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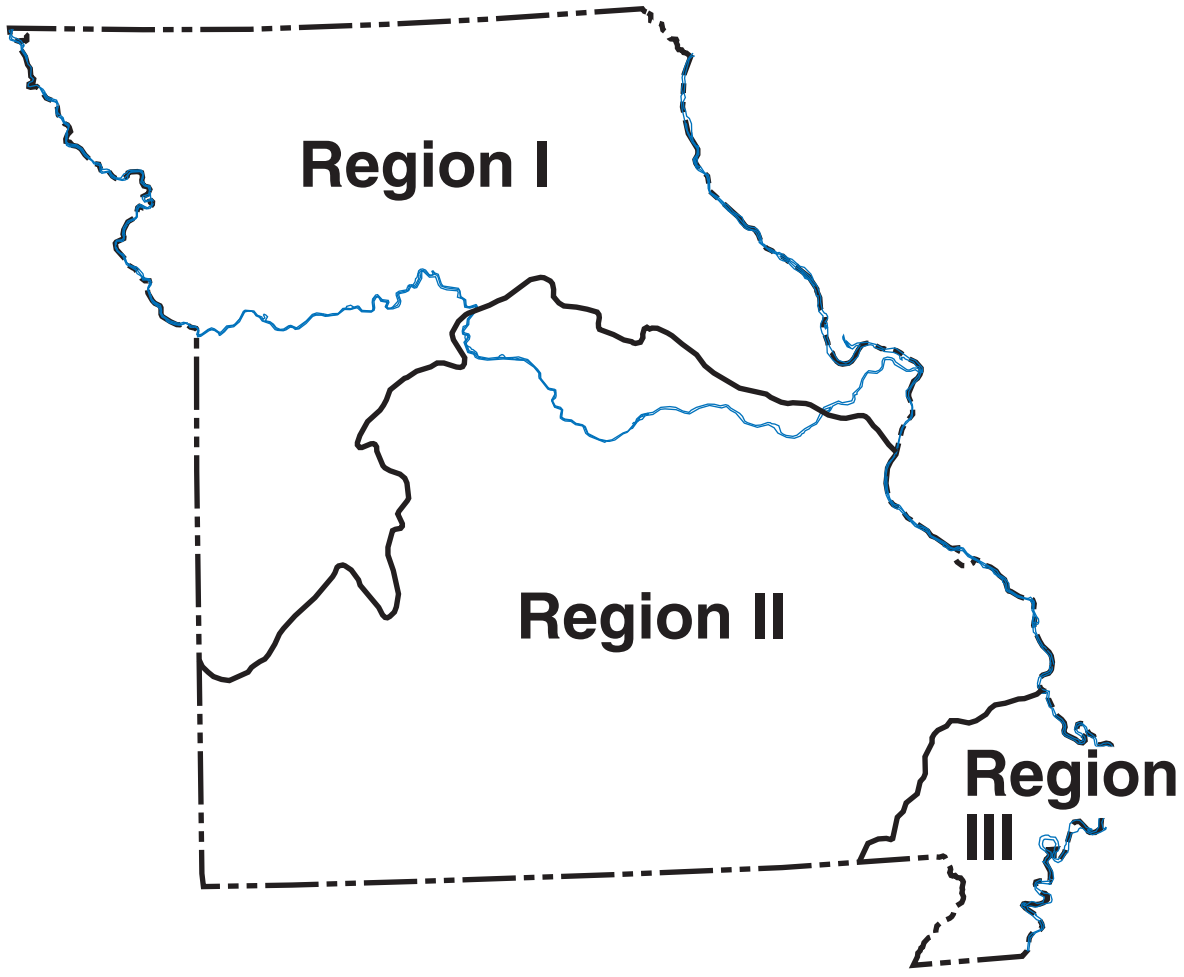
Techniques for Estimating the 2–to 500–Year Flood Discharges on Unregulated Streams in Rural Missouri

Water-Resources Investigations Report 95–4231



Prepared in cooperation with the Missouri Highway and Transportation Department

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

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1995

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Multiply	By	To obtain
inch (in.)	25.4	millimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
square mile (mi^2)	2.590	square kilometer
foot per mile (ft/mi)	0.1894	meter per kilometer
cubic foot per second (ft^3/s)	0.02832	cubic meter per second

Sea level: In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

Technique for Estimating the 2– to 500–Year Flood Discharges on Unregulated Streams in Rural Missouri

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Abstract

A generalized least-squares regression technique was used to relate the 2– to 500–year flood discharges from 278 selected streamflow-gaging stations to statistically significant basin characteristics. The regression relations (estimating equations) were defined for three hydrologic regions (I, II, and III) in rural Missouri. Ordinary least-squares regression analyses indicate that drainage area (Regions I, II, and III) and main-channel slope (Regions I and II) are the only basin characteristics needed for computing the 2– to 500–year design-flood discharges at gaged or ungaged stream locations.

The resulting generalized least-squares regression equations provide a technique for estimating the 2–, 5–, 10–, 25–, 50–, 100–, and 500–year flood discharges on unregulated streams in rural Missouri. The regression equations for Regions I and II were developed from streamflow-gaging stations with drainage areas ranging from 0.13 to 11,500 square miles and 0.13 to 14,000 square miles, and main-channel slopes ranging from 1.35 to 150 feet per mile and 1.20 to 279 feet per mile. The regression equations for Region III were developed from streamflow-gaging stations with drainage areas ranging from 0.48 to 1,040 square miles. Standard errors of estimate for the generalized least-squares regression equations in Regions I, II, and III ranged from 30 to 49 percent.

INTRODUCTION

The most common causes of bridge failures are flood related; consequently, there is a continuing need to evaluate the flood risks associated with the design of highway bridges. Underdesign of bridge structures could result in the disruption of service, costly maintenance, and loss of life; conversely, overdesign could result in excessive costs. One of the major concerns in the design of a new bridge or evaluation of an existing bridge is the susceptibility of bridge piers and abutments to scour from floods. Presently (1995), the design philosophy and concepts are that bridges should be designed to withstand a superflood (500–year recurrence interval) with little risk of failure (Richardson and others, 1993). Most of the Missouri Highway and Transportation Department (MHTD) bridges, culverts, road embankments, or levee structure sites have minimal flood data; thus, an adequate technique for estimating flood discharges is essential to the proper design of these structures.

During 1992, the U.S. Geological Survey (USGS), in cooperation with the MHTD, began a discharge-frequency study of rural streams in or near Missouri. As a result, the study provides a technique (in multiple-regression equation form) for estimating flood discharges having recurrence intervals of 2–, 5–, 10–, 25–, 50–, 100–, and 500–years at gaged or

ungaged sites on unregulated streams in rural Missouri.

Purpose and Scope

The purpose of this report is to present an updated set of discharge-frequency equations that can be used to compute flood discharges for unregulated streams in rural Missouri. The scope of the study included: (1) compiling, verifying, and updating annual maximum discharge data and basin and climatic characteristic data at 278 selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas; (2) defining the flood discharge-frequency curve for each streamflow-gaging station; and (3) developing regression equations for estimating the 2–, 5–, 10–, 25–, 50–, 100–, and 500–year flood discharges at gaged or ungaged stream locations in Missouri. Presented are a summary of the station discharge-frequency data, a general overview of the generalized least-squares (GLS) regression technique used in the study, and the regression equations.

Previous Studies

The first flood-frequency study conducted in Missouri used data collected through 1952 and described a procedure by which the magnitude of floods having recurrence intervals of 1.1 to 50 years can be determined (Searcy, 1955). A second study used data through 1965, and presented a set of regression equations for recurrence intervals of 1.2 to 50 years that uses two basin characteristics (drainage area and main-channel slope) to estimate the magnitude of floods at ungaged sites with certain drainage-area limitations (Sandhaus and Skelton, 1968). The third and most recent study, by Hauth (1974), used rainfall-runoff modeling to extend the limited data available on smaller drainage areas (less than 10 square miles). Using an expanded data base through 1970, Hauth's regression equations for recurrence intervals of 2 to 100 years use drainage area and main-channel slope to estimate the magnitude of floods for drainage areas ranging from 0.13 to 14,000 square miles in rural Missouri.

DISCHARGE-FREQUENCY CURVES

During 1967, the Hydrology Subcommittee of Interagency Advisory Committee on Water Data (formerly the U.S. Water Resources Council) recommended that the log-Pearson Type III distribution be adopted as the standard flood-frequency technique to be used in all Federal planning involving water and related land resources (Hydrology Subcommittee of Interagency Advisory Committee on Water Data, 1982, referred to as Bulletin 17B in this report). This technique, outlined in Bulletin 17B, uses the method of moments to relate annual maximum discharge data to recurrence intervals, where a recurrence interval is the average time interval in years between occurrences of a flood discharge of a given magnitude.

Annual maximum discharge data for 278 selected streamflow-gaging stations having at least 10 years of record were retrieved from the U.S. Geological Survey National Water Data Storage and Retrieval System (WATSTORE) data base (U.S. Geological Survey, 1983). Locations of these gaging stations are shown in figure 1; 230 are in Missouri, 15 are in Iowa, 10 are in Kansas, and 23 are in Arkansas. Also, the USGS station number and name, period of record used, and a map number (fig. 1) for these stations are listed in table 1 (at the back of this report).

Following procedures outlined in Bulletin 17B, logarithms of the annual maximum discharge data at each streamflow-gaging station were fitted to the Pearson Type III distribution after adjusting for historical data and high outliers (assigning them a longer recurrence interval than the record length) and removing low outliers. Because the station skew coefficient (S, table 1) computed from the discharge data can be biased by the adjustment or removal of a high/low outlier, an accurate computation of station skew requires a long period of record. To reduce possible bias caused by short periods of station discharge data, Bulletin 17B suggests that the skew coefficients computed from station data be weighted (W, table 1) with a generalized skew coefficient interpolated from a map showing lines of equal skew for the entire United States (Hydrology Subcommittee of Interagency Advisory Committee on Water Data, 1982, pl. 1). However, Bulletin 17B recommends that a generalized skew coefficient isoline map be drawn for the study region as a possible alternative method to the generalized skew coefficients from Bulletin 17B. For this study, 180 streamflow-gaging stations with 25 or more years of record (table 1) were used to hand draw a skew

coefficient isoline map for Missouri. The isoline map was analyzed to determine if any geographic or topographic deviations from the Bulletin 17B map were apparent. No deviation was apparent, so the map method was not considered further. The use of the map method determined that the generalized skew coefficient map in Bulletin 17B would adequately estimate generalized skew coefficients (G, table 1) for unregulated streams in rural Missouri; therefore, the remaining alternatives were not considered. Discharge-frequency curves for the 278 selected streamflow-gaging stations were defined using Bulletin 17B guidelines, and the resulting flood discharges for recurrence intervals of 2–, 5–, 10–, 25–, 50–, 100–, and 500–years are listed in table 1.

BASIN AND CLIMATIC CHARACTERISTICS

Basin and climatic characteristics for the 278 selected streamflow-gaging stations were retrieved from the WATSTORE data base (U.S. Geological Survey, 1983). The initial list of basin and climatic characteristics were selected on the basis of availability, ease of computation, and their use in previous discharge-frequency studies in Missouri and adjacent states (Thomas and Benson, 1970, p. 13–26). The seven basin and climatic characteristics selected for evaluation are:

1. AREA: Drainage area, in square miles.
2. SLOPE: Main-channel slope, in feet per mile—calculated as the difference in elevations at points 10 and 85 percent of the distance along the main channel from gage location to basin divide, divided by the distance between the two points.
3. LENGTH: Main-channel length, in miles—longest main channel from gage location to basin divide.
4. ELEV: Mean basin elevation, in feet above sea level.
5. FOREST: Forested area, in percent of the drainage area.
6. SOILINF: Soil index, in inches—a relative measure of the potential soil water storage.
7. I24,2: Precipitation intensity, in inches—maximum 24–hour rainfall expected on an average of once each 2 years.

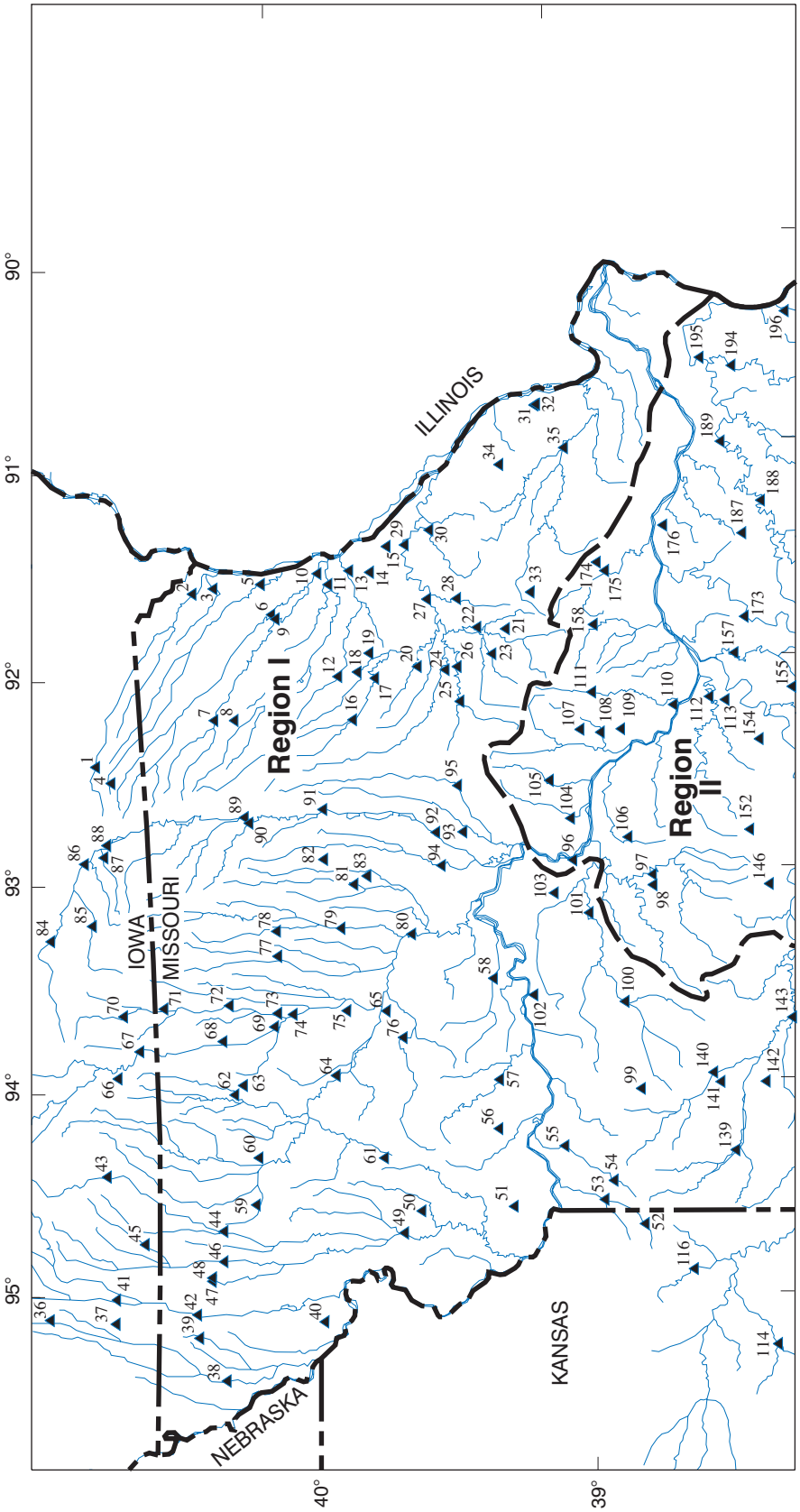
Soil index values were interpolated from Skelton's (1973, pl. 1) report. The 2–year 24–hour precipitation intensity values were interpolated from Huff and Angel (1992, p. 84).

To verify WATSTORE values for selected basin characteristics and to supply missing basin characteristic values, comparison measurements at 119 of the 278 selected streamflow-gaging stations (table 2, at the back of this report) were made using geographic information system (GIS) procedures developed by the USGS. Since accuracy of a GIS measured value can be map-scale dependent, the scale of the digital data to be used in the GIS measurements was selected based on drainage-area size. The most detailed sources of digital data, 1:100,000 scale (100K) and 1:250,000 scale (250K), were used where available. To supplement the smaller scale digital data, features were digitized from the most recent 1:24,000 scale (24K) topographic maps for better definition of basin characteristics. The 119 basin boundaries were outlined and digitized into digital maps (ARC/INFO[1] coverages), which were used to measure the drainage areas. The longest main channels were determined and digitized into separate digital maps for main-channel slope and main-channel length measurements.

The 24K USGS topographic maps were used as the source for measuring basin characteristics at 57 of the 119 streamflow-gaging stations with drainage areas ranging from about 0.2 to 5.4 square miles. From the 24K topographic maps, the elevation contour lines within the basin boundaries were digitized, creating digital hypsography maps. These maps were converted into rasterized data sets from which the calculated mean of approximately 10,000 grid-cell elevations was used as a measure of mean basin elevation. The forested areas within the basin boundaries were digitized, creating digital forested area maps for forested area calculations.

The 100K USGS digital line graph (DLG) files were used as the source for measuring basin characteristics at 32 of the 119 streamflow-gaging stations with drainage areas ranging from about 9.4 to 920 square miles. The forested area within the basin boundary was measured from the 100K/250K USGS land use/land cover digital data. The 100K DLG elevation contours were converted into rasterized data sets from which the calculated mean of approximately 10,000 grid-cell elevations was used as a measure of mean

[1] Any use of product, brand or trade names is for descriptive purposes only and does not constitute endorsement by the U.S. Geological Survey.


Region I
Region II
IOWA
MISSOURI
ILLINOIS
KANSAS
NEBRASKA
90°
91°
92°
93°
94°
95°
40°
39°

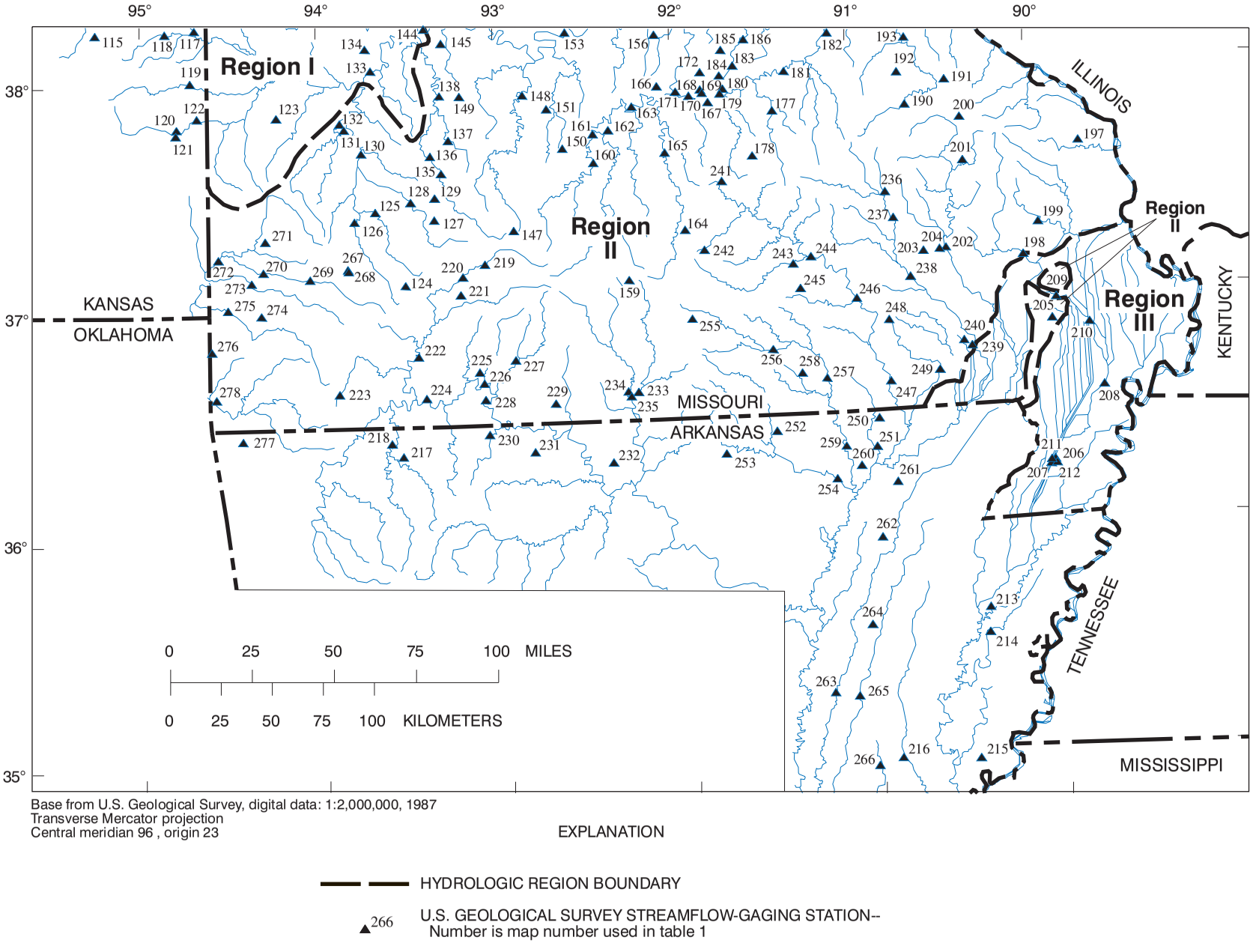


Figure 1. Location of hydrologic region boundaries and selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas.

basin elevation. However, the 100K DLG hypsography coverage of Missouri presently (1995) is incomplete; therefore, the 250K U.S. Defense Mapping Agency digital elevation models (DEM) were used as a source to complete the missing hypsography coverages.

The 250K DEM data were used as the source for measuring basin characteristics for 30 of the 119 streamflow-gaging stations with drainage areas ranging from about 44 to 11,500 square miles. From these data, the calculated mean of a minimum of 15,000 grid-cell elevations was used as the mean basin elevation. The forested areas within the drainage boundaries were determined from the 100K/250K USGS land use/land cover digital data.

MULTIPLE-REGRESSION TECHNIQUES FOR ESTIMATING FLOOD DISCHARGES

Because limited flood data are available at most MHTD project sites, a technique for transferring flood data from gaged to ungaged locations is needed. A statistical method traditionally used to estimate flood discharges is the multiple-regression technique, which can mathematically relate streamflow characteristics to various basin and climatic characteristics.

The general multiple-regression equation used to formulate a relation is:

$$y = a x_1^{b_1} x_2^{b_2} x_3^{b_3} \ldots x_n^{b_n},$$

where y is a streamflow characteristic, a is a regression constant (intercept), $x_{1\text{-}n}$ are basin and climatic characteristics, and $b_{1\text{-}n}$ are regression coefficients. Nonlinear relations between hydrologic (streamflow, basin, and climatic) characteristics frequently are linear if they are transformed to logarithms. Thus, the log-transformed multiple-regression equation becomes

$$\log y = \log a + b_1 \log x_1 + b_2 \log x_2 + b_3 \log x_3 + \ldots + b_n \log x_n.$$

This relation is assumed to be linear only within the range of basin and climatic characteristics that defined the equation.

The ordinary least-squares (OLS) and GLS multiple-regression techniques are used to develop a set of relations between streamflow characteristics and selected basin and climatic characteristics. A general overview of the OLS and GLS multiple-regression techniques used in this study to develop regression equations for estimating flood discharges having recurrence intervals from 2 to 500 years are presented in the following sections.

Ordinary Least-Squares Regression Analyses

Traditionally, in the case of multiple-regression equations, the regression constants and coefficients and the statistically significant basin and climatic characteristics have been determined from OLS regression analyses. An OLS regression analysis gives equal weight to all streamflow-gaging stations regardless of variations in record lengths or any possible cross-correlation between concurrent station data (Stedinger and Tasker, 1985).

Basin and Climatic Characteristics

In this study, the basin and climatic characteristics combinations were evaluated by using Statit statistical procedures ALLREG and REGRES (Statware, Inc., 1990, p. 6–2 to 6–10 and 6–22 to 6–27). The ALLREG for all possible subset regression procedure was used to evaluate all basin and climatic characteristics combinations and the minimum Mallows' Cp statistic was used to identify the sets of best-possible combinations. The REGRES multiple linear regression procedure was used to evaluate the ALLREG best-possible combinations and to determine the most statistically significant basin and climatic characteristics combination based on the following selection criteria:

1. All characteristics are statistically significant at the 95–percent confidence level.
2. All regression coefficients are hydrologically valid.
3. The standard error of prediction (press statistic) is minimized.

Only drainage area and main-channel slope were statistically significant based on these criteria.

Hydrologic Region Boundaries

The discharge-frequency and basin characteristics (drainage area and main-channel slope) data for 261 of the 278 selected streamflow-gaging stations (table 1) were used to develop 2– to 500–year statewide OLS regression equations. Because the Mississippi Alluvial Plain is predominately an area of drainage ditches, the 17 streamflow-gaging stations in

the region (Region III) were not used in the statewide OLS regression analyses. The discharge-frequency and basin characteristics data for these stations also are given in table 1. Each of the 2– to 500–year statewide OLS regression equations residuals were plotted on separate State maps. The residuals are the differences between the station discharge-frequency data and the corresponding OLS regression equation data. For each State map, the magnitude and numerical sign of the residuals were checked for possible regionalizing or regrouping of the residuals.

Physical features within a State or region can have a pronounced effect on the magnitude of floodflows. The state of Missouri includes three major landforms or provinces: Central Lowlands, Ozark Plateaus, and the Mississippi Alluvial Plain (Fenneman, 1938). Trends in the algebraic signs and magnitudes of the 2– to 500–year statewide OLS regression equations residuals indicated a possible regrouping along physiographic boundaries similar to the three provinces outlined by Fenneman (1938).

The Central Lowlands (Region I) are characterized by meandering stream channels in wide and flat valleys resulting in long and narrow drainage patterns (fig. 2) with local relief generally between 50 to 150 feet. However, parts of the meandering stream channels have been straightened by channelization projects of the past century. Elevations range from about 600 feet above sea level near the Mississippi River to about 1,200 feet above sea level in the northwest parts of the region.

The Ozark Plateaus (Region II) are characterized by streams that have cut narrow valleys 200 to 500 feet deep, resulting in sharp rugged ridges (fig. 2) that separate streams, with local relief generally ranging from 100 to 500 feet. The drainage patterns are described as dendritic (tree shaped) with main-channel gradients steeper than elsewhere in Missouri, and karst features are locally prominent in much of the region. Elevations range from 800 to about 1,700 feet above sea level with the exception of Crowley's Ridge, where elevations are about 500 feet above sea level.

The Mississippi Alluvial Plain (Region III) in southeastern Missouri is a relatively flat area of excellent farmland (fig. 2). Virtually all the area is drained by a series of man-made drainage ditches that slope southward at an average of about 1.5 feet per mile. Elevations range from 200 to 300 feet above sea level with local relief seldom exceeding 30 feet.

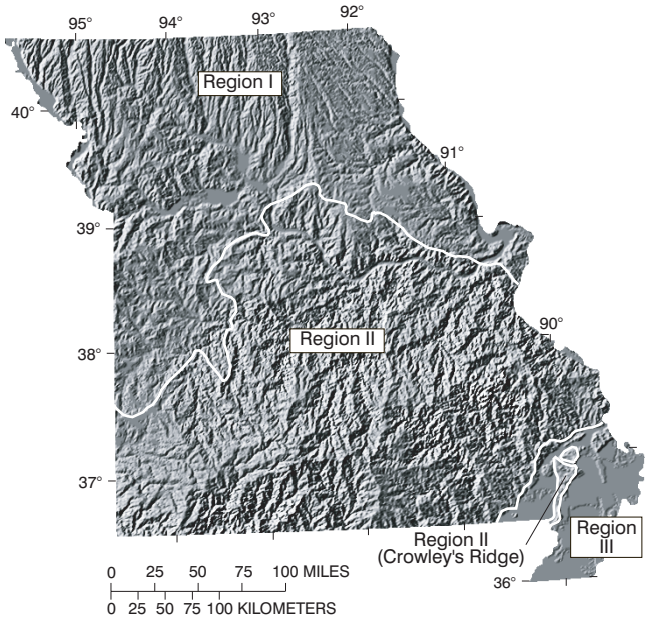


Figure 2. Shaded-relief image of landforms in Missouri and location of hydrologic region boundaries (modified from Thelin and Pike, 1991).

These three physiographic boundaries are consistent with the flood-region boundaries outlined by Crippen and Bue (1977, p. 6). Consequently, the State was divided into three hydrologic regions (I, II, and III) that were adjusted to coincide with major basin or sub-basin boundaries (fig. 1). The resulting three sets of 2– to 500–year regional OLS regression equations residuals and standard errors showed significant improvements over the statewide OLS regression equations residuals and standard errors.

Generalized Least-Squares Regression Equations

Stedinger and Tasker (1985) compared the statistical performance of the ordinary, weighted, and generalized least-squares regression techniques (models) in situations where the available streamflow data at gaging stations within a study region were of different and varying lengths of record and concurrent flows at different gaging stations are cross-correlated. They found that the GLS regression technique provided (1) more accurate hydrologic characteristic estimates; (2) better estimates of the accuracy with which the regression model's characteristics are being estimated; and (3) almost unbiased estimates of the regression model

errors (Stedinger and Tasker, 1985). Study results outlined in Tasker and Stedinger (1989) document an operational GLS hydrologic regression model that can be used to develop empirical relations (estimating equations) between streamflow characteristics and basin and climatic characteristics. Further details on the development of the GLS regression technique are discussed in Stedinger and Tasker (1985) and in Tasker and Stedinger (1989).

The computer program GLSNET (W.O. Thomas, A.M. Lumb, K.M. Flynn, and G.D. Tasker, U.S. Geological Survey, written commun., 1993), which uses the GLS methodology, was used in this study to develop a set of GLS regression equations for estimating the 2–, 5–, 10–, 25–, 50–, 100–, and 500–year flood discharges in hydrologic regions (I, II, and III; fig. 1). For Regions I and II, the statistically significant basin characteristics of drainage area and main-channel slope are needed for computing these discharges; however, only drainage area is needed in Region III. Three sets of GLS regression equations and their average equivalent years of record are given in table 3. The average equivalent years of record is an estimate of the record length (number of years) required at a stream site to achieve an accuracy equivalent to that of the GLS regression equation.

LIMITATIONS AND ACCURACIES OF REGRESSION EQUATIONS

The GLS regression equations for estimating the 2– to 500–year flood discharges (table 3) should be limited to streams in rural Missouri and should not be used on urban drainages (5 percent or more of the drainage area covered with commercial, industrial, or residential development) or where stream regulation, diversion, or other human activities could have a substantial effect on peak discharge. The three sets of regression equations are valid within the limitations of statistically significant basin characteristics used in their respective regression analyses. The Region I regression analyses were based on 118 streamflow-gaging stations with drainage areas ranging from 0.13 to 11,500 square miles and main-channel slopes from 1.35 to 150 feet per mile; Region II regression analyses were based on 143 streamflow-gaging stations with drainage areas ranging from 0.13 to 14,000 square miles and main-channel slopes from 1.20 to 279 feet per mile; and Region III regression analyses were limited to 17 streamflow-gaging stations with drainage areas of 0.48 to 1,040 square miles.

The GLS regression equations have standard errors of estimate ranging from 32 to 43 percent for Region I, 30 to 42 percent for Region II, and 32 to 49 percent for Region III (table 3). The standard error of estimate is a measure of the variation between the regression equation estimate and the station data used in deriving the regression equation. The standard errors of prediction are a measure of the accuracy of the regression equations when predicting 2– to 500–year flood discharges at ungaged sites.

SUMMARY

Discharge-frequency curves for 278 selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas were defined using the log-Pearson Type III distribution. The resulting flood discharges for the 2– to 500–year recurrence intervals are tabulated along with statistically significant basin characteristics. These flood discharge data were regressed against drainage area and main-channel slope using ordinary least-squares regression techniques to develop a set of statewide regression equations for Missouri. The spatial distribution (geographical patterns) of the statewide regression equations residuals indicated that the State be divided into three hydrologic regions (I, II, and III) along physiographic boundaries. Generalized least-squares regression equations were developed for estimating the 2–, 5–, 10–, 25–, 50–, 100–, and 500–year flood discharges in Regions I, II, and III at gaged or ungaged sites on unregulated streams in rural Missouri.

Regions I and II ordinary least-squares regression analyses indicate that drainage area and main-channel slope were the statistically significant basin characteristics. The generalized least-squares regression equations were developed from 261 selected streamflow-gaging stations with drainage areas ranging from 0.13 to 11,500 square miles and 0.13 to 14,000 square miles, and main-channel slopes ranging from 1.35 to 150 feet per mile and 1.20 to 279 feet per mile. Standard errors of estimate for the regression equations ranged from 32 to 43 percent and 30 to 42 percent.

Region III ordinary least-squares regression analyses indicate drainage area is the only statistically significant basin characteristic. The generalized least-squares regression equations were developed from 17

Table 3. Generalized least-squares regression equations for estimating 2– to 500–year flood discharges on unregulated streams in rural Missouri

[Q_t, estimated flood discharge, in cubic feet per second, for a *t*-year recurrence interval; A, drainage area, in square miles; S, main-channel slope, in feet per mile]

Regression equations	Number of gaging stations used in regression analysis (table 1)	Average standard error of estimate (percent)	Average standard error of prediction (percent)	Average equivalent years of record
		Region I		
$Q_2 = 69.4A^{0.703}S^{0.373}$	118	32	34	4
$Q_5 = 123A^{0.690}S^{0.383}$	118	32	32	5
$Q_{10} = 170A^{0.680}S^{0.378}$	118	32	34	6
$Q_{25} = 243A^{0.668}S^{0.366}$	118	34	36	7
$Q_{50} = 305A^{0.660}S^{0.356}$	118	36	38	8
$Q_{100} = 376A^{0.652}S^{0.346}$	118	38	40	9
$Q_{500} = 569A^{0.636}S^{0.321}$	118	43	45	10
		Region II		
$Q_2 = 77.9A^{0.733}S^{0.265}$	143	42	43	3
$Q_5 = 99.6A^{0.763}S^{0.355}$	143	35	36	5
$Q_{10} = 117A^{0.774}S^{0.395}$	143	32	34	7
$Q_{25} = 140A^{0.784}S^{0.432}$	143	30	32	11
$Q_{50} = 155A^{0.789}S^{0.453}$	143	30	31	13
$Q_{100} = 170A^{0.794}S^{0.471}$	143	30	32	15
$Q_{500} = 203A^{0.804}S^{0.503}$	143	31	34	18
		Region III		
$Q_2 = 88.0A^{0.658}$	17	32	34	2
$Q_5 = 145A^{0.627}$	17	33	36	2
$Q_{10} = 187A^{0.612}$	17	35	38	2
$Q_{25} = 244A^{0.595}$	17	38	41	3
$Q_{50} = 288A^{0.585}$	17	40	44	3
$Q_{100} = 334A^{0.576}$	17	43	46	3
$Q_{500} = 448A^{0.557}$	17	49	54	3

selected streamflow-gaging stations with drainage areas ranging from 0.48 to 1,040 square miles. Standard errors of estimate for the regression equations ranged from 32 to 49 percent.

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TABLES

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas

[USGS, U.S. Geological Survey; WY, water year; mi^2, square miles; ft/mi, feet per mile; Method, method of estimating skew coefficient; ft^3/s, cubic feet per second; W, weighted station skew and Bulletin 17B generalized skew coefficient (Hydrology Subcommittee of Interagency Advisory Committee on Water Data, 1982, plate 1); G, Bulletin 17B generalized skew coefficient; S, station skew coefficient]

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
1, I	05494300	Fox River at Bloomfield, Iowa	1953–73	87.7	8.30	W	2,700	4,970	6,650	8,900	10,600	12,400	16,600
2, I	[a]05495000	Fox River at Wayland, Mo.	1922–93	400	4.50	W	6,480	10,900	14,200	18,600	22,000	25,600	34,500
3, I	[a]05495100	Big Branch Tributary near Wayland, Mo.	1956–84	.70	80.8	W	119	239	348	522	682	870	1,430
4, I	05495600	South Wyaconda River near West Grove, Iowa	1953–73	4.69	26.9	G	551	1,320	2,000	3,020	3,880	4,820	7,270
5, I	[a]05496000	Wyaconda River above Canton, Mo.	1922–72, 1976, 1978–93	393	4.50	W	5,600	9,200	11,800	15,300	18,100	20,900	27,900
6, I	[a]05497000	North Fabius River at Monticello, Mo.	1922–93	452	4.80	G	8,080	11,800	14,200	17,000	18,900	20,800	24,900
7, I	[a]05497500	Middle Fabius River near Baring, Mo.	1931–61, 1963–76, 1978–86	185	6.80	G	5,050	7,970	9,900	12,300	14,000	15,700	19,500
8, I	[a]05497700	Bridge Creek Branch near Baring, Mo.	1955–79	2.38	43.2	S	363	585	755	996	1,190	1,410	1,980
9, I	[a]05498000	Middle Fabius River near Monticello, Mo.	1946–93	393	4.10	W	5,860	9,080	11,200	13,900	15,800	17,600	21,800
10, I	05498500	North Fabius River at Taylor, Mo.	1929, 1931–42	930	4.00	W	10,600	18,700	24,400	31,900	37,400	42,900	55,500
11, I	[a]05500000	South Fabius River near Taylor, Mo.	1933, 1935–93	620	3.40	W	7,990	12,000	14,600	17,900	20,200	22,500	27,600
12, I	[a]05500500	North River at Bethel, Mo.	1937–73, 1975–84	58.0	5.00	W	1,880	3,530	4,780	6,480	7,820	9,200	12,600
13, I	[a]05501000	North River at Palmyra, Mo.	1935–93	373	5.00	W	11,000	19,500	26,000	35,200	42,600	50,500	70,800
14, I	05501200	Nichols Branch near Palmyra, Mo.	1960–79	2.58	52.5	W	395	740	1,040	1,510	1,930	2,410	3,830
15, I	05502000	Bear Creek at Hannibal, Mo.	1937, 1939–42, 1948–61	31.0	15.4	W	2,750	4,370	5,470	6,850	7,860	8,860	11,100
16, I	05502300	North Fork Salt River at Hagers Grove, Mo.	1975–93	365	5.19	G	9,690	15,900	20,100	25,500	29,400	33,300	42,100
17, I	[a]05502500	North Fork Salt River near Shelbina, Mo.	1928, 1931–72	481	3.90	S	6,510	10,400	13,100	16,800	19,700	22,600	29,900

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
18, I	05502700	Easdale Branch near Shelbyville, Mo.	1958–79	0.71	59.9	W	350	537	669	842	975	1,110	1,440
19, I	[a]05503000	Douglas Creek (Oak Dale Branch) near Emden, Mo.	1956–81	2.64	32.3	S	655	1,000	1,260	1,620	1,900	2,210	3,020
20, I	05503800	Crooked Creek near Paris, Mo.	1973, 1980–93	80.0	3.97	W	3,330	5,140	6,370	7,950	9,120	10,300	13,000
21, I	05504700	Bean Creek near Mexico, Mo.	1960–79	3.02	33.1	W	628	1,200	1,680	2,410	3,040	3,750	5,730
22, I	[a]05505000	South Fork Salt River at Santa Fe, Mo.	1940–86	298	3.60	W	8,010	12,500	15,600	19,600	22,700	25,800	33,100
23, I	[a]05506000	Youngs Creek near Mexico, Mo.	1937–79	67.4	7.50	G	2,620	4,480	5,790	7,480	8,740	10,000	12,900
24, I	[a]05506500	Middle Fork Salt River at Paris, Mo.	1940–93	356	2.90	W	5,480	9,320	12,500	17,400	21,700	26,600	40,700
25, I	[a]05506800	Elk Fork Salt River near Madison, Mo.	1967, 1969–93	200	4.14	W	7,440	13,700	18,900	26,900	33,800	41,600	63,600
26, I	[a]05507000	Elk Fork Salt River near Paris, Mo.	1928, 1931–54, 1958	262	3.50	S	7,540	12,100	15,600	20,200	24,000	27,900	38,000
27, I	[a]05507500	Salt River near Monroe City, Mo.	1940–79	2,230	2.80	W	27,700	41,900	52,500	67,300	79,400	92,300	126,000
28, I	05507600	Lick Creek at Perry, Mo.	1980–93	104	6.20	S	5,890	8,560	10,300	12,500	14,000	15,500	19,000
29, I	[a]05508000	Salt River near New London, Mo.	1922–79	2,480	2.50	W	27,300	40,200	49,600	62,300	72,400	83,100	110,000
30, I	05508805	Spencer Creek (below Plum Creek) near Frankford, Mo.	1979–93	206	5.56	S	11,400	15,000	17,100	19,600	21,200	22,800	26,200
31, I	[a]05513600	Camp Creek near Elsberry, Mo.	1955–79, 1982–90	1.50	126	G	322	567	743	973	1,150	1,320	1,730
32, I	[a]05513650	Hurricane Creek near Elsberry, Mo.	1955–79	3.06	86.3	W	839	1,620	2,170	2,860	3,360	3,840	4,850
33, I	05513700	Mams Slough Creek near Wellsville, Mo.	1955–57, 1961–79	5.08	14.3	G	748	1,260	1,610	2,070	2,400	2,740	3,510
34, I	[a]05514200	Reid Branch near Bowling Green, Mo.	1955–79	.54	93.3	W	233	402	524	684	807	930	1,220
35, I	[a]05514500	Cuivre River near Troy, Mo.	1922–72, 1974–93	903	4.60	W	24,600	40,800	53,100	70,500	84,700	99,800	139,000
36, I	[a]06811840	Tarkio River at Stanton, Iowa	1952, 1954–56, 1958–91	49.3	11.2	G	2,860	6,130	8,890	12,900	16,300	20,000	29,400
37, I	[a]06811875	Snake Creek near Yorktown, Iowa	1966–91	9.10	32.0	G	1,140	1,940	2,510	3,270	3,850	4,440	5,830

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
38, I	[a]06813000	Tarkio River at Fairfax, Mo.	1922–90	508	4.90	G	6,960	11,600	14,900	19,300	22,600	25,900	33,900
39, I	06815550	Staples Branch near Burlington Junction, Mo.	1959–81	.49	61.1	G	156	280	373	499	598	699	946
40, I	[a]06816000	Mill Creek at Oregon, Mo.	1951–76	4.90	42.3	G	729	1,690	2,550	3,870	5,010	6,280	9,700
41, I	[a]06817000	Nodaway River at Clarinda, Iowa	1918–25, 1937–93	762	5.84	G	11,300	20,200	26,800	35,600	42,500	49,600	66,700
42, I	[a]06817500	Nodaway River near Burlington Junction, Mo.	1922–93	1,240	4.21	G	13,900	24,200	31,600	41,500	49,200	56,900	75,500
43, I	[a]06818750	Platte River near Diagonal, Iowa	1967–91	217	4.47	G	4,920	6,690	7,760	9,010	9,880	10,700	12,500
44, I	[a]06818900	Platte River at Ravenwood, Mo.	1959–92	486	4.45	W	7,340	10,400	12,300	14,600	16,200	17,700	21,200
45, I	06819190	East Fork One Hundred and Two River near Bedford, Iowa	1960–83	92.1	7.70	W	4,190	6,440	7,970	9,910	11,400	12,800	16,100
46, I	[a]06819500	One Hundred and Two River at Maryville, Mo.	1933–90	500	5.72	G	7,910	12,700	16,000	20,200	23,400	26,500	33,800
47, I	[a]06820000	White Cloud Creek near Maryville, Mo.	1949–79	6.06	19.5	G	620	1,450	2,190	3,320	4,300	5,380	8,290
48, I	[a]06820300	Big Slough near Wilcox, Mo.	1950–54, 1956, 1958–79, 1982–89	1.30	35.5	G	419	741	978	1,300	1,540	1,790	2,400
49, I	[a]06820500	Platte River near Agency, Mo.	1924–30, 1933–93	1,760	3.76	W	15,500	24,800	31,800	41,500	49,300	57,600	79,000
50, I	[a]06821000	Jenkins Branch at Gower, Mo.	1951–76	2.72	34.0	W	554	1,350	2,040	3,070	3,930	4,840	7,130
51, I	[a]06821130	First Creek near Nashua, Mo.	1959–79, 1981–84	.55	59.5	W	114	267	423	698	969	1,310	2,420
52, I	06893080	Blue River near Stanley, Kans.	1970–93	46.0	15.0	W	4,640	8,410	11,600	16,400	20,700	25,500	39,200
53, I	[a]06893500	Blue River near Kansas City, Mo.	1939–93	188	9.01	W	9,600	15,400	20,000	26,900	32,800	39,400	57,800
54, I	06893793	Little Blue River (below Longview Dam) at Kansas City, Mo.	1967–85	50.7	8.72	W	6,310	10,100	12,900	16,700	19,800	23,000	31,000
55, I	[a]06894000	Little Blue River near Lake City, Mo.	1948–92	184	6.26	W	4,660	7,620	9,780	12,700	14,900	17,300	23,000

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
56, I	06894500	East Fork Fishing River at Excelsior Springs, Mo.	1951–70	20.0	21.9	G	2,470	5,330	7,740	11,300	14,300	17,500	25,800
57, I	[a]06895000	Crooked River near Richmond, Mo.	1948–71, 1973–75	159	5.17	W	4,020	8,390	12,600	19,600	26,400	34,700	61,200
58, I	[a]06896000	Wakenda Creek at Carrollton, Mo.	1948–70, 1972–82, 1984–92	248	5.27	W	4,990	7,220	8,650	10,400	11,700	12,900	15,700
59, I	[a]06896180	DeMoss Branch near Stanberry, Mo.	1955–79	.38	106	G	137	246	327	436	521	607	815
60, I	06896500	Thompson Branch near Albany, Mo.	1956–72	5.58	30.9	W	736	1,500	2,080	2,850	3,430	4,010	5,330
61, I	[a]06896700	O'Neill Branch at Osborn, Mo.	1955–79	.80	50.9	W	204	443	653	974	1,250	1,560	2,410
62, I	[a]06897000	East Fork Big Creek near Bethany, Mo.	1934–72, 1974	95.0	7.24	W	2,720	4,450	5,790	7,700	9,270	11,000	15,500
63, I	[a]06897200	Simpson Branch near Bethany, Mo.	1955–79	4.72	20.7	W	1,020	2,030	2,860	4,080	5,100	6,210	9,130
64, I	[a]06897500	Grand River near Gallatin, Mo.	1909, 1922–93	2,250	4.11	W	25,600	39,800	49,200	61,000	69,600	78,000	97,000
65, I	[a]06897700	Grand River Tributary near Utica, Mo.	1958, 1960–84	1.44	62.8	W	392	550	652	780	874	966	1,180
66, I	[a]06897950	Elk Creek near Decatur City, Iowa	1967–93	52.5	17.3	S	6,190	13,300	18,500	25,300	30,100	34,800	44,700
67, I	[a]06898000	Thompson River at Davis City, Iowa	1918–26, 1942–93	701	3.51	S	7,720	13,200	17,800	25,100	31,600	39,200	62,000
68, I	06898100	Thompson River at Mount Moriah, Mo.	1961–77	891	3.70	W	13,900	20,900	25,800	32,200	36,900	41,800	53,400
69, I	06898200	Thompson River near Trenton, Mo.	1961–77	1,060	3.40	S	14,000	20,800	25,500	31,500	36,000	40,600	51,500
70, I	[a]06898400	Weldon River near Leon, Iowa	1959–91	104	10.7	W	5,840	9,370	11,900	15,200	17,800	20,500	26,900
71, I	[a]06898500	Weldon River near Mercer, Mo.	1939–59, 1961–77	246	7.54	W	11,300	18,000	22,700	29,100	34,000	39,000	51,300
72, I	[a]06899000	Weldon River at Mill Grove, Mo.	1930–72	494	5.05	G	10,800	18,400	23,800	30,700	36,000	41,300	53,500
73, I	06899100	Weldon River near Trenton, Mo.	1961–77	540	3.70	G	16,600	21,100	23,600	26,600	28,500	30,300	34,100
74, I	[a]06899500	Thompson River at Trenton, Mo.	1928–93	1,720	3.02	G	23,800	40,000	51,300	65,900	76,900	87,800	113,000
75, I	06899600	West Fork Leakey Branch near Chillicothe, Mo.	1955–77	.21	63.8	W	144	248	321	415	485	554	712
76, I	06899700	Shoal Creek near Braymer, Mo.	1958–77	391	2.92	W	6,120	8,580	10,200	12,100	13,500	14,900	18,000

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
77, I	[a]06900000	Medicine Creek near Galt, Mo.	1922–75, 1978–90	225	5.00	G	5,900	9,830	12,600	16,100	18,700	21,300	27,200
78, I	06901300	Moffet Branch near Reger, Mo.	1955–78	.13	150	S	195	266	315	377	426	475	596
79, I	[a]06901500	Locust Creek near Linneus, Mo.	1930–80	550	4.22	W	9,180	14,300	18,000	22,800	26,600	30,400	40,000
80, I	[a]06902000	Grand River near Sumner, Mo.	1922–93	6,880	3.15	W	54,800	82,000	100,000	123,000	141,000	158,000	197,000
81, I	06902200	West Yellow Creek near Brookfield, Mo.	1960–77	135	3.92	G	3,300	5,180	6,420	7,970	9,090	10,200	12,600
82, I	06902500	Hamilton Branch near New Boston, Mo.	1956–72	2.51	27.0	G	573	877	1,080	1,320	1,490	1,660	2,040
83, I	[a]06902800	Onion Branch at Saint Catharine, Mo.	1955–79	1.04	49.3	W	213	419	587	832	1,030	1,250	1,830
84, I	[a]06903400	Chariton River near Chariton, Iowa	1966–93	182	3.83	W	3,650	6,800	9,590	14,000	18,000	22,800	37,000
85, I	[a]06903700	South Fork Chariton River near Promise City, Iowa	1965, 1968–93	168	3.63	W	6,110	10,500	14,200	19,900	25,100	31,000	48,600
86, I	06903900	Chariton River near Rathbun, Iowa	1957–69	549	3.70	G	5,680	12,100	17,300	24,800	30,800	37,100	53,000
87, I	[a]06903990	Cooper Creek at Centerville, Iowa	1966–90	47.8	7.70	G	1,470	3,150	4,530	6,520	8,140	9,840	14,100
88, I	06904000	Chariton River near Centerville, Iowa	1938–59	708	3.42	W	5,620	11,300	16,000	23,000	28,900	35,400	52,600
89, I	[a]06904500	Chariton River at Novinger, Mo.	1917, 1931–52, 1955–69	1,370	2.63	G	9,590	14,700	18,100	22,300	25,200	28,100	34,400
90, I	[a]06904700	Strop Branch near Novinger, Mo.	1955–79	.96	94.7	W	514	1,150	1,670	2,410	3,000	3,610	5,070
91, I	06905000	Chariton River at Elmer, Mo.	1917, 1922–30, 1961–69	1,660	2.40	W	12,500	18,500	22,400	27,300	30,800	34,300	42,200
92, I	[a]06905500	Chariton River near Prairie Hill, Mo.	1929–69, 1993	1,870	2.25	G	13,200	18,800	22,300	26,400	29,300	32,000	38,000
93, I	[a]06905700	Puzzle Creek near Salisbury, Mo.	1955–79	.80	55.6	W	156	301	428	626	803	1,010	1,600
94, I	[a]06906000	Mussel Fork near Musselfork, Mo.	1963–89	267	2.70	W	5,400	10,700	15,300	22,700	29,300	36,900	59,300
95, I	06906300	East Fork Little Chariton River near Huntsville, Mo.	1963–76	220	3.50	W	3,360	6,950	10,400	16,200	21,800	28,600	50,700
96, II	06906600	Burge Branch near Arrow Rock, Mo.	1960–73	.33	76.0	S	63.5	122	171	244	307	377	570

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
97, II	[a]06907000	Lamine River at Clifton City, Mo.	1905, 1923–79, 1981, 1984–85, 1987–88, 1990	598	3.60	G	16,700	29,200	38,300	50,400	59,600	68,900	91,000
98, II	[a]06907200	Shaver Creek Tributary near Clifton City, Mo.	1955–79	1.65	46.4	W	450	814	1,110	1,530	1,880	2,260	3,280
99, I	[a]06907500	South Fork Blackwater River near Elm, Mo.	1954–79	16.6	22.2	G	1,910	3,270	4,260	5,570	6,560	7,580	9,990
100, I	06907700	Blackwater River at Valley City, Mo.	1959–76	547	5.05	W	24,900	44,100	57,900	76,200	90,100	104,000	137,000
101, I	[a]06908000	Blackwater River at Blue Lick, Mo.	1923–33, 1938–93	1,120	2.50	W	10,800	19,300	26,200	36,300	44,900	54,400	80,200
102, I	06908300	Trent Branch near Waverly, Mo.	1955–74	0.97	69.2	W	307	513	674	904	1,090	1,300	1,850
103, I	06908500	Shiloh Branch near Marshall, Mo.	1953–65, 1968–73, 1977, 1987	2.87	32.6	S	585	803	943	1,120	1,240	1,370	1,650
104, II	06909400	Cottonwood Creek Tributary at Estill, Mo.	1958–78	.30	87.0	S	66.7	107	141	194	241	296	460
105, II	[a]06909500	Moniteau Creek near Fayette, Mo.	1949–82, 1984–85, 1987–92	81.0	8.47	W	2,700	4,470	5,940	8,190	10,200	12,400	19,000
106, II	[a]06909700	Petite Saline Creek Tributary near Bellair, Mo.	1955–79	.49	78.4	W	175	323	447	637	803	990	1,520
107, II	06910200	Cow Branch near Columbia, Mo.	1955–75, 1977–79	1.01	57.3	G	325	535	679	862	997	1,130	1,440
108, II	06910230	Hinkson Creek at Columbia, Mo.	1967–81, 1987–91	70.2	11.1	S	4,310	6,730	8,490	10,900	12,800	14,800	19,800
109, II	06910250	Traxler Branch near Columbia, Mo.	1958–80	.55	119	W	282	469	604	784	923	1,060	1,410
110, II	06910400	Baldwin Branch near Jefferson City, Mo.	1958–70, 1972, 1975–76	.60	144	W	479	716	891	1,130	1,320	1,530	2,060
111, II	06910410	Cedar Creek near Columbia, Mo.	1965–79, 1987–91	44.8	8.60	W	2,410	3,890	4,980	6,440	7,600	8,800	11,800

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
112, II	[a]06910500	Moreau River near Jefferson City, Mo.	1948–86, 1988–89, 1991–92	561	4.64	S	12,500	18,400	22,600	28,100	32,500	37,000	48,300
113, II	06910700	Hazel Branch Tributary near Wardsville, Mo.	1957–80	.13	141	W	80.6	125	157	202	238	276	374
114, I	[a]06914000	Pottawatomie Creek near Garnett, Kans.	1940–93	334	4.40	W	11,600	20,600	27,500	37,200	45,000	53,300	74,700
115, I	[a]06914250	South Fork Pottawatomie Creek Tributary near Garnett, Kans.	1963–93	.35	125	S	194	328	429	568	679	797	1,090
116, I	06915000	Big Bull Creek near Hillsdale, Kans.	1951, 1958–80	147	8.12	G	7,630	15,000	20,900	29,200	36,000	43,200	61,300
117, I	[a]06916000	Marais Des Cygnes River at Trading Post, Kans.	1929–58	2,880	2.08	G	20,600	39,600	54,600	75,700	92,700	111,000	156,000
118, I	06916500	Big Sugar Creek at Farlinville, Kans.	1930–31, 1949–58, 1960–70	198	8.03	G	7,070	13,800	19,100	26,700	32,900	39,400	55,800
119, I	[a]06917000	Little Osage River at Fulton, Kans.	1949–93	295	4.97	W	7,920	13,600	18,100	24,500	30,000	35,900	51,800
120, I	06917380	Marmaton River near Marmaton, Kans.	1972–93	292	5.89	W	14,300	21,500	27,500	36,600	44,800	54,200	82,100
121, I	[a]06917400	Marmaton River Tributary near Fort Scott, Kans.	1957–93	2.80	35.6	G	923	1,400	1,710	2,110	2,390	2,680	3,320
122, I	[a]06917500	Marmaton River near Fort Scott, Kans.	1922–24, 1929–71	408	4.55	W	12,200	23,100	31,100	41,900	50,000	58,300	77,700
123, I	[a]06918300	West Fork Clear Creek Tributary near Nevada, Mo.	1955–79	.51	36.2	S	224	339	422	536	627	723	967
124, II	06918400	Pickerel Creek Tributary near Republic, Mo.	1957–79	.57	68.8	S	104	174	226	300	360	423	587
125, II	[a]06918440	Sac River near Dadeville, Mo.	1965–93	257	7.00	W	4,430	7,710	10,500	15,000	19,000	23,700	37,600
126, II	[a]06918460	Turnback Creek above Greenfield, Mo.	1966–93	252	8.60	W	7,070	14,300	21,000	32,100	42,700	55,400	95,500
127, II	06918700	Oak Grove Branch near Brighton, Mo.	1957–79	1.30	94.2	G	215	392	527	710	854	1,000	1,370
128, II	[a]06918740	Little Sac River near Morrisville, Mo.	1969–93	237	9.51	S	10,400	16,200	20,100	25,200	29,100	33,000	42,200
129, II	[a]06918750	Franca Branch near Brighton, Mo.	1955–81	.59	109	W	129	255	364	529	673	834	1,290

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
130, II	[a]06919000	Sac River near Stockton, Mo.	1909, 1922–68	1,160	4.23	W	19,200	37,300	52,600	75,800	95,900	118,000	181,000
131, II	[a]06919200	Sac River Tributary near Caplinger Mills, Mo.	1955–82	.14	149	W	55.4	112	161	238	305	382	601
132, II	[a]06919500	Cedar Creek near Pleasant View, Mo.	1949–93	420	4.78	W	9,520	16,800	22,300	30,000	36,100	42,600	58,800
133, I	[a]06920500	Osage River at Osceola, Mo.	1844, 1918–29, 1931–77	8,220	1.66	W	40,000	61,700	77,700	99,600	117,000	136,000	183,000
134, I	[a]06920800	Big Muddy Creek at Lowry City, Mo.	1955–79	.31	44.8	G	101	154	188	232	263	294	364
135, II	06921000	Pomme de Terre River near Bolivar, Mo.	1951–69	225	9.00	S	7,630	11,700	14,600	18,500	21,400	24,400	31,700
136, II	[a]06921070	Pomme de Terre River near Polk, Mo.	1969–93	276	6.15	S	13,100	18,900	22,700	27,700	31,400	35,100	44,000
137, II	[a]06921200	Lindley Creek near Polk, Mo.	1957–93	112	11.6	W	7,850	12,200	15,600	20,500	24,600	29,100	41,500
138, II	[a]06921500	Pomme de Terre River at Hermitage, Mo.	1922–60	655	4.80	W	18,100	30,600	39,800	52,300	62,200	72,500	98,200
139, I	06921590	South Grand River at Archie, Mo.	1970–86	356	5.90	S	11,700	16,400	19,600	23,700	26,800	30,000	37,600
140, I	06921720	Big Creek at Blairstown, Mo.	1961–84	414	3.30	W	7,910	11,100	13,500	16,700	19,300	22,000	29,000
141, I	06921740	Brushy Creek near Blairstown, Mo.	1961–80	1.15	70.8	W	449	713	907	1,170	1,380	1,610	2,170
142, I	[a]06921800	Granddaddy Creek near Urich, Mo.	1958–84	.92	36.2	W	258	458	624	874	1,090	1,340	2,030
143, I	[a]06922000	South Grand River near Brownington, Mo.	1922–71, 1974–77	1,660	2.10	S	13,800	24,300	32,200	43,100	51,800	60,900	83,700
144, I	06922500	Osage River at Warsaw, Mo.	1905, 1918–30, 1943	11,500	1.35	W	56,900	80,600	97,300	120,000	137,000	155,000	201,000
145, II	06922600	Little Turkey Creek Tributary near Warsaw, Mo.	1959–79	.18	178	S	99.0	138	165	202	232	263	341
146, II	06922800	Big Buffalo Creek near Stover, Mo.	1965–79	24.2	34.5	G	3,870	7,440	10,200	14,100	17,200	20,400	28,400
147, II	[a]06923000	Niangua Branch at Marshfield, Mo.	1951–58, 1960–79	.82	116	S	201	313	394	505	592	682	911
148, II	[a]06924000	Niangua River near Decaturville, Mo.	1923–69	627	4.70	G	11,600	20,500	27,100	35,800	42,600	49,500	66,100
149, II	[a]06925200	Starks Creek at Preston, Mo.	1957–85	4.18	31.0	S	768	1,200	1,490	1,890	2,190	2,490	3,220
150, II	06925270	Dry Auglaize Creek Tributary near Lebanon, Mo.	1955–72	.21	115	W	47.5	93.3	132	190	241	296	450

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
151, II	[a]06925300	Prairie Branch near Decaturville, Mo.	1955–79	1.48	84.1	G	448	1,000	1,490	2,210	2,830	3,500	5,270
152, II	06925450	Little Gravois Creek near Versailles, Mo.	1955–66, 1968–70, 1973–79	4.74	64.0	W	1,410	2,720	3,700	4,990	5,960	6,930	9,160
153, II	[a]06926000	Osage River near Bagnell, Mo.	1881–1971	14,000	1.20	S	74,600	108,000	131,000	160,000	183,000	205,000	259,000
154, II	06926150	Jack Buster Creek at Eugene, Mo.	1961–80	.17	129	W	92.8	171	234	327	406	492	724
155, II	06926200	Van Cleve Branch near Meta, Mo.	1957–80	.75	95.4	G	264	574	835	1,220	1,540	1,880	2,750
156, II	06926800	Long Branch near Vienna, Mo.	1957–80	.32	112	G	145	258	341	452	537	623	829
157, II	[a]06927000	Maries River at Westphalia, Mo.	1948–85, 1987–92	257	8.91	W	11,600	16,900	20,500	25,100	28,600	32,100	40,500
158, II	06927100	Doane Branch near Kingdom City, Mo.	1955–63, 1965–79	.54	70.2	W	69.2	143	214	335	450	591	1,050
159, II	[a]06927600	Wheeler Branch near Mountain Grove, Mo.	1955–81, 1983	1.34	48.8	W	316	530	688	900	1,070	1,240	1,670
160, II	06927800	Osage Fork at Drynob, Mo.	1963–81	404	6.50	G	9,930	15,400	19,000	23,600	27,000	30,300	37,800
161, II	[a]06928000	Gasconade River near Hazelgreen, Mo.	1929–83	1,250	3.97	W	21,600	40,100	53,700	72,000	85,900	100,000	133,000
162, II	06928200	Laquey Branch near Hazelgreen, Mo.	1958–72	1.56	87.4	W	366	655	885	1,220	1,490	1,790	2,590
163, II	[a]06928500	Gasconade River near Waynesville, Mo.	1915–75	1,680	3.18	W	23,300	40,800	53,400	69,800	82,300	94,700	124,000
164, II	[a]06929000	Coyle Branch at Houston, Mo.	1950–55, 1959–79	1.10	95.9	W	216	424	601	869	1,100	1,360	2,080
165, II	[a]06930000	Big Piney River near Big Piney, Mo.	1922–83, 1989–93	560	5.65	W	12,600	21,800	28,700	38,000	45,300	52,800	71,300
166, II	06930750	Prewett Hollow near Dixon, Mo.	1960–77, 1979	.46	77.1	W	191	341	461	636	782	942	1,370
167, II	[a]06931000	Beaver Creek near Rolla, Mo.	1949–58, 1960–79	13.7	39.5	W	2,220	3,940	5,230	6,970	8,330	9,730	13,100
168, II	[a]06931500	Little Beaver Creek near Rolla, Mo.	1948–79	6.41	65.6	W	1,330	2,350	3,240	4,640	5,910	7,390	11,800
169, II	[a]06931600	Paulsell Branch near Rolla, Mo.	1949–78	2.33	75.5	G	914	1,530	1,970	2,530	2,960	3,380	4,370
170, II	[a]06932000	Little Piney Creek at Newburg, Mo.	1929–93	200	14.0	G	6,350	12,600	17,500	24,400	29,900	35,700	50,100

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
171, II	[a]06933500	Gasconade River at Jerome, Mo.	1923–93	2,840	3.01	W	31,200	53,000	68,900	90,500	107,000	125,000	168,000
172, II	06933700	Penzer Hollow near Rolla, Mo.	1956–79	.27	190	S	93.7	157	205	270	322	377	514
173, II	[a]06934000	Gasconade River near Rich Fountain, Mo.	1922–65, 1983, 1985–93	3,180	2.68	W	30,900	52,700	69,000	91,200	109,000	127,000	173,000
174, II	[a]06934600	Rumbo Branch at Danville, Mo.	1954–79	1.40	44.9	W	247	405	528	704	851	1,010	1,440
175, II	06934650	Loutre River at Mineola, Mo.	1948–67	202	10.4	G	7,640	11,200	13,400	16,000	17,900	19,700	23,600
176, II	[a]06934750	Little Berger Creek Tributary near Hermann, Mo.	1955–79	.25	178	W	78.4	175	265	409	540	691	1,130
177, II	07010350	Meramec River at Cook Station, Mo.	1966–81	199	9.90	S	5,670	15,300	23,400	34,500	42,900	51,000	68,600
178, II	[a]07011200	Love Creek near Salem, Mo.	1955–58, 1960–66, 1969–70, 1972–75, 1979, 1982–86, 1988–90	.89	106	S	134	207	267	358	438	530	796
179, II	[a]07011500	Green Acre Branch near Rolla, Mo.	1948–75	.62	82.0	W	251	499	705	1,010	1,270	1,550	2,300
180, II	[a]07012000	Behmke Branch near Rolla, Mo.	1949–79	1.05	77.0	W	462	736	913	1,130	1,280	1,420	1,720
181, II	[a]07013000	Meramec River near Steelville, Mo.	1915, 1917–93	781	6.29	G	14,800	27,300	36,600	49,200	59,000	69,000	93,200
182, II	[a]07014500	Meramec River near Sullivan, Mo.	1915, 1922–33, 1944–93	1,480	4.98	W	20,400	35,300	45,600	58,400	67,800	76,800	96,900
183, II	[a]07015000	Bourbeuse River near St. James, Mo.	1948–81	21.3	34.0	G	3,290	5,350	6,770	8,580	9,930	11,300	14,300
184, II	07015500	Lanes Fork near Rolla, Mo.	1953–71	.22	41.1	G	70.3	106	130	159	179	200	245
185, II	[a]07015700	Lanes Fork near Vichy, Mo.	1944–45, 1948–77	24.1	27.0	G	3,970	5,950	7,240	8,810	9,940	11,000	13,500
186, II	[a]07015720	Bourbeuse River near High Gate, Mo.	1965–93	135	11.5	G	12,900	20,800	26,200	33,100	38,200	43,200	54,800
187, II	07015800	Langenberg Branch near Rosebud, Mo.	1960–83	.64	100	W	119	212	286	391	477	570	815
188, II	[a]07016000	Bourbeuse River near Spring Bluff, Mo.	1944–81	608	3.92	W	14,400	23,100	29,700	39,000	46,500	54,600	75,700
189, II	[a]07016500	Bourbeuse River at Union, Mo.	1915–93	808	2.76	S	13,700	21,600	27,700	36,600	44,100	52,300	74,600

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
190, II	[a]07017200	Big River at Irondale, Mo.	1966–94	175	19.3	W	15,800	26,300	33,800	43,800	51,600	59,600	79,000
191, II	[a]07017500	Dry Branch near Bonne Terre, Mo.	1956–81	3.35	48.5	S	603	893	1,090	1,350	1,540	1,730	2,200
192, II	[a]07017700	Fountain Farm Branch near Potosi, Mo.	1957–81	2.16	71.8	W	454	750	972	1,280	1,530	1,790	2,470
193, II	[a]07018000	Big River near DeSoto, Mo.	1949–94	718	4.63	W	17,800	29,500	38,400	50,800	60,900	71,600	99,400
194, II	[a]07018500	Big River at Byrnesville, Mo.	1915, 1923–94	917	3.36	S	16,200	27,800	36,300	47,900	57,100	66,600	90,200
195, II	[a]07019000	Meramec River near Eureka, Mo.	1915, 1922–94	3,790	3.44	W	37,200	62,500	81,000	106,000	125,000	145,000	194,000
196, II	[a]07019820	Murphy Branch near Crystal City, Mo.	1955–79	.45	86.8	W	153	280	387	549	691	853	1,310
197, II	[a]07020700	Hoehs Branch near Uniontown, Mo.	1955–79	1.66	59.4	W	756	1,330	1,740	2,250	2,630	2,990	3,810
198, II	[a]07021000	Castor River at Zalma, Mo.	1920–91	423	8.92	G	11,700	22,700	31,300	43,300	52,900	62,900	87,700
199, II	07021200	Sunnybrook Creek at Lutesville, Mo.	1955–58, 1960–66, 1971–77	.52	196	S	255	341	397	467	518	569	689
200, II	[a]07033000	Wolf Creek near Farmington, Mo.	1955–79	40.3	19.9	W	3,130	5,110	6,630	8,780	10,500	12,400	17,400
201, II	[a]07035500	Barnes Creek near Fredericktown, Mo.	1956–81	4.03	114	G	1,170	2,430	3,460	4,940	6,150	7,430	10,700
202, II	[a]07037500	St. Francis River near Patterson, Mo.	1915, 1922–94	956	7.24	W	33,200	53,100	66,800	84,500	97,700	111,000	142,000
203, II	07037700	Clark Creek near Piedmont, Mo.	1957–76	4.39	63.9	G	752	1,130	1,380	1,680	1,900	2,120	2,610
204, II	[a]07038000	Clark Creek at Patterson, Mo.	1955–79, 1983	37.5	29.4	G	5,230	8,180	10,200	12,700	14,500	16,300	20,500
205, II	07040040	Delaware Creek Tributary near Bloomfield, Mo.	1955–58, 1960–79	.38	85.5	S	390	547	646	765	851	933	1,120
206, III	[a]07041000	Little River Ditch 81 near Kennett, Mo.	1928–79	111	[b]1.00	G	1,920	2,540	2,910	3,350	3,650	3,930	4,550
207, III	[a]07042000	Little River Ditch 1 near Kennett, Mo.	1928–79	235	[b]1.00	G	4,470	5,910	6,770	7,770	8,470	9,120	10,500
208, III	[a]07042500	Little River Ditch 251 near Lilbourn, Mo.	1945–91	235	[b]2.00	G	3,190	4,270	4,930	5,700	6,230	6,740	7,840
209, III	[a]07043000	Castor River at Aquilla, Mo.	1945–81	175	[b].80	W	2,240	3,480	4,390	5,640	6,640	7,690	10,400
210, III	[a]07043500	Little River Ditch 1 near Morehouse, Mo.	1945–91	450	[b]2.00	S	5,840	7,740	9,010	10,600	11,800	13,100	16,000
211, III	[a]07044000	Little River Ditch 251 near Kennett, Mo.	1928–79	883	[b]1.00	G	9,400	12,300	14,100	16,100	17,500	18,800	21,700
212, III	[a]07046000	Little River Ditch 259 near Kennett, Mo.	1928–79	89.0	[b]1.00	W	1,870	2,620	3,110	3,720	4,160	4,600	5,620
213, III	07047200	Ditch No. 45 near Lepanto, Ark.	1962-85	2.16	[b]1.20	G	165	198	217	238	252	265	292

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
214, III	[a]07047600	Tyronza River near Tyronza, Ark.	1949–74, 1980–91	290	[b]0.70	S	4,780	6,330	7,310	8,500	9,360	10,200	12,100
215, III	07047924	Crooked Bayou Tributary at Hughes, Ark.	1963–82	.48	[b]4.22	G	114	205	275	371	446	525	720
216, III	[a]07047950	L'Anguille River at Palestine, Ark.	1949–85, 1990–91	786	[b].85	W	8,910	13,400	16,200	19,500	21,900	24,100	28,900
217, II	07050400	Freeman Branch at Berryville, Ark.	1961–80	.73	129	W	194	324	419	547	647	749	1,000
218, II	[a]07050500	Kings River near Berryville, Ark.	1927, 1939–93	527	6.82	W	17,100	31,500	42,800	59,100	72,500	86,800	124,000
219, II	07050580	James River near Strafford, Mo.	1974–86	165	10.9	W	8,750	15,100	19,900	26,500	31,800	37,400	51,300
220, II	[a]07050700	James River near Springfield, Mo.	1956–93	246	6.50	G	11,600	18,200	22,700	28,400	32,600	36,800	46,500
221, II	07050800	Maple Grove Branch near Ozark, Mo.	1957–59, 1961, 1963–74, 1976–79, 1983, 1985	1.50	39.7	G	194	381	530	741	912	1,090	1,550
222, II	[a]07052500	James River at Galena, Mo.	1922–93	987	4.75	W	19,600	32,600	41,900	54,300	63,700	73,300	96,400
223, II	07052700	Brawley Hollow near Cassville, Mo.	1960–79	2.61	57.6	W	219	533	814	1,240	1,610	2,010	3,060
224, II	07053000	White River near Reeds Spring, Mo.	1938–52	3,620	3.53	G	65,900	103,000	128,000	160,000	184,000	207,000	261,000
225, II	07053950	Ingenthron Hollow near Forsyth, Mo.	1957–80	.65	186	W	193	351	485	689	867	1,070	1,650
226, II	07054000	White River at Forsyth, Mo.	1927, 1930–52	4,540	3.45	G	66,300	110,000	141,000	181,000	211,000	242,000	313,000
227, II	07054100	Cedar Hollow at Bradleyville, Mo.	1956–79	.83	204	G	267	505	691	948	1,150	1,370	1,900
228, II	07054200	Yandell Branch near Kirbyville, Mo.	1955–60, 1962–79	.33	215	W	62.6	150	229	353	461	581	908
229, II	07054300	Gray Branch at Lutie, Mo.	1955–71, 1973–79	.23	279	G	130	217	278	359	420	481	627
230, II	07054400	Charley Creek near Omaha, Ark.	1963–81, 1983	3.41	112	W	1,210	2,050	2,740	3,740	4,600	5,560	8,200
231, II	[a]07054450	East Sugarloaf Creek Tributary near Lead Hill, Ark.	1962–93	.85	216	W	276	511	713	1,020	1,300	1,620	2,540
232, II	07057300	Dodd Creek Tributary near Mountain Home, Ark.	1961–84	.76	118	W	261	425	540	687	798	909	1,170

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
233, II	[a]07057500	North Fork River near Tecumseh, Mo.	1945–93	561	8.29	W	11,700	23,000	33,400	50,800	67,300	87,200	150,000
234, II	[a]07058000	Bryant Creek near Tecumseh, Mo.	1945–85	570	8.83	W	11,600	21,100	28,400	38,400	46,400	54,700	75,200
235, II	07058500	North Fork River at Tecumseh, Mo.	1905, 1922–44	1,160	8.04	W	16,000	34,400	49,700	71,900	90,300	110,000	160,000
236, II	[a]07061300	East Fork Black River at Lesterville, Mo.	1961–90	94.5	29.7	W	4,660	7,780	10,100	13,400	16,000	18,800	25,900
237, II	[a]07061500	Black River near Annapolis, Mo.	1939–93	484	10.9	W	20,300	35,400	45,900	59,400	69,400	79,200	101,000
238, II	[a]07062500	Black River at Leeper, Mo.	1922–47	957	8.52	S	20,600	43,000	60,900	86,000	106,000	127,000	178,000
239, II	[a]07063000	Black River at Poplar Bluff, Mo.	1904, 1923–47	1,250	6.23	W	16,100	34,200	49,700	72,800	92,400	114,000	171,000
240, II	07063200	Pike Creek Tributary near Poplar Bluff, Mo.	1955–69	.28	111	G	121	210	274	359	424	491	649
241, II	07064300	Fudge Hollow near Licking, Mo.	1957–79	1.72	68.1	S	124	234	332	489	633	803	1,320
242, II	[a]07064500	Big Creek near Yukon, Mo.	1950–79	8.36	53.3	G	1,840	3,350	4,480	6,020	7,220	8,460	11,500
243, II	[a]07066000	Jacks Fork at Eminence, Mo.	1922–93	398	9.50	W	11,900	24,200	34,100	48,200	59,500	71,500	102,000
244, II	[a]07066500	Current River near Eminence, Mo.	1922–75	1,270	7.58	W	23,500	45,500	62,500	85,900	104,000	124,000	171,000
245, II	[a]07066800	Sycamore Creek near Winona, Mo.	1955–90	.86	66.4	W	140	255	349	487	604	733	1,080
246, II	[a]07067000	Current River at Van Buren, Mo.	1913–14, 1916–93	1,670	5.92	S	26,700	48,900	65,500	87,800	105,000	123,000	166,000
247, II	[a]07068000	Current River at Doniphan, Mo.	1904, 1915, 1919–93	2,040	4.75	W	27,300	50,700	68,700	93,500	113,000	134,000	185,000
248, II	[a]07068200	North Prong Little Black River at Hunter, Mo.	1958–82	1.23	61.7	G	182	385	556	805	1,010	1,240	1,820
249, II	[a]07068500	Little Black River near Fairdealing, Mo.	1936–42, 1955–86	187	10.8	G	7,220	15,700	23,000	33,800	43,000	52,800	78,800
250, II	07068870	Fourche River Tributary at Middlebrook, Ark.	1961–81	.19	161	W	140	201	244	301	345	390	502
251, II	07068890	Fourche River above Pocahontas, Ark.	1965–79	229	10.8	S	15,700	28,900	38,600	51,500	61,400	71,400	95,000
252, II	07069250	Brush Creek near Mammoth Spring, Ark.	1961–83, 1985	.48	156	G	315	531	686	889	1,040	1,200	1,570
253, II	07069290	Miller Creek near Salem, Ark.	1961–81	2.28	77.5	W	544	982	1,330	1,820	2,230	2,660	3,800
254, II	[a]07069500	Spring River at Imboden, Ark.	1915, 1937–93	1,180	8.38	W	26,300	49,000	68,000	96,600	121,000	149,000	225,000

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
255, II	07070200	Burnham Branch near Willow Springs, Mo.	1960–79	1.27	58.6	G	175	349	489	690	853	1,030	1,470
256, II	[a]07070500	Eleven Point River near Thomasville, Mo.	1951–76	361	13.7	W	6,070	10,900	14,700	19,800	23,800	28,100	38,600
257, II	[a]07071500	Eleven Point River near Bardley, Mo.	1915, 1922–93	793	10.1	S	9,250	20,000	28,600	40,300	49,500	58,800	80,600
258, II	07071800	Williams Spring Branch near Alton, Mo.	1955–61, 1963–64, 1966, 1968–70, 1972–75, 1977, 1979	4.24	63.3	W	389	740	1,050	1,550	1,990	2,520	4,090
259, II	[a]07072000	Eleven Point River near Ravenden Springs, Ark.	1930–33, 1936–93	1,130	10.2	W	11,800	21,800	30,700	44,800	57,700	73,000	119,000
260, II	[a]07072200	Hubble Creek near Pocahontas, Ark.	1961–85	1.33	50.6	S	600	825	972	1,160	1,290	1,420	1,740
261, III	07074550	Village Creek near Okean, Ark.	1961–81	6.24	[b]1.83	G	229	503	739	1,090	1,390	1,710	2,570
262, III	[a]07077430	Willow Ditch near Egypt, Ark.	1963–89, 1992–93	.48	[b]4.00	W	35.3	64.2	89.5	130	166	208	336
263, III	[a]07077500	Cache River at Patterson, Ark.	1921–31, 1937–77, 1980–91	1,040	[b].82	S	6,330	9,240	11,300	14,200	16,400	18,800	24,900
264, III	07077680	Three Mile Creek near Amagon, Ark.	1961–80	7.93	[b]1.32	G	287	393	458	535	589	640	752
265, III	[a]07077700	Bayou Deview at Morton, Ark.	1939–77, 1980	421	[b]2.34	W	3,210	4,270	4,920	5,670	6,200	6,700	7,790
266, III	[a]07077920	Big Creek at Goodwin, Ark.	1961–93	31.1	[b].92	G	549	783	932	1,110	1,240	1,360	1,640
267, II	[a]07185500	Stahl Creek near Miller, Mo.	1951–84	3.86	41.3	G	619	1,020	1,300	1,660	1,940	2,210	2,860
268, II	[a]07185600	South Fork Stahl Creek near Miller, Mo.	1951–52, 1954–79	0.94	66.7	W	201	392	558	814	1,040	1,300	2,030
269, II	[a]07185700	Spring River at LaRussell, Mo.	1957–81	306	9.84	G	5,810	10,600	14,200	19,100	22,900	26,900	36,600
270, II	07185765	Spring River at Carthage, Mo.	1967–80	425	7.43	W	7,500	12,800	16,800	22,400	26,900	31,800	44,200
271, II	07185900	O'Possum Creek at Jasper, Mo.	1955–77	9.67	16.0	G	1,280	2,000	2,480	3,100	3,560	4,010	5,060
272, II	[a]07186000	Spring River near Waco, Mo.	1923–93	1,160	6.08	W	18,100	33,300	45,800	64,200	79,900	97,300	145,000
273, II	[a]07186400	Center Creek near Carterville, Mo.	1962–91	232	8.90	W	5,380	11,000	16,200	24,700	32,700	42,300	72,000

Table 1. Statistically significant basin characteristics and 2– to 500–year flood discharges at selected streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no., region (fig. 1)	USGS station number	USGS station name	Period of record used (WY)	Drainage area (mi^2)	Main-channel slope (ft/mi)	Method	Flood discharge (ft^3/s) for indicated recurrence interval (years)						
							2–	5–	10–	25–	50–	100–	500–
274, II	[a]07186950	North Fork Carver Branch at Diamond, Mo.	1955–79	0.33	100	S	84.3	145	191	256	309	366	513
275, II	[a]07187000	Shoal Creek above Joplin, Mo.	1924–93	410	8.34	W	7,210	15,000	22,000	32,900	42,600	53,800	85,900
276, II	[a]07188500	Lost Creek at Seneca, Mo.	1949–59, 1961–75	42.0	23.6	G	845	2,650	4,650	8,220	11,700	15,900	28,900
277, II	07188900	Butler Creek Tributary near Gravette, Ark.	1961–81	.96	109	W	105	296	478	764	1,010	1,280	1,980
278, II	[a]07189000	Elk River near Tiff City, Mo.	1940–93	872	8.05	W	20,500	40,300	55,400	76,000	91,900	108,000	147,000

[a] Used in the statewide generalized skew coefficient isolines analysis.
[b] Not statistically significant to the generalized least-squares regression equations for Region III.

Table 2. U.S. Geological Survey National Water Data Storage and Retrieval System values and Geographic Information System measured values for selected basin characteristics and streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas

[USGS, U.S. Geological Survey; mi^2, square miles; ft/mi, feet per mile; mi, miles; ft, feet above sea level; %, percentage of drainage area; --, not determined; First line of data from National Water Data Storage and Retrieval System values; 24K, measured from 1:24,000-scale USGS topographic maps; Second line of data from Geographic Information System measured values; 250K, measured from 1:250,000-scale Defense Mapping Agency digital elevation models; 100K, measured from 1:100,000-scale USGS digital line graphs]

Map no. (fig. 1)	USGS station number	USGS station name	Source	Drainage area (mi^2)	Main-channel slope (ft/mi)	Main-channel length (mi)	Mean basin elevation (ft)	Forest (%)
3	05495100	Big Branch Tributary near Wayland, Mo.	--	0.70	80.8	1.95	600	22.3
			24K	.64	83.0	1.94	623	--
4	05495600	South Wyaconda River near West Grove, Iowa	--	4.69	26.9	3.00	--	--
			24K	4.06	33.8	3.65	[a]929	[a]3.7
8	05497700	Bridge Creek Branch near Baring, Mo.	--	2.38	43.2	2.25	800	3.3
			24K	2.38	31.5	2.37	815	--
14	05501200	Nichols Branch near Palmyra, Mo.	--	2.58	52.5	3.20	700	7.1
			24K	2.66	47.9	3.47	[a]650	11.0
16	05502300	North Fork Salt River at Hagers Grove, Mo.	--	365	--	--	--	--
			250K	356	[a]5.19	[a]48.6	[a]850	[a]4.7
18	05502700	Easdale Branch near Shelbyville, Mo.	--	.71	76.1	1.22	800	12.2
			24K	.71	[a]59.9	1.34	[a]750	13.0
20	05503800	Crooked Creek near Paris, Mo.	--	80.0	--	--	--	--
			100K	82.1	[a]3.97	[a]24.6	[a]750	[a]7.4
21	05504700	Bean Creek near Mexico, Mo.	--	3.02	33.1	3.00	800	3.2
			24K	2.81	26.5	3.36	780	10.0
25	05506800	Elk Fork Salt River near Madison, Mo.	--	200	--	--	--	--
			100K	196	[a]4.14	[a]29.5	[a]800	[a]11.0
27	05507500	Salt River near Monroe City, Mo.	--	2,230	2.80	124.0	800	15.0
			250K	2,192	2.73	120.9	790	11.2
28	05507600	Lick Creek at Perry, Mo.	--	104	--	--	--	--
			250K	105	[a]6.20	[a]21.8	[a]750	[a]2.8
30	05508805	Spencer Creek (below Plum Creek) near Frankford, Mo.	--	206	--	--	--	--
			250K	202	[a]5.56	[a]34.6	[a]700	[a]19.1
32	05513650	Hurricane Creek near Elsberry, Mo.	--	3.06	86.3	3.40	600	22.5
			24K	2.95	78.3	3.57	[a]650	45.3
34	05514200	Reid Branch near Bowling Green, Mo.	--	.54	93.3	1.00	900	.0
			24K	.50	85.5	1.04	[a]850	[a]8.4
37	06811875	Snake Creek near Yorktown, Iowa	--	9.10	32.0	5.38	--	--
			100K	9.36	27.5	5.81	[a]1,150	[a]28.0
40	06816000	Mill Creek at Oregon, Mo.	--	4.90	42.3	3.30	1,100	5.0
			24K	4.96	36.7	3.76	[a]1,050	--
43	06818750	Platte River near Diagonal, Iowa	--	217	4.47	39.3	--	--
			250K	201	4.20	35.5	[a]1,250	[a].5
45	06819190	East Fork One Hundred and Two River near Bedford, Iowa	--	92.1	7.70	27.1	--	--
			100K	92.9	7.49	27.1	[a]1,250	[a]1.2

Table 2. U.S. Geological Survey National Water Data Storage and Retrieval System values and Geographic Information System measured values for selected basin characteristics and streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no. (fig. 1)	USGS station number	USGS station name	Source	Drainage area (mi^2)	Main-channel slope (ft/mi)	Main-channel length (mi)	Mean basin elevation (ft)	Forest (%)
46	06819500	One Hundred and Two River at Maryville, Mo.	-- 250K	500 477	5.72 5.38	49.0 52.6	1,200 1,193	2.4 .9
48	06820300	Big Slough near Wilcox, Mo.	-- 24K	1.30 1.29	35.5 35.8	2.25 2.33	1,100 1,122	.0 --
50	06821000	Jenkins Branch at Gower, Mo.	-- 24K	2.72 2.63	34.0 26.3	2.55 2.83	1,000 980	.0 [a]6.2
52	06893080	Blue River near Stanley, Kans.	-- 250K	46.0 43.6	15.0 10.4	12.4 11.2	-- [a]1,050	-- [a]2.6
53	06893500	Blue River near Kansas City, Mo.	-- 100K	188 184	9.01 9.13	32.1 29.3	-- [a]1,000	11.4 4.9
54	06893793	Little Blue River (below Longview Dam) at Kansas City, Mo.	-- 250K	50.7 52.9	-- [a]8.72	-- [a]15.7	-- [a]950	-- [a]4.9
56	06894500	East Fork Fishing River at Excelsior Springs, Mo.	-- 100K	20.0 20.0	21.9 25.5	11.4 10.9	1,000 990	10.0 --
60	06896500	Thompson Branch near Albany, Mo.	-- 24K	5.58 5.37	30.9 27.4	4.75 5.54	1,000 [a]950	5.8 --
63	06897200	Simpson Branch near Bethany, Mo.	-- 24K	4.72 4.55	27.6 [a]20.7	5.56 [a]6.38	1,000 994	16.4 --
65	06897700	Grand River Tributary near Utica, Mo.	-- 24K	1.44 1.34	120 [a]62.8	1.67 1.90	800 795	.3 [a]8.0
66	06897950	Elk Creek near Decatur City, Iowa	-- 250K	52.5 45.3	17.3 17.6	9.84 10.2	-- [a]1,100	-- [a]8.0
69	06898200	Thompson River near Trenton, Mo.	-- 250K	1,670 [a]1,060	3.40 3.83	108.5 119.2	1,100 1,082	.1 [a]19.3
70	06898400	Weldon River near Leon, Iowa	-- 250K	104 92.5	10.7 12.2	23.0 21.8	-- [a]1,050	-- [a]15.8
71	06898500	Weldon River near Mercer, Mo.	-- 250K	246 251	7.54 7.36	31.0 34.6	1,000 [a]1,050	4.1 [a]70.1
72	06899000	Weldon River at Mill Grove, Mo.	-- 250K	494 481	5.05 5.60	50.2 56.0	1,000 1,020	4.5 [a]80.6
73	06899100	Weldon River near Trenton, Mo.	-- 250K	494 [a]540	-- [a]3.70	-- [a]71.8	-- [a]1,000	-- [a]5.4
74	06899500	Thompson River at Trenton, Mo.	-- 250K	1,670 [a]1,720	3.67 [a]3.02	124.0 [a]136.7	1,000 [a]1,050	5.7 12.1
83	06902800	Onion Branch at Saint Catharine, Mo.	-- 24K	1.04 1.03	49.3 46.8	1.84 1.83	800 [a]850	1.0 --
84	06903400	Chariton River near Chariton, Iowa	-- 250K	182 175	3.83 4.41	39.6 38.5	-- [a]1,050	-- [a]6.5
85	06903700	South Fork Chariton River near Promise City, Iowa	-- 250K	168 171	3.63 3.90	30.0 29.8	-- [a]1,050	-- [a]6.5
87	06903990	Cooper Creek at Centerville, Iowa	-- 250K	47.8 47.1	7.70 7.89	23.3 24.1	-- [a]1,000	-- [a]7.2

Table 2. U.S. Geological Survey National Water Data Storage and Retrieval System values and Geographic Information System measured values for selected basin characteristics and streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no. (fig. 1)	USGS station number	USGS station name	Source	Drainage area (mi^2)	Main-channel slope (ft/mi)	Main-channel length (mi)	Mean basin elevation (ft)	Forest (%)
90	06904700	Strop Branch near Novinger, Mo.	--	0.96	94.7	1.27	900	20.4
			24K	.97	89.5	1.38	[a]850	--
93	06905700	Puzzle Creek near Salisbury, Mo.	--	.80	55.6	1.32	700	4.6
			24K	.75	56.5	1.40	715	8.7
95	06906300	East Fork Little Chariton River near Huntsville, Mo.	--	220	3.50	69.8	800	.2
			100K	220	3.89	63.8	[a]850	[a]6.0
98	06907200	Shaver Creek Tributary near Clifton City, Mo.	--	1.65	46.4	1.87	800	.2
			24K	1.60	42.2	2.03	821	[a]4.0
100	06907700	Blackwater River at Valley City, Mo.	--	547	5.05	40.7	800	4.0
			250K	536	6.63	40.1	[a]850	--
103	06908500	Shiloh Branch near Marshall, Mo.	--	2.87	40.1	3.22	800	1.3
			24K	2.92	[a]32.6	[a]3.75	[a]750	[a]6.2
104	06909400	Cottonwood Creek Tributary at Estill, Mo.	--	.30	87.0	.92	700	5.7
			24K	.27	80.6	.77	702	--
105	06909500	Moniteau Creek near Fayette, Mo.	--	81.0	8.47	23.7	800	11.1
			100K	74.8	7.00	25.0	[a]750	--
108	06910230	Hinkson Creek at Columbia, Mo.	--	70.2	--	--	--	--
			100K	70.3	[a]11.1	[a]24.4	[a]800	[a]17.0
109	06910250	Traxler Branch near Columbia, Mo.	--	.55	119	.82	800	10.5
			24K	.62	95.6	1.01	[a]750	--
111	06910410	Cedar Creek near Columbia, Mo.	--	44.8	8.60	14.3	900	.1
			100K	44.0	7.24	15.1	885	[a]4.8
120	06917380	Marmaton River near Marmaton, Kans.	--	292	5.89	46.4	--	--
			250K	293	7.12	41.2	[a]950	[a]8.2
125	06918440	Sac River near Dadeville, Mo.	--	257	7.00	36.5	1,100	.1
			100K	254	7.13	43.6	[a]1,150	[a]15.0
126	06918460	Turnback Creek above Greenfield, Mo.	--	252	8.60	37.3	1,200	.02
			100K	252	9.09	40.3	[a]1,150	[a]10.0
127	06918700	Oak Grove Branch near Brighton, Mo.	--	1.30	94.2	2.05	1,200	86.0
			24K	1.44	89.1	2.08	[a]1,150	--
128	06918740	Little Sac River near Morrisville, Mo.	--	237	--	--	--	--
			100K	238	[a]9.51	[a]43.6	[a]1,200	[a]34.0
129	06918750	Franca Branch near Brighton, Mo.	--	.59	109	1.04	1,200	.0
			24K	.63	90.2	1.04	[a]1,150	--
134	06920800	Big Muddy Creek at Lowry City, Mo.	--	.31	44.8	1.00	900	.0
			24K	.32	38.3	.90	875	--
135	06921000	Pomme de Terre River near Bolivar, Mo.	--	225	9.00	46.0	1,200	13.3
			100K	229	7.40	46.8	1,203	--
136	06921070	Pomme de Terre River near Polk, Mo.	--	276	--	--	--	--
			100K	276	[a]6.15	[a]49.8	[a]1,200	[a]27.4
139	06921590	South Grand River at Archie, Mo.	--	356	--	--	--	--
			250K	364	[a]5.90	[a]39.5	[a]950	[a]4.8
140	06921720	Big Creek at Blairstown, Mo.	--	414	3.30	48.7	900	13.0
			100K	416	3.27	53.5	897	--

Table 2. U.S. Geological Survey National Water Data Storage and Retrieval System values and Geographic Information System measured values for selected basin characteristics and streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no. (fig. 1)	USGS station number	USGS station name	Source	Drainage area (mi^2)	Main-channel slope (ft/mi)	Main-channel length (mi)	Mean basin elevation (ft)	Forest (%)
141	06921740	Brushy Creek near	--	1.15	70.8	1.73	900	9.4
		Blairstown, Mo.	24K	1.17	61.7	1.94	[a]850	7.0
142	06921800	Granddaddy Creek near	--	.92	36.2	2.13	900	--
		Urich, Mo.	24K	.91	31.1	2.48	[a]850	[a].1
143	06922000	South Grand River near	--	1,660	2.10	95.1	900	.3
		Brownington, Mo.	250K	1,680	1.88	108.3	[a]850	[a]5.8
144	06922500	Osage River at Warsaw, Mo.	--	11,500	--	--	--	--
			250K	11,560	[a]1.35	[a]276.0	[a]950	[a]25.2
146	06922800	Big Buffalo Creek near	--	24.2	34.5	10.0	1,000	76.0
		Stover, Mo.	100K	24.1	41.4	7.80	[a]950	--
150	06925270	Dry Auglaize Creek Tribu-	--	.21	115	.64	1,300	70.1
		tary near Lebanon, Mo.	24K	.19	141	.53	[a]1,250	--
151	06925300	Prairie Branch near	--	1.48	84.1	1.50	1,000	14.5
		Decaturville, Mo.	24K	1.49	93.2	1.54	[a]1,050	--
152	06925450	Little Gravois Creek near	--	4.74	64.0	4.48	940	16.3
		Versailles, Mo.	24K	4.74	73.7	4.72	971	[a]68.8
155	06926200	Van Cleve Branch near Meta,	--	.75	95.4	1.74	800	16.9
		Mo.	24K	.73	101	1.80	776	--
156	06926800	Long Branch near Vienna,	--	.32	112	.78	1,000	55.0
		Mo.	24K	.31	119	.71	978	--
158	06927100	Doane Branch near	--	.54	70.2	1.15	800	3.6
		Kingdom City, Mo.	24K	.40	76.3	1.25	797	1.7
162	06928200	Laquey Branch near	--	1.56	87.4	2.74	1,000	41.1
		Hazelgreen, Mo.	24K	1.56	81.8	2.75	1,008	--
164	06929000	Coyle Branch at Houston,	--	1.10	95.9	1.64	1,200	21.9
		Mo.	24K	1.00	91.3	1.62	1,199	28.9
167	06931000	Beaver Creek near Rolla, Mo.	--	13.7	39.5	6.67	1,000	59.5
			100K	14.8	41.3	6.58	1,025	--
170	06932000	Little Piney Creek at	--	200	14.0	38.4	1,100	55.2
		Newburg, Mo.	100K	199	13.8	40.1	[a]1,050	--
175	06934650	Loutre River at Mineola, Mo.	--	202	10.4	25.7	800	14.8
			250K	198	9.91	28.7	756	24.6
176	06934750	Little Berger Creek Tributary	--	.25	178	.83	700	70.4
		near Hermann, Mo.	24K	.24	149	.79	[a]650	43.0
177	07010350	Meramec River at Cook	--	199	9.90	35.0	1,200	.66
		Station, Mo.	100K	199	9.32	34.6	1,188	[a]79.7
179	07011500	Green Acre Branch near	--	.62	82.0	1.20	1,000	3.7
		Rolla, Mo.	24K	.65	84.2	1.22	[a]1,050	--
180	07012000	Behmke Branch near Rolla,	--	1.05	77.0	2.10	1,000	17.5
		Mo.	24K	1.03	73.1	2.20	[a]1,050	--
184	07015500	Lanes Fork near Rolla, Mo.	--	.22	41.1	.65	1,200	22.2
			24K	.27	44.0	.63	1,188	--
187	07015800	Langenberg Branch near	--	.64	100	1.33	900	45.7
		Rosebud, Mo.	24K	.65	103	1.28	[a]850	--

Table 2. U.S. Geological Survey National Water Data Storage and Retrieval System values and Geographic Information System measured values for selected basin characteristics and streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no. (fig. 1)	USGS station number	USGS station name	Source	Drainage area (mi^2)	Main-channel slope (ft/mi)	Main-channel length (mi)	Mean basin elevation (ft)	Forest (%)
189	07016500	Bourbeuse River at Union, Mo.	--	808	2.76	135.0	900	35.4
			100K	788	2.60	133.7	876	--
190	07017200	Big River at Irondale, Mo.	--	175	19.3	22.2	1,100	.49
			100K	187	17.2	23.6	[a]1,050	[a]60.8
191	07017500	Dry Branch near Bonne Terre, Mo.	--	3.35	48.5	4.35	800	17.3
			24K	3.38	47.6	4.48	[a]850	22.0
192	07017700	Fountain Farm Branch near Potosi, Mo.	--	2.16	71.8	2.88	1,000	64.5
			24K	2.18	71.8	3.01	985	--
194	07018500	Big River at Byrnesville, Mo.	--	917	3.36	127.0	800	60.3
			100K	919	3.36	130.3	[a]850	--
196	07019820	Murphy Branch near Crystal City, Mo.	--	.45	108	1.17	500	2.5
			24K	.45	[a]86.8	1.31	499	--
197	07020700	Hoehs Branch near Uniontown, Mo.	--	1.66	59.4	2.20	500	17.7
			24K	1.51	59.4	2.16	[a]550	--
200	07033000	Wolf Creek near Farmington, Mo.	--	40.3	19.9	9.70	900	18.7
			100K	40.0	16.3	11.1	[a]950	--
201	07035500	Barnes Creek near Fredericktown, Mo.	--	4.03	114	3.22	900	57.3
			24K	4.00	110	3.38	[a]850	--
203	07037700	Clark Creek near Piedmont, Mo.	--	4.39	63.9	3.80	700	69.7
			24K	4.39	64.1	4.05	694	74.4
204	07038000	Clark Creek at Patterson, Mo.	--	37.5	29.4	11.6	700	66.1
			100K	38.4	23.2	11.9	683	--
205	07040040	Delaware Creek Tributary near Bloomfield, Mo.	--	.38	85.5	.73	500	7.6
			24K	.35	87.6	.72	[a]550	20.7
219	07050580	James River near Strafford, Mo.	--	165	--	--	--	--
			100K	166	[a]10.9	[a]28.5	[a]1,500	[a]41.7
221	07050800	Maple Grove Branch near Ozark, Mo.	--	1.50	39.7	2.58	1,300	15.3
			24K	1.49	39.6	2.83	[a]1,350	14.7
223	07052700	Brawley Hollow near Cassville, Mo.	--	2.61	57.6	2.90	1,500	12.4
			24K	2.46	54.2	2.78	[a]1,450	--
225	07053950	Ingenthron Hollow near Forsyth, Mo.	--	.65	186	1.25	1,000	66.4
			24K	.62	202	1.28	987	--
226	07054000	White River at Forsyth, Mo.	--	4,540	--	--	--	--
			250K	4,410	[a]3.45	[a]156.4	[a]1,350	[a]55.2
228	07054200	Yandell Branch near Kirbyville, Mo.	--	.33	116	1.35	900	55.9
			24K	.32	[a]215	1.36	[a]850	65.0
236	07061300	East Fork Black River at Lesterville, Mo.	--	94.5	29.7	19.5	1,100	.73
			100K	93.8	28.3	19.6	[a]1,150	[a]95.2
237	07061500	Black River near Annapolis, Mo.	--	484	10.9	49.2	1,100	81.0
			100K	491	12.1	48.2	1,084	--
239	07063000	Black River at Poplar Bluff, Mo.	--	1,250	6.23	--	--	--
			250K	1,280	6.02	[a]105.9	[a]850	[a]88.8
243	07066000	Jacks Fork at Eminence, Mo.	--	398	9.50	53.0	1,100	76.6
			100K	399	8.03	56.8	1,105	--

Table 2. U.S. Geological Survey National Water Data Storage and Retrieval System values and Geographic Information System measured values for selected basin characteristics and streamflow-gaging stations in Missouri, Iowa, Kansas, and Arkansas—Continued

Map no. (fig. 1)	USGS station number	USGS station name	Source	Drainage area (mi^2)	Main-channel slope (ft/mi)	Main-channel length (mi)	Mean basin elevation (ft)	Forest (%)
245	07066800	Sycamore Creek near Winona, Mo.	-- 24K	0.86 .91	66.4 65.7	1.47 1.52	1,100 1,092	89.2 --
247	07068000	Current River at Doniphan, Mo.	-- 250K	2,040 2,075	4.75 4.95	-- [a]142.4	-- [a]1,000	-- [a]84.8
248	07068200	North Prong Little Black River at Hunter, Mo.	-- 24K	1.23 1.27	61.7 59.7	1.60 1.65	800 [a]750	47.8 57.0
249	07068500	Little Black River near Fairdealing, Mo.	-- 100K	187 185	10.8 9.06	34.8 38.9	600 [a]550	85.5 --
255	07070200	Burnham Branch near Willow Springs, Mo.	-- 24K	1.27 1.28	58.6 63.4	1.55 1.64	1,300 1,283	16.9 8.9
257	07071500	Eleven Point River near Bardley, Mo.	-- 100K	793 782	10.1 9.65	-- [a]81.2	-- [a]950	-- [a]69.8
258	07071800	Williams Spring Branch near Alton, Mo.	-- 24K	4.24 4.10	63.3 60.9	2.94 3.21	820 [a]800	57.8 --
267	07185500	Stahl Creek near Miller, Mo.	-- 24K	3.86 4.04	41.3 38.4	3.00 3.50	1,300 [a]1,250	11.0 5.9
268	07185600	South Fork Stahl Creek near Miller, Mo.	-- 24K	.94 .93	66.7 57.5	1.40 1.39	1,300 [a]1,250	8.3 --
270	07185765	Spring River at Carthage, Mo.	-- 250K	425 431	-- [a]7.43	-- [a]52.6	-- [a]1,200	-- [a]10.3
274	07186950	North Fork Carver Branch at Diamond, Mo.	-- 24K	.33 .23	100 89.4	.72 .88	1,100 [a]1,150	.0 [a]2.0
275	07187000	Shoal Creek above Joplin, Mo.	-- 250K	410 412	8.34 7.46	57.9 59.0	1,200 [a]1,250	22.4 24.5
276	07188500	Lost Creek at Seneca, Mo.	-- 100K	42.0 41.1	23.6 23.4	-- [a]13.5	-- [a]1,100	-- [a]30.8
278	07189000	Elk River near Tiff City, Mo.	-- 250K	872 850	8.05 8.55	59.7 54.9	1,050 [a]1,200	.39 [a]51.3

[a] An updated (GIS measured) basin characteristic value used in the multiple-regression analyses.