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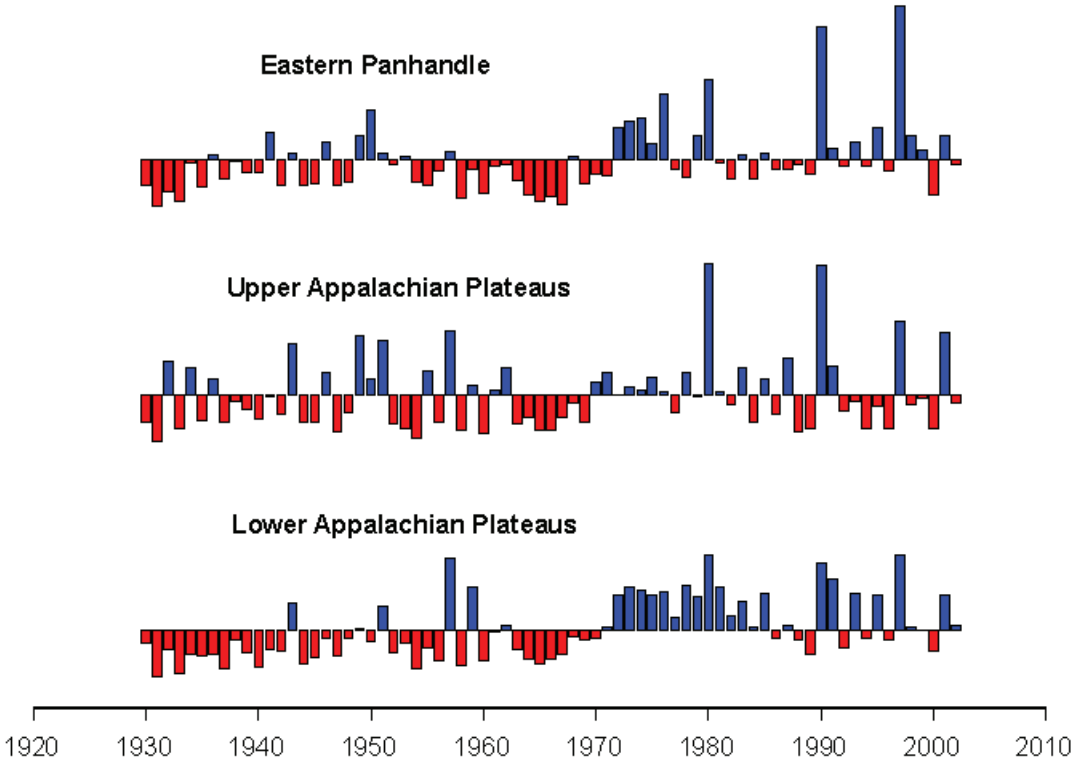
Low-Flow Analysis and Selected Flow Statistics Representative of 1930–2002 for Streamflow-Gaging Stations In or Near West Virginia



Scientific Investigations Report 2006–5002

U.S. Department of the Interior
U.S. Geological Survey

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U.S. Department of the Interior
Gale A. Norton, Secretary

U.S. Geological Survey
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Conversion Factors and Datums

Multiply	By	To obtain
	Length	
inch (in.)	2.54	centimeter (cm)
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
	Area	
square foot (ft^2)	0.0929	square meter (m^2)
square mile (mi^2)	2.590	square kilometer (km^2)
	Volume	
cubic foot (ft^3)	0.02832	cubic meter (m^3)
	Flow rate	
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)

Low-Flow Analysis and Selected Flow Statistics Representative of 1930–2002 for Streamflow-Gaging Stations In or Near West Virginia

By Jeffrey B. Wiley

Abstract

Five time periods between 1930 and 2002 are identified as having distinct patterns of annual minimum daily mean flows (minimum flows). Average minimum flows increased around 1970 at many streamflow-gaging stations in West Virginia. Before 1930, however, there might have been a period of minimum flows greater than any period identified between 1930 and 2002. The effects of climate variability are probably the principal causes of the differences among the five time periods.

Comparisons of selected streamflow statistics are made between values computed for the five identified time periods and values computed for the 1930–2002 interval for 15 streamflow-gaging stations. The average difference between statistics computed for the five time periods and the 1930–2002 interval decreases with increasing magnitude of the low-flow statistic. The greatest individual-station absolute difference was 582.5 percent greater for the 7-day 10-year low flow computed for 1970–1979 compared to the value computed for 1930–2002. The hydrologically based low flows indicate approximately equal or smaller absolute differences than biologically based low flows. The average 1-day 3-year biologically based low flow (1B3) and 4-day 3-year biologically based low flow (4B3) are less than the average 1-day 10-year hydrologically based low flow (1Q10) and 7-day 10-year hydrologic-based low flow (7Q10) respectively, and range between 28.5 percent less and 13.6 percent greater. Seasonally, the average difference between low-flow statistics computed for the five time periods and 1930–2002 is not consistent between magnitudes of low-flow statistics, and the greatest difference is for the summer (July 1–September 30) and fall (October 1–December 31) for the same time period as the greatest difference determined in the annual analysis. The greatest average difference between 1B3 and 4B3 compared to 1Q10 and 7Q10, respectively, is in the spring (April 1–June 30), ranging between 11.6 and 102.3 percent greater.

Statistics computed for the individual station's record period may not represent the statistics computed for the period 1930 to 2002 because (1) station records are available predominantly after about 1970 when minimum flows were greater than the average between 1930 and 2002 and (2) some short-term station records are mostly during dry periods, whereas others are mostly during wet periods. A criterion-based sampling of the individual station's record periods at stations was taken to reduce the effects of statistics computed for the entire record periods not representing the statistics computed for 1930–2002. The criterion used to sample the entire record periods is based on a comparison between the regional minimum flows and the minimum flows at the stations. Criterion-based sampling of the available record periods was superior to record-extension techniques for this study because more stations were selected and areal distribution of stations was more widespread. Principal component and correlation analyses of the minimum flows at 20 stations in or near West Virginia identify three regions of the State encompassing stations with similar patterns of minimum flows: the Lower Appalachian Plateaus, the Upper Appalachian Plateaus, and the Eastern Panhandle. All record periods of 10 years or greater between 1930 and 2002 where the average of the regional minimum flows are nearly equal to the average for 1930–2002 are determined as representative of 1930–2002. Selected statistics are presented for the longest representative record period that matches the record period for 77 stations in West Virginia and 40 stations near West Virginia. These statistics can be used to develop equations for estimating flow in ungaged stream locations.

Introduction

Information on the low-flow statistics of streams is essential for development and management of West Virginia's surface-water resources. Such information is useful for assessing the availability of water for municipal or industrial supplies, irrigation, recreation, aquatic life and wildlife conservation, and disposal of liquid wastes. Low-flow statistics also are useful as a basis for forecasting seasonal low flows, as indicators of the amount of ground-water inflow to streams, and as legal indexes for maintaining water-quality standards.

Low flows can be affected by mining (Hobba, 1981; Puente and Atkins, 1989; Borchers and others, 1991; Wiley and others, 2001); urbanization; land-use practices such as logging and farming; and construction of small detention reservoirs for flood control, recreation, and low-flow augmentation. Low flows that may be associated with climate change also have been observed (Karl and Knight, 1998; Lins and Slack, 1999; McCabe and Wolock, 2002).

The reliability of low-flow frequency curves is related to the record period, and confidence is increased if the record period includes a substantial drought; a record period representing long-term flow characteristics is desired (Riggs, 1972, p. 6). Arbitrarily using entire record periods at streamflow-gaging stations will result in statistics that, for some stations, represent wet or dry periods because all or most of the entire record period is significantly different from average conditions over a longer term. Low-flow statistics representative of average conditions expected over a defined time period that includes a substantial drought are better than arbitrary use of entire record periods from stations that may not represent long-term average conditions.

Previous Studies of National Trends in Streamflow Statistics

An increase in low flows in the eastern United States around 1970 was identified by McCabe and Wolock (2002). The annual maximum, median, and minimum daily mean flows for 400 streamflow-gaging stations across the entire United States were analyzed for 1941–99. A standardized departure at each station was computed by subtracting the average annual maximum, median, and minimum daily mean flows for 1941–99 from the respective daily flows at each station and then dividing by the respective standard deviation. The standardized departures were averaged for all 400 stations for each year. An abrupt change in the average standardized departures from a negative value to a positive value was apparent at about 1970, indicating an increase in flows. The increase was most evident in the minimum and median flows. The increase in flows around 1970 was coincident with increases in precipitation, particularly in the fall (September 1–November 30), in the eastern United States (Karl and Knight, 1998).

Lins and Slack (1999) studied 395 streamflow-gaging stations across the United States for changes in flow for 1944–93. By the use of the Mann-Kendall test, flows were evaluated at several flow percentiles between and including the annual minimum and annual maximum daily mean flows for six time periods between 1944 and 1993. The study indicated an increase in flow for the annual minimum to about the 50-percent flow percentile but no significant increase or decrease in annual maximum flow. Causes for the trends observed were associated with precipitation patterns, variations in ocean characteristics, and increasing atmospheric carbon dioxide in climate model simulations.

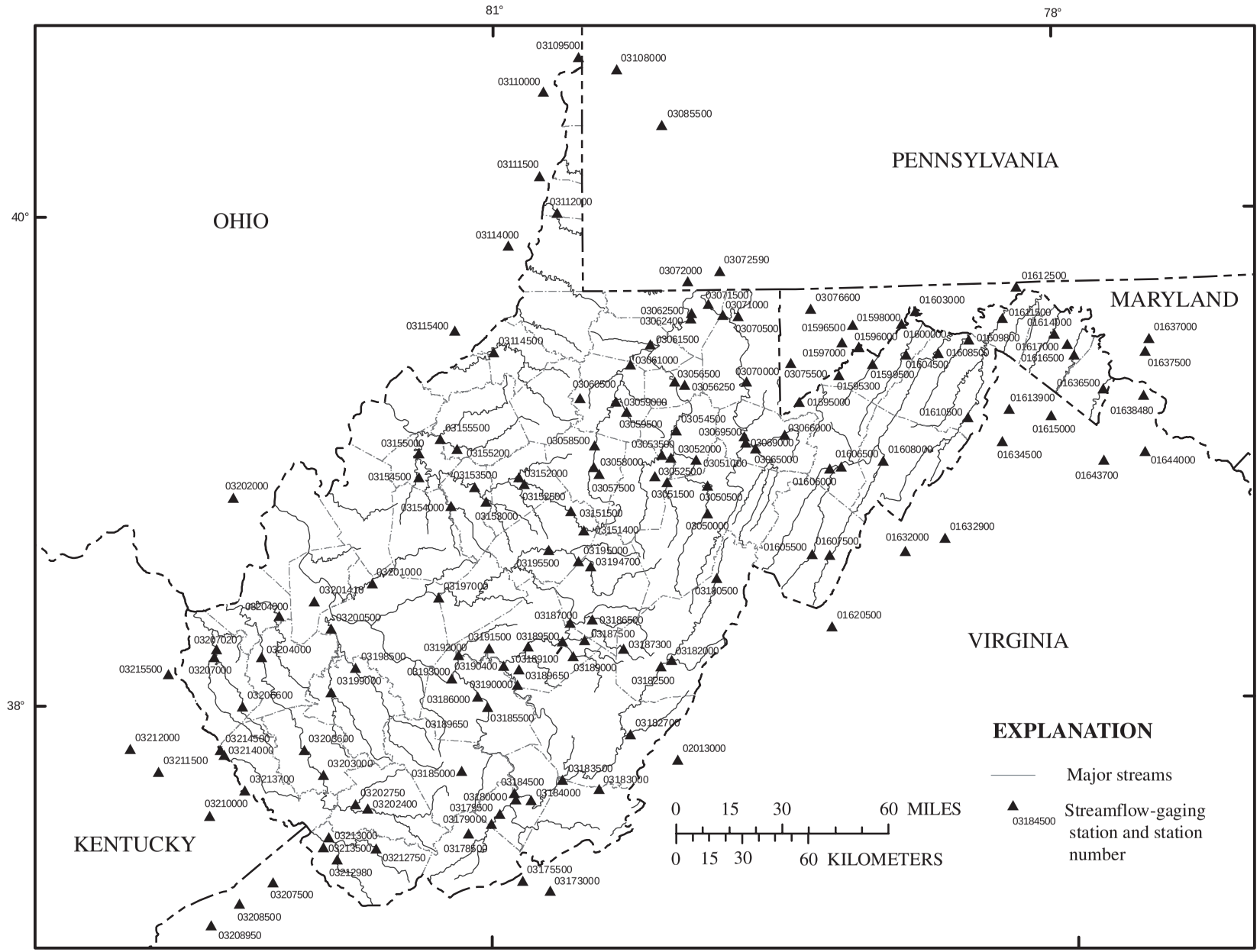
Purpose and Scope

This report, prepared in cooperation with the West Virginia Department of Environmental Protection, Division of Water and Waste Management, evaluates patterns in the annual minimum daily mean flows, referred to as "minimum flows" in this report, and low-flow statistics at U.S. Geological Survey streamflow-gaging stations in or near West Virginia (fig. 1). Five periods consisting of similar patterns in minimum flows are identified, and some flow statistics are computed for those periods. The flow statistics for the periods are compared to the statistics for the long-term period (1930–2002) to quantify the magnitude of statistical variability of low flows. A procedure is developed to select record periods at stations that are representative of streamflows for a long time period (relative to the length of available records) that can be used to develop estimating equations for flow at ungaged stream locations. Selected flow statistics are computed for stations in or near West Virginia. Statistics for stations in West Virginia supersede those published by Friel and others (1989). Statistics for stations in surrounding states can be used to assist in estimating flows for West Virginia but do not supersede the values determined for use in that state.

Selected Flow Statistics and Methods of Statistical Analysis

The following statistics were computed for this study: the annual-minimum daily-mean flow (minimum flow); the 1-day 2-year (1Q2), 1-day 5-year (1Q5), 1-day 10-year (1Q10), 3-day 2-year (3Q2), 3-day 5-year (3Q5), 3-day 10-year (3Q10), 7-day 2-year (7Q2), 7-day 5-year (7Q5), 7-day 10-year (7Q10), 14-day 2-year (14Q2), 14-day 5-year (14Q5), 14-day 10-year (14Q10), 30-day 2-year (30Q2), 30-day 5-year (30Q5), and 30-day 10-year (30Q10) hydrologically based low-flow frequencies; the 1-day 3-year (1B3) and 4-day 3-year (4B3) biologically based low-flow frequencies; the U.S. Environmental Protection Agency (EPA) harmonic-mean flows; the 5-, 10-, 15-, 20-, 25-, 30-, 35-, 40-, 45-, 50-, 55-, 60-, 65-, 70-, 75-, 80-, 85-, 90-, 95-, and 99-percent flow durations; and the variability index. The following statistical methods were used: the Mann-Kendall test for trend (Mann, 1945; Kendall 1975; Hirsch and others, 1982; Helsel and Hirsch, 2002), principal component analysis, and correlation (Helsel and Hirsch, 2002).

Hydrologically based low-flow frequencies were determined by use of methods described by Riggs (1972). The general approach is as follows. An annual series of the minimum n-day (number of consecutive days) daily mean low flows are fitted to a log-Pearson Type III probability curve. A plot of the probability curve and data are reviewed for fitness. Other probability distributions are considered, or a smooth curve is constructed through the data if the data do not fit the log-Pearson Type III probability curve. The frequency of the n day is computed from the fitted probability curve or read



Base from U.S. Geological Survey 1:100,000 Digital Line Graphs for state boundaries; 1:1,000,000 scale digital data for streams; and from the West Virginia Department of Environmental Protection 1:24,000 digital data for county boundaries. All data are in the Universal Transverse Mercator projection, zone 17, NAD1983 projection.

Figure 1. U.S. Geological Survey streamflow-gaging stations in or near West Virginia considered in this study.

from the smooth curve constructed through the data. (All data fit the log-Pearson Type III probability curve in this study.) For example, The 7Q2 would be the streamflow at the 2-year recurrence interval taken from a frequency curve of annual values of the lowest mean streamflow for 7 consecutive days; the 7-day flow will be less than the 7Q2 at intervals averaging 2 years in length; or the probability is 1/2 that the 7-day low flow in any one year will be less than 7Q2.

Biologically based low-flow frequencies were determined by use of methods described by the U.S. Environmental Protection Agency (1986). For these statistics, a daily series of average n-day daily mean flows is computed for a streamflow record. Unlike the hydrologically based statistics, the biologically based statistics are computed by identification of "excursions" in the record. An excursion is a low-flow period that is determined to be hydrologically separate from other low-flow periods, typically by a measure of a minimum of 120 days between excursions. (The excursion concept relates to the biological concept of aquatic-life recovery after a period of stress.) The n-day series is evaluated for the desired frequency of occurrence of the excursions on the basis of number of years of record. For example, the 4B3 would be the streamflow at the 3-year recurrence interval of excursions of the lowest mean streamflow for 4 consecutive days; the 4-day flow will be less than the 4B3 at intervals averaging 3 years in length; or the probability is 1/3 that the 4-day low flow in any one year will be less than 4B3.

The EPA harmonic-mean flows were determined by use of methods described by Rossman (1990). The average of the reciprocals of the daily mean flows is computed for a station record. The harmonic-mean flow is the reciprocal of that average. The EPA harmonic-mean flow is the weighted average of the harmonic mean of the nonzero flows and the arithmetic mean of the zero flows; the harmonic mean of the nonzero flows is multiplied by the number of nonzero days and divided by the total number of days.

Flow durations were determined by use of methods described by Searcy (1959). A yearly record of daily mean flows is divided into 20–30 classes of average flows. Every complete year of record at a station is divided into the same classes. The number of days in each class is computed for the entire record period, and the percentage of the time a flow is in each class is determined. A particular flow duration is extrapolated from the class percentiles, and a log-probability plot of the class percentiles is a flow-duration curve. For example, the 5-percent-duration streamflow is equaled or exceeded 5 percent of the time.

The variability index was determined by use of methods described by Lane and Lei (1950). The variability index is a measure of the slope of the flow-duration curve. The variability index is the standard deviation of the logarithms of flow durations at 10-percent intervals between 5 and 95 percent. A variant of the method used to compute the variability index was necessary when the 95-percent flow duration was 0.00 ft^3/s; the 95- and 5-percent flow durations were excluded from the computation, and the standard deviation was computed for the logarithms of flow durations at 10-percent intervals between 15 and 85 percent. The variability index increases as the slope of the flow-duration curve increases, indicating that as the variability Index increases, the permeability and storage capacity of the base-flow aquifer for a stream decrease. Flows in streams with higher variability indexes will reduce more rapidly during base-flow periods than flows in streams with lower variability indexes.

The statistics and statistical analyses were computed by use of the computer programs (1) SWSTAT, version 4.1 (Lumb and others, 1990; written commun., from USGS colleagues A.M. Lumb, W.O. Thomas, Jr., and K.M. Flynn, titled "Users manual for SWSTAT, a Computer Program for Interactive Computation of Surface-Water Statistics," June 15, 1995), (2) DFLOW, version 3.0 (Rossman, 1990), and (3) S-PLUS 2000 (MathSoft, Inc., 1999). SWSTAT was used to compute hydrologically based statistics and statistics for the Mann-Kendall test for trend; DFLOW was used to compute biologically based low-flow frequencies and the EPA harmonic-mean flow; and S-PLUS 2000 was used to compute statistics for the principal component and correlation analyses.

DFLOW has the capability to compute both hydrologically and biologically based frequencies. Hydrological frequencies determined with DFLOW were not equal to those determined using SWSTAT because SWSTAT applies an adjustment for zero values along with other computational differences. Hydrological frequencies determined with DFLOW were greater than those determined with SWSTAT if zero values were in the analysis. Hydrological frequencies determined with DFLOW were often greater than twice those determined with SWSTAT. Only the biological frequencies determined with DFLOW are presented in this report, and the hydrological frequencies presented herein were computed with SWSTAT.

Patterns in Minimum Flows

Patterns of minimum flows at streamflow-gaging stations in West Virginia were investigated by use of methods similar to those used by McCabe and Wolock (2002). The minimum flows for the climatic year were determined for 110 stations in West Virginia having a minimum of 10 years of unregulated low-flow record (table 1). Table 1 contains all stations in West Virginia with at least 10 years of record, although some stations do not have record periods meeting the criteria for analyses or publication of statistics (there are no dots in table 1 for some stations). The climatic year, as used in this study, is April 1 through March 31of the indicated ending year; for example, the 1970 climatic year is April 1, 1969, through March 31, 1970. Use of climatic years maintains a continuous minimum low-flow period within each year because low flows in March and April are higher than average.

The minimum flows for some stations located on the same stream and with drainage areas within 25 percent of one another were combined to increase record lengths. The 25-

percent criterion was determined as the maximum difference between combined stations—at the drainage areas considered—where the unit minimum flows were approximately equal. The values for the station having the shorter period of record were transferred to the station having the longer period of record. The minimum flows for the station having the shorter period of record were divided by the respective drainage area and multiplied by the drainage area of the station having the longer period of record. Values for the station having the longer period of record were used when the combination of records resulted in more than one value for a particular year. Minimum flows for the following stations in West Virginia were combined: Cheat River near Pisgah (station number, 03071000; drainage area, 1,354 mi^2) was lengthened using near Morgantown (03071500, 1,380 mi^2); Bluestone River near Pipestem (03179000, 395 mi^2) was lengthened using at Lilly (03179500, 438 mi^2); New River at Caperton (03185500, 6,826 mi^2) was lengthened using at Fayette (03186000, 6,850 mi2); Gauley River near Summersville (03189500, 680 mi^2) was lengthened using near Craigsville (03189100, 529 mi2) and; Meadow River at Nallen (03190000, 287 mi^2) was lengthened using near Mount Lookout (03190400, 365 mi^2); Elk River below Webster Springs (03194700, 266 mi^2) was lengthened using at Centralia (03195000, 281 mi^2); Guyandotte River at Man (03203000, 758 mi^2) was lengthened using at Logan (03203600, 833 mi^2); and Tug Fork near Kermit (03214000, 1,188 mi^2) was lengthened using at Kermit (03214500, 1,280 mi^2). Combined records were used for analyzing the minimum flows and were not used to compute other statistics.

The minimum flows were analyzed for the increase in minimum flows around 1970 identified by McCabe and Wolock (2002) and for having patterns of similar flows for different time periods.

Table 1. U.S. Geological Survey streamflow-gaging stations in or near West Virginia considered in this study.

[MD, Maryland; WV, West Virginia; VA, Virginia; PA, Pennsylvania; OH, Ohio; KY, Kentucky; •, indicates that station is included in the indicated criterion]

Station number	Station name	State	Analysis					Selected-streamflow statistics published in this report
			Increase in minimum flows around 1970	Minimum flows from 1930 to 2002	Minimum flows from 1930 to 1969	Minimum flows from 1970 to 2002	Regional minimum flows from 1930 to 2002	
01595000	North Branch Potomac River at Steyer	MD						•
01595300	Abram Creek at Oakmont	WV	•					•
01596000	North Branch Potomac River at Bloomington	MD						•
01596500	Savage River near Barton	MD						•
01597000	Crabtree Creek near Swanton	MD						•
01598000	Savage River at Bloomington	MD						•
01599500	New Creek near Keyser	WV						•
01600000	North Branch Potomac River at Pinto	MD						•
01603000	North Branch Potomac River near Cumberland	MD						•
01604500	Patterson Creek near Headsville	WV	•			•		•
01605500	South Branch Potomac River at Franklin	WV	•					•
01606000	North Fork South Branch Potomac River at Cabins	WV						•
01606500	South Branch Potomac River near Petersburg	WV	•	•	•	•	•	•
01607500	South Fork South Branch Potomac River at Brandywine	WV	•			•		•
01608000	South Fork South Branch Potomac River near Moorefield	WV	•			•		•
01608500	South Branch Potomac River near Springfield	WV	•	•	•	•	•	•
01609800	Little Cacapon River near Levels	WV						
01610500	Cacapon River at Yellow Spring	WV						•
01611500	Cacapon River near Great Cacapon	WV	•	•	•	•	•	•
01612500	Little Tonoloway Creek near Hancock	MD						•
01613900	Hogue Creek near Hayfield	VA						•

Table 1. U.S. Geological Survey streamflow-gaging stations in or near West Virginia considered in this study.—Continued

[MD, Maryland; WV, West Virginia; VA, Virginia; PA, Pennsylvania; OH, Ohio; KY, Kentucky;•, indicates that station is included in the indicated criterion]

Station number	Station name	State	Analysis					Selected-stream-flow statistics published in this report
			Increase in minimum flows around 1970	Minimum flows from 1930 to 2002	Minimum flows from 1930 to 1969	Minimum flows from 1970 to 2002	Regional minimum flows from 1930 to 2002	
01614000	Back Creek near Jones Springs	WV	•					•
01615000	Opequon Creek near Berryville	VA						•
01616500	Opequon Creek near Martinsburg	WV	•			•		•
01617000	Tuscarora Creek above Martinsburg	WV	•					
01620500	North River near Stokesville	VA						•
01632000	North Fork Shenandoah River at Cootes Store	VA					•	•
01632900	Smith Creek near New Market	VA						•
01634500	Cedar Creek near Winchester	VA						•
01636500	Shenandoah River at Millville	WV	•	•	•	•	•	•
01637000	Little Catoctin Creek at Harmony	MD						•
01637500	Catoctin Creek near Middletown	MD						•
01638480	Catoctin Creek at Taylorstown	VA						•
01643700	Goose Creek near Middleburg	VA						•
01644000	Goose Creek near Leesburg	VA					•	•
02013000	Dunlap Creek near Covington	VA					•	
03050000	Tygart Valley River near Dailey	WV	•		•			•
03050500	Tygart Valley River near Elkins	WV	•			•		•
03051000	Tygart Valley River at Belington	WV	•	•	•	•	•	•
03051500	Middle Fork River at Midvale	WV						
03052000	Middle Fork River at Audra	WV	•					•
03052500	Sand Run near Buckhannon	WV	•			•		•
03053500	Buckhannon River at Hall	WV	•	•	•	•	•	•
03054500	Tygart Valley River at Philippi	WV	•			•		•
03056250	Three Fork Creek near Grafton	WV						•
03056500	Tygart Valley River at Fetterman	WV						
03057500	Skin Creek near Brownsville	WV						•
03058000	West Fork River below Stonewall Jackson Dam near Weston	WV	•					•
03058500	West Fork River at Butcherville	WV	•		•			•
03059000	West Fork River at Clarksburg	WV	•		•			•
03059500	Elk Creek at Quiet Dell	WV						
03060500	Salem Creek at Salem	WV						
03061000	West Fork River at Enterprise	WV	•					•
03061500	Buffalo Creek at Barrackville	WV	•	•		•	•	•
03062400	Cobun Creek at Morgantown	WV						
03062500	Deckers Creek at Morgantown	WV						
03065000	Dry Fork at Hendricks	WV	•					•
03066000	Blackwater River at Davis	WV	•	•	•	•	•	•
03069000	Shavers Fork at Parsons	WV	•					•
03069500	Cheat River near Parsons	WV	•	•	•	•	•	•
03070000	Cheat River at Rowlesburg	WV	•		•			•
03070500	Big Sandy Creek at Rockville	WV	•	•	•	•	•	•

Table 1. U.S. Geological Survey streamflow-gaging stations in or near West Virginia considered in this study.—Continued

[MD, Maryland; WV, West Virginia; VA, Virginia; PA, Pennsylvania; OH, Ohio; KY, Kentucky;•, indicates that station is included in the indicated criterion]

Station number	Station name	State	Analysis					Selected-stream-flow statistics published in this report
			Increase in minimum flows around 1970	Minimum flows from 1930 to 2002	Minimum flows from 1930 to 1969	Minimum flows from 1970 to 2002	Regional minimum flows from 1930 to 2002	
03071000	Cheat River near Pisgah	WV						•
03071500	Cheat River near Morgantown	WV						
03072000	Dunkard Creek at Shannopin	PA						•
03072590	Georges Creek at Smithfield	PA						•
03075500	Youghiogheny River near Oakland	MD						•
03076600	Bear Creek at Friendsville	MD						•
03085500	Chartiers Creek at Carnegie	PA						•
03108000	Raccoon Creek at Moffatts Mill	PA						•
03109500	Little Beaver Creek near East Liverpool	OH					•	•
03110000	Yellow Creek near Hammondsville	OH						•
03111500	Short Creak near Dillonvale	OH						•
03112000	Wheeling Creek at Elm Grove	WV	•			•		•
03114000	Captina Creek at Armstrongs Mills	OH						•
03114500	Middle Island Creek at Little	WV	•		•			•
03115400	Little Muskingum River at Bloomfield	OH						•
03151400	Little Kanawha River near Wildcat	WV						
03151500	Little Kanawha River near Burnsville	WV						
03152000	Little Kanawha River at Glenville	WV	•		•			•
03152500	Leading Creek near Glenville	WV						
03153000	Steer Creek near Grantsville	WV	•					•
03153500	Little Kanawha River at Grantsville	WV	•		•			•
03154000	West Fork Little Kanawha River at Rocksdale	WV	•					•
03154500	Reedy Creek near Reedy	WV	•					•
03155000	Little Kanawha River at Palestine	WV	•					•
03155200	South Fork Hughes River at Macfarlan	WV						
03155500	Hughes River at Cisco	WV	•					•
03173000	Walker Creek at Bane	VA						•
03175500	Wolf Creek near Narrows	VA						•
03178500	Camp Creek near Camp Creek	WV						
03179000	Bluestone River near Pipestem	WV	[a]•			•		•
03179500	Bluestone River at Lilly	WV						
03180000	New River at Bluestone Dam	WV						
03180500	Greenbrier River at Durbin	WV	•			•		•
03182000	Knapp Creek at Marlinton	WV						•
03182500	Greenbrier River at Buckeye	WV	•	•	•	•	•	•
03182700	Anthony Creek near Anthony	WV						
03183000	Second Creek near Second Creek	WV						•
03183500	Greenbrier River at Alderson	WV	•	•	•	•	•	•
03184000	Greenbrier River at Hilldale	WV	•			•		•
03184500	New River at Hinton	WV						
03185000	Piney Creek at Raleigh	WV	•					•
03185500	New River at Caperton	WV						

Table 1. U.S. Geological Survey streamflow-gaging stations in or near West Virginia considered in this study.—Continued

[MD, Maryland; WV, West Virginia; VA, Virginia; PA, Pennsylvania; OH, Ohio; KY, Kentucky; •, indicates that station is included in the indicated criterion]

Station number	Station name	State	Analysis					Selected-stream-flow statistics published in this report
			Increase in minimum flows around 1970	Minimum flows from 1930 to 2002	Minimum flows from 1930 to 1969	Minimum flows from 1970 to 2002	Regional minimum flows from 1930 to 2002	
03186000	New River at Fayette	WV						
03186500	Williams River at Dyer	WV	•	•	•	•	•	•
03187000	Gauley River at Camden On Gauley	WV	•		•			•
03187300	North Fork Cranberry River near Hillsboro	WV						
03187500	Cranberry River near Richwood	WV	•			•		•
03189000	Cherry River at Fenwick	WV			•			•
03189100	Gauley River near Craigsville	WV						•
03189500	Gauley River near Summersville	WV	[a] •		[a] •			•
03189650	Collison Creek near Nallen	WV						•
03190000	Meadow River at Nallen	WV	[a] •		•			•
03190400	Meadow River near Mount Lookout	WV						•
03191500	Peters Creek near Lockwood	WV	•					•
03192000	Gauley River above Belva	WV						•
03193000	Kanawha River at Kanawha Falls	WV						
03194700	Elk River below Webster Springs	WV	[a] •			•		•
03195000	Elk River at Centralia	WV						•
03195500	Elk River at Sutton	WV						•
03197000	Elk River at Queen Shoals	WV						•
03198500	Big Coal River at Ashford	WV	•	•	•	•	•	•
03199000	Little Coal River at Danville	WV	•		•			•
03200500	Coal River at Tornado	WV	•			•		•
03201000	Pocatalico River at Sissonville	WV	•					•
03201410	Poplar Fork at Teays	WV						
03202000	Raccoon Creek at Adamsville	OH						•
03202400	Guyandotte River near Bailysville	WV				•		
03202750	Clear Fork at Clear Fork	WV						
03203000	Guyandotte River at Man	WV	[a] •		[a] •			
03203600	Guyandotte River at Logan	WV						•
03204000	Guyandotte River at Branchland	WV	•		•			•
03204500	Mud River near Milton	WV	•					•
03206600	East Fork Twelvepole Creek near Dunlow	WV				•		
03207000	Twelvepole Creek at Wayne	WV						
03207020	Twelvepole Creek below Wayne	WV						
03207500	Levisa Fork near Grundy	VA						•
03208500	Russell Fork at Haysi	VA					•	•
03208950	Cranes Nest River near Clintwood	VA						•
03210000	Johns Creek near Meta	KY						•
03211500	Johns Creek near Van Lear	KY						•
03212000	Paint Creek at Staffordsville	KY						•
03212750	Tug Fork at Welch	WV						
03212980	Dry Fork at Beartown	WV						
03213000	Tug Fork at Litwar	WV	•		•			•

Table 1. U.S. Geological Survey streamflow-gaging stations in or near West Virginia considered in this study.—Continued

[MD, Maryland; WV, West Virginia; VA, Virginia; PA, Pennsylvania; OH, Ohio; KY, Kentucky; •, indicates that station is included in the indicated criterion]

Station number	Station name	State	Analysis					Selected-stream-flow statistics published in this report
			Increase in minimum flows around 1970	Minimum flows from 1930 to 2002	Minimum flows from 1930 to 1969	Minimum flows from 1970 to 2002	Regional minimum flows from 1930 to 2002	
03213500	Panther Creek near Panther	WV	•					•
03213700	Tug Fork at Williamson	WV	•			•		
03214000	Tug Fork near Kermit	WV	[a] •	[a] •	[a] •	[a] •	[a] •	•
03214500	Tug Fork at Kermit	WV						
03215500	Blaine Creek at Yatesville	KY						•

[a] Station record was lengthened using a nearby station for this analysis.

Increase in Minimum Flows Around 1970

Stations in West Virginia having a minimum of 5 years of record before 1970 and 5 years after 1969 were investigated to determine whether there was an increase in minimum flows around 1970 as identified by McCabe and Wolock (2002) (table 1). Departures of the minimum flows from the average minimum flows for the period of record were plotted against time for each station and were visually inspected for the increase in minimum flows around 1970.

The visual patterns of the increase in minimum flows around 1970 in the station plots of departures are not uniform throughout the State. Well-defined increases in minimum flows around 1970 are apparent for many station plots statewide, but some station plots show no noticeable increase. Some station plots in the eastern panhandle of the State indicate a well-defined increase in minimum flows around 1972. The plot for Greenbrier River at Alderson (03183500, 1,364 mi^2) does not show an increase in minimum flows (fig. 2) such as the one apparent in the plot for the nearby combined stations Bluestone River near Pipestem (03179000, record years 1952–2002, 395 mi^2) and at Lilly (03179500, 1910–48, 438 mi^2)(fig. 3). The average minimum flows before the 1970 increase were less than the average minimum flows after the 1970 increase at both Greenbrier River at Alderson and the combined Bluestone River near Pipestem and Bluestone River at Lilly, although the difference at Alderson of about 1 ft^3/s (about 1 percent of the average minimum flow) is insignificant.

The principal cause of the minimum-flow patterns associated with this analysis is probably climate variability. Mining is probably the greatest land-use change affecting low flows in West Virginia. In small drainage basins (drainage areas less than 10 mi^2) mining has transferred water between basins sometimes decreasing low flows and sometimes increasing low flows. The net result of underground mining was an increase in ground-water storage that would return to the surface at a lower elevation due to gravity or would return to the surface from mine pumpage. The water may return to the surface in a different drainage basin, thus in small drainage basins sometimes decreasing low flows and sometimes increasing low flows (Puente and Adkins, 1989; Borchers and others, 1991). In small drainage basins, the net result of valley fills from mountaintop mining was an increase in low flows (Wiley and others, 2001). At large drainage basins (drainage areas greater than 100 mi^2) the net result from mining should show an increase in low flows because of ground-water storage returning to the surface at a lower elevation from underground mines and the increase in low flows from valley fills. A visual inspection of the pattern in plots of the minimum flows for large drainage basins affected by mining did not show a general increase through time corresponding to an increase in mining through time. The pattern in plots of the minimum flows probably did not show the changes associated with mining because these changes were indistinguishable from more significant affects, probably those associated with climate variability.

Minimum Flows From 1930 Through 2002

The stations used for the 1930–2002 analysis were limited to those in West Virginia with mostly complete records for the longest possible continuous time period. There were 14 stations with no more than a total of 4 years of missing record for the period from1930 through 2002. The 14 stations were equally distributed across the State except for a lack of coverage along the western border with Ohio and the southwest border with Kentucky. The combined record for station

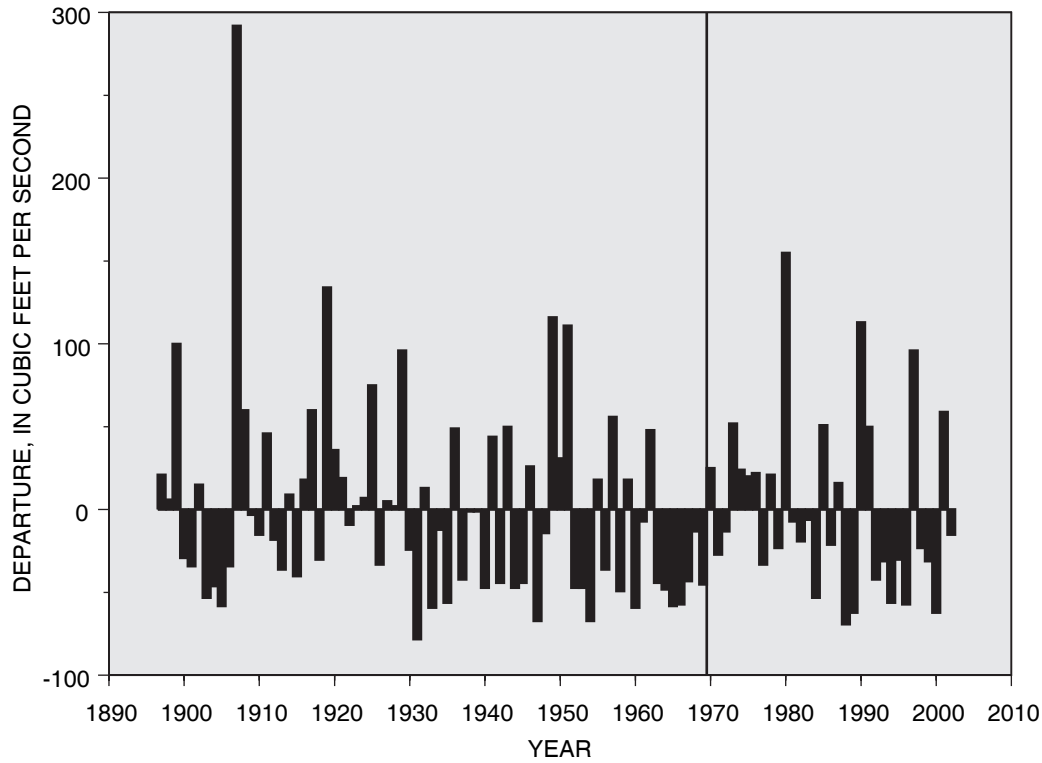


Figure 2. Departure of the minimum flows from the record-period average for Greenbrier River at Alderson, West Virginia (Vertical line between 1969 and 1970 separates periods described in text).

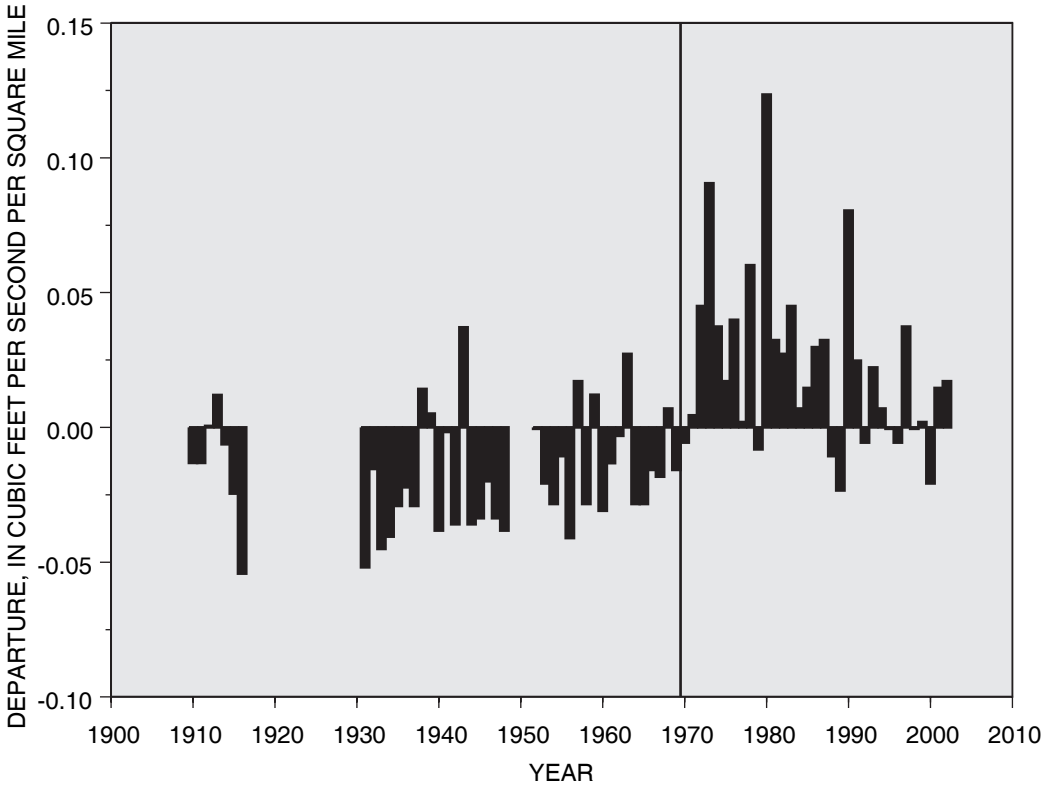


Figure 3. Departure of the unit minimum flows from the record-period average for the combined stations Bluestone River near Pipestem and at Lilly, West Virginia (Vertical line between 1969 and 1970 separates periods described in text).

Tug Fork near Kermit (03214000) lengthened using at Kermit (03214500) was included to improve the areal distribution along the south-west border, but there are no data available to improve the distribution along the western border. Equally distributed station locations and minimizing use of combined stations are necessary for studying the variability of flow statistics and calculating a regional average of low flows discussed later in this report. The station set consisted of 15 stations with the combined records for Tug Fork near and at Kermit counted as 1 station (table 1). The standardized departure at each station was computed by subtracting the respective average minimum flow for 1930–2002 from the minimum flow at each station and then dividing by the respective standard deviation of the minimum flow. The standardized departures were averaged for all 15 stations for each year (fig. 4).

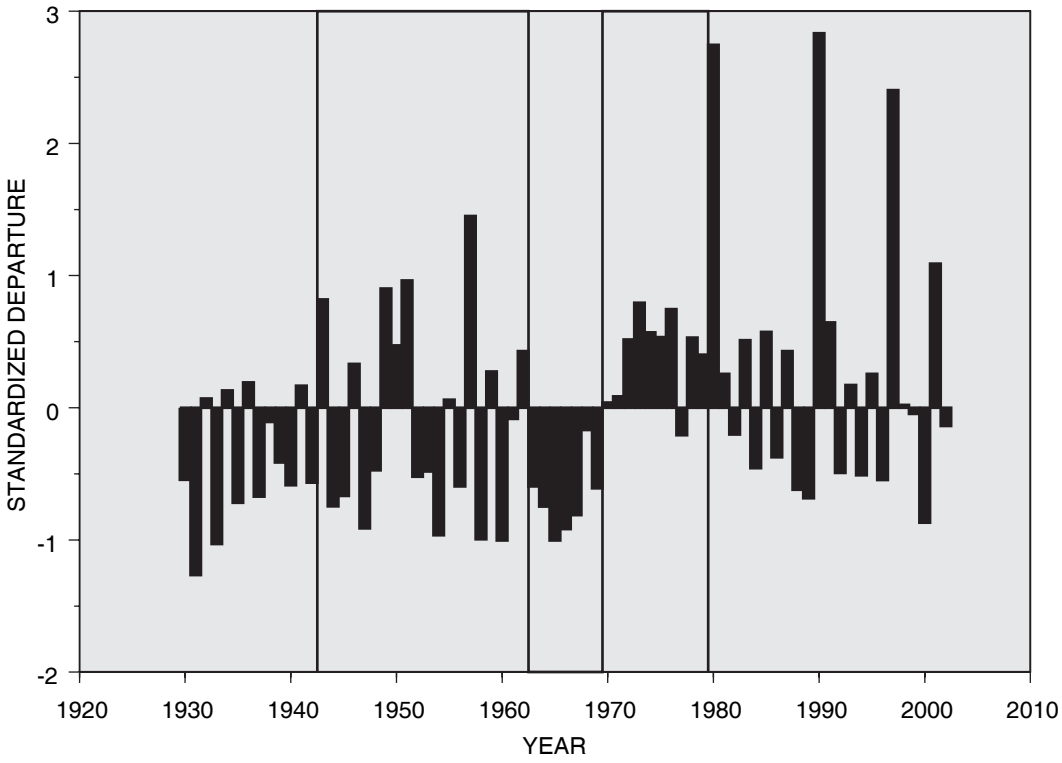


Figure 4. Average standardized departures of the minimum flows from the record-period average for 1930–2002 for 15 stations in West Virginia. (Vertical lines separate subperiods described in text.)

The change from the general negative departures to positive departures between the 1969 and 1970 climatic years is apparent in fig. 4. The period 1930–42 indicates mostly negative departure. The period 1943–62 indicates variation between positive and negative departures that average slightly less than the mean. The period 1963–69 indicates consistently negative departure and the most negative average of any of the time periods investigated. The period 1970–79 indicates largely positive departure and the most positive average of any of the time periods investigated. Finally, the period 1980–2002 indicates variation between positive and negative departures, with the positive departures that are the most positive of any of the periods investigated and an average positive departure slightly less than the average for 1970–79. The average departure for the years before 1970 is negative, and the average departure for the years after 1969 is positive.

A statistical trend analysis of the minimum flows for the 15 stations was done by use of the Mann-Kendall test for the record periods 1930–2002, 1930–63, 1930–69, 1930–42, 1943–62, 1943–69, 1963–69, 1963–79, 1970-2002, 1970–79, and 1980–2002. An alpha value of 0.0667 was selected so that 1 station out of the 15 would be expected to indicate a trend by chance. No stations indicated a trend for 1943–62, 1970–79, or 1980–2002. Only one station indicated a trend for 1930–69 and 1963–69 (a different station for each period). Only two stations indicated a trend for 1930–42, 1930–63, 1943–69, and 1970–2002 (only one station indicated a trend for two periods). One or two stations indicating a trend is close enough to the one station expected by chance that the conclusion of no trends was supported.

In contrast, statistically significant positive trends were found for all 15 stations for 1963–79 (14 stations at an alpha value of 0.05, and 6 stations at an alpha value of 0.01) and 6

stations for 1930–2002 (5 stations at an alpha value of 0.05, and 4 stations at an alpha value of 0.01). All 15 stations indicating a trend for 1963–79 is expected because the change from negative departures to positive departures around 1970 was visible in plots of departures for many stations across the State. The six stations indicating a positive trend for 1930–2002 were Cacapon River near Great Cacapon (station number 01611500), Shenandoah River at Milliville (01636500), Buffalo Creek at Barrackville (03061500), Big Sandy Creek at Rockville (03070500), Big Coal River at Ashford (03198500), and the combined stations Tug Fork near Kermit (03214000) and at Kermit (03214500). Two stations are located in the eastern panhandle (01611500 and 01636500), two are in the north-central area (03061500 and 03070500), and two are in the southwest area of the State (03198500 and combined stations 03214000 and 03214500). These six stations are distributed across the State, but none is near the east-central area of the State, which has the highest annual precipitation.

The Mann-Kendall test did not indicate a trend for 1970–2002, although the average departures of minimum flows for 1970–79 are greater than the average departures for 1980–2002. The annual variation of selected flow statistics discussed later in this report also indicates decreases in low flows between 1970–79 and 1980–2002. The Mann-Kendall test did not indicate a negative trend for the decrease in the minimum flows between the periods, probably because the trend was sudden and not gradual. The Mann-Kendall test is better suited for detecting monotonic trends.

Minimum Flows From 1930 Through 1969

The stations used in this analysis were limited to those in West Virginia with mostly complete records for the period 1930–69. There are 29 stations (the combined records for Tug Fork near and at Kermit counted as 1 station) with no more than a total of 2 years of missing record for the 1930–69 period (table 1). The standardized departures were computed for the 29 stations and averaged (fig. 5).

The same time periods (1930–42, 1943–62, and 1963–69) show similar patterns of departures as those determined by analyzing the characteristic from 1930 through 2002 (fig. 5). The average departure for 1963–69 is the most negative.

Minimum Flows From 1970 Through 2002

The stations used in this analysis were limited to those in West Virginia with mostly complete records for the period 1970–2002. There are 32 stations (or combined stations counted as 1 station) with no more than a total of 2 years of missing record for the 1970–2002 period (table 1). The standardized departures were computed for the 32 stations and averaged (fig. 6).

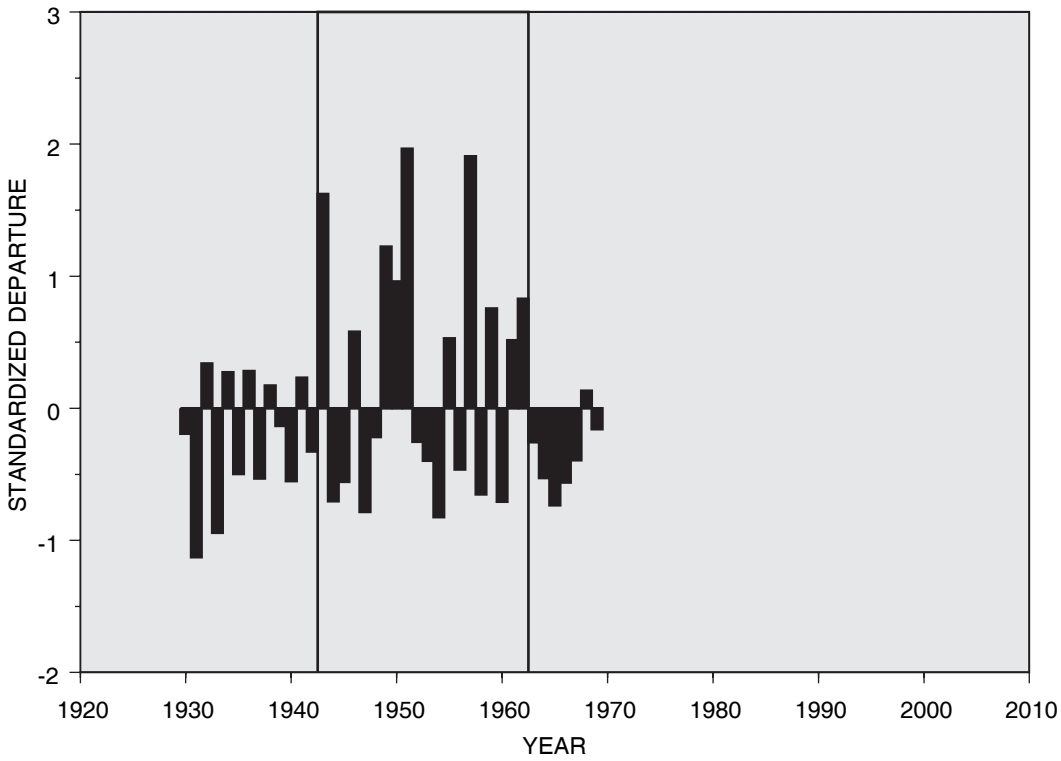


Figure 5. Average standardized departures of the minimum flows from the record-period average for 1930–1969 for 29 stations in West Virginia. (Vertical lines separate subperiods described in text.)

The same time periods (1970–79 and 1980–2002) show similar patterns of departures as those determined by analyzing the characteristic from 1930 through 2002 (fig. 6). The average departure for 1970–79 is the most positive.

Minimum Flows Before 1930

Few West Virginia stations with long periods of records include the period before 1930. Shenandoah River at Millville (01636500) has record starting in 1896 and extending through 2002 (fig. 7) and indicates an increase in minimum flow between the 1971 and 1972 climatic years; however, record is missing from 1910 through 1929. The average positive departures for 1896–1909 are greater than the average departures for 1972–79 and 1972–2002. Greenbrier River at Alderson (03183500) has record from 1897 through 2002 and does not show an increase in minimum flow around 1970 (fig. 2). The average positive departures for 1896–1909 and 1896–1929 are greater than the average departures for the periods 1970–79 and 1970–2002. The analysis for these two stations indicates that there were probably periods in West Virginia between 1896 and 1930 when minimum flows were greater than during any periods between 1930 and 2002.

The Shenandoah River at Millville and Greenbrier River at Alderson are most likely representative of the regional pattern of minimum flows because the log10-transformed flow values are fairly well correlated with concurrent log10-transformed flow values at other stations. The correlation coefficient of minimum flows at Shenandoah River at Millville with minimum flows at Kanawha River at Kanawha Falls (03193000) is 0.75 for the record period 1878–1948, sharing 35 years of concurrent record. Correlation coefficients of 0.84 and 0.82, respectively, were found for minimum flows at Greenbrier River at Alderson and minimum flows at Cheat River near Parsons (03069500), record period 1914–2002 (89 years of concurrent record), and with minimum flows at Tygart Valley River at Belington (03051000), record period 1909–2002 (94 years of concurrent record).

Variability of Flow Statistics

Several streamflow statistics were computed for 15 stations (combined records for Tug Fork near and at Kermit counted as 1 station) to study the variability of determined values for 1930–2002. The 15 stations are the same as those used for the minimum-flow analysis for 1930–2002 (table 1). The annual and seasonal 1Q10, 7Q10, 30Q5, 1B3, 4B3, and the EPA harmonic-mean flows were computed for 1930–2002, 1930–42, 1943–62, 1963–69, 1970–79, and 1980–2002.

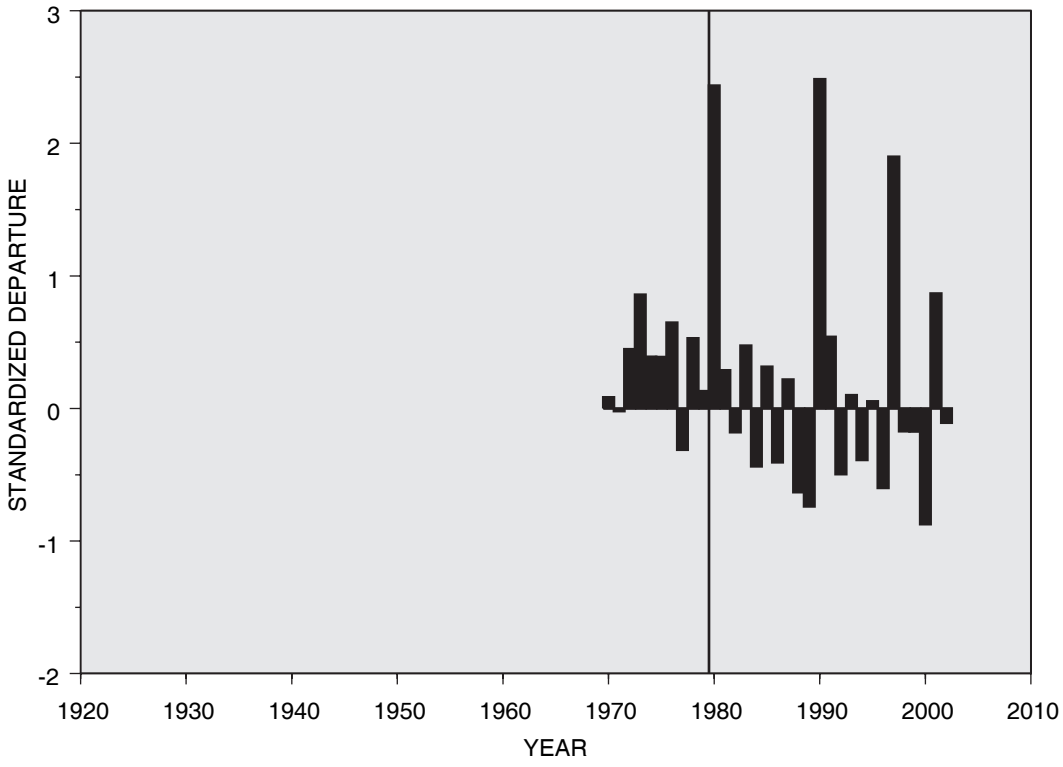


Figure 6. Average standardized departures of the minimum flows from the record-period average for 1970–2002 for 32 stations in West Virginia (Vertical line separate subperiods described in text).

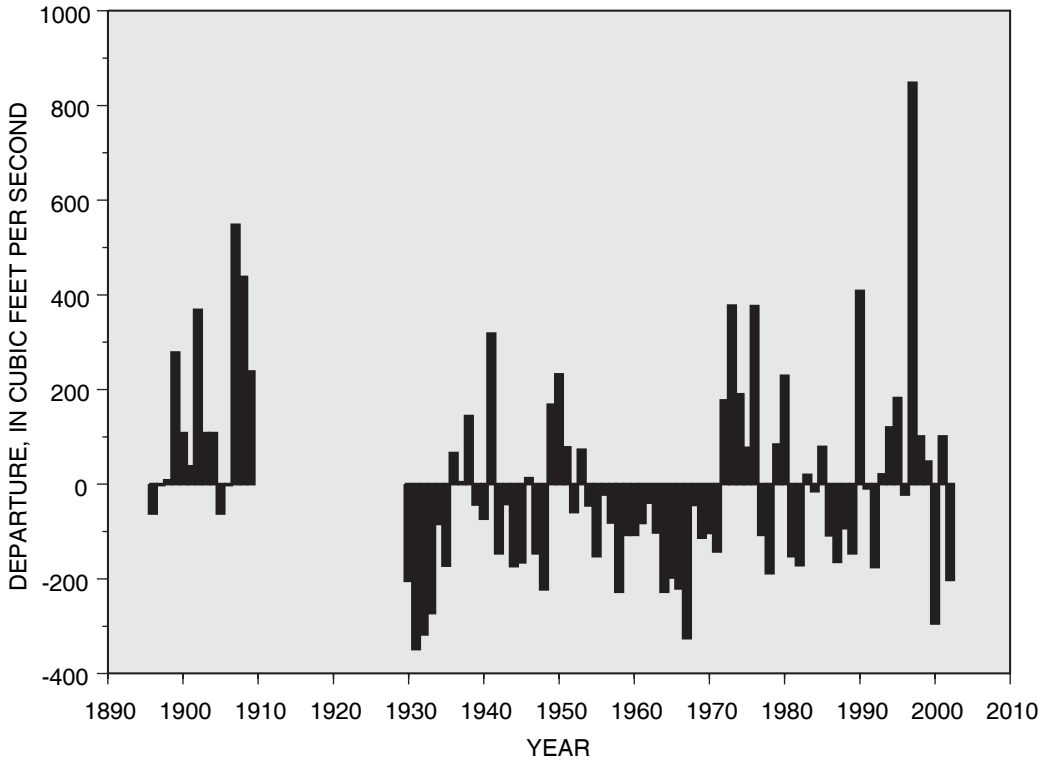


Figure 7. Departure of the minimum flows from the record-period average for Shenandoah River at Millville, West Virginia.

Comparison of Annual Statistics

The values of the selected annual statistics (climatic year) for the 15 stations were averaged and compared to values computed for 1930–2002 to assess variability (table 2). Differences of the average values for the period 1930–42 compared to the average values for the period 1943–62 mostly increase; differences include both increases and decreases between 1943–62 and 1963–69; differences all increase between 1963–69 and 1970–79, and all decrease between 1970–79 and 1980–2002. Generally, the relative differences in values between successive periods follow the trend of the departures of the minimum flows (fig. 4).

The increases and decreases between values for 1943–62 and 1963–69 are inconsistent with the trend of the departures of the minimum flows (fig. 4), where a marked decrease between the periods is apparent in the plot. The increases are for the values of lower flows (1Q10, 7Q10, 1B3, and 4B3), whereas the decreases are for higher flows (30Q5 and the EPA harmonic-mean flow).

No consistent trend was found between statistics for lower flows and those for higher flows. For 1930–42, the absolute differences of values for the lower flows are equal or greater than the absolute differences for higher flows. For 1943–62, the absolute differences are approximately equal. In contrast, for 1970–79 and 1980–2002, the differences of values for the lower flows are about twice the differences for the higher flows.

There is a consistent trend in the statistics for the hydrologically based flows 1Q10 and 7Q10 and the biologically based flows 1B3 and 4B3: absolute differences for hydrologically based flows are approximately equal to or smaller than those for biologically based flows for all periods.

The variability of the differences between annual statistics computed for each subperiod compared to the values computed for 1930–2002 decreases with increasing flows; the values in table 2 get closer to zero when comparing the values for 1Q10, 7Q10, 1B3, and 4B3 to the higher flow values for 30Q5 and the EPA harmonic-mean flow. The values for 1Q10, 7Q10, 1B3, and 4B3 range from -36.9 to 200.7 percent for the average of stations for each period from the values computed for 1930–2002, and the values for 30Q5 and the EPA harmonic-mean flow range from -21.0 to 115.1 percent (table 2). The values for 1Q10, 7Q10, 1B3, and 4B3 range from -93.9 to 582.5 percent for the individual stations for each period from the values computed for 1930–2002, and the values for 30Q5 and the EPA harmonic-mean flow range from -62.3 to 281.2 percent (table 3). Table 3 contains no values for the period 1930-42 for the combined station Tug Fork near Kermit (03214000) and at Kermit (03214500) because the combined station was only used for analyzing the minimum flows and was not used to compute other statistics, and because there

Table 2. Average differences between selected annual statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.

[Station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
1-day 10-year hydrologically based low flow (1Q10)	-23.7	-11.2	5.4	187.0	52.3
7-day 10-year hydrologically based low flow (7Q10)	-20.6	-13.6	2.4	182.8	47.7
30-day 5-year hydrologically based low flow (30Q5)	-9.8	-12.7	-19.2	115.1	24.1
1-day 3-year biologically based low flow (1B3)	-36.9	-10.7	9.2	200.7	67.4
4-day 3-year biologically based low flow (4B3)	-32.1	-13.5	8.9	190.3	58.9
EPA harmonic mean flow	-21.0	-7.1	-15.2	90.7	31.6

were not sufficient years of record at either station to make an estimate representative of the period.

An increase in departures around 1970 is not obvious in the plot of departures for Greenbrier River at Alderson (03183500) (fig. 2), but values for the selected annual statistics indicate an increase between 1963–69 and 1970–79. The greatest difference was found for 1970–79, where the selected statistics are between 40.6 and 70.5 percent greater than those for 1930–2002 (table 3).

Comparison of Seasonal Statistics

Selected statistics were computed for January 1 through March 31 (winter), April 1 through June 30 (spring), July 1 through September 30 (summer), and October 1 through December 31 (fall). The average differences (table 4) and individual-station differences (table 5 at back of report) of the selected statistics were compared to values computed for 1930–2002 for the 15 stations to measure variability.

Generally, the relative average difference in values between successive fall periods (table 4) follows the trend of the departures of the minimum flows (fig. 4) because the minimum flows commonly take place in the fall. The average differences of values for all seasons for all statistics are negative for 1930–42 (table 4); differences for the individual stations range from -95.7 to 43.3 percent (table 5 at back of report). The average differences of values are mixed for 1943–62 and 1963–69; differences for the individual stations range from -86.9 to 231.2 percent. The average differences for values of 30Q5 are negative for all seasons, and those for 1B3 are positive for all seasons for 1963–69. The average differences of values for all seasons for all statistics are positive for 1970–79; differences for the individual stations range from -44.6 to 683.6 percent. The average differences of values for the summer and fall for 1970–79 are the greatest for all periods, ranging from 85.4 to 207.7 percent for all statistics. The average differences of values for the spring for 1970–79 vary between the biologically based flows (range, 0.6 to 4.7 percent) and hydrologically based flows (range, 5.1 to 32.4

Table 3. Differences between selected annual statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.

[Station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
1-day 10-year hydrologically based low flow (1Q10)					
01606500	-2.8	4.2	-17.7	26.5	4.4
01608500	-3.5	6.1	-28.2	62.0	10.8
01611500	-1.8	7.5	-31.4	19.9	18.3
01636500	-21.5	15.5	-19.0	23.6	10.8
03051000	-56.5	16.0	74.6	524.4	7.0
03053500	-56.8	-17.8	33.5	366.3	45.7
03061500	-66.7	-20.7	50.2	351.5	149.1
03066000	4.6	-32.0	7.8	98.1	14.4
03069500	-24.9	-18.9	-11.6	170.1	25.1
03070500	-7.2	-56.3	31.8	217.4	93.8
03182500	-35.4	7.3	-28.9	115.6	28.6
03183500	-13.3	-2.1	4.3	70.5	-1.9
03186500	-1.1	-30.4	23.3	312.8	-6.3
03198500	-45.3	-37.7	-28.2	339.7	250.0
[a] 03214000 and 03214500	No value	[b] -8.6	[b] 20.5	[b] 107.0	[c] 134.3
7-day 10-year hydrologically based low flow (7Q10)					
01606500	-2.1	2.6	-19.2	27.2	5.7
01608500	-5.5	5.7	-26.1	59.6	11.6
01611500	-2.2	5.1	-29.4	21.0	18.1
01636500	-7.1	14.0	-24.6	14.0	4.4
03051000	-53.9	-4.9	55.7	582.5	24.3
03053500	-56.3	-20.2	33.3	387.1	45.6
03061500	-59.0	-20.1	41.5	269.0	98.7
03066000	2.2	-26.6	-7.7	101.7	13.6
03069500	-25.2	-23.0	-4.4	182.3	30.6
03070500	-7.5	-56.2	30.5	213.9	98.5
03182500	-26.9	0.9	-26.9	117.2	19.0
03183500	-14.3	-4.5	3.4	63.1	3.1
03186500	12.0	-34.0	19.5	302.9	-3.2
03198500	-42.3	-36.2	-27.1	293.1	217.8
[b] 03214000 and 03214500	No value	[b] -5.9	[b] 17.6	[b] 107.5	[c] 127.7

Table 3. Differences between selected annual statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.—Continued

[Station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
30-day 5-year hydrologically based low flow (30Q5)					
01606500	-0.2	4.8	-19.0	25.7	2.8
01608500	-1.6	4.4	-25.2	39.3	4.7
01611500	-3.0	-0.4	-28.5	30.0	12.1
01636500	-1.5	6.9	-23.2	13.9	3.0
03051000	-21.6	-21.9	-18.0	281.2	9.2
03053500	-35.3	-23.8	-5.3	215.2	20.2
03061500	-50.6	-19.6	-8.0	220.6	58.1
03066000	7.6	-25.2	-16.6	93.6	11.2
03069500	2.3	-22.7	-14.4	115.3	11.6
03070500	-14.9	-35.4	-37.2	134.8	54.2
03182500	0.7	5.9	-37.1	65.5	2.1
03183500	2.2	2.3	-10.0	53.6	-2.1
03186500	11.1	-26.1	-20.8	188.7	0.9
03198500	-32.2	-34.4	-27.6	149.2	97.3
[a] 03214000 and 03214500	No value	[b] -5.6	[b] 3.2	[b] 100.4	[c] 76.1
1-day 3-year biologically based low flow (1B3)					
01606500	-6.3	5.7	-10.2	34.5	1.8
01608500	-8.2	4.9	-11.2	85.9	33.1
01611500	-3.0	2.4	-27.0	18.6	24.1
01636500	-21.1	21.4	-28.6	21.7	18.1
03051000	-93.9	-7.1	75.0	541.9	-20.6
03053500	-92.7	-11.0	32.2	265.7	12.7
03061500	-60.0	-10.9	60.0	480.0	223.6
03066000	-15.8	-26.3	12.5	101.8	21.8
03069500	-59.5	-29.4	-14.5	159.9	33.5
03070500	-43.8	-42.6	24.9	145.4	71.1
03182500	-42.3	0.0	-16.5	153.6	36.4
03183500	-38.0	-13.3	4.0	61.8	2.0
03186500	21.2	-25.6	34.6	384.0	39.1
03198500	-52.9	-26.5	-30.0	458.8	367.6
[a] 03214000 and 03214500	No value	[b] -2.7	[b] 32.4	[b] 97.3	[c] 147.5

Table 3. Differences between selected annual statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.—Continued

[Station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
4-day 3-year biologically based low flow (4B3)					
01606500	-8.5	6.3	-12.1	34.1	8.5
01608500	-4.3	6.8	-9.7	79.3	36.8
01611500	-0.5	3.4	-25.3	25.5	24.0
01636500	-13.4	17.2	-30.9	13.4	12.2
03051000	-83.4	-10.0	66.6	580.0	-20.0
03053500	-91.3	-17.7	15.3	360.0	20.7
03061500	-40.5	-12.7	51.9	350.6	155.7
03066000	-7.1	-23.5	7.9	114.0	22.2
03069500	-62.2	-38.7	8.9	164.6	23.8
03070500	-30.0	-52.3	33.6	105.5	52.6
03182500	-37.4	-6.7	-6.7	145.0	55.8
03183500	-39.5	-14.4	2.1	68.9	2.1
03186500	16.8	-30.2	34.2	326.7	23.3
03198500	-48.6	-30.4	-35.1	383.5	305.7
[a] 03214000 and 03214500	No value	[b] -0.3	[b] 32.3	[b] 103.3	[c] 159.9
U.S. Environmental Protection Agency harmonic-mean flow					
01606500	-5.6	0.9	-26.2	22.3	5.6
01608500	-7.4	0.0	-30.1	29.6	8.2
01611500	-10.7	-1.3	-24.5	35.8	6.3
01636500	-7.3	3.3	-27.1	23.6	4.1
03051000	-57.7	16.4	11.0	222.2	46.1
03053500	-62.3	7.8	30.4	244.3	97.2
03061500	-49.9	-11.9	-28.9	156.3	56.3
03066000	-7.2	-15.9	-17.2	49.1	15.1
03069500	-23.1	-9.0	-16.2	54.4	18.8
03070500	17.4	-45.4	-19.2	159.0	78.5
03182500	-18.8	2.8	-29.9	45.1	10.4
03183500	-14.7	1.6	-19.9	40.6	3.5
03186500	-7.0	-23.5	-8.5	121.4	10.4
03198500	-39.9	-21.5	-19.2	93.5	72.0
[a] 03214000 and 03214500	No value	[b] -10.1	[b] -2.7	[b] 63.4	[c] 41.3

[a] 1930–2002 period estimated from record for 1936–85 at Tug Fork near Kermit (03214000).

[b] Computed from record for Tug Fork near Kermit (03214000).

[c] Estimated from record for 1986–2002 at Tug Fork at Kermit (03214500).

Table 4. Average differences between selected seasonal statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Season	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
1-day 10-year hydrologically based low flow (1Q10)					
Winter	-9.7	6.0	-11.5	69.4	-2.6
Spring	-12.5	35.7	-29.5	32.4	9.2
Summer	-24.8	-6.5	-3.6	175.4	44.8
Fall	-26.2	-18.8	6.3	167.2	62.2
7-day 10-year hydrologically based low flow (7Q10)					
Winter	-12.2	-4.4	-17.3	58.5	0.1
Spring	-17.6	19.5	-29.2	27.1	3.4
Summer	-21.8	-8.3	-6.0	176.2	39.2
Fall	-25.6	-20.4	10.6	140.4	55.3
30-day 5-year hydrologically based low flow (30Q5)					
Winter	-19.2	2.3	-31.4	31.7	6.5
Spring	-18.7	13.1	-34.3	5.1	6.8
Summer	-12.5	-6.3	-29.2	85.4	20.0
Fall	-25.6	-17.5	-16.5	104.6	22.9
1-day 3-year biologically based low flow (1B3)					
Winter	-11.4	-4.2	1.7	73.8	5.8
Spring	-30.2	15.7	4.3	4.7	57.9
Summer	-35.0	-5.4	0.8	170.2	50.8
Fall	-35.7	-15.1	7.8	207.7	72.2
4-day 3-year biologically based low flow (4B3)					
Winter	-8.1	-4.4	-13.2	59.1	5.1
Spring	-24.3	18.6	3.0	0.6	53.7
Summer	-33.2	-5.8	-2.8	159.3	39.1
Fall	-40.0	-20.3	7.3	170.2	54.1
U.S. Environmental Protection Agency harmonic-mean flow					
Winter	-5.7	5.5	-19.5	37.9	-1.9
Spring	-25.3	4.0	-14.9	3.8	28.6
Summer	-21.9	1.0	-27.9	86.3	31.8
Fall	-18.3	-14.3	2.9	142.5	41.0

percent). The average differences of values for all statistics are less for 1980–2002 than for 1970–79 except for spring values of 30Q5, biologically based flows, and the EPA harmonic-mean flow. The differences of values for all seasons for all statistics for the individual stations range from -45.5 to 603.4 percent for 1980–2002.

Karl and Knight (1998) found that the increases in low flows around 1970 coincide with increased rainfall, primarily in the fall (September 1–November 30) when the lowest streamflows typically occur. As table 4 indicates, the average differences for the period 1970–79 in the summer (July 1–September 30) and fall (October 1–December 31) are the greatest differences for any of the periods investigated. The results of this study are similar to the findings by Karl and Knight (1998).

Comparison Between Hydrologically Based and Biologically Based Low Flows

The 1Q10 and 1B3 were found to be nearly equal, on average, in an analysis of 60 streams across the United States by the U.S. Environmental Protection Agency (1986). The 7Q10 and 4B3 were also found to be nearly equal.

In this study, averaged-station comparisons (table 6) and individual-station comparisons (table 7) between 1Q10/1B3 and 7Q10/4B3 were made for 1930–2002 for the 15 stations. The 1B3 and 4B3 average 6.2- and 7.9-percent less than the 1Q10 and 7Q10 (table 6), respectively; differences for the individual stations range from 28.5 percent less to 13.6 percent greater (table 7). Generally, the biologically based flow was less than the hydrologically based flow in the winter and fall, greater in the spring, and varied among the individual stations during the summer.

The results of this study are consistent with the findings by the U.S. Environmental Protection Agency (1986) for the analysis of hydrologically and biologically based flows. There were no statistics computed seasonally in the study by the U.S. Environmental Protection Agency that could be compared to the results from this study.

Selected Flow Statistics Representative of 1930–2002

The sample of available streamflow records is not representative of the entire population of streamflow records over the time period encompassing the operation of all the stations. Therefore, estimating equations developed by using the entire sample of station records would not be representative of the overall period when stations were operating. Estimating equations should be developed by use of station records that are representative of streamflows during a particular period of interest. These representative station records could not be acquired by means of record-extension techniques; rather, they were acquired for this analysis by way of a purposeful sampling (criterion based for this application) of the available station records.

Record periods for unregulated stations throughout a state or other large area differ because of differing times that stations were operating at particular locations. The number of active stations in a given area changes through time because of budget constraints, interests in particular hydrologic investigations, and stream regulation. The number of stations in West Virginia was about 5 between 1900 and 1910, increased to about 20 between 1910 and 1920, increased to about 40 in the

Table 6.—Average annual and seasonal differences between the 1-day 10-year hydrologically based and 1-day 3-year biologically based low-flow frequencies and between the 7-day 10-year hydrologically based and 4-day 3-year biologically based low-flow frequencies computed for 1930–2002 for 15 stations in West Virginia.

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; 1Q10, 1-day 10-year hydrologically based low-flow frequency; 1B3, 1-day 3-year biologically based low-flow frequency; 7Q10, 7-day 10-year hydrologically based low-flow frequency; 4B3, 4-day 3-year biologically based low-flow frequency; negative numbers indicate the biologically based flow is less than the hydrologically based flow, and positive numbers indicated the biologically based flow is greater than the hydrologically based flow; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500]

Compared streamflow statistics	Average difference, in percent				
	Annual	Seasonal			
		Winter	Spring	Summer	Fall
1Q10 and 1B3	-6.2	-23.1	59.9	2.8	-23.9
7Q10 and 4B3	-7.9	-20.9	49.6	4.1	-21.9

Table 7. Annual and seasonal differences between the 1-day 10-year hydrologically based and 1-day 3-year biologically based low-flow frequencies and between the 7-day 10-year hydrologically based and 4-day 3-year biologically based low-flow frequencies computed for 1930–2002 for 15 stations in West Virginia.

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; 1Q10, 1-day 10-year hydrologically based low-flow frequency; 1B3, 1-day 3-year biologically based low-flow frequency; 7Q10, 7-day 10-year hydrologically based low-flow frequency; 4B3, 4-day 3-year biologically based low-flow frequency; negative numbers indicate the biologically based flow is less than the hydrologically based flow, and positive numbers indicated the biologically based flow is greater than the hydrologically based flow; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500]

Station number	Difference between annual statistics, in percent		Difference between seasonal statistics, in percent							
			Winter		Spring		Summer		Fall	
	1Q10 and 1B3	7Q10 and 4B3	1Q10 and 1B3	7Q10 and 4B3	1Q10 and 1B3	7Q10 and 4B3	1Q10 and 1B3	7Q10 and 4B3	1Q10 and 1B3	7Q10 and 4B3
01606500	-4.2	-6.2	-24.2	-27.8	31.7	34.2	-2.9	-3.3	-7.9	-7.8
01608500	-12.3	-12.0	-30.3	-32.1	37.3	38.4	-9.9	-7.5	-17.2	-11.4
01611500	-0.6	-2.0	-25.4	-19.5	30.9	28.1	-0.2	-1.8	-9.2	-6.3
01636500	0.4	-4.0	-16.9	-17.0	16.9	11.6	2.6	-4.4	7.4	-1.1
03051000	3.4	-8.0	-17.2	-11.5	99.0	73.5	40.7	32.9	-18.3	-34.2
03053500	7.9	9.2	-16.7	-11.3	83.5	66.5	-4.1	28.0	-34.1	-31.4
03061500	-14.5	-23.1	-31.9	-39.0	75.5	53.1	-5.8	-2.4	-20.9	-33.7
03066000	-8.6	-21.1	-14.4	-7.8	54.3	42.3	6.0	-7.0	-36.8	-36.3
03069500	-7.5	0.2	-1.4	-5.3	61.4	51.0	0.7	0.2	-17.6	-25.5
03070500	2.6	13.6	-17.0	-13.0	102.3	88.3	40.1	26.8	-31.7	-21.7
03182500	-11.7	-16.7	-23.3	-24.2	73.0	57.6	-7.8	-2.5	-37.6	-17.4
03183500	2.2	-0.1	-37.6	-32.0	71.9	56.4	2.4	1.1	-16.8	-5.7
03186500	-11.8	-8.6	-17.0	-9.6	70.1	65.4	2.1	4.5	-42.3	-41.7
03198500	-28.5	-28.2	-33.0	-27.6	73.2	64.0	-20.0	-7.6	-43.6	-28.6
[a] 03214000 and 03214500	-10.0	-11.8	-40.7	-35.2	17.3	12.9	-1.1	4.4	-31.3	-25.0

[a] 1930–2002 period estimated from record for 1936–85 at Tug Fork near Kermit (03214000).

early 1930s, increased to about 95 in the late 1940s, was about 95 between 1950 and 1960, increased to about 110 around 1970, remained at 110 through the early 1980s, decreased to about 70 in the middle 1980s (Runner and others, 1989, fig.1), and decreased to about 60 in 2002. The greatest number of stations was operating after a sudden increase in minimum flows was observed around 1970, and many fewer stations were operating during the 1930s, during a significant drought. Therefore, the entire sample of station records is not random and does not represent the entire population; generally, the entire sample of station records has a positive bias over the period encompassing the operation of the stations.

Record periods in West Virginia can be divided into three general groups based on length: those near the length of the overall time period encompassing the operation of the stations, those near the median length of record periods for all stations, and those near the length of the 10-year minimum record period. Record periods near the length of the overall time period will be representative of the entire population. Record periods near the median length of record periods for all stations will be biased toward the period during the 1970s when minimum flows were much greater than average and biased away from the 1930s when there was a significant drought, if the record periods are equally distributed across the entire sample of station records. Bias in record periods near the 10-year minimum will be similar to those near the median length of record periods for all stations if they are equally distributed across the entire sample of station records. Some record periods near the 10-year minimum will be during consistently wet or dry periods and will be significantly different than the average of the entire population.

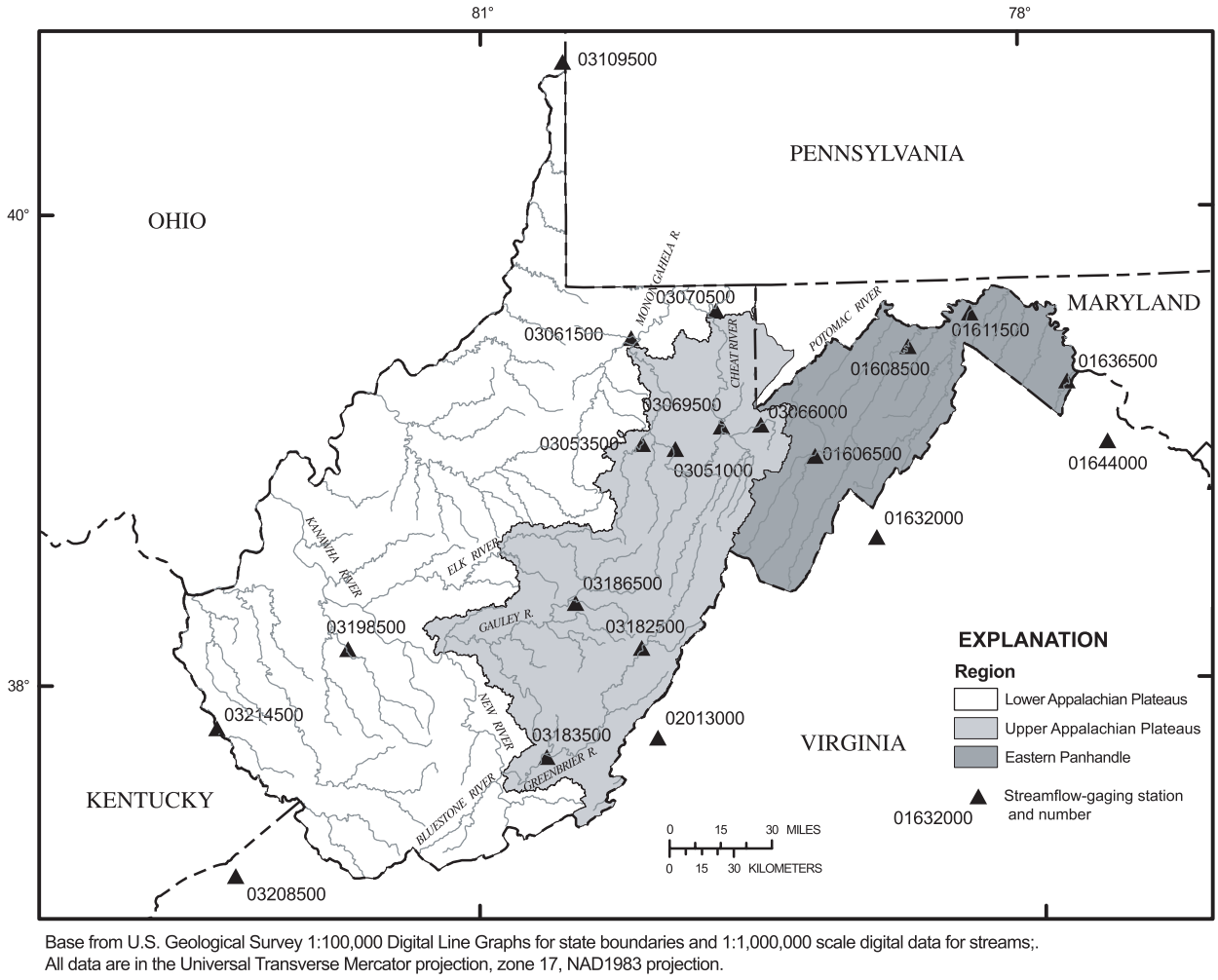
Log10-transformed minimum flows for the entire record period at the 15 stations with record during the period 1930–2002 (fig. 4) and five stations from outside the State were correlated with log10-transformed minimum flows for the entire record period at the remaining stations to study record-extension capabilities. Four stations were in Virginia: North Fork Shenandoah River at Cootes Store (01632000), Goose Creek near Leesburg (01644000), Dunlap Creek near Covington (02013000), and Russell Fork at Haysi (03208500). One station was in Ohio; Little Beaver Creek near East Liverpool (03109500). Correlation coefficients of 0.80 or greater were considered reliable for extending the station record at the remaining stations to the period 1930–2002. There were 47 stations in West Virginia with correlation coefficients of 0.80 or greater, but none of these stations were in the northern panhandle and only 4 stations were within 50 mi of the Ohio River along the western border of the State. Although records could be extended at the 47 stations, the areal distribution of stations was insufficient for developing estimating equations for ungaged-stream locations.

A criterion-based sampling (Goetz and LeCompte, 1984, p. 77) of the entire sample of station records can provide record periods representative of a defined time period. The criterion would reduce the influence caused particularly by the positive bias inherent in the entire sample of station records but also by the bias resulting when individual station records were collected only during a consistently wet or dry period. The longest time period with a sufficient number of active stations well distributed across the State was needed to develop a criterion for sampling. This period also should include a significant drought. The period 1930–2002 has record periods at 15 stations distributed across the State and includes the drought of the 1930s.

Correlation between the log10-transformed average minimum flow and the log10-transformed 1Q10, 7Q10, 30Q5, 1B3, and 4B3, and the EPA harmonic-mean flows for 110 stations (listed in table 1) having a minimum of 10 years of low-flow record in West Virginia resulted in correlation coefficients ranging from 0.987 to 0.998. The high correlation between the average minimum flow and the selected statistics indicates that the minimum flow can be used as a surrogate for statistical analysis. A sampling criterion based on record periods determined from analyzing the minimum flow will be applicable to low-flow statistics. A sampling criterion that the average minimum flow of the record period is nearly equal to the average minimum flow for 1930–2002 will provide representative record periods of the entire population for 1930–2002.

The standardized departures of the minimum flows for the 15 stations during 1930–2002 (fig. 4) were combined with the standardized departures of five stations outside the State (identified above) to determine regional subsets of record periods that could represent 1930–2002.

Principal component and correlation analyses were done on the standardized departures of the 20 stations. Three groups of stations representing three regions of the State were identified, and three stations were removed from consideration in the regional analysis. The three regions are identified in this report as the Lower Appalachian Plateaus, the Upper Appalachian Plateaus, and the Eastern Panhandle (fig. 8). The main stem of the Cheat, Monongahela, and Elk Rivers downstream from the boundary between the Lower Appalachian Plateaus and Upper Appalachian Plateaus are part of the Upper Appalachian Plateaus, but the tributaries to these Rivers downstream from the boundary are part of the Lower Appalachian Plateaus. Greenbrier River at Alderson (03183500) was removed from consideration in the Upper Appalachian Plateaus because it was on the same stream and highly correlated with Greenbrier River at Buckeye (03182500) (correlation coefficient of 0.92). South Branch Potomac River near Springfield (01608500) was removed from consideration in the Eastern Panhandle because it was on the same stream and highly correlated with South Branch Potomac River near Petersburg (01606500) (correlation coefficient of 0.95). Dunlap Creek near Covington, Va. (02013000) was removed from the analysis because it was grouped with the Eastern Panhandle, although it is closer to the Upper Appalachian Plateaus; moreover, its unusually high minimum flow for 1930, which is apparently accurate (D.C. Hayes, U.S. Geological Survey, oral commun., September 10, 2004), is inconsistent with concurrent minimum flows at other stations in the study area.



Base from U.S. Geological Survey 1:100,000 Digital Line Graphs for state boundaries and 1:1,000,000 scale digital data for streams;.
All data are in the Universal Transverse Mercator projection, zone 17, NAD1983 projection.

Figure 8. U.S. Geological Survey streamflow-gaging stations used to determine three regions of similar mimimum flow patterns: Lower Appalachian Plateaus, Upper Appalachian Plateaus, and Eastern Panhandle.

Generally, the Lower Appalachian Plateaus has less annual precipitation—between about 40 and 50 in.—than the Upper Appalachian Plateaus, where the annual precipitation is between about 50 and 60 in. (U.S. Department of Agriculture, Natural Resources Conservation Service, 2004). The exception is the Greenbrier River in the Upper Appalachian Plateaus where annual total precipitation is about 42–48 in.

The standardized departures were averaged for the three regions, and plots of the departures (figs. 9–11) show the increase around 1970 is most apparent in the Lower Appalachian Plateaus. The increase in minimum flows around 1970 and the greater-than-average minimum flows for 1970–79 probably dissipated from west to east, as evidenced by the absence of strong correlation between stations in the Lower Appalachian Plateaus and the difference between patterns of the departures for the Lower and Upper Appalachian Plateaus (figs. 9 and 10). There was also probably a north-to-south difference in minimum flows within the Lower Appalachian Plateaus, as evidenced by the absence of strong correlation between stations in that region. The east-to-west and north-to-south variability in minimum flows in the Lower Appalachian Plateaus reduced the effectiveness of record-extension techniques. The seasonal increase in atmospheric moisture after about 1970 (Karl and Knight, 1998) could have resulted in storms having clouds with greater densities. Precipitation that previously did not fall until reaching the area of the State where mean annual precipitation is the greatest could have began falling sooner, resulting in greater relative increases in minimum flows in the Lower Appalachian Plateaus (fig. 9) and less or no relative increases in minimum flows in the Upper Appalachian Plateaus (fig. 10). This meteorological hypothesis could help explain why the plot of departures

for the Greenbrier River at Alderson (03183500) did not show the increase in minimum flows around 1970 (fig. 2) evident in the plot of departures for the nearby combined stations Bluestone River near Pipestem (03179000) and Bluestone River at Lilly (03179500)(fig. 3). The Greenbrier River Basin receives annual precipitation of about 42–48 in. and is within a significant rain shadow caused by mountainous terrain (annual precipitation reaches about 60 in. on the windward side), whereas the Bluestone River Basin receives annual precipitation of about 38–40 in. and is not within as significant of a rain shadow (annual precipitation reaches only about 46 in. on the windward side). There is little or no increase in minimum flows for the Greenbrier River because the increased moisture was probably depleted from crossing the mountainous terrain before reaching the basin, unlike the situation for the Bluestone River. The Upper Appalachian Plateaus is significantly different from the other regions in that standardized departures for the period 1970–79 are much lower, close to the average for 1930–2002. Also, none of the stations indicating a trend for 1930–2002 by use of the Mann-Kendall test (discussed earlier in this report) are in the Upper Appalachian Plateaus Region.

The sampling criterion was based on determining where the average minimum flow of a record period is nearly equal to that for 1930–2002 in each region. The standardized departures for every 10-year or greater record period between 1930 and 2002 were averaged and compared to the standard deviation of the standardized departures for 1930–2002 for the three regions. The subset of record periods with average departures within 5 percent of the standard deviation of the departures were determined to be representative of 1930–2002 for the three regions (figs. 12–14). The subset of record periods may account for changes in low flow associated with climate variability, but changes in land use—particularly associated with mining—probably remain.

The Lower Appalachian Plateaus, with six stations, has the most restrictive subset of record periods (fig. 12) compared to the other regions (figs. 13–14). There are no 10-year or greater record periods beginning after 1965 or ending before 1974. The record periods for the Lower Appalachian Plateaus are roughly balanced around about 1970 when there was an increase from negative to positive departures (fig. 9). The Upper Appalachian Plateaus has the least restrictive subset of record periods (fig. 13), with the subset of record periods that include the maximum possible beginning year, 1993. The Eastern Panhandle does not have any subset of record periods beginning after 1980.

The subsets of record periods for the three regions were used to determine subset record periods for all stations in West Virginia. Subset record periods for all stations were selected

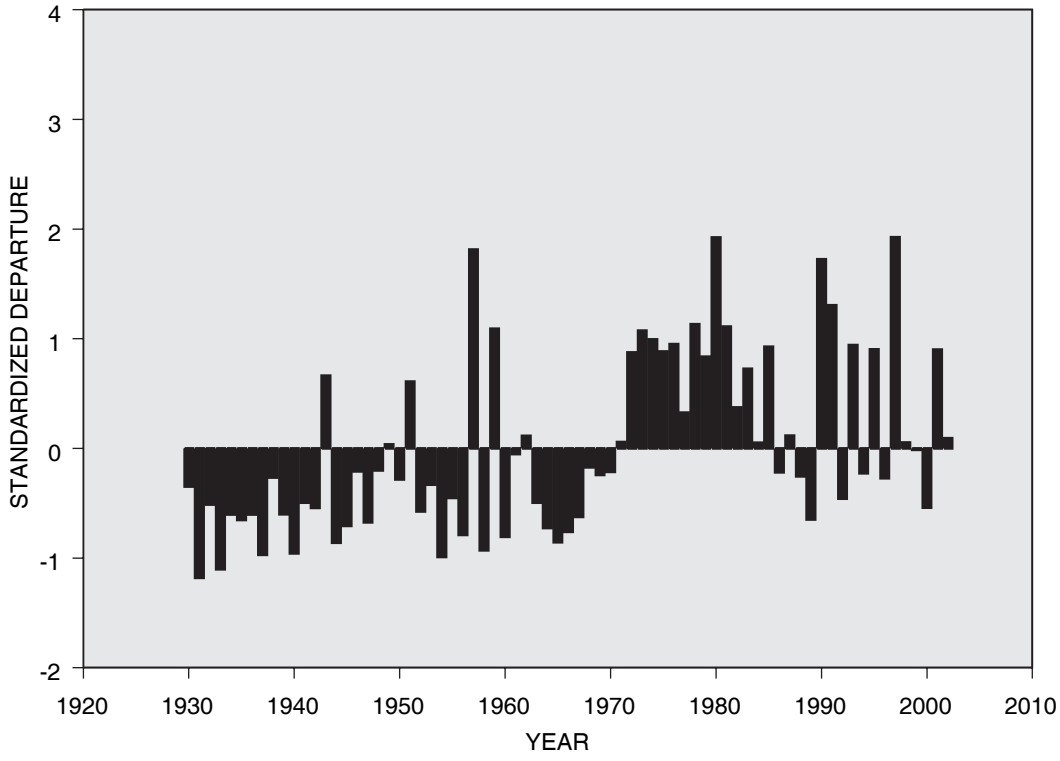


Figure 9. Average standardized departures of the minimum flows from the record-period average for 1930–2002 for six stations in the Lower Appalachian Plateaus region.

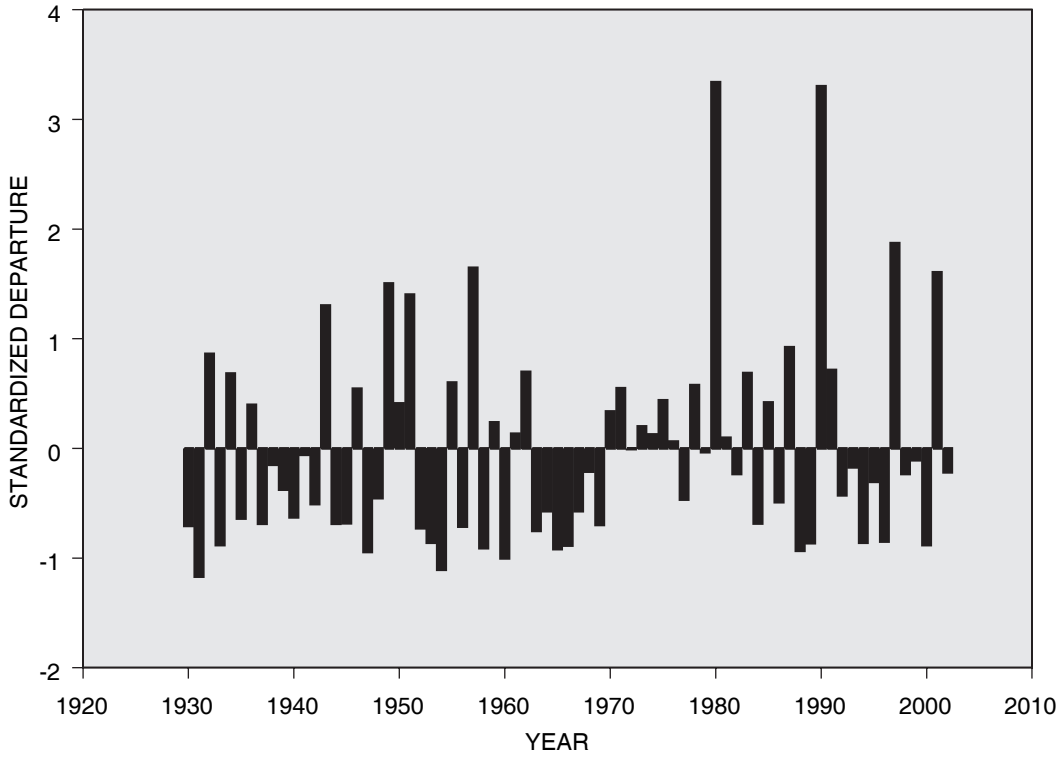


Figure 10. Average standardized departures of the minimum flows from the record-period average for 1930–2002 for six stations in the Upper Appalachian Plateaus region.

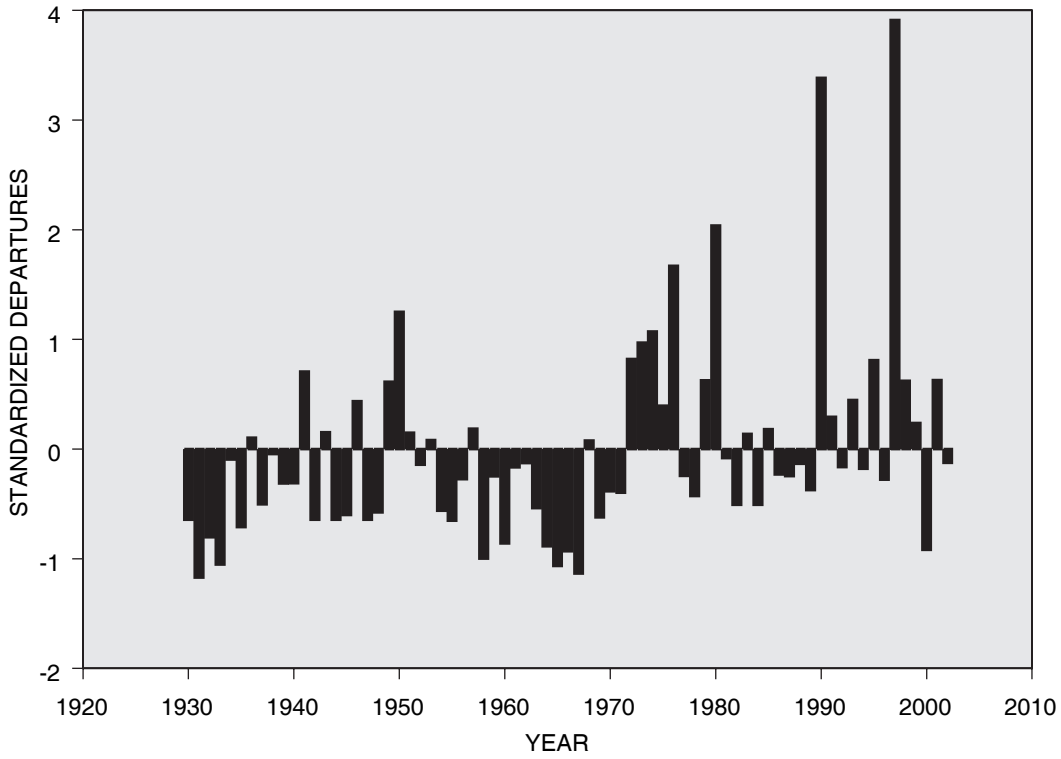


Figure 11. Average standardized departures of the minimum flows from the record-period average for 1930–2002 for five stations in the Eastern Panhandle region.

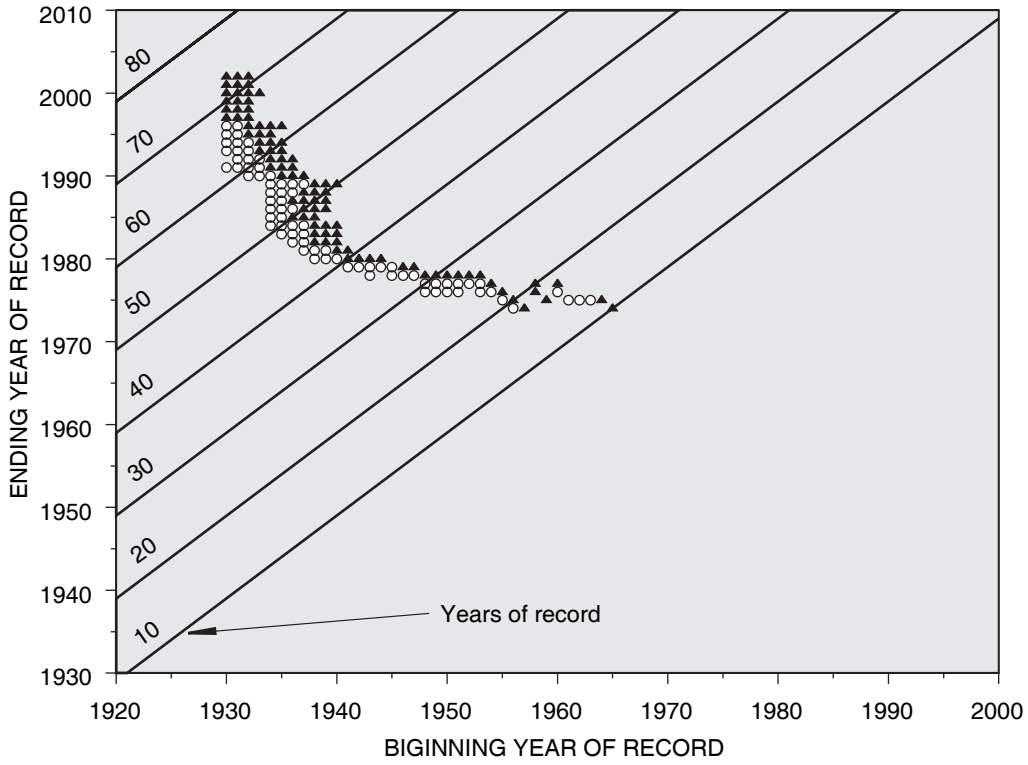


Figure 12. Record periods for the Lower Appalachian Plateaus region for which the average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (Six stations in West Virginia, Ohio, and Virginia; open circle indicates negative departure; solid triangle indicates positive departure).

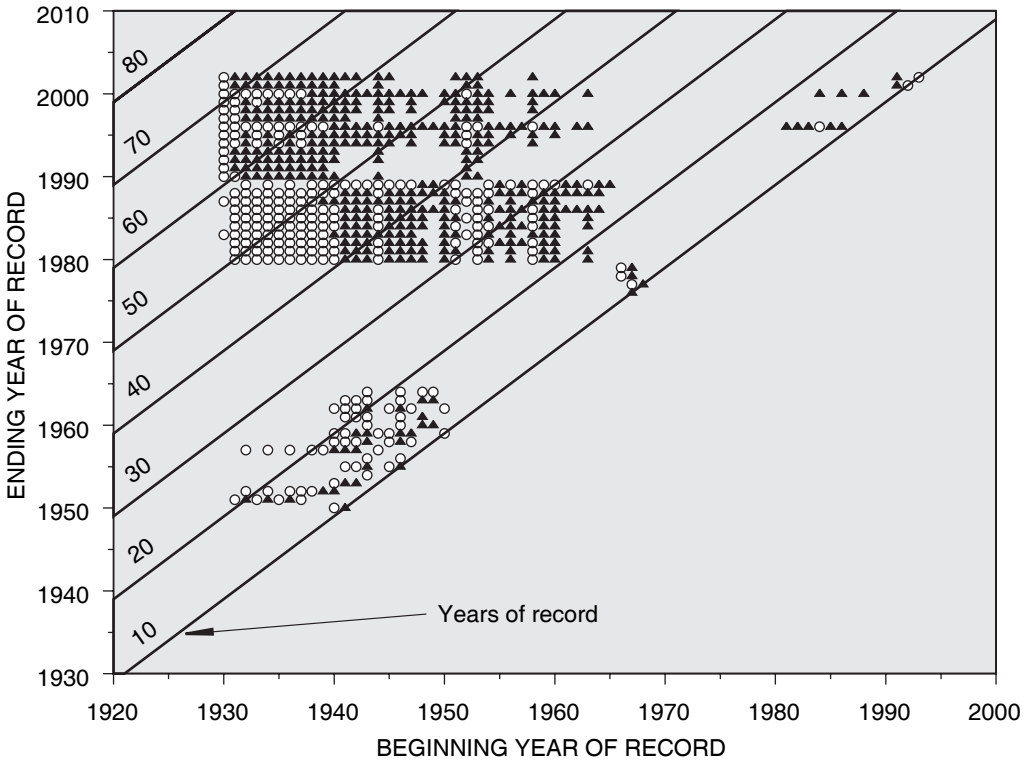


Figure 13. Record periods for the Upper Appalachian Plateaus region for which the average departure was within 5 percent of the standard deviation of the standardized departures of the mimimum flows for 1930–2002 (Six stations in West Virginia; open circle indicates negative departure; solid triangle indicates positive departure.

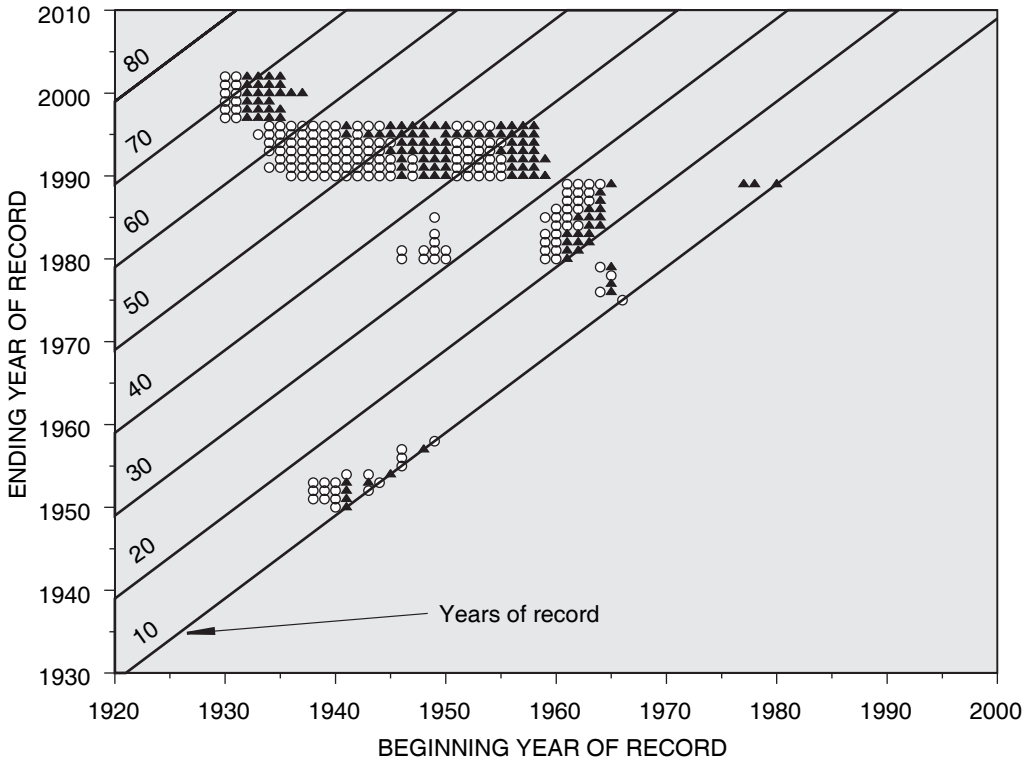


Figure 14. Record periods for the Eastern Panhandle region for which the average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (Five stations in West Virginia; open circle indicates negative departure; solid triangle indicates positive departure).

from the subset of record periods determined by the maximum record length with the minimum departure for the appropriate region (figs. 12–14; tables 8–10, near the end of this report). The dark shaded areas in tables 8–10 indicate 10-year record periods not feasible through 2002, and the light shaded area in table 8 is for the first example presented below.

The subset record period for a particular station can be determined by means of the appropriate regional table. For example, if a station is in the Lower Appalachian Plateaus and the station has a record length of 26 years beginning in climatic year 1949, all record periods of 10 years or more between 1949 and 1974 are feasible. The feasible record periods can be found in table 8 by locating the table entry where the first year is 1949 and the years of record are 26. The field defined by every table entry to the left and increasing by one entry down with each entry to the left indicates the feasible record periods, and these entries are lightly shaded in table 8 for this example. The record period representing 1930–2002 is either the period with the maximum number of record years or the period with the tabled average departure nearest to zero when more than one period is available for the maximum number of years. This example indicates that the maximum number of years is 19 beginning in 1956, or a subset record period of 1956–74, because the near-zero value of -0.034 is tabulated as the feasible record period having the maximum number of record years.

There is no subset record for Leading Creek near Glenville (03152500). There are 13 years of record 1939–51, and the station is located in the Lower Appalachian Plateaus (figs. 1 and 8). The feasible record periods can be found in table 8 by locating the table entry where the first year is 1939 and the years of record are 13; there are no values in the field defined by every table entry to the left and increasing by one entry down with each entry to the left. There is no subset record period because there are no values in the feasible-record field.

Selected statistics were computed for all stations where all or some part of the record period was included in the subset of record periods. Only continuous record periods were considered; therefore, a break in the record period could result in more than one selected record period for a station. The longest selected record period was used if more than one selected record period was considered for a station, or the selected record period with the closest departure to zero was used if the record periods were equal. For example, South Branch Potomac River at Franklin (01605500) is located in the East-

ern Panhandle with record periods 1942–69 and 1978–2002. The feasible record periods for 1942–69 can be found in table 10 by locating the table entry where the first year is 1942 and the years of record are 28; the feasible records are in the field defined by every table entry to the left and increasing by one entry down with each entry to the left. There are 2 record periods with the maximum number of record years, 12 years beginning in 1943 with the table value of -0.040 and 12 years beginning in 1946 with the table value of -0.011. The feasible record period for 1942–69 is 1946–57 with the tabled value of -0.011 because the tabled average departure is nearest to zero. The feasible record periods for 1978–2002 can be found in table 10 by locating the table entry where the first year is 1978 and the years of record are 25; the feasible records are in the field defined by every table entry to the left and increasing by one entry down with each entry to the left. The feasible record period for 1978–2002 is the 12 years 1978–89 with the tabled value of 0.039 because this is the period with the maximum number of record years. Finally, the subset record period is 1946–57 with the tabled value of -0.011 because the feasible records determined for the station record periods 1942–69 and 1978–2002 both have record lengths of 12 years and the feasible record period is the tabled value nearest zero.

Table 1 lists stations where streamflow statistics are published in this report; 77 of the 110 stations with a minimum of 10 years of record in West Virginia have a period of record that was included in the subset of record periods. The stations are areally distributed across the State, including the northern panhandle and the area along the Ohio River. Table 11, near the end of this report, lists the selected statistics that are representative of 1930–2002, and these values supersede those published by Friel and others (1989).

Record periods for 40 stations near but outside West Virginia were selected from the subset of record periods for the appropriate region, and the streamflow statistics computed from these record periods (table 12, at the end of this report) are representative of 1930–2002. These statistics can be used to assist in determining flows for West Virginia, but they do not supersede the values determined for use by the particular state.

Criterion-based sampling of the available record periods was superior to record-extension techniques for this study because more stations were selected and areal distribution of stations was more widespread. Climate variability is likely the primary cause of the regional patterns in the standardized departures of minimum flows. Comparisons of minimum flows between stations considered for record extension could have different slopes for different time periods (Riggs, 1972). For example, one station could be in the Lower Appalachian Plateaus and the other station in the Upper Appalachian Plateaus with record periods 1963–69 and 1963–79, respectively. Stations in both regions have much less than average minimum flows for 1963–69, but the minimum flows for the Lower Appalachian Plateaus are much greater than those for the Upper Appalachian Plateaus for 1970–79 (figs. 9 and 10). These stations could be in the same basin, and the correlation between the stations could be 0.80 or greater, but the extension of the station in the Lower Appalachian Plateaus for the period 1970–79 would reflect the lower flow of the station in the Upper Appalachian Plateaus. Station statistics computed with this type of error from record-extension techniques can make it more difficult to determine significant independent variables when developing estimating equations for ungaged stations. Criterion-based sampling of the available record is not prone to this error. Also, the criterion-based sampling allows for computation of medium-flow statistics, such as 50-percent flow duration and EPA harmonic-mean flow, whereas record-extension techniques are limited to computation of only low-flow statistics; medium flows are also affected by climate variability (Lins and Slack, 1999; McCabe and Wolock, 2002).

The average minimum flows were computed for the entire record period and the subset record period for stations in West Virginia (table 13 at back of report) to quantify some of the effects resulting from criterion-based sampling. The entire record periods for 13 stations were included in the feasible record periods (figs. 12–14 and tables 8–10) making the entire record period equal to the subset record period. There were no subset record periods for 33 stations. The average minimum flows were divided by the respective drainage areas for the stations and plotted for the entire record period (fig. 15) and the subset record period (fig. 16) for comparison.

Two stations have much greater minimum flows than all other stations with respect to drainage area (identified as No. 1 in fig. 15): Tuscarora Creek above Martinsburg (01617000) and North Fork Cranberry River near Hillsboro (03187300). Tuscarora Creek is in a limestone area of karst topography, and its contributing drainage area probably is greater than the drainage area determined from topography. Tuscarora Creek would not be considered for developing estimating equations even if a subset record period had been determined because of insufficient information for streams in karst areas of the State. The record period for North Fork Cranberry River, 1970–82 (table 13), was a consistently wet period of high standardized departures without a subset record period.

Figures 15 and 16 identify stations within the Potomac River Basin as dark-shaded circles. Two stations are identified as outliers from this plot (No. 2 in fig. 15): Tuscarora Creek above Martinsburg (01617000) and Little Cacapon River near Levels (016098000). Tuscarora Creek is a high outlier as discussed above, and Little Cacapon River has lower minimum flows than the rest of the Potomic River Basin. The record period for Little Cacapon River, 1968–77 (table 13), incorporates the period when minimum flows increased suddenly around 1970. Neither of these stations has subset record periods.

East Fork Twelvepole Creek near Dunlow (03206600) is a minor stream flowing directly into the Ohio River with a record period of 1966–2002 (No. 3 in fig. 15). The record period was a consistently wet period of high standardized departures without a subset record period. East Fork Twelvepole Creek has a minimum flow higher than other streams

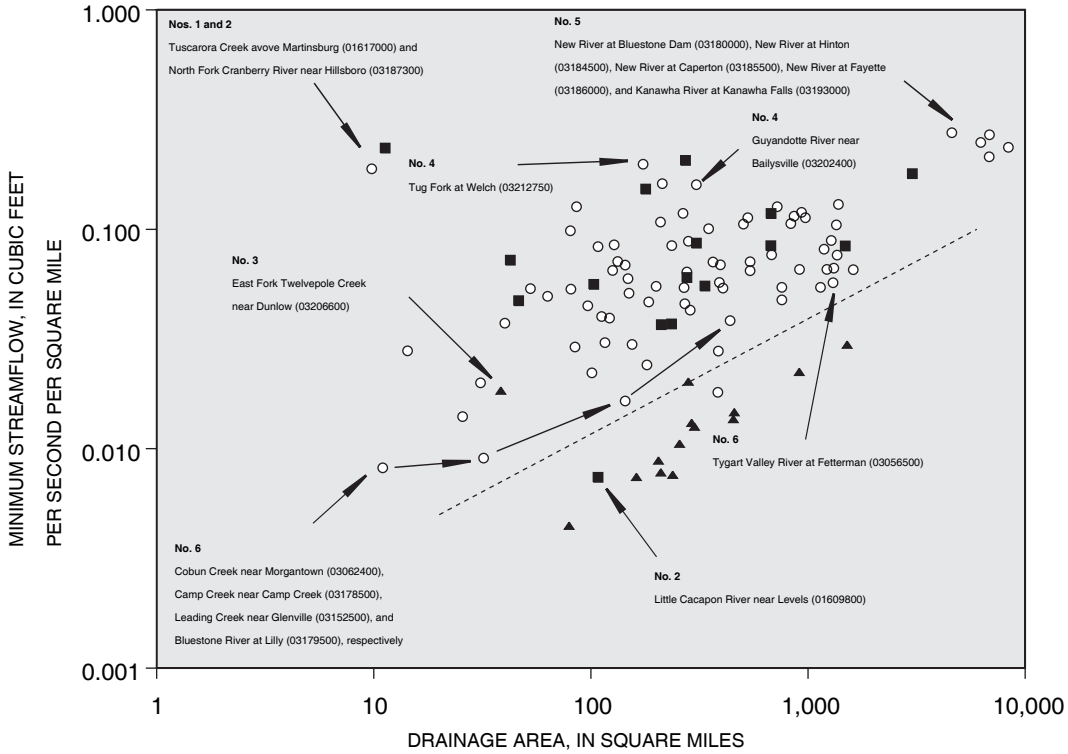


Figure 15. Unit average minimum flows for the entire record period at 110 stations in West Virginia (Open circle indicates station outside the Potomac River Basin and 50 miles or greater from the Ohio River; solid square indicates station within the Potomac River basin; solid triangle indicates station within 50 miles of the Ohio River; generally, points below the dashed line represent stations within 50 miles of the Ohio River; the numbered stations correspond to numbered discussions in text).,

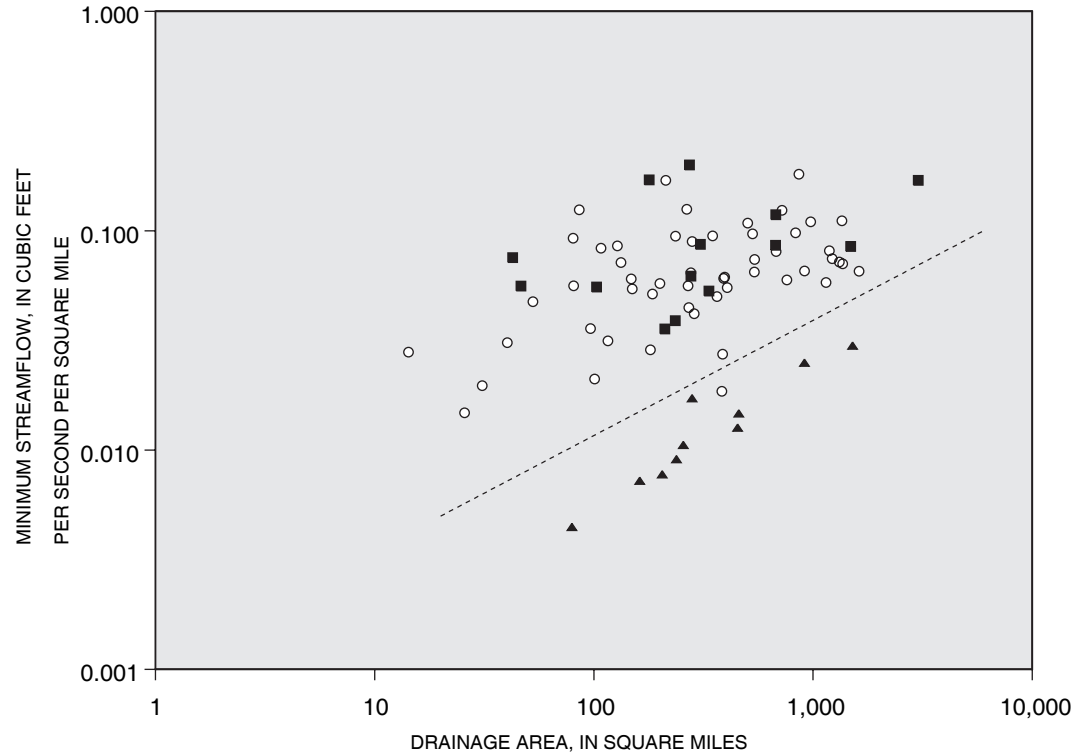


Figure 16. Unit average minimum flows for the subset record period at 77 stations in West Virginia (Open circle indicates station outside the Potomac River Basin and 50 miles or greater from the Ohio River; solid square indicates station within the Potomac River Basin; solid triangle indicates station within 50 miles of the Ohio River; generally, points below dashed line represent stations within 50 miles of the Ohio River).

within 50 mi of the Ohio River with respect to drainage area (note dashed line in figs. 15 and 16).

Guyandotte River near Bailysville (03202400) and Tug Fork at Welch (03212750) had different record periods between 1970 and 2002 during a consistently wet period of high standardized departures (No. 4 in fig. 15). The minimum flows were in the high range compared with other stations and there are no subset record periods for either station.

New River at Bluestone Dam (0318000), New River at Hinton (031845000), New River at Caperton (03185500), and Kanawha River at Kanawha Falls (03193000) are the stations with the greatest drainage areas, and their record periods ended in 1948 because of regulation (No. 5 in fig. 15). These stations had record periods during a consistently dry period of low standardized departures without subset record periods.

Cobun Creek at Morgantown (03062400), Camp Creek near Camp Creek (03178500), Leading Creek near Glenville (03152500), Bluestone River at Lilly (03179500), and Tygart Valley River at Fetterman (03056500) are all stations near the line below which minor streams flowing directly to the Ohio River plotted (No. 6 in fig. 15). Record periods for these stations spanned either the sudden increase in minimum flows around 1970 or a consistently dry period of low standardized departures, and there are no subset record periods.

The plot of subset record periods (fig. 16) identifies two subpopulations— stations within 50 mi of the Ohio River and stations in the remainder of the State—that are not easily discerned from the plot of the entire record periods (fig. 15). The purpose sampling of the entire record periods eliminates outliers that are not included in the subpopulation of records that represent 1930–2002.

Summary

The U.S. Geological Survey, in cooperation with the West Virginia Department of Environmental Protection, Division of Water and Waste Management, evaluated the low-flow patterns and statistics at U.S. Geological Survey streamflow-gaging stations in or near West Virginia. The effects of climate variability were probably the principal causes of the low-flow patterns observed at stations across the State.

Five time periods were identified between 1930 and 2002 with similar low-flow patterns, and average minimum flows for 15 stations were computed for the 5 time periods and the period 1930–2002. Average minimum flows for 1930–42, 1943–62, and 1963–69 were less than the average minimum flows for 1930–2002, and average minimum flows for 1970–79 and 1980–2002 were greater than the average minimum flows for 1930–2002. An abrupt change from a period of less-than-average to greater-than-average minimum flows was noted around 1970. The period of lowest minimum flows was 1963–69, and the period of greatest minimum flows was 1970–79; however, there was probably a period before 1930 with minimum flows greater than during 1970–79.

Variability of selected low-flow statistics for the 5 time periods identified between 1930 and 2002 at 15 stations, was analyzed both annually and seasonally. The selected low-flow statistics were the 1Q10, 7Q10, 7Q30, 1B3, 4B3, and the EPA harmonic-mean flow. Annually, the magnitude of the variability decreases with increasing magnitudes of the flow statistic. The values for 1Q10, 7Q10, 1B3, and 4B3 range from -93.9 to 582.5 percent for the individual stations for each selected time period from the values computed for 1930–2002, and the values for 30Q5 and the EPA harmonic-mean flow range from -62.3 to 281.2 percent. The maximum variation for an individual station is 582.5 percent greater for 7Q10 for the period 1970–79. A consistent trend was noted in the variability between the hydrologically based flows 1Q10 and 7Q10 and the biologically based flows 1B3 and 4B3. Hydrologically based flows indicate approximately equal or smaller absolute differences than biologically based flows for all selected time periods. Seasonally, there is no consistent trend between lower and higher low flows, and the average differences for 15 stations for 1970–79 in the summer (July 1–September 30) and fall (October 1–December 31) are the greatest average differences for any of the periods investigated. The selected statistics range from -95.7 to 683.6 percent for the individual stations for the selected time periods.

Comparisons between the 1Q10 and 1B3 and the 7Q10 and 4B3 were made for 15 stations. Annually, the 1B3 and 4B3 average less than the 1Q10 and 7Q10, respectively, and range from 28.5 percent less to 13.6 percent greater. Seasonally, the biologically based flow was less than the hydrologically based flow in the winter (January 1–March 31) and fall, greater in the spring (April 1–June 30), and varied among the individual stations during the summer.

Station records are available predominantly after about 1970, when minimum flows are greater than the 1930–2002 average. Some short-term station records are mostly during dry periods, whereas others are mostly during wet periods.

Record extension of stations as a means of deriving data representative of 1930–2002 was not feasible because no stations in the northern panhandle and only 4 stations within 50 mi of the Ohio River could be extended to 1930–2002. The areal distribution of stations was insufficient for developing estimating equations for ungaged stream locations. Instead, a criterion-based sampling of the entire record periods at stations was taken to reduce the effects of the entire record periods not representing those between 1930 and 2002. The sampling criterion reduced the inherent bias of entire record periods towards the higher-than-average minimum flows after about 1970 and was based on a comparison between regional minimum flows and station minimum flows. The regional minimum flows were determined from an analysis of 15 stations in West Virginia and 5 stations from surrounding states.

Principal component and correlation analyses on the 20 stations reduced the number of stations to 17 and identified three regions of the State: the Lower Appalachian Plateaus, the Upper Appalachian Plateaus, and the Eastern Panhandle. Generally, the Lower Appalachian Plateaus had less annual

precipitation (about 40 to 50 in.) compared to the Upper Appalachian Plateaus (about 50 to 60 in.). The Greenbrier River Basin was included in the Upper Appalachian Plateaus with an annual precipitation of about 42–48 in. because of rain-shadow effects.

The difference in standardized departures of the minimum flows between the Lower and Upper Appalachian Plateaus regions may be a result of increased storm-cloud densities in the summer and fall after about 1970. Precipitation that typically did not fall until reaching the central mountainous area of the State (where mean annual precipitation is the greatest) could have started falling sooner, resulting in greater relative increases in low flows in the Lower Appalachian Plateaus and lesser or no relative increases in low flows in the Upper Appalachian Plateaus.

Record periods of 10 years or greater between 1930 and 2002 were determined for stations in or near West Virginia on the basis of sampling criterion. The samples of station records are representative of the population for 1930–2002. The record periods for 77 stations in West Virginia and 40 stations near West Virginia, and selected statistics for these record periods are presented. These statistics can be used to develop equations to estimate flow at ungaged stream locations.

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Table 5. Differences between selected seasonal statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
1-day 10-year hydrologically based low flow (1Q10) for winter					
01606500	-8.5	-2.2	-16.8	60.2	-3.7
01608500	1.5	-6.7	-25.3	58.5	-2.3
01611500	-8.6	-8.6	-16.7	95.5	1.5
01636500	-22.4	3.6	-23.6	78.0	3.4
03051000	12.3	15.1	-17.5	50.6	-20.3
03053500	-6.7	24.0	-17.7	36.7	-14.1
03061500	-20.2	-0.4	-39.8	83.6	27.6
03066000	-7.5	14.0	1.2	20.9	-13.0
03069500	-13.4	18.9	3.9	29.6	-13.0
03070500	-13.2	-6.3	14.1	40.4	-0.2
03182500	5.8	2.4	18.2	55.3	-21.1
03183500	-6.0	12.0	-9.5	50.0	-16.9
03186500	-10.5	25.5	30.0	45.1	-20.9
03198500	-38.7	-1.9	-37.7	156.1	20.2
[a] 03214000 and 03214500	No value	[b] 0.1	[b] -35.5	[b] 181.1	[c] 33.5
1-day 10-year hydrologically based low flow (1Q10) for spring					
01606500	4.0	28.6	-26.8	-6.5	-1.2
01608500	-0.8	32.6	-28.7	-0.1	-2.8
01611500	1.8	15.3	-22.8	-7.9	6.8
01636500	-13.7	19.0	-15.5	8.9	1.6
03051000	-1.2	52.4	-44.6	9.6	-6.3
03053500	-14.5	74.2	-43.0	-10.8	-0.1
03061500	-67.3	9.8	-1.6	135.3	36.7
03066000	-3.3	18.7	-32.1	7.2	-4.1
03069500	-3.5	46.9	-34.8	9.7	-9.3
03070500	8.5	1.8	-51.4	101.0	4.3
03182500	-0.2	55.5	-35.5	16.3	-9.5
03183500	-0.9	59.4	-37.6	22.5	-12.3
03186500	-21.2	80.1	-45.4	70.4	-10.5
03198500	-63.3	39.1	-31.6	66.0	86.9
[a] 03214000 and 03214500	No value	[b] 1.9	[b] 8.7	[b] 63.8	[c] 57.7

Table 5. Differences between selected seasonal statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
1-day 10-year hydrologically based low flow (1Q10) for summer					
01606500	-3.6	6.1	-18.3	28.0	5.0
01608500	-2.5	6.6	-29.7	61.5	11.7
01611500	-1.6	8.3	-33.0	22.2	17.8
01636500	-17.8	14.5	-23.4	22.4	10.6
03051000	-62.2	19.7	58.5	557.4	13.4
03053500	-52.6	3.7	15.9	288.4	15.7
03061500	-66.5	-23.6	23.2	301.0	141.6
03066000	3.2	-27.3	-1.4	84.9	10.8
03069500	-28.9	-12.0	-16.3	159.3	21.0
03070500	1.5	-43.6	6.3	146.2	60.9
03182500	-38.8	8.4	-31.7	109.7	31.8
03183500	-17.1	2.3	0.2	64.5	-0.1
03186500	-11.3	-15.7	9.8	267.5	-13.2
03198500	-49.1	-33.9	-30.6	396.9	218.9
[a] 03214000 and 03214500	No value	[b] -10.8	[b] 16.2	[b] 121.5	[c] 126.6
1-day 10-year hydrologically based low flow (1Q10) for fall					
01606500	-7.9	0.0	-17.9	25.8	6.0
01608500	-14.6	1.2	-25.7	47.6	12.3
01611500	-13.4	0.4	-16.4	12.8	9.3
01636500	-26.0	6.6	-5.7	31.6	12.4
03051000	-48.2	-12.8	-2.5	385.1	23.9
03053500	-68.2	-34.4	-2.8	493.3	124.4
03061500	-52.0	-28.9	21.8	437.3	146.1
03066000	-9.4	-40.0	39.7	164.6	41.8
03069500	-22.7	-33.0	5.6	153.6	40.6
03070500	-16.5	-54.8	33.6	241.6	99.6
03182500	-21.5	-2.0	-33.7	56.5	23.5
03183500	-14.0	-9.3	-6.0	43.7	10.0
03186500	-9.6	-45.3	43.2	158.0	36.9
03198500	-43.3	-31.6	35.6	168.3	210.6
[a] 03214000 and 03214500	No value	[b] 1.1	[b] 25.3	[b] 88.9	[c] 135.2

Table 5. Differences between selected seasonal statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
7-day 10-year hydrologically based low flow (7Q10) for winter					
01606500	2.0	-8.1	-16.1	63.7	-4.9
01608500	9.1	-11.2	-26.0	69.5	-1.1
01611500	-10.0	-9.0	-22.8	113.8	4.0
01636500	-17.8	2.6	-19.8	73.7	-0.8
03051000	11.3	13.9	-25.2	41.1	-17.1
03053500	-1.4	17.9	-25.8	26.8	-11.4
03061500	-25.3	-3.2	-38.8	58.1	30.3
03066000	16.5	3.0	-17.2	4.1	-6.7
03069500	-1.5	12.4	-11.1	12.8	-10.3
03070500	5.9	-10.1	-3.6	18.0	-0.2
03182500	11.1	-1.4	5.9	39.4	-17.6
03183500	-9.2	7.4	-6.8	23.6	-12.6
03186500	-79.9	-52.5	11.5	26.9	-10.0
03198500	-81.1	-28.8	-34.7	143.4	26.3
[a] 03214000 and 03214500	No value	[b] 1.4	[b] -29.8	[b] 162.3	[c] 33.0
7-day 10-year hydrologically based low flow (7Q10) for spring					
01606500	3.3	42.5	-25.1	-8.4	-6.5
01608500	-0.4	39.8	-26.9	-5.7	-6.0
01611500	3.2	17.9	-24.9	-9.0	3.9
01636500	3.6	23.2	-21.0	-3.9	-4.0
03051000	-5.7	58.8	-40.9	16.3	-15.2
03053500	-17.7	86.7	-47.3	-10.4	-3.2
03061500	-61.0	2.5	-2.1	128.2	29.8
03066000	-6.1	22.5	-34.1	15.1	-5.6
03069500	-3.7	53.9	-34.6	6.8	-13.1
03070500	6.5	-2.4	-54.4	108.4	5.3
03182500	6.2	60.4	-27.3	10.2	-16.4
03183500	-1.0	53.1	-28.8	11.2	-14.4
03186500	-84.5	-86.9	-44.6	52.0	-14.8
03198500	-89.3	-86.9	-29.2	45.1	68.8
[a] 03214000 and 03214500	No value	[b] 8.1	[b] 3.6	[b] 49.9	[c] 42.4

Table 5. Differences between selected seasonal statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
7-day 10-year hydrologically based low flow (7Q10) for summer					
01606500	-3.0	5.3	-19.6	30.7	6.6
01608500	-5.4	6.9	-27.7	59.5	12.5
01611500	-1.2	5.8	-31.3	22.7	17.2
01636500	1.3	12.1	-28.4	12.1	3.9
03051000	-61.9	-0.9	40.3	649.3	30.7
03053500	-53.7	0.1	30.4	298.1	16.9
03061500	-60.1	-16.7	22.1	230.8	98.7
03066000	5.4	-22.0	-16.9	84.0	8.8
03069500	-24.8	-17.1	-14.5	175.3	23.8
03070500	-4.9	-39.4	2.0	129.2	59.9
03182500	-30.4	2.1	-30.0	116.6	20.7
03183500	-17.7	1.9	-2.5	60.5	2.0
03186500	-3.5	-18.1	2.3	279.2	-12.7
03198500	-46.0	-34.1	-29.8	380.0	182.7
[a] 03214000 and 03214500	No value	[b] -9.8	[b] 12.9	[b] 115.8	[c] 115.9
7-day 10-year hydrologically based low flow (7Q10) for fall					
01606500	-6.1	0.9	-17.1	18.3	6.5
01608500	-13.0	3.5	-25.9	37.2	11.0
01611500	-11.2	3.2	-17.1	14.9	12.4
01636500	-12.1	8.2	-14.4	16.2	4.0
03051000	-51.4	-22.9	34.0	270.4	24.6
03053500	-70.5	-33.4	2.4	428.6	114.1
03061500	-48.0	-30.7	39.7	369.1	94.9
03066000	-5.1	-39.8	35.5	138.5	32.7
03069500	-25.1	-34.6	23.7	121.4	37.4
03070500	-20.8	-58.7	15.2	260.6	112.1
03182500	-25.7	-6.2	-23.0	37.6	24.0
03183500	-18.0	-11.3	0.4	33.4	14.5
03186500	-13.6	-50.0	66.7	146.3	45.5
03198500	-38.0	-33.1	15.1	128.0	172.7
[a] 03214000 and 03214500	No value	[b] -0.8	[b] 23.8	[b] 85.8	[c] 123.5

Table 5. Differences between selected seasonal statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
30-day 5-year hydrologically based low flow (30Q5) for winter					
01606500	-9.6	3.9	-30.2	57.8	-2.1
01608500	-10.8	1.2	-29.6	61.4	-0.4
01611500	-18.2	3.5	-23.3	111.6	-8.4
01636500	-18.0	-3.0	-4.4	57.2	-2.0
03051000	-9.1	16.1	-35.6	5.1	8.0
03053500	-12.3	25.9	-39.8	-0.7	8.7
03061500	-14.9	30.1	-65.4	13.1	25.4
03066000	-5.7	6.2	-28.2	4.2	13.9
03069500	-8.0	10.9	-35.4	7.1	12.2
03070500	8.8	5.3	-24.4	0.2	5.4
03182500	-1.2	5.9	-25.2	18.8	0.5
03183500	-17.3	13.3	-24.8	13.4	7.7
03186500	-33.0	49.3	63.4	175.7	152.9
03198500	-46.1	10.8	52.9	294.6	208.6
[a] 03214000 and 03214500	No value	[b] 13.1	[b] -28.2	[b] 66.6	[c] 10.7
30-day 5-year hydrologically based low flow (30Q5) for spring					
01606500	-7.9	38.8	-28.9	-17.5	-1.1
01608500	-7.5	35.8	-32.0	-17.0	2.3
01611500	-7.7	26.2	-17.7	-4.2	-0.8
01636500	-2.7	21.0	-26.7	-8.0	4.4
03051000	3.0	23.2	-36.0	12.9	-10.5
03053500	-16.0	45.7	-46.5	9.8	-3.6
03061500	-20.9	5.0	-44.1	51.5	10.8
03066000	-14.1	26.2	-38.2	6.8	1.2
03069500	-5.8	47.9	-40.3	-4.0	-8.8
03070500	-4.3	5.9	-48.1	38.9	9.4
03182500	-6.3	57.2	-39.3	-11.9	-9.5
03183500	-11.7	37.6	-30.0	-8.6	-2.5
03186500	12.5	-14.6	231.2	486.7	520.4
03198500	-10.3	-39.2	188.5	355.0	603.4
[a] 03214000 and 03214500	No value	[b] -2.6	[b] -10.1	[b] 22.9	[c] 43.0

Table 5. Differences between selected seasonal statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
30-day 5-year hydrologically based low flow (30Q5) for summer					
01606500	-1.2	8.7	-24.3	29.8	3.3
01608500	-2.6	6.6	-30.4	43.3	5.3
01611500	-1.9	-0.3	-33.4	31.0	10.2
01636500	3.9	4.4	-28.3	17.1	3.7
03051000	-39.8	-9.0	-30.9	193.9	15.7
03053500	-42.6	-3.7	-25.7	128.7	25.4
03061500	-54.8	-10.0	-29.9	148.0	46.0
03066000	-1.8	-13.8	-29.5	69.5	7.2
03069500	-19.5	-8.1	-29.1	86.2	12.6
03070500	-3.4	-31.9	-38.2	81.5	56.9
03182500	-4.8	16.6	-45.9	60.2	1.6
03183500	-9.4	17.8	-23.7	46.0	-2.7
03186500	12.5	-14.6	-32.6	129.3	-4.6
03198500	-10.3	-39.2	-32.0	137.8	62.4
[a] 03214000 and 03214500	No value	[b] -17.6	[b] -4.2	[b] 78.2	[c] 56.8
30-day 5-year hydrologically based low flow (30Q5) for fall					
01606500	-12.4	-3.6	-20.0	38.4	3.9
01608500	-12.7	-2.7	-22.7	44.7	2.8
01611500	-12.4	-4.4	-16.7	49.9	-8.5
01636500	-9.6	9.5	-22.6	23.8	0.3
03051000	-37.2	-25.9	-17.9	152.0	21.9
03053500	-43.3	-39.3	-32.3	192.6	34.4
03061500	-45.0	-10.5	-40.0	210.9	37.8
03066000	0.8	-40.7	7.0	101.1	19.3
03069500	-16.5	-33.4	-2.7	96.6	21.7
03070500	-25.7	-30.7	-52.8	132.4	40.5
03182500	-36.8	-5.7	-15.6	73.6	14.2
03183500	-27.7	-9.8	-0.8	68.7	5.7
03186500	-31.0	-35.5	7.3	170.9	21.9
03198500	-49.3	-25.0	-12.7	104.4	67.9
[a] 03214000 and 03214500	No value	[b] -5.1	[b] -5.6	[b] 109.0	[c] 60.4

Table 5. Differences between selected seasonal statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
1-day 3-year biologically based low flow (1B3) for winter					
01606500	7.6	-4.8	-2.5	68.7	3.4
01608500	20.0	-6.4	-8.6	60.7	-0.7
01611500	16.4	-8.3	-9.8	100.3	3.2
01636500	-16.8	13.6	-17.1	75.1	-2.0
03051000	-22.3	14.4	-22.2	94.4	-7.0
03053500	0.0	21.0	-12.6	62.7	-0.1
03061500	-15.6	-33.6	-8.6	22.4	42.9
03066000	4.4	0.4	20.1	40.2	-15.7
03069500	-21.7	-0.4	-0.4	30.0	-19.6
03070500	-13.8	-29.9	30.1	31.9	24.0
03182500	3.5	-15.0	34.1	58.5	-24.6
03183500	-14.3	8.6	42.1	56.4	-12.9
03186500	-41.8	16.8	51.4	77.1	-13.8
03198500	-65.6	-19.8	-48.7	243.8	40.1
[a] 03214000 and 03214500	No value	[b] -20.2	[b] -21.6	[b] 84.0	[c] 69.3
1-day 3-year biologically based low flow (1B3) for spring					
01606500	-22.2	37.5	-2.1	-14.6	35.4
01608500	-32.1	27.8	-3.6	-27.0	40.9
01611500	-19.7	14.6	12.5	-36.2	15.6
01636500	-14.6	13.6	15.8	-2.2	-3.7
03051000	-34.7	13.3	-24.9	0.0	51.6
03053500	-6.6	21.1	0.0	-44.6	79.6
03061500	-56.2	-5.3	48.2	127.1	127.1
03066000	-14.8	4.3	-4.8	4.8	51.9
03069500	-35.3	9.6	0.0	-20.9	26.2
03070500	-21.1	-3.6	-14.0	14.7	90.0
03182500	-43.5	26.2	-14.0	-10.8	29.5
03183500	-18.9	17.2	1.6	-16.8	26.2
03186500	-34.2	36.8	-5.3	21.1	57.4
03198500	-68.8	8.7	0.0	26.7	104.2
[a] 03214000 and 03214500	No value	[b] 14.4	[b] 55.5	[b] 49.3	[c] 137.0

Table 5. Differences between selected seasonal statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
1-day 3-year biologically based low flow (1B3) for summer					
01606500	-6.0	4.0	-12.2	31.8	-0.2
01608500	-12.2	6.4	-15.4	77.1	27.0
01611500	-2.9	15.5	-26.3	15.8	21.1
01636500	-18.4	18.7	-34.4	11.8	19.9
03051000	-95.7	10.5	17.8	330.5	-9.1
03053500	-87.9	-3.5	54.0	211.1	10.4
03061500	-62.7	-13.4	47.8	407.5	179.1
03066000	-9.3	-14.4	0.0	64.3	0.0
03069500	-51.8	-19.1	-25.6	126.2	19.7
03070500	-3.0	-63.0	-26.5	85.8	17.7
03182500	-38.9	17.6	0.8	134.5	42.9
03183500	-40.3	-6.2	2.3	55.4	-1.9
03186500	0.5	-14.6	39.2	331.2	8.5
03198500	-61.7	-28.9	-29.2	543.5	306.7
[a] 03214000 and 03214500	No value	[b] 9.8	[b] 19.7	[b] 127.1	[c] 120.6
1-day 3-year biologically based low flow (1B3) for fall					
01606500	-17.9	3.8	-21.5	21.6	9.1
01608500	-13.3	9.5	-15.8	68.7	25.4
01611500	-12.2	2.0	-14.6	19.0	19.0
01636500	-32.0	7.9	-10.6	11.1	6.0
03051000	-84.0	-8.5	27.7	469.8	-45.5
03053500	-93.3	-3.4	20.9	683.6	30.2
03061500	-35.1	-23.4	55.8	416.9	193.5
03066000	-14.3	-31.7	-1.1	217.5	105.0
03069500	-69.4	-44.4	13.6	158.1	21.9
03070500	-49.3	-46.4	61.2	123.9	54.3
03182500	-41.4	-7.6	-22.8	135.3	101.7
03183500	-41.5	-16.7	2.3	67.0	24.6
03186500	16.8	-47.3	-0.9	244.5	40.0
03198500	-13.4	-34.6	-32.9	347.1	276.5
[a] 03214000 and 03214500	No value	[b] 14.2	[b] 55.4	[b] 131.1	[c] 221.5

Table 5. Differences between selected seasonal statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
4-day 3-year biologically based low flow (4B3) for winter					
01606500	19.1	-4.6	-3.9	57.2	-0.2
01608500	43.3	-5.7	-17.8	54.1	0.0
01611500	5.9	-14.3	-21.5	120.3	3.3
01636500	-14.0	11.3	-26.4	74.3	-3.6
03051000	-20.8	2.7	-36.2	66.7	-1.8
03053500	-1.4	12.7	-24.0	48.2	-4.3
03061500	17.3	-8.2	-10.4	74.5	83.6
03066000	10.8	11.7	-8.4	10.8	-13.2
03069500	-6.8	0.0	-12.5	16.6	-0.8
03070500	-9.1	-24.3	10.1	8.8	4.0
03182500	-5.7	-16.3	20.4	32.4	-27.2
03183500	-33.0	-0.5	13.0	46.5	-10.3
03186500	-46.4	19.5	24.8	44.8	-13.8
03198500	-72.5	-26.3	-62.7	154.2	21.3
[a] 03214000 and 03214500	No value	[b] -22.9	[b] -43.1	[b] 76.3	[c] 39.5
4-day 3-year biologically based low flow (4B3) for spring					
01606500	-17.6	40.0	-9.4	-23.5	31.8
01608500	-22.9	26.3	-9.6	-29.0	31.7
01611500	-18.3	22.2	16.7	-32.5	27.8
01636500	-8.5	13.3	7.2	-7.1	-3.4
03051000	-23.6	10.9	-10.1	-1.5	33.1
03053500	-15.1	23.8	-14.1	-43.0	73.5
03061500	-61.2	-18.6	37.0	99.4	102.2
03066000	-14.6	15.8	-10.7	-1.2	49.0
03069500	-15.9	19.9	-4.0	-19.9	23.9
03070500	-26.6	-5.3	-11.9	13.3	69.5
03182500	-18.9	26.6	-12.8	-15.5	37.6
03183500	-13.4	26.5	-1.1	-8.6	46.3
03186500	-26.8	49.8	18.8	-4.2	66.3
03198500	-56.7	9.9	3.3	17.4	95.6
[a] 03214000 and 03214500	No value	[b] 17.8	[b] 45.6	[b] 64.5	[c] 120.7

Table 5. Differences between selected seasonal statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
4-day 3-year biologically based low flow (4B3) for summer					
01606500	-5.7	7.2	-12.7	33.7	4.2
01608500	-9.1	17.0	-16.1	66.7	27.3
01611500	-2.8	16.5	-24.8	34.7	22.8
01636500	-12.4	19.6	-34.3	7.7	16.9
03051000	-88.3	-4.3	6.0	347.3	-1.6
03053500	-87.1	-7.4	10.8	289.8	-0.4
03061500	-57.4	-36.1	11.1	300.0	87.0
03066000	-7.8	-9.4	11.9	69.8	-3.4
03069500	-51.3	-14.8	-1.6	139.0	24.5
03070500	-1.9	-64.2	-10.1	100.8	26.3
03182500	-41.0	3.4	-15.4	118.8	28.9
03183500	-39.2	11.5	0.8	66.6	-1.6
03186500	-2.3	-22.3	16.2	300.0	8.3
03198500	-59.2	-5.1	-27.0	405.7	245.3
[a] 03214000 and 03214500	No value	[b] 1.2	[b] 43.3	[b] 109.6	[c] 101.6
4-day 3-year biologically based low flow (4B3) for fall					
01606500	-22.0	1.4	-20.3	16.9	6.9
01608500	-15.1	5.1	-21.5	52.0	15.2
01611500	-5.5	-1.1	-16.3	16.6	16.6
01636500	-20.9	5.0	-13.3	9.5	4.5
03051000	-84.8	-15.2	41.9	455.3	-43.1
03053500	-92.6	-22.3	-4.9	509.9	35.7
03061500	-40.2	-26.5	46.1	395.1	154.9
03066000	-28.4	-33.8	29.0	166.0	72.8
03069500	-65.0	-28.8	16.0	142.9	26.4
03070500	-42.1	-50.8	15.2	135.8	39.8
03182500	-49.9	-34.3	-37.6	68.5	41.6
03183500	-49.2	-21.8	0.9	41.5	11.2
03186500	-4.6	-43.9	5.4	223.2	42.1
03198500	-39.7	-46.0	13.4	206.0	200.0
[a] 03214000 and 03214500	No value	[b] 8.2	[b] 55.1	[b] 114.3	[c] 186.6

Table 5. Differences between selected seasonal statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
U.S. Environmental Protection Agency harmonic-mean flow for winter					
01606500	-0.2	-0.2	-18.2	40.4	-5.1
01608500	0.5	-1.9	-19.8	42.3	-3.9
01611500	-8.5	-1.1	-22.1	78.3	-3.6
01636500	-11.7	3.5	-16.4	48.5	-4.7
03051000	-1.5	9.6	-19.6	24.3	-7.3
03053500	-7.3	13.7	-20.1	15.6	-4.1
03061500	-2.6	5.9	-39.9	45.6	3.0
03066000	-6.7	6.0	-12.7	7.5	-0.7
03069500	-6.5	10.2	-17.3	11.1	-1.9
03070500	-0.7	-1.4	-12.9	16.4	0.4
03182500	7.9	1.0	-9.6	27.3	-9.6
03183500	-4.6	6.4	-12.5	28.4	-6.4
03186500	-4.1	8.1	-13.1	15.3	-5.9
03198500	-33.5	11.4	-33.5	82.4	12.9
[a] 03214000 and 03214500	No value	[b] 11.7	[b] -25.3	[b] 85.6	[c] 8.9
U.S. Environmental Protection Agency harmonic-mean flow for spring					
01606500	-16.6	8.1	-15.1	-7.4	16.0
01608500	-17.2	7.6	-15.4	-10.3	19.0
01611500	-17.9	7.5	-12.1	-3.1	14.0
01636500	-11.8	6.1	-18.4	1.3	9.6
03051000	-22.5	4.0	-19.4	1.2	25.1
03053500	-25.8	11.1	-24.7	-8.5	34.7
03061500	-46.6	-7.1	-13.9	42.6	48.7
03066000	-21.8	-1.6	-12.2	-2.4	27.6
03069500	-19.3	6.3	-14.9	-9.0	22.5
03070500	-25.4	-4.0	-17.9	16.1	30.8
03182500	-24.8	8.0	-13.1	-8.0	24.1
03183500	-25.0	6.4	-13.6	-6.4	28.0
03186500	-36.6	9.7	-11.4	4.6	31.4
03198500	-43.0	0.7	-15.0	14.3	53.8
[a] 03214000 and 03214500	No value	[b] -2.6	[b] -5.9	[b] 32.4	[c] 43.7

Table 5. Differences between selected seasonal statistics computed for 1930–2002 and the statistics computed for the indicated record periods for 15 stations in West Virginia.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; station numbers for the 15 stations are 01606500, 01608500, 01611500, 01636500, 03051000, 03053500, 03061500, 03066000, 03069500, 03070500, 03182500, 03183500, 03186500, 03198500, and combined stations 03214000 and 03214500; a negative value means the average for the indicated record period is less than the average for 1930–2002; a positive value means the average for the indicated record period is greater than the average for 1930–2002]

Station number	Difference for the indicated period, in percent				
	1930–42	1943–62	1963–69	1970–79	1980–2002
U.S. Environmental Protection Agency harmonic-mean flow for summer					
01606500	-4.0	3.3	-36.5	16.7	12.0
01608500	-7.1	2.5	-41.1	27.4	17.0
01611500	-10.6	0.0	-33.1	32.0	11.7
01636500	0.4	2.7	-37.0	16.2	9.6
03051000	-64.6	49.2	5.0	263.6	71.8
03053500	-56.0	29.7	-8.9	139.2	42.4
03061500	-54.8	-3.4	-33.0	169.3	61.3
03066000	-8.2	-9.4	-27.7	49.6	13.3
03069500	-25.3	1.8	-30.2	59.6	17.3
03070500	5.4	-25.8	-45.4	120.8	41.2
03182500	-18.8	9.4	-42.6	55.9	13.4
03183500	-13.4	6.7	-35.7	50.4	5.8
03186500	-13.6	-12.3	-24.3	141.3	6.0
03198500	-35.9	-26.5	-28.2	98.1	93.4
[a] 03214000 and 03214500	No value	[b] -12.5	[b] 0.0	[b] 53.7	[c] 61.1
U.S. Environmental Protection Agency harmonic-mean flow for fall					
01606500	-6.6	-2.0	-18.5	33.8	1.3
01608500	-7.1	-2.9	-21.6	42.3	2.9
01611500	-9.4	-3.8	-17.0	42.5	3.8
01636500	-8.4	2.5	-22.7	31.0	1.8
03051000	-50.3	-5.6	26.7	284.8	31.2
03053500	-66.9	-2.3	90.4	589.3	177.4
03061500	-46.4	-21.0	-24.0	196.6	61.5
03066000	-1.6	-28.8	-2.9	89.0	18.8
03069500	-23.8	-22.5	6.5	92.6	25.5
03070500	36.5	-56.0	20.8	273.6	143.3
03182500	-20.9	-4.0	-16.1	52.3	9.1
03183500	-15.0	-4.2	0.5	46.0	0.5
03186500	7.1	-35.4	16.8	163.7	14.6
03198500	-43.3	-22.9	-7.3	110.8	72.0
[a] 03214000 and 03214500	No value	[b] -5.4	[b] 12.2	[b] 89.9	[c] 50.7

[a] 1930–2002 period estimated from record for 1936–85 at Tug Fork near Kermit (03214000).

[b] Computed from record for Tug Fork near Kermit (03214000).

[c] Estimated from record for 1986–2002 at Tug Fork at Kermit (03214500).

Table 8. Record periods for the Lower Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia, Ohio, and Virginia).

44	45	46	47	48	49

Table layout (page no.)

[No value indicates the average departure was greater than 5 percent; light shading is for example presented in text; station numbers for the six stations are 03061500, 03070500, 03109500, 03198500, 03208500, and combined stations 03214000 and 03214500]

First year	Years of record										
	10	11	12	13	14	15	16	17	18	19	20
1930											
1931											
1932											
1933											
1934											
1935											
1936											
1937											
1938											
1939											
1940											
1941											
1942											
1943											
1944											
1945											
1946											
1947											
1948											
1949											
1950											
1951											
1952											
1953											
1954											
1955											
1956										-0.034	0.012
1957									0.008		
1958										0.008	0.024
1959								0.008			
1960								0.000	0.018		
1961						-0.010					
1962					-0.007						
1963				-0.016							
1964			0.024								
1965	0.013										

Table 8. Record periods for the Lower Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia, Ohio, and Virginia).—Continued

Table layout (page no.)

[No value indicates the average departure was greater than 5 percent; light shading is for example presented in text; station numbers for the six stations are 03061500, 03070500, 03109500, 03198500, 03208500, and combined stations 03214000 and 03214500]

First year	Years of record										
	21	22	23	24	25	26	27	28	29	30	31
1930											
1931											
1932											
1933											
1934											
1935											
1936											
1937											
1938											
1939											
1940											
1941											
1942											
1943											
1944											
1945											
1946											
1947											
1948									-0.035	-0.023	0.015
1949								-0.029	-0.016	0.022	
1950							-0.031	-0.018	0.021		
1951						-0.021	-0.008	0.032			
1952						-0.032	0.011				
1953				-0.024	-0.010	0.033					
1954			-0.011	0.003							
1955	-0.010	0.033									
1956											
1957											
1958											
1959											
1960											
1961											
1962											
1963											
1964											
1965											

Table 8. Record periods for the Lower Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia, Ohio, and Virginia).—Continued

44	45	46	47	48	49

Table layout (page no.)

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the six stations are 03061500, 03070500, 03109500, 03198500, 03208500, and combined stations 03214000 and 03214500]

First year	Years of record										
	32	33	34	35	36	37	38	39	40	41	42
1930											
1931											
1932											
1933											
1934											
1935											
1936											
1937											
1938											
1939											-0.028
1940										-0.014	0.013
1941								-0.039	0.010	0.037	
1942							-0.027	0.023			
1943					-0.037	-0.013	0.038				
1944					-0.032	0.021					
1945			-0.033	-0.009							
1946		-0.013	0.012								
1947	-0.007	0.019									
1948											
1949											
1950											
1951											
1952											
1953											
1954											
1955											
1956											
1957											
1958											
1959											
1960											
1961											
1962											
1963											
1964											
1965											

Table 8. Record periods for the Lower Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia, Ohio, and Virginia).—Continued

44	45	46	47	48	49

Table layout (page no.)

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the six stations are 03061500, 03070500, 03109500, 03198500, 03208500, and combined stations 03214000 and 03214500]

First year	Years of record										
	43	44	45	46	47	48	49	50	51	52	53
1930											
1931											
1932											
1933											
1934									-0.039	-0.021	-0.024
1935							-0.030	-0.028	-0.009	-0.013	-0.011
1936					-0.032	-0.017	-0.015	0.004	-0.001	0.002	-0.003
1937			-0.029	-0.020	-0.004	-0.003	0.016	0.011	0.013	0.008	-0.004
1938	-0.033	-0.007	0.001	0.017	0.018	0.037	0.031	0.033	0.027	0.014	
1939	-0.001	0.007	0.023	0.024		0.038	0.039	0.033	0.020		
1940	0.021	0.037	0.038					0.032			
1941											
1942											
1943											
1944											
1945											
1946											
1947											
1948											
1949											
1950											
1951											
1952											
1953											
1954											
1955											
1956											
1957											
1958											
1959											
1960											

Table 8. Record periods for the Lower Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia, Ohio, and Virginia).—Continued

44	45	46	47	48	49

Table layout (page no.)

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the six stations are 03061500, 03070500, 03109500, 03198500, 03208500, and combined stations 03214000 and 03214500]

First year	Years of record										
	54	55	56	57	58	59	60	61	62	63	64
1930									-0.035		-0.027
1931								-0.030	-0.037	-0.022	-0.025
1932						-0.033	-0.011	-0.018	-0.003	-0.006	0.008
1933					-0.025	-0.003	-0.010	0.005	0.002	0.016	0.012
1934	-0.022	-0.026	-0.037	-0.006	0.016	0.008	0.024	0.020	0.034	0.029	
1935	-0.015	-0.027	0.004	0.027	0.019	0.035	0.030		0.039		
1936	-0.015	0.016	0.039	0.031							
1937	0.028										
1938											
1939											
1940											
1941											
1942											
1943											
1944											
1945											
1946											
1947											
1948											
1949											

Table 8. Record periods for the Lower Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia, Ohio, and Virginia).—Continued

44	45	46	47	48	49

Table layout (page no.)

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the six stations are 03061500, 03070500, 03109500, 03198500, 03208500, and combined stations 03214000 and 03214500]

First year	Years of record								
	65	66	67	68	69	70	71	72	73
1930	-0.030	-0.016	-0.019	0.009	0.010	0.009	0.002	0.014	0.015
1931	-0.011	-0.014	0.014	0.015	0.015	0.007	0.019	0.020	
1932	0.003	0.033	0.033	0.032	0.024	0.036	0.037		
1933				0.032					
1934									
1935									
1936									
1937									
1938									

Table 9. Record periods for the Upper Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia).

[No value indicates the average departure was greater than 5 percent; station numbers for the six stations are 03051000, 03053500, 03066000, 03069500, 03182500, and 03186500]

50	52	54	56	57	58
51	53	55			

Table layout (page no.)

First year	Years of record										
	10	11	12	13	14	15	16	17	18	19	20
1930											
1931											
1932											0.021
1933										-0.024	
1934									0.024	-0.016	
1935								-0.015			
1936							0.024	-0.020			
1937						-0.001	-0.046				
1938						-0.003					-0.024
1939					0.007					-0.018	
1940		-0.018		0.036	-0.028				0.002	-0.046	-0.032
1941	0.043			0.019		-0.017		0.040	-0.013	0.000	
1942			0.025		-0.015		0.046	-0.011	0.003		-0.041
1943			-0.025	0.023	-0.029		0.020	0.033	-0.024	-0.016	0.020
1944					-0.005		-0.046				
1945		-0.028			-0.021	-0.003			-0.012		
1946	0.037	-0.031		0.030	0.045	-0.025	-0.015	0.027	-0.016	-0.045	
1947			-0.013	0.007			-0.005				
1948				0.002	0.012		0.007	-0.027			
1949			0.040			0.037	-0.001				
1950	-0.002			-0.015							
1951											
1952											
1953											
1954											
1955											
1956											
1957											
1958											
1959											
1960											
1961											
1962											
1963									0.029	0.032	0.019
1964											
1965											

Table 9. Record periods for the Upper Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia).—Continued

50	52	54	56	57	58
51	53	55			

Table layout (page no.)

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the six stations are 03051000, 03053500, 03066000, 03069500, 03182500, and 03186500]

First year	Years of record										
	10	11	12	13	14	15	16	17	18	19	20
1966				-0.042	-0.042						
1967	0.022	-0.022	0.028	0.023							
1968	0.033										
1969											
1970											
1971											
1972											
1973											
1974											
1975											
1976											
1977											
1978											
1979											
1980											
1981							0.021				
1982						0.015					
1983					0.033						
1984				-0.017				0.025			
1985			0.038								
1986		0.004				0.046					
1987											
1988				0.020							
1989											
1990											
1991		0.032	0.012								
1992	-0.036										
1993	-0.015										

Table 9. Record periods for the Upper Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia).—Continued

50	52	54	56	57	58
51	53	55			

Table layout (page no.)

[No value indicates the average departure was greater than 5 percent; station numbers for the six stations are 03051000, 03053500, 03066000, 03069500, 03182500, and 03186500]

First year	Years of record										
	21	22	23	24	25	26	27	28	29	30	31
1930											
1931	-0.036										
1932	-0.015					-0.029					
1933											
1934				-0.030							
1935											
1936		-0.035									
1937											
1938											
1939											
1940			-0.035								
1941	-0.041	-0.008	-0.040								
1942	-0.006	-0.039									
1943	-0.017	-0.042									
1944											
1945											
1946											
1947											
1948											
1949											
1950											0.010
1951										-0.003	0.000
1952											
1953								-0.027	-0.023	-0.030	-0.007
1954							0.004	0.007	-0.001	0.022	-0.001
1955								0.038		0.036	
1956					0.024	0.027	0.017	0.041	0.016	0.030	0.013
1957						0.045		0.042		0.037	
1958			-0.014	-0.010	-0.019	0.008	-0.017	-0.002	-0.018	0.013	-0.018
1959		0.026	0.029	0.018	0.045	0.017	0.032	0.013	0.045	0.012	-0.016
1960	0.016	0.020	0.009	0.037	0.008	0.024	0.005	0.038	0.004	-0.024	
1961						0.044		0.040	0.009		
1962					0.040		0.037	0.005			
1963		0.017	0.035	0.013		0.012	-0.021				
1964			0.046		0.042	0.007					
1965					0.030						

Table 9. Record periods for the Upper Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia).—Continued

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the six stations are 03051000, 03053500, 03066000, 03069500, 03182500, and 03186500]

50	52	54	56	57	58
51	53	55			

Table layout (page no.)

First year	Years of record										
	21	22	23	24	25	26	27	28	29	30	31
1966											
1967											
1968											
1969											
1970											
1971											
1972											
1973											
1974											
1975											
1976											
1977											
1978											
1979											
1980											
1981											
1982											

Table 9. Record periods for the Upper Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia).—Continued

50	52	54	56	57	58
51	53	55			

Table layout (page no.)

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the six stations are 03051000, 03053500, 03066000, 03069500, 03182500, and 03186500]

First year	Years of record										
	32	33	34	35	36	37	38	39	40	41	42
1930											
1931											
1932											
1933											
1934											
1935											
1936											
1937											
1938											
1939											-0.016
1940										-0.007	-0.005
1941									0.008	0.011	0.005
1942								0.010	0.012	0.006	0.023
1943							0.024	0.026	0.019	0.036	0.018
1944						-0.011	-0.008	-0.014	0.004	-0.013	-0.003
1945					0.008	0.010	0.004	0.022	0.004	0.014	0.002
1946				0.028	0.030	0.023	0.040	0.022	0.031	0.019	0.040
1947			0.013	0.015	0.008	0.026	0.008	0.018	0.006	0.028	0.005
1948		0.042	0.043	0.035		0.034	0.044	0.030		0.028	0.007
1949							0.043		0.040	0.018	
1950	0.013	0.006	0.026	0.005	0.017	0.003	0.027	0.003	-0.019		
1951	-0.007	0.014	-0.007	0.006	-0.008	0.017	-0.008	-0.030			
1952	-0.029		-0.035		-0.021	-0.046		0.019	0.036	0.025	0.020
1953	-0.028	-0.014	-0.028	-0.001	-0.027		0.039		0.044	0.038	0.017
1954	0.012	-0.003	0.024	-0.003	-0.027					0.038	0.030
1955	0.031		0.029	0.004							0.036
1956	0.041	0.012	-0.014						0.044	0.023	
1957	0.034	0.007							0.041		
1958	-0.044					0.031	0.022	0.000		0.040	0.036
1959							0.024				0.037
1960					0.042	0.018				0.032	
1961											
1962				0.044							
1963			0.025				0.039				
1964											
1965											

Table 9. Record periods for the Upper Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia).—Continued

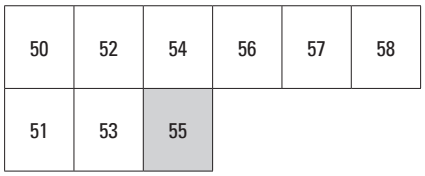

Table layout (page no.)

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the six stations are 03051000, 03053500, 03066000, 03069500, 03182500, and 03186500]

First year	Years of record										
	32	33	34	35	36	37	38	39	40	41	42
1966											
1967											
1968											
1969											
1970											
1971											

Table 9. Record periods for the Upper Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia).—Continued

50	52	54	56	57	58
51	53	55			

Table layout (page no.)

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the six stations are 03051000, 03053500, 03066000, 03069500, 03182500, and 03186500]

First year	Years of record										
	43	44	45	46	47	48	49	50	51	52	53
1930											
1931								-0.045	-0.042	-0.046	-0.032
1932							-0.022	-0.020	-0.024	-0.010	-0.023
1933						-0.040	-0.038	-0.042	-0.027	-0.040	-0.031
1934					-0.023	-0.020	-0.024	-0.010	-0.023	-0.015	-0.024
1935				-0.038	-0.035	-0.039	-0.024	-0.038	-0.029	-0.037	-0.019
1936			-0.025	-0.022	-0.026	-0.012	-0.025	-0.016	-0.026	-0.007	-0.025
1937		-0.034	-0.031	-0.036	-0.020	-0.034	-0.025	-0.034	-0.015	-0.033	
1938	-0.019	-0.016	-0.021	-0.006	-0.020	-0.011	-0.021	-0.002	-0.020	-0.036	0.027
1939	-0.013	-0.018	-0.003	-0.017	-0.008	-0.018	0.001	-0.018	-0.034	0.030	0.043
1940	-0.010	0.006	-0.009	0.000	-0.010	0.009	-0.010	-0.027	0.038		0.042
1941	0.021	0.005	0.014	0.003	0.023	0.003	-0.015				
1942	0.006	0.016	0.004	0.024	0.004	-0.014					0.035
1943	0.028	0.016	0.036	0.015	-0.004					0.046	0.039
1944	-0.014	0.007	-0.014	-0.032	0.039		0.043	0.039	0.021	0.015	-0.001
1945	0.023	0.002	-0.017					0.035	0.029	0.012	
1946	0.018	-0.002						0.043	0.025		
1947	-0.015					0.040	0.033	0.015		0.046	0.043
1948							0.035				0.044
1949						0.045					
1950			0.040	0.033	0.014			0.044	0.025		
1951		0.032	0.024	0.005	0.045	0.039	0.036	0.018		0.044	
1952	0.000	-0.007	-0.026	0.015	0.010	0.008	-0.011	0.022	0.017		
1953	0.010	-0.010	0.032	0.026	0.023	0.004	0.037	0.032			
1954	0.010		0.046	0.042	0.023						
1955											
1956			0.035								
1957											
1958	0.015		0.045								
1959											
1960											

Table 9. Record periods for the Upper Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia).—Continued

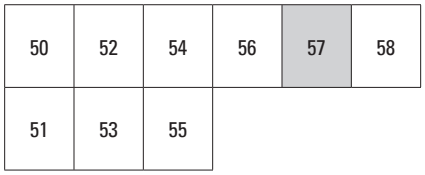

Table layout (page no.)

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the six stations are 03051000, 03053500, 03066000, 03069500, 03182500, and 03186500]

First year	Years of record										
	54	55	56	57	58	59	60	61	62	63	64
1930	-0.045				-0.039			-0.012	0.000	-0.007	-0.010
1931	-0.044	-0.036	-0.044	-0.027	-0.042		0.000	0.011	0.004	0.001	-0.012
1932	-0.015	-0.023	-0.006	-0.023	-0.037	0.019	0.031	0.024	0.020	0.006	0.002
1933	-0.040	-0.022	-0.038		0.005	0.017	0.010	0.007	-0.007	-0.012	-0.025
1934	-0.006	-0.023	-0.038	0.020	0.032	0.025	0.021	0.007	0.002	-0.012	0.018
1935	-0.036		0.009	0.021	0.013	0.010	-0.004	-0.009	-0.023	0.007	0.003
1936	-0.040	0.020	0.033	0.025	0.021	0.006	0.001	-0.013	0.018	0.014	0.012
1937	0.013	0.026	0.018	0.015	0.000	-0.006	-0.020	0.011	0.007	0.006	-0.008
1938	0.039	0.031	0.027	0.012	0.006	-0.008	0.023	0.019	0.017	0.003	0.028
1939	0.034	0.030	0.015	0.009	-0.006	0.026	0.022	0.020	0.005	0.030	0.027
1940	0.038	0.022	0.016	0.001	0.033	0.028	0.026	0.011	0.037	0.033	
1941	0.034	0.028	0.012	0.045	0.040	0.037	0.022		0.044		
1942	0.029	0.013		0.041	0.039	0.023		0.045			
1943	0.023				0.032						
1944	0.033	0.028	0.026	0.010	0.038	0.033					
1945	0.042	0.039	0.023		0.046						
1946		0.035									
1947	0.026										
1948											
1949											

Table 9. Record periods for the Upper Appalachian Plateaus region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (six stations in West Virginia).—Continued

50	52	54	56	57	58
51	53	55			

Table layout (page no.)

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the six stations are 03051000, 03053500, 03066000, 03069500, 03182500, and 03186500]

First year	Years of record								
	65	66	67	68	69	70	71	72	73
1930	-0.023	-0.027	-0.039	-0.011	-0.014	-0.016	-0.028	-0.005	-0.008
1931	-0.016	-0.029	-0.001	-0.004	-0.006	-0.018	0.005	0.002	
1932	-0.012	0.017	0.013	0.011	-0.001	0.021	0.018		
1933	0.004	0.000	-0.001	-0.014	0.009	0.006			
1934	0.014	0.012	-0.001	0.022	0.019				
1935	0.002	-0.012	0.013	0.009					
1936	-0.002	0.022	0.019						
1937	0.017	0.013							
1938	0.024								

Table 10. Record periods for the Eastern Panhandle region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (five stations in West Virginia and Virginia).

[No value indicates the average departure was greater than 5 percent; station numbers for the five stations are 01606500, 01611500, 01632000, 01636500, and 01644000]

59	61	63	64	65	66
60	62				

Table layout (page no.)

First year	Years of record										
	10	11	12	13	14	15	16	17	18	19	20
1930											
1931											
1932											
1933											
1934											
1935											
1936											
1937											
1938					-0.034	-0.041	-0.033				
1939				-0.033	-0.041	-0.032					
1940		-0.024	-0.009	-0.019	-0.012						
1941	0.005	0.018	0.005	0.011	-0.030						
1942											
1943	0.000	0.007	-0.040								
1944	-0.007										
1945	0.001										
1946	-0.004	-0.029	-0.011								
1947											
1948	0.007										
1949	-0.035										
1950											
1951											
1952											
1953											
1954											
1955											
1956											
1957											
1958											
1959											
1960											
1961											0.037
1962											0.042
1963											0.023
1964				-0.032			-0.029				
1965			0.040	0.018	-0.014	0.029					

Table 10. Record periods for the Eastern Panhandle region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (five stations in West Virginia and Virginia).—Continued

[No value indicates the average departure was greater than 5 percent; station numbers for the five stations are 01606500, 01611500, 01632000, 01636500, and 01644000]

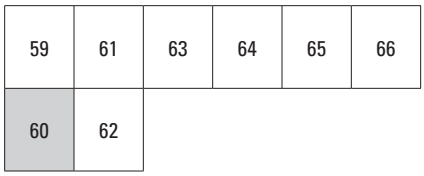

Table layout (page no.)

First year	Years of record										
	10	11	12	13	14	15	16	17	18	19	20
1966	-0.013										
1967											
1968											
1969											
1970											
1971											
1972											
1973											
1974											
1975											
1976											
1977				0.017							
1978			0.039								
1979											
1980	0.027										

Table 10. Record periods for the Eastern Panhandle region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (five stations in West Virginia and Virginia).—Continued

[No value indicates the average departure was greater than 5 percent; station numbers for the five stations are 01606500, 01611500, 01632000, 01636500, and 01644000]

59	61	63	64	65	66
60	62				

Table layout (page no.)

First year	Years of record										
	21	22	23	24	25	26	27	28	29	30	31
1930											
1931											
1932											
1933											
1934											
1935											
1936											
1937											
1938											
1939											
1940											
1941											
1942											
1943											
1944											
1945											
1946											
1947											
1948											
1949											
1950											-0.043
1951											
1952											
1953											
1954											
1955											
1956											
1957											
1958											
1959		-0.016	-0.019	-0.040	-0.033		-0.042				
1960	-0.005	-0.009	-0.031	-0.024	-0.043	-0.034	-0.042				
1961	0.032	0.007	0.013	-0.009	-0.001	-0.010	-0.019	-0.023	-0.035		
1962	0.015	0.021	-0.002	0.006	-0.004	-0.013	-0.018	-0.030			
1963	0.028	0.004	0.011	0.001	-0.009	-0.013	-0.027				
1964	0.029	0.036	0.025	0.014	0.008	-0.007					
1965					0.028						

Table 10. Record periods for the Eastern Panhandle region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (five stations in West Virginia and Virginia).—Continued

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the five stations are 01606500, 01611500, 01632000, 01636500, and 01644000]

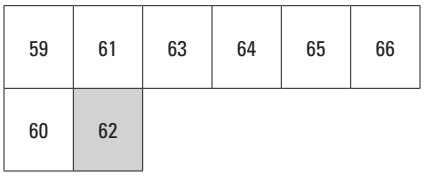

Table layout (page no.)

First year	Years of record										
	21	22	23	24	25	26	27	28	29	30	31
1966											
1967											
1968											
1969											
1970											
1971											
1972											
1973											
1974											
1975											
1976											
1977											
1978											
1979											
1980											

Table 10. Record periods for the Eastern Panhandle region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (five stations in West Virginia and Virginia).—Continued

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the five stations are 01606500, 01611500, 01632000, 01636500, and 01644000]

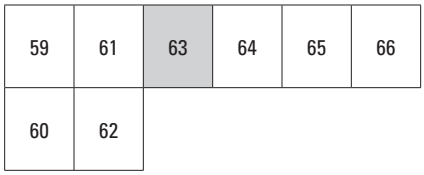

Table layout (page no.)

First year	Years of record										
	32	33	34	35	36	37	38	39	40	41	42
1930											
1931											
1932											
1933											
1934											
1935											
1936											
1937											
1938											
1939											
1940											
1941											
1942											
1943											
1944											
1945											
1946				-0.043	-0.044						
1947											
1948		-0.039	-0.040								
1949	-0.022	-0.024	-0.038	-0.033		-0.040					0.022
1950	-0.044									0.007	0.014
1951									-0.024	-0.016	-0.020
1952								-0.028	-0.020	-0.024	-0.013
1953							-0.025	-0.017	-0.021	-0.009	-0.013
1954						-0.028	-0.020	-0.023	-0.012	-0.016	0.004
1955					-0.013	-0.005	-0.009	0.002	-0.002	0.018	0.011
1956				0.005	0.013	0.008	0.020	0.015	0.035	0.027	
1957			0.013	0.021	0.016	0.028	0.022	0.042	0.034		
1958		0.008	0.016	0.011	0.023	0.018	0.039	0.031			
1959	0.039		0.041								
1960											
1961											
1962											
1963											
1964											
1965											

Table 10. Record periods for the Eastern Panhandle region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (five stations in West Virginia and Virginia).—Continued

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the five stations are 01606500, 01611500, 01632000, 01636500, and 01644000]

59	61	63	64	65	66
60	62				

Table layout (page no.)

First year	Years of record										
	32	33	34	35	36	37	38	39	40	41	42
1966											
1967											
1968											
1969											
1970											
1971											

Table 10. Record periods for the Eastern Panhandle region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (five stations in West Virginia and Virginia).—Continued

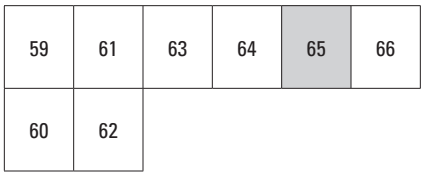

Table layout (page no.)

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First year	Years of record										
	43	44	45	46	47	48	49	50	51	52	53
1930											
1931											
1932											
1933											
1934											
1935											
1936											
1937											
1938											-0.030
1939										-0.029	-0.023
1940									-0.024	-0.018	-0.020
1941								-0.018	-0.012	-0.015	-0.006
1942							-0.033	-0.026	-0.029	-0.020	-0.023
1943						-0.020	-0.014	-0.017	-0.008	-0.011	0.005
1944					-0.024	-0.017	-0.020	-0.011	-0.014	0.002	-0.004
1945				-0.010	-0.004	-0.007	0.002	-0.002	0.014	0.009	
1946			0.003	0.009	0.005	0.015	0.011	0.027	0.021		
1947		-0.007	0.000	-0.004	0.006	0.002	0.018	0.012			
1948	0.008	0.014	0.010	0.020	0.016	0.032	0.026				
1949	0.028	0.024	0.033	0.028		0.038					
1950	0.010	0.020	0.015	0.033	0.026						
1951	-0.009	-0.013	0.006	0.000							
1952	-0.016	0.002	-0.004								
1953	0.006	-0.001									
1954	-0.003										
1955											
1956											
1957											
1958											
1959											
1960											

Table 10. Record periods for the Eastern Panhandle region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (five stations in West Virginia and Virginia).—Continued

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the five stations are 01606500, 01611500, 01632000, 01636500, and 01644000]

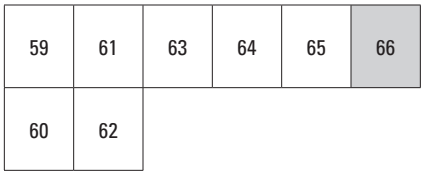

Table layout (page no.)

First year	Years of record										
	54	55	56	57	58	59	60	61	62	63	64
1930											
1931											
1932											
1933										-0.042	
1934					-0.043		-0.037	-0.039	-0.025	-0.029	0.032
1935				-0.042	-0.044	-0.036	-0.038	-0.024	-0.028	0.034	0.043
1936		-0.036	-0.030	-0.032	-0.024	-0.027	-0.013	-0.017			
1937	-0.038	-0.032	-0.035	-0.026	-0.029	-0.015	-0.019				0.042
1938	-0.024	-0.026	-0.018	-0.021	-0.006	-0.011					
1939	-0.026	-0.017	-0.020	-0.006	-0.010						
1940	-0.012	-0.015	0.000	-0.005							
1941	-0.009	0.006	0.001								
1942	-0.007	-0.012									
1943	-0.001										
1944											
1945											
1946											
1947											
1948											
1949											

Table 10. Record periods for the Eastern Panhandle region for which the indicated average departure was within 5 percent of the standard deviation of the standardized departures of the minimum flows for 1930–2002 (five stations in West Virginia and Virginia).—Continued

[No value indicates the average departure was greater than 5 percent; dark shading indicates period outside the limit of this study; station numbers for the five stations are 01606500, 01611500, 01632000, 01636500, and 01644000]

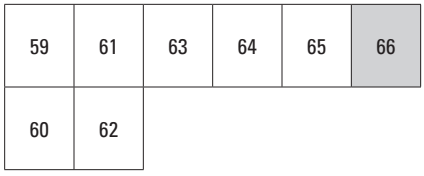

Table layout (page no.)

First year	Years of record								
	65	66	67	68	69	70	71	72	73
1930				-0.024	-0.014	-0.011	-0.023	-0.014	-0.016
1931			-0.014	-0.005	-0.002	-0.015	-0.006	-0.007	
1932		0.003	0.012	0.016	0.002	0.011	0.009		
1933	0.016	0.025	0.028	0.014	0.023	0.021			
1934	0.041	0.044	0.030	0.039	0.036				
1935		0.032	0.041	0.038					
1936	0.043								
1937									
1938									

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01595300 Abram Creek at Oakmont, WV, 1959 –1982					
1-day 2-year hydrologically based flow	2.20	26.0	9.92	2.30	4.82
1-day 5-year hydrologically based flow	0.77	12.6	4.86	0.78	2.06
1-day 10-year hydrologically based flow	0.41	7.61	3.24	0.41	1.35
3-day 2-year hydrologically based flow	2.37	25.0	11.1	2.52	5.22
3-day 5-year hydrologically based flow	0.83	14.7	5.48	0.85	2.29
3-day 10-year hydrologically based flow	0.44	11.0	3.66	0.45	1.51
7-day 2-year hydrologically based flow	2.72	28.2	13.6	2.96	6.04
7-day 5-year hydrologically based flow	0.95	16.1	6.73	0.98	2.64
7-day 10-year hydrologically based flow	0.50	11.8	4.51	0.51	1.75
14-day 2-year hydrologically based flow	3.25	32.3	18.1	3.70	7.14
14-day 5-year hydrologically based flow	1.18	18.2	9.32	1.26	3.14
14-day 10-year hydrologically based flow	0.64	13.3	6.48	0.66	2.08
30-day 2-year hydrologically based flow	4.56	46.1	29.2	5.73	12.2
30-day 5-year hydrologically based flow	1.97	27.0	14.9	2.29	5.12
30-day 10-year hydrologically based flow	1.23	20.3	10.3	1.34	3.22
1-day 3-year biologically based flow	0.17	4.99	7.50	0.29	0.19
4-day 3-year biologically based flow	0.37	5.89	10.4	0.44	0.94
EPA harmonic-mean flow	9.11	37.1	52.4	4.55	5.80
5-percent-duration flow	251	374	260	74.7	166
10-percent-duration flow	168	264	195	45.6	111
15-percent-duration flow	127	210	158	32.7	83.9
20-percent-duration flow	104	173	131	25.4	68.2
25-percent-duration flow	85.8	146	112	21.0	57.3
30-percent-duration flow	71.3	126	95.4	17.8	48.7
35-percent-duration flow	60.7	112	84.5	15.0	42.2
40-percent-duration flow	51.4	99.9	74.7	13.1	36.6
45-percent-duration flow	43.6	89.0	65.6	11.3	31.6
50-percent-duration flow	36.9	78.8	58.0	9.5	26.5
55-percent-duration flow	30.7	71.0	51.4	8.1	21.9
60-percent-duration flow	25.2	63.3	45.4	6.8	17.5
65-percent-duration flow	20.1	55.7	40.4	5.8	13.4
70-percent-duration flow	15.7	49.3	34.8	4.8	10.2
75-percent-duration flow	12.1	43.5	29.3	3.9	7.8
80-percent-duration flow	8.7	36.5	24.0	3.1	6.3
85-percent-duration flow	6.3	31.0	18.8	2.2	5.1
90-percent-duration flow	4.3	25.6	14.0	1.6	3.9
95-percent-duration flow	2.3	18.3	9.3	1.0	2.5
99-percent-duration flow	0.9	11.1	3.9	0.3	1.5
Variability index	0.62	0.39	0.44	0.56	0.57

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01599500 New Creek near Keyser, WV, 1949 –1958					
1-day 2-year hydrologically based flow	2.17	14.5	8.72	2.23	2.78
1-day 5-year hydrologically based flow	1.49	6.67	6.71	1.47	1.73
1-day 10-year hydrologically based flow	1.24	4.18	5.82	1.21	1.37
3-day 2-year hydrologically based flow	2.24	15.1	9.55	2.33	2.91
3-day 5-year hydrologically based flow	1.50	6.91	7.18	1.51	1.80
3-day 10-year hydrologically based flow	1.23	4.33	6.14	1.23	1.41
7-day 2-year hydrologically based flow	2.43	16.8	11.5	2.53	3.58
7-day 5-year hydrologically based flow	1.61	7.45	8.67	1.62	2.25
7-day 10-year hydrologically based flow	1.31	4.72	7.31	1.31	1.75
14-day 2-year hydrologically based flow	2.68	24.8	13.5	2.92	4.04
14-day 5-year hydrologically based flow	1.74	10.1	10.2	1.82	2.43
14-day 10-year hydrologically based flow	1.40	5.82	8.71	1.44	1.90
30-day 2-year hydrologically based flow	3.15	34.9	21.5	3.46	6.10
30-day 5-year hydrologically based flow	2.05	15.9	16.6	2.16	3.35
30-day 10-year hydrologically based flow	1.67	9.98	14.7	1.73	2.40
1-day 3-year biologically based flow	1.09	2.97	6.70	1.05	1.39
4-day 3-year biologically based flow	1.30	3.40	7.80	1.35	1.66
EPA harmonic-mean flow	8.40	22.1	34.3	5.03	4.95
5-percent-duration flow	168	245	192	37.9	90.2
10-percent-duration flow	115	170	122	18.1	51.5
15-percent-duration flow	87.0	146	98.0	13.7	37.7
20-percent-duration flow	69.8	127	82.2	10.9	28.0
25-percent-duration flow	57.6	111	69.9	9.2	21.8
30-percent-duration flow	47.4	98.6	60.6	8.2	16.4
35-percent-duration flow	37.8	88.2	53.8	7.3	13.4
40-percent-duration flow	30.3	80.4	47.8	6.7	11.4
45-percent-duration flow	24.4	72.6	42.3	6.1	9.5
50-percent-duration flow	19.3	64.9	37.5	5.5	8.2
55-percent-duration flow	15.0	58.4	33.7	5.0	7.3
60-percent-duration flow	11.8	52.4	30.0	4.4	6.4
65-percent-duration flow	9.2	47.0	26.3	3.9	5.5
70-percent-duration flow	7.3	39.9	23.1	3.4	4.9
75-percent-duration flow	6.0	32.9	20.5	3.0	4.3
80-percent-duration flow	4.9	27.6	17.8	2.7	3.6
85-percent-duration flow	3.9	21.6	15.4	2.4	2.9
90-percent-duration flow	2.9	12.5	13.7	2.2	2.6
95-percent-duration flow	2.3	5.1	10.8	1.8	2.2
99-percent-duration flow	1.6	3.5	6.5	1.4	1.9
Variability index	0.61	0.48	0.38	0.39	0.51

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01604500 Patterson Creek near Headsville, WV, 1940–1996					
1-day 2-year hydrologically based flow	6.03	39.0	22.3	6.29	9.65
1-day 5-year hydrologically based flow	3.31	20.8	12.7	3.43	5.45
1-day 10-year hydrologically based flow	2.40	14.7	8.97	2.48	4.12
3-day 2-year hydrologically based flow	6.29	41.8	24.1	6.56	10.3
3-day 5-year hydrologically based flow	3.53	22.1	13.8	3.64	5.89
3-day 10-year hydrologically based flow	2.60	15.5	9.80	2.67	4.51
7-day 2-year hydrologically based flow	6.76	48.1	28.2	7.12	11.5
7-day 5-year hydrologically based flow	3.88	24.6	16.4	4.04	6.69
7-day 10-year hydrologically based flow	2.91	16.9	11.6	3.01	5.15
14-day 2-year hydrologically based flow	7.56	59.6	34.0	8.17	13.0
14-day 5-year hydrologically based flow	4.39	29.1	19.6	4.64	7.52
14-day 10-year hydrologically based flow	3.35	19.5	14.0	3.51	5.82
30-day 2-year hydrologically based flow	9.76	95.1	53.8	11.1	20.1
30-day 5-year hydrologically based flow	5.88	46.9	31.2	6.47	10.1
30-day 10-year hydrologically based flow	4.62	31.8	23.0	5.02	7.10
1-day 3-year biologically based flow	1.96	9.98	15.9	2.13	3.10
4-day 3-year biologically based flow	2.40	11.4	19.1	2.87	4.51
EPA harmonic-mean flow	25.4	72.0	90.0	14.6	15.8
5-percent-duration flow	694	1,100	789	191	434
10-percent-duration flow	436	737	520	91.1	248
15-percent-duration flow	308	566	380	58.3	166
20-percent-duration flow	226	456	294	44.1	119
25-percent-duration flow	175	379	234	36.6	93.3
30-percent-duration flow	139	314	189	30.7	74.3
35-percent-duration flow	111	261	156	26.1	59.8
40-percent-duration flow	90.5	221	132	22.9	47.7
45-percent-duration flow	73.8	191	114	20.1	38.5
50-percent-duration flow	60.0	167	97.6	17.8	31.6
55-percent-duration flow	48.7	147	85.9	15.7	26.3
60-percent-duration flow	38.8	129	75.0	14.0	22.7
65-percent-duration flow	31.5	113	65.8	12.3	19.5
70-percent-duration flow	25.4	97.0	57.7	10.7	17.1
75-percent-duration flow	20.4	80.7	50.3	9.2	15.1
80-percent-duration flow	16.3	65.9	42.3	8.1	13.4
85-percent-duration flow	13.1	52.8	34.9	7.0	11.6
90-percent-duration flow	9.9	40.8	28.2	5.9	9.5
95-percent-duration flow	7.1	26.7	21.1	4.6	7.3
99-percent-duration flow	3.5	12.5	10.2	2.6	3.3
Variability index	0.63	0.49	0.48	0.48	0.55

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01605500 South Branch Potomac River at Franklin, WV, 1946–1957					
1-day 2-year hydrologically based flow	29.3	60.0	51.0	30.9	32.7
1-day 5-year hydrologically based flow	25.2	36.4	41.6	26.7	26.4
1-day 10-year hydrologically based flow	23.5	27.7	37.8	25.4	24.1
3-day 2-year hydrologically based flow	29.9	64.9	52.9	31.6	33.4
3-day 5-year hydrologically based flow	26.2	40.2	43.3	27.1	27.0
3-day 10-year hydrologically based flow	24.9	31.0	39.7	25.6	24.8
7-day 2-year hydrologically based flow	30.7	73.0	59.7	32.9	34.5
7-day 5-year hydrologically based flow	26.9	43.5	48.4	27.9	27.9
7-day 10-year hydrologically based flow	25.6	32.7	43.9	26.2	25.6
14-day 2-year hydrologically based flow	31.9	87.6	68.9	34.3	35.9
14-day 5-year hydrologically based flow	27.7	48.8	56.9	28.7	29.1
14-day 10-year hydrologically based flow	26.2	34.8	52.4	26.8	26.8
30-day 2-year hydrologically based flow	33.7	132	92.2	39.0	42.2
30-day 5-year hydrologically based flow	28.9	73.2	72.0	31.2	31.6
30-day 10-year hydrologically based flow	27.1	51.4	64.8	28.6	28.4
1-day 3-year biologically based flow	24.3	25.0	52.9	26.0	24.9
4-day 3-year biologically based flow	25.8	27.8	61.0	26.0	26.2
EPA harmonic-mean flow	73.7	119	148	52.2	50.4
5-percent-duration flow	527	740	524	221	385
10-percent-duration flow	366	539	357	138	222
15-percent-duration flow	289	448	282	108	163
20-percent-duration flow	237	390	241	87.4	128
25-percent-duration flow	200	349	211	74.6	108
30-percent-duration flow	173	316	188	65.8	93.1
35-percent-duration flow	149	292	174	59.9	81.7
40-percent-duration flow	128	268	161	55.2	73.2
45-percent-duration flow	112	245	149	51.6	66.2
50-percent-duration flow	96.6	224	138	48.1	59.5
55-percent-duration flow	83.2	205	128	45.8	53.6
60-percent-duration flow	72.2	190	118	43.5	47.4
65-percent-duration flow	63.3	173	109	41.4	42.2
70-percent-duration flow	55.2	152	101	39.4	38.9
75-percent-duration flow	48.0	128	92.7	37.5	36.4
80-percent-duration flow	42.1	107	84.1	35.5	34.1
85-percent-duration flow	38.0	79.7	75.5	33.5	32.2
90-percent-duration flow	34.3	58.4	66.8	31.4	30.6
95-percent-duration flow	30.7	42.6	56.9	28.7	28.9
99-percent-duration flow	26.7	29.2	43.7	25.1	25.8
Variability index	0.40	0.36	0.28	0.27	0.35

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01606000 North Fork South Branch Potomac River at Cabins, WV, 1941–1954					
1-day 2-year hydrologically based flow	15.2	114	74.7	16.0	24.5
1-day 5-year hydrologically based flow	8.75	65.9	58.1	9.31	10.8
1-day 10-year hydrologically based flow	6.49	47.8	51.9	6.89	7.06
3-day 2-year hydrologically based flow	15.7	121	83.3	16.7	25.2
3-day 5-year hydrologically based flow	9.04	68.3	64.0	9.74	11.1
3-day 10-year hydrologically based flow	6.67	48.8	56.3	7.20	7.25
7-day 2-year hydrologically based flow	17.4	140	96.6	19.0	26.4
7-day 5-year hydrologically based flow	9.61	74.6	72.1	10.7	11.5
7-day 10-year hydrologically based flow	6.97	51.5	62.2	7.78	7.41
14-day 2-year hydrologically based flow	19.7	175	127	23.9	29.5
14-day 5-year hydrologically based flow	10.5	87.0	92.3	12.9	12.3
14-day 10-year hydrologically based flow	7.39	58.6	77.5	9.00	7.88
30-day 2-year hydrologically based flow	23.4	270	200	36.4	40.4
30-day 5-year hydrologically based flow	11.8	166	151	17.7	15.7
30-day 10-year hydrologically based flow	8.22	130	131	11.5	9.86
1-day 3-year biologically based flow	4.98	25.9	65.0	6.16	4.97
4-day 3-year biologically based flow	5.49	33.5	76.7	6.78	5.50
EPA harmonic-mean flow	65.7	230	300	42.9	33.6
5-percent-duration flow	1,370	1,970	1,500	460	872
10-percent-duration flow	942	1,430	1,050	258	495
15-percent-duration flow	703	1,150	844	181	366
20-percent-duration flow	560	969	681	145	296
25-percent-duration flow	459	840	562	116	244
30-percent-duration flow	385	733	505	96.3	206
35-percent-duration flow	325	649	447	82.1	179
40-percent-duration flow	274	580	397	72.4	155
45-percent-duration flow	228	520	357	64.0	129
50-percent-duration flow	193	462	322	57.9	104
55-percent-duration flow	162	410	289	51.8	83.7
60-percent-duration flow	132	367	258	45.4	61.8
65-percent-duration flow	105	330	228	39.4	49.2
70-percent-duration flow	84.0	293	203	33.9	40.9
75-percent-duration flow	65.4	257	180	29.2	31.8
80-percent-duration flow	49.0	210	160	25.2	23.7
85-percent-duration flow	36.1	164	138	20.9	19.2
90-percent-duration flow	24.6	123	112	15.9	14.8
95-percent-duration flow	15.4	90.9	85.6	10.3	11.8
99-percent-duration flow	7.1	46.9	64.3	6.3	5.8
Variability index	0.60	0.40	0.37	0.48	0.59

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01606500 South Branch Potomac River near Petersburg, WV, 1930–2002					
1-day 2-year hydrologically based flow	72.6	239	175	76.7	90.3
1-day 5-year hydrologically based flow	56.9	152	129	58.4	67.9
1-day 10-year hydrologically based flow	51.2	117	109	51.5	60.7
3-day 2-year hydrologically based flow	74.1	253	187	78.4	93.9
3-day 5-year hydrologically based flow	57.9	161	137	59.5	69.9
3-day 10-year hydrologically based flow	52.0	125	115	52.4	62.1
7-day 2-year hydrologically based flow	76.2	284	211	82.2	101
7-day 5-year hydrologically based flow	59.6	178	152	61.9	72.9
7-day 10-year hydrologically based flow	53.8	138	127	54.4	64.1
14-day 2-year hydrologically based flow	79.8	336	259	88.7	110
14-day 5-year hydrologically based flow	62.3	201	182	65.7	76.7
14-day 10-year hydrologically based flow	56.7	154	149	57.6	66.0
30-day 2-year hydrologically based flow	88.1	498	374	102	152
30-day 5-year hydrologically based flow	68.3	295	246	73.8	92.3
30-day 10-year hydrologically based flow	62.3	223	194	65.5	72.9
1-day 3-year biologically based flow	49.0	88.9	144	50.0	55.9
4-day 3-year biologically based flow	50.5	99.9	170	52.6	59.1
EPA harmonic-mean flow	233	455	608	150	151
5-percent-duration flow	2,510	3,820	2,840	840	1,610
10-percent-duration flow	1,660	2,590	1,990	489	1,030
15-percent-duration flow	1,280	2,050	1,540	355	782
20-percent-duration flow	1,030	1,710	1,250	288	623
25-percent-duration flow	847	1,470	1,070	248	522
30-percent-duration flow	709	1,300	930	217	443
35-percent-duration flow	593	1,150	820	192	380
40-percent-duration flow	509	1,020	726	174	328
45-percent-duration flow	437	911	644	158	283
50-percent-duration flow	375	813	579	146	242
55-percent-duration flow	320	724	521	134	205
60-percent-duration flow	271	640	472	124	173
65-percent-duration flow	228	564	429	114	150
70-percent-duration flow	190	497	388	106	132
75-percent-duration flow	160	433	345	98.3	116
80-percent-duration flow	134	371	303	90.4	104
85-percent-duration flow	113	311	262	81.4	93.8
90-percent-duration flow	95.1	255	220	71.7	84.9
95-percent-duration flow	78.3	190	173	60.7	72.8
99-percent-duration flow	56.1	115	113	49.2	56.8
Variability index	0.48	0.39	0.37	0.34	0.43

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01607500 South Fork South Branch Potomac River at Brandywine, WV, 1945–1996					
1-day 2-year hydrologically based flow	5.02	23.5	13.4	5.22	8.15
1-day 5-year hydrologically based flow	3.08	12.9	8.64	3.16	5.14
1-day 10-year hydrologically based flow	2.36	8.91	6.80	2.41	4.11
3-day 2-year hydrologically based flow	5.20	25.7	14.4	5.44	8.41
3-day 5-year hydrologically based flow	3.21	14.1	9.20	3.29	5.25
3-day 10-year hydrologically based flow	2.49	9.90	7.20	2.53	4.19
7-day 2-year hydrologically based flow	5.47	30.3	16.5	5.86	9.01
7-day 5-year hydrologically based flow	3.40	16.2	10.6	3.52	5.59
7-day 10-year hydrologically based flow	2.64	11.1	8.25	2.69	4.47
14-day 2-year hydrologically based flow	6.02	35.2	20.3	6.48	10.0
14-day 5-year hydrologically based flow	3.77	17.9	12.8	3.87	6.11
14-day 10-year hydrologically based flow	2.97	12.1	9.97	3.01	4.86
30-day 2-year hydrologically based flow	7.03	54.1	34.2	8.15	15.5
30-day 5-year hydrologically based flow	4.53	27.0	19.5	4.88	8.31
30-day 10-year hydrologically based flow	3.69	17.9	14.6	3.85	6.17
1-day 3-year biologically based flow	1.98	5.74	10.9	1.91	3.39
4-day 3-year biologically based flow	2.08	6.52	13.7	2.07	4.00
EPA harmonic-mean flow	19.1	41.5	58.2	10.6	13.6
5-percent-duration flow	383	588	417	118	315
10-percent-duration flow	221	345	250	63.9	167
15-percent-duration flow	159	255	184	44.2	114
20-percent-duration flow	123	207	144	33.0	86.4
25-percent-duration flow	99.4	174	119	25.3	68.1
30-percent-duration flow	81.3	148	100	21.2	55.6
35-percent-duration flow	68.0	131	85.6	17.9	46.5
40-percent-duration flow	57.3	115	75.4	15.6	38.9
45-percent-duration flow	48.1	103	65.9	14.0	32.4
50-percent-duration flow	40.7	91.3	58.7	12.7	27.9
55-percent-duration flow	33.7	80.9	52.0	11.4	23.5
60-percent-duration flow	27.4	71.4	46.4	10.0	19.3
65-percent-duration flow	22.2	62.5	41.2	8.8	15.8
70-percent-duration flow	17.8	55.1	36.6	7.9	13.6
75-percent-duration flow	14.5	47.9	31.9	7.1	11.4
80-percent-duration flow	11.7	40.2	26.9	6.3	9.5
85-percent-duration flow	9.3	31.7	21.8	5.6	8.4
90-percent-duration flow	7.4	24.4	17.4	4.7	7.2
95-percent-duration flow	5.6	16.1	13.2	3.6	6.0
99-percent-duration flow	3.1	7.3	7.8	2.0	4.4
Variability index	0.57	0.45	0.45	0.45	0.54

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01608000 South Fork South Branch Potomac River near Moorefield, WV, 1940–1996					
1-day 2-year hydrologically based flow	15.7	58.7	41.5	17.2	21.8
1-day 5-year hydrologically based flow	10.4	33.9	28.6	11.2	14.1
1-day 10-year hydrologically based flow	8.29	24.7	23.3	8.73	11.5
3-day 2-year hydrologically based flow	16.1	62.1	44.0	17.7	22.7
3-day 5-year hydrologically based flow	10.7	35.8	30.3	11.5	14.7
3-day 10-year hydrologically based flow	8.55	26.0	24.6	8.99	12.0
7-day 2-year hydrologically based flow	16.8	71.7	49.3	18.4	24.1
7-day 5-year hydrologically based flow	11.2	40.2	33.8	12.0	15.5
7-day 10-year hydrologically based flow	9.09	28.6	27.5	9.46	12.7
14-day 2-year hydrologically based flow	17.8	81.8	59.2	19.8	26.7
14-day 5-year hydrologically based flow	12.2	43.6	40.0	12.9	17.0
14-day 10-year hydrologically based flow	10.1	30.6	32.2	10.4	13.9
30-day 2-year hydrologically based flow	20.4	120	95.2	23.8	38.0
30-day 5-year hydrologically based flow	14.1	62.4	58.5	15.4	21.4
30-day 10-year hydrologically based flow	11.9	43.2	44.8	12.7	16.4
1-day 3-year biologically based flow	7.80	14.9	33.0	7.86	11.0
4-day 3-year biologically based flow	8.44	18.4	40.7	8.82	11.4
EPA harmonic-mean flow	54.2	101	153	33.8	36.1
5-percent-duration flow	840	1,270	998	291	623
10-percent-duration flow	513	777	640	163	351
15-percent-duration flow	374	584	478	112	239
20-percent-duration flow	290	472	378	84.2	181
25-percent-duration flow	233	394	309	69.0	145
30-percent-duration flow	191	338	258	58.6	119
35-percent-duration flow	161	295	223	50.6	99.4
40-percent-duration flow	136	261	195	45.5	85.0
45-percent-duration flow	115	232	170	40.6	72.3
50-percent-duration flow	97.9	204	152	36.6	61.1
55-percent-duration flow	82.3	179	134	32.7	51.0
60-percent-duration flow	68.0	159	121	29.6	43.9
65-percent-duration flow	55.6	141	108	26.7	38.0
70-percent-duration flow	47.0	126	96.6	24.3	33.4
75-percent-duration flow	39.2	109	85.0	22.0	29.5
80-percent-duration flow	32.5	90.7	73.4	19.9	25.9
85-percent-duration flow	26.6	72.5	61.8	17.8	22.9
90-percent-duration flow	22.0	52.5	51.8	15.4	20.1
95-percent-duration flow	17.2	36.9	39.7	12.5	17.0
99-percent-duration flow	11.2	22.1	25.1	8.1	13.2
Variability index	0.53	0.45	0.42	0.41	0.49

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01608500 South Branch Potomac River near Springfield, WV, 1930–2002					
1-day 2-year hydrologically based flow	115	431	310	122	146
1-day 5-year hydrologically based flow	82.2	267	221	85.4	104
1-day 10-year hydrologically based flow	69.4	201	184	70.8	90.2
3-day 2-year hydrologically based flow	118	458	329	125	151
3-day 5-year hydrologically based flow	83.9	282	233	87.4	106
3-day 10-year hydrologically based flow	70.7	212	193	72.3	91.8
7-day 2-year hydrologically based flow	121	510	372	131	161
7-day 5-year hydrologically based flow	86.7	307	259	90.9	111
7-day 10-year hydrologically based flow	73.5	231	212	75.3	95.1
14-day 2-year hydrologically based flow	127	602	454	141	177
14-day 5-year hydrologically based flow	91.1	352	310	96.6	118
14-day 10-year hydrologically based flow	78.2	263	249	80.2	100
30-day 2-year hydrologically based flow	141	885	655	169	246
30-day 5-year hydrologically based flow	102	507	426	113	143
30-day 10-year hydrologically based flow	90.5	373	332	94.8	111
1-day 3-year biologically based flow	61.0	140	253	64.0	74.8
4-day 3-year biologically based flow	64.7	157	292	69.7	84.2
EPA harmonic-mean flow	378	767	1,040	241	241
5-percent-duration flow	4,750	7,030	5,310	1,640	3,010
10-percent-duration flow	3,090	4,770	3,620	920	1,860
15-percent-duration flow	2,300	3,700	2,820	663	1,350
20-percent-duration flow	1,820	3,070	2,290	528	1,070
25-percent-duration flow	1,490	2,640	1,920	443	888
30-percent-duration flow	1,240	2,300	1,650	381	750
35-percent-duration flow	1,040	2,010	1,430	335	637
40-percent-duration flow	893	1,780	1,270	302	542
45-percent-duration flow	767	1,590	1,130	271	465
50-percent-duration flow	654	1,410	1,010	247	393
55-percent-duration flow	554	1,250	914	223	331
60-percent-duration flow	467	1,110	826	204	280
65-percent-duration flow	389	987	752	186	244
70-percent-duration flow	321	871	679	170	214
75-percent-duration flow	265	758	607	156	188
80-percent-duration flow	221	649	530	141	169
85-percent-duration flow	183	541	452	127	152
90-percent-duration flow	152	428	378	110	134
95-percent-duration flow	121	310	295	88.6	114
99-percent-duration flow	80.0	193	188	64.6	85.8
Variability index	0.50	0.40	0.38	0.37	0.45

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01610500 Cacapon River at Yellow Spring, WV, 1941–1951					
1-day 2-year hydrologically based flow	25.2	77.7	51.7	25.5	34.0
1-day 5-year hydrologically based flow	21.3	45.5	43.5	21.8	25.9
1-day 10-year hydrologically based flow	19.8	33.8	39.8	20.5	22.2
3-day 2-year hydrologically based flow	26.2	81.4	55.6	26.4	35.0
3-day 5-year hydrologically based flow	22.2	48.5	46.5	22.4	26.8
3-day 10-year hydrologically based flow	20.5	36.4	42.5	20.9	23.0
7-day 2-year hydrologically based flow	27.3	89.5	65.3	27.4	37.0
7-day 5-year hydrologically based flow	23.0	51.5	53.0	23.0	26.9
7-day 10-year hydrologically based flow	21.2	38.6	47.8	21.4	23.3
14-day 2-year hydrologically based flow	29.3	102	77.3	30.1	42.7
14-day 5-year hydrologically based flow	23.9	59.1	61.7	24.4	27.8
14-day 10-year hydrologically based flow	21.6	44.1	56.0	22.2	23.3
30-day 2-year hydrologically based flow	32.9	151	128	36.7	49.7
30-day 5-year hydrologically based flow	25.6	83.1	92.1	27.6	30.2
30-day 10-year hydrologically based flow	22.6	59.3	77.6	24.2	24.7
1-day 3-year biologically based flow	20.9	30.0	45.9	21.0	23.0
4-day 3-year biologically based flow	21.0	35.5	51.3	21.0	23.0
EPA harmonic-mean flow	80.4	144	183	52.1	55.6
5-percent-duration flow	867	1,110	1,020	389	706
10-percent-duration flow	572	793	641	238	438
15-percent-duration flow	439	645	472	154	306
20-percent-duration flow	351	544	398	113	225
25-percent-duration flow	286	484	341	91.7	182
30-percent-duration flow	237	424	299	79.0	150
35-percent-duration flow	200	370	266	69.4	122
40-percent-duration flow	174	323	237	62.2	97.8
45-percent-duration flow	148	278	212	56.8	80.2
50-percent-duration flow	123	247	190	52.0	70.3
55-percent-duration flow	101	218	174	47.7	61.4
60-percent-duration flow	84.3	195	157	44.1	54.3
65-percent-duration flow	71.8	176	139	40.5	49.9
70-percent-duration flow	61.6	160	123	36.9	45.5
75-percent-duration flow	53.7	135	111	33.6	41.9
80-percent-duration flow	46.6	110	96.9	30.9	38.2
85-percent-duration flow	39.9	83.4	84.1	28.8	34.3
90-percent-duration flow	33.3	68.5	71.9	27.0	30.4
95-percent-duration flow	27.8	52.1	58.8	24.4	26.6
99-percent-duration flow	23.1	40.1	46.8	20.8	22.2
Variability index	0.48	0.41	0.37	0.37	0.45

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01611500 Cacapon River near Great Cacapon, WV, 1933–1995					
1-day 2-year hydrologically based flow	54.1	178	116	56.6	62.0
1-day 5-year hydrologically based flow	42.1	112	87.0	43.3	49.1
1-day 10-year hydrologically based flow	37.2	86.2	74.8	37.8	45.6
3-day 2-year hydrologically based flow	55.1	187	122	57.4	63.4
3-day 5-year hydrologically based flow	42.9	117	91.4	44.0	49.9
3-day 10-year hydrologically based flow	38.0	88.8	78.4	38.5	46.1
7-day 2-year hydrologically based flow	56.8	207	137	59.8	68.8
7-day 5-year hydrologically based flow	44.2	125	101	45.7	52.0
7-day 10-year hydrologically based flow	39.2	93.3	86.0	39.9	47.2
14-day 2-year hydrologically based flow	59.5	236	164	64.4	75.6
14-day 5-year hydrologically based flow	46.1	137	116	48.3	54.5
14-day 10-year hydrologically based flow	40.9	101	98.1	41.9	48.0
30-day 2-year hydrologically based flow	66.1	338	253	76.5	99.6
30-day 5-year hydrologically based flow	50.3	185	164	55.8	62.9
30-day 10-year hydrologically based flow	44.6	131	131	47.7	51.9
1-day 3-year biologically based flow	36.8	59.9	101	37.8	42.0
4-day 3-year biologically based flow	38.5	70.0	112	39.9	43.4
EPA harmonic-mean flow	159	301	424	103	108
5-percent-duration flow	2,170	3,190	2,620	609	1,480
10-percent-duration flow	1,380	2,100	1,760	334	851
15-percent-duration flow	992	1,600	1,330	238	580
20-percent-duration flow	765	1,280	1,080	191	443
25-percent-duration flow	609	1,070	888	163	350
30-percent-duration flow	502	914	743	142	287
35-percent-duration flow	419	790	632	128	242
40-percent-duration flow	352	688	547	116	202
45-percent-duration flow	296	612	477	107	170
50-percent-duration flow	249	542	417	97.9	146
55-percent-duration flow	207	479	372	91.1	126
60-percent-duration flow	173	427	331	84.3	112
65-percent-duration flow	146	382	297	78.6	99.9
70-percent-duration flow	123	341	265	73.5	90.9
75-percent-duration flow	106	295	234	68.5	82.5
80-percent-duration flow	91.2	248	203	63.6	75.8
85-percent-duration flow	78.5	199	173	58.8	69.2
90-percent-duration flow	67.8	159	144	53.4	62.5
95-percent-duration flow	56.6	122	115	47.2	54.7
99-percent-duration flow	42.8	68.2	81.7	35.6	43.5
Variability index	0.51	0.43	0.42	0.33	0.45

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01614000 Back Creek near Jones Springs, WV, 1940–1953					
1-day 2-year hydrologically based flow	7.90	55.1	25.2	8.04	13.9
1-day 5-year hydrologically based flow	5.08	32.5	19.3	5.21	7.89
1-day 10-year hydrologically based flow	4.07	24.4	16.8	4.22	5.78
3-day 2-year hydrologically based flow	8.35	59.5	27.5	8.49	14.5
3-day 5-year hydrologically based flow	5.36	35.2	21.0	5.45	8.34
3-day 10-year hydrologically based flow	4.28	26.5	18.2	4.39	6.17
7-day 2-year hydrologically based flow	9.02	66.4	33.3	9.21	16.8
7-day 5-year hydrologically based flow	5.85	38.4	25.0	5.95	9.16
7-day 10-year hydrologically based flow	4.73	28.8	21.3	4.83	6.65
14-day 2-year hydrologically based flow	10.4	78.9	42.2	11.0	20.3
14-day 5-year hydrologically based flow	6.44	44.9	32.0	6.75	9.92
14-day 10-year hydrologically based flow	5.07	33.3	27.4	5.30	6.98
30-day 2-year hydrologically based flow	14.1	118	75.4	17.0	29.8
30-day 5-year hydrologically based flow	8.25	66.7	54.1	10.6	13.1
30-day 10-year hydrologically based flow	6.22	49.0	45.2	8.24	8.88
1-day 3-year biologically based flow	3.88	14.0	19.9	3.88	4.76
4-day 3-year biologically based flow	4.55	22.5	23.7	4.91	5.32
EPA harmonic-mean flow	37.6	116	106	21.5	24.2
5-percent-duration flow	801	1,090	828	276	654
10-percent-duration flow	494	760	519	133	358
15-percent-duration flow	356	614	385	85.6	249
20-percent-duration flow	275	494	304	65.6	188
25-percent-duration flow	222	411	252	51.7	152
30-percent-duration flow	184	355	214	42.2	122
35-percent-duration flow	151	310	185	35.6	98.2
40-percent-duration flow	124	267	159	31.3	81.1
45-percent-duration flow	102	242	136	27.6	65.0
50-percent-duration flow	83.8	218	117	24.6	52.1
55-percent-duration flow	69.2	195	103	22.0	42.5
60-percent-duration flow	56.3	172	90.6	19.5	35.2
65-percent-duration flow	45.2	148	80.7	17.6	30.0
70-percent-duration flow	36.4	130	72.3	15.7	25.9
75-percent-duration flow	29.9	114	63.9	14.0	22.3
80-percent-duration flow	24.2	98.9	55.2	12.5	19.5
85-percent-duration flow	19.3	78.1	47.0	10.2	16.5
90-percent-duration flow	14.8	54.7	39.1	8.5	13.2
95-percent-duration flow	9.9	37.7	30.2	6.9	9.1
99-percent-duration flow	5.8	27.5	20.9	4.8	5.9
Variability index	0.59	0.43	0.44	0.47	0.57

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01616500 Opequon Creek near Martinsburg, WV, 1949–1996					
1-day 2-year hydrologically based flow	50.6	98.6	104	59.8	52.8
1-day 5-year hydrologically based flow	38.4	62.7	76.5	44.7	39.9
1-day 10-year hydrologically based flow	33.5	48.9	64.4	38.2	35.6
3-day 2-year hydrologically based flow	51.7	103	106	61.1	54.0
3-day 5-year hydrologically based flow	39.4	65.0	78.4	45.8	40.8
3-day 10-year hydrologically based flow	34.5	50.6	66.3	39.3	36.3
7-day 2-year hydrologically based flow	53.6	113	111	63.0	57.1
7-day 5-year hydrologically based flow	40.8	70.5	82.7	47.4	42.5
7-day 10-year hydrologically based flow	35.8	54.0	70.5	40.9	37.5
14-day 2-year hydrologically based flow	55.9	133	121	66.1	61.2
14-day 5-year hydrologically based flow	42.4	81.1	90.1	49.9	44.0
14-day 10-year hydrologically based flow	37.1	60.7	76.8	43.3	38.3
30-day 2-year hydrologically based flow	61.1	169	144	73.4	74.6
30-day 5-year hydrologically based flow	46.0	101	106	54.9	50.1
30-day 10-year hydrologically based flow	40.0	74.4	89.8	47.3	41.9
1-day 3-year biologically based flow	32.0	44.0	75.8	42.0	35.0
4-day 3-year biologically based flow	33.9	45.6	79.4	44.9	35.4
EPA harmonic-mean flow	115	152	201	95.1	79.0
5-percent-duration flow	700	1,030	773	273	547
10-percent-duration flow	468	696	514	195	360
15-percent-duration flow	362	548	410	161	281
20-percent-duration flow	300	461	345	142	228
25-percent-duration flow	256	399	302	129	190
30-percent-duration flow	224	351	269	119	161
35-percent-duration flow	198	314	245	111	135
40-percent-duration flow	176	282	224	104	112
45-percent-duration flow	157	258	206	96.7	98.1
50-percent-duration flow	140	236	190	91.5	89.1
55-percent-duration flow	125	216	176	86.4	81.0
60-percent-duration flow	113	196	163	81.3	74.5
65-percent-duration flow	101	180	151	76.9	69.1
70-percent-duration flow	91.2	164	140	72.4	65.0
75-percent-duration flow	82.4	146	129	67.9	60.8
80-percent-duration flow	73.9	127	118	63.2	56.7
85-percent-duration flow	65.5	108	109	58.5	52.6
90-percent-duration flow	57.5	87.7	97.8	52.9	48.1
95-percent-duration flow	49.0	65.7	84.2	46.4	43.0
99-percent-duration flow	37.5	44.2	62.5	36.5	33.8
Variability index	0.35	0.35	0.29	0.23	0.35

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01636500 Shenandoah River at Millville, WV, 1930–2002					
1-day 2-year hydrologically based flow	478	1,160	980	522	573
1-day 5-year hydrologically based flow	354	721	700	381	405
1-day 10-year hydrologically based flow	303	550	578	323	344
3-day 2-year hydrologically based flow	513	1,210	1,030	557	605
3-day 5-year hydrologically based flow	387	770	754	412	439
3-day 10-year hydrologically based flow	335	596	633	352	380
7-day 2-year hydrologically based flow	541	1,290	1,110	590	638
7-day 5-year hydrologically based flow	410	824	822	440	462
7-day 10-year hydrologically based flow	357	639	693	379	402
14-day 2-year hydrologically based flow	568	1,430	1,250	628	681
14-day 5-year hydrologically based flow	432	889	918	465	484
14-day 10-year hydrologically based flow	378	692	771	398	419
30-day 2-year hydrologically based flow	615	1,770	1,580	712	822
30-day 5-year hydrologically based flow	466	1,060	1,130	520	545
30-day 10-year hydrologically based flow	409	804	934	446	455
1-day 3-year biologically based flow	304	457	676	331	369
4-day 3-year biologically based flow	343	530	773	362	398
EPA harmonic-mean flow	1,230	1,710	2,280	912	878
5-percent-duration flow	8,040	11,400	8,970	3,730	6,510
10-percent-duration flow	5,480	7,670	6,310	2,440	4,180
15-percent-duration flow	4,300	6,120	4,990	1,870	3,140
20-percent-duration flow	3,530	5,200	4,170	1,600	2,510
25-percent-duration flow	2,980	4,520	3,610	1,410	2,140
30-percent-duration flow	2,570	4,030	3,190	1,260	1,840
35-percent-duration flow	2,270	3,610	2,850	1,150	1,590
40-percent-duration flow	2,000	3,220	2,600	1,050	1,380
45-percent-duration flow	1,770	2,920	2,370	977	1,190
50-percent-duration flow	1,590	2,640	2,190	900	1,070
55-percent-duration flow	1,410	2,410	2,020	842	955
60-percent-duration flow	1,250	2,190	1,870	792	872
65-percent-duration flow	1,100	1,980	1,720	741	790
70-percent-duration flow	970	1,770	1,600	691	732
75-percent-duration flow	863	1,570	1,470	641	677
80-percent-duration flow	764	1,390	1,340	590	620
85-percent-duration flow	678	1,160	1,210	538	563
90-percent-duration flow	585	908	1,060	482	502
95-percent-duration flow	482	707	872	416	436
99-percent-duration flow	367	488	629	324	361
Variability index	0.38	0.36	0.30	0.28	0.36

Table 11. elected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03050000 Tygart Valley River near Dailey, WV, 1932–1957					
1-day 2-year hydrologically based flow	6.27	97.9	37.8	7.68	8.94
1-day 5-year hydrologically based flow	1.89	62.6	22.7	2.26	3.02
1-day 10-year hydrologically based flow	0.83	47.6	17.2	0.95	1.48
3-day 2-year hydrologically based flow	6.79	105	43.1	9.38	10.1
3-day 5-year hydrologically based flow	2.02	65.4	25.7	2.17	3.52
3-day 10-year hydrologically based flow	0.89	49.1	19.4	0.76	1.77
7-day 2-year hydrologically based flow	7.87	122	55.5	10.9	13.2
7-day 5-year hydrologically based flow	2.38	73.7	33.2	2.64	4.45
7-day 10-year hydrologically based flow	1.07	54.1	24.8	1.01	2.22
14-day 2-year hydrologically based flow	10.1	164	78.4	15.2	16.9
14-day 5-year hydrologically based flow	3.04	93.7	45.7	3.66	5.52
14-day 10-year hydrologically based flow	1.40	67.8	34.0	1.45	2.74
30-day 2-year hydrologically based flow	14.8	282	148	28.2	37.2
30-day 5-year hydrologically based flow	5.08	178	83.3	7.80	12.0
30-day 10-year hydrologically based flow	2.61	135	61.0	3.36	5.87
1-day 3-year biologically based flow	0.51	35.0	23.0	1.19	0.58
4-day 3-year biologically based flow	0.81	41.1	30.2	1.87	0.86
EPA harmonic-mean flow	21.5	230	171	15.9	8.78
5-percent-duration flow	1,260	1,920	1,200	560	812
10-percent-duration flow	818	1,300	812	285	515
15-percent-duration flow	606	999	646	191	374
20-percent-duration flow	471	822	533	147	286
25-percent-duration flow	392	694	437	119	227
30-percent-duration flow	323	604	378	96.0	189
35-percent-duration flow	268	539	327	80.7	159
40-percent-duration flow	225	483	277	68.1	132
45-percent-duration flow	189	431	243	58.3	111
50-percent-duration flow	159	383	214	49.3	90.9
55-percent-duration flow	132	345	189	42.1	74.5
60-percent-duration flow	109	310	167	35.5	61.1
65-percent-duration flow	87.7	278	147	29.8	49.4
70-percent-duration flow	69.0	248	129	24.4	39.1
75-percent-duration flow	53.5	219	113	19.3	30.3
80-percent-duration flow	40.0	189	96.4	15.0	21.9
85-percent-duration flow	27.8	155	76.7	10.7	15.5
90-percent-duration flow	17.3	125	59.5	6.8	8.8
95-percent-duration flow	7.4	91.2	40.8	3.6	3.5
99-percent-duration flow	0.9	44.7	22.4	0.5	0.2
Variability index	0.66	0.39	0.44	0.63	0.70

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03050500 Tygart Valley River near Elkins, WV, 1946–2000					
1-day 2-year hydrologically based flow	6.45	142	39.8	8.15	16.4
1-day 5-year hydrologically based flow	1.79	90.5	17.0	2.26	4.94
1-day 10-year hydrologically based flow	0.85	67.0	10.2	1.04	2.46
3-day 2-year hydrologically based flow	8.11	153	49.0	11.1	19.9
3-day 5-year hydrologically based flow	2.34	98.7	23.1	3.14	6.38
3-day 10-year hydrologically based flow	1.13	75.2	14.8	1.44	3.31
7-day 2-year hydrologically based flow	12.2	173	64.3	16.5	27.3
7-day 5-year hydrologically based flow	3.66	107	31.7	4.84	9.45
7-day 10-year hydrologically based flow	1.75	82.1	21.2	2.20	5.14
14-day 2-year hydrologically based flow	14.9	239	92.3	21.6	37.8
14-day 5-year hydrologically based flow	5.22	137	46.0	7.30	12.5
14-day 10-year hydrologically based flow	2.97	102	30.9	3.90	6.51
30-day 2-year hydrologically based flow	23.7	439	179	37.4	86.9
30-day 5-year hydrologically based flow	8.31	272	91.9	12.2	26.9
30-day 10-year hydrologically based flow	4.67	204	62.6	6.39	13.1
1-day 3-year biologically based flow	1.08	62.0	28.0	1.78	1.13
4-day 3-year biologically based flow	1.38	70.9	42.2	2.54	2.11
EPA harmonic-mean flow	36.5	333	270	25.8	15.6
5-percent-duration flow	1,960	2,930	1,990	773	1,600
10-percent-duration flow	1,270	1,980	1,280	425	1,000
15-percent-duration flow	939	1,500	977	286	739
20-percent-duration flow	753	1,230	810	220	575
25-percent-duration flow	617	1,060	685	174	458
30-percent-duration flow	506	921	581	143	372
35-percent-duration flow	426	808	499	119	315
40-percent-duration flow	352	711	429	98.8	262
45-percent-duration flow	298	638	371	82.8	223
50-percent-duration flow	247	569	324	68.3	186
55-percent-duration flow	209	507	283	57.4	159
60-percent-duration flow	172	452	246	47.2	132
65-percent-duration flow	141	400	210	40.1	106
70-percent-duration flow	111	352	180	32.9	83.5
75-percent-duration flow	83.4	310	151	26.3	65.1
80-percent-duration flow	61.6	267	124	20.0	49.4
85-percent-duration flow	42.4	222	98.2	14.4	33.6
90-percent-duration flow	26.1	183	70.9	8.4	19.2
95-percent-duration flow	11.7	135	42.8	4.2	8.5
99-percent-duration flow	2.8	81.8	18.0	1.6	2.3
Variability index	0.66	0.40	0.49	0.66	0.67

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03051000 Tygart Valley River at Belington, WV, 1930–2002					
1-day 2-year hydrologically based flow	16.6	227	71.9	19.8	28.3
1-day 5-year hydrologically based flow	5.69	145	37.5	6.47	9.86
1-day 10-year hydrologically based flow	2.86	109	26.1	3.12	5.35
3-day 2-year hydrologically based flow	17.8	244	83.0	21.7	32.1
3-day 5-year hydrologically based flow	6.28	153	43.4	7.28	11.1
3-day 10-year hydrologically based flow	3.31	114	30.1	3.65	6.06
7-day 2-year hydrologically based flow	21.6	277	109	27.7	42.2
7-day 5-year hydrologically based flow	7.41	167	57.0	8.97	14.4
7-day 10-year hydrologically based flow	3.81	125	39.5	4.36	7.69
14-day 2-year hydrologically based flow	26.8	375	158	37.2	57.5
14-day 5-year hydrologically based flow	9.28	223	81.0	12.1	18.8
14-day 10-year hydrologically based flow	4.95	169	55.4	6.00	9.66
30-day 2-year hydrologically based flow	41.7	677	290	67.6	133
30-day 5-year hydrologically based flow	14.2	434	155	21.1	41.6
30-day 10-year hydrologically based flow	7.51	336	109	10.3	20.1
1-day 3-year biologically based flow	2.96	90.0	51.9	4.39	4.37
4-day 3-year biologically based flow	3.50	111	68.5	5.79	5.06
EPA harmonic-mean flow	62.7	531	423	31.9	35.6
5-percent-duration flow	3,010	4,390	3,080	1,300	2,420
10-percent-duration flow	2,000	2,970	2,090	713	1,590
15-percent-duration flow	1,500	2,330	1,610	471	1,150
20-percent-duration flow	1,210	1,940	1,310	350	885
25-percent-duration flow	971	1,650	1,110	275	701
30-percent-duration flow	810	1,440	946	220	581
35-percent-duration flow	667	1,270	806	186	481
40-percent-duration flow	564	1,110	687	153	408
45-percent-duration flow	468	992	600	131	346
50-percent-duration flow	397	884	522	110	292
55-percent-duration flow	327	788	453	93.5	246
60-percent-duration flow	273	703	395	77.6	202
65-percent-duration flow	221	622	341	65.7	161
70-percent-duration flow	175	547	293	54.2	126
75-percent-duration flow	135	482	247	43.9	96.2
80-percent-duration flow	98.1	420	205	33.4	69.9
85-percent-duration flow	67.6	354	164	23.6	48.1
90-percent-duration flow	42.5	289	120	15.0	28.7
95-percent-duration flow	19.6	218	77.0	8.2	14.6
99-percent-duration flow	5.2	128	34.0	2.5	3.7
Variability index	0.65	0.39	0.48	0.64	0.66

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03052000 Middle Fork River at Audra, WV, 1943–1964					
1-day 2-year hydrologically based flow	4.05	112	33.3	5.15	9.56
1-day 5-year hydrologically based flow	1.04	79.0	19.1	1.43	2.36
1-day 10-year hydrologically based flow	0.49	65.7	14.3	0.69	1.05
3-day 2-year hydrologically based flow	4.46	121	39.2	5.76	10.8
3-day 5-year hydrologically based flow	1.14	83.8	22.0	1.60	2.54
3-day 10-year hydrologically based flow	0.53	69.1	16.3	0.77	1.09
7-day 2-year hydrologically based flow	5.65	140	52.1	7.50	13.9
7-day 5-year hydrologically based flow	1.37	92.9	29.8	2.02	3.02
7-day 10-year hydrologically based flow	0.62	74.9	22.3	0.96	1.24
14-day 2-year hydrologically based flow	7.61	193	70.3	11.0	19.4
14-day 5-year hydrologically based flow	1.75	120	40.0	2.82	3.98
14-day 10-year hydrologically based flow	0.77	92.3	29.9	1.30	1.53
30-day 2-year hydrologically based flow	12.4	315	136	20.8	43.9
30-day 5-year hydrologically based flow	3.09	240	73.5	5.77	9.24
30-day 10-year hydrologically based flow	1.41	208	53.1	2.72	3.49
1-day 3-year biologically based flow	0.42	49.9	22.0	0.55	0.55
4-day 3-year biologically based flow	0.54	64.7	33.7	0.72	1.22
EPA harmonic-mean flow	18.5	281	188	13.2	7.61
5-percent-duration flow	1,250	1,800	1,140	490	1,010
10-percent-duration flow	821	1,300	813	296	665
15-percent-duration flow	647	1,040	667	193	491
20-percent-duration flow	529	858	567	142	386
25-percent-duration flow	435	740	483	112	315
30-percent-duration flow	369	650	416	89.8	253
35-percent-duration flow	311	582	358	73.9	207
40-percent-duration flow	261	522	310	60.1	172
45-percent-duration flow	218	469	269	48.2	148
50-percent-duration flow	180	426	234	38.8	127
55-percent-duration flow	152	388	203	32.6	109
60-percent-duration flow	126	353	180	27.1	90.9
65-percent-duration flow	102	319	161	22.6	73.9
70-percent-duration flow	78.9	287	142	18.0	57.6
75-percent-duration flow	57.3	252	123	14.4	41.3
80-percent-duration flow	38.4	219	103	10.9	25.0
85-percent-duration flow	24.9	188	79.5	7.8	14.2
90-percent-duration flow	14.1	154	57.8	4.8	6.6
95-percent-duration flow	5.3	120	36.8	2.1	2.5
99-percent-duration flow	1.1	68.9	19.3	0.7	0.5
Variability index	0.71	0.35	0.45	0.69	0.77

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03052500 Sand Run near Buckhannon, WV, 1948–2000					
1-day 2-year hydrologically based flow	0.22	7.62	1.12	0.25	1.05
1-day 5-year hydrologically based flow	0.01	5.07	0.44	0.02	0.27
1-day 10-year hydrologically based flow	0.00	3.96	0.25	0.00	0.10
3-day 2-year hydrologically based flow	0.24	8.28	1.65	0.30	1.18
3-day 5-year hydrologically based flow	0.03	5.45	0.51	0.03	0.31
3-day 10-year hydrologically based flow	0.00	4.27	0.21	0.00	0.11
7-day 2-year hydrologically based flow	0.33	9.95	2.03	0.43	1.54
7-day 5-year hydrologically based flow	0.06	6.28	0.70	0.07	0.49
7-day 10-year hydrologically based flow	0.02	4.89	0.35	0.02	0.23
14-day 2-year hydrologically based flow	0.51	13.6	2.93	0.81	2.04
14-day 5-year hydrologically based flow	0.11	8.25	1.15	0.12	0.69
14-day 10-year hydrologically based flow	0.04	6.34	0.65	0.03	0.34
30-day 2-year hydrologically based flow	0.96	24.4	5.91	1.59	5.55
30-day 5-year hydrologically based flow	0.28	16.1	2.60	0.42	1.52
30-day 10-year hydrologically based flow	0.13	12.5	1.67	0.19	0.59
1-day 3-year biologically based flow	0.00	3.48	0.79	0.00	0.00
4-day 3-year biologically based flow	0.00	4.23	1.23	0.00	0.00
EPA harmonic-mean flow	1.15	19.4	9.81	0.50	0.74
5-percent-duration flow	101	156	103	39.6	91.6
10-percent-duration flow	65.8	99.4	65.4	21.9	56.7
15-percent-duration flow	48.9	74.9	49.8	14.5	42.4
20-percent-duration flow	39.8	61.3	40.9	10.4	34.3
25-percent-duration flow	32.5	53.2	33.3	7.7	27.7
30-percent-duration flow	27.4	46.5	28.5	6.2	23.3
35-percent-duration flow	23.0	41.0	23.8	5.0	19.2
40-percent-duration flow	19.3	36.9	20.6	4.0	16.0
45-percent-duration flow	16.0	33.4	17.3	3.3	13.1
50-percent-duration flow	13.2	30.3	15.1	2.8	10.7
55-percent-duration flow	10.7	27.5	12.9	2.3	8.9
60-percent-duration flow	8.3	25.1	10.8	2.0	7.3
65-percent-duration flow	6.6	22.7	8.8	1.6	5.8
70-percent-duration flow	4.9	20.4	7.3	1.3	4.5
75-percent-duration flow	3.6	18.0	5.8	0.9	3.5
80-percent-duration flow	2.6	15.6	4.3	0.6	2.6
85-percent-duration flow	1.8	13.2	3.1	0.4	1.8
90-percent-duration flow	1.0	10.7	2.1	0.2	1.2
95-percent-duration flow	0.4	8.0	1.2	0.1	0.5
99-percent-duration flow	0.0	4.7	0.4	0.0	0.0
Variability index	0.72	0.38	0.58	0.76	0.68

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03053500 Buckhannon River at Hall, WV, 1930–2002					
1-day 2-year hydrologically based flow	12.3	171	49.5	14.3	30.2
1-day 5-year hydrologically based flow	4.28	118	23.8	5.33	8.94
1-day 10-year hydrologically based flow	2.27	95.9	15.7	3.01	4.07
3-day 2-year hydrologically based flow	13.3	186	56.2	15.9	33.1
3-day 5-year hydrologically based flow	4.64	126	27.0	5.82	9.66
3-day 10-year hydrologically based flow	2.44	101	17.7	3.24	4.37
7-day 2-year hydrologically based flow	15.5	216	70.8	19.3	41.2
7-day 5-year hydrologically based flow	5.29	140	33.8	6.80	11.9
7-day 10-year hydrologically based flow	2.75	111	22.2	3.69	5.31
14-day 2-year hydrologically based flow	20.3	293	96.1	26.9	54.1
14-day 5-year hydrologically based flow	6.77	182	47.5	9.09	15.5
14-day 10-year hydrologically based flow	3.47	143	32.0	4.80	6.85
30-day 2-year hydrologically based flow	34.0	510	180	53.2	129
30-day 5-year hydrologically based flow	11.2	333	90.6	17.6	36.5
30-day 10-year hydrologically based flow	5.52	260	62.3	8.91	14.8
1-day 3-year biologically based flow	2.45	79.9	28.9	2.89	2.68
4-day 3-year biologically based flow	3.00	98.5	37.0	4.72	3.64
EPA harmonic-mean flow	42.4	437	271	31.6	17.7
5-percent-duration flow	2,150	3,030	2,090	940	1,880
10-percent-duration flow	1,450	2,120	1,430	551	1,190
15-percent-duration flow	1,100	1,640	1,120	387	901
20-percent-duration flow	866	1,370	918	288	722
25-percent-duration flow	736	1,190	768	220	595
30-percent-duration flow	610	1,050	649	177	499
35-percent-duration flow	522	934	556	147	410
40-percent-duration flow	435	832	480	121	352
45-percent-duration flow	370	753	412	103	294
50-percent-duration flow	307	682	355	86.9	251
55-percent-duration flow	257	623	310	73.9	209
60-percent-duration flow	211	563	268	61.9	175
65-percent-duration flow	172	504	232	51.2	143
70-percent-duration flow	137	449	198	42.3	113
75-percent-duration flow	105	395	166	33.9	88.9
80-percent-duration flow	77.2	340	135	26.1	66.6
85-percent-duration flow	53.9	285	106	19.4	45.5
90-percent-duration flow	34.0	229	77.6	13.1	27.8
95-percent-duration flow	16.4	178	47.4	7.3	11.7
99-percent-duration flow	3.9	107	19.5	2.7	0.8
Variability index	0.64	0.37	0.49	0.62	0.65

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03054500 Tygart Valley River at Philippi, WV, 1941–2000					
1-day 2-year hydrologically based flow	39.3	544	178	47.8	91.3
1-day 5-year hydrologically based flow	15.6	377	91.8	18.3	33.3
1-day 10-year hydrologically based flow	9.37	310	63.0	10.6	18.5
3-day 2-year hydrologically based flow	42.5	587	201	52.3	101
3-day 5-year hydrologically based flow	16.8	399	103	19.9	36.6
3-day 10-year hydrologically based flow	10.0	324	70.7	11.4	20.3
7-day 2-year hydrologically based flow	49.7	684	256	62.9	119
7-day 5-year hydrologically based flow	19.3	442	128	23.6	42.5
7-day 10-year hydrologically based flow	11.5	354	86.2	13.5	23.7
14-day 2-year hydrologically based flow	63.4	944	354	86.6	160
14-day 5-year hydrologically based flow	24.3	563	173	31.7	55.9
14-day 10-year hydrologically based flow	14.4	429	116	18.0	30.1
30-day 2-year hydrologically based flow	103	1,670	634	158	360
30-day 5-year hydrologically based flow	38.4	1,070	329	57.5	120
30-day 10-year hydrologically based flow	22.4	822	230	32.5	60.8
1-day 3-year biologically based flow	8.20	260	121	11.0	10.0
4-day 3-year biologically based flow	10.5	302	161	14.7	12.3
EPA harmonic-mean flow	224	1,400	1,030	131	118
5-percent-duration flow	6,800	9,770	6,720	2,930	5,940
10-percent-duration flow	4,580	6,720	4,700	1,740	3,930
15-percent-duration flow	3,490	5,270	3,610	1,230	2,850
20-percent-duration flow	2,810	4,450	2,980	902	2,290
25-percent-duration flow	2,370	3,850	2,530	692	1,940
30-percent-duration flow	2,000	3,400	2,180	550	1,630
35-percent-duration flow	1,720	3,020	1,910	449	1,370
40-percent-duration flow	1,470	2,690	1,670	371	1,170
45-percent-duration flow	1,250	2,430	1,460	310	981
50-percent-duration flow	1,040	2,210	1,280	265	819
55-percent-duration flow	851	2,020	1,110	225	688
60-percent-duration flow	699	1,840	958	189	570
65-percent-duration flow	557	1,670	828	159	455
70-percent-duration flow	438	1,470	706	132	362
75-percent-duration flow	332	1,300	581	109	281
80-percent-duration flow	246	1,120	463	85.4	208
85-percent-duration flow	173	917	365	62.8	152
90-percent-duration flow	111	726	265	40.3	89.6
95-percent-duration flow	54.8	548	176	24.5	46.6
99-percent-duration flow	16.1	339	75.6	11.2	12.6
Variability index	0.63	0.37	0.48	0.62	0.63

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03056250 Three Fork Creek near Grafton, WV, 1986–2000					
1-day 2-year hydrologically based flow	2.58	47.2	10.6	2.61	7.75
1-day 5-year hydrologically based flow	1.11	31.1	5.26	1.11	3.49
1-day 10-year hydrologically based flow	0.68	24.2	3.51	0.68	2.24
3-day 2-year hydrologically based flow	2.83	55.3	12.2	2.86	8.30
3-day 5-year hydrologically based flow	1.19	36.2	5.92	1.19	3.84
3-day 10-year hydrologically based flow	0.73	28.1	3.85	0.73	2.51
7-day 2-year hydrologically based flow	3.45	63.9	16.2	3.53	9.84
7-day 5-year hydrologically based flow	1.39	40.1	7.68	1.39	4.81
7-day 10-year hydrologically based flow	0.83	30.9	4.94	0.82	3.29
14-day 2-year hydrologically based flow	4.58	90.6	21.1	4.83	11.8
14-day 5-year hydrologically based flow	1.86	51.0	9.72	1.88	5.76
14-day 10-year hydrologically based flow	1.11	37.7	6.33	1.10	4.02
30-day 2-year hydrologically based flow	7.37	170	40.7	8.83	20.6
30-day 5-year hydrologically based flow	3.11	104	18.1	3.27	9.33
30-day 10-year hydrologically based flow	1.87	79.8	11.4	1.93	6.56
1-day 3-year biologically based flow	0.56	17.0	13.3	0.52	1.16
4-day 3-year biologically based flow	0.69	21.6	17.3	0.81	1.14
EPA harmonic-mean flow	15.0	116	93.6	6.86	9.85
5-percent-duration flow	692	1,030	640	211	608
10-percent-duration flow	432	688	402	114	371
15-percent-duration flow	325	540	310	74.6	272
20-percent-duration flow	254	440	242	55.0	215
25-percent-duration flow	202	378	201	42.0	175
30-percent-duration flow	169	331	173	31.9	146
35-percent-duration flow	142	293	150	25.6	121
40-percent-duration flow	121	254	131	21.1	97.9
45-percent-duration flow	101	225	116	17.8	80.1
50-percent-duration flow	82.7	201	101	15.2	66.7
55-percent-duration flow	67.1	180	87.3	12.7	54.3
60-percent-duration flow	52.2	159	74.2	10.1	41.2
65-percent-duration flow	38.8	141	61.7	8.1	30.8
70-percent-duration flow	28.1	127	50.8	6.5	24.6
75-percent-duration flow	20.8	113	41.0	5.1	18.1
80-percent-duration flow	14.9	99.4	30.8	3.9	13.5
85-percent-duration flow	10.1	85.0	23.0	2.9	10.5
90-percent-duration flow	6.6	70.3	17.0	2.0	8.1
95-percent-duration flow	3.2	53.4	10.0	1.3	5.8
99-percent-duration flow	1.1	30.2	3.6	0.7	2.4
Variability index	0.71	0.39	0.54	0.67	0.64

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03057500 Skin Creek near Brownsville, WV, 1948–1960					
1-day 2-year hydrologically based flow	0.18	9.04	0.96	0.20	0.45
1-day 5-year hydrologically based flow	0.00	5.20	0.44	0.00	0.00
1-day 10-year hydrologically based flow	0.00	3.75	0.30	0.00	0.00
3-day 2-year hydrologically based flow	0.25	9.84	1.13	0.27	0.44
3-day 5-year hydrologically based flow	0.00	5.48	0.53	0.00	0.00
3-day 10-year hydrologically based flow	0.00	3.91	0.37	0.00	0.00
7-day 2-year hydrologically based flow	0.34	12.4	1.79	0.15	1.29
7-day 5-year hydrologically based flow	0.00	6.82	0.81	0.00	0.00
7-day 10-year hydrologically based flow	0.00	4.72	0.54	0.00	0.00
14-day 2-year hydrologically based flow	0.21	22.5	2.41	0.42	3.04
14-day 5-year hydrologically based flow	0.00	11.6	1.21	0.00	0.05
14-day 10-year hydrologically based flow	0.00	7.63	0.88	0.00	0.00
30-day 2-year hydrologically based flow	0.49	40.9	6.76	1.11	4.79
30-day 5-year hydrologically based flow	0.01	30.3	2.86	0.07	0.19
30-day 10-year hydrologically based flow	0.00	25.1	1.87	0.00	0.00
1-day 3-year biologically based flow	0.00	2.53	0.39	0.00	0.00
4-day 3-year biologically based flow	0.00	3.09	0.50	0.00	0.00
EPA harmonic-mean flow	0.96	21.2	6.84	0.52	0.44
5-percent-duration flow	185	330	159	67.3	142
10-percent-duration flow	105	196	95.7	30.3	74.2
15-percent-duration flow	67.8	140	62.0	16.5	49.7
20-percent-duration flow	51.8	107	46.9	10.9	36.5
25-percent-duration flow	40.4	85.4	36.4	7.9	28.0
30-percent-duration flow	31.7	68.9	28.9	5.8	20.9
35-percent-duration flow	25.8	59.3	23.8	4.5	16.8
40-percent-duration flow	20.9	51.9	19.8	3.6	13.5
45-percent-duration flow	16.7	45.4	16.5	2.8	11.2
50-percent-duration flow	13.4	40.2	14.1	2.2	9.4
55-percent-duration flow	10.5	36.1	12.3	1.6	8.0
60-percent-duration flow	7.9	32.2	10.4	1.2	6.7
65-percent-duration flow	6.1	29.1	8.5	0.9	5.4
70-percent-duration flow	4.5	26.0	6.8	0.6	4.3
75-percent-duration flow	3.2	23.1	5.1	0.4	3.2
80-percent-duration flow	2.0	20.2	3.9	0.2	2.2
85-percent-duration flow	1.1	17.0	2.8	0.1	0.6
90-percent-duration flow	0.3	13.7	1.9	0.0	0.0
95-percent-duration flow	0.0	9.4	1.0	0.0	0.0
99-percent-duration flow	0.0	4.0	0.4	0.0	0.0
Variability index	0.59	0.45	0.65	0.72	0.60

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03058000 WEST Fork River below Stonewall Jackson Dam near Weston, WV, 1948–1978					
1-day 2-year hydrologically based flow	1.03	33.3	4.61	1.51	4.38
1-day 5-year hydrologically based flow	0.10	19.6	1.72	0.25	0.78
1-day 10-year hydrologically based flow	0.00	14.3	0.92	0.01	0.03
3-day 2-year hydrologically based flow	1.26	35.6	5.31	1.77	4.76
3-day 5-year hydrologically based flow	0.22	21.2	2.03	0.42	0.86
3-day 10-year hydrologically based flow	0.00	15.8	1.12	0.14	0.04
7-day 2-year hydrologically based flow	1.64	46.6	7.19	2.15	5.50
7-day 5-year hydrologically based flow	0.40	25.7	3.10	0.54	1.08
7-day 10-year hydrologically based flow	0.13	18.1	1.98	0.22	0.35
14-day 2-year hydrologically based flow	2.34	73.8	10.6	3.05	8.83
14-day 5-year hydrologically based flow	0.57	36.6	4.94	0.80	1.79
14-day 10-year hydrologically based flow	0.23	24.0	3.33	0.38	0.56
30-day 2-year hydrologically based flow	4.39	139	24.3	6.32	19.7
30-day 5-year hydrologically based flow	1.21	74.8	10.1	1.91	3.87
30-day 10-year hydrologically based flow	0.58	48.4	6.42	0.96	1.35
1-day 3-year biologically based flow	0.00	13.9	1.86	0.09	0.00
4-day 3-year biologically based flow	0.00	14.9	3.89	0.19	0.00
EPA harmonic-mean flow	5.51	71.6	35.6	2.94	2.90
5-percent-duration flow	710	1,110	697	225	575
10-percent-duration flow	419	712	403	106	332
15-percent-duration flow	286	535	268	62.4	229
20-percent-duration flow	211	409	199	44.0	163
25-percent-duration flow	163	330	155	33.2	126
30-percent-duration flow	128	281	125	25.9	100
35-percent-duration flow	104	241	102	20.5	80.7
40-percent-duration flow	84.2	208	83.4	15.9	67.2
45-percent-duration flow	67.2	180	71.9	13.3	54.7
50-percent-duration flow	55.0	158	61.3	10.9	44.0
55-percent-duration flow	43.8	140	52.0	8.9	36.5
60-percent-duration flow	34.1	124	43.2	7.4	29.8
65-percent-duration flow	26.7	110	35.3	6.0	24.7
70-percent-duration flow	19.8	95.6	28.8	4.7	19.3
75-percent-duration flow	14.4	81.9	22.6	3.5	14.6
80-percent-duration flow	9.5	68.3	16.2	2.6	10.1
85-percent-duration flow	6.1	54.7	11.7	1.7	4.7
90-percent-duration flow	3.4	43.3	7.8	0.8	2.3
95-percent-duration flow	1.1	31.6	4.7	0.4	0.6
99-percent-duration flow	0.2	14.1	1.7	0.1	0.1
Variability index	0.83	0.46	0.65	0.79	0.86

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03058500 West Fork River at Butcherville, WV, 1934–1989					
1-day 2-year hydrologically based flow	3.13	61.9	11.1	3.62	7.80
1-day 5-year hydrologically based flow	1.14	37.1	4.73	1.25	2.42
1-day 10-year hydrologically based flow	0.66	26.9	2.86	0.70	1.23
3-day 2-year hydrologically based flow	3.56	66.4	12.9	4.16	8.96
3-day 5-year hydrologically based flow	1.28	40.0	5.47	1.42	2.72
3-day 10-year hydrologically based flow	0.73	29.5	3.29	0.79	1.37
7-day 2-year hydrologically based flow	4.43	82.2	17.6	5.49	12.0
7-day 5-year hydrologically based flow	1.57	47.8	7.28	1.82	3.65
7-day 10-year hydrologically based flow	0.88	34.9	4.33	1.00	1.82
14-day 2-year hydrologically based flow	6.47	123	25.5	8.60	16.9
14-day 5-year hydrologically based flow	2.13	67.7	10.9	2.75	4.94
14-day 10-year hydrologically based flow	1.14	47.4	6.67	1.44	2.36
30-day 2-year hydrologically based flow	12.4	244	60.3	20.5	44.8
30-day 5-year hydrologically based flow	3.88	140	25.0	6.30	11.8
30-day 10-year hydrologically based flow	1.94	96.3	15.1	3.14	4.91
1-day 3-year biologically based flow	0.59	22.0	3.36	0.69	0.88
4-day 3-year biologically based flow	0.75	25.1	5.89	0.92	1.08
EPA harmonic-mean flow	16.8	151	64.1	9.24	9.27
5-percent-duration flow	1,270	1,830	1,240	544	1,040
10-percent-duration flow	738	1,210	728	248	598
15-percent-duration flow	511	911	505	143	412
20-percent-duration flow	383	717	380	99.9	311
25-percent-duration flow	307	582	302	76.0	246
30-percent-duration flow	248	489	243	60.8	198
35-percent-duration flow	201	420	195	51.5	162
40-percent-duration flow	163	366	158	43.6	132
45-percent-duration flow	131	321	133	37.0	108
50-percent-duration flow	106	280	112	31.2	89.0
55-percent-duration flow	85.8	250	93.9	26.0	72.3
60-percent-duration flow	69.0	222	80.9	21.3	58.6
65-percent-duration flow	55.2	199	68.3	17.4	47.9
70-percent-duration flow	44.1	174	56.7	13.9	38.4
75-percent-duration flow	33.9	148	46.3	10.3	30.0
80-percent-duration flow	24.7	124	36.5	7.1	22.0
85-percent-duration flow	16.6	103	26.9	4.7	13.9
90-percent-duration flow	9.4	81.0	18.6	2.9	7.2
95-percent-duration flow	3.7	58.4	10.7	1.6	2.7
99-percent-duration flow	1.1	29.1	3.3	0.8	0.6
Variability index	0.75	0.45	0.61	0.73	0.75

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03059000 West Fork River at Clarksburg, WV, 1935–1983					
1-day 2-year hydrologically based flow	2.22	138	16.4	3.13	10.7
1-day 5-year hydrologically based flow	0.00	77.4	3.85	0.00	0.00
1-day 10-year hydrologically based flow	0.00	52.2	1.49	0.00	0.00
3-day 2-year hydrologically based flow	2.87	147	20.3	3.85	12.8
3-day 5-year hydrologically based flow	0.00	82.4	4.93	0.00	0.26
3-day 10-year hydrologically based flow	0.00	57.7	1.95	0.00	0.00
7-day 2-year hydrologically based flow	4.21	182	31.6	5.79	20.8
7-day 5-year hydrologically based flow	0.00	96.0	8.47	0.23	1.19
7-day 10-year hydrologically based flow	0.00	65.1	3.56	0.00	0.00
14-day 2-year hydrologically based flow	7.56	255	51.4	10.5	29.5
14-day 5-year hydrologically based flow	0.57	128	16.1	1.14	2.34
14-day 10-year hydrologically based flow	0.00	84.6	7.74	0.00	0.00
30-day 2-year hydrologically based flow	20.3	495	122	31.2	75.5
30-day 5-year hydrologically based flow	2.22	271	43.5	6.38	17.3
30-day 10-year hydrologically based flow	0.00	180	22.9	1.96	3.39
1-day 3-year biologically based flow	0.00	40.0	1.78	0.00	0.00
4-day 3-year biologically based flow	0.00	49.6	4.31	0.00	0.00
EPA harmonic-mean flow	17.3	291	51.0	7.35	13.3
5-percent-duration flow	2,410	3,720	2,300	1,020	1,990
10-percent-duration flow	1,500	2,470	1,490	506	1,120
15-percent-duration flow	1,050	1,830	1,060	320	750
20-percent-duration flow	786	1,470	789	222	582
25-percent-duration flow	618	1,220	605	164	457
30-percent-duration flow	502	1,030	495	126	359
35-percent-duration flow	401	875	402	100	297
40-percent-duration flow	331	765	331	82.2	239
45-percent-duration flow	267	674	279	67.2	196
50-percent-duration flow	217	592	235	55.4	161
55-percent-duration flow	174	531	201	44.8	134
60-percent-duration flow	137	471	171	36.5	109
65-percent-duration flow	109	417	144	28.5	85.8
70-percent-duration flow	83.4	364	120	21.1	65.8
75-percent-duration flow	61.8	314	96.1	14.5	50.2
80-percent-duration flow	43.2	264	73.4	8.2	34.2
85-percent-duration flow	26.7	218	53.4	3.1	19.2
90-percent-duration flow	12.1	173	33.6	1.5	6.8
95-percent-duration flow	1.9	118	13.3	0.1	0.1
99-percent-duration flow	0.0	49.7	1.5	0.0	0.0
Variability index	0.89	0.45	0.65	1.13	1.19

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03061000 West Fork River at Enterprise, WV, 1935–1983					
1-day 2-year hydrologically based flow	39.7	316	115	41.7	58.4
1-day 5-year hydrologically based flow	18.9	186	59.2	20.5	27.8
1-day 10-year hydrologically based flow	12.0	134	38.7	13.4	18.0
3-day 2-year hydrologically based flow	42.1	336	124	44.2	63.0
3-day 5-year hydrologically based flow	20.5	199	64.3	22.3	29.9
3-day 10-year hydrologically based flow	13.2	146	42.5	14.9	19.5
7-day 2-year hydrologically based flow	47.0	400	152	51.1	76.5
7-day 5-year hydrologically based flow	23.6	222	77.2	26.5	35.7
7-day 10-year hydrologically based flow	15.6	159	50.9	18.2	22.9
14-day 2-year hydrologically based flow	57.5	535	193	67.6	92.6
14-day 5-year hydrologically based flow	30.6	290	98.6	35.7	43.3
14-day 10-year hydrologically based flow	21.5	206	66.3	24.8	28.2
30-day 2-year hydrologically based flow	82.5	982	330	111	170
30-day 5-year hydrologically based flow	44.3	564	165	57.7	73.1
30-day 10-year hydrologically based flow	31.3	397	111	39.7	45.3
1-day 3-year biologically based flow	9.51	89.7	69.9	9.98	15.0
4-day 3-year biologically based flow	15.9	142	65.7	19.0	19.9
EPA harmonic-mean flow	176	697	407	104	109
5-percent-duration flow	4,420	6,880	4,490	1,850	3,500
10-percent-duration flow	2,840	4,560	2,900	1,000	2,090
15-percent-duration flow	2,090	3,500	2,170	665	1,490
20-percent-duration flow	1,610	2,840	1,660	480	1,110
25-percent-duration flow	1,300	2,410	1,340	367	881
30-percent-duration flow	1,060	2,090	1,110	296	723
35-percent-duration flow	868	1,830	930	245	595
40-percent-duration flow	721	1,610	782	205	487
45-percent-duration flow	591	1,430	668	180	401
50-percent-duration flow	480	1,290	572	157	329
55-percent-duration flow	391	1,150	494	138	273
60-percent-duration flow	317	1,030	426	120	229
65-percent-duration flow	260	916	363	104	192
70-percent-duration flow	211	807	308	90.3	159
75-percent-duration flow	168	699	265	77.7	130
80-percent-duration flow	132	587	224	66.0	105
85-percent-duration flow	101	474	179	53.5	76.3
90-percent-duration flow	72.6	375	138	40.9	51.3
95-percent-duration flow	43.0	264	96.7	28.6	33.2
99-percent-duration flow	20.9	120	40.3	13.8	19.1
Variability index	0.62	0.42	0.51	0.54	0.61

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03061500 Buffalo Creek at Barrackville, WV, 1934–1996					
1-day 2-year hydrologically based flow	2.57	36.4	10.5	2.91	4.40
1-day 5-year hydrologically based flow	1.02	20.6	4.88	1.14	1.61
1-day 10-year hydrologically based flow	0.60	14.7	3.07	0.66	0.93
3-day 2-year hydrologically based flow	2.92	39.7	11.9	3.22	4.97
3-day 5-year hydrologically based flow	1.21	22.2	5.57	1.31	1.91
3-day 10-year hydrologically based flow	0.72	15.8	3.52	0.79	1.14
7-day 2-year hydrologically based flow	3.49	46.5	15.0	3.86	6.19
7-day 5-year hydrologically based flow	1.55	25.4	7.09	1.66	2.46
7-day 10-year hydrologically based flow	0.98	18.1	4.53	1.04	1.50
14-day 2-year hydrologically based flow	4.33	60.8	20.8	4.99	7.78
14-day 5-year hydrologically based flow	1.94	31.1	9.66	2.14	3.08
14-day 10-year hydrologically based flow	1.24	21.5	6.29	1.35	1.88
30-day 2-year hydrologically based flow	6.26	127	40.1	8.23	15.9
30-day 5-year hydrologically based flow	2.70	65.5	18.0	3.45	5.97
30-day 10-year hydrologically based flow	1.72	44.0	11.6	2.20	3.51
1-day 3-year biologically based flow	0.57	10.0	5.50	0.66	0.70
4-day 3-year biologically based flow	0.69	11.2	6.86	0.84	0.92
EPA harmonic-mean flow	13.1	81.4	55.4	6.83	7.86
5-percent-duration flow	711	1,160	744	236	485
10-percent-duration flow	415	715	451	106	271
15-percent-duration flow	285	533	311	62.8	186
20-percent-duration flow	213	419	232	45.4	137
25-percent-duration flow	168	341	183	35.2	109
30-percent-duration flow	134	286	154	28.4	88.6
35-percent-duration flow	110	243	129	23.1	72.2
40-percent-duration flow	90.5	213	110	19.0	60.4
45-percent-duration flow	73.2	186	94.3	16.1	49.5
50-percent-duration flow	60.0	164	80.5	13.5	39.7
55-percent-duration flow	47.7	144	69.2	11.3	32.4
60-percent-duration flow	37.0	127	58.3	9.2	25.7
65-percent-duration flow	28.7	112	49.1	7.8	19.8
70-percent-duration flow	21.9	98.4	40.8	6.5	15.2
75-percent-duration flow	16.6	85.2	33.2	5.5	11.9
80-percent-duration flow	12.0	72.6	26.1	4.5	9.1
85-percent-duration flow	8.3	59.7	20.2	3.5	6.7
90-percent-duration flow	5.4	46.4	15.1	2.7	4.4
95-percent-duration flow	3.1	30.0	9.6	1.8	2.7
99-percent-duration flow	1.1	14.6	3.7	0.7	0.9
Variability index	0.72	0.47	0.56	0.63	0.69

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03065000 Dry Fork at Hendricks, WV, 1944–1993					
1-day 2-year hydrologically based flow	26.3	203	96.7	28.6	55.7
1-day 5-year hydrologically based flow	13.5	149	56.9	14.4	25.5
1-day 10-year hydrologically based flow	9.29	127	42.7	9.76	16.4
3-day 2-year hydrologically based flow	27.9	213	111	31.1	62.0
3-day 5-year hydrologically based flow	14.3	154	64.3	15.5	27.1
3-day 10-year hydrologically based flow	9.87	131	47.6	10.5	17.0
7-day 2-year hydrologically based flow	32.3	241	146	37.3	76.2
7-day 5-year hydrologically based flow	16.3	166	81.9	18.3	32.7
7-day 10-year hydrologically based flow	11.2	139	58.8	12.3	20.2
14-day 2-year hydrologically based flow	39.4	314	199	48.8	98.5
14-day 5-year hydrologically based flow	19.7	195	107	23.4	40.7
14-day 10-year hydrologically based flow	13.6	154	75.0	15.6	24.6
30-day 2-year hydrologically based flow	59.2	533	345	83.4	201
30-day 5-year hydrologically based flow	28.1	326	188	39.7	79.3
30-day 10-year hydrologically based flow	18.7	246	132	25.6	44.8
1-day 3-year biologically based flow	7.09	117	68.8	8.00	12.0
4-day 3-year biologically based flow	9.13	132	87.8	10.7	13.4
EPA harmonic-mean flow	148	503	494	82.6	92.6
5-percent-duration flow	2,740	4,000	2,680	1,100	2,280
10-percent-duration flow	1,800	2,750	1,930	675	1,500
15-percent-duration flow	1,380	2,170	1,520	487	1,150
20-percent-duration flow	1,140	1,770	1,270	379	918
25-percent-duration flow	945	1,490	1,100	302	760
30-percent-duration flow	789	1,300	959	250	641
35-percent-duration flow	673	1,150	837	211	552
40-percent-duration flow	576	1,020	744	179	484
45-percent-duration flow	493	906	655	155	426
50-percent-duration flow	424	806	574	134	373
55-percent-duration flow	360	718	511	115	322
60-percent-duration flow	304	637	448	99.6	277
65-percent-duration flow	254	562	389	85.7	236
70-percent-duration flow	209	494	339	73.3	197
75-percent-duration flow	169	431	290	61.9	160
80-percent-duration flow	130	369	243	50.4	122
85-percent-duration flow	96.0	307	198	39.2	86.3
90-percent-duration flow	64.3	251	149	28.5	54.1
95-percent-duration flow	35.7	185	99.3	19.6	32.0
99-percent-duration flow	14.2	137	47.8	9.9	12.9
Variability index	0.56	0.40	0.43	0.52	0.55

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03066000 Blackwater River at Davis, WV, 1930–2002					
1-day 2-year hydrologically based flow	9.08	54.4	28.0	9.60	17.3
1-day 5-year hydrologically based flow	5.08	36.5	17.6	5.33	8.78
1-day 10-year hydrologically based flow	3.66	29.1	13.6	3.86	5.98
3-day 2-year hydrologically based flow	9.64	57.8	31.5	10.2	19.6
3-day 5-year hydrologically based flow	5.50	39.9	19.5	5.84	9.74
3-day 10-year hydrologically based flow	4.05	32.5	14.9	4.35	6.50
7-day 2-year hydrologically based flow	11.0	65.7	38.7	12.0	23.9
7-day 5-year hydrologically based flow	6.39	44.5	23.5	6.88	11.8
7-day 10-year hydrologically based flow	4.79	36.1	17.8	5.13	7.85
14-day 2-year hydrologically based flow	13.2	84.6	51.0	15.2	30.6
14-day 5-year hydrologically based flow	7.51	53.7	30.9	8.22	14.5
14-day 10-year hydrologically based flow	5.55	42.5	23.5	5.95	9.27
30-day 2-year hydrologically based flow	18.6	144	82.9	23.3	55.2
30-day 5-year hydrologically based flow	9.87	89.8	50.0	11.9	24.3
30-day 10-year hydrologically based flow	7.11	68.9	37.7	8.50	14.6
1-day 3-year biologically based flow	3.35	24.9	21.0	4.09	3.78
4-day 3-year biologically based flow	3.78	33.3	25.3	4.77	5.00
EPA harmonic-mean flow	45.8	134	123	25.6	30.9
5-percent-duration flow	718	1,040	684	361	577
10-percent-duration flow	479	740	492	212	376
15-percent-duration flow	361	574	388	150	284
20-percent-duration flow	289	465	319	111	229
25-percent-duration flow	239	393	270	87.4	193
30-percent-duration flow	204	340	233	71.2	165
35-percent-duration flow	174	296	203	59.2	145
40-percent-duration flow	149	260	177	51.2	125
45-percent-duration flow	129	234	158	43.8	109
50-percent-duration flow	110	210	140	37.5	94.7
55-percent-duration flow	95.1	189	123	32.5	82.2
60-percent-duration flow	80.8	169	109	27.9	71.6
65-percent-duration flow	67.5	151	96.4	23.9	61.4
70-percent-duration flow	56.4	132	84.3	20.4	51.6
75-percent-duration flow	45.9	116	72.4	17.3	42.9
80-percent-duration flow	36.1	101	61.7	14.8	34.0
85-percent-duration flow	26.9	85.9	51.6	12.2	24.8
90-percent-duration flow	18.3	67.0	40.5	9.3	17.5
95-percent-duration flow	11.9	51.0	29.0	6.8	12.1
99-percent-duration flow	5.4	34.1	15.6	4.2	4.6
Variability index	0.54	0.39	0.41	0.52	0.50

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03069000 Shavers Fork at Parsons, WV, 1944–1993					
1-day 2-year hydrologically based flow	28.9	138	94.3	32.4	57.7
1-day 5-year hydrologically based flow	13.8	98.1	55.7	15.6	25.4
1-day 10-year hydrologically based flow	9.02	82.2	41.5	10.2	15.4
3-day 2-year hydrologically based flow	30.7	148	104	35.2	64.4
3-day 5-year hydrologically based flow	14.6	103	60.7	16.8	28.0
3-day 10-year hydrologically based flow	9.52	85.4	44.8	11.0	16.8
7-day 2-year hydrologically based flow	35.9	169	129	42.8	76.1
7-day 5-year hydrologically based flow	16.8	113	73.8	20.1	32.7
7-day 10-year hydrologically based flow	10.8	92.7	53.7	12.9	19.4
14-day 2-year hydrologically based flow	44.1	219	164	55.0	97.8
14-day 5-year hydrologically based flow	20.5	133	95.5	25.9	40.9
14-day 10-year hydrologically based flow	13.1	103	70.0	16.7	23.7
30-day 2-year hydrologically based flow	65.3	364	268	90.1	188
30-day 5-year hydrologically based flow	30.1	221	165	43.9	77.0
30-day 10-year hydrologically based flow	19.2	166	125	28.7	42.2
1-day 3-year biologically based flow	7.00	75.0	63.0	10.9	13.0
4-day 3-year biologically based flow	10.0	91.1	83.4	13.4	14.1
EPA harmonic-mean flow	142	340	387	90.1	86.3
5-percent-duration flow	1,850	2,620	1,910	868	1,590
10-percent-duration flow	1,260	1,790	1,330	551	1,060
15-percent-duration flow	962	1,430	1,040	415	781
20-percent-duration flow	779	1,170	875	336	630
25-percent-duration flow	649	1,000	763	283	528
30-percent-duration flow	555	870	672	240	455
35-percent-duration flow	481	760	593	209	398
40-percent-duration flow	415	675	524	183	354
45-percent-duration flow	364	605	470	162	313
50-percent-duration flow	317	542	419	142	281
55-percent-duration flow	279	483	374	125	252
60-percent-duration flow	243	431	335	109	225
65-percent-duration flow	210	385	298	93.1	199
70-percent-duration flow	181	336	265	79.3	172
75-percent-duration flow	153	292	234	68.2	144
80-percent-duration flow	124	252	204	56.6	117
85-percent-duration flow	97.9	207	173	45.0	88.4
90-percent-duration flow	69.0	169	136	34.0	56.8
95-percent-duration flow	39.3	127	96.0	22.2	31.7
99-percent-duration flow	15.6	86.5	48.0	10.6	14.0
Variability index	0.49	0.40	0.38	0.47	0.48

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03069500 Cheat River near Parsons, WV, 1930–2002					
1-day 2-year hydrologically based flow	75.5	418	246	82.0	138
1-day 5-year hydrologically based flow	41.1	285	151	43.9	67.2
1-day 10-year hydrologically based flow	29.1	233	116	30.7	43.7
3-day 2-year hydrologically based flow	79.7	451	278	87.8	155
3-day 5-year hydrologically based flow	43.0	307	168	46.7	72.7
3-day 10-year hydrologically based flow	30.4	251	127	32.6	46.5
7-day 2-year hydrologically based flow	90.6	519	351	103	190
7-day 5-year hydrologically based flow	47.9	345	203	53.4	87.0
7-day 10-year hydrologically based flow	33.5	280	150	37.1	54.5
14-day 2-year hydrologically based flow	112	685	463	133	243
14-day 5-year hydrologically based flow	57.5	426	265	67.4	107
14-day 10-year hydrologically based flow	39.5	336	193	46.3	64.8
30-day 2-year hydrologically based flow	163	1,200	772	220	468
30-day 5-year hydrologically based flow	79.3	752	457	105	191
30-day 10-year hydrologically based flow	53.0	575	339	70.2	108
1-day 3-year biologically based flow	26.9	230	187	30.9	36.0
4-day 3-year biologically based flow	33.6	265	226	37.2	40.6
EPA harmonic-mean flow	377	1,080	1,110	225	231
5-percent-duration flow	5,880	8,370	5,890	2,960	4,800
10-percent-duration flow	3,980	5,900	4,210	1,790	3,170
15-percent-duration flow	3,060	4,600	3,340	1,310	2,390
20-percent-duration flow	2,480	3,780	2,810	994	1,950
25-percent-duration flow	2,090	3,230	2,450	786	1,640
30-percent-duration flow	1,780	2,840	2,140	650	1,380
35-percent-duration flow	1,520	2,510	1,890	545	1,200
40-percent-duration flow	1,310	2,210	1,660	460	1,040
45-percent-duration flow	1,120	1,990	1,470	400	899
50-percent-duration flow	961	1,780	1,300	347	785
55-percent-duration flow	818	1,600	1,150	302	680
60-percent-duration flow	692	1,430	1,010	260	590
65-percent-duration flow	585	1,260	882	223	504
70-percent-duration flow	486	1,100	769	193	427
75-percent-duration flow	398	953	664	163	351
80-percent-duration flow	316	819	564	134	278
85-percent-duration flow	237	680	464	106	206
90-percent-duration flow	167	530	358	79.0	137
95-percent-duration flow	96.1	398	248	56.1	82.8
99-percent-duration flow	39.9	273	129	28.7	30.5
Variability index	0.54	0.40	0.41	0.52	0.52

Table 11. elected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03070000 Cheat River at Rowlesburg, WV, 1930–1996					
1-day 2-year hydrologically based flow	93.1	612	325	99.6	169
1-day 5-year hydrologically based flow	49.6	415	202	54.3	78.6
1-day 10-year hydrologically based flow	34.2	337	156	38.4	49.5
3-day 2-year hydrologically based flow	97.0	660	361	105	186
3-day 5-year hydrologically based flow	51.5	447	219	57.2	83.8
3-day 10-year hydrologically based flow	35.5	364	167	40.5	52.2
7-day 2-year hydrologically based flow	109	757	451	123	226
7-day 5-year hydrologically based flow	56.3	509	263	64.9	98.5
7-day 10-year hydrologically based flow	38.4	415	195	45.4	59.8
14-day 2-year hydrologically based flow	135	996	596	162	293
14-day 5-year hydrologically based flow	68.0	619	339	83.3	121
14-day 10-year hydrologically based flow	45.8	486	248	57.6	70.9
30-day 2-year hydrologically based flow	201	1,700	1,010	276	605
30-day 5-year hydrologically based flow	96.7	1,060	591	133	235
30-day 10-year hydrologically based flow	63.6	809	437	87.3	127
1-day 3-year biologically based flow	35.0	309	229	40.9	41.9
4-day 3-year biologically based flow	39.6	380	280	50.6	47.8
EPA harmonic-mean flow	471	1,550	1,470	283	276
5-percent-duration flow	8,030	11,400	7,860	3,690	6,590
10-percent-duration flow	5,430	7,950	5,690	2,260	4,450
15-percent-duration flow	4,160	6,290	4,540	1,660	3,370
20-percent-duration flow	3,380	5,210	3,770	1,270	2,710
25-percent-duration flow	2,810	4,450	3,240	1,020	2,230
30-percent-duration flow	2,390	3,880	2,830	834	1,920
35-percent-duration flow	2,060	3,410	2,490	699	1,660
40-percent-duration flow	1,760	3,050	2,210	592	1,440
45-percent-duration flow	1,530	2,730	1,960	504	1,250
50-percent-duration flow	1,300	2,440	1,740	433	1,070
55-percent-duration flow	1,120	2,200	1,530	379	932
60-percent-duration flow	942	1,970	1,340	329	798
65-percent-duration flow	783	1,750	1,190	283	677
70-percent-duration flow	648	1,560	1,030	242	571
75-percent-duration flow	522	1,370	888	203	467
80-percent-duration flow	408	1,180	752	166	357
85-percent-duration flow	305	981	616	130	258
90-percent-duration flow	208	768	472	97.4	168
95-percent-duration flow	116	573	313	68.3	97.1
99-percent-duration flow	49.0	395	180	36.2	31.0
Variability index	0.55	0.39	0.42	0.52	0.54

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03070500 Big Sandy Creek at Rockville, WV, 1930–2002					
1-day 2-year hydrologically based flow	10.6	112	38.1	9.89	23.5
1-day 5-year hydrologically based flow	4.48	75.3	19.8	4.74	8.27
1-day 10-year hydrologically based flow	2.43	60.1	13.8	3.07	4.04
3-day 2-year hydrologically based flow	11.4	121	43.8	10.7	25.9
3-day 5-year hydrologically based flow	4.79	81.6	22.4	5.14	8.79
3-day 10-year hydrologically based flow	2.58	65.6	15.4	3.37	4.23
7-day 2-year hydrologically based flow	13.5	138	55.9	12.8	31.6
7-day 5-year hydrologically based flow	5.48	91.7	28.3	5.94	10.7
7-day 10-year hydrologically based flow	2.88	74.1	19.2	3.83	5.04
14-day 2-year hydrologically based flow	16.8	178	75.3	16.8	39.6
14-day 5-year hydrologically based flow	6.74	111	38.2	7.49	13.2
14-day 10-year hydrologically based flow	3.59	87.7	26.0	4.73	6.24
30-day 2-year hydrologically based flow	23.5	306	136	27.5	75.8
30-day 5-year hydrologically based flow	9.90	195	71.7	11.9	24.2
30-day 10-year hydrologically based flow	5.54	151	50.3	7.39	11.4
1-day 3-year biologically based flow	2.49	49.9	27.9	4.30	2.76
4-day 3-year biologically based flow	3.27	64.5	36.1	4.86	3.94
EPA harmonic-mean flow	39.0	280	224	26.0	17.8
5-percent-duration flow	1,500	2,170	1,480	555	1,230
10-percent-duration flow	957	1,500	1,030	315	805
15-percent-duration flow	755	1,170	819	212	609
20-percent-duration flow	610	965	679	156	483
25-percent-duration flow	506	820	571	120	407
30-percent-duration flow	427	713	491	95.3	336
35-percent-duration flow	360	636	431	78.9	286
40-percent-duration flow	303	571	376	65.3	237
45-percent-duration flow	253	514	331	53.9	202
50-percent-duration flow	210	462	289	45.8	168
55-percent-duration flow	172	414	251	38.7	142
60-percent-duration flow	140	369	215	33.0	116
65-percent-duration flow	111	326	183	27.8	93.8
70-percent-duration flow	86.4	286	155	22.9	72.6
75-percent-duration flow	64.6	248	130	18.9	54.3
80-percent-duration flow	46.5	214	106	15.2	40.2
85-percent-duration flow	32.4	177	82.3	12.0	29.5
90-percent-duration flow	20.7	144	60.9	9.2	19.7
95-percent-duration flow	11.6	109	38.4	6.4	11.4
99-percent-duration flow	4.7	68.2	15.6	2.8	2.4
Variability index	0.65	0.39	0.48	0.59	0.62

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03071000 Cheat River near Pisgah, WV, 1932–1957					
1-day 2-year hydrologically based flow	130	886	551	132	192
1-day 5-year hydrologically based flow	64.9	605	320	72.0	85.7
1-day 10-year hydrologically based flow	42.6	497	235	51.9	52.3
3-day 2-year hydrologically based flow	137	948	609	141	205
3-day 5-year hydrologically based flow	68.0	644	350	75.8	89.9
3-day 10-year hydrologically based flow	44.4	529	254	54.4	54.7
7-day 2-year hydrologically based flow	154	1,080	726	164	252
7-day 5-year hydrologically based flow	73.3	720	419	84.9	101
7-day 10-year hydrologically based flow	46.9	585	304	60.0	59.2
14-day 2-year hydrologically based flow	189	1,450	911	213	317
14-day 5-year hydrologically based flow	85.7	895	547	107	120
14-day 10-year hydrologically based flow	53.6	697	410	74.7	67.6
30-day 2-year hydrologically based flow	273	2,330	1,510	378	609
30-day 5-year hydrologically based flow	120	1,620	919	177	220
30-day 10-year hydrologically based flow	72.4	1,330	693	115	114
1-day 3-year biologically based flow	41.0	399	299	46.8	40.9
4-day 3-year biologically based flow	49.6	484	357	65.4	68.7
EPA harmonic-mean flow	597	2,280	1,910	415	301
5-percent-duration flow	10,000	15,800	9,440	5,100	7,140
10-percent-duration flow	6,900	11,200	7,020	3,140	4,560
15-percent-duration flow	5,380	8,310	5,660	2,340	3,720
20-percent-duration flow	4,440	7,100	4,820	1,830	3,030
25-percent-duration flow	3,770	6,040	4,220	1,440	2,510
30-percent-duration flow	3,260	5,360	3,740	1,160	2,120
35-percent-duration flow	2,780	4,870	3,330	988	1,860
40-percent-duration flow	2,400	4,420	3,000	845	1,610
45-percent-duration flow	2,070	4,010	2,690	723	1,410
50-percent-duration flow	1,790	3,610	2,420	634	1,210
55-percent-duration flow	1,510	3,250	2,170	549	1,060
60-percent-duration flow	1,260	2,960	1,920	470	904
65-percent-duration flow	1,060	2,700	1,690	406	759
70-percent-duration flow	882	2,430	1,470	341	635
75-percent-duration flow	712	2,080	1,290	278	512
80-percent-duration flow	553	1,810	1,120	226	365
85-percent-duration flow	401	1,500	949	183	252
90-percent-duration flow	260	1,160	766	138	170
95-percent-duration flow	148	842	499	97.1	101
99-percent-duration flow	63.3	504	286	50.3	23.1
Variability index	0.55	0.37	0.38	0.52	0.55

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03112000 Wheeling Creek at Elm Grove, WV, 1942–1980					
1-day 2-year hydrologically based flow	2.25	80.9	29.4	2.53	6.52
1-day 5-year hydrologically based flow	0.68	35.9	13.5	0.74	1.64
1-day 10-year hydrologically based flow	0.36	21.1	8.01	0.37	0.78
3-day 2-year hydrologically based flow	2.64	86.1	34.0	2.90	7.64
3-day 5-year hydrologically based flow	0.82	38.0	15.5	0.89	1.95
3-day 10-year hydrologically based flow	0.43	22.8	9.21	0.46	0.91
7-day 2-year hydrologically based flow	3.29	96.7	43.1	3.66	9.43
7-day 5-year hydrologically based flow	1.09	46.2	20.2	1.23	2.42
7-day 10-year hydrologically based flow	0.60	30.2	12.2	0.68	1.12
14-day 2-year hydrologically based flow	5.10	129	59.1	5.85	13.7
14-day 5-year hydrologically based flow	1.69	59.8	28.8	1.99	3.47
14-day 10-year hydrologically based flow	0.91	38.8	18.2	1.11	1.53
30-day 2-year hydrologically based flow	8.77	234	104	11.5	28.0
30-day 5-year hydrologically based flow	2.81	110	51.0	3.82	6.83
30-day 10-year hydrologically based flow	1.47	70.2	34.0	2.05	2.88
1-day 3-year biologically based flow	0.30	11.0	21.0	0.55	0.35
4-day 3-year biologically based flow	0.37	16.7	28.0	0.84	0.46
EPA harmonic-mean flow	13.9	131	165	8.96	6.13
5-percent-duration flow	1,320	2,030	1,420	423	820
10-percent-duration flow	858	1,400	922	213	507
15-percent-duration flow	621	1,080	701	134	350
20-percent-duration flow	472	883	544	95.2	261
25-percent-duration flow	374	744	441	73.2	200
30-percent-duration flow	302	637	371	57.9	155
35-percent-duration flow	241	556	318	45.8	126
40-percent-duration flow	196	488	274	36.8	102
45-percent-duration flow	157	435	235	30.0	82.1
50-percent-duration flow	126	387	202	24.3	68.4
55-percent-duration flow	99.4	339	175	19.6	57.2
60-percent-duration flow	77.4	292	152	15.7	48.1
65-percent-duration flow	60.5	255	130	12.7	39.1
70-percent-duration flow	46.8	219	111	10.0	30.2
75-percent-duration flow	34.3	186	94.3	7.8	22.2
80-percent-duration flow	23.4	154	78.0	5.8	16.2
85-percent-duration flow	14.7	112	60.6	3.9	8.7
90-percent-duration flow	7.8	76.5	44.3	2.6	4.3
95-percent-duration flow	3.1	53.6	27.8	1.5	1.9
99-percent-duration flow	0.9	21.4	10.9	0.5	0.6
Variability index	0.79	0.47	0.51	0.73	0.78

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03114500 Middle Island Creek at Little, WV, 1930–1995					
1-day 2-year hydrologically based flow	3.08	138	28.4	4.48	7.14
1-day 5-year hydrologically based flow	0.68	65.3	9.65	1.01	1.69
1-day 10-year hydrologically based flow	0.27	34.0	4.57	0.39	0.70
3-day 2-year hydrologically based flow	3.46	149	30.1	4.97	7.78
3-day 5-year hydrologically based flow	0.79	67.8	10.7	1.10	1.93
3-day 10-year hydrologically based flow	0.32	35.2	5.49	0.42	0.84
7-day 2-year hydrologically based flow	4.14	174	39.7	6.05	9.58
7-day 5-year hydrologically based flow	0.97	74.2	13.6	1.38	2.41
7-day 10-year hydrologically based flow	0.40	39.0	6.88	0.55	1.05
14-day 2-year hydrologically based flow	5.79	214	55.8	8.96	14.5
14-day 5-year hydrologically based flow	1.45	91.0	20.4	2.09	3.99
14-day 10-year hydrologically based flow	0.63	53.5	11.3	0.85	1.83
30-day 2-year hydrologically based flow	11.6	521	125	22.6	43.8
30-day 5-year hydrologically based flow	3.14	230	46.9	6.08	11.0
30-day 10-year hydrologically based flow	1.43	129	26.6	2.67	4.64
1-day 3-year biologically based flow	0.17	27.9	11.9	0.19	0.27
4-day 3-year biologically based flow	0.23	40.0	15.9	0.56	0.46
EPA harmonic-mean flow	12.8	127	139	7.11	6.40
5-percent-duration flow	2,940	4,820	2,880	912	2,070
10-percent-duration flow	1,560	2,950	1,750	424	1,120
15-percent-duration flow	1,070	2,120	1,190	260	757
20-percent-duration flow	807	1,570	873	178	543
25-percent-duration flow	625	1,250	676	128	405
30-percent-duration flow	485	1,060	550	98.2	311
35-percent-duration flow	388	887	443	78.0	252
40-percent-duration flow	313	776	375	61.5	202
45-percent-duration flow	249	664	312	49.7	160
50-percent-duration flow	201	589	266	39.8	128
55-percent-duration flow	156	515	221	31.3	99.6
60-percent-duration flow	119	450	186	26.0	76.7
65-percent-duration flow	89.5	390	152	21.0	58.2
70-percent-duration flow	65.5	335	127	16.9	43.2
75-percent-duration flow	46.6	285	101	13.2	30.9
80-percent-duration flow	31.6	237	75.9	9.9	21.2
85-percent-duration flow	20.5	189	54.9	6.8	13.8
90-percent-duration flow	11.8	134	36.5	4.0	6.1
95-percent-duration flow	4.4	85.2	20.6	1.5	2.3
99-percent-duration flow	0.4	32.9	6.9	0.2	0.2
Variability index	0.84	0.51	0.64	0.80	0.87

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03152000 Little Kanawha River at Glenville, WV, 1943–1978					
1-day 2-year hydrologically based flow	5.89	153	30.8	7.40	15.7
1-day 5-year hydrologically based flow	1.36	88.7	15.6	1.81	4.15
1-day 10-year hydrologically based flow	0.55	63.2	10.8	0.74	1.80
3-day 2-year hydrologically based flow	6.51	170	35.0	8.15	18.1
3-day 5-year hydrologically based flow	1.59	97.9	17.3	2.11	4.89
3-day 10-year hydrologically based flow	0.68	69.5	11.7	0.91	2.16
7-day 2-year hydrologically based flow	7.68	212	44.3	9.56	23.3
7-day 5-year hydrologically based flow	2.00	116	21.2	2.67	6.29
7-day 10-year hydrologically based flow	0.90	79.8	14.0	1.25	2.76
14-day 2-year hydrologically based flow	10.4	300	65.6	13.6	35.9
14-day 5-year hydrologically based flow	2.57	156	30.0	3.62	9.24
14-day 10-year hydrologically based flow	1.13	104	19.2	1.65	3.80
30-day 2-year hydrologically based flow	19.0	531	149	28.9	83.0
30-day 5-year hydrologically based flow	5.00	304	64.7	8.29	18.4
30-day 10-year hydrologically based flow	2.24	207	39.9	3.92	6.68
1-day 3-year biologically based flow	0.27	43.9	17.9	0.70	0.57
4-day 3-year biologically based flow	0.37	52.2	20.9	0.88	1.25
EPA harmonic-mean flow	22.0	334	192	12.3	10.8
5-percent-duration flow	2,600	3,690	2,480	927	2,100
10-percent-duration flow	1,520	2,570	1,530	449	1,200
15-percent-duration flow	1,100	1,940	1,090	286	840
20-percent-duration flow	848	1,540	817	194	646
25-percent-duration flow	670	1,300	643	141	508
30-percent-duration flow	540	1,100	522	108	402
35-percent-duration flow	446	940	432	89.6	334
40-percent-duration flow	361	823	367	73.6	272
45-percent-duration flow	296	733	314	61.4	219
50-percent-duration flow	237	651	268	50.6	180
55-percent-duration flow	191	580	231	41.9	146
60-percent-duration flow	152	523	200	34.7	117
65-percent-duration flow	118	470	172	28.6	92.3
70-percent-duration flow	88.8	416	146	23.6	71.1
75-percent-duration flow	64.8	361	122	18.9	53.2
80-percent-duration flow	45.7	307	96.4	14.8	38.3
85-percent-duration flow	29.9	253	72.8	10.2	24.7
90-percent-duration flow	18.7	195	49.4	6.6	13.3
95-percent-duration flow	8.1	141	26.7	3.1	4.1
99-percent-duration flow	1.2	69.0	12.5	0.6	0.6
Variability index	0.75	0.42	0.58	0.72	0.79

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03153000 Steer Creek near Grantsville, WV, 1956–1974					
1-day 2-year hydrologically based flow	0.55	37.3	4.55	0.67	1.72
1-day 5-year hydrologically based flow	0.00	15.4	1.36	0.00	0.46
1-day 10-year hydrologically based flow	0.00	8.53	0.61	0.00	0.21
3-day 2-year hydrologically based flow	0.63	39.8	5.24	0.77	2.11
3-day 5-year hydrologically based flow	0.00	18.2	1.53	0.00	0.57
3-day 10-year hydrologically based flow	0.00	11.4	0.66	0.00	0.26
7-day 2-year hydrologically based flow	0.63	53.7	7.19	0.87	3.19
7-day 5-year hydrologically based flow	0.03	23.1	2.23	0.03	0.88
7-day 10-year hydrologically based flow	0.00	13.7	1.03	0.00	0.39
14-day 2-year hydrologically based flow	0.79	82.8	11.5	1.11	5.81
14-day 5-year hydrologically based flow	0.06	34.7	3.70	0.08	1.50
14-day 10-year hydrologically based flow	0.01	19.5	1.78	0.01	0.62
30-day 2-year hydrologically based flow	1.95	183	20.0	3.84	18.3
30-day 5-year hydrologically based flow	0.22	80.7	9.23	0.39	3.88
30-day 10-year hydrologically based flow	0.06	44.1	6.34	0.09	1.38
1-day 3-year biologically based flow	0.00	8.20	3.30	0.00	0.00
4-day 3-year biologically based flow	0.00	8.84	4.53	0.00	0.06
EPA harmonic-mean flow	1.32	57.3	42.1	0.41	1.76
5-percent-duration flow	957	1,580	949	291	665
10-percent-duration flow	529	953	571	136	353
15-percent-duration flow	360	706	367	70.7	224
20-percent-duration flow	275	557	273	44.7	158
25-percent-duration flow	208	448	209	31.1	118
30-percent-duration flow	158	378	163	22.5	91.6
35-percent-duration flow	125	326	128	16.6	71.9
40-percent-duration flow	95.8	283	104	12.3	57.8
45-percent-duration flow	72.9	248	83.4	9.1	44.9
50-percent-duration flow	55.5	216	68.2	7.0	34.4
55-percent-duration flow	41.3	190	55.8	5.7	27.2
60-percent-duration flow	30.9	165	45.0	4.5	22.2
65-percent-duration flow	22.7	145	36.8	3.4	18.0
70-percent-duration flow	16.0	126	29.2	2.6	13.6
75-percent-duration flow	10.6	107	22.5	1.8	9.8
80-percent-duration flow	6.9	85.9	16.4	1.1	6.7
85-percent-duration flow	4.3	64.5	11.2	0.5	3.8
90-percent-duration flow	2.1	45.5	7.5	0.2	2.1
95-percent-duration flow	0.6	29.7	4.6	0.0	0.9
99-percent-duration flow	0.0	6.9	0.6	0.0	0.2
Variability index	0.96	0.50	0.70	0.69	0.85

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03153500 Little Kanawha River at Grantsville, WV, 1943–1978					
1-day 2-year hydrologically based flow	14.7	313	67.7	20.6	37.1
1-day 5-year hydrologically based flow	2.31	174	32.7	3.66	8.48
1-day 10-year hydrologically based flow	0.63	121	21.5	1.04	2.93
3-day 2-year hydrologically based flow	15.0	347	75.4	20.6	40.5
3-day 5-year hydrologically based flow	2.60	187	36.0	4.06	8.99
3-day 10-year hydrologically based flow	0.80	127	23.6	1.32	3.09
7-day 2-year hydrologically based flow	17.3	433	92.2	23.9	49.3
7-day 5-year hydrologically based flow	3.12	221	43.5	4.99	10.6
7-day 10-year hydrologically based flow	1.00	145	28.2	1.75	3.55
14-day 2-year hydrologically based flow	22.8	605	136	31.9	73.7
14-day 5-year hydrologically based flow	4.42	306	60.0	7.48	15.1
14-day 10-year hydrologically based flow	1.52	203	37.5	3.02	4.77
30-day 2-year hydrologically based flow	42.0	1,130	304	65.2	181
30-day 5-year hydrologically based flow	9.09	607	134	17.5	34.0
30-day 10-year hydrologically based flow	3.26	402	82.6	7.67	9.75
1-day 3-year biologically based flow	0.78	79.9	36.9	2.20	1.00
4-day 3-year biologically based flow	0.90	91.1	45.3	2.55	1.66
EPA harmonic-mean flow	16.6	645	393	10.4	7.10
5-percent-duration flow	6,130	9,000	5,610	2,040	4,630
10-percent-duration flow	3,590	6,040	3,440	1,010	2,590
15-percent-duration flow	2,500	4,510	2,430	590	1,760
20-percent-duration flow	1,830	3,550	1,810	406	1,300
25-percent-duration flow	1,450	2,930	1,420	321	999
30-percent-duration flow	1,140	2,480	1,150	247	803
35-percent-duration flow	940	2,100	940	202	650
40-percent-duration flow	750	1,840	777	159	521
45-percent-duration flow	612	1,610	652	134	425
50-percent-duration flow	482	1,430	558	109	337
55-percent-duration flow	391	1,270	477	91.8	277
60-percent-duration flow	305	1,130	412	76.4	220
65-percent-duration flow	239	992	350	62.9	175
70-percent-duration flow	181	872	292	52.4	136
75-percent-duration flow	132	757	238	42.1	101
80-percent-duration flow	94.7	638	193	33.1	72.1
85-percent-duration flow	64.5	514	145	23.7	46.3
90-percent-duration flow	40.3	390	96.4	14.0	22.4
95-percent-duration flow	16.2	278	57.0	5.6	8.5
99-percent-duration flow	1.9	114	25.9	1.2	0.2
Variability index	0.77	0.45	0.59	0.73	0.80

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03154000 West Fork Little Kanawha River at Rocksdale, WV, 1955–1975					
1-day 2-year hydrologically based flow	0.90	45.9	5.38	1.15	2.68
1-day 5-year hydrologically based flow	0.10	20.8	1.86	0.12	0.64
1-day 10-year hydrologically based flow	0.00	12.7	1.00	0.00	0.23
3-day 2-year hydrologically based flow	1.00	51.3	6.20	1.29	3.30
3-day 5-year hydrologically based flow	0.11	22.4	2.09	0.12	0.76
3-day 10-year hydrologically based flow	0.00	13.4	1.10	0.00	0.25
7-day 2-year hydrologically based flow	1.20	68.3	8.50	1.66	4.89
7-day 5-year hydrologically based flow	0.16	28.4	2.88	0.19	1.44
7-day 10-year hydrologically based flow	0.01	16.3	1.50	0.01	0.60
14-day 2-year hydrologically based flow	1.67	106	13.2	2.44	7.23
14-day 5-year hydrologically based flow	0.24	46.0	4.50	0.28	1.90
14-day 10-year hydrologically based flow	0.01	26.2	2.34	0.01	0.73
30-day 2-year hydrologically based flow	3.52	229	26.0	5.11	21.6
30-day 5-year hydrologically based flow	0.44	103	10.9	0.82	5.78
30-day 10-year hydrologically based flow	0.11	57.7	6.90	0.28	2.58
1-day 3-year biologically based flow	0.00	6.58	4.57	0.00	0.00
4-day 3-year biologically based flow	0.00	11.4	6.00	0.00	0.36
EPA harmonic-mean flow	3.90	72.7	50.2	1.98	2.03
5-percent-duration flow	1,170	1,970	1,150	319	863
10-percent-duration flow	669	1,190	634	148	452
15-percent-duration flow	445	886	434	84.1	293
20-percent-duration flow	328	696	319	53.7	209
25-percent-duration flow	254	567	242	40.4	157
30-percent-duration flow	194	478	188	31.1	121
35-percent-duration flow	154	409	151	24.2	96.1
40-percent-duration flow	120	357	120	19.7	74.5
45-percent-duration flow	91.2	311	96.6	15.7	57.3
50-percent-duration flow	69.6	272	78.4	12.5	44.2
55-percent-duration flow	52.0	237	64.4	9.7	34.5
60-percent-duration flow	38.3	206	53.4	7.3	26.6
65-percent-duration flow	28.7	180	43.6	5.5	20.6
70-percent-duration flow	21.0	156	34.4	3.8	15.8
75-percent-duration flow	14.7	133	26.2	2.7	11.8
80-percent-duration flow	9.7	111	19.8	2.0	8.1
85-percent-duration flow	6.1	87.2	13.5	1.2	5.6
90-percent-duration flow	3.1	62.5	8.5	0.6	3.2
95-percent-duration flow	1.1	36.7	4.7	0.2	1.5
99-percent-duration flow	0.1	8.2	1.0	0.0	0.1
Variability index	0.91	0.50	0.72	0.93	0.83

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03154500 Reedy Creek near Reedy, WV, 1953–1978					
1-day 2-year hydrologically based flow	0.22	11.3	1.24	0.34	0.64
1-day 5-year hydrologically based flow	0.05	5.17	0.41	0.08	0.13
1-day 10-year hydrologically based flow	0.00	3.23	0.21	0.00	0.05
3-day 2-year hydrologically based flow	0.26	12.0	1.41	0.36	0.73
3-day 5-year hydrologically based flow	0.06	5.48	0.50	0.10	0.17
3-day 10-year hydrologically based flow	0.00	3.46	0.28	0.00	0.07
7-day 2-year hydrologically based flow	0.32	15.6	1.92	0.45	1.09
7-day 5-year hydrologically based flow	0.08	7.19	0.72	0.12	0.26
7-day 10-year hydrologically based flow	0.00	4.64	0.41	0.00	0.10
14-day 2-year hydrologically based flow	0.44	26.7	3.19	0.76	1.61
14-day 5-year hydrologically based flow	0.11	11.5	1.18	0.18	0.37
14-day 10-year hydrologically based flow	0.00	7.03	0.66	0.00	0.15
30-day 2-year hydrologically based flow	0.95	62.6	9.08	2.34	5.32
30-day 5-year hydrologically based flow	0.13	26.3	3.21	0.37	1.12
30-day 10-year hydrologically based flow	0.03	15.1	1.75	0.10	0.44
1-day 3-year biologically based flow	0.00	1.15	0.80	0.00	0.00
4-day 3-year biologically based flow	0.00	1.59	1.07	0.00	0.00
EPA harmonic-mean flow	1.65	22.1	11.4	0.90	0.83
5-percent-duration flow	434	762	428	116	297
10-percent-duration flow	220	433	211	50.3	143
15-percent-duration flow	141	298	137	25.8	92.1
20-percent-duration flow	103	228	98.1	16.8	64.9
25-percent-duration flow	76.6	181	71.7	11.8	48.2
30-percent-duration flow	57.7	148	54.2	8.3	37.1
35-percent-duration flow	43.7	121	42.7	6.2	28.9
40-percent-duration flow	34.0	104	34.7	4.9	22.5
45-percent-duration flow	25.8	90.6	28.3	3.9	17.5
50-percent-duration flow	19.5	79.1	22.9	3.2	13.6
55-percent-duration flow	14.8	68.7	18.2	2.5	9.8
60-percent-duration flow	10.5	58.9	14.9	2.1	7.1
65-percent-duration flow	7.3	50.0	11.6	1.6	5.1
70-percent-duration flow	5.0	42.2	8.8	1.2	3.6
75-percent-duration flow	3.5	34.7	6.5	0.9	2.4
80-percent-duration flow	2.3	26.7	4.6	0.6	1.6
85-percent-duration flow	1.4	20.5	3.3	0.4	1.0
90-percent-duration flow	0.8	15.5	2.0	0.2	0.5
95-percent-duration flow	0.3	8.7	1.0	0.1	0.2
99-percent-duration flow	0.0	2.8	0.3	0.0	0.1
Variability index	0.96	0.57	0.78	0.89	0.95

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03155000 Little Kanawha River at Palestine, WV, 1943–1978					
1-day 2-year hydrologically based flow	29.2	524	152	38.4	62.8
1-day 5-year hydrologically based flow	7.63	289	65.9	10.7	17.6
1-day 10-year hydrologically based flow	3.30	198	36.7	4.70	8.03
3-day 2-year hydrologically based flow	30.8	563	169	40.8	67.8
3-day 5-year hydrologically based flow	8.05	306	72.3	11.5	18.6
3-day 10-year hydrologically based flow	3.49	211	39.6	5.06	8.37
7-day 2-year hydrologically based flow	34.3	674	203	46.8	76.8
7-day 5-year hydrologically based flow	8.86	351	86.0	12.9	20.4
7-day 10-year hydrologically based flow	3.86	237	47.6	5.71	9.02
14-day 2-year hydrologically based flow	40.8	947	274	62.5	105
14-day 5-year hydrologically based flow	10.7	471	118	17.2	26.8
14-day 10-year hydrologically based flow	4.83	307	68.1	7.79	11.4
30-day 2-year hydrologically based flow	64.5	1,740	524	116	225
30-day 5-year hydrologically based flow	17.0	912	245	36.5	54.4
30-day 10-year hydrologically based flow	7.74	603	154	17.6	21.4
1-day 3-year biologically based flow	1.65	120	74.9	2.40	3.29
4-day 3-year biologically based flow	2.05	151	92.7	3.42	4.76
EPA harmonic-mean flow	93.0	1,030	714	54.8	44.8
5-percent-duration flow	9,000	14,100	8,670	2,790	7,050
10-percent-duration flow	5,740	9,660	5,600	1,480	3,960
15-percent-duration flow	4,010	7,440	3,980	962	2,620
20-percent-duration flow	2,940	6,020	2,960	712	1,930
25-percent-duration flow	2,260	5,020	2,280	545	1,490
30-percent-duration flow	1,790	4,230	1,840	440	1,190
35-percent-duration flow	1,460	3,590	1,520	358	957
40-percent-duration flow	1,170	3,110	1,270	293	805
45-percent-duration flow	955	2,680	1,080	248	666
50-percent-duration flow	786	2,330	919	208	548
55-percent-duration flow	636	2,050	802	175	448
60-percent-duration flow	513	1,810	695	147	355
65-percent-duration flow	406	1,590	606	121	275
70-percent-duration flow	313	1,390	517	100	215
75-percent-duration flow	235	1,200	429	80.5	162
80-percent-duration flow	169	1,010	347	62.8	122
85-percent-duration flow	118	800	273	47.3	77.7
90-percent-duration flow	74.3	621	191	28.2	33.3
95-percent-duration flow	29.3	430	116	11.9	12.6
99-percent-duration flow	4.40	177	53.2	2.7	2.6
Variability index	0.74	0.46	0.56	0.68	0.79

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03155500 Hughes River at Cisco, WV, 1940–1989					
1-day 2-year hydrologically based flow	3.75	92.0	20.9	4.94	6.67
1-day 5-year hydrologically based flow	1.24	47.0	9.41	1.74	2.06
1-day 10-year hydrologically based flow	0.64	31.7	5.85	0.91	1.08
3-day 2-year hydrologically based flow	4.06	99.9	23.6	5.41	7.29
3-day 5-year hydrologically based flow	1.31	49.8	10.3	1.87	2.20
3-day 10-year hydrologically based flow	0.66	33.3	6.31	0.97	1.13
7-day 2-year hydrologically based flow	4.66	122	30.0	6.51	8.72
7-day 5-year hydrologically based flow	1.45	59.0	12.7	2.19	2.57
7-day 10-year hydrologically based flow	0.73	39.0	7.73	1.12	1.29
14-day 2-year hydrologically based flow	5.83	176	45.1	8.57	11.8
14-day 5-year hydrologically based flow	1.83	80.7	18.6	2.84	3.44
14-day 10-year hydrologically based flow	0.94	51.7	11.4	1.48	1.69
30-day 2-year hydrologically based flow	9.45	419	105	18.9	39.6
30-day 5-year hydrologically based flow	2.97	208	44.5	6.41	10.5
30-day 10-year hydrologically based flow	1.55	133	27.5	3.41	4.75
1-day 3-year biologically based flow	0.37	19.0	15.0	0.89	0.43
4-day 3-year biologically based flow	0.48	23.0	19.4	1.33	0.77
EPA harmonic-mean flow	18.5	208	151	10.9	8.87
5-percent-duration flow	2,620	3,940	2,670	777	1,980
10-percent-duration flow	1,480	2,570	1,570	354	1,010
15-percent-duration flow	976	1,920	1,030	223	674
20-percent-duration flow	707	1,440	758	156	487
25-percent-duration flow	546	1,130	597	114	365
30-percent-duration flow	434	930	483	87.1	281
35-percent-duration flow	341	787	392	69.1	224
40-percent-duration flow	275	677	323	54.9	178
45-percent-duration flow	220	588	274	43.8	139
50-percent-duration flow	174	517	232	35.9	107
55-percent-duration flow	137	451	197	29.1	80.8
60-percent-duration flow	104	395	163	24.2	59.1
65-percent-duration flow	77.4	345	135	19.8	43.3
70-percent-duration flow	55.6	298	111	16.2	31.7
75-percent-duration flow	38.6	252	88.7	12.8	24.3
80-percent-duration flow	27.3	208	69.4	9.6	17.8
85-percent-duration flow	19.0	164	48.1	7.0	11.7
90-percent-duration flow	11.6	119	32.3	4.4	6.4
95-percent-duration flow	4.9	75.2	20.2	2.4	2.4
99-percent-duration flow	1.1	29.1	6.9	0.8	0.6
Variability index	0.82	0.51	0.63	0.74	0.87

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03179000 Bluestone River near Pipestem, WV, 1952–1978					
1-day 2-year hydrologically based flow	21.6	131	72.4	23.1	31.7
1-day 5-year hydrologically based flow	14.0	63.8	47.6	14.7	17.7
1-day 10-year hydrologically based flow	11.1	40.5	37.5	11.5	13.5
3-day 2-year hydrologically based flow	22.4	144	80.3	24.5	32.9
3-day 5-year hydrologically based flow	14.6	69.3	51.9	15.5	18.3
3-day 10-year hydrologically based flow	11.6	44.0	40.4	12.1	14.0
7-day 2-year hydrologically based flow	24.1	183	95.0	26.8	36.5
7-day 5-year hydrologically based flow	15.7	84.5	61.4	16.9	19.5
7-day 10-year hydrologically based flow	12.6	51.2	48.0	13.2	14.7
14-day 2-year hydrologically based flow	26.9	243	118	32.5	42.8
14-day 5-year hydrologically based flow	17.4	108	74.3	20.4	22.1
14-day 10-year hydrologically based flow	14.0	63.8	58.9	15.8	16.4
30-day 2-year hydrologically based flow	35.6	389	179	43.9	68.8
30-day 5-year hydrologically based flow	22.7	188	108	29.1	30.2
30-day 10-year hydrologically based flow	17.9	116	84.0	23.3	19.9
1-day 3-year biologically based flow	12.0	24.9	63.9	13.0	12.0
4-day 3-year biologically based flow	12.5	28.0	75.2	17.1	13.1
EPA harmonic-mean flow	90.3	222	304	59.1	51.3
5-percent-duration flow	1,790	3,080	1,870	327	1,300
10-percent-duration flow	1,110	1,960	1,210	211	784
15-percent-duration flow	824	1,490	889	163	556
20-percent-duration flow	652	1,210	738	133	420
25-percent-duration flow	531	1,010	625	114	326
30-percent-duration flow	438	880	535	99.9	253
35-percent-duration flow	365	779	470	88.3	203
40-percent-duration flow	299	684	412	79.2	169
45-percent-duration flow	244	608	361	71.4	136
50-percent-duration flow	198	555	318	64.3	112
55-percent-duration flow	160	501	281	58.0	95.0
60-percent-duration flow	130	448	248	51.9	80.7
65-percent-duration flow	106	400	217	47.1	67.2
70-percent-duration flow	87.6	356	185	42.2	55.4
75-percent-duration flow	70.8	304	160	37.2	45.1
80-percent-duration flow	56.5	253	137	32.6	37.3
85-percent-duration flow	43.9	205	116	28.4	31.1
90-percent-duration flow	33.4	152	96.7	24.3	26.4
95-percent-duration flow	24.7	92.2	73.0	19.4	18.9
99-percent-duration flow	15.2	26.5	43.9	13.2	14.3
Variability index	0.59	0.44	0.42	0.37	0.58

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03180500 Greenbrier River at Durbin, WV, 1944–2002					
1-day 2-year hydrologically based flow	7.76	69.5	31.4	8.40	16.5
1-day 5-year hydrologically based flow	3.07	45.8	18.8	3.37	6.38
1-day 10-year hydrologically based flow	1.71	36.4	14.0	1.90	3.59
3-day 2-year hydrologically based flow	8.33	75.0	34.8	9.13	17.7
3-day 5-year hydrologically based flow	3.37	48.7	20.7	3.72	6.90
3-day 10-year hydrologically based flow	1.91	38.5	15.4	2.11	3.92
7-day 2-year hydrologically based flow	9.57	86.0	42.1	10.7	20.1
7-day 5-year hydrologically based flow	3.94	54.9	25.3	4.36	8.30
7-day 10-year hydrologically based flow	2.27	42.9	19.2	2.49	5.08
14-day 2-year hydrologically based flow	11.7	113	56.8	13.9	24.4
14-day 5-year hydrologically based flow	4.80	68.2	34.0	5.57	9.91
14-day 10-year hydrologically based flow	2.82	52.1	25.6	3.18	6.05
30-day 2-year hydrologically based flow	16.2	202	108	21.0	45.4
30-day 5-year hydrologically based flow	7.36	121	63.4	9.29	17.2
30-day 10-year hydrologically based flow	4.67	88.7	45.9	5.93	9.91
1-day 3-year biologically based flow	1.58	30.0	28.0	1.64	1.96
4-day 3-year biologically based flow	1.79	36.2	35.7	2.09	3.78
EPA harmonic-mean flow	36.4	166	180	20.5	20.3
5-percent-duration flow	955	1,450	953	310	757
10-percent-duration flow	615	966	653	183	480
15-percent-duration flow	472	756	509	131	362
20-percent-duration flow	381	622	419	101	287
25-percent-duration flow	311	531	357	80.3	240
30-percent-duration flow	264	464	310	65.5	200
35-percent-duration flow	222	415	276	54.8	173
40-percent-duration flow	191	370	244	46.7	148
45-percent-duration flow	162	329	215	40.0	127
50-percent-duration flow	138	295	192	34.7	106
55-percent-duration flow	114	264	170	29.7	86.6
60-percent-duration flow	92.6	235	150	25.7	70.9
65-percent-duration flow	74.8	210	131	22.0	57.3
70-percent-duration flow	59.2	185	113	18.9	45.5
75-percent-duration flow	45.8	161	97.5	16.0	36.2
80-percent-duration flow	34.3	140	80.4	13.5	27.7
85-percent-duration flow	24.8	118	64.3	10.4	18.9
90-percent-duration flow	16.5	92.6	49.0	7.5	13.3
95-percent-duration flow	9.9	67.8	33.6	4.9	8.9
99-percent-duration flow	3.5	38.3	17.5	1.6	4.3
Variability index	0.60	0.39	0.43	0.53	0.59

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03182000 Knapp Creek at Marlinton, WV, 1947–1958					
1-day 2-year hydrologically based flow	8.94	40.3	20.4	9.28	11.2
1-day 5-year hydrologically based flow	5.32	22.7	16.2	5.35	7.78
1-day 10-year hydrologically based flow	3.77	15.4	14.3	3.75	6.59
3-day 2-year hydrologically based flow	9.36	44.7	22.0	9.81	11.5
3-day 5-year hydrologically based flow	5.48	25.3	17.5	5.55	7.92
3-day 10-year hydrologically based flow	3.85	17.0	15.4	3.84	6.71
7-day 2-year hydrologically based flow	10.0	53.3	25.5	10.5	12.5
7-day 5-year hydrologically based flow	5.81	28.1	19.7	5.91	8.39
7-day 10-year hydrologically based flow	4.10	18.5	17.3	4.11	6.90
14-day 2-year hydrologically based flow	11.5	74.6	33.1	12.0	15.8
14-day 5-year hydrologically based flow	6.51	36.1	25.0	6.63	10.1
14-day 10-year hydrologically based flow	4.59	22.2	21.8	4.61	7.88
30-day 2-year hydrologically based flow	13.2	114	55.9	14.3	24.0
30-day 5-year hydrologically based flow	8.11	58.4	41.3	8.49	12.2
30-day 10-year hydrologically based flow	6.40	37.2	35.9	6.52	8.45
1-day 3-year biologically based flow	2.14	8.40	20.0	2.08	3.38
4-day 3-year biologically based flow	3.62	9.05	22.7	5.56	6.99
EPA harmonic-mean flow	30.6	82.0	85.1	17.7	20.1
5-percent-duration flow	579	895	507	126	455
10-percent-duration flow	344	594	336	72.1	239
15-percent-duration flow	251	469	247	52.1	175
20-percent-duration flow	195	374	198	42.2	134
25-percent-duration flow	160	314	166	35.7	102
30-percent-duration flow	133	275	143	30.2	82.8
35-percent-duration flow	109	242	124	26.3	69.3
40-percent-duration flow	90.4	209	110	23.3	57.7
45-percent-duration flow	74.8	189	97.3	21.3	46.6
50-percent-duration flow	62.9	170	87.3	19.4	39.5
55-percent-duration flow	52.9	154	79.5	17.5	31.7
60-percent-duration flow	44.0	139	71.2	15.9	26.7
65-percent-duration flow	34.4	126	63.8	14.5	22.2
70-percent-duration flow	27.5	110	57.4	13.3	18.8
75-percent-duration flow	22.2	93.1	51.4	12.2	16.0
80-percent-duration flow	17.9	78.8	45.2	11.0	13.7
85-percent-duration flow	14.5	65.4	37.6	9.8	12.3
90-percent-duration flow	11.9	50.2	30.0	8.5	10.7
95-percent-duration flow	9.0	35.1	24.1	7.1	8.5
99-percent-duration flow	6.4	9.5	17.4	3.0	7.1
Variability index	0.57	0.41	0.39	0.37	0.55

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03182500 Greenbrier River at Buckeye, WV, 1931–2002					
1-day 2-year hydrologically based flow	29.7	234	108	32.4	49.2
1-day 5-year hydrologically based flow	17.0	143	68.5	18.0	26.4
1-day 10-year hydrologically based flow	12.6	107	53.1	12.9	19.2
3-day 2-year hydrologically based flow	30.7	254	120	33.8	51.7
3-day 5-year hydrologically based flow	17.9	155	75.5	18.9	27.5
3-day 10-year hydrologically based flow	13.3	116	58.2	13.8	20.0
7-day 2-year hydrologically based flow	33.4	299	143	37.7	58.6
7-day 5-year hydrologically based flow	19.3	178	89.9	21.0	30.2
7-day 10-year hydrologically based flow	14.5	132	69.2	15.3	21.7
14-day 2-year hydrologically based flow	38.4	392	192	45.7	69.9
14-day 5-year hydrologically based flow	21.7	220	116	24.5	34.4
14-day 10-year hydrologically based flow	16.3	159	88.0	17.7	24.1
30-day 2-year hydrologically based flow	50.8	696	341	68.3	129
30-day 5-year hydrologically based flow	28.4	389	196	34.7	53.8
30-day 10-year hydrologically based flow	21.4	272	141	24.9	33.9
1-day 3-year biologically based flow	11.0	82.0	91.9	11.9	11.9
4-day 3-year biologically based flow	15.4	115	112	17.1	17.4
EPA harmonic-mean flow	144	521	540	82.1	84.7
5-percent-duration flow	3,310	5,020	3,250	1,020	2,580
10-percent-duration flow	2,100	3,440	2,160	588	1,520
15-percent-duration flow	1,550	2,640	1,660	406	1,100
20-percent-duration flow	1,240	2,170	1,350	310	855
25-percent-duration flow	1,010	1,840	1,150	252	684
30-percent-duration flow	836	1,610	993	209	571
35-percent-duration flow	689	1,420	860	176	481
40-percent-duration flow	586	1,250	748	149	406
45-percent-duration flow	492	1,110	653	129	336
50-percent-duration flow	414	990	576	112	277
55-percent-duration flow	341	877	515	96.8	227
60-percent-duration flow	277	781	458	84.9	183
65-percent-duration flow	223	691	401	73.5	149
70-percent-duration flow	175	605	348	63.0	119
75-percent-duration flow	136	524	299	53.3	95.1
80-percent-duration flow	103	453	251	44.6	75.0
85-percent-duration flow	76.7	371	201	37.3	58.5
90-percent-duration flow	53.8	296	155	30.2	43.6
95-percent-duration flow	34.7	207	112	21.8	31.7
99-percent-duration flow	16.9	101	60.1	12.1	16.8
Variability index	0.61	0.41	0.44	0.50	0.59

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03183000 Second Creek near Second Creek, WV, 1948–1964					
1-day 2-year hydrologically based flow	4.18	20.7	12.1	4.51	5.36
1-day 5-year hydrologically based flow	3.04	9.25	8.26	3.40	3.46
1-day 10-year hydrologically based flow	2.58	5.65	6.77	2.98	2.73
3-day 2-year hydrologically based flow	4.71	23.9	13.2	5.01	6.06
3-day 5-year hydrologically based flow	3.58	11.1	9.03	3.83	4.07
3-day 10-year hydrologically based flow	3.15	6.95	7.37	3.37	3.31
7-day 2-year hydrologically based flow	5.22	29.6	15.4	5.51	6.76
7-day 5-year hydrologically based flow	3.99	14.0	10.7	4.19	4.65
7-day 10-year hydrologically based flow	3.51	8.92	8.86	3.67	3.82
14-day 2-year hydrologically based flow	5.72	43.1	19.6	6.07	7.61
14-day 5-year hydrologically based flow	4.29	19.6	13.6	4.51	5.01
14-day 10-year hydrologically based flow	3.74	12.0	11.2	3.97	4.08
30-day 2-year hydrologically based flow	6.58	64.5	28.5	7.28	11.1
30-day 5-year hydrologically based flow	4.87	33.7	19.5	5.69	5.94
30-day 10-year hydrologically based flow	4.19	22.5	15.7	5.14	4.33
1-day 3-year biologically based flow	2.68	4.09	10.9	3.39	2.66
4-day 3-year biologically based flow	3.22	4.95	12.2	4.26	3.23
EPA harmonic-mean flow	16.4	37.8	48.9	10.4	10.0
5-percent-duration flow	297	548	292	55.4	200
10-percent-duration flow	183	332	193	32.7	106
15-percent-duration flow	135	246	143	24.6	72.6
20-percent-duration flow	106	201	114	20.5	54.6
25-percent-duration flow	86.7	175	97.1	17.6	44.6
30-percent-duration flow	70.4	154	84.4	15.4	36.3
35-percent-duration flow	57.6	136	73.1	13.8	29.0
40-percent-duration flow	47.4	123	63.9	12.4	23.5
45-percent-duration flow	39.0	110	56.6	11.2	19.6
50-percent-duration flow	31.7	99.2	50.4	9.9	16.6
55-percent-duration flow	25.5	88.3	45.3	9.1	14.1
60-percent-duration flow	20.3	79.8	40.5	8.4	12.2
65-percent-duration flow	16.7	71.3	35.8	7.7	10.2
70-percent-duration flow	13.7	63.2	31.3	7.1	8.6
75-percent-duration flow	11.4	54.9	27.4	6.7	7.7
80-percent-duration flow	8.9	46.4	23.2	6.2	6.8
85-percent-duration flow	7.5	37.6	19.8	5.8	6.0
90-percent-duration flow	6.3	27.9	16.3	5.2	5.3
95-percent-duration flow	5.1	16.4	12.5	4.5	4.4
99-percent-duration flow	3.6	5.5	8.6	3.4	3.2
Variability index	0.57	0.43	0.41	0.33	0.52

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03183500 Greenbrier River at Alderson, WV, 1930–2002					
1-day 2-year hydrologically based flow	84.1	540	281	92.8	126
1-day 5-year hydrologically based flow	54.9	313	180	58.5	74.8
1-day 10-year hydrologically based flow	44.0	224	142	45.8	57.6
3-day 2-year hydrologically based flow	86.7	577	302	96.2	130
3-day 5-year hydrologically based flow	57.0	336	193	61.1	76.5
3-day 10-year hydrologically based flow	46.0	241	152	48.2	59.2
7-day 2-year hydrologically based flow	91.1	683	346	103	140
7-day 5-year hydrologically based flow	59.3	384	218	64.8	80.1
7-day 10-year hydrologically based flow	48.0	272	171	50.9	61.4
14-day 2-year hydrologically based flow	101	879	446	120	163
14-day 5-year hydrologically based flow	64.4	465	277	73.2	88.2
14-day 10-year hydrologically based flow	52.1	321	216	56.9	65.5
30-day 2-year hydrologically based flow	125	1,560	756	167	272
30-day 5-year hydrologically based flow	77.5	836	447	94.1	124
30-day 10-year hydrologically based flow	62.0	568	334	72.3	82.6
1-day 3-year biologically based flow	45.0	140	244	46.9	47.9
4-day 3-year biologically based flow	47.9	185	268	51.5	57.9
EPA harmonic-mean flow	367	1,090	1,250	224	213
5-percent-duration flow	7,110	11,400	7,090	2,190	5,340
10-percent-duration flow	4,600	7,620	4,770	1,250	3,140
15-percent-duration flow	3,420	6,020	3,660	872	2,290
20-percent-duration flow	2,700	4,950	2,980	680	1,800
25-percent-duration flow	2,190	4,170	2,530	555	1,460
30-percent-duration flow	1,840	3,600	2,190	466	1,200
35-percent-duration flow	1,540	3,170	1,910	401	978
40-percent-duration flow	1,290	2,810	1,680	347	795
45-percent-duration flow	1,080	2,490	1,490	301	668
50-percent-duration flow	895	2,230	1,320	264	549
55-percent-duration flow	739	1,980	1,170	233	444
60-percent-duration flow	603	1,770	1,040	206	359
65-percent-duration flow	483	1,560	918	183	293
70-percent-duration flow	382	1,370	804	161	241
75-percent-duration flow	301	1,180	692	141	198
80-percent-duration flow	235	989	588	121	165
85-percent-duration flow	182	821	479	102	132
90-percent-duration flow	135	654	376	84.1	106
95-percent-duration flow	92.6	444	274	66.3	81.1
99-percent-duration flow	54.7	193	161	44.2	50.1
Variability index	0.59	0.42	0.42	0.45	0.57

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03184000 Greenbrier River at Hilldale, WV, 1938–2002					
1-day 2-year hydrologically based flow	91.1	622	329	101	132
1-day 5-year hydrologically based flow	59.6	349	210	64.3	78.1
1-day 10-year hydrologically based flow	48.2	245	165	50.8	61.4
3-day 2-year hydrologically based flow	93.4	667	352	105	137
3-day 5-year hydrologically based flow	60.7	375	223	66.1	80.1
3-day 10-year hydrologically based flow	49.0	262	175	52.0	62.8
7-day 2-year hydrologically based flow	97.9	796	400	113	148
7-day 5-year hydrologically based flow	63.4	437	252	70.6	83.6
7-day 10-year hydrologically based flow	51.5	303	197	55.6	64.6
14-day 2-year hydrologically based flow	108	1,050	518	132	171
14-day 5-year hydrologically based flow	68.2	528	319	79.5	91.0
14-day 10-year hydrologically based flow	55.2	354	246	61.9	68.0
30-day 2-year hydrologically based flow	136	1,870	913	186	288
30-day 5-year hydrologically based flow	82.6	995	530	106	128
30-day 10-year hydrologically based flow	65.9	670	391	80.7	85.7
1-day 3-year biologically based flow	45.9	170	293	49.9	48.0
4-day 3-year biologically based flow	49.9	203	337	57.8	58.3
EPA harmonic-mean flow	413	1,250	1,530	261	229
5-percent-duration flow	8,300	13,200	8,560	2,460	6,110
10-percent-duration flow	5,510	8,720	5,670	1,420	3,750
15-percent-duration flow	4,140	7,030	4,440	1,000	2,740
20-percent-duration flow	3,270	5,920	3,600	774	2,100
25-percent-duration flow	2,670	5,050	3,030	629	1,680
30-percent-duration flow	2,220	4,400	2,610	525	1,380
35-percent-duration flow	1,840	3,890	2,280	451	1,110
40-percent-duration flow	1,530	3,460	2,020	390	908
45-percent-duration flow	1,270	3,090	1,790	339	753
50-percent-duration flow	1,050	2,760	1,590	299	625
55-percent-duration flow	864	2,450	1,420	265	507
60-percent-duration flow	696	2,170	1,250	234	406
65-percent-duration flow	555	1,910	1,100	207	329
70-percent-duration flow	434	1,670	962	182	265
75-percent-duration flow	342	1,430	831	159	216
80-percent-duration flow	265	1,180	700	136	178
85-percent-duration flow	202	981	563	114	142
90-percent-duration flow	148	764	437	93.6	108
95-percent-duration flow	99.1	496	324	73.7	84.7
99-percent-duration flow	61.7	205	177	51.3	56.8
Variability index	0.60	0.42	0.43	0.46	0.59

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03185000 Piney Creek at Raleigh, WV, 1953–1978					
1-day 2-year hydrologically based flow	1.85	19.3	9.95	2.40	2.69
1-day 5-year hydrologically based flow	0.86	7.91	5.39	1.12	1.16
1-day 10-year hydrologically based flow	0.56	4.22	3.55	0.70	0.78
3-day 2-year hydrologically based flow	1.99	20.9	11.3	2.58	2.96
3-day 5-year hydrologically based flow	0.93	8.47	6.16	1.19	1.31
3-day 10-year hydrologically based flow	0.61	4.48	4.04	0.74	0.90
7-day 2-year hydrologically based flow	2.19	26.3	13.7	2.99	3.30
7-day 5-year hydrologically based flow	1.00	10.4	7.74	1.36	1.43
7-day 10-year hydrologically based flow	0.64	5.28	5.26	0.82	0.96
14-day 2-year hydrologically based flow	2.60	34.7	17.0	3.85	3.77
14-day 5-year hydrologically based flow	1.16	13.6	9.77	1.71	1.61
14-day 10-year hydrologically based flow	0.73	6.68	6.91	1.00	1.09
30-day 2-year hydrologically based flow	3.74	55.8	26.0	6.30	7.28
30-day 5-year hydrologically based flow	1.73	26.1	14.5	2.91	2.76
30-day 10-year hydrologically based flow	1.10	14.7	10.3	1.71	1.64
1-day 3-year biologically based flow	0.54	3.08	6.88	0.77	0.66
4-day 3-year biologically based flow	0.63	3.88	8.43	0.87	0.80
EPA harmonic-mean flow	8.41	19.5	39.7	5.80	4.43
5-percent-duration flow	217	384	210	66.4	157
10-percent-duration flow	143	244	148	39.4	103
15-percent-duration flow	110	182	116	28.0	75.9
20-percent-duration flow	88.2	149	95.5	22.9	57.8
25-percent-duration flow	71.7	129	82.0	18.9	45.9
30-percent-duration flow	60.3	114	71.0	16.0	36.7
35-percent-duration flow	50.5	101	62.5	13.6	30.0
40-percent-duration flow	41.9	90.8	54.9	11.7	25.0
45-percent-duration flow	35.2	81.6	48.0	10.0	19.6
50-percent-duration flow	29.2	73.3	42.6	8.5	14.8
55-percent-duration flow	24.2	66.2	37.5	7.7	11.4
60-percent-duration flow	19.4	59.2	33.3	6.8	8.9
65-percent-duration flow	15.4	53.1	29.5	6.2	7.3
70-percent-duration flow	11.9	47.0	26.3	5.5	5.9
75-percent-duration flow	8.9	41.5	23.2	4.7	4.8
80-percent-duration flow	6.9	35.9	20.1	4.0	3.9
85-percent-duration flow	5.3	30.4	16.4	3.2	3.0
90-percent-duration flow	3.7	20.7	13.3	2.4	2.2
95-percent-duration flow	2.2	13.2	9.1	1.5	1.3
99-percent-duration flow	0.8	1.7	4.9	0.4	0.8
Variability index	0.62	0.41	0.41	0.48	0.65

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03186500 Williams River at Dyer, WV, 1931–2002					
1-day 2-year hydrologically based flow	7.15	94.3	30.9	7.78	18.1
1-day 5-year hydrologically based flow	2.91	64.8	16.2	3.18	6.72
1-day 10-year hydrologically based flow	1.77	51.6	11.2	1.95	3.81
3-day 2-year hydrologically based flow	7.69	102	35.3	8.52	19.5
3-day 5-year hydrologically based flow	3.13	70.0	18.3	3.47	7.15
3-day 10-year hydrologically based flow	1.91	55.6	12.5	2.13	4.02
7-day 2-year hydrologically based flow	9.04	117	46.4	10.5	24.8
7-day 5-year hydrologically based flow	3.63	78.0	23.5	4.18	8.84
7-day 10-year hydrologically based flow	2.21	61.9	15.8	2.54	4.81
14-day 2-year hydrologically based flow	11.9	150	67.6	14.9	33.7
14-day 5-year hydrologically based flow	4.71	93.6	34.5	5.78	11.6
14-day 10-year hydrologically based flow	2.81	73.1	23.4	3.42	6.18
30-day 2-year hydrologically based flow	20.1	258	128	31.6	77.2
30-day 5-year hydrologically based flow	8.12	164	67.2	11.8	25.1
30-day 10-year hydrologically based flow	5.00	126	45.4	6.81	12.5
1-day 3-year biologically based flow	1.56	42.8	19.0	1.99	2.20
4-day 3-year biologically based flow	2.02	56.0	26.1	2.65	2.80
EPA harmonic-mean flow	41.2	222	175	23.5	22.6
5-percent-duration flow	1,190	1,740	1,090	580	1,020
10-percent-duration flow	776	1,180	776	340	656
15-percent-duration flow	588	910	614	244	491
20-percent-duration flow	478	750	510	184	388
25-percent-duration flow	401	641	434	142	327
30-percent-duration flow	335	557	374	114	277
35-percent-duration flow	290	494	330	93.3	235
40-percent-duration flow	246	440	289	77.6	205
45-percent-duration flow	212	392	254	64.1	178
50-percent-duration flow	180	354	224	53.5	154
55-percent-duration flow	153	317	196	44.4	131
60-percent-duration flow	129	282	173	36.5	113
65-percent-duration flow	107	250	150	30.0	96.4
70-percent-duration flow	87.1	220	129	24.3	79.4
75-percent-duration flow	68.2	192	108	19.3	61.2
80-percent-duration flow	49.7	165	88.5	15.0	42.7
85-percent-duration flow	32.8	139	69.9	10.7	26.7
90-percent-duration flow	19.8	118	51.1	7.1	15.9
95-percent-duration flow	9.5	91.9	32.1	4.3	8.8
99-percent-duration flow	3.1	59.3	12.1	2.1	2.9
Variability index	0.62	0.39	0.46	0.64	0.61

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03187000 Gauley River at Camden On Gauley, WV, 1932–1957					
1-day 2-year hydrologically based flow	16.4	173	63.5	16.7	25.9
1-day 5-year hydrologically based flow	5.30	112	37.8	6.74	7.85
1-day 10-year hydrologically based flow	2.57	87.1	28.7	4.04	3.57
3-day 2-year hydrologically based flow	17.6	196	72.7	18.3	28.4
3-day 5-year hydrologically based flow	5.56	127	43.1	7.25	8.53
3-day 10-year hydrologically based flow	2.66	97.6	32.5	4.28	3.80
7-day 2-year hydrologically based flow	20.4	226	94.2	22.6	35.9
7-day 5-year hydrologically based flow	6.31	140	56.0	8.80	10.3
7-day 10-year hydrologically based flow	3.01	105	41.9	5.12	4.44
14-day 2-year hydrologically based flow	26.7	302	140	33.2	45.7
14-day 5-year hydrologically based flow	8.21	173	78.1	12.6	12.8
14-day 10-year hydrologically based flow	3.92	125	56.3	7.13	5.50
30-day 2-year hydrologically based flow	39.1	519	235	67.8	98.5
30-day 5-year hydrologically based flow	12.6	324	136	24.9	27.3
30-day 10-year hydrologically based flow	6.30	241	98.7	13.7	11.9
1-day 3-year biologically based flow	3.45	80.0	29.9	4.18	4.35
4-day 3-year biologically based flow	4.15	95.8	50.7	5.39	4.95
EPA harmonic-mean flow	57.8	430	292	49.7	23.1
5-percent-duration flow	2,040	3,070	1,820	1,100	1,510
10-percent-duration flow	1,370	2,140	1,290	668	958
15-percent-duration flow	1,050	1,650	1,020	483	720
20-percent-duration flow	859	1,400	859	367	595
25-percent-duration flow	724	1,210	742	291	488
30-percent-duration flow	607	1,060	642	236	405
35-percent-duration flow	523	960	560	192	348
40-percent-duration flow	446	869	497	159	302
45-percent-duration flow	383	789	443	132	259
50-percent-duration flow	326	714	394	109	219
55-percent-duration flow	275	643	352	91.0	187
60-percent-duration flow	229	579	311	75.4	160
65-percent-duration flow	189	521	272	61.4	133
70-percent-duration flow	151	468	238	49.2	105
75-percent-duration flow	117	411	199	39.6	73.8
80-percent-duration flow	86.5	351	163	30.4	47.6
85-percent-duration flow	57.1	293	133	22.1	31.4
90-percent-duration flow	35.2	233	100	15.1	21.0
95-percent-duration flow	17.9	169	70.6	9.5	12.2
99-percent-duration flow	5.4	68.6	35.0	3.8	1.4
Variability index	0.62	0.37	0.42	0.63	0.63

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03187500 Cranberry River near Richwood, WV, 1966–1979					
1-day 2-year hydrologically based flow	6.44	68.0	22.2	6.82	27.8
1-day 5-year hydrologically based flow	3.82	44.6	10.1	3.89	12.7
1-day 10-year hydrologically based flow	2.86	35.7	5.96	2.87	7.82
3-day 2-year hydrologically based flow	7.13	70.8	25.9	7.65	31.1
3-day 5-year hydrologically based flow	4.13	45.7	11.4	4.21	13.9
3-day 10-year hydrologically based flow	3.03	36.1	6.64	3.03	8.48
7-day 2-year hydrologically based flow	8.64	77.4	30.8	9.58	38.3
7-day 5-year hydrologically based flow	4.86	47.0	13.0	5.49	18.0
7-day 10-year hydrologically based flow	3.47	36.4	7.69	4.14	11.7
14-day 2-year hydrologically based flow	12.1	93.2	41.5	14.3	48.9
14-day 5-year hydrologically based flow	6.66	52.7	17.9	8.06	22.0
14-day 10-year hydrologically based flow	4.72	39.1	11.1	6.02	13.8
30-day 2-year hydrologically based flow	21.0	150	75.7	26.7	113
30-day 5-year hydrologically based flow	12.6	74.8	35.9	17.2	59.8
30-day 10-year hydrologically based flow	9.25	49.7	23.2	14.0	37.1
1-day 3-year biologically based flow	2.07	32.0	14.9	2.09	4.49
4-day 3-year biologically based flow	3.31	34.9	16.6	3.31	5.26
EPA harmonic-mean flow	52.4	139	124	26.1	44.2
5-percent-duration flow	818	1,140	775	409	783
10-percent-duration flow	564	803	568	258	541
15-percent-duration flow	433	635	460	191	411
20-percent-duration flow	359	514	383	150	342
25-percent-duration flow	303	437	325	122	282
30-percent-duration flow	257	384	285	98.2	246
35-percent-duration flow	221	343	250	81.0	215
40-percent-duration flow	189	309	218	67.8	188
45-percent-duration flow	161	279	188	57.7	167
50-percent-duration flow	140	249	163	49.6	149
55-percent-duration flow	120	216	140	42.6	135
60-percent-duration flow	101	191	119	36.6	120
65-percent-duration flow	83.7	167	100	31.2	105
70-percent-duration flow	68.7	142	83.5	26.0	88.8
75-percent-duration flow	56.0	118	69.1	21.3	76.0
80-percent-duration flow	45.0	97.0	56.9	17.4	65.0
85-percent-duration flow	34.6	78.1	44.2	13.7	53.0
90-percent-duration flow	23.6	56.6	31.9	9.7	37.1
95-percent-duration flow	12.9	43.5	19.5	6.8	19.1
99-percent-duration flow	5.5	34.3	6.5	3.8	8.1
Variability index	0.54	0.43	0.49	0.54	0.46

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03189000 Cherry River at Fenwick, WV, 1932–1957					
1-day 2-year hydrologically based flow	4.44	107	29.8	5.56	8.03
1-day 5-year hydrologically based flow	1.49	67.8	14.1	2.13	2.22
1-day 10-year hydrologically based flow	0.82	52.0	9.34	1.27	1.12
3-day 2-year hydrologically based flow	5.32	124	37.1	6.32	8.77
3-day 5-year hydrologically based flow	2.03	75.9	18.0	2.48	2.86
3-day 10-year hydrologically based flow	1.23	56.4	12.1	1.50	1.64
7-day 2-year hydrologically based flow	6.55	154	55.0	8.22	12.0
7-day 5-year hydrologically based flow	2.46	87.1	26.4	3.29	3.74
7-day 10-year hydrologically based flow	1.48	62.0	17.0	2.03	2.01
14-day 2-year hydrologically based flow	8.71	200	95.2	11.9	19.8
14-day 5-year hydrologically based flow	3.20	113	43.5	4.59	5.53
14-day 10-year hydrologically based flow	1.87	82.1	26.1	2.71	2.72
30-day 2-year hydrologically based flow	14.6	358	161	29.9	46.1
30-day 5-year hydrologically based flow	5.02	209	76.4	10.5	12.1
30-day 10-year hydrologically based flow	2.82	152	47.1	5.67	5.62
1-day 3-year biologically based flow	1.00	44.9	11.0	1.48	1.18
4-day 3-year biologically based flow	1.18	54.8	19.2	2.10	1.42
EPA harmonic-mean flow	29.3	286	166	19.7	13.1
5-percent-duration flow	1,450	2,280	1,380	757	1,130
10-percent-duration flow	1,020	1,590	970	448	740
15-percent-duration flow	779	1,230	787	312	556
20-percent-duration flow	648	1,060	664	224	438
25-percent-duration flow	535	900	566	164	351
30-percent-duration flow	451	808	488	125	291
35-percent-duration flow	379	724	425	98.3	245
40-percent-duration flow	317	650	373	78.0	209
45-percent-duration flow	267	591	326	62.0	177
50-percent-duration flow	221	534	288	49.4	147
55-percent-duration flow	181	479	254	40.6	119
60-percent-duration flow	146	428	224	33.1	95.7
65-percent-duration flow	114	381	195	26.8	74.0
70-percent-duration flow	86.1	341	166	21.1	53.8
75-percent-duration flow	62.1	297	139	16.0	35.7
80-percent-duration flow	41.2	241	109	12.3	19.6
85-percent-duration flow	25.5	188	80.7	8.5	12.7
90-percent-duration flow	14.0	144	56.6	5.6	8.4
95-percent-duration flow	6.6	102	34.4	3.4	4.5
99-percent-duration flow	2.0	52.9	12.6	1.6	0.7
Variability index	0.71	0.40	0.48	0.72	0.75

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03189100 Gauley River near Craigsville, WV, 1966–1979					
1-day 2-year hydrologically based flow	45.4	433	141	50.8	153
1-day 5-year hydrologically based flow	26.4	334	74.4	27.9	69.6
1-day 10-year hydrologically based flow	19.5	295	49.9	19.9	43.5
3-day 2-year hydrologically based flow	48.9	457	159	55.1	168
3-day 5-year hydrologically based flow	29.1	345	83.8	30.4	73.6
3-day 10-year hydrologically based flow	21.7	299	56.3	21.9	45.8
7-day 2-year hydrologically based flow	57.2	510	182	68.4	197
7-day 5-year hydrologically based flow	33.3	353	91.9	36.6	90.5
7-day 10-year hydrologically based flow	24.5	298	61.9	25.8	59.2
14-day 2-year hydrologically based flow	79.6	630	250	100	254
14-day 5-year hydrologically based flow	45.5	400	124	53.4	113
14-day 10-year hydrologically based flow	32.6	318	85.1	37.2	72.0
30-day 2-year hydrologically based flow	129	1,020	462	162	599
30-day 5-year hydrologically based flow	81.6	588	241	105	307
30-day 10-year hydrologically based flow	63.1	429	165	85.7	194
1-day 3-year biologically based flow	17.0	249	97.7	22.9	17.0
4-day 3-year biologically based flow	23.9	261	122	27.7	30.8
EPA harmonic-mean flow	340	981	788	182	253
5-percent-duration flow	4,870	6,730	4,590	2,470	4,620
10-percent-duration flow	3,340	4,820	3,410	1,370	3,140
15-percent-duration flow	2,610	3,670	2,700	998	2,470
20-percent-duration flow	2,140	3,130	2,270	743	2,060
25-percent-duration flow	1,820	2,650	1,950	615	1,750
30-percent-duration flow	1,560	2,370	1,680	520	1,520
35-percent-duration flow	1,320	2,100	1,470	440	1,310
40-percent-duration flow	1,130	1,890	1,270	373	1,120
45-percent-duration flow	966	1,700	1,100	326	1,000
50-percent-duration flow	820	1,520	960	289	893
55-percent-duration flow	692	1,350	825	257	802
60-percent-duration flow	590	1,210	706	222	709
65-percent-duration flow	503	1,080	604	190	616
70-percent-duration flow	426	939	517	161	513
75-percent-duration flow	356	781	440	137	427
80-percent-duration flow	278	636	363	112	352
85-percent-duration flow	211	534	278	89.4	279
90-percent-duration flow	145	469	199	68.5	200
95-percent-duration flow	83.4	404	131	48.8	96.1
99-percent-duration flow	39.4	293	57.4	22.9	50.6
Variability index	0.53	0.38	0.47	0.51	0.49

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03189500 Gauley River near Summersville, WV, 1932–1957					
1-day 2-year hydrologically based flow	34.0	536	189	37.7	53.5
1-day 5-year hydrologically based flow	10.5	343	102	13.5	15.3
1-day 10-year hydrologically based flow	5.19	259	70.4	7.56	7.11
3-day 2-year hydrologically based flow	37.7	585	221	42.4	61.1
3-day 5-year hydrologically based flow	11.3	368	119	14.9	17.2
3-day 10-year hydrologically based flow	5.49	273	79.8	8.32	7.84
7-day 2-year hydrologically based flow	46.1	663	295	53.1	80.4
7-day 5-year hydrologically based flow	13.4	396	161	18.6	21.4
7-day 10-year hydrologically based flow	6.30	287	105	10.3	9.11
14-day 2-year hydrologically based flow	61.5	863	417	77.4	108
14-day 5-year hydrologically based flow	17.3	485	213	26.7	27.5
14-day 10-year hydrologically based flow	7.85	340	136	14.4	11.3
30-day 2-year hydrologically based flow	91.2	1,410	646	165	235
30-day 5-year hydrologically based flow	26.5	882	348	56.1	56.4
30-day 10-year hydrologically based flow	12.3	659	237	29.1	22.1
1-day 3-year biologically based flow	6.43	229	105	6.72	8.99
4-day 3-year biologically based flow	9.21	260	129	12.2	9.84
EPA harmonic-mean flow	114	1,180	786	113	41.6
5-percent-duration flow	5,500	8,410	5,020	2,810	4,070
10-percent-duration flow	3,710	5,780	3,540	1,670	2,630
15-percent-duration flow	2,880	4,530	2,830	1,220	2,010
20-percent-duration flow	2,360	3,830	2,390	931	1,590
25-percent-duration flow	1,990	3,310	2,060	752	1,280
30-percent-duration flow	1,660	2,950	1,810	605	1,090
35-percent-duration flow	1,420	2,670	1,580	503	915
40-percent-duration flow	1,190	2,420	1,370	420	792
45-percent-duration flow	1,030	2,190	1,210	359	669
50-percent-duration flow	869	2,010	1,070	301	572
55-percent-duration flow	736	1,820	958	249	478
60-percent-duration flow	607	1,630	850	209	403
65-percent-duration flow	500	1,460	746	172	329
70-percent-duration flow	403	1,300	644	137	254
75-percent-duration flow	316	1,150	543	104	177
80-percent-duration flow	231	983	449	78.4	113
85-percent-duration flow	153	809	365	51.0	69.3
90-percent-duration flow	85.1	653	286	31.7	45.1
95-percent-duration flow	36.8	485	190	18.0	25.4
99-percent-duration flow	10.8	165	90.2	8.6	2.0
Variability index	0.64	0.36	0.43	0.66	0.67

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03189650 Collison Creek near Nallen, WV, 1968–1977					
1-day 2-year hydrologically based flow	0.04	0.85	0.18	0.04	0.06
1-day 5-year hydrologically based flow	0.01	0.19	0.07	0.01	0.03
1-day 10-year hydrologically based flow	0.00	0.07	0.04	0.00	0.02
3-day 2-year hydrologically based flow	0.04	0.97	0.23	0.05	0.08
3-day 5-year hydrologically based flow	0.02	0.22	0.08	0.02	0.03
3-day 10-year hydrologically based flow	0.00	0.08	0.04	0.00	0.02
7-day 2-year hydrologically based flow	0.05	1.15	0.33	0.06	0.12
7-day 5-year hydrologically based flow	0.02	0.26	0.13	0.03	0.04
7-day 10-year hydrologically based flow	0.00	0.09	0.07	0.00	0.02
14-day 2-year hydrologically based flow	0.10	2.24	0.52	0.13	0.18
14-day 5-year hydrologically based flow	0.02	0.69	0.19	0.03	0.06
14-day 10-year hydrologically based flow	0.01	0.27	0.10	0.01	0.04
30-day 2-year hydrologically based flow	0.16	3.60	1.37	0.23	0.68
30-day 5-year hydrologically based flow	0.08	1.71	0.61	0.10	0.25
30-day 10-year hydrologically based flow	0.05	0.99	0.36	0.06	0.14
1-day 3-year biologically based flow	0.04	0.00	0.00	0.03	0.05
4-day 3-year biologically based flow	0.04	0.00	0.00	0.03	0.05
EPA harmonic-mean flow	0.28	0.61	0.87	0.16	0.19
5-percent-duration flow	17.8	25.1	15.6	8.8	19.3
10-percent-duration flow	11.1	16.0	10.0	3.9	11.5
15-percent-duration flow	8.2	12.5	8.0	2.4	7.8
20-percent-duration flow	6.5	10.1	6.6	1.8	6.3
25-percent-duration flow	5.3	8.4	5.5	1.4	5.2
30-percent-duration flow	4.3	7.3	4.5	1.0	4.3
35-percent-duration flow	3.7	6.4	3.8	0.8	3.7
40-percent-duration flow	3.1	5.6	3.3	0.6	3.1
45-percent-duration flow	2.6	4.9	2.8	0.5	2.5
50-percent-duration flow	2.1	4.3	2.3	0.4	2.0
55-percent-duration flow	1.7	4.0	2.0	0.3	1.6
60-percent-duration flow	1.3	3.6	1.7	0.3	1.3
65-percent-duration flow	1.0	3.3	1.4	0.2	0.9
70-percent-duration flow	0.7	2.9	1.1	0.2	0.5
75-percent-duration flow	0.4	2.6	0.9	0.1	0.4
80-percent-duration flow	0.3	2.2	0.7	0.1	0.3
85-percent-duration flow	0.2	1.9	0.4	0.1	0.2
90-percent-duration flow	0.1	1.3	0.3	0.1	0.1
95-percent-duration flow	0.1	0.3	0.1	0.0	0.0
99-percent-duration flow	0.0	0.0	0.0	0.0	0.0
Variability index	0.72	0.52	0.65	0.51	0.55

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03190000 Meadow River at Nallen, WV, 1932–1957					
1-day 2-year hydrologically based flow	8.54	184	54.1	10.2	14.1
1-day 5-year hydrologically based flow	2.34	96.8	27.1	3.31	4.60
1-day 10-year hydrologically based flow	0.91	62.5	17.7	1.63	2.19
3-day 2-year hydrologically based flow	8.88	204	61.5	11.2	14.5
3-day 5-year hydrologically based flow	2.88	108	30.9	3.72	4.93
3-day 10-year hydrologically based flow	1.45	68.9	20.1	1.88	2.65
7-day 2-year hydrologically based flow	10.2	242	80.1	13.8	16.9
7-day 5-year hydrologically based flow	3.55	120	40.5	4.85	5.75
7-day 10-year hydrologically based flow	1.90	74.0	26.2	2.58	3.09
14-day 2-year hydrologically based flow	12.4	331	113	17.7	22.4
14-day 5-year hydrologically based flow	4.79	156	55.4	6.64	7.84
14-day 10-year hydrologically based flow	2.77	92.3	35.4	3.77	4.24
30-day 2-year hydrologically based flow	18.3	537	184	34.5	43.1
30-day 5-year hydrologically based flow	6.86	288	89.2	11.9	13.0
30-day 10-year hydrologically based flow	4.00	190	58.3	6.56	6.79
1-day 3-year biologically based flow	0.96	39.9	20.9	1.72	1.28
4-day 3-year biologically based flow	1.28	48.1	33.6	2.95	1.45
EPA harmonic-mean flow	41.1	341	242	26.0	19.4
5-percent-duration flow	1,980	3,030	1,900	914	1,340
10-percent-duration flow	1,380	2,220	1,340	503	879
15-percent-duration flow	1,050	1,780	1,050	330	645
20-percent-duration flow	847	1,460	859	225	505
25-percent-duration flow	699	1,280	722	171	396
30-percent-duration flow	573	1,130	616	138	312
35-percent-duration flow	475	1,000	520	113	251
40-percent-duration flow	390	907	454	92.1	205
45-percent-duration flow	314	818	396	76.7	167
50-percent-duration flow	258	742	345	63.6	131
55-percent-duration flow	208	668	306	53.4	95.7
60-percent-duration flow	163	598	269	43.9	76.0
65-percent-duration flow	126	534	234	35.6	58.1
70-percent-duration flow	92.6	476	201	29.5	44.8
75-percent-duration flow	67.6	411	168	24.5	31.0
80-percent-duration flow	48.5	340	138	19.7	22.2
85-percent-duration flow	31.7	283	111	14.0	16.7
90-percent-duration flow	20.0	221	83.9	8.2	12.4
95-percent-duration flow	10.1	147	52.7	4.8	6.9
99-percent-duration flow	2.9	39.5	20.4	2.3	1.6
Variability index	0.71	0.39	0.47	0.67	0.73

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03190400 Meadow River near Mount Lookout, WV, 1988–2000					
1-day 2-year hydrologically based flow	12.2	196	74.4	14.7	24.5
1-day 5-year hydrologically based flow	6.40	141	37.7	7.32	11.0
1-day 10-year hydrologically based flow	4.74	120	25.6	5.15	7.53
3-day 2-year hydrologically based flow	12.7	235	83.2	15.5	25.9
3-day 5-year hydrologically based flow	6.64	168	41.1	7.66	11.6
3-day 10-year hydrologically based flow	4.92	143	27.4	5.39	7.82
7-day 2-year hydrologically based flow	13.9	330	106	17.3	31.0
7-day 5-year hydrologically based flow	7.32	215	51.9	8.67	13.2
7-day 10-year hydrologically based flow	5.52	172	34.0	6.21	8.51
14-day 2-year hydrologically based flow	16.4	469	144	21.2	39.4
14-day 5-year hydrologically based flow	8.54	273	71.3	10.5	14.6
14-day 10-year hydrologically based flow	6.51	204	46.8	7.62	8.84
30-day 2-year hydrologically based flow	25.2	761	275	34.5	70.2
30-day 5-year hydrologically based flow	12.8	497	128	16.3	22.8
30-day 10-year hydrologically based flow	9.60	391	80.5	11.6	12.5
1-day 3-year biologically based flow	5.15	97.8	99.8	6.86	5.76
4-day 3-year biologically based flow	6.48	112	133	8.38	6.81
EPA harmonic-mean flow	77.4	515	571	44.6	39.2
5-percent-duration flow	2,520	3,430	2,510	734	1,880
10-percent-duration flow	1,820	2,670	1,820	399	1,210
15-percent-duration flow	1,380	2,260	1,410	270	902
20-percent-duration flow	1,100	1,940	1,180	192	688
25-percent-duration flow	901	1,760	1,000	152	541
30-percent-duration flow	756	1,560	865	124	434
35-percent-duration flow	637	1,370	773	101	355
40-percent-duration flow	534	1,210	689	83.1	296
45-percent-duration flow	441	1,080	612	70.2	249
50-percent-duration flow	360	954	546	60.3	212
55-percent-duration flow	285	855	482	51.0	179
60-percent-duration flow	222	776	423	44.2	144
65-percent-duration flow	175	707	363	37.1	115
70-percent-duration flow	127	634	306	30.3	90.9
75-percent-duration flow	89.5	563	261	25.0	63.7
80-percent-duration flow	61.3	500	215	20.5	44.1
85-percent-duration flow	41.4	435	173	16.9	28.8
90-percent-duration flow	25.7	350	119	14.1	20.3
95-percent-duration flow	15.6	223	64.6	11.0	13.0
99-percent-duration flow	8.1	162	28.3	7.1	6.9
Variability index	0.70	0.35	0.46	0.56	0.67

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03191500 Peters Creek near Lockwood, WV, 1948–1964					
1-day 2-year hydrologically based flow	1.13	21.5	3.89	1.15	1.96
1-day 5-year hydrologically based flow	0.20	11.5	2.32	0.39	0.47
1-day 10-year hydrologically based flow	0.04	7.65	1.82	0.16	0.16
3-day 2-year hydrologically based flow	1.34	23.2	4.55	1.32	2.29
3-day 5-year hydrologically based flow	0.24	12.3	2.81	0.43	0.54
3-day 10-year hydrologically based flow	0.04	8.18	2.24	0.17	0.18
7-day 2-year hydrologically based flow	1.44	25.7	6.08	1.93	2.61
7-day 5-year hydrologically based flow	0.25	13.5	3.76	0.41	0.66
7-day 10-year hydrologically based flow	0.07	9.21	2.99	0.12	0.24
14-day 2-year hydrologically based flow	1.87	32.3	9.79	2.70	4.10
14-day 5-year hydrologically based flow	0.38	18.2	5.94	0.68	0.95
14-day 10-year hydrologically based flow	0.12	13.1	4.61	0.24	0.32
30-day 2-year hydrologically based flow	3.02	66.5	21.7	4.80	7.17
30-day 5-year hydrologically based flow	0.84	46.3	11.0	1.58	1.76
30-day 10-year hydrologically based flow	0.36	37.1	7.65	0.72	0.73
1-day 3-year biologically based flow	0.00	6.97	3.57	0.07	0.14
4-day 3-year biologically based flow	0.00	7.60	4.30	0.10	0.22
EPA harmonic-mean flow	2.07	40.7	25.2	1.17	0.99
5-percent-duration flow	273	403	257	112	203
10-percent-duration flow	167	271	166	50.8	112
15-percent-duration flow	120	205	123	32.0	75.4
20-percent-duration flow	96.6	166	93.8	23.4	54.1
25-percent-duration flow	77.0	140	78.7	17.6	41.1
30-percent-duration flow	61.5	123	64.3	14.0	32.7
35-percent-duration flow	50.2	111	53.9	11.5	27.4
40-percent-duration flow	40.0	99.9	45.0	9.4	22.7
45-percent-duration flow	32.9	90.4	38.2	8.0	19.8
50-percent-duration flow	26.2	81.1	33.2	6.8	16.9
55-percent-duration flow	21.4	72.8	28.8	5.7	14.5
60-percent-duration flow	17.3	65.1	25.0	4.8	12.3
65-percent-duration flow	13.9	58.0	21.8	4.0	10.0
70-percent-duration flow	10.8	51.6	18.8	3.5	7.5
75-percent-duration flow	8.0	45.5	15.5	2.9	5.4
80-percent-duration flow	5.8	39.8	12.7	2.3	3.7
85-percent-duration flow	4.0	33.7	9.4	1.7	2.8
90-percent-duration flow	2.8	24.9	6.9	1.1	1.6
95-percent-duration flow	1.3	16.0	5.0	0.3	0.6
99-percent-duration flow	0.1	8.6	3.0	0.1	0.1
Variability index	0.70	0.40	0.52	0.71	0.73

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03192000 Gauley River above Belva, WV, 1932–1957					
1-day 2-year hydrologically based flow	66.1	916	346	78.3	89.0
1-day 5-year hydrologically based flow	24.8	555	194	32.4	30.6
1-day 10-year hydrologically based flow	14.0	400	134	19.6	16.5
3-day 2-year hydrologically based flow	68.9	998	386	84.6	92.5
3-day 5-year hydrologically based flow	25.8	601	216	34.6	31.8
3-day 10-year hydrologically based flow	14.6	428	149	20.7	17.2
7-day 2-year hydrologically based flow	76.8	1,150	492	100	110
7-day 5-year hydrologically based flow	28.2	648	272	39.7	36.5
7-day 10-year hydrologically based flow	15.8	447	180	23.2	19.3
14-day 2-year hydrologically based flow	94.6	1,530	682	134	141
14-day 5-year hydrologically based flow	33.9	805	352	51.7	44.8
14-day 10-year hydrologically based flow	18.7	528	230	29.7	23.0
30-day 2-year hydrologically based flow	134	2,460	1,070	267	290
30-day 5-year hydrologically based flow	45.8	1,450	574	94.3	78.8
30-day 10-year hydrologically based flow	24.8	1,040	395	50.5	36.8
1-day 3-year biologically based flow	15.0	325	191	24.0	15.0
4-day 3-year biologically based flow	17.0	375	231	29.2	17.0
EPA harmonic-mean flow	264	1,900	1,370	226	105
5-percent-duration flow	9,560	14,800	8,910	4,530	6,770
10-percent-duration flow	6,510	10,300	6,270	2,760	4,220
15-percent-duration flow	4,980	8,130	4,990	2,010	3,200
20-percent-duration flow	4,070	6,820	4,180	1,530	2,540
25-percent-duration flow	3,420	5,910	3,590	1,220	2,060
30-percent-duration flow	2,850	5,220	3,150	982	1,680
35-percent-duration flow	2,400	4,650	2,730	788	1,400
40-percent-duration flow	2,020	4,240	2,350	662	1,180
45-percent-duration flow	1,700	3,860	2,080	557	989
50-percent-duration flow	1,430	3,520	1,850	469	825
55-percent-duration flow	1,180	3,180	1,640	398	674
60-percent-duration flow	977	2,850	1,460	339	541
65-percent-duration flow	789	2,560	1,280	283	430
70-percent-duration flow	620	2,280	1,090	227	338
75-percent-duration flow	474	1,960	910	179	250
80-percent-duration flow	354	1,660	760	137	149
85-percent-duration flow	244	1,370	611	96.5	98.3
90-percent-duration flow	138	1,080	487	63.0	66.2
95-percent-duration flow	63.4	773	328	36.2	38.0
99-percent-duration flow	20.1	217	184	18.7	6.8
Variability index	0.65	0.38	0.43	0.63	0.69

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03194700 Elk River below Webster Springs, WV, 1962–1984					
1-day 2-year hydrologically based flow	27.6	189	73.0	30.5	61.3
1-day 5-year hydrologically based flow	15.7	140	41.6	16.7	30.7
1-day 10-year hydrologically based flow	11.6	120	30.1	12.0	21.2
3-day 2-year hydrologically based flow	29.2	206	79.5	32.5	67.2
3-day 5-year hydrologically based flow	16.5	152	45.1	17.7	32.9
3-day 10-year hydrologically based flow	12.1	130	32.9	12.7	22.5
7-day 2-year hydrologically based flow	32.9	237	95.6	38.9	80.9
7-day 5-year hydrologically based flow	18.4	166	53.5	20.3	39.4
7-day 10-year hydrologically based flow	13.5	140	39.6	14.4	26.6
14-day 2-year hydrologically based flow	41.1	308	137	50.6	102
14-day 5-year hydrologically based flow	21.8	197	74.8	25.1	46.2
14-day 10-year hydrologically based flow	15.4	157	53.5	17.4	29.6
30-day 2-year hydrologically based flow	69.0	504	260	84.7	261
30-day 5-year hydrologically based flow	33.5	304	140	42.3	108
30-day 10-year hydrologically based flow	22.4	228	96.9	28.8	60.0
1-day 3-year biologically based flow	10.0	117	49.8	9.94	11.0
4-day 3-year biologically based flow	11.0	140	57.5	13.4	12.0
EPA harmonic-mean flow	159	477	380	90.4	108
5-percent-duration flow	2,440	3,260	2,420	1,060	2,220
10-percent-duration flow	1,670	2,390	1,740	668	1,550
15-percent-duration flow	1,300	1,880	1,390	478	1,220
20-percent-duration flow	1,050	1,570	1,150	383	991
25-percent-duration flow	873	1,340	956	311	827
30-percent-duration flow	736	1,160	821	262	696
35-percent-duration flow	628	1,020	698	220	601
40-percent-duration flow	537	902	602	188	524
45-percent-duration flow	458	812	523	160	456
50-percent-duration flow	392	730	459	136	400
55-percent-duration flow	337	652	392	120	348
60-percent-duration flow	286	582	342	106	301
65-percent-duration flow	240	520	298	91.9	259
70-percent-duration flow	199	457	251	79.2	218
75-percent-duration flow	163	393	212	67.1	179
80-percent-duration flow	128	343	173	55.3	143
85-percent-duration flow	97.3	287	140	43.9	109
90-percent-duration flow	68.9	233	104	31.1	76.4
95-percent-duration flow	42.5	187	69.5	20.3	47.5
99-percent-duration flow	16.1	141	32.9	12.1	13.9
Variability index	0.53	0.38	0.47	0.51	0.50

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03195000 Elk River at Centralia, WV, 1940–1962					
1-day 2-year hydrologically based flow	15.3	209	85.6	17.6	23.5
1-day 5-year hydrologically based flow	5.71	141	59.1	7.24	8.50
1-day 10-year hydrologically based flow	3.33	113	49.5	4.50	4.78
3-day 2-year hydrologically based flow	16.7	220	95.0	19.4	28.9
3-day 5-year hydrologically based flow	6.20	147	65.0	7.99	10.0
3-day 10-year hydrologically based flow	3.59	117	54.1	4.94	5.35
7-day 2-year hydrologically based flow	19.3	247	117	24.2	35.2
7-day 5-year hydrologically based flow	6.90	157	79.4	9.31	11.8
7-day 10-year hydrologically based flow	3.95	123	65.2	5.52	6.16
14-day 2-year hydrologically based flow	24.1	322	164	33.1	47.4
14-day 5-year hydrologically based flow	8.46	189	111	12.2	14.6
14-day 10-year hydrologically based flow	4.86	141	90.2	6.96	7.43
30-day 2-year hydrologically based flow	37.3	535	296	61.3	100
30-day 5-year hydrologically based flow	13.5	348	199	22.2	30.6
30-day 10-year hydrologically based flow	7.85	273	163	12.3	15.2
1-day 3-year biologically based flow	3.95	83.0	56.0	5.49	3.95
4-day 3-year biologically based flow	4.49	102	88.6	6.50	4.63
EPA harmonic-mean flow	81.9	477	391	58.2	37.1
5-percent-duration flow	2,370	3,420	2,350	1,320	1,690
10-percent-duration flow	1,610	2,360	1,670	746	1,080
15-percent-duration flow	1,240	1,890	1,340	528	806
20-percent-duration flow	987	1,580	1,090	390	634
25-percent-duration flow	803	1,360	896	307	518
30-percent-duration flow	668	1,210	752	251	432
35-percent-duration flow	576	1,060	658	208	375
40-percent-duration flow	490	954	585	172	324
45-percent-duration flow	418	861	521	143	283
50-percent-duration flow	355	761	462	121	242
55-percent-duration flow	303	685	408	101	202
60-percent-duration flow	256	616	362	82.9	172
65-percent-duration flow	212	553	320	68.4	142
70-percent-duration flow	174	497	281	55.2	113
75-percent-duration flow	139	438	245	44.2	85.1
80-percent-duration flow	103	374	209	33.5	60.1
85-percent-duration flow	70.2	318	173	25.1	38.8
90-percent-duration flow	41.5	251	141	16.7	21.1
95-percent-duration flow	18.3	197	101	9.2	12.3
99-percent-duration flow	5.8	106	61.9	4.8	3.6
Variability index	0.62	0.37	0.41	0.64	0.63

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03195500 Elk River at Sutton, WV, 1940–1959					
1-day 2-year hydrologically based flow	27.8	335	135	28.4	40.5
1-day 5-year hydrologically based flow	7.94	218	92.2	11.9	10.8
1-day 10-year hydrologically based flow	3.53	172	76.8	7.56	4.45
3-day 2-year hydrologically based flow	29.0	361	152	31.0	44.1
3-day 5-year hydrologically based flow	8.31	230	104	13.0	11.3
3-day 10-year hydrologically based flow	3.72	178	86.6	8.25	4.61
7-day 2-year hydrologically based flow	32.6	420	190	38.0	51.4
7-day 5-year hydrologically based flow	9.03	255	129	15.3	12.7
7-day 10-year hydrologically based flow	3.99	191	106	9.50	5.09
14-day 2-year hydrologically based flow	38.5	555	278	51.7	68.8
14-day 5-year hydrologically based flow	10.8	326	183	19.6	15.9
14-day 10-year hydrologically based flow	5.03	242	145	11.6	6.47
30-day 2-year hydrologically based flow	57.4	960	474	94.4	138
30-day 5-year hydrologically based flow	17.6	620	313	33.3	36.2
30-day 10-year hydrologically based flow	9.03	477	255	18.5	15.8
1-day 3-year biologically based flow	7.77	130	82.7	9.50	7.77
4-day 3-year biologically based flow	8.27	160	137	10.9	8.27
EPA harmonic-mean flow	90.6	781	626	91.3	32.9
5-percent-duration flow	3,730	5,570	3,600	2,040	2,780
10-percent-duration flow	2,610	3,840	2,640	1,300	1,790
15-percent-duration flow	2,040	3,080	2,170	893	1,290
20-percent-duration flow	1,680	2,610	1,800	644	980
25-percent-duration flow	1,380	2,250	1,520	491	800
30-percent-duration flow	1,160	2,010	1,310	402	666
35-percent-duration flow	965	1,820	1,140	329	567
40-percent-duration flow	822	1,650	982	272	483
45-percent-duration flow	689	1,490	853	225	412
50-percent-duration flow	577	1,350	752	184	348
55-percent-duration flow	483	1,220	663	153	290
60-percent-duration flow	406	1,100	583	125	242
65-percent-duration flow	332	988	515	102	199
70-percent-duration flow	263	880	456	81.1	155
75-percent-duration flow	207	775	402	64.1	112
80-percent-duration flow	152	658	339	49.9	73.7
85-percent-duration flow	99.1	539	273	36.2	48.4
90-percent-duration flow	57.0	412	223	27.4	29.2
95-percent-duration flow	27.9	303	165	15.0	14.2
99-percent-duration flow	9.1	165	92.2	8.7	2.6
Variability index	0.64	0.37	0.41	0.65	0.68

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03197000 Elk River at Queen Shoals, WV, 1932–1957					
1-day 2-year hydrologically based flow	48.8	653	256	48.9	64.5
1-day 5-year hydrologically based flow	13.3	393	144	20.6	16.7
1-day 10-year hydrologically based flow	5.45	288	102	13.2	6.52
3-day 2-year hydrologically based flow	49.7	718	278	52.7	65.6
3-day 5-year hydrologically based flow	14.1	434	154	22.1	17.8
3-day 10-year hydrologically based flow	6.11	317	107	14.0	7.36
7-day 2-year hydrologically based flow	53.2	842	314	63.2	72.3
7-day 5-year hydrologically based flow	16.1	486	174	25.6	20.6
7-day 10-year hydrologically based flow	7.65	346	121	16.0	9.36
14-day 2-year hydrologically based flow	63.9	1,130	428	87.4	101
14-day 5-year hydrologically based flow	19.5	638	241	33.8	28.8
14-day 10-year hydrologically based flow	9.52	446	169	20.6	13.2
30-day 2-year hydrologically based flow	97.5	1,800	802	173	204
30-day 5-year hydrologically based flow	29.9	1,080	437	64.9	53.7
30-day 10-year hydrologically based flow	14.6	783	301	37.7	23.1
1-day 3-year biologically based flow	7.97	190	117	19.0	7.95
4-day 3-year biologically based flow	11.9	255	148	24.1	11.9
EPA harmonic-mean flow	149	1,440	982	175	51.6
5-percent-duration flow	7,070	11,800	6,270	3,120	4,980
10-percent-duration flow	4,820	7,900	4,670	1,990	3,050
15-percent-duration flow	3,610	6,180	3,740	1,420	2,200
20-percent-duration flow	2,980	5,120	3,120	1,030	1,660
25-percent-duration flow	2,420	4,360	2,640	830	1,280
30-percent-duration flow	2,060	3,840	2,230	683	1,070
35-percent-duration flow	1,710	3,420	1,970	566	882
40-percent-duration flow	1,430	3,070	1,700	471	740
45-percent-duration flow	1,180	2,790	1,460	397	613
50-percent-duration flow	985	2,550	1,280	336	507
55-percent-duration flow	810	2,340	1,130	282	423
60-percent-duration flow	671	2,130	999	238	355
65-percent-duration flow	543	1,910	873	197	286
70-percent-duration flow	429	1,680	759	160	220
75-percent-duration flow	334	1,470	656	129	172
80-percent-duration flow	247	1,260	551	101	113
85-percent-duration flow	170	1,040	448	73.9	73.8
90-percent-duration flow	103	782	343	49.6	47.5
95-percent-duration flow	48.8	571	237	28.4	22.7
99-percent-duration flow	15.7	233	118	15.2	2.8
Variability index	0.65	0.38	0.43	0.61	0.70

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03198500 Big Coal River at Ashford, WV, 1932–2002					
1-day 2-year hydrologically based flow	19.0	159	73.9	21.3	25.3
1-day 5-year hydrologically based flow	8.03	80.0	38.9	8.88	11.7
1-day 10-year hydrologically based flow	4.76	52.1	25.9	5.23	7.53
3-day 2-year hydrologically based flow	19.9	179	81.3	22.4	26.3
3-day 5-year hydrologically based flow	8.56	88.3	42.7	9.50	12.3
3-day 10-year hydrologically based flow	5.14	56.6	28.3	5.66	8.06
7-day 2-year hydrologically based flow	21.7	222	97.2	25.4	29.5
7-day 5-year hydrologically based flow	9.61	107	50.3	11.0	14.1
7-day 10-year hydrologically based flow	5.91	66.3	33.4	6.61	9.39
14-day 2-year hydrologically based flow	24.7	289	124	31.1	35.5
14-day 5-year hydrologically based flow	11.6	140	64.1	14.0	16.7
14-day 10-year hydrologically based flow	7.51	87.1	43.1	8.86	11.0
30-day 2-year hydrologically based flow	31.7	508	190	46.8	53.8
30-day 5-year hydrologically based flow	15.3	261	96.7	21.8	24.7
30-day 10-year hydrologically based flow	10.3	165	65.5	14.2	16.5
1-day 3-year biologically based flow	3.40	34.9	44.9	4.18	4.25
4-day 3-year biologically based flow	4.24	48.0	54.7	6.11	6.70
EPA harmonic-mean flow	74.4	272	286	47.1	39.7
5-percent-duration flow	1,910	3,100	2,040	613	1,230
10-percent-duration flow	1,260	2,080	1,340	357	769
15-percent-duration flow	952	1,620	1,040	254	559
20-percent-duration flow	757	1,350	843	197	420
25-percent-duration flow	612	1,160	705	159	322
30-percent-duration flow	514	1,010	602	133	250
35-percent-duration flow	424	902	524	114	195
40-percent-duration flow	345	801	458	97.4	155
45-percent-duration flow	285	727	402	84.6	125
50-percent-duration flow	231	653	350	73.2	103
55-percent-duration flow	184	595	309	64.9	85.6
60-percent-duration flow	147	537	270	56.7	71.8
65-percent-duration flow	117	479	235	49.5	60.0
70-percent-duration flow	92.7	422	203	42.7	51.4
75-percent-duration flow	73.0	364	173	36.9	43.2
80-percent-duration flow	57.2	309	140	31.2	35.5
85-percent-duration flow	43.5	255	112	25.6	28.8
90-percent-duration flow	31.8	194	86.2	19.5	22.1
95-percent-duration flow	20.3	123	61.0	12.1	15.5
99-percent-duration flow	7.8	37.1	30.5	4.7	6.5
Variability index	0.62	0.40	0.46	0.50	0.59

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03199000 Little Coal River at Danville, WV, 1934–1984					
1-day 2-year hydrologically based flow	9.88	102	49.5	11.1	14.4
1-day 5-year hydrologically based flow	3.36	47.8	21.9	3.82	5.11
1-day 10-year hydrologically based flow	1.77	29.7	12.5	2.04	2.82
3-day 2-year hydrologically based flow	10.6	118	54.0	12.0	15.3
3-day 5-year hydrologically based flow	3.85	54.4	23.8	4.37	5.49
3-day 10-year hydrologically based flow	2.13	33.0	13.5	2.44	3.05
7-day 2-year hydrologically based flow	11.9	142	63.8	13.7	17.3
7-day 5-year hydrologically based flow	4.44	65.2	28.4	5.14	6.25
7-day 10-year hydrologically based flow	2.53	39.2	16.3	2.93	3.48
14-day 2-year hydrologically based flow	14.3	183	80.1	17.6	20.7
14-day 5-year hydrologically based flow	5.68	85.3	34.6	7.00	7.75
14-day 10-year hydrologically based flow	3.37	51.7	20.1	4.12	4.42
30-day 2-year hydrologically based flow	18.8	322	120	26.1	30.8
30-day 5-year hydrologically based flow	7.52	151	52.4	11.4	12.3
30-day 10-year hydrologically based flow	4.57	89.1	31.6	7.32	7.57
1-day 3-year biologically based flow	1.30	15.0	20.0	1.55	1.90
4-day 3-year biologically based flow	1.54	27.1	23.8	3.40	2.08
EPA harmonic-mean flow	37.5	166	149	24.9	18.6
5-percent-duration flow	1,330	2,070	1,420	423	797
10-percent-duration flow	845	1,420	932	249	519
15-percent-duration flow	633	1,090	706	167	368
20-percent-duration flow	508	903	563	125	268
25-percent-duration flow	418	778	475	102	199
30-percent-duration flow	342	678	403	85.1	154
35-percent-duration flow	280	610	347	71.3	121
40-percent-duration flow	228	542	303	61.9	96.3
45-percent-duration flow	183	493	266	52.9	77.4
50-percent-duration flow	147	445	233	46.3	63.0
55-percent-duration flow	116	401	204	39.9	52.2
60-percent-duration flow	90.8	359	177	34.4	42.9
65-percent-duration flow	71.0	317	153	29.2	35.6
70-percent-duration flow	55.3	275	129	25.4	29.4
75-percent-duration flow	43.9	236	106	21.6	24.2
80-percent-duration flow	33.5	196	84.4	18.0	19.8
85-percent-duration flow	25.0	159	66.2	14.2	15.4
90-percent-duration flow	17.7	120	49.4	10.1	11.2
95-percent-duration flow	10.2	69.4	32.8	5.9	6.7
99-percent-duration flow	3.0	20.0	16.3	2.2	2.2
Variability index	0.66	0.42	0.49	0.54	0.64

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03200500 Coal River at Tornado, WV, 1963–1975					
1-day 2-year hydrologically based flow	127	662	366	167	202
1-day 5-year hydrologically based flow	41.3	465	240	57.5	80.8
1-day 10-year hydrologically based flow	19.7	368	187	26.9	43.8
3-day 2-year hydrologically based flow	137	735	396	178	221
3-day 5-year hydrologically based flow	45.7	511	260	63.8	88.1
3-day 10-year hydrologically based flow	22.2	399	202	30.6	47.2
7-day 2-year hydrologically based flow	155	837	456	205	243
7-day 5-year hydrologically based flow	54.1	612	302	75.8	99.2
7-day 10-year hydrologically based flow	26.7	500	233	37.0	54.1
14-day 2-year hydrologically based flow	176	1,000	530	235	265
14-day 5-year hydrologically based flow	69.0	750	345	104	111
14-day 10-year hydrologically based flow	37.7	613	260	59.1	60.8
30-day 2-year hydrologically based flow	239	1,330	689	287	383
30-day 5-year hydrologically based flow	109	942	452	144	191
30-day 10-year hydrologically based flow	65.0	738	343	93.0	111
1-day 3-year biologically based flow	9.97	259	250	39.8	12.0
4-day 3-year biologically based flow	17.8	310	273	67.9	21.2
EPA harmonic-mean flow	419	1,230	1,080	302	223
5-percent-duration flow	4,240	6,550	4,260	1,580	3,100
10-percent-duration flow	2,910	4,450	3,060	1,060	2,220
15-percent-duration flow	2,320	3,530	2,460	848	1,700
20-percent-duration flow	1,940	3,050	2,080	730	1,340
25-percent-duration flow	1,640	2,680	1,800	644	1,150
30-percent-duration flow	1,440	2,390	1,580	576	1,010
35-percent-duration flow	1,250	2,180	1,420	523	896
40-percent-duration flow	1,100	1,990	1,260	475	779
45-percent-duration flow	960	1,830	1,130	433	662
50-percent-duration flow	847	1,670	1,030	396	585
55-percent-duration flow	738	1,530	934	360	518
60-percent-duration flow	636	1,430	846	333	469
65-percent-duration flow	555	1,330	764	306	422
70-percent-duration flow	484	1,230	690	272	384
75-percent-duration flow	419	1,130	627	232	345
80-percent-duration flow	357	1,030	578	205	306
85-percent-duration flow	303	929	503	164	259
90-percent-duration flow	239	811	420	122	186
95-percent-duration flow	142	639	316	92.1	106
99-percent-duration flow	51.8	366	175	31.9	23.7
Variability index	0.44	0.30	0.34	0.36	0.42

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03201000 Pocatalico River at Sissonville, WV, 1943–1978					
1-day 2-year hydrologically based flow	0.66	59.6	9.97	1.01	2.29
1-day 5-year hydrologically based flow	0.07	23.6	2.67	0.11	0.38
1-day 10-year hydrologically based flow	0.01	12.4	1.03	0.02	0.13
3-day 2-year hydrologically based flow	0.87	66.5	10.2	1.34	2.61
3-day 5-year hydrologically based flow	0.10	26.7	3.93	0.16	0.42
3-day 10-year hydrologically based flow	0.02	14.3	2.19	0.03	0.14
7-day 2-year hydrologically based flow	1.04	86.9	14.3	1.62	3.32
7-day 5-year hydrologically based flow	0.17	33.9	5.64	0.27	0.59
7-day 10-year hydrologically based flow	0.06	17.6	3.22	0.09	0.21
14-day 2-year hydrologically based flow	1.38	126	22.8	2.26	4.85
14-day 5-year hydrologically based flow	0.23	51.8	9.07	0.37	0.85
14-day 10-year hydrologically based flow	0.08	28.6	5.22	0.12	0.30
30-day 2-year hydrologically based flow	2.97	251	46.0	6.25	14.4
30-day 5-year hydrologically based flow	0.60	118	20.3	1.20	2.53
30-day 10-year hydrologically based flow	0.25	70.2	12.6	0.46	0.88
1-day 3-year biologically based flow	0.00	6.00	5.14	0.00	0.00
4-day 3-year biologically based flow	0.00	6.68	6.84	0.00	0.00
EPA harmonic-mean flow	1.90	74.4	62.5	1.09	0.86
5-percent-duration flow	1,440	2,360	1,270	390	1,070
10-percent-duration flow	796	1,530	751	168	531
15-percent-duration flow	518	1,090	492	97.1	335
20-percent-duration flow	367	826	354	64.7	230
25-percent-duration flow	285	657	266	47.8	165
30-percent-duration flow	219	547	204	36.5	124
35-percent-duration flow	166	462	168	27.8	96.3
40-percent-duration flow	131	391	136	22.1	73.6
45-percent-duration flow	101	343	114	17.7	55.9
50-percent-duration flow	80.0	299	94.3	14.6	43.1
55-percent-duration flow	61.3	265	81.3	11.9	32.7
60-percent-duration flow	45.1	232	68.3	9.6	25.1
65-percent-duration flow	34.1	200	57.7	7.6	19.7
70-percent-duration flow	24.5	171	47.1	5.8	14.7
75-percent-duration flow	17.1	146	38.8	4.3	10.2
80-percent-duration flow	11.5	122	30.5	2.7	6.5
85-percent-duration flow	7.1	98.7	22.1	1.5	3.6
90-percent-duration flow	3.5	74.1	14.4	0.7	1.5
95-percent-duration flow	1.0	45.0	8.2	0.2	0.3
99-percent-duration flow	0.1	8.1	2.4	0.0	0.1
Variability index	0.93	0.51	0.65	0.93	1.02

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03203600 Guyandotte River at Logan, WV, 1964–1975					
1-day 2-year hydrologically based flow	73.6	365	218	85.6	91.2
1-day 5-year hydrologically based flow	49.2	165	136	56.8	57.5
1-day 10-year hydrologically based flow	39.8	99.5	106	45.0	46.8
3-day 2-year hydrologically based flow	75.6	421	229	88.6	94.5
3-day 5-year hydrologically based flow	51.2	183	141	59.4	60.6
3-day 10-year hydrologically based flow	41.9	106	109	47.5	49.8
7-day 2-year hydrologically based flow	80.5	567	249	94.3	101
7-day 5-year hydrologically based flow	54.8	254	152	64.6	62.9
7-day 10-year hydrologically based flow	45.0	143	118	52.5	51.1
14-day 2-year hydrologically based flow	87.3	730	302	105	108
14-day 5-year hydrologically based flow	59.0	314	185	72.2	64.9
14-day 10-year hydrologically based flow	48.1	170	144	58.8	51.9
30-day 2-year hydrologically based flow	109	1,070	439	132	158
30-day 5-year hydrologically based flow	69.8	499	232	87.3	84.8
30-day 10-year hydrologically based flow	55.2	280	166	69.8	62.0
1-day 3-year biologically based flow	39.4	47.9	167	48.0	39.1
4-day 3-year biologically based flow	42.8	55.7	181	54.0	42.9
EPA harmonic-mean flow	264	522	741	187	154
5-percent-duration flow	3,940	6,530	3,880	1,110	2,860
10-percent-duration flow	2,450	4,160	2,510	720	1,810
15-percent-duration flow	1,900	3,290	2,000	521	1,360
20-percent-duration flow	1,560	2,640	1,750	421	1,110
25-percent-duration flow	1,310	2,250	1,530	360	919
30-percent-duration flow	1,130	2,010	1,340	313	707
35-percent-duration flow	970	1,780	1,170	278	562
40-percent-duration flow	823	1,580	1,030	237	413
45-percent-duration flow	668	1,440	916	208	345
50-percent-duration flow	548	1,320	811	183	285
55-percent-duration flow	435	1,210	715	160	239
60-percent-duration flow	345	1,120	637	148	200
65-percent-duration flow	290	1,030	568	136	155
70-percent-duration flow	235	929	496	123	130
75-percent-duration flow	186	819	392	112	113
80-percent-duration flow	147	698	320	105	98.5
85-percent-duration flow	119	567	269	97.5	88.0
90-percent-duration flow	99.8	407	216	86.6	78.1
95-percent-duration flow	80.4	274	174	70.4	61.4
99-percent-duration flow	51.2	56.9	122	48.0	44.3
Variability index	0.54	0.39	0.41	0.37	0.55

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03204000 Guyandotte River at Branchland, WV, 1941–1979					
1-day 2-year hydrologically based flow	82.0	578	366	88.3	96.0
1-day 5-year hydrologically based flow	49.0	282	176	53.4	52.5
1-day 10-year hydrologically based flow	36.5	176	143	40.2	39.0
3-day 2-year hydrologically based flow	84.3	621	284	91.7	99.5
3-day 5-year hydrologically based flow	50.2	307	187	55.3	54.2
3-day 10-year hydrologically based flow	37.4	193	150	41.7	40.2
7-day 2-year hydrologically based flow	90.1	733	320	100	106
7-day 5-year hydrologically based flow	53.7	357	209	60.2	57.5
7-day 10-year hydrologically based flow	40.1	221	169	45.2	42.8
14-day 2-year hydrologically based flow	100	948	398	117	121
14-day 5-year hydrologically based flow	58.7	460	254	69.7	65.2
14-day 10-year hydrologically based flow	43.6	283	204	52.0	48.8
30-day 2-year hydrologically based flow	125	1,490	583	164	173
30-day 5-year hydrologically based flow	70.9	758	350	94.4	87.6
30-day 10-year hydrologically based flow	52.2	488	270	69.5	63.3
1-day 3-year biologically based flow	30.9	83.7	200	41.0	30.9
4-day 3-year biologically based flow	35.4	111	221	48.0	35.7
EPA harmonic-mean flow	306	890	959	214	161
5-percent-duration flow	5,970	9,820	6,050	1,620	3,990
10-percent-duration flow	3,930	6,780	4,110	1,000	2,600
15-percent-duration flow	2,980	5,260	3,130	762	1,840
20-percent-duration flow	2,370	4,450	2,550	602	1,410
25-percent-duration flow	1,930	3,820	2,150	498	1,070
30-percent-duration flow	1,600	3,350	1,850	426	803
35-percent-duration flow	1,340	2,960	1,600	367	624
40-percent-duration flow	1,100	2,650	1,390	315	495
45-percent-duration flow	899	2,380	1,220	279	401
50-percent-duration flow	729	2,120	1,080	245	324
55-percent-duration flow	583	1,920	950	213	266
60-percent-duration flow	468	1,720	841	192	221
65-percent-duration flow	378	1,540	740	172	184
70-percent-duration flow	303	1,370	642	156	157
75-percent-duration flow	239	1,200	543	140	135
80-percent-duration flow	187	1,020	456	125	115
85-percent-duration flow	148	813	383	108	97.0
90-percent-duration flow	113	584	315	85.4	81.1
95-percent-duration flow	76.8	360	241	60.8	60.2
99-percent-duration flow	40.8	119	168	38.2	36.3
Variability index	0.77	0.40	0.43	0.42	0.58

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03204500 Mud River near Milton, WV, 1939–1980					
1-day 2-year hydrologically based flow	1.27	61.1	12.7	1.97	1.88
1-day 5-year hydrologically based flow	0.27	19.8	6.20	0.45	0.41
1-day 10-year hydrologically based flow	0.11	8.94	4.13	0.18	0.18
3-day 2-year hydrologically based flow	1.36	68.0	14.2	2.07	2.19
3-day 5-year hydrologically based flow	0.33	22.2	7.02	0.55	0.48
3-day 10-year hydrologically based flow	0.14	10.0	4.71	0.25	0.21
7-day 2-year hydrologically based flow	1.63	85.2	18.5	2.42	2.71
7-day 5-year hydrologically based flow	0.41	28.9	8.92	0.68	0.60
7-day 10-year hydrologically based flow	0.19	13.0	5.85	0.33	0.26
14-day 2-year hydrologically based flow	2.19	120	25.9	3.32	3.99
14-day 5-year hydrologically based flow	0.56	41.6	11.8	0.94	0.86
14-day 10-year hydrologically based flow	0.25	19.5	7.55	0.46	0.36
30-day 2-year hydrologically based flow	3.57	209	50.0	6.36	8.28
30-day 5-year hydrologically based flow	0.95	88.5	21.8	1.81	1.54
30-day 10-year hydrologically based flow	0.46	49.8	13.9	0.94	0.61
1-day 3-year biologically based flow	0.07	2.96	7.28	0.48	0.07
4-day 3-year biologically based flow	0.09	3.24	10.2	0.62	0.09
EPA harmonic-mean flow	4.29	50.5	75.9	3.75	1.53
5-percent-duration flow	1,300	2,220	1,410	341	812
10-percent-duration flow	727	1,380	729	169	402
15-percent-duration flow	487	1,010	501	100	248
20-percent-duration flow	352	772	361	66.9	187
25-percent-duration flow	272	609	283	48.0	140
30-percent-duration flow	214	516	230	36.0	104
35-percent-duration flow	169	441	189	27.7	77.1
40-percent-duration flow	134	384	160	21.8	57.6
45-percent-duration flow	103	335	135	17.9	42.8
50-percent-duration flow	78.8	294	114	14.4	30.7
55-percent-duration flow	59.0	257	96.3	11.6	21.9
60-percent-duration flow	42.9	228	80.5	9.1	15.7
65-percent-duration flow	30.3	199	66.7	7.4	11.0
70-percent-duration flow	21.2	173	54.8	5.9	7.5
75-percent-duration flow	14.7	147	43.9	4.5	5.2
80-percent-duration flow	9.5	121	34.2	3.3	3.5
85-percent-duration flow	5.8	92.4	25.7	2.4	2.1
90-percent-duration flow	3.3	61.3	18.1	1.6	1.1
95-percent-duration flow	1.4	34.2	11.1	0.9	0.4
99-percent-duration flow	0.3	4.7	4.9	0.2	0.1
Variability index	0.91	0.52	0.62	0.77	1.01

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03213000 Tug Fork at Litwar, WV, 1934–1984					
1-day 2-year hydrologically based flow	47.9	183	153	56.6	52.4
1-day 5-year hydrologically based flow	33.1	85.9	100	38.2	34.9
1-day 10-year hydrologically based flow	27.7	54.8	78.2	31.2	29.2
3-day 2-year hydrologically based flow	49.9	207	161	58.8	54.5
3-day 5-year hydrologically based flow	34.7	96.6	106	39.9	36.5
3-day 10-year hydrologically based flow	29.2	60.7	82.5	32.7	30.7
7-day 2-year hydrologically based flow	53.8	241	181	63.5	60.6
7-day 5-year hydrologically based flow	37.2	113	117	42.8	39.3
7-day 10-year hydrologically based flow	31.0	70.1	90.4	34.9	32.6
14-day 2-year hydrologically based flow	58.2	296	208	71.9	66.3
14-day 5-year hydrologically based flow	40.0	135	137	48.0	42.6
14-day 10-year hydrologically based flow	33.3	83.2	108	38.9	35.3
30-day 2-year hydrologically based flow	69.1	463	270	93.0	84.1
30-day 5-year hydrologically based flow	46.4	216	172	63.0	51.2
30-day 10-year hydrologically based flow	38.2	132	134	51.6	40.9
1-day 3-year biologically based flow	27.0	33.9	95.0	35.0	28.0
4-day 3-year biologically based flow	29.5	44.6	105	38.8	29.5
EPA harmonic-mean flow	156	278	428	128	84.8
5-percent-duration flow	1,940	3,090	2,120	609	1,070
10-percent-duration flow	1,290	2,140	1,480	391	664
15-percent-duration flow	983	1,670	1,140	304	497
20-percent-duration flow	793	1,390	952	255	378
25-percent-duration flow	654	1,210	821	221	296
30-percent-duration flow	547	1,060	711	198	236
35-percent-duration flow	461	941	622	178	194
40-percent-duration flow	388	845	555	160	163
45-percent-duration flow	327	754	499	147	135
50-percent-duration flow	272	685	448	134	115
55-percent-duration flow	230	616	407	122	103
60-percent-duration flow	195	553	368	111	92.3
65-percent-duration flow	164	492	331	101	83.1
70-percent-duration flow	136	439	295	91.6	73.4
75-percent-duration flow	113	384	262	83.2	64.5
80-percent-duration flow	94.8	325	231	74.7	57.6
85-percent-duration flow	78.7	248	201	65.9	50.1
90-percent-duration flow	62.8	170	171	54.9	42.8
95-percent-duration flow	46.2	91.6	132	44.7	35.8
99-percent-duration flow	32.5	39.4	83.0	32.4	28.2
Variability index	0.51	0.43	0.36	0.33	0.46

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03213500 Panther Creek near Panther, WV, 1948–1978					
1-day 2-year hydrologically based flow	0.52	9.29	1.76	0.64	0.88
1-day 5-year hydrologically based flow	0.13	3.60	0.92	0.16	0.33
1-day 10-year hydrologically based flow	0.05	1.89	0.66	0.06	0.19
3-day 2-year hydrologically based flow	0.60	10.1	2.14	0.75	0.99
3-day 5-year hydrologically based flow	0.17	3.86	1.17	0.22	0.38
3-day 10-year hydrologically based flow	0.07	2.01	0.85	0.09	0.22
7-day 2-year hydrologically based flow	0.71	12.4	2.89	0.90	1.24
7-day 5-year hydrologically based flow	0.26	4.64	1.63	0.32	0.50
7-day 10-year hydrologically based flow	0.15	2.37	1.21	0.17	0.31
14-day 2-year hydrologically based flow	0.97	17.2	4.09	1.30	1.66
14-day 5-year hydrologically based flow	0.39	6.62	2.28	0.51	0.63
14-day 10-year hydrologically based flow	0.23	3.44	1.68	0.29	0.38
30-day 2-year hydrologically based flow	1.52	34.2	6.94	2.29	2.94
30-day 5-year hydrologically based flow	0.63	15.8	3.54	0.98	1.03
30-day 10-year hydrologically based flow	0.38	8.51	2.52	0.58	0.58
1-day 3-year biologically based flow	0.00	0.59	1.07	0.00	0.09
4-day 3-year biologically based flow	0.00	0.66	1.51	0.16	0.24
EPA harmonic-mean flow	2.58	10.2	12.0	1.55	1.38
5-percent-duration flow	145	268	144	33.7	96.5
10-percent-duration flow	84.7	158	88.2	19.9	54.1
15-percent-duration flow	61.7	115	64.5	13.8	37.0
20-percent-duration flow	47.5	91.3	52.1	10.3	28.0
25-percent-duration flow	36.8	74.8	42.9	7.9	21.4
30-percent-duration flow	30.3	64.4	34.5	6.6	16.3
35-percent-duration flow	24.2	56.4	28.8	5.4	13.0
40-percent-duration flow	19.9	49.4	24.1	4.6	10.4
45-percent-duration flow	16.1	44.0	20.3	3.8	8.1
50-percent-duration flow	12.7	39.3	17.3	3.2	6.4
55-percent-duration flow	9.7	35.2	14.7	2.7	5.0
60-percent-duration flow	7.3	31.6	12.3	2.4	3.9
65-percent-duration flow	5.6	28.0	9.9	2.0	3.1
70-percent-duration flow	4.2	24.9	8.3	1.7	2.5
75-percent-duration flow	3.2	21.8	6.8	1.4	2.0
80-percent-duration flow	2.4	18.9	5.3	1.1	1.5
85-percent-duration flow	1.8	15.9	4.0	0.9	1.1
90-percent-duration flow	1.2	12.1	3.0	0.6	0.7
95-percent-duration flow	0.6	5.7	2.0	0.4	0.5
99-percent-duration flow	0.2	0.8	0.9	0.1	0.1
Variability index	0.73	0.47	0.57	0.57	0.71

Table 11. Selected annual and seasonal statistics for 77 stations in West Virginia representative of 1930–2002.—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03214000 Tug Fork near Kermit, WV, 1936–1985					
1-day 2-year hydrologically based flow	81.5	463	262	93.2	94.5
1-day 5-year hydrologically based flow	49.1	220	163	55.7	54.7
1-day 10-year hydrologically based flow	37.6	138	124	42.2	42.0
3-day 2-year hydrologically based flow	84.2	508	281	97.2	97.3
3-day 5-year hydrologically based flow	50.9	242	174	58.4	56.1
3-day 10-year hydrologically based flow	39.0	152	132	44.3	43.1
7-day 2-year hydrologically based flow	89.3	611	316	105	107
7-day 5-year hydrologically based flow	53.7	288	195	63.2	60.2
7-day 10-year hydrologically based flow	41.1	176	150	48.0	45.7
14-day 2-year hydrologically based flow	99.8	771	380	123	123
14-day 5-year hydrologically based flow	59.2	361	234	74.0	67.1
14-day 10-year hydrologically based flow	45.0	219	181	56.3	50.1
30-day 2-year hydrologically based flow	125	1,300	533	171	167
30-day 5-year hydrologically based flow	72.0	633	316	103	86.5
30-day 10-year hydrologically based flow	54.2	386	242	79.1	62.8
1-day 3-year biologically based flow	33.9	64.8	167	47.9	33.9
4-day 3-year biologically based flow	36.2	87.8	199	53.4	36.3
EPA harmonic-mean flow	298	712	876	228	154
5-percent-duration flow	4,820	7,900	5,230	1,540	2,940
10-percent-duration flow	3,230	5,370	3,550	973	1,880
15-percent-duration flow	2,480	4,180	2,780	739	1,410
20-percent-duration flow	1,990	3,490	2,290	591	1,080
25-percent-duration flow	1,650	3,000	1,940	495	848
30-percent-duration flow	1,380	2,670	1,660	430	666
35-percent-duration flow	1,160	2,390	1,440	375	515
40-percent-duration flow	973	2,150	1,280	326	415
45-percent-duration flow	802	1,940	1,140	291	339
50-percent-duration flow	651	1,760	1,010	260	277
55-percent-duration flow	526	1,600	897	233	231
60-percent-duration flow	429	1,460	787	207	195
65-percent-duration flow	348	1,320	686	184	170
70-percent-duration flow	288	1,180	591	164	152
75-percent-duration flow	234	1,030	503	147	133
80-percent-duration flow	187	870	432	130	113
85-percent-duration flow	152	682	366	113	92.9
90-percent-duration flow	118	486	301	91.2	77.0
95-percent-duration flow	80.5	278	230	66.5	56.5
99-percent-duration flow	45.6	85.3	141	44.3	34.5
Variability index	0.56	0.41	0.41	0.40	0.54

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01595000 North Branch Potomac River at Steyer, MD, 1958–1996					
1-day 2-year hydrologically based flow	9.68	65.2	29.1	10.6	16.0
1-day 5-year hydrologically based flow	6.08	44.9	17.2	6.33	9.06
1-day 10-year hydrologically based flow	4.74	36.4	12.7	4.80	6.92
3-day 2-year hydrologically based flow	10.8	68.9	32.4	11.8	17.7
3-day 5-year hydrologically based flow	6.76	47.6	19.4	6.97	10.2
3-day 10-year hydrologically based flow	5.21	38.8	14.5	5.24	7.91
7-day 2-year hydrologically based flow	13.0	75.0	38.0	14.3	21.0
7-day 5-year hydrologically based flow	7.97	51.2	22.8	8.36	12.7
7-day 10-year hydrologically based flow	6.03	42.1	17.1	6.14	10.1
14-day 2-year hydrologically based flow	15.4	88.1	47.4	17.9	25.9
14-day 5-year hydrologically based flow	9.52	57.0	28.0	10.3	15.8
14-day 10-year hydrologically based flow	7.14	45.2	21.0	7.43	12.7
30-day 2-year hydrologically based flow	19.2	129	69.7	23.4	44.9
30-day 5-year hydrologically based flow	11.7	78.0	41.5	13.2	25.9
30-day 10-year hydrologically based flow	8.95	59.0	31.4	9.51	19.3
1-day 3-year biologically based flow	3.63	31.0	20.0	3.78	4.90
4-day 3-year biologically based flow	4.14	33.2	25.4	4.70	6.74
EPA harmonic-mean flow	47.9	136	123	26.4	33.3
5-percent-duration flow	561	849	582	231	463
10-percent-duration flow	384	564	415	147	306
15-percent-duration flow	302	453	340	108	245
20-percent-duration flow	247	379	284	84.3	205
25-percent-duration flow	210	326	245	68.9	175
30-percent-duration flow	182	283	215	56.9	153
35-percent-duration flow	158	253	190	48.9	135
40-percent-duration flow	138	229	168	42.9	119
45-percent-duration flow	120	207	149	38.2	104
50-percent-duration flow	104	191	132	34.3	90.3
55-percent-duration flow	88.2	176	117	30.7	77.3
60-percent-duration flow	73.9	159	103	27.5	65.5
65-percent-duration flow	61.6	144	89.9	24.5	54.9
70-percent-duration flow	51.1	131	77.1	21.8	45.6
75-percent-duration flow	41.3	117	67.2	19.3	38.0
80-percent-duration flow	33.6	103	57.8	16.7	30.8
85-percent-duration flow	26.7	88.2	48.0	13.8	24.9
90-percent-duration flow	20.4	71.7	37.7	10.9	19.8
95-percent-duration flow	13.7	56.8	27.8	7.3	14.5
99-percent-duration flow	6.4	34.8	16.1	4.2	9.3
Variability index	0.49	0.35	0.40	0.44	0.46

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01596000 North Branch Potomac River at Bloomington, MD, 1940–1950					
1-day 2-year hydrologically based flow	34.1	146	98.2	36.4	60.8
1-day 5-year hydrologically based flow	24.0	97.6	61.6	26.2	34.3
1-day 10-year hydrologically based flow	20.0	80.4	47.5	22.0	24.5
3-day 2-year hydrologically based flow	37.2	155	111	39.6	65.8
3-day 5-year hydrologically based flow	26.2	99.9	68.8	28.9	37.3
3-day 10-year hydrologically based flow	21.6	80.9	52.2	24.3	26.7
7-day 2-year hydrologically based flow	43.6	168	131	46.6	71.9
7-day 5-year hydrologically based flow	30.0	105	79.3	34.1	40.1
7-day 10-year hydrologically based flow	24.3	83.2	59.4	28.4	28.5
14-day 2-year hydrologically based flow	48.0	190	158	53.0	77.1
14-day 5-year hydrologically based flow	33.2	114	95.7	38.5	43.1
14-day 10-year hydrologically based flow	27.1	89.2	72.4	32.0	31.3
30-day 2-year hydrologically based flow	59.2	297	223	73.7	103
30-day 5-year hydrologically based flow	38.4	184	159	46.4	55.7
30-day 10-year hydrologically based flow	30.0	143	136	36.3	40.0
1-day 3-year biologically based flow	21.0	29.0	71.8	24.0	21.0
4-day 3-year biologically based flow	23.7	83.9	82.7	26.5	26.6
EPA harmonic-mean flow	147	309	347	92.1	98.3
5-percent-duration flow	1,630	2,280	1,700	848	1,010
10-percent-duration flow	1,120	1,660	1,160	519	673
15-percent-duration flow	850	1,360	927	347	524
20-percent-duration flow	700	1,160	792	268	446
25-percent-duration flow	598	1,010	702	218	369
30-percent-duration flow	513	879	629	185	302
35-percent-duration flow	444	782	564	159	265
40-percent-duration flow	375	701	508	137	234
45-percent-duration flow	316	631	455	121	206
50-percent-duration flow	270	570	406	107	184
55-percent-duration flow	232	512	361	93.7	160
60-percent-duration flow	197	460	323	83.7	135
65-percent-duration flow	167	417	289	74.7	117
70-percent-duration flow	138	364	259	66.6	102
75-percent-duration flow	114	308	230	59.9	85.3
80-percent-duration flow	94.2	262	201	53.2	70.0
85-percent-duration flow	75.6	206	170	46.1	60.6
90-percent-duration flow	59.0	148	140	39.2	43.2
95-percent-duration flow	40.6	107	103	32.9	32.6
99-percent-duration flow	28.2	88.2	55.0	26.4	25.0
Variability index	0.49	0.39	0.36	0.43	0.45

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01596500 Savage River near Barton, MD, 1950–1996					
1-day 2-year hydrologically based flow	2.03	21.5	8.32	2.12	3.90
1-day 5-year hydrologically based flow	1.14	12.6	5.05	1.15	2.12
1-day 10-year hydrologically based flow	0.84	9.00	3.92	0.83	1.56
3-day 2-year hydrologically based flow	2.13	22.4	9.07	2.24	4.13
3-day 5-year hydrologically based flow	1.20	13.1	5.43	1.22	2.25
3-day 10-year hydrologically based flow	0.88	9.45	4.19	0.88	1.67
7-day 2-year hydrologically based flow	2.38	24.8	10.9	2.58	4.95
7-day 5-year hydrologically based flow	1.35	14.2	6.59	1.39	2.67
7-day 10-year hydrologically based flow	1.00	10.2	5.14	1.00	1.98
14-day 2-year hydrologically based flow	2.77	29.4	14.3	3.06	5.90
14-day 5-year hydrologically based flow	1.54	16.0	8.58	1.61	3.04
14-day 10-year hydrologically based flow	1.14	11.3	6.66	1.15	2.19
30-day 2-year hydrologically based flow	3.76	45.8	25.9	4.47	10.5
30-day 5-year hydrologically based flow	2.24	25.8	15.1	2.54	4.41
30-day 10-year hydrologically based flow	1.75	19.1	11.2	1.94	2.79
1-day 3-year biologically based flow	0.78	5.60	7.16	0.80	0.91
4-day 3-year biologically based flow	0.89	6.88	10.2	0.94	1.16
EPA harmonic-mean flow	10.7	40.5	49.6	5.68	6.63
5-percent-duration flow	301	446	331	61.6	212
10-percent-duration flow	189	314	216	35.9	132
15-percent-duration flow	138	244	163	24.1	98.9
20-percent-duration flow	108	194	131	18.5	78.8
25-percent-duration flow	87.8	163	110	15.3	63.5
30-percent-duration flow	72.2	137	94.0	13.1	52.0
35-percent-duration flow	59.0	119	81.0	11.1	43.3
40-percent-duration flow	48.9	105	69.6	9.5	36.1
45-percent-duration flow	40.5	92.5	59.9	8.3	29.7
50-percent-duration flow	33.2	82.7	51.9	7.3	23.7
55-percent-duration flow	26.8	73.3	45.2	6.4	19.2
60-percent-duration flow	21.3	64.3	39.2	5.6	15.6
65-percent-duration flow	16.7	55.8	33.9	4.9	12.5
70-percent-duration flow	13.0	48.9	29.0	4.3	9.4
75-percent-duration flow	9.6	42.2	24.7	3.8	7.2
80-percent-duration flow	7.3	35.8	20.9	3.1	5.6
85-percent-duration flow	5.4	29.6	17.3	2.7	4.4
90-percent-duration flow	3.9	23.5	13.2	2.2	3.5
95-percent-duration flow	2.6	16.2	8.7	1.6	2.6
99-percent-duration flow	1.3	7.8	4.8	0.9	1.6
Variability index	0.65	0.43	0.47	0.47	0.61

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01597000 Crabtree Creek near Swanton, MD, 1950–1981					
1-day 2-year hydrologically based flow	1.55	7.72	5.09	1.64	1.99
1-day 5-year hydrologically based flow	1.13	4.55	3.43	1.19	1.29
1-day 10-year hydrologically based flow	0.97	3.39	2.76	1.01	1.08
3-day 2-year hydrologically based flow	1.60	8.08	5.47	1.70	2.07
3-day 5-year hydrologically based flow	1.17	4.81	3.67	1.22	1.36
3-day 10-year hydrologically based flow	1.01	3.63	2.95	1.04	1.15
7-day 2-year hydrologically based flow	1.68	9.16	6.39	1.80	2.30
7-day 5-year hydrologically based flow	1.22	5.29	4.20	1.28	1.49
7-day 10-year hydrologically based flow	1.06	3.94	3.31	1.09	1.26
14-day 2-year hydrologically based flow	1.79	10.7	7.91	2.02	2.55
14-day 5-year hydrologically based flow	1.29	5.88	4.95	1.40	1.60
14-day 10-year hydrologically based flow	1.13	4.29	3.82	1.18	1.32
30-day 2-year hydrologically based flow	2.01	17.7	11.8	2.46	3.74
30-day 5-year hydrologically based flow	1.44	10.1	7.11	1.68	1.95
30-day 10-year hydrologically based flow	1.27	7.50	5.45	1.41	1.45
1-day 3-year biologically based flow	0.85	2.40	4.04	0.96	0.98
4-day 3-year biologically based flow	0.96	2.84	4.95	1.09	1.14
EPA harmonic-mean flow	5.89	15.6	22.0	3.58	3.45
5-percent-duration flow	113	169	122	23.9	71.5
10-percent-duration flow	72.3	120	82.8	13.7	44.2
15-percent-duration flow	54.0	96.2	64.9	9.6	33.0
20-percent-duration flow	42.1	78.3	53.9	7.8	25.1
25-percent-duration flow	34.4	64.5	44.9	6.5	20.0
30-percent-duration flow	28.3	54.7	38.7	5.6	16.2
35-percent-duration flow	23.1	47.9	33.9	4.9	13.7
40-percent-duration flow	19.0	42.2	29.6	4.3	11.6
45-percent-duration flow	15.8	37.3	26.2	3.9	9.4
50-percent-duration flow	13.1	33.4	23.2	3.5	7.8
55-percent-duration flow	10.7	29.6	20.4	3.2	6.1
60-percent-duration flow	8.4	26.1	18.1	3.0	4.8
65-percent-duration flow	6.7	22.7	16.0	2.7	3.9
70-percent-duration flow	5.2	19.3	14.0	2.5	3.2
75-percent-duration flow	4.1	16.3	12.2	2.2	2.8
80-percent-duration flow	3.3	13.6	10.4	2.0	2.4
85-percent-duration flow	2.7	11.2	8.5	1.8	2.1
90-percent-duration flow	2.2	8.4	6.9	1.6	1.8
95-percent-duration flow	1.7	6.0	4.9	1.4	1.5
99-percent-duration flow	1.2	3.2	3.1	1.0	1.2
Variability index	0.59	0.44	0.42	0.37	0.55

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01598000 Savage River at Bloomington, MD, 1940–1950					
1-day 2-year hydrologically based flow	5.60	44.3	29.8	5.91	9.42
1-day 5-year hydrologically based flow	2.79	20.6	17.7	2.90	4.28
1-day 10-year hydrologically based flow	1.83	12.5	13.2	1.86	2.56
3-day 2-year hydrologically based flow	5.88	49.0	34.1	6.26	9.78
3-day 5-year hydrologically based flow	2.91	22.1	20.3	3.09	4.64
3-day 10-year hydrologically based flow	1.90	13.2	14.8	2.00	2.90
7-day 2-year hydrologically based flow	6.43	53.3	40.0	7.00	11.1
7-day 5-year hydrologically based flow	3.16	24.0	23.8	3.36	5.00
7-day 10-year hydrologically based flow	2.06	14.6	17.3	2.13	3.02
14-day 2-year hydrologically based flow	7.41	61.9	47.3	8.53	12.0
14-day 5-year hydrologically based flow	3.55	27.3	29.8	3.90	5.13
14-day 10-year hydrologically based flow	2.25	16.5	23.0	2.37	3.18
30-day 2-year hydrologically based flow	9.70	102	70.4	12.6	17.8
30-day 5-year hydrologically based flow	4.36	54.9	47.5	5.50	8.16
30-day 10-year hydrologically based flow	2.65	37.8	39.1	3.25	5.49
1-day 3-year biologically based flow	1.18	1.38	20.0	1.14	1.15
4-day 3-year biologically based flow	1.18	7.13	23.4	2.27	1.39
EPA harmonic-mean flow	22.8	57.9	112	13.9	13.1
5-percent-duration flow	619	894	747	224	373
10-percent-duration flow	392	625	463	125	242
15-percent-duration flow	302	495	357	87.1	180
20-percent-duration flow	246	400	299	63.2	139
25-percent-duration flow	198	339	264	49.0	104
30-percent-duration flow	165	297	230	40.3	82.6
35-percent-duration flow	137	265	197	33.7	68.1
40-percent-duration flow	112	236	168	28.7	57.9
45-percent-duration flow	91.2	209	149	24.7	47.6
50-percent-duration flow	76.4	185	133	21.5	39.2
55-percent-duration flow	63.6	166	117	19.1	32.1
60-percent-duration flow	51.8	148	102	16.8	25.8
65-percent-duration flow	41.1	128	90.0	14.9	20.5
70-percent-duration flow	32.0	109	79.9	13.1	17.1
75-percent-duration flow	23.7	92.6	70.7	11.3	14.4
80-percent-duration flow	18.1	77.8	61.4	9.1	11.8
85-percent-duration flow	14.0	64.4	52.8	6.8	9.0
90-percent-duration flow	9.8	44.8	44.3	4.8	6.8
95-percent-duration flow	5.8	22.7	32.4	3.1	5.2
99-percent-duration flow	1.8	8.6	17.0	1.4	1.6
Variability index	0.63	0.46	0.41	0.54	0.59

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01600000 North Branch Potomac River at Pinto, MD, 1940–1950					
1-day 2-year hydrologically based flow	61.4	259	191	64.1	94.4
1-day 5-year hydrologically based flow	45.6	160	127	49.1	59.8
1-day 10-year hydrologically based flow	38.2	123	102	41.9	46.3
3-day 2-year hydrologically based flow	64.5	275	218	68.4	99.6
3-day 5-year hydrologically based flow	48.1	164	141	52.3	63.9
3-day 10-year hydrologically based flow	40.4	125	111	44.3	49.8
7-day 2-year hydrologically based flow	70.7	296	247	75.6	109
7-day 5-year hydrologically based flow	52.0	171	156	57.1	68.1
7-day 10-year hydrologically based flow	43.4	127	120	47.9	52.6
14-day 2-year hydrologically based flow	76.2	334	289	83.1	115
14-day 5-year hydrologically based flow	56.0	187	184	61.5	70.5
14-day 10-year hydrologically based flow	46.9	138	145	51.2	55.2
30-day 2-year hydrologically based flow	91.6	520	409	114	152
30-day 5-year hydrologically based flow	62.1	318	300	73.9	88.1
30-day 10-year hydrologically based flow	49.7	244	257	58.2	67.5
1-day 3-year biologically based flow	35.9	50.0	139	37.9	41.0
4-day 3-year biologically based flow	39.0	101	152	40.9	46.3
EPA harmonic-mean flow	246	516	636	155	159
5-percent-duration flow	2,920	4,330	3,260	1,260	1,680
10-percent-duration flow	1,920	2,940	2,170	781	1,170
15-percent-duration flow	1,460	2,350	1,660	574	881
20-percent-duration flow	1,210	1,990	1,400	448	719
25-percent-duration flow	1,030	1,710	1,220	358	597
30-percent-duration flow	877	1,490	1,090	300	492
35-percent-duration flow	742	1,330	980	254	426
40-percent-duration flow	638	1,200	891	220	372
45-percent-duration flow	543	1,080	792	197	323
50-percent-duration flow	463	984	710	176	278
55-percent-duration flow	394	886	639	155	237
60-percent-duration flow	333	800	580	134	198
65-percent-duration flow	276	716	526	121	166
70-percent-duration flow	226	621	470	109	147
75-percent-duration flow	184	533	415	98.1	128
80-percent-duration flow	149	448	370	88.7	108
85-percent-duration flow	120	355	322	78.8	92.8
90-percent-duration flow	95.6	266	262	66.9	79.3
95-percent-duration flow	71.8	181	196	52.6	61.3
99-percent-duration flow	46.9	118	119	41.4	43.0
Variability index	0.50	0.40	0.36	0.42	0.45

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01603000 North Branch Potomac River near Cumberland, MD, 1940–1950					
1-day 2-year hydrologically based flow	102	354	301	107	138
1-day 5-year hydrologically based flow	78.5	217	211	83.9	94.5
1-day 10-year hydrologically based flow	68.1	169	173	73.2	76.5
3-day 2-year hydrologically based flow	106	382	331	111	146
3-day 5-year hydrologically based flow	81.6	229	227	87.0	99.1
3-day 10-year hydrologically based flow	70.8	176	183	76.2	79.7
7-day 2-year hydrologically based flow	114	413	369	120	157
7-day 5-year hydrologically based flow	87.5	240	248	93.2	105
7-day 10-year hydrologically based flow	75.8	180	197	80.6	84.6
14-day 2-year hydrologically based flow	122	465	413	133	160
14-day 5-year hydrologically based flow	92.9	261	280	99.8	104
14-day 10-year hydrologically based flow	80.0	194	227	84.8	86.7
30-day 2-year hydrologically based flow	139	717	562	171	211
30-day 5-year hydrologically based flow	100	433	451	119	133
30-day 10-year hydrologically based flow	84.0	332	413	97.5	108
1-day 3-year biologically based flow	62.9	79.9	207	74.9	64.9
4-day 3-year biologically based flow	69.5	151	260	76.4	73.6
EPA harmonic-mean flow	370	728	942	244	236
5-percent-duration flow	4,110	5,850	4,710	1,700	2,330
10-percent-duration flow	2,710	4,230	3,120	1,030	1,680
15-percent-duration flow	2,120	3,440	2,400	741	1,250
20-percent-duration flow	1,760	2,870	2,070	586	1,010
25-percent-duration flow	1,490	2,490	1,830	487	804
30-percent-duration flow	1,270	2,190	1,640	420	657
35-percent-duration flow	1,070	1,930	1,470	362	560
40-percent-duration flow	883	1,730	1,320	312	487
45-percent-duration flow	743	1,570	1,180	281	414
50-percent-duration flow	636	1,410	1,030	255	362
55-percent-duration flow	541	1,280	912	230	314
60-percent-duration flow	457	1,160	811	202	268
65-percent-duration flow	382	1,030	735	186	226
70-percent-duration flow	318	856	667	171	204
75-percent-duration flow	262	735	594	157	182
80-percent-duration flow	216	627	528	141	160
85-percent-duration flow	181	490	461	124	139
90-percent-duration flow	147	354	397	109	120
95-percent-duration flow	113	259	310	88.6	102
99-percent-duration flow	78.5	173	195	73.3	71.0
Variability index	0.49	0.40	0.35	0.39	0.43

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01612500 Little Tonoloway Creek near Hancock, MD, 1949–1958					
1-day 2-year hydrologically based flow	0.00	3.38	0.61	0.00	0.24
1-day 5-year hydrologically based flow	0.00	1.11	0.33	0.00	0.00
1-day 10-year hydrologically based flow	0.00	0.54	0.24	0.00	0.00
3-day 2-year hydrologically based flow	0.05	3.76	0.70	0.05	0.26
3-day 5-year hydrologically based flow	0.00	1.31	0.36	0.00	0.00
3-day 10-year hydrologically based flow	0.00	0.67	0.26	0.00	0.00
7-day 2-year hydrologically based flow	0.09	4.47	1.07	0.09	0.48
7-day 5-year hydrologically based flow	0.00	1.68	0.56	0.00	0.16
7-day 10-year hydrologically based flow	0.00	0.96	0.38	0.00	0.09
14-day 2-year hydrologically based flow	0.08	6.27	1.62	0.09	0.65
14-day 5-year hydrologically based flow	0.00	2.34	1.09	0.00	0.21
14-day 10-year hydrologically based flow	0.00	1.30	0.89	0.00	0.11
30-day 2-year hydrologically based flow	0.14	11.5	3.62	0.16	1.28
30-day 5-year hydrologically based flow	0.00	4.98	2.03	0.00	0.33
30-day 10-year hydrologically based flow	0.00	2.97	1.55	0.00	0.15
1-day 3-year biologically based flow	0.00	0.14	0.56	0.00	0.00
4-day 3-year biologically based flow	0.00	0.27	0.76	0.00	0.00
EPA harmonic-mean flow	0.81	5.03	5.76	0.35	0.52
5-percent-duration flow	71.3	116	72.5	14.5	54.0
10-percent-duration flow	42.0	73.6	41.9	6.2	26.5
15-percent-duration flow	28.9	54.2	27.9	3.6	19.2
20-percent-duration flow	22.3	44.9	21.6	2.2	14.2
25-percent-duration flow	17.6	38.0	17.4	1.6	10.8
30-percent-duration flow	14.0	32.1	14.7	1.1	7.7
35-percent-duration flow	11.6	28.6	12.7	0.9	6.2
40-percent-duration flow	9.1	25.3	11.0	0.6	4.6
45-percent-duration flow	6.8	22.5	9.5	0.4	3.2
50-percent-duration flow	5.1	19.7	8.3	0.3	2.5
55-percent-duration flow	3.9	17.8	6.9	0.3	2.0
60-percent-duration flow	2.7	15.9	5.7	0.2	1.6
65-percent-duration flow	1.9	14.0	4.9	0.2	1.4
70-percent-duration flow	1.3	11.9	4.2	0.1	1.2
75-percent-duration flow	1.0	9.8	3.5	0.1	1.0
80-percent-duration flow	0.6	8.2	2.8	0.1	0.7
85-percent-duration flow	0.3	5.8	2.0	0.1	0.5
90-percent-duration flow	0.1	4.2	1.4	0.1	0.2
95-percent-duration flow	0.1	1.8	0.9	0.0	0.1
99-percent-duration flow	0.0	0.6	0.3	0.0	0.1
Variability index	0.90	0.51	0.56	0.56	0.80

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01613900 Hogue Creek near Hayfield, VA, 1962–1986					
1-day 2-year hydrologically based flow	0.72	4.17	1.89	0.79	1.03
1-day 5-year hydrologically based flow	0.34	2.02	1.15	0.36	0.58
1-day 10-year hydrologically based flow	0.21	1.23	0.88	0.22	0.45
3-day 2-year hydrologically based flow	0.73	4.48	2.05	0.80	1.07
3-day 5-year hydrologically based flow	0.38	2.15	1.24	0.41	0.62
3-day 10-year hydrologically based flow	0.27	1.30	0.94	0.28	0.49
7-day 2-year hydrologically based flow	0.78	4.78	2.39	0.86	1.19
7-day 5-year hydrologically based flow	0.48	2.34	1.38	0.51	0.73
7-day 10-year hydrologically based flow	0.38	1.47	1.02	0.40	0.60
14-day 2-year hydrologically based flow	0.87	5.41	3.06	0.96	1.38
14-day 5-year hydrologically based flow	0.56	2.65	1.70	0.59	0.89
14-day 10-year hydrologically based flow	0.46	1.74	1.22	0.47	0.76
30-day 2-year hydrologically based flow	1.04	8.30	4.84	1.16	2.21
30-day 5-year hydrologically based flow	0.68	4.05	2.38	0.74	1.23
30-day 10-year hydrologically based flow	0.57	2.64	1.62	0.60	0.94
1-day 3-year biologically based flow	0.19	0.61	1.19	0.29	0.40
4-day 3-year biologically based flow	0.31	0.93	1.35	0.39	0.38
EPA harmonic-mean flow	2.66	6.21	7.73	1.48	1.87
5-percent-duration flow	60.2	89.4	65.7	12.9	46.7
10-percent-duration flow	34.4	57.0	39.7	6.3	26.5
15-percent-duration flow	24.4	40.5	30.1	4.5	17.9
20-percent-duration flow	18.9	31.5	24.0	3.5	13.3
25-percent-duration flow	15.1	26.1	19.8	3.0	9.9
30-percent-duration flow	12.1	22.2	16.5	2.6	7.9
35-percent-duration flow	9.6	19.2	13.9	2.3	6.6
40-percent-duration flow	8.0	17.2	11.9	2.0	5.5
45-percent-duration flow	6.6	15.3	10.1	1.8	4.7
50-percent-duration flow	5.4	13.6	8.6	1.6	4.0
55-percent-duration flow	4.5	12.0	7.4	1.5	3.4
60-percent-duration flow	3.7	10.4	6.5	1.4	2.9
65-percent-duration flow	3.0	9.2	5.6	1.3	2.5
70-percent-duration flow	2.4	8.1	4.9	1.1	2.1
75-percent-duration flow	2.0	7.0	4.2	1.0	1.9
80-percent-duration flow	1.7	5.7	3.5	0.9	1.6
85-percent-duration flow	1.4	4.6	2.8	0.8	1.4
90-percent-duration flow	1.1	3.6	2.2	0.6	1.2
95-percent-duration flow	0.8	2.3	1.5	0.5	0.9
99-percent-duration flow	0.4	1.2	0.8	0.4	0.5
Variability index	0.58	0.46	0.49	0.40	0.53

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01615000 Opequon Creek near Berryville, VA, 1945–1996					
1-day 2-year hydrologically based flow	3.92	12.8	9.13	4.67	4.79
1-day 5-year hydrologically based flow	1.82	7.20	5.43	2.14	2.59
1-day 10-year hydrologically based flow	1.15	5.13	4.01	1.31	1.88
3-day 2-year hydrologically based flow	4.61	14.0	9.78	5.28	5.33
3-day 5-year hydrologically based flow	2.23	7.74	6.20	2.50	3.07
3-day 10-year hydrologically based flow	1.41	5.45	4.77	1.54	2.32
7-day 2-year hydrologically based flow	5.16	15.3	10.7	5.84	6.01
7-day 5-year hydrologically based flow	2.53	8.47	6.92	2.81	3.53
7-day 10-year hydrologically based flow	1.61	5.97	5.39	1.74	2.70
14-day 2-year hydrologically based flow	5.71	18.1	12.0	6.43	6.85
14-day 5-year hydrologically based flow	2.86	10.0	7.88	3.15	3.99
14-day 10-year hydrologically based flow	1.85	7.06	6.20	1.98	3.05
30-day 2-year hydrologically based flow	6.37	27.1	16.2	7.32	8.96
30-day 5-year hydrologically based flow	3.42	15.4	10.3	3.79	5.06
30-day 10-year hydrologically based flow	2.35	11.1	8.05	2.54	3.88
1-day 3-year biologically based flow	1.49	4.50	5.83	1.60	1.70
4-day 3-year biologically based flow	1.76	5.27	6.69	1.83	2.05
EPA harmonic-mean flow	11.1	22.1	22.7	6.90	7.95
5-percent-duration flow	156	253	156	55.4	126
10-percent-duration flow	84.6	152	85.6	30.5	67.0
15-percent-duration flow	60.1	107	60.3	23.1	47.8
20-percent-duration flow	47.8	84.5	48.2	19.1	36.1
25-percent-duration flow	39.2	69.1	40.5	16.9	28.8
30-percent-duration flow	32.5	59.5	35.1	14.8	24.0
35-percent-duration flow	28.4	52.0	31.0	13.5	20.2
40-percent-duration flow	24.4	45.5	27.6	12.3	17.2
45-percent-duration flow	21.3	41.1	25.2	11.0	15.2
50-percent-duration flow	18.4	36.8	23.0	9.8	13.5
55-percent-duration flow	16.4	33.6	20.9	8.7	11.9
60-percent-duration flow	14.5	30.3	19.0	7.8	10.5
65-percent-duration flow	12.6	27.5	17.2	7.0	9.2
70-percent-duration flow	10.8	24.9	15.7	6.3	8.1
75-percent-duration flow	9.3	21.9	14.1	5.5	7.3
80-percent-duration flow	8.0	18.8	12.7	4.7	6.4
85-percent-duration flow	6.7	15.8	11.0	4.0	5.7
90-percent-duration flow	5.3	12.9	9.1	3.3	4.5
95-percent-duration flow	3.7	9.3	7.1	2.5	3.3
99-percent-duration flow	2.0	4.8	4.8	0.9	2.3
Variability index	0.48	0.42	0.39	0.39	0.47

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01620500 North River near Stokesville, VA, 1948–1996					
1-day 2-year hydrologically based flow	0.64	7.53	3.07	0.70	1.29
1-day 5-year hydrologically based flow	0.31	3.74	1.73	0.32	0.53
1-day 10-year hydrologically based flow	0.20	2.36	1.25	0.21	0.33
3-day 2-year hydrologically based flow	0.66	7.96	3.29	0.72	1.36
3-day 5-year hydrologically based flow	0.32	4.03	1.88	0.34	0.54
3-day 10-year hydrologically based flow	0.21	2.58	1.37	0.22	0.34
7-day 2-year hydrologically based flow	0.71	9.28	3.83	0.78	1.53
7-day 5-year hydrologically based flow	0.34	4.75	2.20	0.37	0.58
7-day 10-year hydrologically based flow	0.23	3.02	1.62	0.25	0.35
14-day 2-year hydrologically based flow	0.77	10.9	4.91	0.89	1.83
14-day 5-year hydrologically based flow	0.38	5.40	2.85	0.43	0.68
14-day 10-year hydrologically based flow	0.26	3.36	2.11	0.28	0.40
30-day 2-year hydrologically based flow	0.96	16.8	9.17	1.22	3.41
30-day 5-year hydrologically based flow	0.46	7.98	4.92	0.57	1.11
30-day 10-year hydrologically based flow	0.32	4.78	3.55	0.39	0.60
1-day 3-year biologically based flow	0.14	1.36	2.95	0.13	0.20
4-day 3-year biologically based flow	0.20	1.44	3.68	0.15	0.28
EPA harmonic-mean flow	2.83	10.7	16.7	1.61	1.56
5-percent-duration flow	97.8	135	117	29.4	85.0
10-percent-duration flow	62.1	86.6	75.1	14.8	51.5
15-percent-duration flow	45.5	66.3	56.4	9.2	37.3
20-percent-duration flow	35.1	54.2	44.2	6.7	29.1
25-percent-duration flow	29.0	46.5	36.1	5.4	23.3
30-percent-duration flow	24.4	40.4	30.1	4.5	19.3
35-percent-duration flow	20.6	35.6	26.2	3.7	16.0
40-percent-duration flow	17.5	31.7	22.9	3.1	13.1
45-percent-duration flow	14.5	28.3	20.1	2.7	10.8
50-percent-duration flow	12.1	25.5	17.6	2.3	8.7
55-percent-duration flow	9.8	23.0	15.4	1.9	6.9
60-percent-duration flow	7.6	20.6	13.7	1.7	5.2
65-percent-duration flow	5.8	18.6	12.1	1.5	3.8
70-percent-duration flow	4.2	16.6	10.4	1.3	2.7
75-percent-duration flow	3.1	14.6	8.7	1.1	2.0
80-percent-duration flow	2.2	12.5	7.3	0.9	1.6
85-percent-duration flow	1.6	10.4	6.0	0.7	1.2
90-percent-duration flow	1.1	7.8	4.4	0.6	0.8
95-percent-duration flow	0.6	4.5	3.0	0.4	0.5
99-percent-duration flow	0.3	1.8	1.5	0.2	0.2
Variability index	0.68	0.42	0.47	0.55	0.70

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01632000 North Fork Shenandoah River at Cootes Store, VA, 1930–2002					
1-day 2-year hydrologically based flow	2.60	36.1	17.1	2.90	5.42
1-day 5-year hydrologically based flow	1.02	15.7	9.24	1.09	2.13
1-day 10-year hydrologically based flow	0.61	9.23	6.40	0.64	1.31
3-day 2-year hydrologically based flow	2.78	38.5	18.9	3.13	5.80
3-day 5-year hydrologically based flow	1.11	16.6	10.3	1.19	2.39
3-day 10-year hydrologically based flow	0.67	9.77	7.17	0.70	1.52
7-day 2-year hydrologically based flow	3.05	43.6	22.5	3.51	6.90
7-day 5-year hydrologically based flow	1.23	18.1	12.5	1.33	2.83
7-day 10-year hydrologically based flow	0.76	10.6	8.93	0.78	1.81
14-day 2-year hydrologically based flow	3.48	51.3	29.8	4.28	8.09
14-day 5-year hydrologically based flow	1.40	20.6	16.3	1.55	3.17
14-day 10-year hydrologically based flow	0.86	12.0	11.6	0.89	2.00
30-day 2-year hydrologically based flow	4.46	86.5	58.5	6.53	14.4
30-day 5-year hydrologically based flow	1.73	34.1	29.1	2.06	4.75
30-day 10-year hydrologically based flow	1.05	19.5	19.6	1.12	2.70
1-day 3-year biologically based flow	0.49	4.99	12.0	0.48	0.80
4-day 3-year biologically based flow	0.56	5.81	15.4	0.51	1.08
EPA harmonic-mean flow	11.0	44.8	87.3	5.24	7.32
5-percent-duration flow	753	1,070	893	295	543
10-percent-duration flow	438	663	523	142	288
15-percent-duration flow	307	475	384	84.5	196
20-percent-duration flow	230	377	298	56.9	144
25-percent-duration flow	181	317	237	41.7	110
30-percent-duration flow	147	267	193	32.1	87.0
35-percent-duration flow	117	232	165	25.6	68.2
40-percent-duration flow	96.4	201	140	20.6	53.2
45-percent-duration flow	77.9	177	119	17.2	41.7
50-percent-duration flow	62.2	154	104	14.2	32.7
55-percent-duration flow	49.4	134	90.2	11.8	24.8
60-percent-duration flow	38.2	116	78.2	9.6	18.4
65-percent-duration flow	29.0	100	66.8	7.5	13.9
70-percent-duration flow	21.6	84.6	57.2	5.8	10.8
75-percent-duration flow	15.9	69.0	48.2	4.5	8.5
80-percent-duration flow	10.9	54.6	39.8	3.3	6.7
85-percent-duration flow	7.5	41.7	32.2	2.4	5.2
90-percent-duration flow	4.7	28.5	24.7	1.6	3.9
95-percent-duration flow	2.5	15.3	16.5	1.0	2.9
99-percent-duration flow	0.8	6.7	7.3	0.5	1.4
Variability index	0.76	0.53	0.52	0.74	0.72

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01632900 Smith Creek near New Market, VA, 1962–1989					
1-day 2-year hydrologically based flow	12.7	30.8	27.1	13.4	15.9
1-day 5-year hydrologically based flow	8.82	18.9	18.0	9.30	10.3
1-day 10-year hydrologically based flow	7.36	14.4	14.4	7.74	8.38
3-day 2-year hydrologically based flow	13.0	32.0	27.9	14.1	16.2
3-day 5-year hydrologically based flow	9.15	19.8	18.5	9.80	10.5
3-day 10-year hydrologically based flow	7.68	15.1	14.8	8.11	8.63
7-day 2-year hydrologically based flow	13.4	35.6	29.2	14.6	16.7
7-day 5-year hydrologically based flow	9.43	21.7	19.4	10.1	10.6
7-day 10-year hydrologically based flow	7.93	16.4	15.6	8.33	8.81
14-day 2-year hydrologically based flow	14.0	39.8	31.8	15.6	17.6
14-day 5-year hydrologically based flow	9.85	23.5	21.5	10.7	11.1
14-day 10-year hydrologically based flow	8.27	17.4	17.5	8.84	9.15
30-day 2-year hydrologically based flow	15.5	52.1	39.3	17.6	21.1
30-day 5-year hydrologically based flow	10.9	29.9	25.8	12.0	13.1
30-day 10-year hydrologically based flow	9.07	21.3	20.7	9.77	10.7
1-day 3-year biologically based flow	7.40	13.0	16.0	7.88	7.87
4-day 3-year biologically based flow	7.82	13.5	17.2	8.17	8.10
EPA harmonic-mean flow	30.8	45.2	57.1	22.5	21.9
5-percent-duration flow	213	310	223	85.0	176
10-percent-duration flow	146	209	158	58.9	120
15-percent-duration flow	114	169	126	48.5	89.1
20-percent-duration flow	93.3	144	105	41.6	72.3
25-percent-duration flow	80.3	125	92.7	36.7	60.8
30-percent-duration flow	70.2	110	84.8	33.7	52.7
35-percent-duration flow	61.7	98.5	77.4	30.7	44.4
40-percent-duration flow	54.9	88.4	70.2	27.8	37.7
45-percent-duration flow	48.5	79.8	64.5	25.4	33.0
50-percent-duration flow	42.5	72.5	59.1	23.2	29.7
55-percent-duration flow	37.5	65.9	54.0	21.4	27.0
60-percent-duration flow	33.1	60.6	49.1	19.6	24.5
65-percent-duration flow	29.2	55.4	45.0	18.1	22.2
70-percent-duration flow	25.8	50.6	40.9	16.6	19.9
75-percent-duration flow	22.6	45.8	36.5	15.2	18.0
80-percent-duration flow	19.6	40.9	32.6	13.8	16.3
85-percent-duration flow	16.9	34.5	28.6	12.4	14.9
90-percent-duration flow	14.5	26.8	24.5	11.2	13.2
95-percent-duration flow	11.7	18.7	19.9	9.6	10.7
99-percent-duration flow	8.5	10.8	14.7	8.0	8.2
Variability index	0.39	0.35	0.31	0.29	0.37

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01634500 Cedar Creek near Winchester, VA, 1939–1996					
1-day 2-year hydrologically based flow	7.09	30.7	17.1	7.30	9.24
1-day 5-year hydrologically based flow	4.87	18.1	11.0	4.97	6.67
1-day 10-year hydrologically based flow	3.99	13.3	8.57	4.04	5.93
3-day 2-year hydrologically based flow	7.38	33.0	18.3	7.58	9.61
3-day 5-year hydrologically based flow	5.12	19.2	11.7	5.20	7.08
3-day 10-year hydrologically based flow	4.22	13.9	9.13	4.25	6.36
7-day 2-year hydrologically based flow	7.89	36.8	21.3	8.11	10.9
7-day 5-year hydrologically based flow	5.46	20.7	13.7	5.58	7.83
7-day 10-year hydrologically based flow	4.49	14.8	10.7	4.59	6.92
14-day 2-year hydrologically based flow	8.55	41.9	26.3	8.97	12.8
14-day 5-year hydrologically based flow	5.97	23.6	16.6	6.18	8.72
14-day 10-year hydrologically based flow	4.96	17.0	13.0	5.09	7.46
30-day 2-year hydrologically based flow	9.94	58.2	41.1	10.8	17.6
30-day 5-year hydrologically based flow	6.98	33.0	24.2	7.35	10.9
30-day 10-year hydrologically based flow	5.85	23.9	18.2	6.05	8.94
1-day 3-year biologically based flow	3.58	12.0	13.9	3.55	5.38
4-day 3-year biologically based flow	4.02	13.3	16.1	4.04	5.72
EPA harmonic-mean flow	24.2	51.7	66.4	14.1	16.8
5-percent-duration flow	342	504	422	94.5	232
10-percent-duration flow	211	312	274	51.8	140
15-percent-duration flow	153	240	201	37.9	99.3
20-percent-duration flow	119	196	158	30.8	76.1
25-percent-duration flow	98.7	165	130	25.7	61.6
30-percent-duration flow	82.5	140	111	22.4	51.6
35-percent-duration flow	69.0	124	97.3	19.9	43.4
40-percent-duration flow	59.5	111	85.5	18.0	36.0
45-percent-duration flow	50.4	101	76.1	16.0	29.9
50-percent-duration flow	41.8	90.9	67.7	14.8	25.7
55-percent-duration flow	34.8	82.0	60.5	13.5	22.4
60-percent-duration flow	29.0	73.6	54.2	12.5	19.8
65-percent-duration flow	24.2	65.6	48.3	11.6	17.7
70-percent-duration flow	20.2	58.6	42.8	10.6	16.0
75-percent-duration flow	17.2	51.9	37.4	9.4	14.6
80-percent-duration flow	14.7	43.6	32.4	8.3	13.3
85-percent-duration flow	12.6	35.0	27.1	7.5	12.0
90-percent-duration flow	10.2	28.3	21.9	6.7	10.7
95-percent-duration flow	7.8	21.8	16.5	5.6	8.9
99-percent-duration flow	5.2	12.0	10.3	4.0	6.4
Variability index	0.51	0.40	0.42	0.36	0.44

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01637000 Little Catoctin Creek at Harmony, MD, 1949–1958					
1-day 2-year hydrologically based flow	0.96	4.03	2.55	0.96	1.21
1-day 5-year hydrologically based flow	0.62	2.04	1.81	0.62	0.73
1-day 10-year hydrologically based flow	0.48	1.36	1.50	0.48	0.54
3-day 2-year hydrologically based flow	1.00	4.36	2.67	1.02	1.24
3-day 5-year hydrologically based flow	0.66	2.24	1.85	0.67	0.76
3-day 10-year hydrologically based flow	0.52	1.50	1.51	0.53	0.58
7-day 2-year hydrologically based flow	1.08	4.80	3.08	1.11	1.41
7-day 5-year hydrologically based flow	0.70	2.46	2.06	0.73	0.86
7-day 10-year hydrologically based flow	0.55	1.66	1.64	0.56	0.64
14-day 2-year hydrologically based flow	1.20	5.65	3.69	1.27	1.50
14-day 5-year hydrologically based flow	0.78	2.76	2.41	0.84	0.92
14-day 10-year hydrologically based flow	0.60	1.80	1.90	0.66	0.71
30-day 2-year hydrologically based flow	1.39	7.80	5.38	1.61	2.01
30-day 5-year hydrologically based flow	0.94	4.18	3.32	1.08	1.31
30-day 10-year hydrologically based flow	0.75	2.84	2.57	0.85	1.05
1-day 3-year biologically based flow	0.32	1.26	2.12	0.40	0.48
4-day 3-year biologically based flow	0.50	1.43	2.39	0.54	0.62
EPA harmonic-mean flow	3.11	6.80	8.92	1.90	2.00
5-percent-duration flow	30.9	38.8	31.2	14.7	23.6
10-percent-duration flow	23.3	31.3	23.9	7.9	15.6
15-percent-duration flow	19.3	26.9	21.1	5.2	12.3
20-percent-duration flow	16.2	24.2	18.7	3.9	9.2
25-percent-duration flow	13.7	21.9	16.6	3.2	7.5
30-percent-duration flow	12.0	19.9	15.2	2.9	5.4
35-percent-duration flow	10.2	17.5	13.8	2.7	4.6
40-percent-duration flow	8.4	15.6	12.6	2.5	3.9
45-percent-duration flow	7.2	14.2	11.5	2.3	3.4
50-percent-duration flow	5.5	13.1	10.1	2.1	3.0
55-percent-duration flow	4.4	12.3	9.1	2.0	2.6
60-percent-duration flow	3.5	11.2	8.4	1.8	2.4
65-percent-duration flow	2.9	9.8	7.3	1.7	2.1
70-percent-duration flow	2.5	8.7	6.1	1.5	2.0
75-percent-duration flow	2.2	7.9	5.2	1.4	1.8
80-percent-duration flow	1.9	6.4	4.3	1.2	1.6
85-percent-duration flow	1.6	5.2	3.6	1.1	1.3
90-percent-duration flow	1.3	3.2	2.9	0.9	1.1
95-percent-duration flow	1.0	2.2	2.5	0.7	1.0
99-percent-duration flow	0.6	1.5	1.6	0.6	0.6
Variability index	0.49	0.36	0.35	0.37	0.44

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01637500 Catoctin Creek near Middletown, MD, 1949–1996					
1-day 2-year hydrologically based flow	3.10	28.4	16.0	3.16	5.00
1-day 5-year hydrologically based flow	1.22	14.5	9.22	1.24	2.74
1-day 10-year hydrologically based flow	0.64	9.24	6.72	0.65	2.09
3-day 2-year hydrologically based flow	3.26	30.5	17.1	3.32	5.23
3-day 5-year hydrologically based flow	1.35	15.6	10.0	1.37	2.96
3-day 10-year hydrologically based flow	0.75	10.1	7.36	0.76	2.31
7-day 2-year hydrologically based flow	3.64	33.7	20.3	3.73	6.02
7-day 5-year hydrologically based flow	1.64	17.4	12.0	1.66	3.52
7-day 10-year hydrologically based flow	0.98	11.3	8.93	0.99	2.80
14-day 2-year hydrologically based flow	4.42	40.4	24.8	4.65	7.70
14-day 5-year hydrologically based flow	2.06	20.5	15.6	2.12	4.28
14-day 10-year hydrologically based flow	1.26	13.1	12.0	1.27	3.29
30-day 2-year hydrologically based flow	6.04	57.7	35.7	7.07	12.7
30-day 5-year hydrologically based flow	2.90	29.4	22.5	3.26	6.48
30-day 10-year hydrologically based flow	1.87	18.5	17.7	2.03	4.61
1-day 3-year biologically based flow	0.58	7.40	14.0	0.63	0.88
4-day 3-year biologically based flow	0.72	9.18	16.4	0.88	1.45
EPA harmonic-mean flow	13.6	39.9	63.0	7.32	8.67
5-percent-duration flow	268	380	295	72.3	196
10-percent-duration flow	176	258	205	44.5	125
15-percent-duration flow	136	206	162	33.1	95.1
20-percent-duration flow	110	172	134	26.4	74.4
25-percent-duration flow	89.1	151	113	22.4	59.6
30-percent-duration flow	76.7	133	97.6	18.7	47.6
35-percent-duration flow	64.4	118	86.7	16.7	39.0
40-percent-duration flow	55.0	105	77.5	14.7	32.2
45-percent-duration flow	46.0	94.1	69.5	12.9	27.0
50-percent-duration flow	39.0	85.2	62.9	11.3	22.8
55-percent-duration flow	32.3	76.7	56.5	9.8	19.1
60-percent-duration flow	26.6	69.2	51.0	8.7	16.3
65-percent-duration flow	21.6	62.2	45.5	7.6	13.8
70-percent-duration flow	17.3	55.0	40.7	6.6	11.7
75-percent-duration flow	13.9	47.9	35.7	5.6	9.5
80-percent-duration flow	10.7	41.2	30.6	4.7	8.0
85-percent-duration flow	8.0	34.9	25.8	3.9	6.6
90-percent-duration flow	5.8	27.9	21.2	2.9	5.1
95-percent-duration flow	3.7	18.2	15.6	1.7	3.7
99-percent-duration flow	1.4	5.2	8.2	0.7	2.5
Variability index	0.57	0.39	0.38	0.47	0.54

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01638480 Catoctin Creek at Taylorstown, VA, 1977–1989					
1-day 2-year hydrologically based flow	4.56	31.4	25.1	4.91	5.95
1-day 5-year hydrologically based flow	1.67	17.3	11.6	1.75	1.96
1-day 10-year hydrologically based flow	0.83	11.5	6.71	0.85	1.05
3-day 2-year hydrologically based flow	4.87	32.2	26.7	5.32	6.16
3-day 5-year hydrologically based flow	1.88	18.0	12.6	2.00	2.20
3-day 10-year hydrologically based flow	0.98	12.2	7.29	1.01	1.27
7-day 2-year hydrologically based flow	5.50	34.5	30.5	6.07	6.92
7-day 5-year hydrologically based flow	2.10	19.4	14.7	2.26	2.48
7-day 10-year hydrologically based flow	1.08	13.2	8.54	1.13	1.43
14-day 2-year hydrologically based flow	6.27	40.5	35.7	7.08	9.62
14-day 5-year hydrologically based flow	2.42	22.0	17.1	2.68	3.48
14-day 10-year hydrologically based flow	1.30	14.6	10.1	1.39	1.95
30-day 2-year hydrologically based flow	8.32	53.2	47.1	9.50	17.7
30-day 5-year hydrologically based flow	3.43	28.7	26.0	4.46	7.60
30-day 10-year hydrologically based flow	1.88	19.7	17.3	2.75	4.64
1-day 3-year biologically based flow	0.25	5.71	12.0	1.18	0.25
4-day 3-year biologically based flow	0.45	6.54	15.1	1.51	0.43
EPA harmonic-mean flow	14.5	43.8	65.2	11.2	6.77
5-percent-duration flow	317	425	404	104	262
10-percent-duration flow	197	264	253	61.6	158
15-percent-duration flow	148	203	195	43.2	117
20-percent-duration flow	117	168	158	34.3	91.5
25-percent-duration flow	95.0	145	129	28.5	74.6
30-percent-duration flow	80.2	125	108	25.3	62.2
35-percent-duration flow	69.1	109	91.7	22.1	53.1
40-percent-duration flow	60.0	95.2	80.2	19.9	45.2
45-percent-duration flow	51.8	87.8	71.6	17.6	37.8
50-percent-duration flow	44.8	80.3	64.6	15.5	28.9
55-percent-duration flow	38.0	73.9	58.4	13.6	22.8
60-percent-duration flow	31.5	67.8	52.7	11.7	19.8
65-percent-duration flow	26.5	61.2	47.7	9.8	17.0
70-percent-duration flow	21.7	54.4	43.5	8.5	14.3
75-percent-duration flow	17.3	47.7	39.2	7.6	11.7
80-percent-duration flow	13.9	41.4	34.7	6.5	9.8
85-percent-duration flow	9.7	35.3	29.8	4.9	8.2
90-percent-duration flow	7.6	29.8	24.3	3.7	6.7
95-percent-duration flow	4.6	21.8	18.0	2.2	4.4
99-percent-duration flow	1.4	8.2	4.1	0.5	0.9
Variability index	0.55	0.38	0.40	0.48	0.55

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01643700 Goose Creek near Middleburg, VA, 1977–1989					
1-day 2-year hydrologically based flow	1.49	37.8	21.0	1.69	4.44
1-day 5-year hydrologically based flow	0.30	16.9	7.26	0.33	0.25
1-day 10-year hydrologically based flow	0.00	9.90	3.77	0.00	0.01
3-day 2-year hydrologically based flow	1.67	39.8	23.2	2.24	4.82
3-day 5-year hydrologically based flow	0.33	18.0	8.13	0.14	0.30
3-day 10-year hydrologically based flow	0.00	10.6	4.22	0.00	0.02
7-day 2-year hydrologically based flow	1.92	42.2	27.6	2.47	4.57
7-day 5-year hydrologically based flow	0.14	19.3	10.6	0.24	0.45
7-day 10-year hydrologically based flow	0.02	11.5	5.97	0.04	0.10
14-day 2-year hydrologically based flow	2.57	49.6	35.2	2.78	6.75
14-day 5-year hydrologically based flow	0.34	23.3	14.9	0.43	0.72
14-day 10-year hydrologically based flow	0.09	14.2	9.05	0.13	0.17
30-day 2-year hydrologically based flow	3.89	70.4	50.3	4.78	24.5
30-day 5-year hydrologically based flow	0.57	33.7	25.9	1.19	4.66
30-day 10-year hydrologically based flow	0.16	21.2	18.0	0.50	1.42
1-day 3-year biologically based flow	0.00	4.61	15.0	0.27	0.00
4-day 3-year biologically based flow	0.00	6.04	17.7	0.31	0.00
EPA harmonic-mean flow	1.83	47.1	84.2	3.99	0.52
5-percent-duration flow	470	550	612	131	389
10-percent-duration flow	302	389	392	73.1	248
15-percent-duration flow	226	315	290	46.4	186
20-percent-duration flow	174	258	233	34.3	145
25-percent-duration flow	144	221	192	28.1	117
30-percent-duration flow	117	189	161	22.7	91.4
35-percent-duration flow	99.2	163	138	18.6	69.0
40-percent-duration flow	81.6	141	121	15.5	51.7
45-percent-duration flow	66.8	129	107	12.9	39.3
50-percent-duration flow	53.4	116	94.4	10.9	30.0
55-percent-duration flow	43.4	103	83.9	9.2	23.6
60-percent-duration flow	34.4	91.0	74.0	7.5	18.6
65-percent-duration flow	26.4	78.7	63.5	5.8	15.3
70-percent-duration flow	19.9	68.9	53.9	4.6	13.5
75-percent-duration flow	15.0	59.1	45.4	3.4	11.8
80-percent-duration flow	11.2	50.0	39.0	2.4	9.3
85-percent-duration flow	7.5	42.8	31.4	1.7	6.7
90-percent-duration flow	4.4	32.3	24.4	0.9	4.7
95-percent-duration flow	1.6	23.7	17.0	0.4	1.0
99-percent-duration flow	0.1	6.6	5.0	0.0	0.0
Variability index	0.74	0.41	0.46	0.73	0.76

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
01644000 Goose Creek near Leesburg, VA, 1931–2002					
1-day 2-year hydrologically based flow	8.42	110	61.2	8.73	20.3
1-day 5-year hydrologically based flow	2.70	50.1	30.3	2.76	6.13
1-day 10-year hydrologically based flow	1.42	30.1	20.2	1.44	3.11
3-day 2-year hydrologically based flow	9.02	122	66.7	9.47	21.5
3-day 5-year hydrologically based flow	2.88	57.0	33.9	2.96	6.53
3-day 10-year hydrologically based flow	1.51	35.1	23.0	1.53	3.30
7-day 2-year hydrologically based flow	10.4	134	80.7	11.1	25.1
7-day 5-year hydrologically based flow	3.33	63.9	44.4	3.48	7.78
7-day 10-year hydrologically based flow	1.77	39.9	31.7	1.81	4.00
14-day 2-year hydrologically based flow	13.0	158	103	14.3	32.0
14-day 5-year hydrologically based flow	4.22	74.7	57.9	4.62	9.84
14-day 10-year hydrologically based flow	2.27	47.7	41.5	2.48	5.01
30-day 2-year hydrologically based flow	20.0	222	145	24.4	52.9
30-day 5-year hydrologically based flow	6.71	108	83.6	8.47	18.5
30-day 10-year hydrologically based flow	3.65	68.9	61.3	4.69	10.1
1-day 3-year biologically based flow	1.09	13.0	43.0	1.28	1.47
4-day 3-year biologically based flow	1.22	17.3	52.3	1.69	1.71
EPA harmonic-mean flow	32.5	142	215	18.4	17.7
5-percent-duration flow	1,100	1,520	1,130	495	887
10-percent-duration flow	716	1,030	751	255	539
15-percent-duration flow	546	812	585	176	399
20-percent-duration flow	435	684	482	136	310
25-percent-duration flow	363	589	406	111	248
30-percent-duration flow	306	519	361	90.8	199
35-percent-duration flow	261	460	319	76.3	162
40-percent-duration flow	221	414	287	64.2	133
45-percent-duration flow	187	371	258	54.1	108
50-percent-duration flow	157	334	232	45.8	90.4
55-percent-duration flow	130	299	208	38.3	76.4
60-percent-duration flow	107	270	186	31.8	64.1
65-percent-duration flow	85.9	241	167	25.9	54.7
70-percent-duration flow	69.1	215	148	20.9	45.9
75-percent-duration flow	54.2	188	132	16.6	38.1
80-percent-duration flow	41.0	157	115	12.8	29.6
85-percent-duration flow	28.7	122	96.6	9.2	20.7
90-percent-duration flow	17.4	89.4	75.9	6.1	13.8
95-percent-duration flow	8.3	55.6	54.7	3.1	7.3
99-percent-duration flow	2.1	21.6	24.4	1.3	2.1
Variability index	0.63	0.41	0.38	0.64	0.62

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03072000 Dunkard Creek at Shannopin, PA, 1942–1980					
1-day 2-year hydrologically based flow	3.16	59.8	14.5	3.55	6.13
1-day 5-year hydrologically based flow	1.48	28.7	7.14	1.67	2.30
1-day 10-year hydrologically based flow	1.02	18.4	4.76	1.16	1.39
3-day 2-year hydrologically based flow	3.49	64.7	16.1	3.96	6.97
3-day 5-year hydrologically based flow	1.64	30.6	7.98	1.88	2.61
3-day 10-year hydrologically based flow	1.13	19.5	5.36	1.31	1.57
7-day 2-year hydrologically based flow	4.09	76.3	20.0	4.54	8.31
7-day 5-year hydrologically based flow	1.94	36.7	10.0	2.16	3.10
7-day 10-year hydrologically based flow	1.34	23.9	6.86	1.51	1.85
14-day 2-year hydrologically based flow	4.84	101	30.0	5.61	10.3
14-day 5-year hydrologically based flow	2.33	44.5	14.0	2.64	3.87
14-day 10-year hydrologically based flow	1.63	27.5	9.14	1.87	2.31
30-day 2-year hydrologically based flow	7.48	195	58.4	10.0	19.5
30-day 5-year hydrologically based flow	3.25	88.7	27.3	4.58	6.08
30-day 10-year hydrologically based flow	2.11	54.7	18.2	3.11	3.29
1-day 3-year biologically based flow	1.30	10.0	11.0	1.60	1.30
4-day 3-year biologically based flow	1.39	12.2	13.7	1.78	1.47
EPA harmonic-mean flow	18.1	106	96.8	10.1	9.80
5-percent-duration flow	1,190	1,850	1,270	300	799
10-percent-duration flow	693	1,220	748	162	436
15-percent-duration flow	486	912	529	106	306
20-percent-duration flow	366	727	406	74.6	227
25-percent-duration flow	284	602	323	55.1	175
30-percent-duration flow	226	505	259	42.0	138
35-percent-duration flow	183	433	218	33.0	110
40-percent-duration flow	147	378	183	26.8	87.1
45-percent-duration flow	117	330	154	21.2	68.4
50-percent-duration flow	92.9	291	130	17.7	54.4
55-percent-duration flow	72.6	255	110	14.6	43.9
60-percent-duration flow	55.9	223	93.3	11.8	35.0
65-percent-duration flow	42.0	195	79.5	9.4	27.3
70-percent-duration flow	31.2	169	67.4	8.0	20.9
75-percent-duration flow	22.6	143	56.3	6.7	15.7
80-percent-duration flow	15.9	118	44.1	5.4	11.2
85-percent-duration flow	10.2	91.7	33.3	4.4	6.7
90-percent-duration flow	6.3	63.3	23.4	3.3	4.3
95-percent-duration flow	3.6	35.4	14.2	2.3	2.5
99-percent-duration flow	1.8	16.5	6.0	1.5	1.6
Variability index	0.78	0.50	0.58	0.65	0.77

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03072590 Georges Creek at Smithfield, PA, 1965–1974					
1-day 2-year hydrologically based flow	0.29	5.24	1.14	0.29	0.53
1-day 5-year hydrologically based flow	0.00	2.81	0.54	0.00	0.25
1-day 10-year hydrologically based flow	0.00	1.95	0.36	0.00	0.17
3-day 2-year hydrologically based flow	0.27	5.50	1.34	0.28	0.59
3-day 5-year hydrologically based flow	0.11	3.08	0.62	0.12	0.32
3-day 10-year hydrologically based flow	0.07	2.21	0.41	0.07	0.24
7-day 2-year hydrologically based flow	0.32	6.16	1.85	0.33	0.70
7-day 5-year hydrologically based flow	0.15	3.44	0.92	0.16	0.39
7-day 10-year hydrologically based flow	0.10	2.48	0.64	0.11	0.29
14-day 2-year hydrologically based flow	0.44	7.40	2.54	0.46	0.86
14-day 5-year hydrologically based flow	0.20	3.93	1.17	0.21	0.45
14-day 10-year hydrologically based flow	0.14	2.77	0.79	0.14	0.32
30-day 2-year hydrologically based flow	0.65	10.9	4.82	0.67	1.23
30-day 5-year hydrologically based flow	0.33	6.00	2.57	0.34	0.54
30-day 10-year hydrologically based flow	0.24	4.30	1.84	0.24	0.36
1-day 3-year biologically based flow	0.10	1.73	1.28	0.10	0.10
4-day 3-year biologically based flow	0.08	2.08	1.99	0.09	0.14
EPA harmonic-mean flow	1.46	10.7	10.8	0.68	0.93
5-percent-duration flow	65.8	90.9	81.5	15.0	49.0
10-percent-duration flow	42.4	59.4	53.9	7.9	29.1
15-percent-duration flow	32.1	45.8	43.0	5.4	21.0
20-percent-duration flow	25.4	38.8	34.3	4.3	16.1
25-percent-duration flow	20.4	33.8	27.9	3.3	12.4
30-percent-duration flow	16.8	30.0	23.8	2.7	9.8
35-percent-duration flow	14.0	26.8	20.3	2.1	7.9
40-percent-duration flow	11.4	24.0	17.5	1.8	6.6
45-percent-duration flow	9.0	21.4	15.3	1.5	5.6
50-percent-duration flow	7.3	18.9	13.3	1.2	4.7
55-percent-duration flow	5.8	17.1	11.6	1.0	4.0
60-percent-duration flow	4.7	15.1	9.6	0.8	3.2
65-percent-duration flow	3.7	13.4	8.1	0.7	2.4
70-percent-duration flow	2.6	12.1	6.9	0.5	1.8
75-percent-duration flow	1.8	10.7	5.8	0.5	1.2
80-percent-duration flow	1.2	9.1	4.7	0.4	0.9
85-percent-duration flow	0.8	7.1	3.4	0.3	0.6
90-percent-duration flow	0.5	5.3	2.3	0.2	0.5
95-percent-duration flow	0.3	3.9	1.3	0.1	0.4
99-percent-duration flow	0.1	2.3	0.5	0.1	0.2
Variability index	0.73	0.40	0.53	0.63	0.67

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03075500 Youghiogheny River near Oakland, MD, 1944–2002					
1-day 2-year hydrologically based flow	13.4	88.6	38.6	14.3	23.0
1-day 5-year hydrologically based flow	7.32	61.0	23.2	7.78	12.1
1-day 10-year hydrologically based flow	5.18	50.1	17.8	5.49	8.58
3-day 2-year hydrologically based flow	14.3	92.8	42.6	15.3	24.3
3-day 5-year hydrologically based flow	7.80	63.2	25.1	8.33	12.7
3-day 10-year hydrologically based flow	5.53	51.8	19.0	5.90	9.01
7-day 2-year hydrologically based flow	16.0	104	52.7	17.8	28.5
7-day 5-year hydrologically based flow	8.67	67.7	30.6	9.43	14.8
7-day 10-year hydrologically based flow	6.11	54.7	22.7	6.58	10.4
14-day 2-year hydrologically based flow	18.4	134	68.5	21.6	34.7
14-day 5-year hydrologically based flow	9.83	82.5	39.0	11.0	17.4
14-day 10-year hydrologically based flow	6.94	64.0	28.7	7.55	12.1
30-day 2-year hydrologically based flow	25.0	221	113	32.0	60.3
30-day 5-year hydrologically based flow	13.5	133	62.7	15.9	27.7
30-day 10-year hydrologically based flow	9.67	101	45.1	10.9	17.7
1-day 3-year biologically based flow	3.78	41.0	29.9	4.38	5.39
4-day 3-year biologically based flow	4.74	50.0	37.0	5.52	6.82
EPA harmonic-mean flow	60.3	208	185	33.6	38.1
5-percent-duration flow	1,070	1,540	1,010	493	856
10-percent-duration flow	725	1,110	740	286	589
15-percent-duration flow	561	887	597	197	439
20-percent-duration flow	453	740	496	148	356
25-percent-duration flow	377	635	422	117	298
30-percent-duration flow	317	552	362	96.5	251
35-percent-duration flow	266	483	312	80.4	216
40-percent-duration flow	227	425	271	67.9	183
45-percent-duration flow	193	380	237	57.8	154
50-percent-duration flow	163	340	208	49.4	130
55-percent-duration flow	137	304	183	42.3	109
60-percent-duration flow	114	272	163	36.8	90.9
65-percent-duration flow	93.3	242	143	31.7	75.3
70-percent-duration flow	75.8	213	123	27.0	61.4
75-percent-duration flow	59.7	186	105	22.9	48.8
80-percent-duration flow	46.1	159	87.3	19.0	38.2
85-percent-duration flow	34.3	133	70.7	15.5	29.5
90-percent-duration flow	23.9	106	53.7	12.0	22.2
95-percent-duration flow	15.0	77.7	38.1	8.4	14.8
99-percent-duration flow	6.9	51.8	18.5	4.8	7.6
Variability index	0.57	0.39	0.43	0.53	0.54

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03076600 Bear Creek at Friendsville, MD, 1984–2000					
1-day 2-year hydrologically based flow	4.74	34.6	14.5	5.28	7.51
1-day 5-year hydrologically based flow	2.94	21.9	9.42	3.13	3.90
1-day 10-year hydrologically based flow	2.35	16.4	7.50	2.40	2.84
3-day 2-year hydrologically based flow	4.94	36.2	15.6	5.54	7.84
3-day 5-year hydrologically based flow	3.14	22.5	9.88	3.32	4.12
3-day 10-year hydrologically based flow	2.54	16.7	7.73	2.56	3.03
7-day 2-year hydrologically based flow	5.27	39.0	18.8	6.03	8.61
7-day 5-year hydrologically based flow	3.41	23.8	11.7	3.66	4.57
7-day 10-year hydrologically based flow	2.80	17.9	9.03	2.85	3.40
14-day 2-year hydrologically based flow	6.00	48.1	21.9	6.91	9.77
14-day 5-year hydrologically based flow	3.92	30.7	14.0	4.23	5.16
14-day 10-year hydrologically based flow	3.27	24.4	11.0	3.34	3.82
30-day 2-year hydrologically based flow	7.23	79.2	31.8	9.09	14.9
30-day 5-year hydrologically based flow	4.51	48.1	19.4	5.20	7.24
30-day 10-year hydrologically based flow	3.71	36.6	14.7	3.99	5.14
1-day 3-year biologically based flow	2.38	15.0	15.0	2.40	2.45
4-day 3-year biologically based flow	2.54	15.7	18.4	2.87	2.70
EPA harmonic-mean flow	21.1	65.4	71.2	12.9	12.1
5-percent-duration flow	342	460	340	155	297
10-percent-duration flow	246	335	250	76.9	189
15-percent-duration flow	179	281	188	56.0	132
20-percent-duration flow	138	242	148	42.0	106
25-percent-duration flow	112	206	121	33.4	90.5
30-percent-duration flow	94.7	174	104	27.4	77.6
35-percent-duration flow	80.4	152	89.8	23.2	67.3
40-percent-duration flow	68.8	134	78.8	20.2	59.3
45-percent-duration flow	60.0	120	69.3	17.5	51.5
50-percent-duration flow	52.0	107	62.7	15.0	44.8
55-percent-duration flow	44.6	94.8	56.3	13.0	38.8
60-percent-duration flow	37.8	84.7	50.2	11.2	32.2
65-percent-duration flow	31.4	76.1	44.3	9.7	26.9
70-percent-duration flow	25.2	67.6	39.1	8.6	20.6
75-percent-duration flow	19.4	59.6	34.4	7.6	13.0
80-percent-duration flow	14.0	53.3	29.6	6.5	9.7
85-percent-duration flow	10.3	46.2	24.0	5.4	7.6
90-percent-duration flow	7.5	39.6	19.1	4.5	6.5
95-percent-duration flow	5.2	32.1	13.9	3.5	4.9
99-percent-duration flow	3.1	18.1	8.4	2.6	3.1
Variability index	0.56	0.36	0.42	0.50	0.56

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03085500 Chartiers Creek at Carnegie, PA, 1942–1980					
1-day 2-year hydrologically based flow	46.4	104	91.7	50.3	52.5
1-day 5-year hydrologically based flow	36.9	61.9	70.0	40.5	39.7
1-day 10-year hydrologically based flow	33.2	47.0	61.5	36.8	35.4
3-day 2-year hydrologically based flow	48.4	111	96.9	52.4	54.9
3-day 5-year hydrologically based flow	38.9	65.9	73.2	42.7	41.7
3-day 10-year hydrologically based flow	35.4	50.5	63.8	39.2	37.3
7-day 2-year hydrologically based flow	51.7	121	107	55.7	58.8
7-day 5-year hydrologically based flow	42.3	71.8	80.2	45.6	45.1
7-day 10-year hydrologically based flow	38.8	55.0	69.8	42.1	40.5
14-day 2-year hydrologically based flow	55.1	142	124	61.7	64.8
14-day 5-year hydrologically based flow	44.2	80.3	91.1	48.3	48.5
14-day 10-year hydrologically based flow	40.3	59.5	78.5	43.7	42.7
30-day 2-year hydrologically based flow	61.7	204	154	70.4	77.7
30-day 5-year hydrologically based flow	48.2	113	112	53.3	55.0
30-day 10-year hydrologically based flow	43.3	81.0	95.6	47.6	46.7
1-day 3-year biologically based flow	34.0	38.9	73.9	39.0	33.9
4-day 3-year biologically based flow	37.0	41.7	80.4	42.7	38.0
EPA harmonic-mean flow	123	179	243	93.4	82.5
5-percent-duration flow	885	1,350	975	385	502
10-percent-duration flow	610	939	666	247	353
15-percent-duration flow	476	756	534	193	261
20-percent-duration flow	393	646	453	163	213
25-percent-duration flow	331	571	399	140	179
30-percent-duration flow	282	508	354	124	154
35-percent-duration flow	241	453	316	112	133
40-percent-duration flow	210	403	285	103	117
45-percent-duration flow	182	364	259	94.5	105
50-percent-duration flow	158	331	235	88.7	95.7
55-percent-duration flow	137	300	214	83.1	87.9
60-percent-duration flow	119	270	197	77.8	80.5
65-percent-duration flow	104	243	180	72.8	74.8
70-percent-duration flow	93.0	214	163	68.0	69.2
75-percent-duration flow	82.9	182	148	63.8	64.1
80-percent-duration flow	74.0	150	133	59.6	59.2
85-percent-duration flow	65.9	120	119	55.6	54.3
90-percent-duration flow	57.9	89.6	104	51.6	49.3
95-percent-duration flow	49.5	68.9	86.5	46.3	43.9
99-percent-duration flow	39.8	45.6	65.0	38.9	37.0
Variability index	0.40	0.38	0.32	0.28	0.33

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03108000 Raccoon Creek at Moffatts Mill, PA, 1943–1980					
1-day 2-year hydrologically based flow	12.1	59.3	38.4	12.4	18.2
1-day 5-year hydrologically based flow	8.07	32.1	26.0	8.25	11.5
1-day 10-year hydrologically based flow	6.56	22.4	21.3	6.70	9.38
3-day 2-year hydrologically based flow	12.2	64.6	41.4	12.7	19.6
3-day 5-year hydrologically based flow	8.24	33.9	28.2	8.51	12.2
3-day 10-year hydrologically based flow	6.82	23.5	23.2	7.00	9.84
7-day 2-year hydrologically based flow	13.3	72.7	48.1	13.9	22.7
7-day 5-year hydrologically based flow	9.06	39.5	32.9	9.34	13.5
7-day 10-year hydrologically based flow	7.61	28.3	27.4	7.78	10.5
14-day 2-year hydrologically based flow	15.6	86.0	60.5	16.7	26.6
14-day 5-year hydrologically based flow	10.4	45.8	40.7	10.8	15.2
14-day 10-year hydrologically based flow	8.51	32.6	33.5	8.88	11.5
30-day 2-year hydrologically based flow	19.1	132	86.4	22.0	35.9
30-day 5-year hydrologically based flow	12.6	71.9	56.8	14.1	19.9
30-day 10-year hydrologically based flow	10.3	51.9	46.5	11.4	14.6
1-day 3-year biologically based flow	6.06	13.0	30.9	6.29	7.58
4-day 3-year biologically based flow	7.10	14.6	39.9	7.87	8.29
EPA harmonic-mean flow	49.5	107	150	30.2	31.7
5-percent-duration flow	660	1,030	723	201	404
10-percent-duration flow	451	720	514	127	275
15-percent-duration flow	345	571	409	96.3	201
20-percent-duration flow	276	480	339	76.1	156
25-percent-duration flow	228	413	286	63.9	127
30-percent-duration flow	190	362	248	55.5	107
35-percent-duration flow	159	319	221	48.7	88.9
40-percent-duration flow	133	285	197	43.2	75.5
45-percent-duration flow	111	255	175	38.6	65.0
50-percent-duration flow	93.3	227	155	34.3	56.2
55-percent-duration flow	77.6	204	138	31.0	49.0
60-percent-duration flow	65.0	180	122	27.7	43.8
65-percent-duration flow	54.2	158	108	24.7	38.6
70-percent-duration flow	46.0	136	96.5	22.0	33.4
75-percent-duration flow	38.8	113	84.5	19.9	28.9
80-percent-duration flow	31.8	93.2	73.1	17.8	24.8
85-percent-duration flow	25.5	73.9	62.4	15.6	20.4
90-percent-duration flow	19.7	57.4	50.9	13.4	16.7
95-percent-duration flow	14.6	41.2	40.3	10.8	13.2
99-percent-duration flow	8.7	24.3	25.6	7.3	8.2
Variability index	0.52	0.42	0.38	0.38	0.46

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03109500 Little Beaver Creek near East Liverpool, OH, 1930–2002					
1-day 2-year hydrologically based flow	35.5	175	107	36.0	52.4
1-day 5-year hydrologically based flow	23.2	100	65.2	23.4	33.9
1-day 10-year hydrologically based flow	18.7	71.2	49.2	18.9	27.9
3-day 2-year hydrologically based flow	36.6	182	115	37.2	54.8
3-day 5-year hydrologically based flow	24.0	104	69.5	24.2	35.3
3-day 10-year hydrologically based flow	19.4	73.9	52.3	19.6	29.0
7-day 2-year hydrologically based flow	39.0	195	133	39.9	61.7
7-day 5-year hydrologically based flow	25.6	112	80.7	25.9	38.6
7-day 10-year hydrologically based flow	20.8	80.9	60.9	21.0	31.0
14-day 2-year hydrologically based flow	44.2	228	163	45.3	70.9
14-day 5-year hydrologically based flow	28.6	127	96.7	28.8	42.5
14-day 10-year hydrologically based flow	23.1	90.2	72.3	23.5	33.3
30-day 2-year hydrologically based flow	53.1	348	229	59.7	95.3
30-day 5-year hydrologically based flow	34.6	185	133	37.2	55.1
30-day 10-year hydrologically based flow	28.2	128	98.3	30.1	41.7
1-day 3-year biologically based flow	18.0	55.0	74.9	18.0	24.0
4-day 3-year biologically based flow	20.7	62.4	89.5	20.7	27.7
EPA harmonic-mean flow	133	282	366	78.5	90.6
5-percent-duration flow	1,850	2,870	2,070	614	1,150
10-percent-duration flow	1,210	1,940	1,450	358	703
15-percent-duration flow	906	1,490	1,130	260	530
20-percent-duration flow	721	1,230	923	205	417
25-percent-duration flow	591	1,040	788	169	341
30-percent-duration flow	493	902	681	144	285
35-percent-duration flow	416	783	589	126	243
40-percent-duration flow	349	694	524	111	208
45-percent-duration flow	292	616	464	98.2	179
50-percent-duration flow	246	548	412	88.1	157
55-percent-duration flow	207	491	366	78.7	138
60-percent-duration flow	174	438	322	71.1	121
65-percent-duration flow	146	386	284	63.8	107
70-percent-duration flow	121	336	249	57.0	93.9
75-percent-duration flow	101	289	216	50.7	83.3
80-percent-duration flow	83.2	247	187	45.2	70.5
85-percent-duration flow	66.9	204	155	39.9	58.8
90-percent-duration flow	52.0	155	126	34.6	48.8
95-percent-duration flow	38.8	104	92.8	28.3	38.8
99-percent-duration flow	25.1	55.2	50.4	18.3	28.1
Variability index	0.52	0.42	0.41	0.40	0.45

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03110000 Yellow Creek near Hammondsville, OH, 1942–1980					
1-day 2-year hydrologically based flow	4.56	53.0	25.1	4.59	10.1
1-day 5-year hydrologically based flow	2.30	26.5	15.9	2.28	4.56
1-day 10-year hydrologically based flow	1.58	17.0	12.5	1.58	2.93
3-day 2-year hydrologically based flow	4.85	55.7	27.3	4.85	11.2
3-day 5-year hydrologically based flow	2.43	27.2	17.2	2.40	5.17
3-day 10-year hydrologically based flow	1.67	17.4	13.4	1.65	3.35
7-day 2-year hydrologically based flow	5.60	58.9	32.5	5.60	13.0
7-day 5-year hydrologically based flow	2.78	28.5	20.7	2.74	6.15
7-day 10-year hydrologically based flow	1.89	18.2	16.3	1.88	4.10
14-day 2-year hydrologically based flow	6.62	69.5	41.7	6.72	16.1
14-day 5-year hydrologically based flow	3.41	32.5	25.9	3.36	7.86
14-day 10-year hydrologically based flow	2.41	20.6	20.0	2.43	5.41
30-day 2-year hydrologically based flow	9.27	106	65.8	10.1	24.1
30-day 5-year hydrologically based flow	4.93	49.8	39.2	4.98	12.9
30-day 10-year hydrologically based flow	3.60	32.4	30.6	3.59	9.39
1-day 3-year biologically based flow	1.50	7.99	21.0	1.71	2.14
4-day 3-year biologically based flow	1.85	14.0	25.2	2.12	2.75
EPA harmonic-mean flow	25.0	73.8	115	13.6	15.6
5-percent-duration flow	603	954	672	168	339
10-percent-duration flow	392	655	451	96.3	220
15-percent-duration flow	294	517	352	66.8	165
20-percent-duration flow	234	425	290	52.5	129
25-percent-duration flow	191	356	245	43.9	104
30-percent-duration flow	156	311	212	36.3	84.3
35-percent-duration flow	129	275	184	30.6	70.2
40-percent-duration flow	107	242	161	26.0	59.2
45-percent-duration flow	88.4	217	142	22.6	50.0
50-percent-duration flow	72.1	192	126	19.6	42.2
55-percent-duration flow	58.0	168	111	16.9	35.8
60-percent-duration flow	47.0	146	97.5	14.8	30.7
65-percent-duration flow	37.9	127	85.5	12.7	27.0
70-percent-duration flow	30.4	111	74.1	10.6	23.3
75-percent-duration flow	24.3	94.0	63.0	9.0	19.8
80-percent-duration flow	19.3	76.4	52.6	7.6	16.4
85-percent-duration flow	14.8	59.8	42.7	6.2	12.8
90-percent-duration flow	10.2	38.8	34.8	4.7	9.7
95-percent-duration flow	6.3	21.2	25.7	3.2	6.4
99-percent-duration flow	2.9	14.1	15.8	1.9	3.6
Variability index	0.61	0.48	0.43	0.51	0.52

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03111500 Short Creak near Dillonvale, OH, 1943–1980					
1-day 2-year hydrologically based flow	14.9	43.9	41.7	16.5	20.4
1-day 5-year hydrologically based flow	8.36	23.1	29.5	9.36	12.5
1-day 10-year hydrologically based flow	6.04	16.1	24.5	6.74	9.58
3-day 2-year hydrologically based flow	15.4	47.3	44.1	16.9	22.0
3-day 5-year hydrologically based flow	8.95	23.8	31.2	9.97	13.5
3-day 10-year hydrologically based flow	6.66	16.2	25.9	7.43	10.4
7-day 2-year hydrologically based flow	16.5	50.0	50.3	18.1	24.3
7-day 5-year hydrologically based flow	10.2	25.2	35.9	11.4	14.8
7-day 10-year hydrologically based flow	7.97	17.2	29.8	8.98	11.3
14-day 2-year hydrologically based flow	18.2	62.5	59.9	20.3	27.5
14-day 5-year hydrologically based flow	11.4	31.9	42.4	12.7	16.6
14-day 10-year hydrologically based flow	9.00	21.8	35.2	10.0	12.7
30-day 2-year hydrologically based flow	20.8	88.8	77.2	24.1	33.0
30-day 5-year hydrologically based flow	13.7	45.7	54.9	15.1	21.0
30-day 10-year hydrologically based flow	11.3	31.4	46.0	12.0	16.7
1-day 3-year biologically based flow	5.17	11.0	31.9	6.53	7.99
4-day 3-year biologically based flow	6.99	11.9	36.2	8.59	10.0
EPA harmonic-mean flow	46.8	69.4	121	32.3	31.5
5-percent-duration flow	392	586	435	163	223
10-percent-duration flow	274	421	308	108	158
15-percent-duration flow	220	343	256	82.7	122
20-percent-duration flow	184	295	222	68.7	99.6
25-percent-duration flow	156	257	196	60.6	85.5
30-percent-duration flow	134	229	175	54.5	74.1
35-percent-duration flow	116	206	157	49.4	64.8
40-percent-duration flow	101	188	143	44.5	56.9
45-percent-duration flow	86.4	170	130	39.7	50.3
50-percent-duration flow	73.8	153	120	36.0	44.8
55-percent-duration flow	64.2	137	111	32.5	39.9
60-percent-duration flow	55.6	124	102	29.8	36.1
65-percent-duration flow	48.2	110	93.2	27.0	32.5
70-percent-duration flow	41.2	96.4	84.8	24.5	29.7
75-percent-duration flow	35.1	81.8	76.8	22.0	26.8
80-percent-duration flow	30.1	66.9	68.6	19.7	24.0
85-percent-duration flow	25.5	51.5	60.2	17.4	21.0
90-percent-duration flow	20.6	35.8	51.5	15.1	17.9
95-percent-duration flow	16.0	25.1	41.5	12.8	14.8
99-percent-duration flow	10.6	13.5	29.5	7.7	10.8
Variability index	0.43	0.40	0.30	0.33	0.36

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03114000 Captina Creek at Armstrongs Mills, OH, 1960–1977					
1-day 2-year hydrologically based flow	0.74	46.5	10.8	0.75	4.04
1-day 5-year hydrologically based flow	0.00	24.6	4.56	0.00	1.05
1-day 10-year hydrologically based flow	0.00	17.2	2.78	0.00	0.43
3-day 2-year hydrologically based flow	0.87	47.7	12.0	0.88	5.00
3-day 5-year hydrologically based flow	0.00	25.3	5.35	0.00	1.42
3-day 10-year hydrologically based flow	0.00	17.8	3.40	0.00	0.61
7-day 2-year hydrologically based flow	1.11	51.4	16.0	1.12	6.48
7-day 5-year hydrologically based flow	0.09	26.3	7.66	0.09	1.88
7-day 10-year hydrologically based flow	0.00	18.3	5.14	0.00	0.81
14-day 2-year hydrologically based flow	1.67	64.0	21.1	1.57	11.1
14-day 5-year hydrologically based flow	0.25	30.1	10.7	0.25	2.18
14-day 10-year hydrologically based flow	0.06	19.9	7.63	0.08	0.67
30-day 2-year hydrologically based flow	4.23	106	41.3	4.01	18.4
30-day 5-year hydrologically based flow	0.86	51.7	22.5	1.26	4.77
30-day 10-year hydrologically based flow	0.30	34.1	16.9	0.65	1.88
1-day 3-year biologically based flow	0.00	10.8	10.9	0.08	0.00
4-day 3-year biologically based flow	0.00	13.2	16.0	0.10	0.00
EPA harmonic-mean flow	5.79	70.7	85.5	2.99	2.99
5-percent-duration flow	612	1,020	690	275	369
10-percent-duration flow	367	613	439	129	243
15-percent-duration flow	281	459	318	76.9	176
20-percent-duration flow	226	374	254	49.7	137
25-percent-duration flow	183	323	211	35.3	107
30-percent-duration flow	152	281	180	26.2	83.4
35-percent-duration flow	124	251	156	20.5	65.1
40-percent-duration flow	98.3	223	136	15.8	52.4
45-percent-duration flow	78.7	200	116	12.4	42.6
50-percent-duration flow	62.1	180	98.6	9.7	34.5
55-percent-duration flow	48.3	162	85.6	7.8	28.9
60-percent-duration flow	37.0	139	73.8	6.4	24.6
65-percent-duration flow	29.5	120	63.3	5.1	21.0
70-percent-duration flow	22.7	101	53.7	4.1	17.7
75-percent-duration flow	16.8	83.7	44.8	3.1	14.6
80-percent-duration flow	11.5	67.7	36.2	2.2	10.6
85-percent-duration flow	6.7	50.5	27.8	1.4	6.4
90-percent-duration flow	3.7	39.4	19.4	0.8	3.6
95-percent-duration flow	1.4	30.5	12.5	0.4	1.8
99-percent-duration flow	0.1	15.2	4.7	0.0	0.1
Variability index	0.80	0.45	0.52	0.84	0.69

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03115400 Little Muskingum River at Bloomfield, OH, 1960–1977					
1-day 2-year hydrologically based flow	0.95	52.1	9.93	1.02	2.76
1-day 5-year hydrologically based flow	0.30	22.2	4.21	0.32	0.79
1-day 10-year hydrologically based flow	0.13	13.3	2.58	0.14	0.42
3-day 2-year hydrologically based flow	1.03	55.1	11.2	1.13	3.20
3-day 5-year hydrologically based flow	0.27	22.9	4.70	0.30	0.90
3-day 10-year hydrologically based flow	0.12	13.5	2.88	0.13	0.46
7-day 2-year hydrologically based flow	1.16	60.4	14.9	1.25	4.21
7-day 5-year hydrologically based flow	0.39	24.6	6.17	0.42	1.10
7-day 10-year hydrologically based flow	0.22	14.6	3.80	0.23	0.53
14-day 2-year hydrologically based flow	1.50	78.0	22.2	1.61	7.67
14-day 5-year hydrologically based flow	0.50	33.4	9.09	0.55	1.81
14-day 10-year hydrologically based flow	0.28	21.2	5.66	0.31	0.76
30-day 2-year hydrologically based flow	3.14	152	47.4	4.06	14.5
30-day 5-year hydrologically based flow	1.06	65.8	20.7	1.44	3.03
30-day 10-year hydrologically based flow	0.60	40.2	13.9	0.81	1.21
1-day 3-year biologically based flow	0.07	11.1	12.0	0.27	0.08
4-day 3-year biologically based flow	0.17	12.3	15.5	0.38	0.24
EPA harmonic-mean flow	6.46	84.0	97.6	4.12	2.82
5-percent-duration flow	1,010	1,590	1,110	275	703
10-percent-duration flow	617	1,010	698	142	425
15-percent-duration flow	442	737	507	84.4	301
20-percent-duration flow	338	585	399	54.2	235
25-percent-duration flow	271	500	320	38.8	178
30-percent-duration flow	216	432	256	28.1	137
35-percent-duration flow	170	377	213	20.7	108
40-percent-duration flow	136	332	178	16.7	85.4
45-percent-duration flow	107	293	147	13.4	62.9
50-percent-duration flow	81.2	260	124	10.7	47.5
55-percent-duration flow	60.1	228	105	8.8	37.3
60-percent-duration flow	43.9	199	88.1	7.0	29.4
65-percent-duration flow	32.5	172	75.5	5.4	23.7
70-percent-duration flow	24.3	148	63.1	4.1	19.3
75-percent-duration flow	17.6	124	51.1	3.1	14.6
80-percent-duration flow	11.5	98.2	39.4	2.3	10.0
85-percent-duration flow	6.8	62.2	28.3	1.5	5.5
90-percent-duration flow	3.4	36.8	19.2	1.0	2.5
95-percent-duration flow	1.3	28.2	10.6	0.6	0.9
99-percent-duration flow	0.4	16.9	3.9	0.3	0.3
Variability index	0.88	0.51	0.60	0.81	0.86

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03173000 Walker Creek at Bane, VA, 1939–1989					
1-day 2-year hydrologically based flow	40.6	114	85.1	42.5	47.7
1-day 5-year hydrologically based flow	32.3	66.9	63.5	33.8	35.4
1-day 10-year hydrologically based flow	29.0	48.7	54.4	30.7	31.2
3-day 2-year hydrologically based flow	41.7	122	88.8	43.3	49.8
3-day 5-year hydrologically based flow	33.7	73.5	65.9	34.4	37.1
3-day 10-year hydrologically based flow	30.5	54.4	56.2	31.3	32.8
7-day 2-year hydrologically based flow	43.3	137	95.8	44.9	52.6
7-day 5-year hydrologically based flow	35.3	82.3	70.8	35.9	38.6
7-day 10-year hydrologically based flow	32.3	61.1	60.4	32.7	33.9
14-day 2-year hydrologically based flow	45.4	168	111	48.0	57.1
14-day 5-year hydrologically based flow	37.1	95.0	80.7	38.0	40.9
14-day 10-year hydrologically based flow	33.9	68.3	68.2	34.6	35.4
30-day 2-year hydrologically based flow	50.5	247	151	53.8	70.0
30-day 5-year hydrologically based flow	41.1	131	106	43.3	46.2
30-day 10-year hydrologically based flow	37.5	89.6	88.2	40.5	38.8
1-day 3-year biologically based flow	29.0	38.0	75.8	31.9	30.0
4-day 3-year biologically based flow	31.0	43.5	82.2	34.2	33.2
EPA harmonic-mean flow	113	198	252	79.7	72.9
5-percent-duration flow	1,120	1,710	1,210	345	744
10-percent-duration flow	725	1,180	804	217	469
15-percent-duration flow	548	914	620	160	349
20-percent-duration flow	435	754	499	132	271
25-percent-duration flow	361	649	424	114	217
30-percent-duration flow	303	569	370	100	174
35-percent-duration flow	258	507	326	92.0	146
40-percent-duration flow	221	451	291	84.5	123
45-percent-duration flow	189	402	264	78.5	107
50-percent-duration flow	161	364	241	72.7	94.0
55-percent-duration flow	137	327	220	68.3	83.1
60-percent-duration flow	117	292	200	63.9	74.3
65-percent-duration flow	99.8	260	182	60.0	67.0
70-percent-duration flow	86.2	231	164	56.3	61.0
75-percent-duration flow	74.4	205	148	52.6	55.4
80-percent-duration flow	64.7	176	131	49.3	50.7
85-percent-duration flow	56.5	149	116	45.9	46.6
90-percent-duration flow	48.9	116	101	42.3	43.4
95-percent-duration flow	42.7	76.1	82.0	38.2	39.5
99-percent-duration flow	34.5	44.8	57.5	30.8	34.2
Variability index	0.45	0.39	0.35	0.28	0.41

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03175500 Wolf Creek near Narrows, VA, 1939–1989					
1-day 2-year hydrologically based flow	30.8	108	71.5	32.6	36.7
1-day 5-year hydrologically based flow	23.5	62.0	51.2	24.5	26.2
1-day 10-year hydrologically based flow	20.5	43.5	42.8	21.2	22.8
3-day 2-year hydrologically based flow	31.6	117	75.0	33.4	38.3
3-day 5-year hydrologically based flow	24.3	68.4	53.4	25.0	27.1
3-day 10-year hydrologically based flow	21.2	48.7	44.7	21.6	23.5
7-day 2-year hydrologically based flow	33.0	134	83.4	35.2	40.4
7-day 5-year hydrologically based flow	25.5	76.9	59.3	26.3	27.8
7-day 10-year hydrologically based flow	22.4	54.3	49.7	22.8	23.9
14-day 2-year hydrologically based flow	35.4	163	95.1	38.2	44.7
14-day 5-year hydrologically based flow	27.3	89.4	67.4	28.5	30.0
14-day 10-year hydrologically based flow	24.0	62.1	56.7	24.8	25.3
30-day 2-year hydrologically based flow	39.5	242	134	44.2	56.8
30-day 5-year hydrologically based flow	30.3	132	91.9	33.1	34.5
30-day 10-year hydrologically based flow	26.8	91.4	76.3	29.4	27.8
1-day 3-year biologically based flow	20.0	29.0	61.0	24.0	22.0
4-day 3-year biologically based flow	21.7	33.4	69.3	26.0	22.7
EPA harmonic-mean flow	94.5	187	235	65.8	57.4
5-percent-duration flow	992	1,500	1,030	289	691
10-percent-duration flow	676	1,060	727	185	475
15-percent-duration flow	532	850	581	144	350
20-percent-duration flow	430	725	481	120	269
25-percent-duration flow	354	631	409	105	213
30-percent-duration flow	297	561	356	93.1	170
35-percent-duration flow	250	505	314	83.6	139
40-percent-duration flow	212	454	281	75.9	114
45-percent-duration flow	180	410	253	68.8	96.3
50-percent-duration flow	151	369	230	63.1	82.7
55-percent-duration flow	127	333	208	57.7	71.4
60-percent-duration flow	107	298	188	53.4	62.3
65-percent-duration flow	90.5	264	169	49.2	54.8
70-percent-duration flow	76.4	233	152	45.6	48.4
75-percent-duration flow	64.4	204	135	42.1	44.1
80-percent-duration flow	54.0	177	117	38.7	39.9
85-percent-duration flow	45.5	145	102	35.4	36.2
90-percent-duration flow	38.6	114	86.7	32.1	32.8
95-percent-duration flow	32.1	80.8	69.8	28.3	29.1
99-percent-duration flow	24.5	35.9	46.5	23.0	22.7
Variability index	0.48	0.37	0.35	0.30	0.45

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03202000 Raccoon Creek at Adamsville, OH, 1940–1984					
1-day 2-year hydrologically based flow	13.4	160	67.9	15.4	19.9
1-day 5-year hydrologically based flow	5.26	64.8	40.5	6.57	6.61
1-day 10-year hydrologically based flow	3.07	35.2	30.6	4.09	3.54
3-day 2-year hydrologically based flow	14.2	170	72.4	16.5	20.6
3-day 5-year hydrologically based flow	5.61	69.5	43.1	7.08	6.92
3-day 10-year hydrologically based flow	3.30	38.4	32.6	4.42	3.76
7-day 2-year hydrologically based flow	15.9	193	86.1	18.5	23.1
7-day 5-year hydrologically based flow	6.39	79.7	49.6	8.04	7.89
7-day 10-year hydrologically based flow	3.79	45.5	37.1	5.07	4.31
14-day 2-year hydrologically based flow	18.5	247	111	22.6	27.9
14-day 5-year hydrologically based flow	7.41	99.8	61.8	9.84	9.39
14-day 10-year hydrologically based flow	4.37	56.1	45.7	6.21	5.11
30-day 2-year hydrologically based flow	24.3	383	187	31.8	41.9
30-day 5-year hydrologically based flow	9.74	179	100	13.9	13.7
30-day 10-year hydrologically based flow	5.82	114	72.4	9.09	7.31
1-day 3-year biologically based flow	2.33	13.0	51.0	6.30	2.39
4-day 3-year biologically based flow	2.59	24.5	67.2	7.51	2.59
EPA harmonic-mean flow	51.8	190	360	41.7	22.2
5-percent-duration flow	2,680	3,740	3,000	741	1,360
10-percent-duration flow	1,700	2,850	2,120	362	861
15-percent-duration flow	1,210	2,270	1,560	231	617
20-percent-duration flow	918	1,790	1,210	173	448
25-percent-duration flow	720	1,480	975	137	330
30-percent-duration flow	575	1,260	807	109	249
35-percent-duration flow	466	1,080	678	92.9	193
40-percent-duration flow	371	915	582	80.2	155
45-percent-duration flow	290	812	503	69.4	125
50-percent-duration flow	225	712	435	59.7	100
55-percent-duration flow	177	624	376	50.9	80.3
60-percent-duration flow	137	542	322	43.9	67.2
65-percent-duration flow	106	467	272	37.4	54.8
70-percent-duration flow	82.5	400	229	31.7	43.6
75-percent-duration flow	63.7	333	191	27.3	34.1
80-percent-duration flow	47.7	266	156	22.9	25.8
85-percent-duration flow	34.5	203	124	18.2	18.0
90-percent-duration flow	23.1	137	94.4	13.5	9.9
95-percent-duration flow	12.1	79.8	63.0	8.7	5.9
99-percent-duration flow	4.4	28.2	34.1	4.0	2.7
Variability index	0.73	0.50	0.51	0.56	0.72

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03207500 Levisa Fork near Grundy, VA, 1956–1974					
1-day 2-year hydrologically based flow	7.40	82.5	25.2	7.99	12.3
1-day 5-year hydrologically based flow	3.18	38.2	14.1	3.38	5.74
1-day 10-year hydrologically based flow	1.92	23.4	10.4	2.00	3.98
3-day 2-year hydrologically based flow	7.87	89.1	28.1	8.52	13.3
3-day 5-year hydrologically based flow	3.36	41.1	15.6	3.58	6.35
3-day 10-year hydrologically based flow	2.03	25.0	11.6	2.12	4.47
7-day 2-year hydrologically based flow	8.99	112	34.1	9.80	15.4
7-day 5-year hydrologically based flow	3.75	48.7	18.9	4.02	7.07
7-day 10-year hydrologically based flow	2.21	28.4	13.8	2.31	4.89
14-day 2-year hydrologically based flow	10.9	153	46.0	13.0	18.8
14-day 5-year hydrologically based flow	4.42	63.9	26.4	5.01	8.31
14-day 10-year hydrologically based flow	2.61	35.9	19.7	2.82	5.65
30-day 2-year hydrologically based flow	15.8	278	78.6	24.0	31.8
30-day 5-year hydrologically based flow	6.81	138	40.5	9.84	12.9
30-day 10-year hydrologically based flow	4.22	83.8	28.6	5.57	7.99
1-day 3-year biologically based flow	1.18	14.0	17.9	1.19	3.66
4-day 3-year biologically based flow	1.20	15.2	23.0	1.81	3.93
EPA harmonic-mean flow	33.8	132	134	20.6	18.3
5-percent-duration flow	1,110	1,780	1,230	315	776
10-percent-duration flow	674	1,120	762	189	439
15-percent-duration flow	496	862	567	132	322
20-percent-duration flow	396	705	440	100	245
25-percent-duration flow	323	599	364	78.1	194
30-percent-duration flow	264	523	302	62.8	155
35-percent-duration flow	219	469	254	52.8	123
40-percent-duration flow	182	420	217	44.6	96.5
45-percent-duration flow	147	379	185	37.7	74.8
50-percent-duration flow	116	341	163	32.4	60.0
55-percent-duration flow	92.7	306	140	27.7	47.9
60-percent-duration flow	72.5	274	118	24.1	38.7
65-percent-duration flow	56.3	247	102	21.0	31.4
70-percent-duration flow	43.7	222	87.1	18.5	25.5
75-percent-duration flow	33.4	197	72.6	16.2	21.3
80-percent-duration flow	24.8	172	59.3	14.0	18.0
85-percent-duration flow	19.3	140	47.7	11.6	14.9
90-percent-duration flow	14.9	99.5	36.1	8.7	11.8
95-percent-duration flow	9.8	59.4	22.2	5.9	7.3
99-percent-duration flow	3.8	16.1	13.3	1.2	3.8
Variability index	0.65	0.42	0.52	0.52	0.63

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03208500 Russell Fork at Haysi, VA, 1930–2002					
1-day 2-year hydrologically based flow	8.10	82.6	40.9	9.64	12.5
1-day 5-year hydrologically based flow	2.70	36.6	16.7	3.62	4.32
1-day 10-year hydrologically based flow	1.36	21.5	8.52	2.03	2.26
3-day 2-year hydrologically based flow	8.65	92.2	44.8	10.4	13.4
3-day 5-year hydrologically based flow	2.96	40.5	19.0	3.91	4.78
3-day 10-year hydrologically based flow	1.53	23.6	10.0	2.18	2.56
7-day 2-year hydrologically based flow	9.74	114	53.3	12.1	15.8
7-day 5-year hydrologically based flow	3.44	49.0	22.8	4.59	5.49
7-day 10-year hydrologically based flow	1.83	27.9	12.6	2.56	2.91
14-day 2-year hydrologically based flow	12.1	151	63.5	16.3	20.3
14-day 5-year hydrologically based flow	4.48	65.3	31.1	6.20	6.80
14-day 10-year hydrologically based flow	2.43	37.7	20.3	3.42	3.53
30-day 2-year hydrologically based flow	17.6	268	104	28.5	30.8
30-day 5-year hydrologically based flow	6.96	123	52.7	11.5	10.5
30-day 10-year hydrologically based flow	3.92	73.1	36.8	6.46	5.69
1-day 3-year biologically based flow	0.79	9.50	17.0	1.45	1.23
4-day 3-year biologically based flow	1.10	12.8	20.0	2.11	1.71
EPA harmonic-mean flow	29.9	119	149	20.8	14.3
5-percent-duration flow	1,210	2,190	1,280	452	714
10-percent-duration flow	746	1,310	787	240	425
15-percent-duration flow	553	990	619	164	294
20-percent-duration flow	431	793	502	123	218
25-percent-duration flow	343	666	415	96.1	169
30-percent-duration flow	285	568	355	80.9	133
35-percent-duration flow	232	497	305	68.1	104
40-percent-duration flow	195	436	263	57.8	82.3
45-percent-duration flow	159	391	231	49.6	66.8
50-percent-duration flow	129	348	199	42.6	54.8
55-percent-duration flow	103	313	177	37.4	45.7
60-percent-duration flow	80.0	279	155	32.8	38.1
65-percent-duration flow	63.9	248	134	28.4	31.5
70-percent-duration flow	50.4	218	114	24.5	27.2
75-percent-duration flow	39.2	190	95.4	20.5	23.1
80-percent-duration flow	31.0	161	78.0	16.6	18.2
85-percent-duration flow	23.5	128	61.4	13.0	13.0
90-percent-duration flow	16.1	90.9	45.8	8.8	8.5
95-percent-duration flow	8.3	49.5	29.9	4.4	4.4
99-percent-duration flow	2.1	15.6	12.4	1.6	1.4
Variability index	0.66	0.47	0.48	0.57	0.66

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03208950 Cranes Nest River near Clintwood, VA, 1965–1974					
1-day 2-year hydrologically based flow	2.38	30.9	7.31	2.47	5.12
1-day 5-year hydrologically based flow	1.31	12.6	4.02	1.36	2.57
1-day 10-year hydrologically based flow	0.95	6.32	2.89	0.98	1.85
3-day 2-year hydrologically based flow	2.64	34.2	8.20	2.72	5.59
3-day 5-year hydrologically based flow	1.56	13.7	4.56	1.61	2.85
3-day 10-year hydrologically based flow	1.19	6.70	3.29	1.23	2.07
7-day 2-year hydrologically based flow	3.19	40.7	10.8	3.69	6.35
7-day 5-year hydrologically based flow	1.87	16.2	5.77	2.14	3.23
7-day 10-year hydrologically based flow	1.40	7.73	4.03	1.54	2.38
14-day 2-year hydrologically based flow	3.81	47.2	14.9	4.72	8.36
14-day 5-year hydrologically based flow	2.31	17.6	8.88	2.59	3.96
14-day 10-year hydrologically based flow	1.81	8.25	6.71	1.93	2.82
30-day 2-year hydrologically based flow	5.45	74.8	23.9	6.87	13.6
30-day 5-year hydrologically based flow	3.72	31.2	12.4	4.02	6.72
30-day 10-year hydrologically based flow	3.15	15.3	9.01	3.28	4.73
1-day 3-year biologically based flow	0.84	1.90	4.28	1.25	0.90
4-day 3-year biologically based flow	1.08	2.13	5.44	1.86	1.69
EPA harmonic-mean flow	14.0	31.4	39.6	9.22	8.31
5-percent-duration flow	282	431	308	126	228
10-percent-duration flow	174	278	182	75.1	135
15-percent-duration flow	131	210	132	49.3	97.1
20-percent-duration flow	104	173	108	35.7	77.0
25-percent-duration flow	88.5	148	92.6	28.5	61.2
30-percent-duration flow	75.2	128	80.6	23.4	50.8
35-percent-duration flow	63.7	115	70.7	19.0	43.3
40-percent-duration flow	55.0	103	62.9	15.8	37.0
45-percent-duration flow	46.7	94.0	56.0	13.4	30.5
50-percent-duration flow	38.8	86.7	49.7	11.5	24.7
55-percent-duration flow	31.8	79.5	44.2	9.8	20.2
60-percent-duration flow	25.7	72.9	38.8	8.4	16.6
65-percent-duration flow	20.4	66.3	33.4	7.3	13.3
70-percent-duration flow	15.9	59.8	27.6	6.4	10.0
75-percent-duration flow	12.2	53.5	23.1	5.6	7.8
80-percent-duration flow	8.8	46.2	18.8	4.8	6.4
85-percent-duration flow	6.5	37.8	14.8	4.1	5.3
90-percent-duration flow	5.0	28.4	12.1	3.4	4.6
95-percent-duration flow	3.7	17.7	7.2	2.5	3.8
99-percent-duration flow	2.0	2.2	3.8	1.3	2.1
Variability index	0.59	0.39	0.47	0.52	0.57

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03210000 Johns Creek near Meta, KY, 1942–1980					
1-day 2-year hydrologically based flow	0.31	17.4	2.69	0.42	1.20
1-day 5-year hydrologically based flow	0.00	6.42	0.93	0.00	0.10
1-day 10-year hydrologically based flow	0.00	3.24	0.50	0.00	0.00
3-day 2-year hydrologically based flow	0.37	19.6	3.11	0.55	1.32
3-day 5-year hydrologically based flow	0.00	7.16	1.12	0.00	0.13
3-day 10-year hydrologically based flow	0.00	3.59	0.63	0.00	0.00
7-day 2-year hydrologically based flow	0.42	24.6	4.04	0.68	1.60
7-day 5-year hydrologically based flow	0.00	9.23	1.52	0.06	0.16
7-day 10-year hydrologically based flow	0.00	4.62	0.87	0.00	0.00
14-day 2-year hydrologically based flow	0.76	33.9	5.90	1.18	2.17
14-day 5-year hydrologically based flow	0.07	13.7	2.51	0.22	0.51
14-day 10-year hydrologically based flow	0.00	7.20	1.60	0.00	0.16
30-day 2-year hydrologically based flow	2.04	62.8	11.9	3.08	4.46
30-day 5-year hydrologically based flow	0.28	31.1	4.97	0.50	1.13
30-day 10-year hydrologically based flow	0.03	19.2	3.12	0.11	0.49
1-day 3-year biologically based flow	0.00	0.75	0.78	0.00	0.00
4-day 3-year biologically based flow	0.00	1.55	1.38	0.00	0.00
EPA harmonic-mean flow	3.25	18.6	15.0	1.69	1.87
5-percent-duration flow	279	497	276	80.3	184
10-percent-duration flow	170	306	167	41.4	105
15-percent-duration flow	120	228	117	26.0	71.4
20-percent-duration flow	90.0	182	90.4	17.9	51.3
25-percent-duration flow	72.7	153	72.6	13.1	39.1
30-percent-duration flow	57.7	131	60.0	10.0	31.1
35-percent-duration flow	46.4	114	49.6	8.0	24.2
40-percent-duration flow	37.1	101	41.2	6.5	19.1
45-percent-duration flow	28.7	89.7	34.9	5.3	15.1
50-percent-duration flow	22.1	79.8	28.9	4.4	11.3
55-percent-duration flow	16.6	71.7	24.2	3.6	8.2
60-percent-duration flow	12.2	63.7	19.8	3.0	6.5
65-percent-duration flow	8.7	57.1	16.2	2.5	5.2
70-percent-duration flow	6.5	50.5	13.1	2.0	4.1
75-percent-duration flow	4.8	43.7	10.1	1.5	2.9
80-percent-duration flow	3.4	37.0	7.6	1.1	2.2
85-percent-duration flow	2.3	30.6	5.8	0.7	1.5
90-percent-duration flow	1.3	20.1	4.2	0.4	0.9
95-percent-duration flow	0.6	11.5	2.6	0.1	0.3
99-percent-duration flow	0.0	2.0	0.8	0.0	0.0
Variability index	0.82	0.46	0.62	0.82	0.83

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03211500 Johns Creek near Van Lear, KY, 1941–1981					
1-day 2-year hydrologically based flow	4.69	21.3	12.4	8.49	10.3
1-day 5-year hydrologically based flow	0.33	7.61	4.68	3.09	3.11
1-day 10-year hydrologically based flow	0.00	0.00	2.04	1.53	1.18
3-day 2-year hydrologically based flow	6.56	36.2	14.5	8.99	11.5
3-day 5-year hydrologically based flow	1.66	14.8	7.06	3.39	3.98
3-day 10-year hydrologically based flow	0.35	7.09	4.42	1.72	1.88
7-day 2-year hydrologically based flow	8.54	63.5	17.6	9.89	12.9
7-day 5-year hydrologically based flow	3.29	28.7	8.51	3.92	4.35
7-day 10-year hydrologically based flow	1.64	18.0	5.38	2.06	2.07
14-day 2-year hydrologically based flow	9.68	98.1	22.3	11.5	14.9
14-day 5-year hydrologically based flow	3.81	42.8	11.4	4.75	4.70
14-day 10-year hydrologically based flow	1.90	25.3	7.88	2.62	2.25
30-day 2-year hydrologically based flow	11.6	189	37.6	14.5	20.2
30-day 5-year hydrologically based flow	4.63	87.8	18.3	6.08	6.68
30-day 10-year hydrologically based flow	2.50	53.9	12.8	3.63	3.65
1-day 3-year biologically based flow	0.00	2.94	1.04	1.09	0.78
4-day 3-year biologically based flow	0.85	11.0	6.20	1.84	0.92
EPA harmonic-mean flow	17.8	82.8	42.6	12.4	9.27
5-percent-duration flow	1,080	2,000	1,070	282	706
10-percent-duration flow	604	1,190	589	127	437
15-percent-duration flow	421	857	395	76.3	309
20-percent-duration flow	321	660	291	52.8	220
25-percent-duration flow	245	541	228	40.0	162
30-percent-duration flow	188	461	182	31.9	126
35-percent-duration flow	146	396	144	26.3	104
40-percent-duration flow	114	345	118	23.6	82.7
45-percent-duration flow	88.7	302	97.5	20.9	63.4
50-percent-duration flow	66.5	264	79.0	18.9	45.3
55-percent-duration flow	48.1	230	61.6	17.4	33.1
60-percent-duration flow	35.2	198	49.7	15.8	25.6
65-percent-duration flow	27.1	171	38.1	14.4	20.5
70-percent-duration flow	21.8	145	30.4	13.3	16.5
75-percent-duration flow	18.4	121	25.6	12.2	13.8
80-percent-duration flow	15.3	98.0	21.6	11.1	12.0
85-percent-duration flow	12.9	73.7	18.6	9.6	10.3
90-percent-duration flow	10.6	43.4	14.9	7.5	8.7
95-percent-duration flow	7.6	22.8	11.1	3.5	5.0
99-percent-duration flow	1.3	8.2	5.4	0.9	0.9
Variability index	0.70	0.55	0.63	0.52	0.69

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03212000 Paint Creek at Staffordsville, KY, 1955–1975					
1-day 2-year hydrologically based flow	1.28	23.7	3.64	1.28	2.69
1-day 5-year hydrologically based flow	0.66	9.51	2.19	0.81	1.24
1-day 10-year hydrologically based flow	0.25	5.15	1.74	0.51	0.78
3-day 2-year hydrologically based flow	1.61	28.1	4.65	1.71	3.19
3-day 5-year hydrologically based flow	0.66	11.3	2.61	0.70	1.49
3-day 10-year hydrologically based flow	0.30	6.27	1.93	0.31	0.96
7-day 2-year hydrologically based flow	1.82	36.2	6.41	2.01	3.93
7-day 5-year hydrologically based flow	0.77	16.4	3.40	0.85	1.78
7-day 10-year hydrologically based flow	0.38	9.83	2.44	0.41	1.11
14-day 2-year hydrologically based flow	2.42	51.2	10.6	3.16	5.46
14-day 5-year hydrologically based flow	0.95	22.1	5.47	1.18	2.23
14-day 10-year hydrologically based flow	0.49	12.8	3.81	0.58	1.31
30-day 2-year hydrologically based flow	4.03	85.7	19.9	5.14	10.1
30-day 5-year hydrologically based flow	2.16	46.1	9.59	2.86	4.28
30-day 10-year hydrologically based flow	1.51	31.9	6.51	2.10	2.54
1-day 3-year biologically based flow	0.18	2.62	3.36	0.18	0.51
4-day 3-year biologically based flow	0.31	3.27	3.97	0.43	0.64
EPA harmonic-mean flow	8.11	35.4	33.5	4.20	5.10
5-percent-duration flow	535	923	623	156	320
10-percent-duration flow	305	567	345	70.3	155
15-percent-duration flow	197	403	227	45.1	99.0
20-percent-duration flow	146	312	163	30.3	71.4
25-percent-duration flow	112	252	124	22.3	55.2
30-percent-duration flow	87.9	208	97.5	16.9	42.9
35-percent-duration flow	71.0	179	80.1	13.5	33.4
40-percent-duration flow	57.7	154	67.2	11.1	26.3
45-percent-duration flow	45.9	135	56.7	9.1	21.1
50-percent-duration flow	34.8	118	47.7	7.7	17.6
55-percent-duration flow	26.7	105	40.1	6.3	14.9
60-percent-duration flow	20.4	93.2	33.2	5.2	12.5
65-percent-duration flow	15.6	82.0	27.6	4.4	10.1
70-percent-duration flow	11.9	73.0	23.0	3.7	8.3
75-percent-duration flow	8.4	65.1	18.5	3.0	6.7
80-percent-duration flow	6.2	56.9	13.9	2.5	5.4
85-percent-duration flow	4.6	48.5	10.2	2.1	4.1
90-percent-duration flow	3.2	36.5	7.0	1.7	3.1
95-percent-duration flow	2.0	19.8	4.3	1.2	1.7
99-percent-duration flow	0.8	5.0	2.3	0.2	0.7
Variability index	0.76	0.48	0.64	0.64	0.68

Table 12. Selected annual and seasonal statistics for 40 stations in surrounding states near West Virginia representative of 1930–2002 (values do not supersede those determined for use by the particular state).—Continued

[Winter, January 1–March 31; spring, April 1–June 30; summer, July 1–September 30; fall, October 1–December 31; streamflow statistics are in cubic feet per second, except for variability index, which is dimensionless; the record period is in climatic years, April 1 through March 31of the indicated ending year; EPA, U.S. Environmental Protection Agency]

Streamflow statistic	Annual	Season			
		Winter	Spring	Summer	Fall
03215500 Blaine Creek at Yatesville, KY, 1955–1975					
1-day 2-year hydrologically based flow	2.28	44.8	11.0	2.85	4.04
1-day 5-year hydrologically based flow	0.69	14.8	6.90	0.81	1.69
1-day 10-year hydrologically based flow	0.32	7.13	5.49	0.35	1.01
3-day 2-year hydrologically based flow	2.63	55.7	12.4	3.12	4.70
3-day 5-year hydrologically based flow	0.79	17.8	7.45	0.90	2.06
3-day 10-year hydrologically based flow	0.35	8.29	5.83	0.38	1.26
7-day 2-year hydrologically based flow	3.08	69.3	15.3	3.73	5.71
7-day 5-year hydrologically based flow	0.97	24.8	9.08	1.14	2.38
7-day 10-year hydrologically based flow	0.45	12.6	7.07	0.51	1.40
14-day 2-year hydrologically based flow	4.08	95.6	21.0	4.91	7.29
14-day 5-year hydrologically based flow	1.68	36.8	12.0	1.97	2.82
14-day 10-year hydrologically based flow	0.96	19.4	9.12	1.12	1.59
30-day 2-year hydrologically based flow	6.18	168	45.7	7.57	11.8
30-day 5-year hydrologically based flow	2.92	86.1	23.4	3.57	4.21
30-day 10-year hydrologically based flow	1.85	57.5	16.4	2.35	2.33
1-day 3-year biologically based flow	0.09	3.13	8.16	0.29	0.28
4-day 3-year biologically based flow	0.31	3.56	11.5	0.74	0.57
EPA harmonic-mean flow	11.0	46.3	80.0	6.79	5.52
5-percent-duration flow	1,000	1,590	1,230	249	563
10-percent-duration flow	571	1,060	643	121	312
15-percent-duration flow	406	753	474	69.4	196
20-percent-duration flow	297	612	349	44.8	135
25-percent-duration flow	226	511	257	33.9	97.1
30-percent-duration flow	179	433	207	26.8	66.1
35-percent-duration flow	141	375	173	21.6	50.0
40-percent-duration flow	112	321	144	17.7	37.7
45-percent-duration flow	88.0	282	122	15.4	29.3
50-percent-duration flow	65.5	245	105	13.3	23.9
55-percent-duration flow	47.3	219	91.4	11.5	19.4
60-percent-duration flow	34.3	193	77.2	9.7	15.8
65-percent-duration flow	25.0	171	62.7	8.5	13.1
70-percent-duration flow	18.5	149	51.2	7.3	10.6
75-percent-duration flow	14.4	129	42.0	6.3	8.3
80-percent-duration flow	10.8	109	31.1	5.3	6.5
85-percent-duration flow	8.0	91.5	23.6	4.4	4.9
90-percent-duration flow	5.6	68.3	16.6	3.3	3.4
95-percent-duration flow	3.3	32.6	11.3	2.2	2.2
99-percent-duration flow	0.8	5.1	6.9	0.3	0.7
Variability index	0.79	0.48	0.61	0.60	0.74

Table 13. Comparison between the average minimum flows computed for the entire record period and the subset record period for 110 stations in West Virginia.

[Climatic year, April 1 through March 31of the indicated ending year]

Station number	Station name	Drainage area (square miles)	Entire record period			Subset record period		
			Record period (climatic years)	Average minimum flow (cubic feet per second)	Unit average minimum flow (cubic feet per second per square mile)	Record period (climatic years)	Average minimum flow (cubic feet per second)	Unit average minimum flow (cubic feet per second per square mile)
01595300	Abram Creek at Oakmont	42.6	1958–1982	3.08	0.0723	1959–1982	3.21	0.0754
01599500	New Creek near Keyser	46.5	1949–1963	2.20	0.0473	1949–1958	2.60	0.0559
01604500	Patterson Creek near Headsville	211	1940–2002	7.76	0.0368	1940–1996	7.53	0.0357
01605500	South Branch Potomac River at Franklin	179	1942–1969, 1978–2002	27.3	0.1525	1946–1957	30.5	0.1704
01606000	North Fork South Branch Potomac River at Cabins	335	1941–1961, 1980, 1999–2002	18.5	0.0552	1941–1954	17.8	0.0531
01606500	South Branch Potomac River near Petersburg	676	1930–2002	79.9	0.1182	1930–2002	79.9	0.1182
01607500	South Fork South Branch Potomac River at Brandywine	103	1945–2002	5.78	0.0561	1945–1996	5.71	0.0554
01608000	South Fork South Branch Potomac River near Moorefield	277	1930–1935, 1940–2002	16.7	0.0603	1940–1996	17.2	0.0621
01608500	South Branch Potomac River near Springfield	1,486	1901, 1905–1906, 1930–2002	125	0.0841	1930–2002	126	0.0848
01609800	Little Cacapon River near Levels	108	1968–1977	0.80	0.0074	No value	No value	No value
01610500	Cacapon River at Yellow Spring	306	1941–1951	26.5	0.0866	1941–1951	26.5	0.0866
01611500	Cacapon River near Great Cacapon	675	1924–1995, 1998–2002	56.9	0.0843	1933–1995	57.9	0.0858
01614000	Back Creek near Jones Springs	235	1930–1931, 1940–1975	8.71	0.0371	1940–1953	9.14	0.0389
01616500	Opequon Creek near Martinsburg	273	1949–2002	56.3	0.2062	1949–1996	54.5	0.1996

Table 13. Comparison between the average minimum flows computed for the entire record period and the subset record period for 110 stations in West Virginia.—Continued

[Climatic year, April 1 through March 31of the indicated ending year]

Station number	Station name	Drainage area (square miles)	Entire record period			Subset record period		
			Record period (climatic years)	Average minimum flow (cubic feet per second)	Unit average minimum flow (cubic feet per second per square mile)	Record period (climatic years)	Average minimum flow (cubic feet per second)	Unit average minimum flow (cubic feet per second per square mile)
01617000	Tuscarora Creek above Martinsburg	11.3	1950–1963 1969–1977	2.65	0.2345	No value	No value	No value
01636500	Shenandoah River at Millville	3,022	1896–1909, 1930–2002	542	0.1794	1930–2002	513	0.1698
03050000	Tygart Valley River near Dailey	185	1917–1975, 1990–2002	8.64	0.0467	1932–1957	9.54	0.0516
03050500	Tygart Valley River near Elkins	271	1946–2002	12.4	0.0458	1946–2000	12.1	0.0446
03051000	Tygart Valley River at Belington	406	1909–2002	21.9	0.0539	1930–2002	22.3	0.0549
03051500	Middle Fork River at Midvale	122	1917–1942	4.81	0.0394	No value	No value	No value
03052000	Middle Fork River at Audra	148	1943–1979, 1990–2002	8.82	0.0596	1943–1964	8.91	0.0602
03052500	Sand Run near Buckhannon	14.3	1948–2002	0.40	0.0280	1948–2000	0.40	0.0280
03053500	Buckhannon River at Hall	277	1917–2002	17.7	0.0639	1930–2002	17.8	0.0643
03054500	Tygart Valley River at Philippi	914	1941–2000	60.0	0.0656	1941–2000	60.0	0.0656
03056250	Three Fork Creek near Grafton	96.8	1986–2002	4.35	0.0449	1986–2000	3.47	0.0358
03056500	Tygart Valley River at Fetterman	1,304	1909–1939	74.5	0.0571	No value	No value	No value
03057500	Skin Creek near Brownsville	25.7	1947–1960	0.36	0.0140	1948–1960	0.38	0.0148
03058000	West Fork River below Stonewall Jackson Dam near Weston	101	1948–1984	2.24	0.0222	1948–1978	2.13	0.0211
03058500	West Fork River at Butcherville	181	1917–1989	4.36	0.0241	1934–1989	5.18	0.0286
03059000	West Fork River at Clarksburg	384	1924–1983	6.95	0.0181	1935–1983	7.12	0.0185

Table 13. Comparison between the average minimum flows computed for the entire record period and the subset record period for 110 stations in West Virginia.—Continued

[Climatic year, April 1 through March 31of the indicated ending year]

Station number	Station name	Drainage area (square miles)	Entire record period			Subset record period		
			Record period (climatic years)	Average minimum flow (cubic feet per second)	Unit average minimum flow (cubic feet per second per square mile)	Record period (climatic years)	Average minimum flow (cubic feet per second)	Unit average minimum flow (cubic feet per second per square mile)
03059500	Elk Creek at Quiet Dell	84.6	1945–1970	2.46	0.0291	No value	No value	No value
03060500	Salem Creek at Salem	8.32	1952–1969	0.00	0.0000	No value	No value	No value
03061000	West Fork River at Enterprise	759	1909–1916, 1934–1983, 1986–1989	41.3	0.0544	1935–1983	45.3	0.0597
03061500	Buffalo Creek at Barrackville	116	1917–1924, 1934–2002	3.53	0.0304	1934–1996	3.65	0.0315
03062400	Cobun Creek at Morgantown	11.0	1966–1994, 1999–2002	0.09	0.0082	No value	No value	No value
03062500	Deckers Creek at Morgantown	63.2	1947–1969	3.13	0.0495	No value	No value	No value
03065000	Dry Fork at Hendricks	349	1942–1993, 1997–2002	35.2	0.1009	1944–1993	33.1	0.0948
03066000	Blackwater River at Davis	85.9	1923–2002	10.9	0.1269	1930–2002	10.7	0.1246
03069000	Shavers Fork at Parsons	213	1912–1926, 1942–1993	34.4	0.1615	1944–1993	36.1	0.1695
03069500	Cheat River near Parsons	722	1914–2002	91.7	0.1270	1930–2002	89.6	0.1241
03070000	Cheat River at Rowlesburg	974	1925–1996	110	0.1129	1930–1996	107	0.1099
03070500	Big Sandy Creek at Rockville	200	1911–1918, 1923–2002	11.0	0.0550	1930–2002	11.5	0.0575
03071000	Cheat River near Pisgah	1,354	1929–1958	142	0.1049	1932–1957	150	0.1108
03071500	Cheat River near Morgantown	1,380	1904–1905, 1910–1917, 1924–1925	179	0.1297	No value	No value	No value
03112000	Wheeling Creek at Elm Grove	281	1942–2002	5.62	0.0200	1942–1980	4.79	0.0170

Table 13. Comparison between the average minimum flows computed for the entire record period and the subset record period for 110 stations in West Virginia.—Continued

[Climatic year, April 1 through March 31of the indicated ending year]

Station number	Station name	Drainage area (square miles)	Entire record period			Subset record period		
			Record period (climatic years)	Average minimum flow (cubic feet per second)	Unit average minimum flow (cubic feet per second per square mile)	Record period (climatic years)	Average minimum flow (cubic feet per second)	Unit average minimum flow (cubic feet per second per square mile)
03114500	Middle Island Creek at Little	458	1930–1995	6.65	0.0145	1930–1995	6.65	0.0145
03151400	Little Kanawha River near Wildcat	112	1975–1983, 1987–2002	4.48	0.0400	No value	No value	No value
03151500	Little Kanawha River near Burnsville	155	1939–1973	4.63	0.0299	No value	No value	No value
03152000	Little Kanawha River at Glenville	387	1917–1920, 1930–1978	10.8	0.0279	1943–1978	10.6	0.0274
03152500	Leading Creek near Glenville	144	1939–1951	2.38	0.0165	No value	No value	No value
03153000	Steer Creek near Grantsville	162	1939–1975	1.19	0.0073	1956–1974	1.16	0.0072
03153500	Little Kanawha River at Grantsville	913	1930–1978	20.2	0.0221	1943–1978	22.6	0.0248
03154000	West Fork Little Kanawha River at Rocksdale	205	1930–1931, 1939–1975	1.79	0.0087	1955–1975	1.57	0.0077
03154500	Reedy Creek near Reedy	79.4	1953–1978	0.35	0.0044	1953–1978	0.35	0.0044
03155000	Little Kanawha River at Palestine	1,516	1941–1978	44.7	0.0295	1943–1978	44.8	0.0296
03155200	South Fork Hughes River at Macfarlan	210	1939–1951	1.62	0.0077	No value	No value	No value
03155500	Hughes River at Cisco	453	1930–1931, 1940–1994	6.11	0.0135	1940–1989	5.66	0.0125
03178500	Camp Creek near Camp Creek	32.0	1948–1971	0.29	0.0091	No value	No value	No value
03179000	Bluestone River near Pipestem	395	1952–2002	27.2	0.0689	1952–1978	24.3	0.0615
03179500	Bluestone River at Lilly	438	1910–1916, 1931–1948	16.8	0.0384	No value	No value	No value
03180000	New River at Bluestone Dam	4,602	1925–1948	1,270	0.2760	No value	No value	No value

Table 13. Comparison between the average minimum flows computed for the entire record period and the subset record period for 110 stations in West Virginia.—Continued

[Climatic year, April 1 through March 31of the indicated ending year]

Station number	Station name	Drainage area (square miles)	Entire record period			Subset record period		
			Record period (climatic years)	Average minimum flow (cubic feet per second)	Unit average minimum flow (cubic feet per second per square mile)	Record period (climatic years)	Average minimum flow (cubic feet per second)	Unit average minimum flow (cubic feet per second per square mile)
03180500	Greenbrier River at Durbin	133	1944–2002	9.51	0.0715	1944–2002	9.51	0.0715
03182000	Knapp Creek at Marlinton	108	1947–1958	9.00	0.0833	1947–1958	9.00	0.0833
03182500	Greenbrier River at Buckeye	540	1931–2002	35.0	0.0648	1931–2002	35.0	0.0648
03182700	Anthony Creek near Anthony	144	1973–1982	9.90	0.0688	No value	No value	No value
03183000	Second Creek near Second Creek	80.8	1947–1973, 1998	4.32	0.0535	1948–1964	4.53	0.0561
03183500	Greenbrier River at Alderson	1,364	1897–2002	104	0.0762	1930–2002	96.4	0.0707
03184000	Greenbrier River at Hilldale	1,619	1938–2002	106	0.0655	1938–2002	106	0.0655
03184500	New River at Hinton	6,256	1938–1948	1,560	0.2494	No value	No value	No value
03185000	Piney Creek at Raleigh	52.7	1953–1982	2.83	0.0537	1953–1978	2.50	0.0474
03185500	New River at Caperton	6,826	1930–1948	1,460	0.2139	No value	No value	No value
03186000	New River at Fayette	6,850	1897–1901, 1904, 1910–1916	1,850	0.2701	No value	No value	No value
03186500	Williams River at Dyer	128	1931–2002	10.9	0.0852	1931–2002	10.9	0.0852
03187000	Gauley River at Camden On Gauley	236	1910–1916, 1931–1975	19.9	0.0843	1932–1957	22.3	0.0945
03187300	North Fork Cranberry River near Hillsboro	9.78	1970–1982	1.85	0.1892	No value	No value	No value
03187500	Cranberry River near Richwood	80.4	1946–1951, 1966–2002	7.93	0.0986	1966–1979	7.43	0.0924
03189000	Cherry River at Fenwick	150	1931–1969, 1981–1982	7.68	0.0512	1932–1957	8.15	0.0543

Table 13. Comparison between the average minimum flows computed for the entire record period and the subset record period for 110 stations in West Virginia.—Continued

[Climatic year, April 1 through March 31of the indicated ending year]

Station number	Station name	Drainage area (square miles)	Entire record period			Subset record period		
			Record period (climatic years)	Average minimum flow (cubic feet per second)	Unit average minimum flow (cubic feet per second per square mile)	Record period (climatic years)	Average minimum flow (cubic feet per second)	Unit average minimum flow (cubic feet per second per square mile)
03189100	Gauley River near Craigsville	529	1966–1982, 1987–2002	59.7	0.1129	1966–1979	51.1	0.0966
03189500	Gauley River near Summersville	680	1910–1916, 1931–1965	52.0	0.0765	1932–1957	54.7	0.0804
03189650	Collison Creek near Nallen	2.78	1968–1977	0.00	0.0000	1968–1977	0.00	0.0000
03190000	Meadow River at Nallen	287	1910–1916, 1930–1971	12.3	0.0429	1932–1957	12.0	0.0418
03190400	Meadow River near Mount Lookout	365	1968–1983, 1987–2002	25.9	0.0710	1988–2000	18.3	0.0501
03191500	Peters Creek near Lockwood	40.2	1947–1971, 1981–1982, 1998	1.50	0.0373	1948–1964	1.24	0.0308
03192000	Gauley River above Belva	1,317	1930–1964	87.5	0.0664	1932–1957	94.8	0.0720
03193000	Kanawha River at Kanawha Falls	8,371	1878–1948	1,980	0.2365	No value	No value	No value
03194700	Elk River below Webster Springs	266	1961–1984, 1987–2002	31.5	0.1184	1962–1984	33.3	0.1252
03195000	Elk River at Centralia	281	1936–1963	24.8	0.0883	1940–1962	25.1	0.0893
03195500	Elk River at Sutton	542	1940–1960	38.5	0.0710	1940–1959	40.1	0.0740
03197000	Elk River at Queen Shoals	1,145	1930–1960	62.2	0.0543	1932–1957	66.5	0.0581
03198500	Big Coal River at Ashford	391	1910–1916, 1932–2002	22.4	0.0573	1932–2002	23.7	0.0606
03199000	Little Coal River at Danville	269	1932–1984	14.6	0.0543	1934–1984	15.1	0.0561
03200500	Coal River at Tornado	862	1910–1911, 1930–1931, 1963–2002	99.0	0.1148	1963–1975	156	0.1810
03201000	Pocatalico River at Sissonville	238	1910–1916, 1938–1978	1.79	0.0075	1943–1978	2.14	0.0090
03201410	Poplar Fork at Teays	8.47	1968–1978	0.00	0.0000	No value	No value	No value
03202400	Guyandotte River near Bailysville	306	1970–2002	49.0	0.1601	No value	No value	No value

Table 13. Comparison between the average minimum flows computed for the entire record period and the subset record period for 110 stations in West Virginia.—Continued

[Climatic year, April 1 through March 31of the indicated ending year]

Station number	Station name	Drainage area (square miles)	Entire record period			Subset record period		
			Record period (climatic years)	Average minimum flow (cubic feet per second)	Unit average minimum flow (cubic feet per second per square mile)	Record period (climatic years)	Average minimum flow (cubic feet per second)	Unit average minimum flow (cubic feet per second per square mile)
03202750	Clear Fork at Clear Fork	126	1976–2002	8.19	0.0650	No value	No value	No value
03203000	Guyandotte River at Man	758	1930–1962	36.2	0.0478	No value	No value	No value
03203600	Guyandotte River at Logan	833	1964–1979	88.4	0.1061	1964–1975	81.6	0.0980
03204000	Guyandotte River at Branchland	1,224	1917, 1930–1979	80.4	0.0657	1941–1979	91.1	0.0744
03204500	Mud River near Milton	256	1939–1980	2.67	0.0104	1939–1980	2.67	0.0104
03206600	East Fork Twelvepole Creek near Dunlow	38.5	1966–2002	0.70	0.0182	No value	No value	No value
03207000	Twelvepole Creek at Wayne	291	1917, 1928–1931, 1948–1966	3.77	0.0130	No value	No value	No value
03207020	Twelvepole Creek below Wayne	300	1917, 1928–1931, 1948–1971	3.74	0.0125	No value	No value	No value
03212750	Tug Fork at Welch	174	1986–1993, 1998–2002	34.5	0.1983	No value	No value	No value
03212980	Dry Fork at Beartown	209	1986–1993, 1998–2002	22.6	0.1081	No value	No value	No value
03213000	Tug Fork at Litwar	504	1932–1984	53.3	0.1058	1934–1984	54.7	0.1085
03213500	Panther Creek near Panther	31.0	1948–1986	0.62	0.0200	1948–1978	0.61	0.0197
03213700	Tug Fork at Williamson	936	1969–2002	112	0.1197	No value	No value	No value
03214000	Tug Fork near Kermit	1,188	1936–1985	96.3	0.0811	1936–1985	96.3	0.0811
03214500	Tug Fork at Kermit	1,280	1917, 1930–1934, 1986–2002	114	0.0891	No value	No value	No value