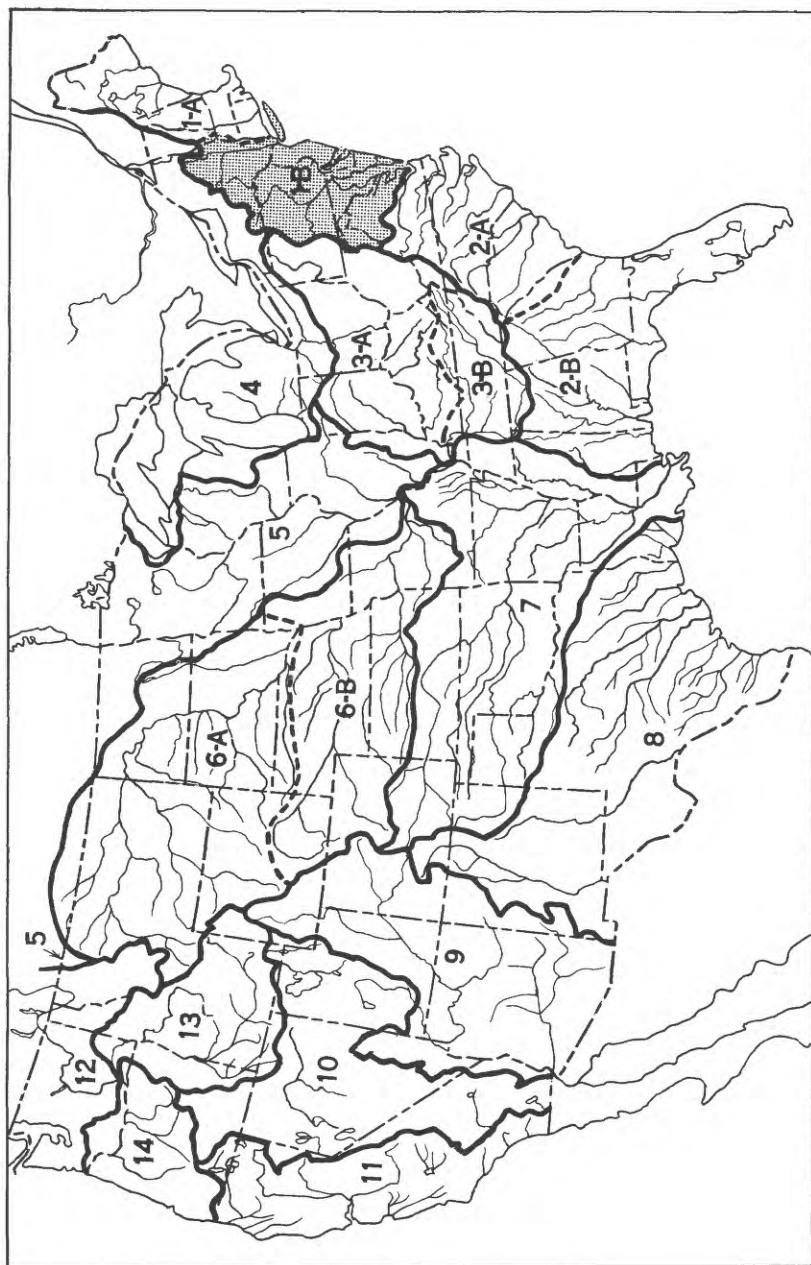


Figure 2.--Map of the United States showing areas covered by the 18 annual volumes on surface-water supply. The area covered by this report is shaded.

Reports containing compilations of records of discharge by States and drainage basins		
WSP	Period	Report
109.....	1890-1904	Hydrography of Susquehanna River basin (Pa., Md.).
192.....	1895-1906	The Potomac River basin (D. C., Md., W. Va.).
1105.....	1863-1945	Hydrology of Massachusetts, Part 1, Summary of streamflow and precipitation records.

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

State reports containing compilations of records of discharge			
State	Period	Report	Issued by
Maryland.....	1929-37	Flow data and draft storage curves for major streams in Maryland.	State Planning Commission and Water Resources Commission.
Do.....	1892-1943	Bull. 1, Summary of records of surface waters of Maryland and the Potomac River basin.	Department of Geology, Mines, and Water Resources.
Do.....	1931-48	Bull. 5, Anne Arundel County water resources.	Do.
Do.....	1944-49	Physical features of Washington County...	Do.
Do.....	1896-1950	Bull. 10, Prince Georges County water resources.	Do.
Do.....	1946-51	Bull. 11, St. Marys County water resources.	Do.
Do.....	1898-1952	Bull. 13, Geology and water resources of Garrett County.	Do.
Do.....	1886-1952	Bull. 14, The water resources of Howard and Montgomery Counties.	Do.
Do.....	1929-53	Bull. 16, The water resources of Somerset, Wicomico, and Worcester Counties.	Do.
Do.....	1897-54	Bull. 17, The water resources of Baltimore and Hartford Counties.	Do.
Do.....	1943-55	Bull. 18, The water resources of Caroline, Dorchester, and Talbot Counties.	Do.
Do.....	1896-1956	Bull. 21, The water resources of Cecil, Kent, and Queen Annes Counties.	Do.
New Jersey....	1892-1928	Bull. 33, Surface water supply of New Jersey.	Department of Conservation and Development.
Do.....	1928-34	Special Rept. 5, Surface water supply of New Jersey.	State Water Policy Commission.
Do.....	1934-40	Special Rept. 9, Surface water supply of New Jersey.	Do.
Do.....	1940-45	Special Rept. 12, Surface water supply of New Jersey.	Department of Conservation and Economic Development.
Pennsylvania..	1890-1911	Report of Water Supply Commission of Pennsylvania.	Water Supply Commission of Pennsylvania.
Do.....	1928-32	Streamflow records of Pennsylvania.....	Department of Forests and Waters.
Virginia.....	1895-1927	Bull. 31, Water resources of Virginia....	Virginia Geological Survey.
Do.....	1927-42	Bull. 4, Surface water supply of Virginia (Potomac, Rappahannock, and York River basins).	Virginia Conservation Commission.
Do.....	1942-50	Bull. 12, Surface water supply of Virginia (Potomac, Rappahannock, and York River basins).	Department of Conservation and Development.
Do.....	1951-55	Bull. 16, Surface water supply of Virginia (Potomac, Rappahannock, and York River basins).	Do.

Note.--In addition to the records contained in the reports listed above, the following States have issued annual or biennial reports in which are contained records of discharge: New York (also Board of Water Supply, City of New York, and City of Rochester) and Pennsylvania.

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

Report	Issued by
WSP 88: The Passaic flood of 1902.	U. S. Geological Survey
WSP 92: The Passaic flood of 1903.	Do.
WSP 147: Destructive floods in the United States in 1904.	Do.
WSP 162: Destructive floods in the United States in 1905.	Do.
WSP 771: Floods in the United States, magnitude and frequency.	Do.
WSP 773-E: The New York State flood of July 1935.	Do.
WSP 799: The floods of 1936, Part 2, Hudson River to Susquehanna River region.	Do.
WSP 800: The floods of 1936, Part 3, Potomac, James, and upper Ohio Rivers.	Do.

Special reports on floods published by the Geological Survey and other agencies--Continued

<u>Report</u>	<u>Issued by</u>
WSP 847: Maximum discharges at stream-measurement stations through September 1938.	U. S. Geological Survey.
WSP 867: Hurricane Floods of September 1938.	Do.
WSP 966: Minor floods of 1938 in North Atlantic States.	Do.
WSP 1134-A: Floods of August 4-5, 1943, in Central West Virginia.	Do.
WSP 1134-B: Floods of July 18, 1942, in North Central Pennsylvania.	Do.
WSP 1137-I: Summary of floods in the United States during 1950.	Do.
WSP 1227-C: Floods of 1950 and 1951 in the Catskill Mountain Region, New York.	Do.
Cir. 155: New Year flood of 1949 in New York and New England.	Do.
Bull. 10: Flood of June 1949 in Stokesville-Bridgewater area, Virginia.	Commonwealth of Virginia.

RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE GEOLOGICAL SURVEY

The table below contains a list of gaging stations for the area covered by this report, at which records of discharge were collected during the water year October 1955 to September 1956 by agencies other than the Geological Survey. The records of these stations are not contained in publications of the Geological Survey.

Records of discharge collected by agencies other than the Geological Survey			
Stream	Location	Period	Collected by
East Canada Creek.....	Inghams, N. Y.....	1913-56	Niagara Mohawk Power Corp.
Gunpowder Falls.....	Lock Raven, Md.....	1863-1956*	Baltimore Department of Public Works.
Hoosic River.....	Schaghticoke, N. Y.....	1910-56	Niagara Mohawk Power Corp.
Rudson River.....	Spier Falls, N. Y.....	1923-56*†	Do.
Sprite Creek.....	Below Canada Lake, N. Y.....	1913-56	Do.

* Monthly means only prior to 1937.

† Records for period 1912-23 published in water-supply papers of Geological Survey.

Note.--The Agricultural Research Service, United States Department of Agriculture, has been collecting records of runoff from the following selected areas in the North Atlantic slope basins, New York to York River: Beginning in 1937, from 4 areas, 13 to 2,215 acres, near Cohocton, N. Y.; beginning in 1941, from 2 areas about 3.5 acres each near College Park, Md.; and beginning in 1951, from 4 areas, 30 to 1,570 acres, in Dutchess County, N. Y.

HYDROLOGIC CONDITIONS

In the area covered by this report, several noteworthy floods occurred during water year 1956. At many gaging stations in southern New York and in parts of New Jersey and Pennsylvania, the flood of October 15-16 was the greatest in 30 to 40 years of record. A detailed report of this flood will be published in Water-Supply Paper 1420 (in preparation). The flood of March 8-9 in upper Susquehanna River in Pennsylvania was outstanding. Record-breaking local floods occurred July 20-21 in the Potomac River tributaries and other small streams in central Maryland. Monthly mean discharge of Seneca Creek near Dawsonville, Md., was the highest for July in 27 years of record; peak discharge July 21 was more than $1\frac{1}{2}$ times the previous maximum. By contrast, the monthly mean discharge of Potomac River at Paw Paw, W. Va., was record-low for January; for Rappahannock River at Fredericksburg, Va., the lowest in 48 years occurred in May and June. For three key gaging stations in the area covered by this report, a comparison of the monthly and yearly mean discharges during the 1956 water year with the median discharge for the 25-year period 1921-45 is shown in figure 3 on the following page.

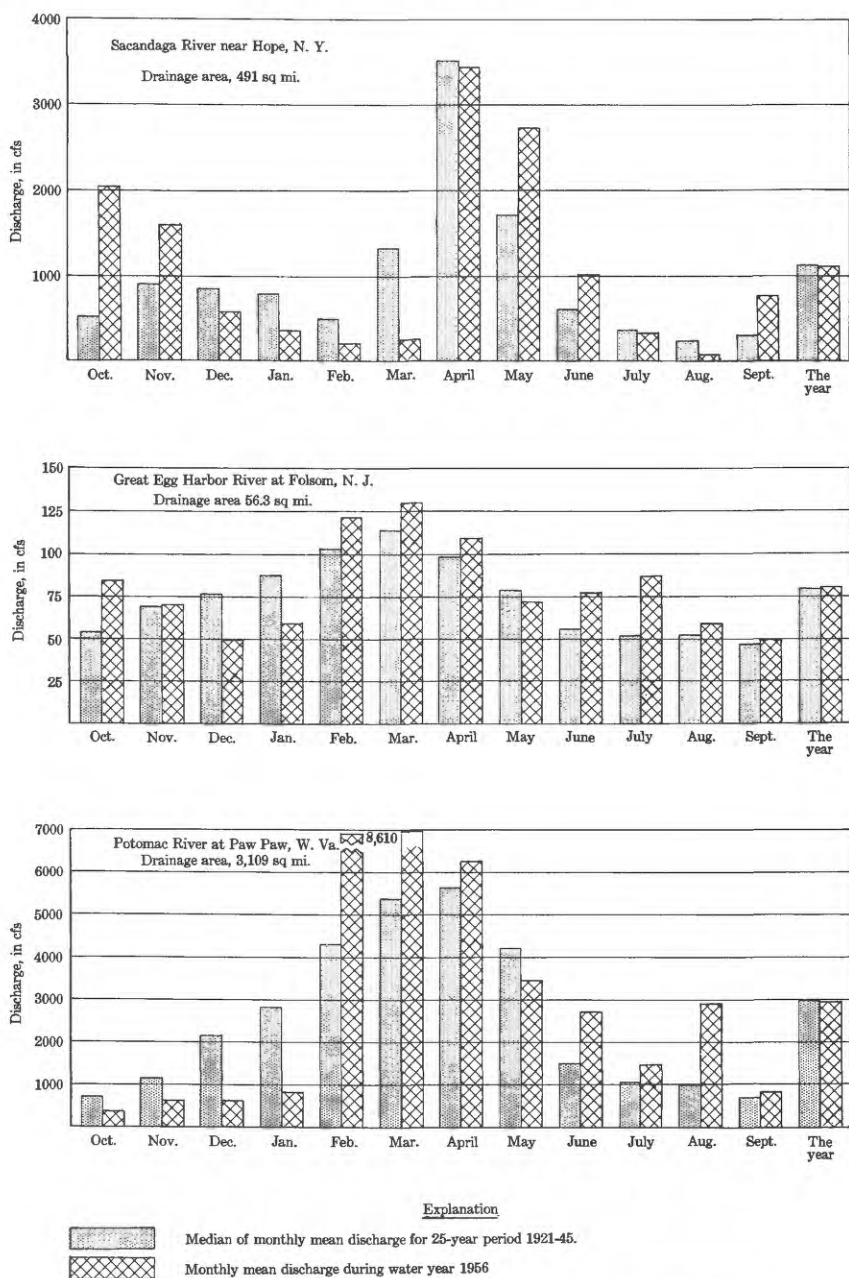


Figure 3. Comparison of discharge at three key gaging stations during 1956 water year with median discharge for 25-year period.

