Prepared in cooperation with the
OKLAHOMA DEPARTMENT OF TRANSPORTATION

Flood Frequency Estimates and Documented and Potential Extreme Peak Discharges in Oklahoma

Water-Resources Investigations Report 01–4152

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

Cover: Photograph was taken October 23, 2000, during the Apache, Oklahoma, flood. Photographer: Stanley Wright, The Apache News.

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Conversion Factors and Datum

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

Vertical coordinate information is referenced to North American Vertical Datum of 1988 (NAVD 88).

Horizontal coordinate information is referenced to North American Datum of 1983 (NAD 83).

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.

Flood Frequency Estimates and Documented and Potential Extreme Peak Discharges in Oklahoma

By Robert L. Tortorelli and Lan P. McCabe

Abstract

Knowledge of the magnitude and frequency of floods is required for the safe and economical design of highway bridges, culverts, dams, levees, and other structures on or near streams; and for flood plain management programs. Flood frequency estimates for gaged streamflow sites were updated, documented extreme peak discharges for gaged and miscellaneous measurement sites were tabulated, and potential extreme peak discharges for Oklahoma streamflow sites were estimated. Potential extreme peak discharges, derived from the relation between documented extreme peak discharges and contributing drainage areas, can provide valuable information concerning the maximum peak discharge that could be expected at a stream site. Potential extreme peak discharge is useful in conjunction with flood frequency analysis to give the best evaluation of flood risk at a site.

Peak discharge and flood frequency for selected recurrence intervals from 2 to 500 years were estimated for 352 gaged streamflow sites. Data through 1999 water year were used from streamflow-gaging stations with at least 8 years of record within Oklahoma or about 25 kilometers into the bordering states of Arkansas, Kansas, Missouri, New Mexico, and Texas. These sites were in unregulated basins, and basins affected by regulation, urbanization, and irrigation.

Documented extreme peak discharges and associated data were compiled for 514 sites in and near Oklahoma, 352 with streamflow-gaging stations and 162 at miscellaneous measurements sites or streamflow-gaging stations with short record, with a total of 671 measurements.The sites are fairly well distributed statewide, however many streams, large and small, have never been monitored.

Potential extreme peak-discharge curves were developed for streamflow sites in hydrologic regions of the state based on documented extreme peak discharges and the contributing drainage areas.

Two hydrologic regions, east and west, were defined using 98 degrees 15 minutes longitude as the dividing line.

Introduction

Knowledge of the magnitude and frequency of floods is required for the safe and economical design of highway bridges, culverts, dams, levees, and other structures on or near streams. Flood plain management programs and flood-insurance rates also are based on flood magnitude and frequency information. A flood is any relatively high streamflow overtopping the natural or artificial banks in any reach of a stream (Leopold and Maddock, 1954, p. 249-251). The magnitude of a flood is referred to as the flood peak, which is the highest value of the discharge or stage attained by a flood; thus, peak discharge or peak stage (Langbein and Isseri, 1960, p.10). Three kinds of flood frequency analyses may be conducted; (1) peak discharge; (2) peak stage; and (3) total volume (Dalrymple, 1960, p. 5). Peak-discharge flood frequency analyses are the most common and are the type of flood frequency analyses that will be presented in this investigation.

Documented historical peak-discharge data are valuable for giving perspective to flood potential for local communities near a streamflow-gaging site. Often very large floods happened so long ago that people have forgotten or are unaware that the floods happened and could happen again. These documented peak discharges may be much larger than large damaging streamflows that have recently occurred.

The potential extreme peak discharge at a site, which is an estimate of the maximum expected peak discharge that could occur at a stream site, is used in conjunction with flood frequency analysis to give the best evaluation of flood risk at a site. Extreme flood potential exceeds the discharge associated with large recurrence-interval flood, such as the 100-year peak discharge (Asquith and Slade, 1995). Potential extreme peak-discharge curves, derived from the relation between documented extreme peak-discharge measurements and contributing drainage areas from a hydrologic region, are not associated with specific probabilities or frequencies, but give evidence as to the magnitude of flow that has occurred and can occur. Given similar basin characteristics, a peak lying close to the envelope curve might occur at other basins in the same region (Crippen, 1982). The U. S. Geological Survey (USGS), in cooperation with the Oklahoma Department of Transportation, conducted an investigation to define the potential extreme peak discharges in Oklahoma.

Purpose and Scope

The purpose of this report is to: (1) update flood frequency estimates for gaged streamflow sites with 8 years or more of record for unregulated, regulated, and urban basins in and near Oklahoma, using data through 1999 water year; (2) present documented extreme peak discharges for gaged and miscellaneous measurement sites; (3) present potential extreme peak-discharge curves for unregulated basins for the state; and (4) present potential extreme peak-discharge estimates for all the streamflow measurement sites used in this investigation.

The potential extreme peak-discharge curves were developed based on documented extreme peak-discharge measurements from 352 streamflow-gaging stations in Oklahoma and within about 25 kilometers of Oklahoma in the bordering states of Arkansas, Kansas, Missouri, New Mexico, and Texas (fig. 1; table 1, back of report); and 162 sites in Oklahoma at miscellaneous measurement sites without streamflow-gaging stations, or streamflow-gaging stations with short record (fig. 2; table 2, back of report). The peak-discharge measurements presented are from unregulated basins, and basins affected by regulation, urbanization, and irrigation. An unregulated basin is defined as a drainage basin for which the peak discharges are not affected by regulation, reservoirs, diversions, urbanization, or other human-related activities. Significant regulation by dams or other manmade modification of streamflow is defined as 20 percent or more of the contributing drainage basin being affected (Heimann and Tortorelli, 1988).

This report updates the flood frequencies presented in Heimann and Tortorelli (1988). This update can be used to estimate flood discharges for Oklahoma streamflow-gaging sites with a drainage area greater than 2,510 square miles, because it includes 15 years of additional annual peak data and records from many additional gaging stations, including major peak discharges recorded during 1987, 1990, 1993, and 1995 water years. This report also includes and updates the flood frequencies in Tortorelli (1997), which estimated flood discharges for Oklahoma streamflow-gaging sites with drainage areas less than or equal to 2,510 square miles.

This report also updates the potential extreme peak-discharge analysis by Crippen and Bue (1977) for Oklahoma.

Acknowledgments

The following U.S. Geological Survey personnel provided assistance with this report: Darrell Walters and Tony Coffey provided accurate and valuable information about historic streamflow-gaging data; William Asquith provided guidance about the investigation methodology; and Michael Stallings and Jason Masoner produced the streamflow-gaging station site maps.

Flood Frequency Estimates for Gaged Streamflows

The curvilinear relation between flood peak magnitude and annual exceedance probability or recurrence interval is referred to as a flood frequency curve. Annual exceedance probability is the probability of a given flood magnitude being equaled or exceeded in any one year. Recurrence interval is the reciprocal of the annual exceedance probability, and represents the average number of years between peak flow exceedances of that magnitude. For instance, a flood having an annual exceedance probability of 0.01 has a recurrence interval of 100 years. This does not imply that a 100-year flood peak will be equaled or exceeded each 100 years, but that it will be equaled or exceeded on the ***average*** of once every 100 years (Thomas and Corley, 1977). That peak might be exceeded in successive years, or more than once in the same year. The probability of that peak happening is called risk. Procedures for making flood risk estimates are given by the Interagency Advisory Committee on Water Data (IACWD) (1982).

The IACWD (1982) provides a standard procedure for flood frequency estimation using the log-Pearson Type III (LPIII) distribution. The procedure uses systematically collected and historical peak-discharge values to define frequency distribution. The shape of the distribution is defined by a skew coefficient used in the estimation procedure.

The LPIII distribution does not always define a suitable distribution of peak-discharge values because of variation in the climatic and physiographic characteristics in the basin. The data distribution is defined by Weibull plotting positions (Chow and others, 1988). An inappropriate fit of the LPIII distribution to the distribution of peak-discharge data can produce erroneous values for flood frequency. Therefore, for the estimation of flood frequency in this investigation, available historical flood information, low-outlier thresholds, and skew coefficients were all considered, following the IACWD guidelines. LPIII flood frequency estimates of the 2-, 5-, 10-, 25-, 50-, 100-, and 500-year floods are given for each gaged station used in this investigation in table 1 (back of report).

Annual Peak Data

All pertinent annual peak-discharge data were collated and reviewed to begin the flood frequency analysis. This review of data eliminated discrepancies across state lines and accounted for data in the immediate bordering areas of a state with similar hydrology.

The station flood frequency analysis presented is based on annual peak-discharge data systematically collected at 352 gag-

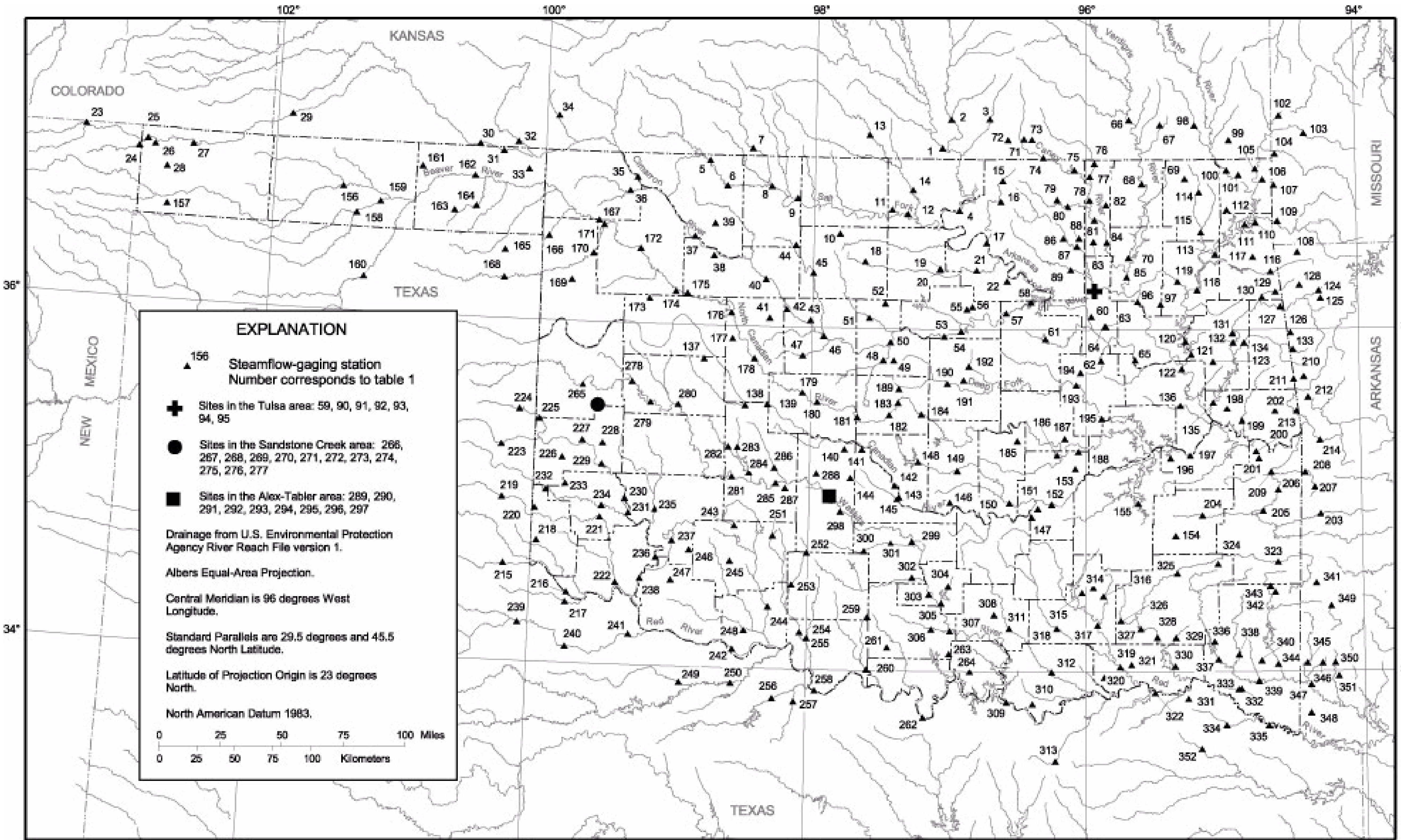

Figure 1. Location of streamflow-gaging stations with at least 8 years of peak-discharge data used in study.

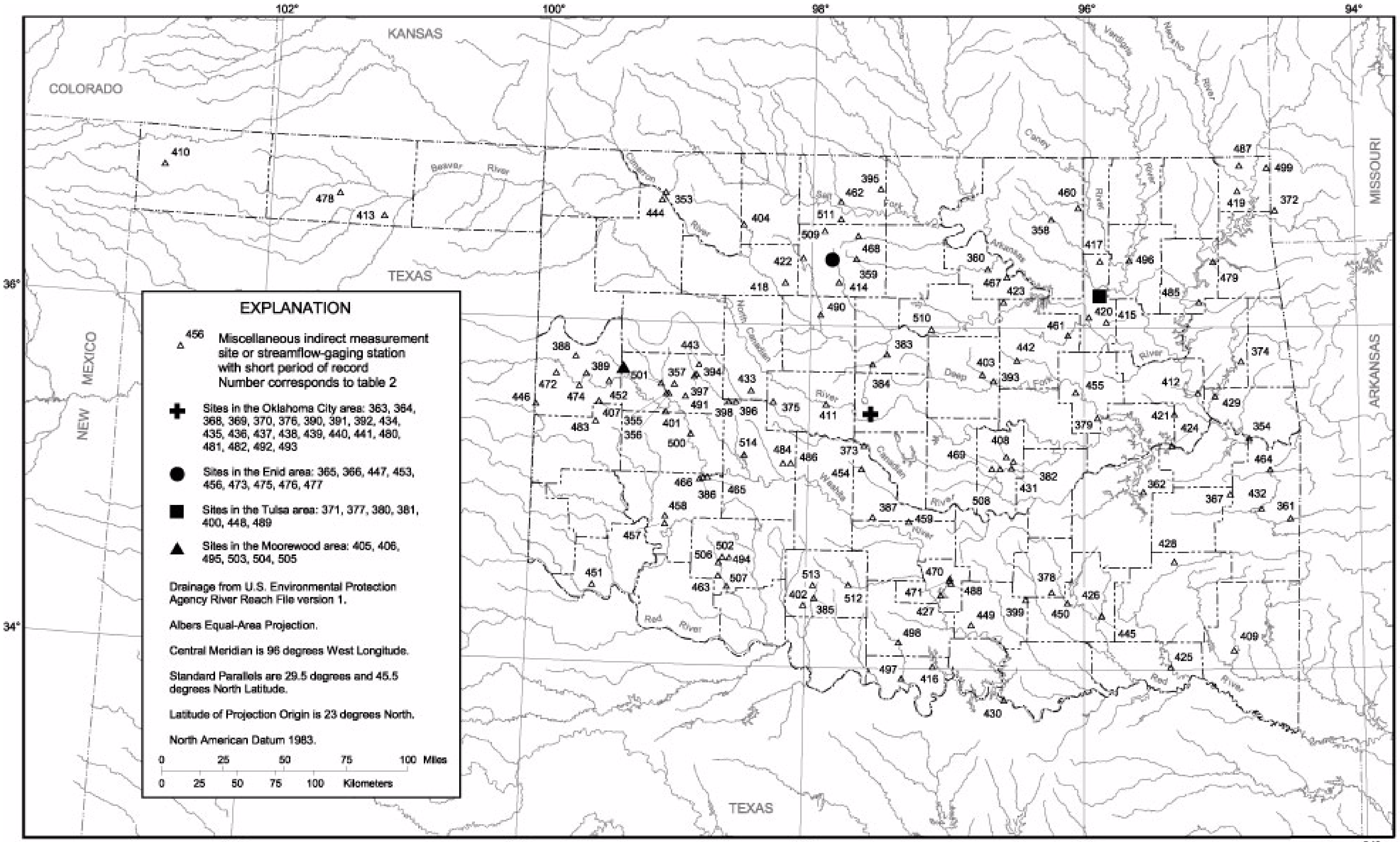

Figure 2. Location of miscellaneous indirect measurement sites and streamflow-gaging stations with short periods of record used in study.

ing stations (fig. 1; table 1, back of report). Those data were based on a water year, October 1 through September 30. Those data were collected through September 30, 1999, for all stations used in this investigation. Only those stations with at least 8 years of flood peak data were used in the analysis. The IACWD (1982) recommends using at least 10 years of data to make these calculations. The only time stations with less than 10 years of data were used was to fill regional gaps; twelve crest-stage partial record sites (sites 16, 40, 79, 110, 117, 144, 198, 200, 218, 247, 314, 324) and eight continuous record sites (sites 61, 136, 165, 191, 283, 285, 291, 342) (fig.1: table 1, back of report).

All station data were divided into appropriate periods of record, those periods in which the basins were unregulated, and those periods in which there were substantial effects from regulation by major dams or floodwater retarding structures and other manmade modifications. Therefore, each basin condition was analyzed separately if 8 or more years of record were available.

Historical Peak Discharges

In addition to the systematically collected peak-discharge data from gaging stations, the USGS routinely compiles, through newspaper accounts and interviews with local residents, information about historical peak discharges and historical peak stages, so that historical peak elevations can be determined for sites or times without measured data. A historical peak discharge is the highest peak discharge since a known date and may precede the installation of the station; a historical peak discharge can occur either before or after installation of a station. Historical information is critical for evaluating flood frequency estimates for the larger recurrence intervals. Many historical peak discharges are associated with catastrophic storms. Large storms can cause flood peaks exceeding those that can be estimated accurately by analyses of available precipitation or annual peak-discharge data.

Historical peak-discharge data also are valuable for giving perspective to flood potential for local communities near a streamflow-gaging site without the need to attach a statistical meaning to the flood. Often very large peak discharges, both historical peak discharges and systematically collected peak discharges, have occurred so long in the past that people have forgotten or are unaware that the floods have occurred. These peak discharges may be much larger than recent large notable floods. For example, the residents of Blackwell, Oklahoma, experienced a large flood on the Chikaskia River (site 14, fig.1; table 1, back of report) with a peak discharge of 60,700 cubic feet per second on November 1, 1998, when the river rose about 31 feet in less than two days. However, historic records show that there have been larger peak discharges. The largest is a historical peak discharge of 100,000 cubic feet per second on June 10, 1923, before the streamflow gage was installed. The second largest flood was on June 22, 1942, after the gage was installed, when the peak discharge was 85,000 cubic feet per second, almost 50 percent more flow than the 1998 flood; three other peak discharges exceeded the 1998 peak discharge.

Historical peak-discharge data are available for over 20 percent of the 352 Oklahoma and border-state stations. These peaks are designated with an “H” in table 1 (back of report). Historical peak discharge is included in frequency estimates by the specifying of a high-outlier threshold and historical record length according to guidelines in the IACWD (1982).

Historical information from nearby streamflow gages was used for a small number of stations, including time of large peaks and period of record. These stations are indicated by the footnotes in table 1 (back of report). For many of these stations, usually those with short periods of record, one gage-recorded peak discharge is historically important because it is considerably greater than the other peak discharges. Although no official documentation of the historical importance of that peak discharge is available, a historical perspective was developed through consideration of a longer period of record from relevant nearby stations. Such consideration was necessary to produce more realistic flood frequency analyses for these stations.

Low-Outlier Thresholds

The climatic and physiographic characteristics of some streams in Oklahoma result in extremely small annual peak-discharge values, referred to as low outliers. Typically, low outliers are identified by visually fitting the data to the LPIII distribution curve. The presence of low outliers can substantially affect the distribution curve; therefore, the fit of the LPIII distribution to the data should be adjusted to account for the presence of low outliers. All peak-discharge values below the low-outlier threshold, including zero, are excluded from the fitting of the LPIII distribution.

The IACWD (1982) guidelines provide a computational procedure for low-outlier threshold selection; however, the IACWD procedure may not produce accurate low-outlier thresholds for some stations. Therefore, the fit of the preliminary LPIII distribution to the distribution of the peak-discharge data for each station was visually inspected and some stations were assigned a revised low-outlier threshold based on that inspection.

Skew Coefficients

The IACWD (1982) guidelines recognize three types of skew coefficients: (1) the station skew coefficient calculated from only the systematic record with appropriate adjustments for high and low outliers, if applicable; (2) the generalized skew coefficient from a locally developed generalized skew map or the IACWD (1982) generalized skew map; and (3) the weighted skew coefficient, calculated by combining the locally developed generalized skew or the IACWD (1982) generalized skew with station skew coefficients.

The station skew coefficient is difficult to estimate reliably for stations with short periods of record. The IACWD (1982) recommends applying a weighted skew coefficient to the LPIII distribution. The weighted skew coefficient estimate is calculated by weighting the skew coefficient computed from the peak-discharge data at the station (station skew) and the generalized skew coefficient representative of the surrounding area. A weighted skew coefficient is based on the inverse of the respective mean square errors for each of the station and generalized skew coefficients.

Generalized skew coefficients were determined for Oklahoma (Tortorelli and Bergman, 1985) using adjusted station skew coefficients from stations with at least 20 years of peak-discharge data, streamflow data through 1980, and drainage basin areas greater than 10 square miles and less than or equal to 2,510 square miles. Tortorelli and Bergman (1985) updated the generalized skew coefficients recommended by the IACWD (1982), based on data through 1973. Updating the 1985 Oklahoma generalized skew map was not part of this project. However, a check of the standard error of the generalized skew, using the stations used to develop the generalized skew map and updated streamflow records through 1995, indicated that the standard error value of 0.33 was still valid (Tortorelli, 1997). That standard error value was used to compute weighted skew coefficients using the station and Oklahoma generalized skews for all unregulated basins (designated with a "N" in table 1, back of report) with contributing drainage areas ***less than or equal to*** 2,510 square miles.

The IACWD (1982) weighted skew coefficients were used for all unregulated basins (designated with a "N" in table 1, back of report) with contributing drainage areas ***greater than*** 2,510 square miles.

Weighted skew coefficients are not appropriate for stations for which there has been significant effects from regulation by major dams or floodwater retarding structures and other man-made modifications. The station skew coefficient was calculated from only the systematic record with appropriate adjustments for high and low outliers, if applicable, for these types of basins (designated with an "R, U, or I" in table 1, back of report).

Documented Extreme Peak Discharges

The USGS has monitored and published streamflow data for almost 100 years at streamflow-gaging stations throughout Oklahoma, including compilation of annual peak discharges. The USGS also determines peak discharges for large floods at sites without streamflow-gaging stations, through indirect measurements at miscellaneous streamflow measurement sites. Qualifications are assigned to the peak discharges that document the nature of each peak discharge and provide information regarding regulation, reservoirs, land use, and other characteristics affecting the discharge values.

The documented extreme peak discharge was tabulated for each of 352 sites with streamflow-gaging stations (table 1, back of report). The site number, USGS station number, USGS station name, type of station, type of record, date and magnitude of the documented extreme peak discharge, magnitude of potential extreme peak discharge (described in next section), contributing drainage area, latitude and longitude of station, hydrologic region, type of basin, and LPIII flood frequency estimates (described in previous section) are presented in table 1. If the documented extreme peak discharge was described in a flood report, that report is noted by a footnote. If a station had more than one type of record, all are presented.

The documented extreme peak discharge also was tabulated at each of 162 selected sites in Oklahoma at miscellaneous measurement sites without streamflow-gaging stations or with streamflow-gaging stations with short periods of record (table 2, back of report). These data were tabulated by visually inspecting the indirect streamflow measurement files at District office. Some have been reported as a historical peak in table 1 and were not repeated in table 2. Many of these peak discharges are associated with catastrophic storms and represent some of the largest peak discharges for the corresponding contributing drainage areas in the state. The descriptive information listed in table 2 is the same as in table 1, except that table 2 lists stream name or indirect measurement site name in place of USGS station name. A USGS station number was noted only on those sites that had a streamflow-gaging station. No LPIII flood frequency estimates were computed. If the documented extreme peak discharge was reported in a flood report, that report is noted by a footnote. If a station had more than one type of record, all are presented.

The sites are fairly well distributed statewide, however many streams, large and small, have never been monitored. The location of each site with streamflow-gaging stations is shown on figure 1. The site numbers on the figure refer to those in table 1, back of report, for sites 1-352. The location of each site without streamflow-gaging stations or streamflow-gaging stations with short periods of record is shown on figure 2. The site numbers on the figure refer to those in table 2, back of report, for sites 353-514. The distribution of the documented peak-discharge measurements from these sites is listed in table 3. A total of 671 streamflow measurements were used from the 514 sites.

Potential Extreme Peak Discharges

The documented extreme peak discharges were analyzed to estimate the potential extreme peak discharges for Oklahoma. Curves enveloping the documented extreme peak discharges for different regions of the state were developed as a function of the corresponding contributing drainage areas of the streamflow measurement sites. The relation between documented extreme peak discharge and other basin characteristics, such as channel length and channel slope, were evaluated by Asquith and Slade (1995). They reported that the potential extreme peak discharge correlates better with contributing drainage areas than with other characteristics. Crippen and Bue (1977) and Paul Jordan (USGS, written commun., 2000) also

Table 3. Summary of drainage area and state distribution of extreme peak discharge measurements

Contributing drainage area (square miles)	Number of extreme peak discharge measurements						
		Border states					
	Oklahoma	Arkansas	Kansas	Missouri	New Mexico	Texas	Total
0.1 to less than 1	22	4	1				27
1 to less than 10	115	2	2			1	120
10 to less than 100	120	9	4	2		2	137
100 to less than 1,000	154	9	9	3	1	13	189
1,000 to less than 10,000	119	3	5	1		11	139
10,000 to less than 50,000	33		2			11	46
50,000 or more	10	3					13
Total	573	30	23	6	1	38	671

report that contributing drainage area is the single most influential basin characteristic to use for determination of potential extreme peak-discharge curves. Therefore, other characteristics were not used in the development of the potential extreme peak-discharge curves for Oklahoma. The envelope curve of discharge data is referred to as potential extreme peak-discharge curve (Asquith and Slade, 1995).

Documented extreme peak discharges 25 kilometers into the bordering states were used to expand the data base of streamflow measurements and to account for data in the immediate bordering areas of a state with similar hydrology. The documented extreme peak discharges were plotted by state to check if the potential extreme peak-discharge curve analysis may be unduly influenced by bordering state data (fig. 3). Only one bordering state data point influenced the analysis, the largest documented extreme peak discharge near Van Buren, Arkansas, (site 214, table 1, back of report), the point at which the Arkansas River flows out of Oklahoma. This point is the upper limit in the east hydrologic region described in succeeding sections.

One possible discriminator for potential extreme peak-discharge curves for the state tested and rejected was dividing the data into the two major drainage basins, the Arkansas River basin and the Red River basin. The documented extreme peak discharges were plotted by major drainage basins (fig. 4) and it was decided by visual inspection that there was not enough difference of discharges between basins to warrant using this criterion. There does not appear to be a meaningful role for statistical testing of documented extreme peak discharges between envelope-curve hydrologic regions (W.F. Kirby, USGS, written commun., 2001); therefore, no statistical test was performed to verify this conclusion.

Another possible discriminator tested and accepted was dividing the data into two sets, east and west of a line roughly corresponding to the 28-inch mean annual precipitation line (Tortorelli, 1997), which divides the state into an east and west region. The documented extreme peak discharges were plotted by dividing the data into two hydrologic regions, east and west, separated by a longitude line, 98 degrees 15 minutes. It was decided by visual inspection that there was a significant difference of discharges between regions, and again no statistical test was performed to verify this conclusion. This was the criterion that was adopted to define two hydrologic regions. The resulting potential extreme peak-discharge curves are shown in figure 5 for the east region and figure 6 for the west region.

Peak-discharge data from all types of basins are presented in the graphs to see what type of peak-discharge measurement records define the potential extreme peak-discharge curves (figs. 5 and 6). The peak-discharge measurements presented are from unregulated basins and basins affected by regulation, urbanization, and irrigation. All extreme peak-discharge measurements, regardless of basin type, are documented in this publication to see if extreme peak-discharge measurements from other than unregulated basins would control, or define the potential extreme peak-discharge curves.

The relation between the estimated 100-year flood frequency discharge and the contributing drainage area for each of the streamflow-gaging stations was plotted

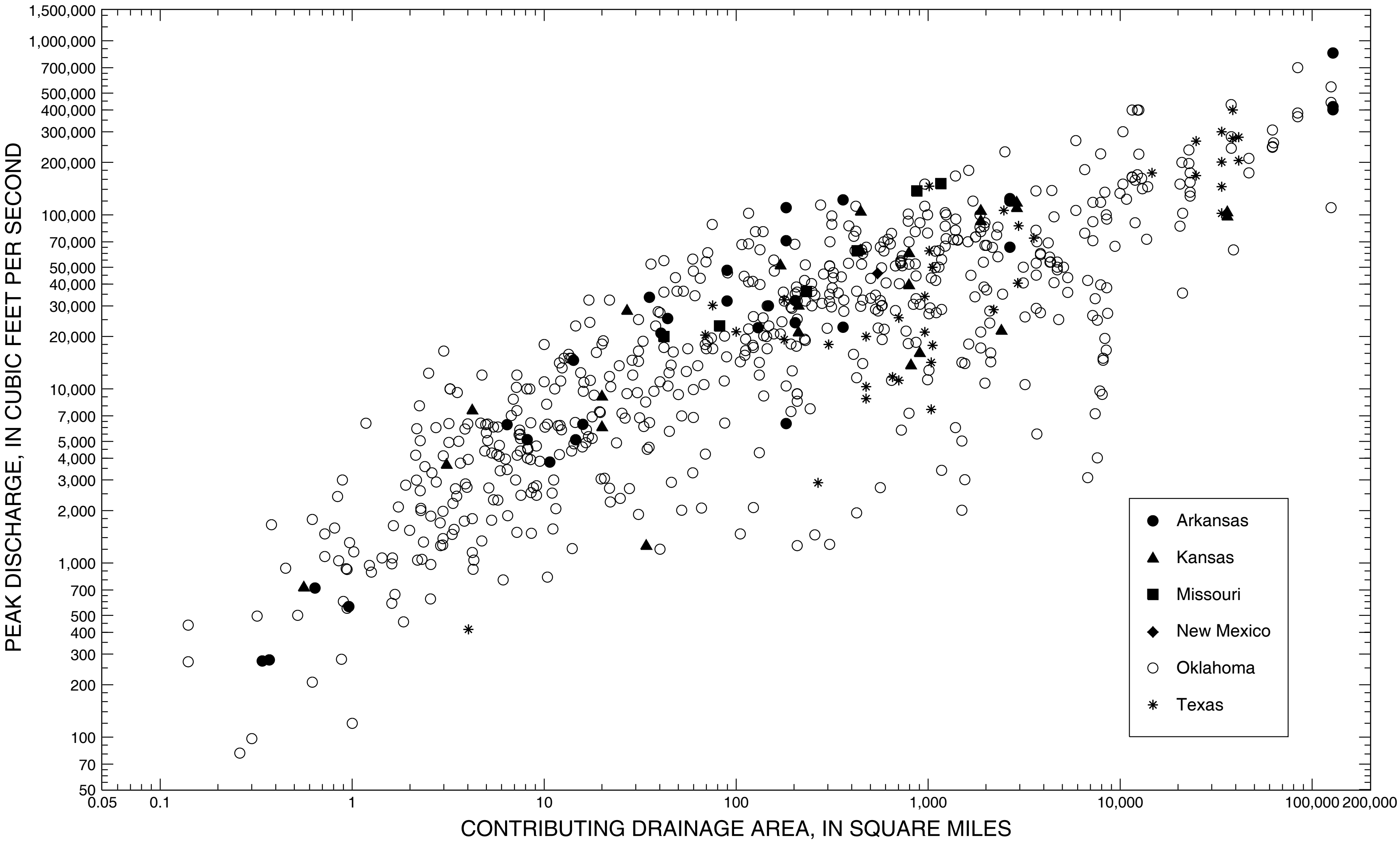

Figure 3. Distribution of extreme peak-discharge data by state.

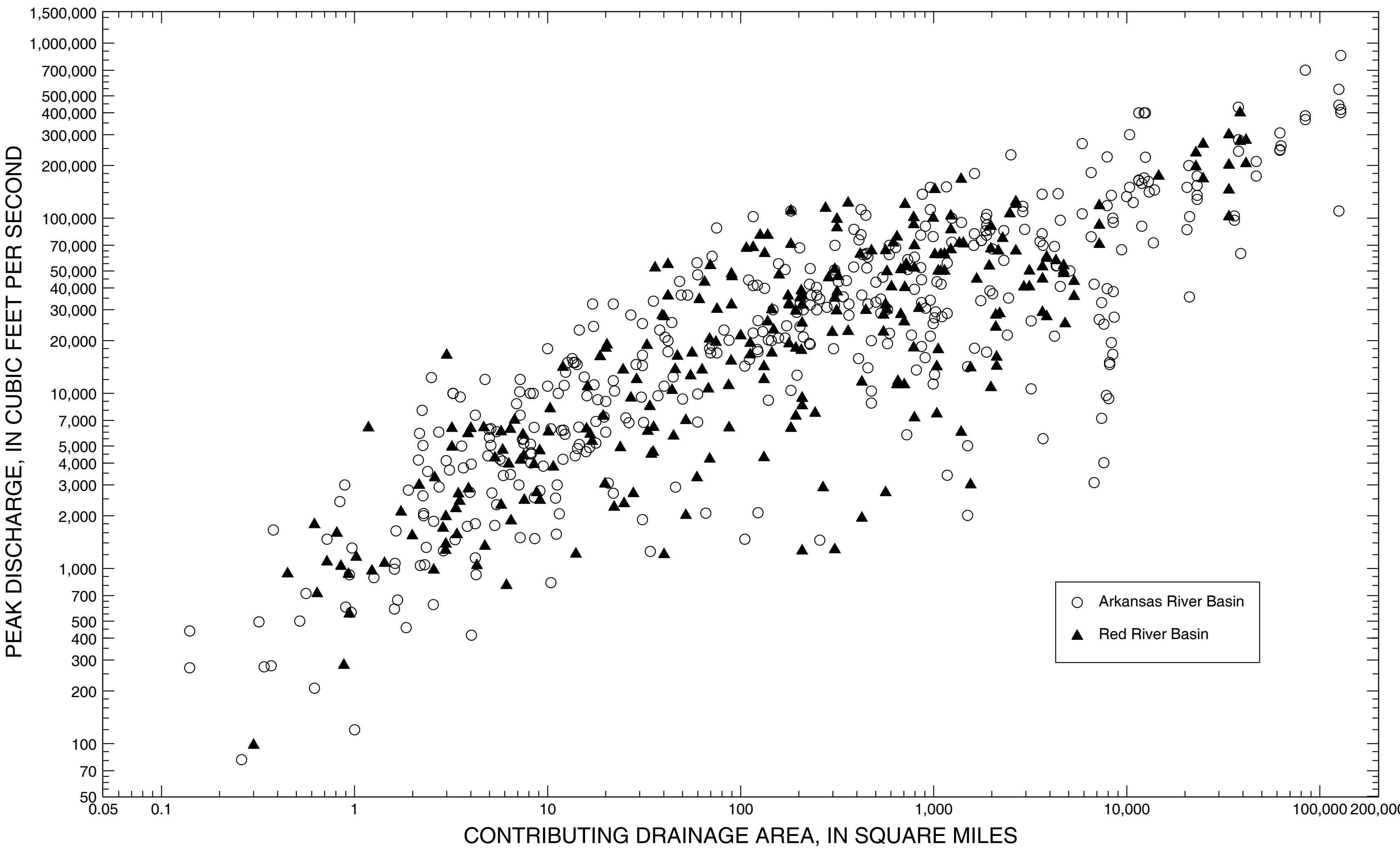

Figure 4. Distribution of extreme peak-discharge data by major drainage basins.

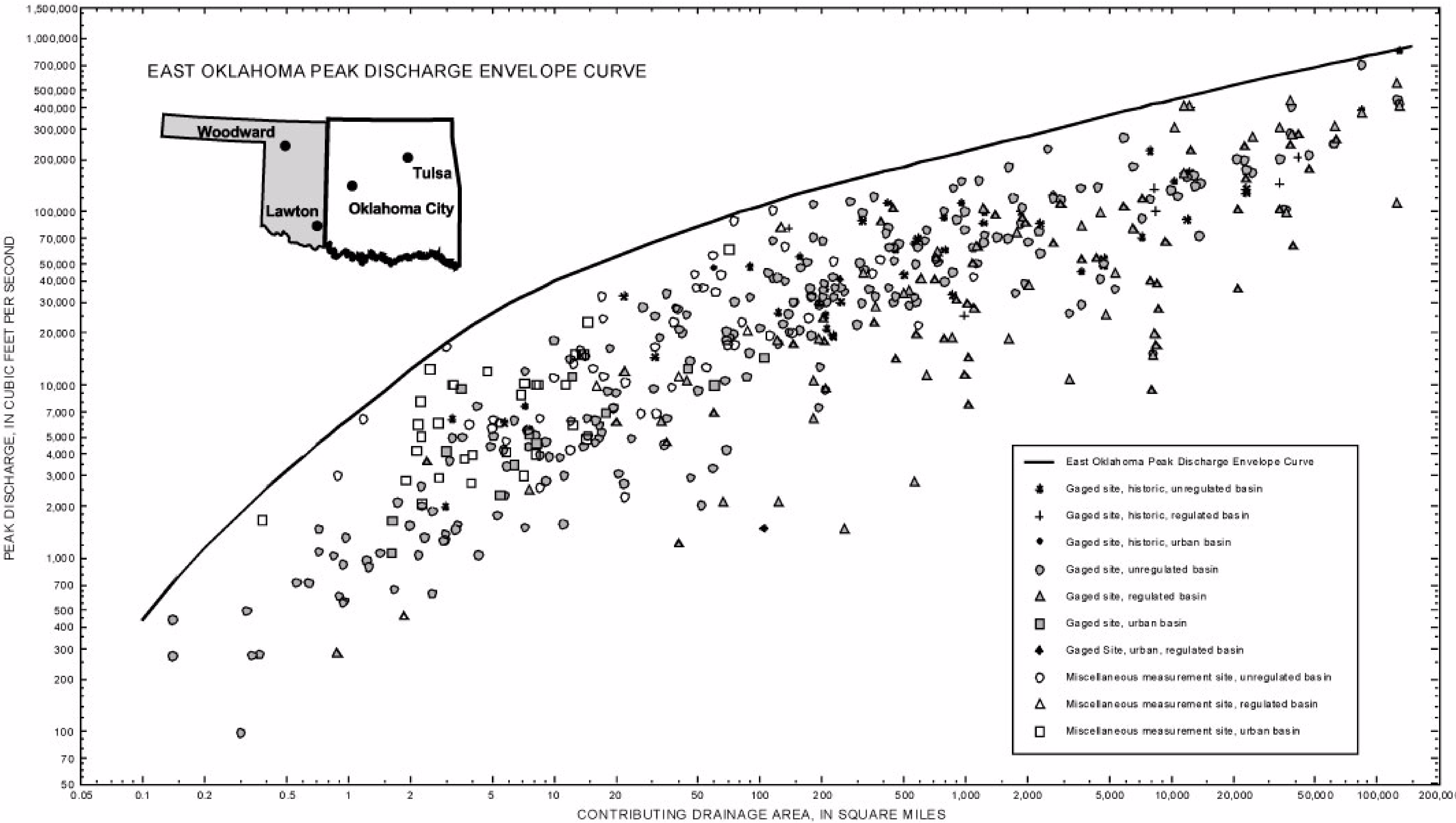

Figure 5. Oklahoma Peak Discharge Envelope Curve based on peak-discharge measurements at streamflow sites east of 98 degrees 15 minutes longitude.

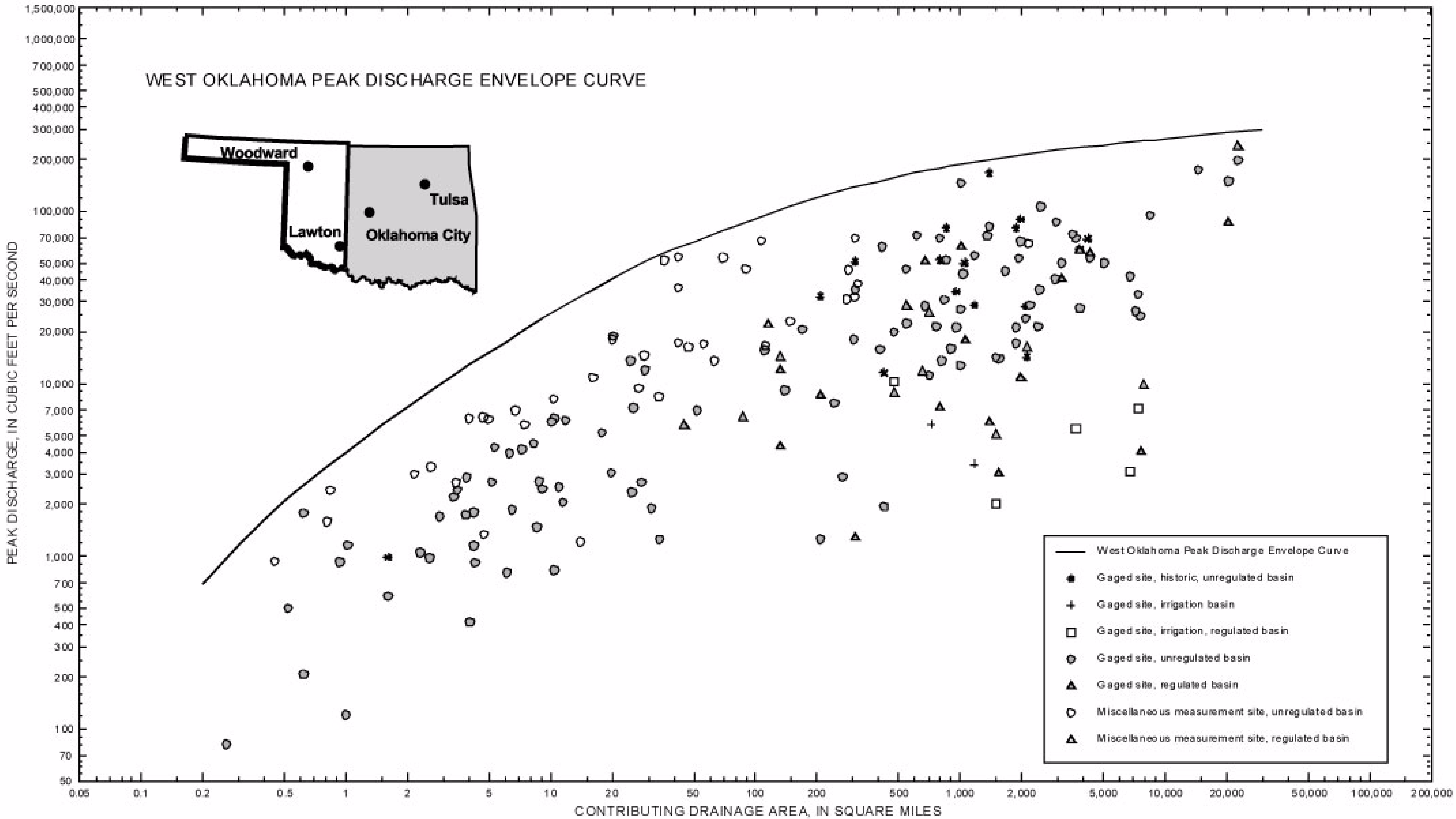

Figure 6. Oklahoma Peak Discharge Envelope Curve based on peak-discharge measurements at streamflow sites west of 98 degrees 15 minutes longitude.

and used to visually check each of the regional potential extreme peak-discharge curves as suggested by Asquith and Slade (1995). The 100-year peak discharges are listed in table 1 (back of report). These data resulted in the slight upward adjustment of both regional curves in the area below 1.0 square mile and above 1,000 square miles.

The potential extreme peak-discharge curves developed used all peak data as of 1999 water year and will be subject to change as greater peak discharges are subsequently documented. The upward trend of the curves through time is probably due to an increased number of streamflow-gaging stations and an increased period of record (Creager, 1939). However, the rate of increase in peak discharges experienced in the United States has been slowing due to a longer period of recorded data and, perhaps, to approaching geophysical limits (Wolman and Costa, 1984; Matthai, 1969). Longer periods of record also would tend to minimize the effect of weather fluctuations.

Generally, the extreme peak-discharge measurements did define the potential extreme peak-discharge curves in figures 5 and 6. Miscellaneous measurements of peak discharge in unregulated basins control the curve for drainage basin areas of about 200 square miles and less for the east region; a few miscellaneous measurements of peak discharge in urban basins control the curve for about 5 square miles and less. Miscellaneous measurements of peak discharge in unregulated basins control the curve for drainage basin areas of about 1,000 square miles and less for the west region. The potential extreme peak-discharge curve is defined mostly by measurements of peak discharge in unregulated basins at streamflow-gaging stations in the east region and a few measurements of peak discharge in regulated basins at streamflow-gaging stations and historical peaks, for drainage areas greater than 200 square miles (fig. 5). The potential extreme peak-discharge curve is defined by measurements of peak discharge in unregulated basins at streamflow-gaging stations and historical peaks in the west region for drainage areas greater than 1,000 square miles (fig. 6). One measurement from a regulated basin in the east region was used, Red River near Terral, Okla. (site 258, fig.1; table 1, back of report), in the west region curve. That measurement was used to provide a reasonable upper limit for the curve since most of the drainage area for the site is in the west region. A comparison of the potential extreme peak-discharge curves for two hydrologic regions (figs. 5 and 6) is shown in figure 7.

A potential extreme peak-discharge estimate for any site in a unregulated basin can be obtained from the potential extreme peak-discharge curve for the hydrologic region containing the site, if the contributing drainage area is known. Since all types of drainage basins were used to develop the curves, extreme peak-discharge estimates for sites in which there have been significant effects from manmade modification of streamflow may be obtained if caution is exercised to recognize the limitations of such estimates. For example, streams regulated by major dams are subject to reservoir operations. Urban basins with a high percentage of impervious land cover such as concrete, asphalt and buildings, when coupled with a highly localized storm, could conceivably have higher peak flow. Potential extreme peak-discharge estimates of all 514 sites are listed in tables 1 and 2 (back of report). The curves are presented in tabular form for convenience (table 4). Recurrence intervals cannot be associated with potential extreme peak-discharge estimates because the discharge data do not meet the criteria for statistical analysis (P.R. Jordan, USGS, written commun., 2001).

Summary

Knowledge of the magnitude and frequency of floods is required for the safe and economical design of highway bridges, culverts, dams, levees, and other structures on or near streams; and for flood plain management programs. The potential extreme peak discharge at a site, which is an estimate of the maximum expected peak discharge that could occur at a stream site, often is used in conjunction with flood frequency analysis to give the best evaluation of flood risk at a site. Potential extreme peak-discharge curves, derived from the relation between documented extreme peak-discharge measurements and the contributing drainage areas from a hydrologic region, are not associated with specific probabilities or frequencies, but give evidence as to the magnitude of flow that has occurred.

This report: (1) updates flood frequency estimates for gaged streamflow sites with 8 years or more of record for unregulated, regulated, and urban basins in and near Oklahoma, using data through 1999 water year; (2) presents documented extreme peak discharges for gaged and miscellaneous measurement sites; (3) presents potential extreme peak-discharge curves for unregulated basins for the State; and (4) presents potential extreme peak-discharge estimates for all the streamflow measurement sites used in this investigation.

Peak discharge and flood frequency for selected recurrence intervals from 2 to 500 years were determined for 352 gaged streamflow sites. Data through 1999 water year were used from streamflow-gaging stations with at least 8 years

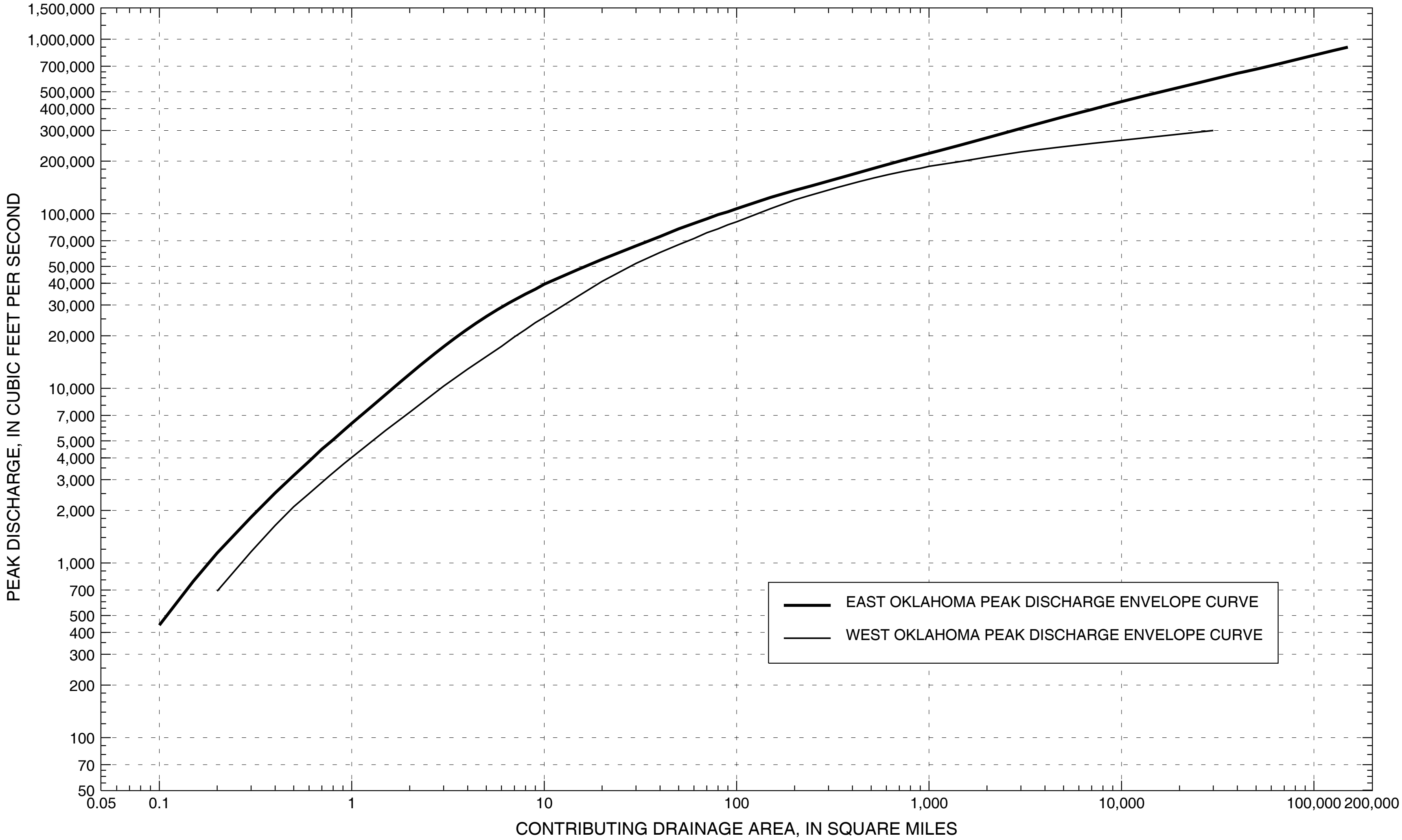

Figure 7. Comparison of East and West Oklahoma Peak Discharge Envelope Curves.

Table 4. Oklahoma Peak Discharge Envelope Curve Data

[mi^2, square miles; East, sites east of 98 degrees 15 minutes longitude; West, sites west of 98 degrees 15 minutes longitude]

Contributing drainage area (mi^2)	Peak discharge	
	East	Wesxt
0.1	440	
0.15	785	
0.2	1,140	690
0.3	1,830	1,160
0.4	2,520	1,640
0.5	3,170	2,100
0.6	3,820	2,500
0.7	4,490	2,900
0.8	5,080	3,280
0.9	5,700	3,670
1	6,300	4,020
1.5	9,220	5,750
2	12,100	7,300
3	17,300	10,300
4	21,900	12,900
5	25,800	15,200
6	29,100	17,400
7	32,100	19,700
8	34,700	21,700
9	37,000	23,800
10	39,500	25,500
15	47,900	33,700
20	54,800	41,000
30	65,400	52,000
40	74,100	60,000
50	82,000	66,500
60	88,000	72,100
70	93,500	77,800
80	98,800	82,000
90	102,500	86,500

Contributing drainage area (mi^2)	Peak discharge (cubic feet per second)	
	East	West
100	107,000	90,000
150	124,000	107,000
200	136,000	120,000
300	154,000	137,000
400	168,000	149,000
500	180,000	159,000
600	191,000	167,000
700	200,000	173,000
800	208,000	178,000
900	215,000	182,000
1,000	222,000	187,000
1,500	250,000	200,000
2,000	272,000	211,000
3,000	308,000	226,000
4,000	335,000	235,000
5,000	360,000	242,000
6,000	379,000	248,000
7,000	395,000	253,000
8,000	411,000	257,000
9,000	425,000	260,000
10,000	440,000	264,000
15,000	491,000	276,000
20,000	529,000	286,000
30,000	590,000	300,000
40,000	637,000	
50,000	672,000	
60,000	705,000	
70,000	735,000	
80,000	760,000	
90,000	785,000	
100,000	810,000	
150,000	900,000	

of record within Oklahoma or about 25 kilometers into the bordering states of Arkansas, Kansas, Missouri, New Mexico, and Texas. These sites were in unregulated basins, and basins affected by regulation, urbanization, and irrigation.

Two types of documented extreme peak discharges are presented. These are maximum peak discharges documented at 352 sites with streamflow-gaging stations within and near Oklahoma and selected large peak discharges documented at 162 selected sites in Oklahoma at miscellaneous measurement sites without streamflow-gaging stations or streamflow-gaging stations with short record, with a total of 671 measurements. The sites are fairly well distributed statewide, however many streams, large and small, have never been monitored.

Potential extreme peak-discharge curves were developed for streamflow sites in hydrologic regions of the state based on documented extreme peak discharges and the contributing drainage areas. Two hydrologic regions, east and west, were defined, using 98 degrees 15 minutes longitude as the dividing line. The relation between the estimated 100-year flood frequency peak discharge and the contributing drainage area for each of the streamflow-gaging stations also was used to check and adjust each of the regional potential extreme peak-discharge curves.

A potential extreme peak-discharge estimate for any site in a unregulated basin can be obtained from the potential extreme peak-discharge curve for the hydrologic region containing the site, if the contributing drainage area is known. However, since all types of drainage basins were used to develop the curves, extreme peak-discharge estimates for sites in which there have been significant effects from manmade modification of streamflow may be obtained if caution is exercised to recognize the limitations of such estimates.

Selected References

Asquith, W.H., and Slade, R.M., Jr., 1995, Documented and potential extreme peak discharges and relation between potential extreme peak discharges and probable maximum flood peak discharges in Texas: U.S. Geological Survey Water-Resources Investigations Report 95-4249, 58 p.

——, 1997, Regional equations for estimation of peak-streamflow frequency for natural basins in Texas: U.S. Geological Survey Water-Resources Investigations Report 96-4307, 68p.

Bergman, D.L., and Huntzinger, T.L., 1981, Rainfall-runoff hydrographs and basin characteristics data for small streams in Oklahoma: U.S. Geological Survey Open-File Report 81-824, 320 p.

Bergman, D.L., and Tortorelli, R.L., 1988, Flood of May 26-27, 1984, in Tulsa, Oklahoma: U.S. Geological Survey Hydrologic Investigations Atlas HA-707, 1 sheet.

Bingham, R.H., Bergman, D.L., and Thomas, W.O., Jr., 1974, Flood of October 1973 in Enid and vicinity, north-central Oklahoma: U.S. Geological Survey Water-Resources Investigations Report 74-27, 2 sheets, scale 1:250,000, 1:126,720.

Bradshaw, H.A., 1945, Wewoka dam failure, April 14, 1945: Oklahoma Planning and Resources Board, Oklahoma City, Division of Water Resources Report, 57 p.

Buckner, H.D., and Kurklin, J.K., 1984, Floods in south-central Oklahoma and north-central Texas: U.S. Geological Survey Open-File Report 84-065, 112 p.

Burnham, W.C., 1939, Washita River, Hammon flood, April 3-4, 1934: Oklahoma Planning and Resources Board, Oklahoma City, Division of Water Resources Report, 112 p.

Chow, V.T., Maidment, D.R., and Mays, L.W., 1988, Applied hydrology: New York, McGraw-Hill, 572 p.

Corley, R.K., and Huntzinger, T.L., 1979, Flood of August 27-28, 1977, West Cache Creek and Blue Beaver Creek, southwestern Oklahoma: U.S. Geological Survey Open-File Report 79-276, 1 sheet, scale 1:24,00

Costa, J.E., 1987, A comparison of the largest rainfall-runoff floods in the United States with those of the People's Republic of China and the world: Journal of Hydrology, v. 96, no. 1-4, p. 101-115.

Creager, W.P., 1939, Possible and probable future floods: Civil Engineering, v. 9, p. 668-670.

Crippen, J.R., 1982, Envelope curves for extreme flood events: American Society of Civil Engineers, Proceedings of the 1982 Journal of Hydraulic Engineering, v. 108, p. 1208-1212.

Crippen, J.R., and Bue, C.D., 1977, Maximum floodflows in the conterminous United States: U.S. Geological Survey Water-Supply Paper 1887, 52 p.

Dalrymple, Tate, 1960, Flood-frequency analyses: U.S. Geological Survey Water-Supply Paper 1543-A, 80 p.

Hauth, L.D., 1985, Floods in central, southwest Oklahoma, October 17-23, 1983: U.S. Geological Survey Open-File Report 85-494, 21 p.

Heimann, D.C., and Tortorelli, R.L., 1988, Statistical summaries of streamflow records in Oklahoma and in parts of Arkansas, Kansas, Missouri, and Texas through 1984: U.S. Geological Survey Water-Resources Investigations Report 87-4205, 387 p.

Helsel, D.R., and Hirsch, R.M., 1992, Studies in Environmental Science 49, Statistical Methods in Water Resources: New York, Elsevier, 522 p.

Interagency Advisory Committee on Water Data (IACWD), 1982, Guidelines for determining flow frequency: Reston, Va., U.S. Geological Survey, Office of Water Data Coordination, Hydrology Subcommittee Bulletin 17B [variously paged].

Interagency Advisory Committee on Water Data (IACWD), 1986, Feasibility of assigning a probability to the probable maximum flood: Reston, Va., U.S. Geological Survey, Office of Water Data Coordination, 79 p.

Langbein, W.B., and Iseri, K.T., 1960, General introduction and hydrologic definitions: U.S. Geological Survey Water-Supply Paper 1541-A, 29 p.

Leopold, L.B., and Maddock, Thomas, Jr., 1954, The flood control controversy: New York, Ronald Press Co., 278 p.

Matthai, H.F., 1969, Floods of June 1965 in South Platte River Basin, Colorado: U.S. Geological Survey Water-Supply Paper 1850-B, 64 p.

National Research Council, 1988, Estimating probabilities of extreme floods, methods and recommended research: Washington, D.C., National Academy Press, 141 p.

——, 1999, Improving American river flood frequency analyses: Washington, D.C., National Academy Press, 132 p.

Patterson, J.L., 1964, Magnitude and frequency of floods in the United States, Part 7. Lower Mississippi River Basin: U.S. Geological Survey Water-Supply Paper 1681, 636 p.

Perry, C.A., Aldridge, B.N., and Ross, H.C., 2000, Summary of significant floods in the United States, Puerto Rico and the Virgin Islands, 1970 through 1989: U.S. Geological Survey Water-Supply Paper 2502, 598 p.

Sauer, V.B., 1974, Flood characteristics of Oklahoma streams: U.S. Geological Survey Water-Resources Investigations 52-73, 301 p.

Thomas, B.E., Hjalmarson, H.W. and Waltemeyer, S.D., 1994, Methods for estimating magnitude and frequency of floods in the southwestern United States: U.S. Geological Survey Open-File Report 93-419, 211 p.

Thomas, W.O., Jr., and Corley, R.K., 1973, 1971-72 Floods on Glover Creek and Little River in southeastern Oklahoma: U.S. Geological Survey Water-Resources Investigations 5-73, 2 sheets, scale 1:24,000.

——, 1977, Techniques for estimating flood discharges for Oklahoma streams: U.S. Geological Survey Water-Resources Investigations Report 77-54, 170 p.

Tortorelli, R.L., 1996a, Estimated flood peak discharges on Twin, Brock, and Lightning Creeks, southwest Oklahoma City, Oklahoma, May 8, 1993: U.S. Geological Survey Water-Resources Investigations Report 96-4185, 127 p.

——1996b, Floods of April and May 1990 on the Arkansas, Red and Trinity Rivers in Oklahoma, Texas, Arkansas, and Louisiana, in U.S. Geological Survey, 1996, Summary of floods in the United States during 1990 and 1991: U.S. Geological Survey Water-Supply Paper 2474, p. 39-56.

——1997, Techniques for estimating peak-streamflow frequency for unregulated streams and streams regulated by small floodwater retarding structures in Oklahoma: U.S. Geological Survey Water-Resources Investigations Report 97-4202, 39 p.

Tortorelli, R.L., and Bergman, D.L., 1985. Techniques for estimating flood peak discharges for unregulated streams and streams regulated by small floodwater retarding structures in Oklahoma: U.S. Geological Survey Water-Resources Investigations Report 84-4358, 85 p.

Tortorelli, R.L., Cooter, E.J., and Schuelin, J.W., 1991,Oklahoma--Floods and droughts, in U.S. Geological Survey, 1991, National Water Summary 1988-1989: U.S. Geological Survey Water-Supply Paper 2375, p. 451-458.

U.S. Army Corps of Engineers, 1990, After action flood report, flood of April-May 1990 -- Southeastern Oklahoma, northeastern Texas: Tulsa District, 28 p.

U.S. Department of Agriculture, Soil Conservation Service, 1970, Storm Report, October 7, 8, 1970 (six sub-watersheds of Washita River) between Pauls Valley and Tishimingo, Oklahoma: 26 p.

U.S. Department of Commerce, 1958, Rainfall and floods of April, May, June 1957 in the south-central States: Weather Bureau Technical Paper 33, 350 p.

——, 1952,Kansas-Missouri floods of June-July 1951: Weather Bureau Technical Paper 17, 105 p.

U.S. Geological Survey, 1954, Floods of May 1951 in western Oklahoma and northwestern Texas: U.S. Geological Survey Water-Supply Paper 1227-B, p. 135-199.

Wahl, K.L., and Tortorelli, R.L., 1997, Changes in flow in the Beaver-North Canadian River basin upstream from Canton Lake, western Oklahoma: Geological Survey Water-Resources Investigations Report 96-4304, 58 p.

Walters, D.M., and Tortorelli, R.L., 1998, Oklahoma floods of May 8-14 and September 25-27, 1993, in U.S. Geological Survey, 1998, Summary of Floods in the United States, January 1992 through September 1993: U.S. Geological Survey Water-Supply Paper 2499, p. 231-237.

Weiss, D.L., and Sullivan, C.L., 1958, Floods of April-May 1957 in Oklahoma and western Arkansas: U.S. Geological Survey Open-File Report 57-127, 21 p.

Westfall, A.O., and Patterson, J.L., 1964, Floods in Oklahoma, magnitude and frequency: U.S. Geological Survey Open-File Report 64-170, 105 p.

Wolman, M.G., and Costa, J.E., 1984, Envelope curves for extreme flood events--Discussion: American Society of Engineers, Proceedings of the 1984 Journal of Hydraulic Engineering, v. 110, p. 77-78.

Wright, J., 1990, April-May 1990 flood event at Bureau of Reclamation reservoirs (flood control): U.S. Bureau of Reclamation, Oklahoma-Texas Project Office Memorandum, 2 p.

Supplemental Information

Table 1. Documented and potential extreme peak discharges and flood frequency estimates for selected streamflow-gaging stations with at least 8 years of annual peak-discharge data from unregulated, regulated, and urban basins within and near Oklahoma

[CONT, continuous record site; CSG, crest-stage partial record site; H, historic, I, irrigation; N, unregulated; R, regulated; U, urban; ft^3/s, cubic feet per second; mi^2, square mile; E, sites east of 98 degrees 15 minutes longitude; W, sites west of 98 degrees 15 minutes longitude; LPIII, Log-Pearson Type III; abv, above; Ck, creek; St, Street; blw, below; SWS, Subwatershed; Ave, Avenue; Lk, Lake; OKC, Oklahoma City; R., River; WY, water year]

Site number (fig. 1)	Station number	Station name	Type of station (CONT/CSG)	Documented extreme peak discharge: Type of record (H/I/N/R/U)	Documented extreme peak discharge: Date	Documented extreme peak discharge: Discharge (ft^3/s)	Potential extreme peak discharge (ft^3/s) (table 4)
1	07146500	Arkansas River at Arkansas City, Kans.	CONT	N	06/10/23	103,000	619,000
				R	11/03/98	97,400	
2	07147800	Walnut River at Winfield, Kans.	CONT	N	04/23/44	105,000 [a,b]	267,000
				R	11/02/98	91,600	
3	07148100	Grouse Creek near Dexter, Kans.	CSG	N	07/03/76	51,000	129,000
4	07148140	Arkansas River near Ponca City, Okla.	CONT	R	05/14/93	62,900 [c]	632,000
5	07148350	Salt Fork Arkansas River near Winchester, Okla.	CONT	HN	05/00/57	80,000	180,000
				N	08/19/61	52,200	
6	07148400	Salt Fork Arkansas River near Alva, Okla.	CONT	N	10/23/41	27,000 [a]	187,000
				N	10/10/85	12,800	
7	07149000	Medicine Lodge River near Kiowa, Kans.	CONT	N	10/22/41	16,000 [a]	182,000
8	07149500	Salt Fork Arkansas River near Cherokee, Okla.	CONT	N	10/23/41	35,000 [a]	218,000
9	07150500	Salt Fork Arkansas River near Jet, Okla.	CONT	N	05/19/38	25,900	313,000
				R	04/02/73	10,600	
10	07150580	Sand Creek Tributary near Kremlin, Okla.	CSG	N	10/11/73	12,000 [d]	32,600
11	07150870	Salt Fork Arkansas River Tributary near Eddy, Okla.	CSG	N	09/06/69	1,320	13,900
12	07151000	Salt Fork of Arkansas River at Tonkawa, Okla.	CONT	N	05/20/38	40,800 [a]	348,000
				R	10/11/73	97,300 [d]	
13	07151500	Chikaskia River near Corbin, Kans.	CONT	HN	06/09/23	60,000 [a]	208,000
				N	10/11/85	39,300	
14	07152000	Chikaskia River near Blackwell, Okla.	CONT	HN	06/10/23	100,000 [a]	266,000
				N	06/22/42	85,000	
15	07152360	Elm Creek near Foraker, Okla.	CSG	N	06/24/69	9,200	52,300
16	07152410	Rock Creek near Shidler, Okla.	CSG	N	05/18/65	2,780	37,300
17	07152500	Arkansas River at Ralston, Okla.	CONT	N	10/13/73	211,000 [d]	661,000
				R	10/04/86	174,000	
18	07152520	Black Bear Creek Tributary near Garber, Okla.	CSG	N	08/14/74	1,310	6,120
19	07152842	Subwatershed W-4 near Morrison, Okla.	CONT	N	04/18/57	496	1,970
20	07152846	Subwatershed W-3 near Morrison, Okla.	CONT	N	07/15/51	440	716
21	07153000	Black Bear Creek at Pawnee, Okla.	CONT	N	10/03/59	30,200	188,000
				R	10/05/86	19,200	
22	07153100	Ranch Creek at Cleveland Dam, Okla.	CONT	HN	09/04/40	32,400	56,800
				R	10/02/59	11,800	
23	07153500	Dry Cimarron River near Guy, N. Mex.	CONT	N	08/21/65	46,100 [b]	163,000
24	07154400	Carrizozo Creek near Kenton, Okla.	CSG	N	07/06/58	15,600	93,700
25	07154500	Cimarron River near Kenton, Okla.	CONT	N	10/17/65	43,400	188,000
26	07154650	Tesesquite Creek near Kenton, Okla.	CSG	N	08/06/71	7,250	46,900
27	07155000	Cimarron River abv Ute Ck near Boise City, Okla.	CONT	HN	04/20/42	80,000 [a]	208,000
				N	05/15/51	17,200 [e]	
28	07155100	Cold Springs Creek near Wheeless, Okla.	CSG	N	08/21/65	2,520	27,100
29	07155590	Cimarron River near Elkhart, Kans.	CONT	N	05/26/77	21,500	217,000
30	07156900	Cimarron River near Forgan, Okla.	CONT	HN	00/00/42	69,000	237,000
				N	10/20/65	21,200	
31	07157000	Cimarron River near Mocane, Okla.	CONT	N	05/17/51	53,400 [e]	237,000

Site number (fig. 1)	Contributing drainage area (mi^2)	Latitude	Longitude	Hydrologic region (E/W)	Type basin (N/I/R/U)	LPIII flood frequency estimates, Peak discharge for indicated recurrence interval (ft^3/s): 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	500 yr
1	36,106	0370323	0970332	E	N	14,900	31,000	44,600	65,000	82,200	101,000	152,000
					R	22,900	44,100	61,200	86,000	106,000	128,000	186,000
2	1,880	0371327	0965940	E	N	18,100	34,000	46,700	65,100	80,200	96,500	139,000
					R	19,100	38,100	54,300	78,600	99,500	123,000	186,000
3	170	0371338	0964244	E	N	8,370	16,700	23,900	34,800	44,400	55,100	84,900
4	38,923	0364136	0965548	E	R	18,200	29,000	37,200	48,400	57,400	67,000	91,800
5	856	0365742	0984655	W	N	6,690	16,100	25,100	39,800	53,300	69,100	115,000
6	1,009	0364854	0983852	W	N	7,200	15,100	21,600	30,800	38,400	46,400	66,700
7	903	0370217	0982804	W	N	3,120	5,620	7,720	10,900	13,700	16,800	25,700
8	2,439	0364906	0981908	W	N	13,600	23,700	31,500	42,500	51,400	61,000	85,600
9	3,194	0364509	0980743	E	R	3,320	6,070	8,050	10,600	12,500	14,400	18,800
10	7.21	0363300	0974838	E	N	384	731	1,050	1,580	2,070	2,670	4,560
11	2.35	0364142	0972530	E	N	254	524	774	1,180	1,560	2,020	3,400
12	4,520	0364019	0971833	E	R	13,000	25,700	36,600	53,000	67,200	83,000	127,000
13	794	0370744	0973604	E	N	9,100	18,600	26,800	39,400	50,400	62,700	96,800
14	1,859	0364841	0971637	E	N	18,700	38,000	55,200	82,200	106,000	134,000	215,000
15	18.2	0365208	0963650	E	N	2,180	4,640	6,860	10,400	13,600	17,100	27,600
16	9.13	0364450	0963730	E	N	1,630	2,090	2,380	2,730	2,990	3,230	3,780
17	46,850	0363015	0964341	E	N	56,900	110,000	152,000	211,000	259,000	310,000	438,000
					R	47,600	87,200	117,000	158,000	190,000	223,000	303,000
18	0.97	0362325	0973720	E	N	90	290	547	1,100	1,740	2,640	6,290
19	0.32	0362107	0970402	E	N	132	228	303	409	495	587	827
20	0.14	0362050	0970402	E	N	65	157	247	397	536	700	1,190
21	576	0362037	0964757	E	N	6,710	11,700	16,000	22,700	28,800	35,900	57,000
					R	5,390	9,310	12,300	16,400	19,600	23,000	31,600
22	21.9	0361700	0963435	E	R	1,480	3,800	5,840	8,860	11,300	13,900	20,300
23	545	0365915	1032525	W	N	2,860	6,760	10,800	17,900	25,100	34,100	64,300
24	111	0365255	1030105	W	N	1,720	4,440	7,170	11,800	16,100	21,300	36,800
25	1,038	0365536	1025731	W	N	4,900	11,200	17,200	27,400	37,000	48,400	83,600
26	25.4	0365352	1025404	W	N	1,400	4,050	6,780	11,400	15,700	20,800	35,600
27	1,879	0365446	1023708	W	N	8,600	16,000	21,800	30,100	36,800	43,900	62,000
28	11.0	0364620	1024816	W	N	89	419	938	2,200	3,800	6,200	16,600
29	2,406	0370730	1015350	W	N	1,290	4,110	7,280	13,000	18,600	25,600	47,000
30	4,220	0370040	1002929	W	N	861	3,130	6,160	12,700	20,300	31,000	73,300
31	4,305	0365833	1001850	W	N	5,210	11,800	18,600	30,900	43,300	59,200	114,000

Table 1. Documented and potential extreme peak discharges and flood frequency estimates for selected streamflow-gaging stations with at least 8 years of annual peak-discharge data from unregulated, regulated, and urban basins within and near Oklahoma—Continued

Site number (fig. 1)	Station number	Station name	Type of station (CONT/ CSG)	Documented extreme peak discharge			Potential extreme peak discharge (ft^3/s) (table 4)
				Type of record (H/ I/N/ R/U)	Date	Discharge (ft^3/s)	
32	07157500	Crooked Creek near Englewood, Kans.	CONT	N	05/20/55	13,600 [a]	179,000
33	07157550	West Fork Creek near Knowles, Okla.	CSG	N	08/14/67	1,150	13,400
34	07157700	Keiger Creek near Ashland, Kans.	CSG	N	07/21/61	1,250	55,200
35	07157950	Cimarron River near Buffalo, Okla.	CONT	N	09/26/73	26,400	254,000
36	07157960	Buffalo Creek near Lovedale, Okla.	CONT	N	08/09/67	15,800	150,000
37	07158000	Cimarron River near Waynoka, Okla.	CONT	N	05/16/57	94,500 [a]	259,000
38	07158020	Cimarron River Tributary near Lone Wolf, Okla.	CSG	N	11/02/74	921	13,500
39	07158080	Sand Creek Tributary near Waynoka, Okla.	CSG	HN	07/04/51	990	6,090
				N	08/21/70	587	
40	07158120	Cimarron River Tributary near Isabella, Okla.	CSG	N	05/07/69	207	2,580
41	07158180	Salt Creek Tributary near Okeene, Okla.	CSG	N	09/20/74	4,500	22,200
42	07158400	Salt Creek near Okeene, Okla.	CONT	N	09/19/74	12,700	135,000
43	07158500	Preacher Creek near Dover, Okla.	CSG	N	05/15/57	6,420 [a]	47,100
44	07158550	Turkey Creek Tributary near Goltry, Okla.	CSG	N	05/26/76	5,050	26,100
45	07159000	Turkey Creek near Drummond, Okla. [1]	CSG	HN	00/00/32	30,000	145,000
				N	10/11/73	36,300 [d]	
46	07159100	Cimarron River near Dover, Okla.	CONT	N	10/03/86	123,000	448,000
47	07159200	Kingfisher Creek near Kingfisher, Okla. [1]	CSG	HN	06/23/48	55,000 [a]	126,000
				N	05/27/77	20,700	
48	07159750	Cottonwood Creek near Seward, Okla.	CONT	R	06/09/95	43,500	157,000
49	07159810	Watershed W-IV near Guthrie, Okla.	CONT	N	00/00/49	271	716
50	07160000	Cimarron River near Guthrie, Okla.	CONT	HN	05/00/35	90,000	460,000
				N	05/17/57	158,000 [a]	
51	07160500	Skeleton Creek near Lovell, Okla.	CONT	N	05/16/57	75,200 [a,b]	169,000
52	07160550	West Beaver Creek near Orlando, Okla.	CSG	N	05/07/82	4,400	46,100
53	07161000	Cimarron River at Perkins, Okla.	CONT	N	10/04/86	162,000	470,000
54	07161450	Cimarron River near Ripley, Okla. [2]	CONT	N	05/10/93	141,000 [c]	471,000
55	07163000	Council Creek near Stillwater, Okla.	CONT	HN	04/27/12	14,400	66,300
				N	10/02/59	25,000 [b]	
56	07163020	Corral Creek near Yale, Okla.	CSG	N	09/21/65	1,260	16,700
57	07163500	Cimarron River at Oilton, Okla.	CONT	N	06/21/35	72,300	478,000
58	07164000	Cimarron River at Mannford, Okla.	CONT	N	05/18/57	145,000	478,000
59	07164500	Arkansas River at Tulsa, Okla.	CONT	HN	06/13/23	244,000	711,000
				N	10/05/59	246,000	
				R	10/05/86	307,000	
60	07164600	Joe Creek at 61st Street at Tulsa, Okla.	CONT	U	06/09/95	11,100	43,200
61	07165500	Polecat Creek below Heyburn Reservoir near Heyburn, Okla.	CONT	HN	09/04/40	26,000 [a]	115,000
				N	05/19/49	17,300	
				R	11/04/74	2,080	
62	07165550	Snake Creek near Bixby, Okla. [1]	CSG	N	06/09/74	9,280	82,000
63	07165562	Haikey Ck at 101st St South at Tulsa, Okla.	CONT	U	10/05/98	6,910	51,800
64	07165565	Little Haikey Ck at 101st St South at Tulsa, Okla.	CONT	U	10/05/98	2,310	27,300
65	07165570	Arkansas River near Haskell, Okla.	CONT	R	10/05/86	259,000	714,000
66	07170500	Verdigris River at Independence, Kans.	CONT	N	04/17/45	117,000 [a]	304,000

Site number (fig. 1)	Contrib-uting drainage area (mi^2)	Latitude	Longitude	Hydrologic region (E/ W)	Type basin (N/I/R/ U)	LPIII flood frequency estimates Peak discharge for indicated recurrence interval (ft^3/s)						
						2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	500 yr
32	813	0370154	1001229	W	N	902	3,440	6,520	12,400	18,300	25,600	48,600
33	4.22	0365230	1000720	W	N	106	271	435	713	974	1,280	2,220
34	34.0	0371136	0995448	W	N	391	686	905	1,200	1,440	1,680	2,270
35	7,191	0365107	0991854	W	N	3,410	8,480	13,100	20,100	26,200	32,700	50,000
36	408	0364614	0992200	W	N	1,050	4,110	7,980	15,700	23,800	34,200	68,800
37	8,504	0363102	0985245	W	N	14,400	32,400	46,800	66,600	82,000	97,700	134,000
38	4.26	0362425	0984410	W	N	534	771	929	1,130	1,280	1,420	1,770
39	1.61	0363540	0984400	W	N	146	360	570	923	1,260	1,650	2,850
40	0.62	0361630	0982100	W	N	83	143	190	255	308	365	513
41	8.23	0360300	0981900	W	N	660	1,960	3,500	6,540	9,810	14,200	30,100
42	196	0360611	0981136	E	N	4,590	7,130	9,060	11,800	14,000	16,500	22,900
43	14.5	0360230	0980048	E	N	200	521	897	1,640	2,440	3,520	7,600
44	5.08	0362840	0980805	E	N	342	999	1,760	3,230	4,790	6,840	14,100
45	248	0361905	0980003	E	N	2,630	7,200	12,200	21,500	31,100	43,300	85,000
46	10,787	0355706	0975451	E	N	26,700	51,200	71,700	102,000	128,000	157,000	237,000
47	157	0355003	0980357	E	N	3,070	9,820	18,300	36,000	55,800	83,400	190,000
48	320	0354849	0972840	E	R	8,220	19,800	30,400	46,800	61,000	76,800	119,000
49	0.14	0354847	0972414	E	N	30	80	137	250	371	534	1,140
50	11,966	0355514	0972532	E	N	30,200	58,000	78,600	106,000	127,000	147,000	196,000
51	410	0360336	0973505	E	N	5,320	14,200	24,400	43,900	64,900	92,800	195,000
52	13.9	0360845	0972805	E	N	972	2,190	3,380	5,400	7,330	9,680	17,100
53	12,926	0355727	0970154	E	N	31,200	61,800	86,200	121,000	149,000	178,000	252,000
54	13,053	0355909	0965443	E	N	33,200	65,500	90,800	126,000	154,000	183,000	254,000
55	31.0	0360658	0965203	E	N	2,150	4,660	7,190	11,700	16,200	21,900	41,500
56	2.89	0360750	0964950	E	N	582	908	1,160	1,530	1,850	2,190	3,150
57	13,743	0360538	0963452	E	N	37,500	50,400	58,600	68,700	76,000	83,200	99,400
58	13,923	0360932	0962354	E	N	33,100	61,000	82,300	112,000	135,000	160,000	220,000
59	62,074	0360826	0960022	E	N	80,000	140,000	183,000	239,000	282,000	324,000	422,000
					R	42,900	82,800	117,000	169,000	215,000	266,000	413,000
60	12.2	0360432	0955737	E	U	5,750	8,020	9,570	11,600	13,100	14,700	18,500
61	123	0355642	0961739	E	N	8,820	16,900	24,400	36,600	48,100	61,900	105,000
					R	1,390	1,890	2,160	2,450	2,630	2,780	3,080
62	50.0	0354908	0955318	E	N	3,280	5,800	7,930	11,200	14,100	17,400	26,900
63	17.8	0360101	0955055	E	U	3,050	4,990	6,420	8,380	9,940	11,600	15,700
64	5.45	0360103	0955138	E	U	1,080	1,560	1,910	2,400	2,800	3,220	4,330
65	62,932	0354915	0953819	E	R	52,400	93,600	129,000	185,000	236,000	295,000	471,000
66	2,892	0371326	0954043	E	N	28,100	49,300	66,100	90,200	110,000	132,000	190,000

Table 1. Documented and potential extreme peak discharges and flood frequency estimated for selected streamflow-gaging stations with at least 8 years of annual peak-discharge data from unregulated, regulated, and urban basins within and near Oklahoma—Continued

Site number (fig. 1)	Station number	Station name	Type of station (CONT/ CSG)	Documented extreme peak discharge: Type of record (H/ I/N/ R/U)	Date	Discharge (ft³/s)	Potential extreme peak discharge (ft³/s) (table 4)
66				R	10/04/86	109,000	
67	07170800	Mud Creek near Mound City, Kans.	CSG	N	07/03/76	7,500	22,800
68	07171000	Verdigris River near Lenapah, Okla.	CONT	N	05/20/43	137,000 [a]	325,000
				R	10/05/86	81,500	
69	07171120	Clear Creek Tributary near Hollow, Okla.	CSG	N	03/08/74	1,040	13,100
70	07171400	Verdigris River near Oologah, Okla.	CONT	R	10/14/86	53,700	343,000
71	07171700	Spring Branch near Cedar Vale, Kans.	CSG	N	10/02/86	3,650	17,800
72	07171800	Cedar Creek Tributary near Hooser, Kans.	CSG	N	10/03/86	720	3,560
73	07171900	Grant Creek near Wauneta, Kans.	CSG	N	09/13/61	9,000	54,800
				R	06/22/77	6,000	
74	07172000	Caney River near Elgin, Kans.	CONT	N	09/13/61	62,000 [b]	173,000
				R	10/03/86	104,000	
75	07173000	Caney River near Hulah, Okla.	CONT	N	04/10/44	51,000 [a]	203,000
				R	10/03/86	58,000	
76	07174000	Little Caney River near Copan, Okla.	CONT	N	04/10/44	36,400 [a]	171,000
77	07174200	Little Caney River blw Cotton Ck, near Copan, Okla. [3]	CONT	HN	04/00/44	43,100	180,000
				R	03/10/74	33,200	
78	07174400	Caney River abv Coon Creek at Bartlesville, Okla.	CONT	R	10/04/86	94,500	244,000
79	07174570	Dry Hollow near Pawhuska, Okla.	CSG	N	07/14/65	660	10,200
80	07174600	Sand Creek at Okesa, Okla.	CONT	N	05/09/93	20,200 [c]	120,000
81	07174700	Caney River near Ochelata, Okla.	CONT	N	06/13/57	33,800	261,000
82	07174720	Hogshooter Creek Tributary near Bartlesville, Okla.	CSG	N	06/24/69	919	5,940
83	07175000	Double Creek SWS 5 near Ramona, Okla.	CONT	R	06/23/57	3,580 [b]	14,100
84	07175500	Caney River near Ramona, Okla.	CONT	N	10/03/45	38,500 [a]	270,000
				R	10/05/86	85,600	
85	07176000	Verdigris River near Claremore, Okla.	CONT	N	05/21/43	182,000 [a]	388,000
				R	10/12/86	78,400	
86	07176465	Birch Creek blw Birch Lake near Barnsdall, Okla.	CONT	R	10/07/86	2,070	91,300
87	07176500	Bird Creek at Avant, Okla.	CONT	N	10/02/59	32,400	163,000
				R	06/10/85	27,900	
88	07176800	Candy Creek near Wolco, Okla.	CONT	N	03/10/74	9,520	65,900
89	07177000	Hominy Creek near Skiatook, Okla.	CONT	N	10/03/59	35,600	160,000
90	07177500	Bird Creek near Sperry, Okla.	CONT	N	10/03/59	90,000	215,000
				R	05/10/93	30,600 [c]	
91	07177650	Flat Rock Creek at Cincinnati Ave at Tulsa, Okla.	CONT	U	05/04/99	4,580	35,200
92	07177800	Coal Creek at Tulsa, Okla.	CONT	U	06/23/95	5,190	33,500
93	07178000	Bird Creek near Owasso, Okla.	CONT	R	05/11/93	29,200	223,000
94	07178040	Mingo Creek at 46th Street North at Tulsa, Okla.	CONT	HU	05/27/84	47,500 [f]	88,000
				U	08/20/89	9,920	
95	07178200	Bird Creek at State Highway 266 near Catoosa, Okla.	CONT	R	05/11/93	27,400 [c]	228,000
96	07178600	Verdigris River near Inola, Okla.	CONT	HN	05/21/43	224,000 [a]	410,000
				N	05/12/61	118,000	
				R	05/01/70	39,600	
97	07178640	Bull Creek near Inola, Okla.	CSG	N	06/03/73	1,570	41,300
98	07184500	Labette Creek near Oswego, Kans.	CSG	HN	05/00/35	21,000	138,000

Site number (fig. 1)	Contrib-uting drainage area (mi²)	Latitude	Longitude	Hydrologic region (E/ W)	Type basin (N/I/R/ U)	LPIII flood frequency estimates, Peak discharge for indicated recurrence interval (ft³/s): 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	500 yr
66					R	22,000	34,900	45,200	60,100	72,700	86,800	126,000
67	4.22	0371138	0952652	E	N	1,270	2,180	2,880	3,850	4,640	5,480	7,650
68	3,639	0365104	0953509	E	N	33,800	58,000	77,800	107,000	132,000	161,000	240,000
					R	32,400	47,500	58,100	72,000	82,800	93,900	121,000
69	2.19	0365250	0951600	E	N	423	613	748	925	1,060	1,210	1,560
70	4,339	0362514	0954103	E	R	20,500	27,900	32,600	38,300	42,300	46,200	55,000
71	3.10	0370648	0962729	E	N	840	2,160	3,310	4,960	6,280	7,630	10,800
72	0.56	0370627	0963427	E	N	148	334	488	706	880	1,060	1,490
73	20.0	0370634	0962355	E	R	2,570	3,980	4,960	6,210	7,150	8,090	10,300
74	445	0370013	0961854	E	N	13,900	28,400	38,800	52,100	61,600	70,600	89,800
					R	16,100	29,000	38,500	51,100	60,700	70,400	93,300
75	733	0365537	0960506	E	N	14,900	25,600	32,900	42,100	48,800	55,300	69,700
					R	3,540	6,830	10,200	16,200	22,400	30,500	59,800
76	424	0365815	0955605	E	N	10,900	20,100	26,800	35,400	42,000	48,400	63,100
77	502	0365342	0955809	E	N	12,700	20,400	25,800	33,000	38,600	44,200	57,900
					R	6,740	12,500	18,100	27,800	37,300	49,400	90,600
78	1,392	0364520	0955819	E	R	8,720	20,200	32,700	56,600	82,200	116,000	244,000
79	1.67	0364530	0961230	E	N	320	607	822	1,110	1,330	1,550	2,070
80	139	0364310	0960756	E	N	8,260	13,300	16,600	20,400	23,100	25,600	30,900
81	1,753	0363826	0955602	E	R	14,100	22,500	27,700	33,800	37,900	41,600	49,400
82	0.94	0364340	0955052	E	N	353	517	618	737	818	895	1,060
83	2.39	0363050	0955625	E	R	1,020	2,500	3,580	4,870	5,730	6,490	7,890
84	1,955	0363032	0955030	E	R	19,100	34,200	48,000	70,800	92,500	119,000	204,000
85	6,534	0361825	0954152	E	N	43,900	73,900	96,400	127,000	152,000	178,000	243,000
					R	24,300	34,500	41,000	49,000	54,900	60,600	73,600
86	66.0	0363200	0960943	E	R	846	1,460	1,850	2,330	2,660	2,960	3,590
87	364	0362912	0960350	E	N	12,500	19,300	23,900	29,700	34,000	38,200	47,900
					R	16,400	23,000	27,200	32,300	35,900	39,500	47,400
88	30.6	0363206	0960254	E	N	5,190	7,910	9,700	11,900	13,500	15,100	18,600
89	340	0362055	0960635	E	N	8,300	12,800	16,500	21,900	26,600	31,900	46,900
90	905	0361642	0955714	E	N	14,200	25,600	35,900	52,900	69,000	88,600	152,000
					R	16,900	24,000	28,800	35,100	39,900	44,700	56,500
91	8.20	0361255	0955942	E	U	1,910	3,050	3,870	4,980	5,830	6,700	8,860
92	7.53	0361140	0955450	E	U	1,970	3,320	4,500	6,420	8,190	10,300	16,900
93	1,022	0361455	0955206	E	R	16,300	21,700	25,200	29,700	33,000	36,200	44,000
94	59.9	0361314	0955130	E	U	5,770	8,370	11,400	17,600	24,500	34,400	76,600
95	1,103	0361323	0954909	E	R	17,400	22,000	24,600	27,400	29,200	30,900	34,300
96	7,911	0360951	0953711	E	N	50,800	89,300	120,000	163,000	198,000	237,000	338,000
97	11.1	0360850	0952705	E	N	901	1,410	1,780	2,280	2,670	3,090	4,140
98	211	0371130	0951130	E	N	8,310	12,900	16,100	20,100	23,100	26,000	32,900

Table 1. Documented and potential extreme peak discharges and flood frequency estimates for selected streamflow-gaging stations with at least 8 years of annual peak-discharge data from unregulated, regulated, and urban basins within and near Oklahoma—Continued

Site number (fig. 1)	Station number	Station name	Type of station (CONT/CSG)	Documented extreme peak discharge: Type of record (H/I/N/R/U)	Documented extreme peak discharge: Date	Documented extreme peak discharge: Discharge (ft^3/s)	Potential extreme peak discharge (ft^3/s) (table 4)	Contributing drainage area (mi^2)	Latitude	Longitude	Hydrologic region (E/W)	Type basin (N/I/R/U)	LPIII flood frequency estimates, Peak discharge for indicated recurrence interval (ft^3/s): 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	500 yr
98				N	06/22/48	30,000 [a]													
99	07184600	Fly Creek near Faulkner, Kans.	CSG	N	07/03/76	28,000	62,200	27.0	0370615	0945621	E	N	4,170	11,000	18,000	30,000	41,500	55,300	97,500
100	07185000	Neosho River near Commerce, Okla.	CONT	N	07/15/51	267,000 [a,b]	377,000	5,876	0365543	0945726	E	N	34,200	59,800	82,200	118,000	150,000	188,000	302,000
				R	04/13/94	106,000						R	37,900	57,000	71,200	90,700	106,000	123,000	167,000
101	07185095	Tar Creek at 22nd Street Bridge, Miami, Okla.	CONT	U	09/25/93	12,400 [c]	77,700	44.7	0365400	0945205	E	U	3,090	5,860	8,400	12,600	16,500	21,300	36,200
102	07186000	Spring River near Waco, Mo. [4]	CONT	N	09/26/93	151,000	231,000	1,164	0371444	0943358	E	N	18,700	34,400	47,100	65,800	81,600	98,900	146,000
103	07186400	Center Creek near Cartersville, Mo.	CONT	N	07/03/76	36,300	142,000	232	0370826	0942257	E	N	5,620	11,500	16,700	24,900	32,200	40,500	64,500
104	07187000	Shoal Creek above Joplin, Mo.	CONT	N	05/18/43	62,100 [a]	171,000	427	0370123	0943558	E	N	7,350	15,000	21,700	32,000	41,000	51,200	79,700
105	07188000	Spring River near Quapaw, Okla.	CONT	N	09/26/93	230,000 [c]	290,000	2,510	0365604	0944449	E	N	35,500	64,000	86,900	120,000	148,000	178,000	258,000
106	07188140	Flint Branch near Peoria, Okla.	CSG	N	06/13/64	4,400	25,400	4.90	0365225	0944135	E	N	786	1,480	2,060	2,940	3,690	4,530	6,860
107	07188500	Lost Creek at Seneca, Mo. [5]	CSG	N	10/02/59	20,000	75,700	42.0	0365028	0943630	E	N	890	3,140	6,010	11,900	18,500	27,500	60,400
108	07188900	Butler Creek Tributary near Gravette, Ark.	CSG	N	05/19/61	562	6,060	0.96	0362651	0942636	E	N	101	296	495	828	1,130	1,490	2,480
109	07189000	Elk River near Tiff City, Mo.	CONT	N	04/19/41	137,000 [a,b]	213,000	872	0363753	0943512	E	N	20,400	40,500	56,500	79,200	97,600	117,000	166,000
110	07189480	Wolf Creek near Grove, Okla.	CSG	HN	05/00/43	7,500	32,600	7.21	0363720	0944450	E	N	1,130	1,620	1,960	2,410	2,750	3,090	3,940
				N	02/01/68	1,500													
111	07189500	Neosho River near Grove, Okla.	CONT	N	04/15/27	133,000 [a]	440,000	9,969	0363645	0944925	E	N	62,200	100,000	126,000	157,000	180,000	202,000	252,000
112	07189700	Horse Creek at Afton, Okla.	CSG	N	07/03/76	2,690	56,800	21.9	0364150	0945720	E	N	1,680	2,120	2,380	2,700	2,920	3,130	3,610
113	07190500	Neosho River near Langley, Okla.	CONT	HN	06/00/35	150,000	443,000	10,335	0362620	0950254	E	R	53,800	108,000	152,000	213,000	262,000	314,000	443,000
				R	05/20/43	300,000													
114	07190600	Big Cabin Creek near Pyramid Corners, Okla. [6]	CSG	N	03/08/74	18,800	94,100	71.1	0364806	0950948	E	N	4,710	8,470	11,400	15,700	19,200	23,000	32,900
115	07191000	Big Cabin Creek near Big Cabin, Okla.	CONT	HN	05/18/43	63,000 [a]	174,000	450	0363406	0950907	E	N	16,600	29,000	38,500	51,800	62,500	73,900	103,000
				N	10/03/59	52,000													
116	07191220	Spavinaw Creek near Sycamore, Okla.	CONT	N	07/27/75	39,800	118,000	133	0362007	0943827	E	N	3,480	8,730	13,600	21,000	27,500	34,600	53,500
117	07191260	Brushy Creek near Jay, Okla.	CSG	N	11/24/73	4,640	49,000	15.8	0362515	0944610	E	N	843	2,160	3,530	5,910	8,230	11,100	20,100
118	07191500	Neosho River near Chouteau, Okla.	CONT	HN	04/19/27	165,000	456,000	11,534	0361346	0951057	E	R	56,400	90,200	117,000	156,000	189,000	226,000	327,000
				R	05/20/43	400,000													
				R	06/11/95	164,000													
119	07192000	Pryor Creek near Pryor, Okla.	CONT	HN	05/10/43	19,000	141,000	229	0361652	0951932	E	N	5,180	11,600	18,100	29,100	40,000	53,300	96,700
				N	10/03/59	32,000													
120	07192500	Neosho River near Wagoner, Okla.	CONT	HN	04/16/27	170,000	464,000	12,307	0355544	0951608	E	R	115,000	221,000	285,000	352,000	392,000	424,000	479,000
				R	05/21/43	400,000 [a]													
121	07193500	Neosho River below Fort Gibson Lake	CONT	HR	05/21/43	400,000	465,000	12,495	0355110	0951344	E	R	47,400	82,100	108,000	145,000	174,000	205,000	284,000
		near Fort Gibson, Okla.		R	05/26/57	223,000													
122	07194500	Arkansas River near Muskogee, Okla.	CONT	HN	05/00/1898	384,000	770,000	84,133	0354610	0951749	E	N	161,000	236,000	284,000	342,000	383,000	422,000	509,000
				N	05/21/43	700,000													
				R	05/26/57	366,000													
123	07194515	Mill Creek near Park Hill, Okla.	CSG	N	04/19/68	1,860	15,100	2.57	0354837	0950407	E	N	433	864	1,230	1,790	2,270	2,810	4,300
124	07195000	Osage Creek near Elm Springs, Ark.	CONT	N	05/10/50	22,500 [a]	117,000	130	0361319	0941718	E	N	4,980	10,200	14,800	21,800	27,900	34,700	53,800
125	07195200	Brush Creek Tributary near Tonitown, Ark.	CSG	N	07/23/59	278	2,310	0.37	0361038	0941640	E	N	63	164	268	449	624	837	1,500
126	07195450	Ballard Creek at Summers, Ark.	CSG	N	11/19/85	5,100	47,200	14.6	0355842	0942956	E	N	1,700	4,010	6,040	9,090	11,600	14,400	21,600
127	07195500	Illinois River near Watts, Okla.	CONT	N	07/25/60	68,000	194,000	635	0360748	0943419	E	N	18,900	33,300	43,400	56,200	65,700	75,000	96,000
128	07195800	Flint Creek at Springtown, Ark.	CONT	N	06/08/74	14,600	46,600	14.2	0361520	0942550	E	N	786	2,090	3,430	5,780	8,060	10,800	19,500
129	07195855	Flint Creek near West Siloam Springs, Okla.	CONT	R	06/30/99	6,860	87,900	59.8	0361258	0943615	E	R	1,270	3,300	5,260	8,450	11,300	14,600	23,800
130	07196000	Flint Creek near Kansas, Okla.	CONT	N	06/08/74	44,400	110,000	110	0361111	0944224	E	N	3,950	9,750	15,200	23,700	31,300	39,800	63,300

Table 1. Documented and potential extreme peak discharges and flood frequency estimates for selected streamflow-gaging stations with at least 8 years of annual peak-discharge data from unregulated, regulated, and urban basins within and near Oklahoma—Continued

Site number (fig. 1)	Station number	Station name	Type of station (CONT/CSG)	Documented extreme peak discharge: Type of record (H/I/N/R/U)	Documented extreme peak discharge: Date	Documented extreme peak discharge: Discharge (ft^3/s)	Potential extreme peak discharge (ft^3/s) (table 4)	Contributing drainage area (mi^2)	Latitude	Longitude	Hydrologic region (E/W)	Type basin (N/I/R/U)	LPIII flood frequency estimates, Peak discharge for indicated recurrence interval (ft^3/s): 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	500 yr
131	07196380	Steely Hollow near Tahlequah, Okla.	CSG	N	06/08/74	5,000	20,000	3.59	0355837	0945524	E	N	536	1,760	3,190	5,880	8,630	12,100	23,300
132	07196500	Illinois River near Tahlequah, Okla.	CONT	HN	01/00/16	112,000	219,000	959	0355522	0945524	E	N	19,800	39,100	54,900	78,100	97,500	119,000	174,000
				N	05/10/50	150,000 [a,b]													
133	07196900	Baron Fork at Dutch Mills, Ark.	CONT	N	11/18/85	20,900	74,600	40.6	0355248	0942911	E	N	7,110	14,000	19,400	26,900	32,700	38,800	53,400
134	07197000	Baron Fork at Eldon, Okla.	CONT	N	05/03/90	50,600	155,000	307	0355516	0945018	E	N	15,200	26,300	34,300	44,800	52,900	61,000	80,200
135	07198000	Illinois River near Gore, Okla. [7]	CONT	N	05/11/50	180,000 [a]	256,000	1,626	0353423	0950407	E	N	31,300	64,300	94,300	143,000	187,000	239,000	395,000
				R	06/09/57	18,100						R	8,180	11,900	14,300	17,100	19,100	21,000	25,100
136	07198500	Dirty Creek near Warner, Okla.	CONT	HN	02/00/38	19,300	141,000	227	0353318	0951828	E	N	9,170	23,700	39,200	67,400	96,000	132,000	254,000
				N	05/10/43	42,000 [a]													
137	07228290	Rough Creek near Thomas, Okla.	CSG	N	05/23/81	6,270	26,200	10.4	0354808	0984715	W	N	794	2,170	3,690	6,500	9,390	13,100	25,600
138	07228450	Deer Creek Tributary near Hydro, Okla.	CSG	N	09/21/65	1,050	8,230	2.31	0353210	0982850	W	N	304	539	741	1,060	1,340	1,670	2,640
139	07228500	Canadian River at Bridgeport, Okla.	CONT	N	06/23/48	150,000	287,000	20,475	0353237	0981903	W	N	26,200	45,300	60,000	80,900	97,900	116,000	164,000
				R	05/17/82	86,100						R	16,200	31,400	43,800	61,700	76,600	92,700	135,000
140	07228930	Worley Creek near Tuttle, Okla.	CSG	N	10/20/83	3,000	41,500	11.2	0351728	0974510	E	N	1,260	2,130	2,800	3,770	4,570	5,450	7,780
141	07228960	Canadian River Tributary near Newcastle, Okla.	CSG	N	04/14/65	1,460	18,800	3.32	0351727	0973720	E	N	710	1,180	1,550	2,090	2,550	3,060	4,470
142	07229100	Canadian River near Noble, Okla.	CONT	R	09/22/65	35,500	536,000	21,110	0350455	0972252	E	R	15,700	24,100	30,800	40,400	48,400	57,300	81,800
143	07229200	Canadian River at Purcell, Okla.	CONT	R	05/29/87	102,000	536,000	21,138	0350050	0972050	E	R	21,400	43,200	62,700	93,700	122,000	154,000	250,000
144	07229220	Walnut Creek near Blanchard, Okla.	CSG	N	11/20/63	887	7,820	1.26	0350720	0974210	E	N	378	666	906	1,270	1,590	1,960	3,000
145	07229300	Walnut Creek near Purcell, Okla.	CONT	N	10/20/83	67,700 [g]	136,000	202	0345956	0972200	E	N	8,750	16,900	24,500	37,400	49,700	64,800	114,000
146	07229420	Julian Creek Tributary near Asher, Okla.	CSG	N	05/13/68	2,000	13,600	2.28	0345909	0965848	E	N	400	746	1,070	1,610	2,140	2,780	4,870
147	07229430	Arbeca Creek near Allen, Okla.	CSG	N	10/08/70	2,600	13,500	2.26	0345410	0962320	E	N	660	1,210	1,690	2,490	3,220	4,100	6,830
148	07230000	Little River blw Lk Thunderbird near Norman, Okla. [8]	CONT	N	05/25/57	34,600 [a]	146,000	257	0351318	0971249	E	N	5,300	8,500	11,200	15,500	19,400	23,900	37,700
				R	05/10/90	1,450						R	667	960	1,120	1,300	1,410	1,510	1,690
149	07230500	Little River near Tecumseh, Okla.	CONT	HN	06/00/32	60,000 [a]	175,000	456	0351021	0965554	E	N	9,200	16,800	24,000	36,500	48,800	64,100	116,000
				N	05/25/57	32,400						R	5,040	7,230	8,810	11,000	12,600	14,400	19,000
				R	05/03/90	14,000 [h]													
150	07231000	Little River near Sasakwa, Okla.	CONT	HN	06/00/39	33,000	213,000	865	0345902	0963301	E	N	15,200	26,900	36,700	51,500	64,500	79,300	122,000
				N	05/11/50	44,600 [a]						R	7,820	11,900	14,600	17,700	19,900	22,000	26,600
				R	05/01/85	18,500													
151	07231320	Leader Creek Tributary near Atwood, Okla.	CSG	N	10/08/70	1,470	4,610	0.72	0345710	0962040	E	N	300	590	868	1,330	1,780	2,330	4,110
152	07231500	Canadian River at Calvin, Okla.	CONT	HN	08/07/06	128,000	548,000	23,151	0345840	0961436	E	N	60,400	94,700	121,000	157,000	186,000	218,000	300,000
				HN	05/31/37	135,000						R	53,300	88,900	114,000	147,000	172,000	198,000	258,000
				N	05/11/50	174,000													
				R	05/29/87	154,000													
153	07231560	Middle Creek near Carson, Okla.	CSG	N	05/13/68	5,460	33,100	7.40	0351110	0960420	E	N	1,650	3,030	4,260	6,200	7,980	10,100	16,400
154	07231950	Pine Creek near Higgins, Okla.	CSG	N	03/27/77	18,000	39,500	9.99	0344740	0952050	E	N	4,150	7,940	11,200	16,300	20,800	26,000	40,900
155	07232000	Gaines Creek near Krebs, Okla.	CONT	HN	02/18/38	70,000 [a]	190,000	588	0345900	0953700	E	N	11,600	20,500	28,300	40,900	52,500	66,300	108,000
				N	05/11/43	62,000													
156	07232500	Beaver River near Guymon, Okla. [9]	CONT	HN	06/00/37	28,600	192,000	1,175	0364317	1012921	W	N	8,580	21,400	33,100	51,000	66,300	82,900	126,000
				N	06/15/64	55,400						I	181	1,160	2,510	5,020	7,340	9,910	16,300
				I	09/15/88	3,410													
157	07232650	Aqua Frio Creek near Felt, Okla.	CSG	N	08/19/65	1,900	52,800	31.0	0363323	1024710	W	N	131	706	1,690	4,270	7,750	13,200	38,600
158	07232900	Coldwater Creek near Guymon, Okla. [9]	CONT	I	06/20/82	5,800	174,000	725	0363419	1012252	W	I	223	979	1,980	4,010	6,150	8,890	17,900
159	07233000	Coldwater Creek near Hardesty, Okla. [9]	CONT	N	06/25/47	21,500	176,000	767	0363838	1011238	W	N	2,720	7,460	12,300	20,500	28,200	37,200	64,100
160	07233500	Palo Duro Creek Near Spearman, Tex.	CONT	HN	09/04/38	34,000 [a]	185,000	960	0361208	1011820	W	N	2,400	6,510	11,200	20,100	29,500	42,000	86,700
				N	10/07/46	21,200													

Table 1. Documented and potential extreme peak discharges and flood frequency estimates for selected streamflow-gaging stations with at least 8 years of annual peak-discharge data from unregulated, regulated, and urban basins within and near Oklahoma—Continued

Site number (fig. 1)	Station number	Station name	Type of station (CONT/CSG)	Documented extreme peak discharge: Type of record (H/I/N/R/U)	Documented extreme peak discharge: Date	Documented extreme peak discharge: Discharge (ft^3/s)	Potential extreme peak discharge (ft^3/s) (table 4)
161	07233850	Sharp Creek Tributary near Turpin, Okla.	CSG	N	03/23/73	120	4,020
162	07234000	Beaver River at Beaver, Okla. [9]	CONT	N	10/08/46	70,000 [a]	232,000
				IR	06/10/83	5,510	
163	07234050	North Fork Clear Creek near Balko, Okla.	CSG	N	08/22/65	1,800	13,400
164	07234100	Clear Creek near Elmwood, Okla.	CONT	N	05/17/89	20,700	112,000
165	07234150	White Woman Creek Tributary near Doarrouzett, Tex.	CONT	N	08/31/66	416	13,000
166	07234290	Clear Creek Tributary near Catesby, Okla.	CSG	N	06/09/68	1,480	22,900
167	07234500	Beaver River near Fort Supply, Okla.	CONT	N	10/09/46	50,000 [a]	242,000
168	07235000	Wolf Creek at Lipscomb, Tex. [9]	CONT	N	10/21/41	20,000 [a]	156,000
				R	05/31/63	8,790	
				IR	09/19/96	10,300	
169	07235700	**Table 2.** Little Wolf Creek near Gage, Okla.	CSG	N	05/13/69	5,200	37,800
170	07236000	Wolf Creek near Fargo, Okla. [9]	CONT	N	06/23/57	81,600 [a]	197,000
171	07237000	Wolf Creek near Fort Supply, Okla. [9]	CONT	N	06/24/39	14,200	200,000
				R	05/19/57	5,020	
				IR	05/13/79	2,010	
172	07237500	North Canadian River at Woodward, Okla. [9]	CONT	N	10/10/46	42,000	252,000
				IR	05/23/89	3,090	
173	07237750	Cottonwood Creek near Vici, Okla.	CSG	N	05/13/75	2,050	28,000
174	07237800	Bent Creek near Seiling, Okla. [1]	CSG	N	08/27/74	9,120	103,000
175	07238000	North Canadian River near Seiling, Okla. [9]	CONT	N	05/19/51	33,000	255,000
				IR	09/23/97	7,200	
176	07239000	North Canadian River at Canton, Okla.	CONT	N	10/12/46	24,800 [a]	255,000
				R	06/11/49	4,020	
177	07239050	North Canadian River Tributary near Eagle City, Okla.	CSG	N	06/11/67	501	2,180
178	07239300	North Canadian R. blw Weavers Ck near Watonga, Okla.	CONT	R	10/03/86	9,740	256,000
179	07239450	North Canadian River near Calumet, Okla.	CONT	R	05/10/93	9,310	412,000
180	07239500	North Canadian River near El Reno, Okla.	CONT	N	10/28/41	15,000 [a]	413,000
				R	05/10/93	14,600 [c]	
181	07241000	North Canadian River below Lake Overholser near Oklahoma City, Okla.	CONT	HR	10/00/23	135,000	416,000
				R	06/11/95	19,500	
182	07241500	North Canadian River near Oklahoma City, Okla. [10]	CONT	HR	06/03/32	100,000	417,000
				R	10/30/41	16,700	
183	07241520	North Canadian River at Britton Rd at OKC, Okla.	CONT	R	05/09/93	38,100 [c]	418,000
184	07241550	North Canadian River near Harrah, Okla.	CONT	R	05/29/87	27,200	419,000
185	07241880	Sand Creek near Cromwell, Okla.	CSG	N	04/30/85	3,840	38,200
186	07242000	North Canadian River near Wetumka, Okla.	CONT	R	04/15/45	66,000 [a]	431,000
187	07242160	Alabama Creek near Weleetka, Okla.	CSG	N	10/01/86	4,910	50,000
188	07242180	Stidham Creek Tributary near Dustin, Okla.	CSG	N	05/13/68	622	15,000
189	07242350	Deep Fork near Arcadia, Okla.	CONT	U	11/02/74	14,300	109,000
				UR	06/28/89	1,470	
190	07242380	Deep Fork near Warwick, Okla.	CONT	N	10/21/83	28,700	183,000
				R	06/09/95	34,600	
191	07242500	Bellcow Creek at Chandler, Okla.	CONT	N	05/23/52	2,910 [a]	78,800

Site number (fig. 1)	Contrib-uting drainage area (mi^2)	Latitude	Longitude	Hydro-logic region (E/W)	Type basin (N/I/R/U)	LPIII flood frequency estimates, Peak discharge for indicated recurrence interval (ft^3/s): 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	500 yr
161	1.00	0365150	1005445	W	N	34	71	101	145	181	221	323
162	3,685	0364920	1003108	W	N	9,100	18,500	27,300	41,800	55,600	72,100	124,000
					IR	838	2,310	3,600	5,450	6,890	8,350	11,700
163	4.22	0363701	1003950	W	N	59	306	691	1,590	2,660	4,180	10,100
164	170	0363852	1003007	W	N	1,290	4,710	9,040	17,700	27,100	39,400	82,400
165	4.03	0362400	1001630	W	N	78	210	346	584	813	1,090	1,950
166	8.57	0362930	0995720	W	N	113	462	920	1,860	2,870	4,210	8,800
167	5,068	0363530	0993530	W	N	9,640	19,400	27,800	40,500	51,400	63,600	97,200
168	475	0361416	1001630	W	R	3,240	7,040	10,100	14,400	17,900	21,400	30,000
					IR	259	1,530	3,830	10,100	18,800	32,800	100,000
169	17.8	0361426	0994630	W	N	495	1,400	2,380	4,170	5,980	8,250	15,700
170	1,386	0362357	0993722	W	N	4,300	9,040	13,500	20,800	27,700	35,900	61,400
171	1,498	0363400	0993305	W	R	924	2,170	3,170	4,550	5,600	6,650	9,020
					IR	306	735	1,160	1,900	2,600	3,460	6,140
172	6,777	0362612	0991641	W	N	5,330	12,400	19,400	31,300	42,600	56,200	98,700
					IR	759	1,460	1,980	2,680	3,220	3,760	5,030
173	11.5	0360845	0991200	W	N	436	1,010	1,540	2,380	3,130	3,980	6,380
174	139	0361126	0990036	W	N	2,280	4,370	6,080	8,610	10,700	13,100	19,300
175	7,414	0361100	0985515	W	N	4,250	8,800	13,200	20,800	28,200	37,400	67,600
					IR	2,010	3,720	5,050	6,900	8,390	9,960	13,900
176	7,601	0360437	0983547	W	N	8,000	13,800	18,500	25,600	31,700	38,500	57,800
					R	1,100	1,610	2,080	2,880	3,650	4,610	7,810
177	0.52	0355530	0983500	W	N	89	228	378	649	924	1,270	2,460
178	7,837	0354843	0982514	W	R	2,300	4,040	5,270	6,860	8,040	9,210	11,900
179	8,063	0353701	0980354	E	R	3,060	5,270	7,090	9,830	12,200	14,900	22,400
180	8,143	0353347	0975726	E	N	4,780	7,180	9,000	11,600	13,700	16,000	22,200
					R	3,220	5,760	7,790	10,800	13,200	16,000	23,200
181	8,323	0352843	0973947	E	R	3,490	9,110	14,500	23,200	30,900	39,600	63,900
182	8,455	0352940	0972540	E	R	4,860	8,190	11,800	18,600	26,100	36,400	77,600
183	8,514	0353356	0972201	E	R	12,700	24,200	33,200	45,900	56,100	66,900	93,900
184	8,602	0353001	0971137	E	R	6,450	11,700	16,200	23,300	29,700	37,000	58,800
185	9.48	0352056	0962940	E	N	1,400	2,160	2,760	3,610	4,340	5,130	7,310
186	9,391	0351556	0961221	E	R	11,900	19,800	26,100	35,300	43,100	51,800	75,700
187	16.5	0352144	0960855	E	N	2,180	3,350	4,220	5,460	6,470	7,560	10,500
188	2.56	0351716	0960305	E	N	363	523	637	792	914	1,040	1,370
189	105	0353850	0972135	E	N	6,380	11,200	14,200	17,600	19,900	21,900	25,800
190	532	0354051	0970029	E	R	11,700	19,300	25,300	34,200	41,700	50,100	73,200
191	46.0	0354208	0965320	E	N	2,030	2,560	2,910	3,350	3,680	4,010	4,810

Table 1. Documented and potential extreme peak discharges and flood frequency estimates for selected streamflow-gaging stations with at least 8 years of annual peak-discharge data from unregulated, regulated, and urban basins within and near Oklahoma—Continued

Site number (fig. 1)	Station number	Station name	Type of station (CONT/ CSG)	Documented extreme peak discharge: Type of record (H/ I/N/ R/U)	Documented extreme peak discharge: Date	Documented extreme peak discharge: Discharge (ft³/s)	Potential extreme peak discharge (ft³/s) (table 4)
192	07243000	Dry Creek near Kendrick, Okla.	CONT	N	11/02/74	18,000	93,000
193	07243500	Deep Fork near Beggs, Okla.	CONT	N	05/11/43	66,800 [a]	273,000
				R	03/16/90	37,000	
194	07243550	Adams Creek near Beggs, Okla.	CSG	N	06/08/74	3,390	28,800
195	07244000	Deep Fork near Dewar, Okla.	CONT	HN	10/00/08	85,000	283,000
				N	04/16/45	57,400	
196	07244790	Brooken Creek near Enterprise, Okla.	CSG	N	05/13/68	4,200	28,000
197	07245000	Canadian River near Whitefield, Okla.	CONT	N	05/10/43	281,000	627,000
				R	05/03/90	241,000 [h]	
198	07245090	Vian Creek near Vian, Okla.	CSG	N	04/20/66	7,320	54,200
199	07245500	Sallisaw Creek near Sallisaw, Okla.	CONT	N	04/15/45	110,000 [a,b]	132,000
				R	10/26/70	10,400	
200	07246600	Cache Creek near Cowlington, Okla.	CSG	N	04/05/64	3,070	55,400
201	07246610	Pecan Creek near Spiro, Okla.	CSG	N	05/13/68	602	5,700
202	07246630	Big Black Fox Creek near Long, Okla.	CSG	N	10/26/70	1,760	26,900
203	07247000	Poteau River at Cauthron, Ark.	CONT	N	05/20/60	32,200	137,000
				R	05/03/90	24,000	
204	07247500	Fourche Maline near Red Oak, Okla.	CONT	N	05/19/60	41,500	114,000
				R	11/24/73	17,800	
205	07248500	Poteau River near Wister, Okla.	CONT	N	05/16/45	78,600 [a]	222,000
				R	05/27/57	11,300	
				HR	05/00/90	25,000 [i]	
206	07249000	Poteau River at Poteau, Okla.	CONT	HN	06/18/35	100,000	235,000
				N	02/19/38	73,000	
207	07249300	James Fork near Midland, Ark. [11]	CSG	N	05/14/68	25,400	77,300
208	07249400	James Fork near Hackett, Ark.	CONT	N	05/14/68	30,000	123,000
209	07249413	Poteau River near Panama, Okla.	CONT	R	05/03/90	74,600	262,000
210	07249500	Cove Creek near Lee Creek, Ark. [1]	CSG	N	05/05/60	33,600 [b]	70,000
211	07249650	Mountain Fork near Evansville, Ark.	CSG	N	10/26/70	5,120	35,000
212	07249950	Webber Creek Tributary near Cedarville, Ark.	CSG	N	10/26/70	274	2,110
213	07249985	Lee Creek near Short, Okla. [12]	CONT	HN	04/15/45	112,000 [a,b]	170,000
				N	05/06/60	80,600	
214	07250550	Arkansas River at James W. Trimble Lock & Dam near Van Buren, Ark. [13]	CONT	N	06/19/35	418,000	861,000
				HN	05/12/43	850,000	
				R	05/05/90	401,000 [h]	
215	07299540	Prairie Dog Fork Red River near Childress, Tex.	CONT	N	05/28/78	86,400	225,000
216	07299570	Red River near Quanah, Tex.	CONT	N	05/28/78	73,500	231,000
217	07299670	Groesbeck Creek at State Highway 6 near Quanah, Tex.	CONT	N	10/20/83	18,000	137,000
218	07299705	Bitter Creek near Hollis, Okla.	CSG	N	06/01/68	830	26,200
219	07300000	Salt Fork Red River near Wellington, Tex. [14]	CONT	N	05/16/57	146,000 [b]	187,000
				R	04/20/77	62,100	
220	07300150	Bear Creek near Vinson, Okla.	CSG	N	05/19/77	4,160	20,200
221	07300500	Salt Fork Red River at Magnum, Okla.	CONT	N	05/16/57	72,000 [a]	196,000
222	07301110	Salt Fork Red River near Elmer, Okla.	CONT	N	10/20/83	44,900	204,000
223	07301300	North Fork Red River near Shamrock, Tex.	CONT	N	06/07/67	11,200	173,000

Site number (fig. 1)	Contrib-uting drainage area (mi²)	Latitude	Longitude	Hydrologic region (E/ W)	Type basin (N/ I/R/ U)	LPIII flood frequency estimates Peak discharge for indicated recurrence interval (ft³/s): 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	500 yr
192	69.0	0354655	0965114	E	N	3,870	6,940	9,640	13,900	17,800	22,400	36,200
193	2,018	0354026	0960406	E	N	9,440	22,600	36,900	63,800	92,100	130,000	265,000
					R	10,300	19,500	27,200	38,600	48,400	59,200	88,700
194	5.90	0354453	0960207	E	N	1,090	2,100	2,980	4,360	5,590	7,010	11,200
195	2,307	0352843	0955257	E	N	11,100	23,600	35,600	56,000	75,400	99,200	175,000
196	5.66	0351450	0952250	E	N	1,840	3,390	4,690	6,660	8,380	10,300	15,800
197	37,876	0351550	0951421	E	N	100,000	175,000	233,000	315,000	382,000	453,000	640,000
					R	30,300	51,400	70,800	103,000	134,000	172,000	296,000
198	19.6	0353214	0945815	E	N	2,840	4,240	5,270	6,670	7,790	8,980	12,000
199	182	0352752	0945143	E	N	12,700	28,500	43,900	70,100	95,200	126,000	223,000
					R	6,110	8,290	9,540	10,900	11,800	12,700	14,300
200	20.6	0351710	0944535	E	N	1,600	2,120	2,470	2,920	3,260	3,610	4,440
201	0.90	0351440	0944435	E	N	265	407	511	654	767	886	1,190
202	5.32	0353115	0943710	E	N	865	1,410	1,810	2,370	2,800	3,260	4,430
203	203	0345508	0941755	E	N	11,000	19,800	26,900	37,400	46,300	56,100	83,000
					R	9,480	13,100	15,500	18,600	21,000	23,400	29,100
204	122	0345445	0950920	E	N	6,560	14,100	21,200	32,900	43,800	56,900	97,300
					R	3,610	6,090	8,060	10,900	13,300	16,000	23,200
205	993	0345615	0944254	E	N	25,900	51,200	73,000	107,000	137,000	170,000	267,000
					R	6,560	7,740	8,500	9,420	10,100	10,800	12,300
206	1,240	0350335	0943610	E	N	22,400	46,000	67,600	103,000	135,000	172,000	286,000
207	44.0	0350427	0942020	E	N	4,570	9,440	14,000	21,600	28,700	37,200	64,000
208	147	0350945	0942425	E	N	6,590	11,100	14,700	20,000	24,300	29,200	42,300
209	1,767	0350956	0943910	E	R	22,800	39,400	52,100	69,600	83,800	98,700	137,000
210	35.3	0354320	0942428	E	N	4,910	9,900	14,400	21,800	28,500	36,500	60,500
211	8.15	0354223	0942857	E	N	1,240	2,450	3,470	5,040	6,390	7,920	12,200
212	0.34	0353600	0942249	E	N	34	84	139	239	342	475	937
213	420	0353109	0942758	E	N	23,900	41,200	55,000	75,100	92,000	111,000	161,000
214	128,306	0352056	0941754	E	N	218,000	351,000	448,000	577,000	679,000	784,000	1,040,000
					R	163,000	230,000	277,000	340,000	390,000	442,000	572,000
215	2,956	0343409	1001137	W	N	15,800	31,200	44,200	63,600	80,300	98,800	149,000
216	3,552	0342447	0994403	W	N	20,200	35,600	47,900	65,700	80,400	96,500	139,000
217	303.	0342116	0994424	W	N	1,980	5,060	8,220	13,800	19,100	25,700	46,400
218	10.4	0344240	0995735	W	N	129	389	674	1,190	1,690	2,310	4,250
219	1,013	0345727	1001314	W	N	18,700	39,900	60,800	97,100	133,000	177,000	326,000
					R	6,960	20,500	36,300	67,300	101,000	145,000	304,000
220	7.24	0345401	0995854	W	N	661	1,620	2,570	4,180	5,700	7,530	13,100
221	1,357	0345130	0993030	W	N	11,800	24,500	35,200	50,900	64,100	78,500	116,000
222	1,669	0342844	0992255	W	N	8,970	19,300	28,700	43,700	57,200	72,700	118,000
223	703	0351551	1001429	W	R	3,500	7,430	11,300	17,900	24,400	32,400	59,000

Table 1. Documented and potential extreme peak discharges and flood frequency estimates for selected streamflow-gaging stations with at least 8 years of annual peak-discharge data from unregulated, regulated, and urban basins within and near Oklahoma—Continued

Site number (fig. 1)	Station number	Station name	Type of station (CONT/CSG)	Documented extreme peak discharge: Type of record (H/I/N/R/U)	Date	Discharge (ft^3/s)	Potential extreme peak discharge (ft^3/s) (table 4)
223				R	06/03/95	25,600	
224	07301410	Sweetwater Creek near Kelton, Tex.	CONT	N	05/20/77	2,890	131,000
225	07301420	Sweetwater Creek near Sweetwater, Okla.	CONT	HN	04/29/54	11,600	151,000
				N	06/03/95	1,940	
226	07301455	Turkey Creek near Erick, Okla.	CSG	N	00/00/74	3,040	40,700
227	07301480	Short Creek near Sayre, Okla.	CSG	N	05/19/77	2,450	24,000
228	07301495	Indian Creek near Carter, Okla.	CSG	N	10/09/68	2,350	46,400
229	07301500	North Fork Red River near Carter, Okla. [15]	CONT	N	05/26/59	53,400	210,000
230	07302000	North Fork Red River near Granite, Okla.	CONT	HN	05/18/35	28,000	212,000
				N	04/27/42	23,900	
231	07303000	North Fork Red River below Altus Dam near Lugert, Okla.	CONT	HN	05/16/28	14,300	213,000
				R	05/18/51	16,100 [e]	
232	07303400	Elm Fork of North Fork Red River near Carl, Okla.	CONT	N	06/03/95	62,300	151,000
233	07303450	Deer Creek near Plainview, Okla.	CSG	N	06/02/73	2,680	49,700
234	07303500	Elm Fork of North Fork Red River near Magnum, Okla.	CONT	N	05/12/47	30,600 [a]	180,000
235	07304500	Elk Creek near Hobart, Okla.	CONT	N	10/04/55	22,400 [a]	163,000
				R	10/03/86	28,000	
236	07305000	North Fork Red River near Headrick, Okla.	CONT	HN	05/18/35	60,000	234,000
				N	06/10/41	27,400	
				R	10/04/86	59,000	
237	07305500	West Otter Ck at Snyder Lk near Mountain Park, Okla.	CONT	R	06/06/53	14,200 [a]	101,000
				R	05/29/87	4,300	
238	07307028	North Fork Red River near Tipton, Okla.	CONT	R	10/05/86	57,200	237,000
239	07307800	Pease River near Childress, Tex.	CONT	N	06/05/95	28,500	214,000
240	07308000	Pease River near Cromwell, Tex.	CONT	N	06/06/41	106,000 [a]	218,000
241	07308200	Pease River near Vernon, Tex.	CONT	N	10/02/83	40,500	225,000
242	07308500	Red River near Burkburnett, Tex.	CONT	N	06/06/95	174,000	275,000
243	07309480	Canyon Creek near Medicine Park, Okla.	CSG	N	07/03/67	2,200	11,200
244	07311000	East Cache Creek near Walters, Okla.	CONT	N	05/18/51	28,200 [a,e]	172,000
				R	10/21/83	50,900	
245	07311200	Blue Beaver Creek near Cache, Okla.	CONT	N	08/28/77	13,600 [j]	46,100
246	07311410	Red Creek near Snyder, Okla.	CSG	N	07/01/68	800	17,700
247	07311420	Deadman Creek Tributary at Manitou, Okla.	CSG	N	07/13/68	980	9,010
248	07311500	Deep Red Creek near Randlett, Okla.	CONT	N	10/20/83	72,300	168,000
249	07312200	Beaver Creek near Electra, Tex.	CONT	R	03/17/61	11,700	170,000
250	07312500	Wichita River at Wichita Falls, Tex.	CONT	HN	05/08/15	50,000	188,000
				R	10/03/41	17,800	
251	07312850	Nine Mile Beaver Creek near Elgin, Okla.	CSG	N	10/20/83	3,950 [g]	18,100
252	07312950	Little Beaver Creek near Marlow, Okla.	CSG	N	05/31/68	6,400	70,100
253	07313000	Little Beaver Creek near Duncan, Okla. [16]	CONT	N	05/25/57	47,500 [a]	128,000
254	07313500	Beaver Creek near Waurika, Okla.	CONT	HN	05/18/51	65,300 [a]	187,000
				N	05/20/55	32,200	
				R	06/09/87	2,710	
255	07313600	Cow Creek near Waurika, Okla. [1]	CSG	HN	05/19/55	29,500	134,000
				N	05/24/75	7,420	

Site number (fig. 1)	Contributing drainage area (mi^2)	Latitude	Longitude	Hydrologic region (E/W)	Type basin (N/I/R/U)	LPIII flood frequency estimates, Peak discharge for indicated recurrence interval (ft^3/s): 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	500 yr
224	267	0352823	1000714	W	N	465	1,010	1,520	2,320	3,060	3,900	6,380
225	424	0352520	0995808	W	N	263	680	1,180	2,200	3,370	5,020	11,800
226	19.8	0351205	0994755	W	N	1,020	1,940	2,720	3,910	4,940	6,110	9,410
227	9.12	0351820	0993915	W	N	441	923	1,386	2,170	2,930	3,860	6,860
228	24.9	0351730	0993035	W	N	724	1,330	1,850	2,660	3,380	4,200	6,600
229	1,938	0351005	0993025	W	N	6,540	14,300	21,200	31,800	41,000	51,300	79,500
230	2,095	0345824	0992000	W	N	9,320	15,300	19,700	25,600	30,200	34,900	46,700
231	2,116	0345322	0991824	W	R	155	2,760	7,570	16,300	23,300	29,800	41,000
232	416	0350042	0995412	W	N	4,980	10,100	15,100	23,500	31,600	41,500	73,800
233	27.8	0350250	0994610	W	N	929	1,660	2,250	3,110	3,830	4,630	6,760
234	838	0345536	0993000	W	N	7,400	15,000	21,100	29,800	36,900	44,400	63,500
235	549	0345451	0990649	W	N	4,080	6,930	9,150	12,300	14,900	17,700	25,200
					R	5,610	11,700	17,400	27,100	36,200	47,200	82,000
236	3,845	0343804	0990547	W	N	17,600	28,000	35,900	47,300	56,600	66,800	94,000
					R	12,300	22,800	31,000	42,800	52,500	62,900	89,900
237	132	0344402	0985910	W	R	145	440	813	1,610	2,540	3,860	9,270
238	4,292	0343025	0991228	W	R	12,600	20,800	27,800	38,600	48,400	59,800	94,200
239	2,195	0341339	1000424	W	N	6,550	11,600	15,500	20,800	25,100	29,600	40,900
240	2,478	0340545	0994347	W	N	39,400	64,700	82,300	105,000	121,000	138,000	176,000
241	2,929	0341045	0991640	W	N	10,300	20,700	28,900	40,200	49,100	58,300	80,600
242	14,634	0340636	0983153	W	N	30,900	60,300	84,600	121,000	151,000	185,000	276,000
243	3.35	0344955	0983210	W	N	829	1,930	2,900	4,370	5,620	6,980	10,600
244	675	0342144	0981656	W	N	7,450	12,500	16,400	21,800	26,300	31,200	44,000
					R	5,570	12,400	19,100	30,600	41,800	55,500	99,700
245	24.6	0343724	0983348	W	N	1,780	3,650	5,260	7,720	9,860	12,200	18,900
246	6.12	0344058	0985140	W	N	142	344	533	831	1,090	1,390	2,220
247	2.57	0343017	0985901	W	N	373	780	1,130	1,640	2,080	2,560	3,850
248	617	0341315	0982710	W	N	7,850	17,200	25,700	39,300	51,600	65,800	107,000
249	652	0335421	0985417	W	R	2,880	5,050	6,840	9,530	11,800	14,400	21,800
250	1,054	0335434	0983200	W	R	4,130	6,910	8,800	11,200	12,900	14,600	18,300
251	6.29	0344640	0981525	W	N	730	1,790	2,860	4,710	6,510	8,700	15,700
252	35.4	0344057	0980031	E	N	807	2,000	3,330	5,880	8,600	12,200	25,700
253	158	0342935	0980650	E	N	14,100	26,700	36,700	51,100	62,900	75,600	109,000
254	563	0341300	0980257	E	N	4,030	10,200	17,100	30,800	45,900	66,200	144,000
					R	1,660	2,600	2,920	3,130	3,200	3,240	3,270
255	193	0341055	0980005	E	N	2,260	5,760	9,520	16,400	23,500	32,600	64,000
					R	3,520	7,880	12,000	18,800	25,200	32,700	55,500

Table 1. Documented and potential extreme peak discharges and flood frequency estimates for selected streamflow-gaging stations with at least 8 years of annual peak-discharge data from unregulated, regulated, and urban basins within and near Oklahoma—Continued

Site number (fig. 1)	Station number	Station name	Type of station (CONT/ CSG)	Documented extreme peak discharge: Type of record (H/ I/N/ R/U)	Date	Discharge (ft^3/s)	Potential extreme peak discharge (ft^3/s) (table 4)
255				R	10/20/83	18,100 [g]	
256	07314900	Little Witchita River above Henrietta, Tex.	CONT	R	05/01/66	7,630	224,000
				R	05/03/90	14,200 [h]	
257	07315200	East Fork Little Wichita River near Henrietta, Tex.	CONT	N	10/13/81	32,500 [k]	131,000
258	07315500	Red River near Terral, Okla.	CONT	N	06/06/41	197,000	546,000
				R	06/07/95	236,000	
259	07315680	Cottonwood Creek Tributary near Loco, Okla.	CSG	N	06/22/65	2,100	10,600
260	07315700	Mud Creek near Courtney, Okla.	CONT	HN	05/00/57	30,000	188,000
				N	05/03/90	49,600	
261	07315880	Demijohn Creek near Wilson, Okla.	CSG	N	04/12/67	2,300	28,200
				HN	10/00/81	6,040	
262	07316000	Red River near Gainesville, Tex.	CONT	N	06/09/41	168,000	559,000
				R	05/31/87	265,000	
263	07316130	Wilson Creek near McMillan, Okla.	CSG	N	05/23/75	1,380	17,100
				HN	10/00/81	1,980 [k]	
264	07316140	Brier Creek near Powell, Okla.	CSG	N	10/14/81	14,100 [k]	42,900
265	07316500	Washita River near Cheyenne, Okla.	CONT	HN	04/03/34	52,000	178,000
				N	04/29/54	69,800	
				R	04/22/90	7,250	
266	07317500	Sandstone Creek SWS 16A near Cheyenne, Okla. [17]	CONT	N	05/26/59	2,710	23,300
267	07318000	Sandstone Creek SWS 16 near Cheyenne, Okla. [17]	CONT	N	05/23/54	18,900	41,700
268	07318500	Sandstone Creek SWS 14 near Cheyenne, Okla. [17]	CONT	N	04/18/57	1,160	4,090
269	07319000	Sandstone Creek SWS 17 near Cheyenne, Okla. [17]	CONT	N	04/29/54	6,030	25,700
270	07319500	Sandstone Creek near Berlin, Okla.	CONT	R	04/30/54	5,710	63,200
271	07320000	Sandstone Creek SWS 10A near Elk City, Okla. [17]	CONT	N	08/16/68	1,700	9,910
272	07320500	Sandstone Creek SWS 6 near Elk City, Okla. [17]	CONT	N	05/03/57	1,870	18,500
273	07321000	Sandstone Creek SWS 5 near Elk City, Okla. [17]	CONT	N	08/16/68	2,850	12,600
274	07321500	Sandstone Creek SWS 3 near Elk City, Okla. [17]	CONT	N	04/18/57	1,780	2,580
275	07322000	Sandstone Creek SWS 9 near Elk City, Okla. [17]	CONT	N	06/08/71	2,420	11,600
276	07323000	Sandstone Creek near Cheyenne, Okla.	CONT	R	04/30/54	6,360	85,200
277	07324000	Sandstone Creek SWS 1 near Cheyenne, Okla. [17]	CONT	N	04/18/57	4,280	15,900
278	07324200	Washita River near Hammon, Okla.	CONT	H	04/03/34	167,000 [l]	197,000
				R	05/17/82	6,000	
279	07324400	Washita River near Foss, Okla.	CONT	N	04/19/57	14,000	201,000
				R	08/26/69	3,010	
280	07325000	Washita River near Clinton, Okla.	CONT	HN	04/03/34	90,000	210,000
				N	05/16/51	66,800 [e]	
				R	09/15/96	10,800	
281	07325500	Washita River at Carnegie, Okla.	CONT	N	05/18/49	50,000	227,000
				R	10/20/83	40,600	
282	07325800	Cobb Creek near Eakly, Okla.	CONT	R	06/04/95	12,000	101,000
283	07325850	Lake Creek near Eakly, Okla.	CONT	N	05/20/77	7,000	67,600
284	07326000	Cobb Creek near Fort Cobb, Okla.	CONT	HN	06/15/37	51,000	138,000
				N	05/17/49	35,000 [a]	
				R	06/23/87	1,280	
285	07326500	Washita River at Anadarko, Okla.	CONT	N	05/25/03	29,000	326,000

Site number (fig. 1)	Contributing drainage area (mi^2)	Latitude	Longitude	Hydrologic region (E/ W)	Type basin (N/ I/R/ U)	LPIII flood frequency estimates, Peak discharge for indicated recurrence interval (ft^3/s): 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	500 yr
256	1,037	0334936	0981423	E	R	1,280	3,260	5,050	7,760	10,000	12,500	18,800
257	178	0334846	0980505	E	N	1,720	5,360	9,800	18,800	28,800	42,400	93,400
258	22,787	0335243	0975603	E	R	45,200	85,300	121,000	176,000	227,000	286,000	463,000
259	1.74	0341840	0973400	E	N	483	1,080	1,670	2,700	3,690	4,920	8,910
260	572	0340015	0973400	E	N	6,260	16,200	27,300	48,400	70,800	100,000	206,000
261	5.74	0340810	0972520	E	N	1,950	2,570	3,020	3,630	4,120	4,640	5,970
262	24,846	0334340	0970935	E	R	49,600	88,800	120,000	165,000	202,000	243,000	352,000
263	2.97	0340600	0965835	E	N	760	1,100	1,360	1,700	1,970	2,260	3,000
264	12.0	0335954	0964935	E	N	2,870	5,430	7,740	11,500	14,900	19,000	31,500
265	794	0353735	0994005	W	N	5,500	15,400	26,900	49,200	73,200	105,000	222,000
					R	696	2,010	3,540	6,570	9,850	14,200	30,400
266	8.78	0352810	0994010	W	N	438	1,060	1,720	2,940	4,200	5,830	11,500
267	20.3	0352840	0993610	W	R	1,670	3,910	6,340	10,900	15,700	22,100	45,400
268	1.02	0352840	0993610	W	N	290	681	1,070	1,740	2,400	3,200	5,770
269	10.1	0353030	0993640	W	N	960	2,370	3,800	6,300	8,710	11,700	21,100
270	44.9	0353026	0993327	W	R	670	1,540	2,440	4,080	5,760	7,910	15,400
271	2.87	0352800	0993320	W	N	742	1,250	1,640	2,200	2,650	3,130	4,410
272	6.46	0352910	0993010	W	R	592	1,210	1,750	2,580	3,320	4,150	6,520
273	3.89	0352930	0992920	W	R	977	1,750	2,260	2,870	3,290	3,680	4,490
274	0.62	0353040	0993040	W	N	349	684	974	1,420	1,810	2,250	3,500
275	3.50	0352940	0993200	W	N	813	1,530	2,140	3,080	3,900	4,820	7,470
276	87.1	0353310	0993150	W	R	1,250	2,520	3,560	5,060	6,300	7,610	11,000
277	5.33	0353400	0993010	W	N	994	2,320	3,640	5,920	8,120	10,800	19,400
278	1,387	0353923	0991821	W	R	1,040	2,240	3,290	4,900	6,280	7,820	12,000
279	1,551	0353220	0991010	W	R	864	1,450	1,860	2,360	2,740	3,100	3,900
280	1,977	0353151	0985800	W	N	7,800	18,200	29,200	49,700	71,000	98,900	199,000
					R	2,090	4,090	6,000	9,270	12,400	16,400	29,300
281	3,129	0350702	0983349	W	N	9,210	17,000	23,600	33,700	42,600	52,700	81,500
					R	5,740	12,000	18,500	30,000	41,900	57,200	111,000
282	132	0351726	0983538	W	R	2,060	4,490	7,060	11,800	16,800	23,300	47,000
283	52.0	0351727	0983144	W	N	707	1,850	3,160	5,740	8,560	12,400	26,900
284	307	0350837	0982633	W	N	4,420	10,500	16,900	28,700	40,800	56,500	112,000
					R	535	1,020	1,340	1,680	1,90	2,10	2,440
285	3,656	0350503	0981435	E	N	8,720	18,300	27,400	42,600	57,200	74,700	130,000

Table 1. Documented and potential extreme peak discharges and flood frequency estimates for selected streamflow-gaging stations with at least 8 years of annual peak-discharge data from unregulated, regulated, and urban basins within and near Oklahoma—Continued

Site number (fig. 1)	Station number	Station name	Type of station (CONT/ CSG)	Documented extreme peak discharge: Type of record (H/ I/N/ R/U)	Date	Discharge (ft^3/s)	Potential extreme peak discharge (ft^3/s) (table 4)
285				HN	05/18/49	45,000	
				R	06/06/95	52,800	
286	07327000	Sugar Creek near Gracemont, Okla.	CONT	HN	05/17/49	32,000	121,000
				N	10/04/59	1,260	
				R	09/21/65	8,500	
287	07327040	Delaware Creek Number 131 near Anadarko, Okla.	CONT	R	05/31/77	1,201	74,200
288	07327150	Salt Creek near Chickasha, Okla.	CONT	N	04/12/67	4,900	58,800
289	07327210	Line Creek Number 411 at Chickasha, Okla.	CONT	N	08/28/65	2,010	83,200
290	07327420	West Bitter Creek near Tabler, Okla.	CONT	N	04/12/67	3,300	87,600
291	07327439	Watershed R-7 near Tabler, Okla.	CONT	N	00/00/73	98	1,830
292	07327440	East Bitter Creek near Tabler, Okla.	CONT	R	05/24/73	4,620	69,900
293	07327490	Little Washita River near Ninnekah, Okla. [18]	CONT	HN	05/16/47	36,000	137,000
				HN	05/24/57	25,200	
				N	05/10/64	9,360	
				R	10/20/83	9,380 [g]	
294	07328000	Washita River near Tabler, Okla.	CONT	HN	04/07/27	53,600	353,000
				N	05/20/49	50,000	
				HN	05/00/57	48,300	
295	07328030	Big Dry Creek near Alex, Okla.	CSG	R	05/09/64	2,450	33,600
296	07328040	Little Dry Creek near Alex, Okla.	CSG	R	07/01/68	280	5,580
297	07328070	Winter Creek near Alex, Okla.	CONT	R	05/27/78	6,080	68,000
298	07328100	Washita River at Alex, Okla.	CONT	R	06/08/95	25,000	355,000
299	07328500	Washita River near Pauls Valley, Okla.	CONT	N	05/18/57	35,800	366,000
				R	05/29/87	43,600	
300	07329000	Rush Creek at Purdy, Okla.	CONT	N	05/10/50	30,000	122,000
				R	05/28/87	17,000	
301	07329500	Rush Creek near Maysville, Okla. [19]	CONT	N	05/18/57	38,500	137,000
				R	05/21/79	17,600	
302	07329700	Wild Horse Creek near Hoover, Okla.	CONT	R	05/03/90	40,600	191,000
303	07329810	Honey Creek near Davis, Okla.	CSG	N	10/13/81	16,200 [k]	53,000
304	07329852	Rock Creek at Sulphur, Okla.	CONT	R	04/26/90	10,400	77,300
305	07329900	Rock Creek near Dougherty, Okla.	CONT	N	05/17/57	25,600	120,000
				HR	10/08/70	80,000	
306	07330500	Caddo Creek near Ardmore, Okla.	CONT	N	03/15/45	22,300 [a]	154,000
307	07331000	Washita River near Dickson, Okla.	CONT	HN	05/00/08	71,000	398,000
				N	05/11/43	91,300	
				R	05/03/90	118,000 [h]	
308	07331410	Buzzard Creek near Reagan, Okla.	CSG	N	05/13/68	1,040	23,100
309	07331600	Red River at Denison Dam near Denison, Tex. [20]	CONT	N	05/21/35	201,000	608,000
				R	06/05/57	102,000	
				HR	05/06/90	145,000 [i]	
310	07332070	Rock Creek near Achille, Okla.	CSG	N	04/21/67	1,090	4,610
311	07332400	Blue River at Milburn, Okla.	CONT	N	10/08/70	35,100	137,000
312	07332500	Blue Creek near Blue, Okla.	CONT	N	10/14/81	65,200 [k]	177,000
313	07332600	Bois D' Arc Creek near Randolph, Tex.	CONT	N	05/13/82	19,200	131,000

Site number (fig. 1)	Contributing drainage area (mi^2)	Latitude	Longitude	Hydrologic region (E/ W)	Type basin (N/ I/R/ U)	LPIII flood frequency estimates, Peak discharge for indicated recurrence interval (ft^3/s): 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	500 yr
285					R	4,640	10,400	17,300	31,800	49,000	72,200	186,000
286	208	0351030	0981520	W	N	1,260	2,930	4,690	7,910	11,200	15,400	30,200
					R	1,480	3,520	5,730	9,940	14,400	20,300	42,100
287	40.1	0350325	0981041	E	R	359	791	1,140	1,640	2,030	2,440	3,430
288	23.8	0350844	0975703	E	N	719	1,640	2,580	4,240	5,900	7,980	15,000
289	52.0	0350318	0975711	E	N	437	998	1,550	2,510	3,440	4,580	8,260
290	59.4	0350300	0975100	E	N	1,670	3,110	4,330	6,170	7,760	9,560	14,600
291	0.30	0350441	0974710	E	N	30	48	63	84	103	124	184
292	35.2	0350238	0974928	E	N	1,740	3,020	4,050	5,590	6,910	8,380	12,500
293	208	0345641	0975708	E	N	3,320	7,510	11,900	20,200	28,700	39,900	80,300
					R	2,900	4,750	6,200	8,310	10,100	12,000	17,300
294	4,706	0345818	0975221	E	N	11,800	22,900	32,500	47,700	61,300	77,000	123,000
295	7.57	0345644	0975018	E	R	337	794	1,310	2,340	3,470	5,030	11,200
296	0.88	0345706	0975048	E	R	153	216	253	294	321	346	396
297	33.0	0345935	0974540	E	R	1,210	2,970	4,580	7,060	9,200	11,600	17,800
298	4,787	0345533	0974625	E	R	7,710	12,900	16,700	21,600	25,400	29,200	38,400
299	5,330	0344517	0971504	E	N	14,000	21,400	26,200	31,900	35,900	39,700	47,900
					R	11,400	18,800	24,400	32,200	38,400	45,000	61,800
300	145	0344146	0973555	E	N	10,000	16,100	21,100	28,500	35,000	42,400	63,500
					R	3,570	6,980	10,000	14,800	19,200	24,300	39,600
301	206	0344436	0972418	E	N	9,260	17,700	25,500	38,400	50,800	65,800	114,000
					R	5,510	9,800	13,200	18,100	22,100	26,500	38,100
302	604	0343239	0971449	E	R	11,600	19,800	25,800	33,900	40,200	46,700	62,600
303	18.7	0342650	0970740	E	N	1,990	4,520	7,120	11,800	16,500	22,600	43,300
304	44.1	0342943	0965918	E	R	5,100	7,100	8,540	10,500	12,100	13,700	18,000
305	138	0342350	0970210	E	N	4,510	10,500	16,900	28,900	41,500	58,100	118,000
306	298	0341433	0970628	E	N	8,150	15,500	21,900	32,100	41,200	51,900	83,400
307	7,202	0341400	0965832	E	N	22,700	41,200	56,100	78,000	96,400	117,000	172,000
					R	29,500	46,700	59,100	75,900	89,000	103,000	137,000
308	4.30	0341950	0963928	E	N	465	711	898	1,160	1,380	1,620	2,260
309	33,784	0334908	0963347	E	N	87,000	140,000	177,000	226,000	262,000	299,000	386,000
					R	30,400	52,700	68,900	90,600	107,000	124,000	165,000
310	0.72	0334835	0962238	E	N	396	683	921	1,280	1,590	1,940	2,950
311	203	0341502	0963255	E	N	8,630	17,200	24,600	35,900	45,800	56,800	87,600
312	476	0335949	0961427	E	N	9,400	17,500	24,800	36,600	47,600	60,600	101,000
313	178	0332832	0961252	E	N	8,220	12,600	15,500	19,100	21,800	24,400	30,200

Table 1. Documented and potential extreme peak discharges and flood frequency estimates for selected streamflow-gaging stations with at least 8 years of annual peak-discharge data from unregulated, regulated, and urban basins within and near Oklahoma—Continued

Site number (fig. 1)	Station number	Station name	Type of station (CONT/ CSG)	Documented extreme peak discharge: Type of record (H/ I/N/ R/U)	Documented extreme peak discharge: Date	Documented extreme peak discharge: Discharge (ft³/s)	Potential extreme peak discharge (ft³/s) (table 4)
314	07333330	Chickasaw Creek Tributary near Stringtown, Okla.	CSG	N	04/20/71	4,930	18,200
				HN	10/00/81	6,320 [k]	
315	07333500	Chickasaw Creek near Stringtown, Okla. [21]	CSG	N	10/14/62	18,800 [b]	67,700
316	07333800	McGee Creek near Stringtown, Okla. [21]	CSG	N	11/24/73	11,100	101,000
317	07334000	Muddy Boggy Creek near Farris, Okla.	CONT	N	06/17/45	61,900 [a]	227,000
				R	05/05/90	49,800 [h]	
318	07335000	Clear Boggy Creek near Caney, Okla.	CONT	HN	02/00/38	54,600 [a]	202,000
				N	12/11/46	52,800	
				R	10/14/81	53,500 [k]	
319	07335300	Muddy Boggy Creek near Unger, Okla.	CONT	N	05/06/90	76,700 [h]	282,000
320	07335310	Rock Creek near Boswell, Okla.	CSG	N	05/13/68	550	5,940
321	07335320	Bokchito Creek near Soper, Okla.	CSG	N	10/30/74	5,840	50,100
322	07335500	Red River at Arthur City, Tex.	CONT	N	05/28/08	400,000	630,000
				R	05/04/90	275,000 [h]	
323	07335700	Kiamichi River near Big Cedar, Okla. [22]	CONT	N	05/19/90	27,400	74,200
324	07335760	Kiamichi River Tributary near Albion, Okla.	CSG	N	12/09/71	1,070	8,810
325	07335790	Kiamichi River near Clayton, Okla.	CONT	R	05/04/90	40,200 [h]	201,000
326	07336000	Tenmile Creek near Miller, Okla. [1]	CSG	N	03/28/77	10,600	92,400
327	07336200	Kiamichi River near Antlers, Okla. [22]	CONT	N	03/28/77	50,000	230,000
				R	05/03/90	62,300 [h]	
328	07336500	Kiamichi River near Belzoni, Okla.	CONT	HN	10/00/15	72,000 [a]	246,000
				N	02/18/38	71,400	
329	07336520	Frazier Creek near Oleta, Okla.	CSG	N	11/01/84	7,400	54,000
330	07336710	Rock Creek near Sawyer, Okla.	CSG	N	12/09/71	1,560	19,100
331	07336750	Little Pine Creek near Kanawha, Tex.	CONT	N	12/10/71	30,200	96,400
332	07336780	Perry Creek near Idabel, Okla.	CSG	N	04/22/64	4,400	33,500
333	07336785	Bokchito Creek near Garvin, Okla.	CSG	N	12/09/71	1,270	17,100
334	07336800	Pecan Bayou near Clarksville, Tex. [23]	CONT	N	12/10/71	21,300	107,000
335	07336820	Red River near DeKalb, Tex.	CONT	HR	06/07/57	205,000	642,000
				R	05/06/90	279,000 [h]	
336	07337220	Big Branch near Ringold, Okla.	CSG	N	10/31/72	1,540	12,000
337	07337500	Little River near Wright City, Okla.	CONT	N	05/06/61	78,200	195,000
				R	12/10/71	11,200 [m]	
338	07337900	Glover River near Glover, Okla.	CONT	HN	05/00/61	88,200	156,000
				N	12/10/71	98,600 [m]	
339	07338500	Little River below Lukfata Creek near Idabel, Okla. [24]	CONT	HN	02/00/38	86,000	235,000
				N	09/17/50	66,100	
				R	12/10/71	103,000 [m]	
340	07338520	Yanubbee Creek near Broken Bow, Okla.	CSG	N	05/03/84	4,700	37,200
341	07338700	Two Mile Creek near Hatfield, Ark.	CSG	N	05/13/68	6,260	49,100
342	07338750	Mountain Fork at Smithville, Okla.	CONT	N	10/06/98	46,500	157,000
343	07338780	Mountain Fork Tributary near Smithville, Okla.	CSG	N	05/13/82	1,030	5,390
344	07339000	Mountain Fork near Eagletown, Okla.	CONT	HN	08/18/15	92,000 [a]	207,000
				N	05/20/60	101,000 [b]	
				R	06/02/90	18,200	

Site number (fig. 1)	Contributing drainage area (mi²)	Latitude	Longitude	Hydrologic region (E/ W)	Type basin (N/ I/R/ U)	LPIII flood frequency estimates, Peak discharge for indicated recurrence interval (ft³/s): 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	500 yr
314	3.19	0342933	0955639	E	N	1,610	3,400	5,110	7,970	10,700	14,000	24,500
315	32.7	0342741	0960136	E	N	7,580	10,800	13,100	16,200	18,600	21,200	27,500
316	86.6	0342633	0955210	E	N	6,660	8,870	10,300	12,000	13,300	14,500	17,300
317	1,087	0341617	0955443	E	N	19,500	29,400	36,700	47,000	55,300	64,200	87,700
					R	14,700	21,500	28,300	40,300	52,400	68,000	124,000
318	720	0341509	0961219	E	N	14,000	28,600	42,200	64,600	85,500	111,000	188,000
					R	11,000	18,200	23,800	31,400	38,700	46,000	65,800
319	2,273	0340136	0954500	E	N	20,900	32,900	42,100	54,900	65,500	76,800	107,000
320	0.94	0335757	0955202	E	N	250	428	562	749	899	1,060	1,460
321	16.6	0340220	0954010	E	N	3,230	5,100	6,440	8,240	9,630	11,100	14,600
322	38,595	0335230	0953006	E	N	80,600	146,000	202,000	287,000	361,000	446,000	688,000
					R	57,300	86,500	111,000	150,000	185,000	226,000	349,000
323	40.1	0343818	0943645	E	N	9,330	14,700	18,400	23,200	26,900	30,600	39,500
324	1.43	0343740	0950250	E	N	222	538	862	1,430	2,000	2,700	5,000
325	708	0343432	0952026	E	R	17,000	22,700	26,800	32,200	36,500	41,000	52,500
326	68.0	0341755	0954440	E	N	3,620	5,080	6,130	7,560	8,690	9,890	13,000
327	1,138	0341455	0953618	E	N	28,200	37,400	42,700	48,800	53,000	56,900	65,000
					R	27,500	37,700	44,700	53,900	61,000	68,200	86,100
328	1,423	0341202	0952903	E	N	34,500	49,400	59,400	72,000	81,400	90,800	113,000
329	19.4	0341150	0952100	E	N	2,500	4,570	6,220	8,570	10,500	12,600	18,000
330	3.39	0340150	0952130	E	N	790	1,170	1,440	1,790	2,060	2,350	3,050
331	75.4	0335026	0951555	E	N	5,890	10,100	13,500	18,600	23,000	28,100	42,300
332	7.53	0335344	0945315	E	N	2,220	3,020	3,580	4,310	4,870	5,440	6,860
333	2.96	0335344	0945423	E	N	726	1,020	1,210	1,450	1,630	1,810	2,220
334	100	0334107	0945941	E	N	4,280	7,210	9,560	13,000	15,900	19,200	28,100
335	41,412	0334059	0944139	E	R	72,300	110,000	140,000	183,000	220,000	261,000	374,000
336	1.99	0341027	0950433	E	N	450	857	1,200	1,720	2,160	2,660	4,050
337	645	0340410	0950247	E	N	30,500	49,700	64,100	83,800	99,500	116,000	158,000
					R	6,460	7,840	8,740	9,870	10,700	11,600	13,600
338	315	0340551	0945407	E	N	28,000	44,300	56,400	73,100	86,600	101,000	138,000
339	1,226	0335628	0944530	E	N	27,500	46,100	60,100	79,500	95,200	112,000	155,000
					R	12,300	19,300	27,800	45,600	66,900	98,500	244,000
340	9.10	0340345	0944422	E	N	1,780	3,110	4,110	5,500	6,600	7,750	10,600
341	15.9	0343052	0942014	E	N	1,960	3,530	4,870	6,950	8,810	11,000	17,300
342	320	0342744	0943806	E	N	26,300	35,800	42,100	50,300	56,400	62,500	77,300
343	0.85	0342948	0944006	E	N	199	356	488	689	865	1,070	1,640
344	787	0340230	0943711	E	N	39,400	64,400	82,300	106,000	124,000	143,000	187,000
					R	9,260	11,800	13,800	16,700	19,100	21,700	28,800

Table 1. Documented and potential extreme peak discharges and flood frequency estimates for selected streamflow-gaging stations with at least 8 years of annual peak-discharge data from unregulated, regulated, and urban basins within and near Oklahoma—Continued

Site number (fig. 1)	Station number	Station name	Type of station (CONT/CSG)	Documented extreme peak discharge: Type of record (H/I/N/R/U)	Documented extreme peak discharge: Date	Documented extreme peak discharge: Discharge (ft^3/s)	Potential extreme peak discharge (ft^3/s) (table 4)	Contributing drainage area (mi^2)	Latitude	Longitude	Hydrologic region (E/W)	Type basin (N/I/R/U)	LPIII flood frequency estimates, Peak discharge for indicated recurrence interval (ft^3/s): 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	500 yr
345	07339500	Rolling Fork near DeQueen, Ark. [25]	CSG	HN	08/27/47	110,000 [a,b]	132,000	182	0340251	0942447	E	N	15,700	31,200	45,300	68,100	89,100	114,000	190,000
				N	12/10/71	71,000						R	2,300	3,370	4,290	5,750	7,070	8,640	13,500
				R	05/17/82	6,320													
346	07339800	Pepper Creek near DeQueen, Ark.	CSG	N	05/13/68	6,240	30,300	6.41	0340244	0941813	E	N	961	2,400	3,840	6,330	8,720	11,600	20,600
347	07340000	Little River near Horatio, Ark.	CONT	HN	08/00/15	124,000 [a]	296,000	2,662	0335510	0942315	E	N	46,400	71,300	89,200	113,000	132,000	152,000	201,000
				N	03/30/45	120,000						R	25,800	35,300	41,500	49,100	54,700	60,200	72,900
				R	12/10/71	65,100													
348	07340200	West Flat Creek near Foremean, Ark.	CSG	N	12/02/82	3,800	40,700	10.7	0334513	0942328	E	N	1,540	2,650	3,490	4,660	5,590	6,580	9,100
349	07340300	Cossalot River near Vandervoort, Ark.	CONT	HN	05/06/61	48,000	102,000	89.6	0342246	0941408	E	N	14,600	25,400	33,800	45,600	55,400	65,800	93,000
				N	12/02/82	32,000													
350	07340500	Cossalot River near DeQueen, Ark. [25]	CSG	N	05/13/68	122,000	162,000	360	0340245	0941242	E	N	27,800	46,600	61,800	84,300	104,000	125,000	185,000
				R	07/02/83	22,600						R	8,080	13,200	16,800	21,400	24,900	28,400	36,500
351	07340530	Mill Slough Tributary near Lockesburg, Ark.	CSG	N	12/26/82	719	4,090	0.64	0335804	0941125	E	N	189	337	460	643	801	977	1,470
352	07343300	Cuthand Creek near Bogata, Tex.	CONT	N	12/10/71	20,400	93,000	69.0	0333251	0951022	E	N	4,740	7,580	9,800	13,000	15,700	18,700	26,700

[a] Patterson (1964)
[b] Crippen and Bue (1977)
[c] Walters and Tortorelli (1998)
[d] Bingham, Bergman and Thomas (1974)
[e] U.S. Geological Survey (1954)
[f] Bergman and Tortorelli (1988)
[g] Hauth (1985)
[h] Tortorelli (1996b)
[i] U.S. Army Corps of Engineers, Tulsa District (1990)
[j] Corley and Huntzinger (1979)
[k] Buckner and Kurklin (1984)
[l] Burnham (1939)
[m] Thomas and Corley (1973)
[1] Continuous-record gage prior to WY 1971
[2] Frequency analysis includes streamflow record from nearby station 07161000
[3] Frequency analysis includes streamflow record from nearby station 07174000
[4] Historical record length assumed equal to that for nearby station 07188000
[5] Continuous-record gage prior to WY 1960
[6] Continuous-record gage prior to WY 1973
[7] Historical record length assumed to start from same year as that for nearby station 07196500 for unregulated streamflow period
[8] Historical record length assumed equal to that for nearby station 07230500 for unregulated streamflow period
[9] Pre- and post-irrigation development as defined in Wahl and Tortorelli (1997)
[10] Historical record length assumed equal to that for nearby station 07241000
[11] Historical record length assumed equal to that for nearby station 07249400
[12] Was 07250000, Lee Creek near Van Buren, Ark., prior to WY 1993
[13] Was 07250500, Arkansas River at Van Buren, Ark., prior to WY 1970
[14] Historical record length assumed to start from same year as that for nearby station 07299850 for unregulated streamflow period
[15] Frequency analysis includes streamflow record from nearby station 07302000
[16] Historical record length assumed equal to that for nearby station 07313500
[17] Streamflow data computed from inflow to floodwater retarding structure
[18] Frequency analysis includes streamflow record from nearby station 07327500, not shown in table
[19] Continuous-record gage prior to WY 1977
[20] Frequency analysis includes streamflow record from nearby station 07332000, not shown in table
[21] Continuous-record gage prior to WY 1969
[22] Historical record length assumed to start from same year as that for nearby station 07336500 for unregulated streamflow period
[23] Historical record length assumed to start from same year as that for nearby station 07335500 for regulated streamflow period
[24] Frequency analysis includes streamflow record from nearby station 07338000, not shown in table
[25] Continuous-record gage prior to WY 1980

Table 2. Documented and potential extreme peak discharges for selected indirect measurement sites without streamflow-gaging stations and streamflow-gaging stations with short periods of record in basins within Oklahoma

[N, unregulated; R, regulated; U, urban; ft^3/s, cubic feet per second; mi^2, square miles; E, sites east of 98 degrees 15 minutes longitude; W, sites west of 98 degrees 15 minutes longitude; Ck, Creek; Ave, Avenue; SW, southwest; Trib, Tributary; NW, northwest; SE, southeast]

Site number (fig. 2)	Station number	Station name or indirect measurement site name	Documented extreme peak discharges			Potential extreme peak discharge (ft^3/s) (table 4)	Contributing drainage area (mi^2)	Latitude	Longitude	Hydrologic region (E/W)
			Type basin (N/R/U)	Date	Discharge (ft^3/s)					
353		Anderson Creek near Freedom, Okla.	N	05/16/57	14,600	50,600	28.7	0364521	0990539	W
354	07246500	Arkansas River near Sallisaw, Okla.	N	05/12/50	442,000	856,000	125,516	0352058	0944816	E
			R	05/27/57	544,000					
			R	04/09/65	110,000					
355	07324500	Barnitz Creek near Arapaho, Okla.	N	05/16/51	7,700	127,000	243	0353450	0990235	W
356		Barnitz Creek Tributary near Arapaho, Okla.[1]	N	05/16/51	2,990	7,780	2.16	0353450	0990131	W
357		Beaver Creek Tributary near Arapaho, Okla.	N	05/16/51	1,590	3,320	0.81	0353818	0985918	W
358		Bird Creek at Nelagoney, Okla.	N	05/19/43	29,000	135,000	195	0363753	0961429	E
359		Black Bear Creek near Garber, Okla. [2]	N	10/10/73	10,300	57,100	22.2	0362330	0974030	E
360		Black Bear Creek near Skedee, Okla.	N	05/19/43	22,000	190,000	590	0362023	0964232	E
361	07247250	Black Fork below Big Creek near Page, Okla.	N	11/05/94	19,600	95,800	74.4	0345246	0943040	E
362	07232010	Blue Creek near Blocker, Okla.	N	4/19/76	6,170	43,000	12.1	0350226	0953421	E
363	07159500	Bluff Creek above Lake Hefner near Oklahoma City, Okla.	U	06/16/55	1,070	9,910	1.62	0353233	0973546	E
364	07159450	Bluff Creek at Oklahoma City, Okla.	U	05/20/77	1,640	10,000	1.64	0353226	0973556	E
365		Boggy Creek at Lahoma Road at Enid, Okla. [2]	U	10/10/73	8,730	31,800	6.91	0362325	0975440	E
366		Boggy Ck Diversion Canal below Rupe Ave in Enid, Okla. [2]	N	10/10/73	13,200	43,500	12.4	0362225	0975400	E
367	07249080	Brazil Creek near Walls, Okla.	N	10/20/84	4,220	93,000	69.1	0350121	0945639	E
368		Brock Creek at SW 29th Street at Oklahoma City, Okla. [3]	U	05/08/93	12,000	24,800	4.74	0352607	0973253	E
369		Brock Creek at SW 44th Street at Oklahoma City, Okla. [3]	U	05/08/93	10,000	18,400	3.24	0352514	0973259	E
370		Brock Creek at SW 59th Street at Oklahoma City, Okla. [3]	U	05/08/93	8,000	13,300	2.24	0352422	0973315	E
371		Brookhollow Ck below 136th East Ave Bridge at Tulsa, Okla. [4]	U	05/27/84	5,910	13,000	2.17	0360720	0944930	E
372		Buffalo Creek near Tiff City, Mo.[1]	N	05/18/43	23,000	99,500	82.0	0364043	0943537	E
373	07229000	Canadian River near Newcastle, Okla.	N	05/04/41	200,000	535,000	20,962	0351803	0973554	E
374		Caney Creek southwest of Wauhillau, Okla.	N	05/00/43	17,000	96,400	75.4	0354753	0945118	E
375	07228600	Canyon View Creek near Geary, Okla.	N	09/21/65	6,150	28,500	11.8	0353255	0981550	W
376		Chisholm Creek at Village Drive, The Village, Okla.	U	05/20/77	2,800	11,500	1.90	0353356	0973326	E
377		Coal Creek at Tulsa, Okla.	U	07/23/63	4,000	35,500	8.18	0361224	0955448	E
378	07332900	Coal Creek near Lehigh, Okla. [5]	N	10/00/81	3,930	35,800	8.50	0342706	0961356	E
379		Coal Creek of Deep Fork near Dewar, Okla.	N	05/16/45	6,820	66,600	31.4	0352815	0955414	E
380		Cooley Creek at 129th East Ave at Tulsa, Okla. [4]	U	05/27/84	4,160	12,800	2.14	0360948	0955000	E
381		Cooley Ck Trib at Interstate 44 and 129th East Ave at Tulsa, Okla. [4]	U	05/27/84	5,040	13,500	2.26	0360932	0954956	E
382		Coon Creek near Wewoka, Okla. [1,6]	N	04/14/45	11,000	39,500	10.0	0351303	0963048	E
383		Cottonwood Creek near Guthrie, Okla. [7]	N	05/19/49	44,000	161,000	353	0355013	0972625	E
384	07159720	Cottonwood Creek near Navina, Okla.	UR	09/13/89	40,300	144,000	247	0354636	0973245	E
385		Cow Creek near Comanche, Okla.[1]	N	05/10/50	43,200	90,800	65.0	0342420	0975630	E
386		Crawfish Creek near Mountain View, Okla.	N	05/18/49	5,800	20,600	7.45	0350542	0984543	W

Table 2. Documented and potential extreme peak discharges for selected indirect measurement sites without streamflow-gaging stations and streamflow-gaging stations with short periods of record in basins within Oklahoma—Continued

Site number (fig. 2)	Station number	Station name and location	Documented extreme peak discharges			Potential extreme peak discharge (ft^3/s) (table 4)
			Type basin (N/R/U)	Date	Discharge (ft^3/s)	
387		Criner Creek near Payne, Okla.	N	05/17/57	12,600	85,000
388		Dead Indian Creek near Roll, Okla.	N	04/29/54	8,410	55,000
389		Dead Indian Creek near Strong City, Okla. [8]	N	4/3-4/34	17,000	69,900
390		Deep Fork at 34th and Independence, Oklahoma City, Okla.	U	11/02/74	3,940	22,000
391		Deep Fork at NW 39th Street Culvert, Oklahoma City, Okla.	U	11/02/74	4,100	28,500
392	07242200	Deep Fork at Portland Ave., Oklahoma City, Okla.	U	05/20/77	4,130	17,200
393		Deep Fork near Stroud, Okla.[1]	N	05/18/43	42,000	227,000
394		Deer Creek near Custer City, Okla. [1]	N	05/16/51	46,400	86,600
395		Deer Creek near Deer Creek, Okla. [2]	N	10/11/73	36,400	83,900
396		Deer Creek near Hydro, Okla.	N	06/00/48	70,000	138,000
397		Deer Creek Tributary near Custer City, Okla.[1]	N	05/16/51	7,030	19,100
398		Deer Creek west of Hydro, Okla. [1]	N	06/22/48	31,000	134,000
399	07334440	Delaware Creek near Wapanucka, Okla. [5]	N	10/00/11	13,700	78,700
400		Dirty Butter Creek Tributary at Mohawk Road at Tulsa, Okla. [4]	U	05/27/84	2,920	15,900
401		Dry Creek near Clinton, Okla.[1]	N	10/04/55	8,170	26,000
402	07313566	Dry Creek near Comanche, Okla.	N	05/18/55	5,320	50,700
403		Dry Creek near Davenport, Okla.[1]	N	05/00/43	20,000	122,000
404		Eagle Chief Creek near Carmen, Okla.[1]	N	05/16/57	31,800	138,000
405		East Branch Hay Creek near Moorewood, Okla. [8]	N	04/03-04/34	6,300	12,900
406		East Branch Quartermaster Creek near Moorewood, Okla. [8]	N	04/03-04/34	54,500	61,300
407		East Branch Sandstone Creek near Elk City, Okla.	N	04/29/54	1,340	14,600
408		East Fork Big Creek near Bowlegs, Okla. [1, 6, 9]	N	04/14/45	3,000	5,640
409	07337920	Fifteen Creek near Glover, Okla.	N	10/31/72	968	7,640
410	07155100	Flagg Springs Tributary near Boise City, Okla.	N	08/21/65	2,700	15,500
411		Four Mile Creek near El Reno, Okla.[1]	N	11/19/53	6,390	35,900
412		Greenleaf Lake near Braggs, Okla.	R	05/10/50	20,100	101,000
413		Hackberry Creek near Hardesty, Okla.[1]	R	05/16/55	22,100	95,400
414		Hackberry Creek near Waukomis, Okla.	N	05/16/57	16,500	66,300
415		Haikey Creek at 91st Street in Tulsa, Okla.	N	05/27/84	6,040	27,300
416	07316070	Hickory Creek near Marietta, Okla. [5]	N	10/13-14/81	68,100	112,000
417		Horsepen Creek near Collinsville, Okla.	N	05/22/53	2,540	36,000
418		Hoyle Creek near Ames, Okla.	N	05/16/57	6,800	61,600
419		Hudson Creek near Narcissa, Okla.[1]	N	05/18/43	15,800	45,200
420		Joe Creek at East 71st Street South at Tulsa, Okla. [4]	U	05/27/84	23,000	47,200
421		Johnson Lake near Warner, Okla.	R	05/10/50	459	11,200
422		Knee Creek near Lahoma, Okla.	N	05/08/50	11,200	51,200

Site number (fig. 2)	Contributing drainage area (mi^2)	Latitude	Longitude	Hydrologic region (E/W)
387	55.0	0345303	0973140	E
388	33.8	0354654	0994243	W
389	56.0	0354056	0993750	W
390	4.02	0353018	0973428	E
391	5.83	0353041	0973323	E
392	2.98	0353006	0973458	E
393	1,093	0354111	0963943	E
394	90.2	0354155	0984940	W
395	53.1	0364808	0973010	E
396	308	0353234	0983206	W
397	6.74	0354112	0985036	W
398	280	0353233	0983518	W
399	45.8	0342430	0962515	E
400	2.74	0361158	0955815	E
401	10.3	0352830	0990245	W
402	17.0	0342144	0980108	E
403	144	0354326	0964439	E
404	306	0363444	0983037	W
405	4.00	0354509	0992339	W
406	42.0	0354333	0992109	W
407	4.73	0353129	0993156	W
408	0.89	0351440	0963354	E
409	1.23	0340633	0945542	E
410	5.15	0364620	1024816	W
411	8.51	0353220	0975249	E
412	87.0	0353653	0951023	E
413	116	0363259	1010948	W
414	31.0	0361513	0974802	E
415	5.45	0360154	0955019	E
416	116	0340046	0970459	E
417	8.55	0362316	0955304	E
418	26.4	0361446	0981145	E
419	13.4	0364734	0945212	E
420	14.6	0360339	0955801	E
421	1.85	0352930	0952040	E
422	17.4	0362328	0980355	E

Table 2. Documented and potential extreme peak discharges for selected indirect measurement sites without streamflow-gaging stations and streamflow-gaging stations with short periods of record in basins within Oklahoma—Continued

Site number (fig. 2)	Station number	Station name and location	Documented extreme peak discharges			Potential extreme peak discharge (ft^3/s) (table 4)	Site number (fig. 2)	Contributing drainage area (mi^2)	Latitude	Longitude	Hydrologic region (E/W)
			Type basin (N/R/U)	Date	Discharge (ft^3/s)						
423		Lagoon Ck abv Magnolia Pump Station near Jennings, Okla.[1]	N	09/04/40	43,600	80,700	423	48.3	0360853	0963533	E
424	07244800	Lake Eufaula near Brooken, Okla. [10, 11]	R	05/00/90	430,000	627,000	424	37,822	0351825	0952145	E
425	07336600	Lake Hugo near Hugo, Okla. [10, 11]	N	05/00/90	120,000	259,000	425	1,709	0340042	0952249	E
426		Lake McGee Creek near Farris, Okla. [10, 11]	N	05/00/90	32,000	131,000	426	178	0341852	0955230	E
427		Lake of the Arbuckles near Dougherty, Okla. [10, 12]	R	10/08-09/70	80,000	116,000	427	126	0342550	0970150	E
428	07335775	Lake Sardis near Clayton, Okla. [10, 11]	N	05/00/90	114,000	150,000	428	275	0343745	0952103	E
429	07197500	Lake Tenkiller near Gore, Okla. [10, 11]	N	05/00/90	70,000	255,000	429	1,610	0353548	0950257	E
430	07331500	Lake Texoma near Denison, Tex. [10, 11]	R	05/00/90	300,000	608,000	430	33,784	0334905	0963420	E
431		Lake Wewoka near Wewoka, Okla. [6]	R	04/14/45	9,700	49,300	431	16.0	0351037	0963137	E
432	07248000	Lake Wister near Wister, Okla. [10, 11]	N	05/00/90	100,000	222,000	432	993	0345612	0944310	E
433		Lariat Creek west of Geary, Okla.	N	06/22/48	2,410	3,440	433	0.84	0353641	0982540	W
434		Lightning Creek at Grand Avenue at Oklahoma City, Okla. [3]	U	05/08/93	15,000	44,000	434	12.7	0352541	0973046	E
435		Lightning Creek at Sage Street at Oklahoma City, Okla. [3]	U	05/08/93	10,000	35,700	435	8.42	0352500	0973100	E
436		Lightning Creek at SE 25th Street at Oklahoma City, Okla. [3]	U	05/08/93	15,000	46,100	436	13.9	0352621	0973043	E
437		Lightning Creek at SW 29th Street at Oklahoma City, Okla. [3]	U	05/08/93	15,000	45,500	437	13.6	0352606	0973050	E
438		Lightning Creek at SW 44th Street at Oklahoma City, Okla. [3]	U	05/08/93	10,000	41,800	438	11.4	0352514	0973050	E
439		Lightning Creek at SW 51st Street at Oklahoma City, Okla. [3]	U	05/08/93	10,000	35,000	439	8.12	0352451	0973105	E
440		Lightning Creek at SW 19th Street in Oklahoma City, Okla.	U	05/29/70	4,840	46,700	440	14.3	0352644	0973033	E
441		Lightning Creek at SW 74th Street in Oklahoma City, Okla.	U	05/29/70	2,720	21,700	441	3.96	0352328	0973136	E
442		Little Deep Fork near Depew, Okla.	N	05/09/43	17,000	93,400	442	69.9	0354822	0962930	E
443		Little Deer Creek near Thomas, Okla. [1]	N	05/16/51	6,230	15,100	443	4.96	0354516	0984839	W
444		Long Creek near Freedom, Okla. [1]	N	05/16/57	17,300	61,300	444	42.0	0364244	0990708	W
445	07333910	McGee Creek near Farris, Okla.	N	03/27/77	36,000	130,000	445	176	0341854	0955230	E
446		Meridian Creek near Sweetwater, Okla.	N	04/29/54	1,210	32,100	446	14.0	0352944	0995930	W
447		Middle Boggy Creek at Enid, Okla.	U	07/29/50	5,830	43,400	447	12.3	0362327	0975345	E
448		Mill Creek in McClure Park at Tulsa, Okla. [4]	U	05/27/84	12,300	14,700	448	2.50	0360900	0955322	E
449	07331250	Mill Creek near Ravia, Okla. [13]	N	10/08/70	15,300	102,000	449	89.2	0341535	0964837	E
450	07332950	Muddy Boggy at Atoka, Okla. [5]	N	10/16/81	29,800	173,000	450	445	0342323	0960712	E
451	07299720	Mule Creek near Eldorado, Okla.	N	09/20/65	1,740	12,500	451	3.84	0342700	0993210	W
452		Nine Mile Creek near Hammon, Okla. [8]	N	04/03-04/34	36,000	61,300	452	42.0	0353831	0992754	W
453		North Boggy Creek at Enid, Okla. [2]	U	10/10/73	10,200	32,500	453	7.17	0362400	0975224	E
454		North Fork Walnut Creek near Blanchard, Okla.	N	05/28/49	36,400	81,400	454	49.2	0350951	0973651	E
455		Okmulgee Dam near Okmulgee, Okla. [6]	R	04/14/45	11,000	74,200	455	40.1	0353717	0960342	E
456		Old Channel Boggy Creek at Lahoma Road at Enid, Okla. [2]	U	10/10/73	1,660	2,380	456	0.38	0362327	0975340	E
457		Otter Creek near Roosevelt (at Narrows), Okla.	N	06/05/53	16,300	64,600	457	47.0	0344910	0990137	W
458		Otter Creek Tributary at Roosevelt, Okla.	N	06/05/53	2,670	11,500	458	3.45	0345156	0990131	W

Table 2. Documented and potential extreme peak discharges for selected indirect measurement sites without streamflow-gaging stations and streamflow-gaging stations with short periods of record in basins within Oklahoma— Continued

Site number (fig. 2)	Station number	Station name and location	Documented extreme peak discharges			Potential extreme peak discharge (ft³/s) (table 4)	Site number (fig. 2)	Contributing drainage area (mi²)	Latitude	Longitude	Hydrologic region (E/W)
			Type basin (N/R/U)	Date	Discharge (ft³/s)						
459		Owl Creek near Paoli, Okla.	N	05/10/50	4,740	28,600	459	5.85	0345135	0971555	E
460		Panther Creek near Bartlesville, Okla.[1]	N	05/19/43	5,500	33,400	460	7.50	0364158	0960246	E
461		Polecat Creek below Sapulpa, Okla.	N	09/03/40	51,600	141,000	461	229	0355719	0960707	E
462		Pond and Osage Creeks near Jefferson, Okla. [2]	N	10/11/73	24,300	130,000	462	173	0364325	0974745	E
463		Post Oak Creek near Cache, Okla. [14]	N	08/27/71	23,000	106,000	463	148	0343125	0983757	W
464	07249413	Poteau River near Poteau, Okla. [15]	R	05/03/90	74,600	262,000	464	1,767	0350956	0943910	E
465		Rainey Mountain Creek near Mountain View, Okla. [1]	N	05/17/49	38,000	139,000	465	316	0350554	0984334	W
466		Rainey Mountain Creek Tributary West of Mountain View, Okla.	N	05/17/49	3,300	9,100	466	2.60	0350515	0984704	W
467		Ranch Creek near Hallet, Okla. [1, 9]	N	09/04/40	32,400	50,800	467	17.1	0361736	0963409	E
468		Red Rock Creek near Hunter, Okla. [2]	N	10/11/73	55,700	87,600	468	59.4	0363130	0973955	E
469		Rock Creek near Bowlegs, Okla. [6]	N	04/14/45	5,600	25,800	469	5.00	0351022	0964011	E
470		Rock Creek near Sulphur, Okla. [12]	N	10/08/70	27,800	73,400	470	39.2	0343056	0965806	E
471		Rock Creek Tributary, Site 9, near Sulphur, Okla. [10, 13]	N	10/08/70	6,350	7,350	471	1.18	0343143	0965755	E
472		Rush Creek near Reydon, Okla. [1]	N	04/29/54	53,700	77,600	472	69.6	0354045	0995100	W
473		Sand Creek at Highway 60 near Enid, Okla. [2]	N	10/10/73	12,400	48,600	473	15.5	0362327	0975913	E
474		Sergeant Major Creek near Cheyenne, Okla. [8]	N	04/04/34	52,100	56,800	474	36.0	0353633	0994043	W
475		Skeleton Creek at Enid, Okla. [2]	N	10/10/73	24,100	51,100	475	17.3	0362451	0974916	E
476		Skeleton Creek below Boggy Creek near Enid, Okla. [2]	U	10/10/73	60,600	94,100	476	71.1	0362135	0974815	E
477		South Boggy Creek at Enid, Okla. [1]	U	05/16/57	3,750	20,300	477	3.66	0362231	0975324	E
478	07232550	South Fork Tributary near Guymon, Okla.	N	04/30/82	81	972	478	0.26	0364006	1012954	W
479	07191310	Spavinaw Creek near Spavinaw, Okla. [1]	R	04/19/41	86,400	166,000	479	386	0362301	0950313	E
480	07159600	Spring Creek at Lansbrook Lane, Oklahoma City, Okla.	U	11/02/74	3,440	30,400	480	6.42	0353322	0973718	E
481		Spring Creek at Northwest Highway, Oklahoma City, Okla.	U	11/02/74	2,060	13,600	481	2.28	0353305	0973717	E
482		Spring Creek at Ski Island Dam, Oklahoma City, Okla.	U	11/02/74	3,000	32,400	482	7.10	0353431	0973724	E
483	07301485	Spring Creek near Elk City, Okla.	N	05/28/70	927	3,780	483	0.93	0352425	0993305	W
484		Spring Creek near Gracemont, Okla.	N	05/08/93	4,500	69,200	484	34.4	0351121	0981054	E
485	07192100	Spring Creek near Locust Grove, Okla.	N	05/10/50	41,200	112,000	485	116	0360853	0950929	E
486		Stinking Creek near Dutton, Okla.	N	05/08/93	2,240	57,000	486	22.1	0351121	0980735	E
487		Tar Creek near Commerce, Okla.	N	05/18/43	9,700	71,800	487	37.3	0365640	0945114	E
488		Travertine Creek at Sulphur, Okla. [13]	N	10/08/70	16,500	17,300	488	3.00	0343003	0965725	E
489	07178020	Tupelo Creek at US Highway 169 at Tulsa, Okla. [4]	U	05/26-27/84	9,540	19,700	489	3.53	0360906	0955136	E
490		Turkey Creek near Hennessey, Okla. [2]	N	10/11/73	52,700	166,000	490	385	0360338	0975550	E
491		Turtle Creek Tributary to Washita River near Arapaho, Okla.	N	05/16/51	10,900	35,300	491	16.1	0353403	0985411	W
492		Twin Creek at SW 29th Street at Oklahoma City, Okla. [3]	U	05/08/93	10,000	18,400	492	3.23	0352606	0973358	E
493		Twin Creek at SW 44th Street at Oklahoma City, Okla. [3]	U	05/08/93	6,000	15,900	493	2.73	0352514	0973405	E
494		Unnamed Tributary to Blue Beaver Creek, Cache, Okla. [14]	N	08/27-28/77	933	1,870	494	0.45	0343751	0983323	W

Table 2. Documented and potential extreme peak discharges for selected indirect measurement sites without streamflow-gaging stations and streamflow-gaging stations with short periods of record in basins within Oklahoma—Continued

Site number (fig. 2)	Station number	Station name and location	Documented extreme peak discharges: Type basin (N/R/U)	Documented extreme peak discharges: Date	Documented extreme peak discharges: Discharge (ft³/s)	Potential extreme peak discharge (ft³/s) (table 4)	Contributing drainage area (mi²)	Latitude	Longitude	Hydrologic region (E/W)
495		Unnamed Trib to Quartermaster Ck near Moorewood, Okla. [8]	N	04/03-04/34	18,100	41,000	20.0	0354148	0991833	W
496	07171500	Verdigris River Near Sageeyah, Okla.	N	05/21/43	138,000	345,000	4,402	0362330	0954015	E
497	07315900	Walnut Bayou near Burneyville, Okla. [5]	N	10/13-14/81	29,600	156,000	314	0335630	0971820	E
498		Walnut Creek near Lone Grove, Okla. [1]	N	05/17/57	63,000	118,000	133	0340911	0971945	E
499		Warren Branch near Peoria, Okla.	N	05/18/43	4,200	42,900	12.0	0365546	0943905	E
500		Washita River near Cordell, Okla. [8]	N	04/04/34	65,000	213,000	2,160	0352058	0985126	W
501		West Barnitz Creek near Arapaho, Okla. [8]	N	04/03-04/34	16,600	111,000	112	0353819	0990501	W
502		West Branch Blue Beaver Creek near Cache, Okla. [14]	N	08/27-28/77	6,370	14,400	4.67	0343801	0983622	W
503		West Branch Hay Creek near Moorewood, Okla. [8]	N	04/03-04/34	9,400	48,700	27.0	0354509	0992423	W
504		West Branch Quartermaster Creek near Moorewood, Okla. [8]	N	04/03-04/34	34,300	88,600	61.0	0353924	0971820	E
505		West Branch Quartermaster Creek near Moorewood, Okla. [8]	N	04/03-04/34	67,400	92,400	107	0354215	0992236	W
506		West Cache Creek near Cache, Okla. [14]	N	08/28/77	13,600	73,900	63.1	0343609	0983757	W
507		West Cache Creek near Faxon, Okla. [14]	N	08/28/77	45,700	135,000	285	0342746	0983413	W
508		Wewoka Creek at Lima, Okla. [1, 6]	N	04/14/45	88,000	96,200	75.0	0351026	0963633	E
509		Wildhorse Creek near Hillsdale, Okla. [2]	N	10/10/73	6,280	26,100	5.08	0363305	0975440	E
510		Wildhorse Creek near Perkins, Okla.	N	05/20/57	23,000	72,400	38.1	0355907	0970707	E
511		Wildhorse Creek near Pond Creek, Okla. [2]	N	10/11/73	102,000	112,000	116	0363723	0974736	E
512		Wildhorse Creek near Velma, Okla.	N	05/19/55	19,300	111,000	112	0342906	0974144	E
513		Willow Creek at Duncan, Okla. [1]	N	05/10/50	5,890	21,300	3.87	0342841	0975708	E
514	07325860	Willow Creek near Albert, Okla.	N	05/20/77	12,000	50,800	28.9	0351400	0982757	W

[1] Patterson (1964)
[2] Bingham, Bergman, and Thomas, Jr. (1974)
[3] Tortorelli (1996a)
[4] Bergman and Tortorelli (1988)
[5] Buckner and Kurklin (1984)
[6] Bradshaw (1945)
[7] Hauth (1985)
[8] Burnham (1939)
[9] Crippen and Bue (1977)
[10] Inflow Calculation
[11] U.S. Army Corps of Engineers, Tulsa District (1990)
[12] Charles Sullivan (USGS, written commun., 1971)
[13] U.S. Department of Agriculture, Soil Conservation Service (1970)
[14] Corley and Huntzinger (1979)
[15] Tortorelli (1996b)