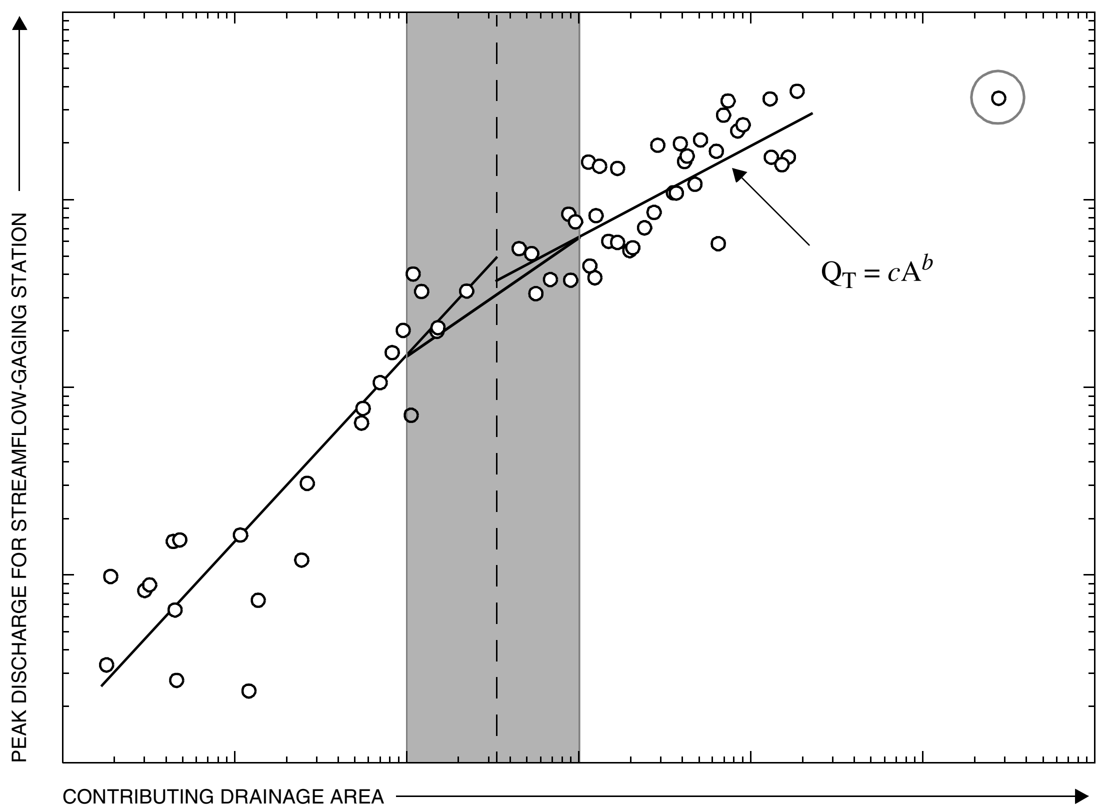
REGIONAL EQUATIONS FOR ESTIMATION OF PEAK-STREAMFLOW FREQUENCY FOR NATURAL BASINS IN TEXAS

U.S. GEOLOGICAL SURVEY
Water-Resources Investigations Report 96–4307



Prepared in cooperation with the
TEXAS DEPARTMENT OF TRANSPORTATION

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By William H. Asquith and Raymond M. Slade, Jr.

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(Plate in pocket)

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ABBREVIATIONS

ft^3/s, cubic foot per second
ft/mi, foot per mile
in., inch
mi, mile
mi^2, square mile

Regional Equations for Estimation of Peak-Streamflow Frequency for Natural Basins in Texas

By William H. Asquith *and* Raymond M. Slade, Jr.

Abstract

Peak-streamflow frequency estimates are needed for flood-plain management; for objective assessment of flood risk; and for cost-effective design of dams, levees, other flood-control structures, roads, bridges, and culverts. Peak-streamflow frequency represents the peak discharges for recurrence intervals of 2, 5, 10, 25, 50, and 100 years. The U.S. Geological Survey, in cooperation with the Texas Department of Transportation, conducted an investigation to develop regional regression equations for the estimation of peak-streamflow frequency for ungaged sites in natural basins in Texas. Peak-streamflow frequency data from streamflow-gaging stations in natural drainage basins of Texas were used.

Peak-streamflow frequency for 559 Texas stations with natural (unregulated and rural or nonurbanized) basins was estimated with annual peak-streamflow data through 1993. The peak-streamflow frequency and drainage-basin characteristics for the Texas stations were used to develop 16 sets of equations to estimate peak-streamflow frequency for ungaged natural stream sites in each of 11 regions in Texas. The relation between peak-streamflow frequency and contributing drainage area for 5 of the 11 regions is curvilinear, requiring that one set of equations be developed for drainage areas less than 32 square miles and another set be developed for drainage areas greater than 32 square miles. These equations, developed through multiple-regression analysis using weighted least squares, are based on the relation between peak-streamflow frequency and basin characteristics for streamflow-gaging stations. The regions represent areas with similar flood characteristics. The use and limitations of the regression equations also are discussed. Additionally, procedures are presented to compute the 50-, 67-, and 90-percent confidence limits for any estimation from the equations. Also, supplemental peak-streamflow frequency and basin characteristics for 105 selected stations bordering Texas are included in the report. This supplemental information will aid in interpretation of flood characteristics for sites near the state borders of Texas.

INTRODUCTION

For more than 100 years, the U.S. Geological Survey (USGS) has been monitoring streamflow and publishing streamflow data, including annual peak discharges, for stations throughout the United States. In Texas, peak-streamflow data are available for about 946 active and inactive stations on regulated or unregulated streams that drain rural or urban basins. In addition to this data, peak-streamflow frequency estimates are needed by planners and managers in Texas for flood-plain management, for objective assessment of flood risk, and for cost-effective design of dams, levees, other flood-control structures, roads, bridges, and culverts. In 1991, the USGS, in cooperation with the Texas Department of Transportation, began a 5-year investigation of floods in Texas. Part of this investigation was to develop regional regression equations for the estimation of peak-streamflow frequency for ungaged sites in natural basins using peak-streamflow frequency data from streamflow-gaging stations in natural basins of Texas.

Purpose and Scope

The primary purpose of this report is to present regional equations for the estimation of peak-streamflow frequency at ungaged sites in natural basins of Texas using peak-streamflow frequency data from stations in natural basins that have at least 8 years of annual peak-streamflow data. A secondary purpose is to present the peak-streamflow frequency analysis information and selected basin characteristics for 559 stations in Texas and for 105 stations that have at least 8 years of annual peak-streamflow data from natural basins in Arkansas, Louisiana, New Mexico, and Oklahoma. The non-Texas stations provide supplemental information to aid in the interpretation of flood characteristics for sites near the borders of Texas. The stations outside Texas represent basins similar to those within the State. More than 16,000 annual peak-discharge values are recorded for the 664 stations included in this report.

This report specifically focuses on a method to produce estimates of peak-streamflow frequency for sites in natural basins in Texas. For this report, a natural basin is defined as a basin with less than 10-percent impervious cover, less than 10 percent of its drainage area controlled by reservoirs, and no other human-related factors that would affect peak streamflow. Peak-streamflow frequency represents the peak discharges for recurrence intervals of 2, 5, 10, 25, 50, and 100 years.

Background

The climate and physiography of Texas vary considerably across the State. Accordingly, climatic and physiographic factors typically cause peak streamflows at a site to be nonuniformly distributed and to range by as much as 5 orders of magnitude. This nonuniformity and extreme range cause difficulty in determining reliable estimations of peak-streamflow frequency using streamflow data from a single station. Therefore, regionalization of peak-streamflow frequency characteristics in Texas is essential for producing reliable estimates of peak-streamflow frequency for any stream site (gaged or ungaged).

The climatic variability in Texas contributes substantially to the nonuniformity and extreme range in peak streamflow at sites. Several large precipitation events have occurred in the State. For example, near Thrall in east-central Texas (about 30 mi northeast of Austin) during September 9–10, 1921, an unofficial total of 38.2 in. of precipitation fell in 24 hours; and a 1935 storm near D'Hanis in south-central Texas (about 40 mi west of San Antonio) produced 22 in. of precipitation in 2 hours, 45 minutes. Destructive floods occur somewhere in the State nearly every year. Recently, catastrophic flooding occurred in southeastern Texas (Liscum and East, 1994) and in north-central Texas (Hejl and others, 1996). Long-term droughts that frequently cause periods of no flow or extreme low flow also occur throughout the State. At least one drought has occurred in some part of Texas in every decade of the 20th century.

The physiography of Texas also contributes to the extreme range in peak streamflow at sites. Much of the western one-half of the State contains alluvial basins where large evapotranspiration and bank storage rates can cause substantial reduction of the smaller (more frequent) peak streamflows; thus, the range in peak streamflow at many stations in alluvial basins is increased over stations in non-alluvial basins. Conversely, many streams in the eastern one-half of the State have sustained flow from shallow water tables. Additionally, the range in peak streamflow at stations on streams in central Texas can be large because of substantial streamflow loss into fractured limestones during droughts and because of extraordinarily large streamflows, which are enhanced by thin soils and steep slopes, during periods of abundant precipitation.

For more than 45 years, the USGS has been involved in the development and use of procedures for regionalization of peak-streamflow frequency characteristics. These procedures are used to transfer peak-streamflow frequency information, such as 100-year peak discharges from gaged basins to ungaged basins (Thomas and Landers, 1989). The basis for these procedures is the comparison of the statistical relation between peak-streamflow frequency with watershed (drainage-basin) and climatic characteristics. The watershed and climatic characteristics collectively are referred to as basin characteristics.

The traditional approach has been to develop regression equations to estimate peak-streamflow frequency for an ungaged site on the basis of the relation between peak-streamflow frequency and basin characteristics for gaged sites (stations) in each defined flood region. A flood region generally is defined on the basis that the stations encompassed in the region possess similar flood characteristics. This approach (Schroeder and Massey, 1977) has been used extensively to estimate peak-streamflow frequency for sites in Texas. Schroeder and Massey divided the State into 6 regions, and equations were presented to estimate the 2-, 5-, 10-, 25-, 50-, and 100-year peak discharges for each region. Equations were not developed for some areas of the State. Other studies, using adaptations of this traditional approach, recently have been completed for Hays County, Texas (Slade and others, 1995) and for the

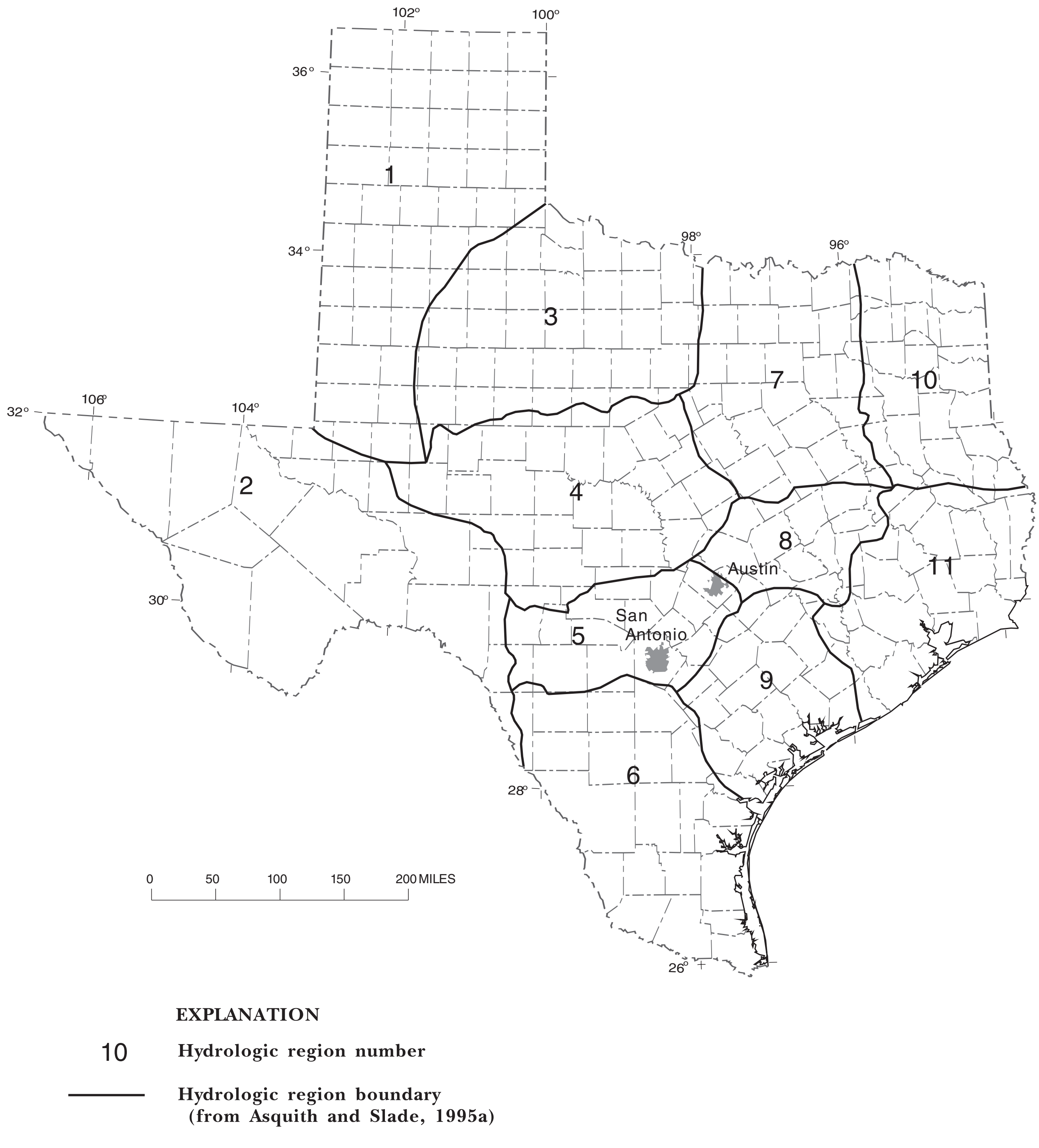

Figure 1. Hydrologic regions of Texas.

Lower Colorado River Authority in central Texas (Asquith and others, 1996).

Eleven hydrologic regions of Texas (fig. 1, pl. 1) were identified in a study that investigated the extreme flood potential of the State (Asquith and Slade, 1995a). These regions are based on areas of the State with similar physiographic and climatic characteristics. The regions were developed with consideration of regions presented by Carr (1967), Kier and others (1977), and Schroeder and Massey (1977). The regional boundaries also are based on areal density of the station locations, drainage-basin boundaries for the larger basins, and climatic patterns (precipitation and evaporation).

ESTIMATION OF PEAK-STREAMFLOW FREQUENCY

The Interagency Advisory Committee on Water Data (IACWD, 1982) provides a standard procedure for peak-streamflow frequency estimation that involves a standard frequency distribution—the log-Pearson Type III (LPIII) distribution. The LPIII distribution uses systematically collected and historical peak-streamflow values to define its frequency distribution. The curvature in the shape of the distribution is defined by a skew coefficient that is used in the estimation procedure.

Because of variations in the climatic and physiographic characteristics in Texas, the LPIII distribution does not always adequately define a suitable distribution of peak-streamflow values. An inappropriate fit of the LPIII distribution to the distribution of peak-streamflow data—the distribution of the data is defined by Weibull plotting positions (Chow and others, 1988)—can produce erroneous values for peak-streamflow frequency. Therefore, for the estimation of peak-streamflow frequency for the Texas stations, historical flood information (where available), low-outlier thresholds, and skew coefficients were all carefully considered.

Peak-streamflow frequency estimates for the Texas stations were calculated with the computer program PEAKFQ (Slade and Asquith, 1996), which follows the Interagency Advisory Committee on Water Data (1982) guidelines, using all data from natural basins through the 1993 water year. Discharges at many stations became regulated during the period the station was in operation; these "regulated" annual peak discharges were not used. A water year is the 12-month period from October 1 through September 30; the water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Supplemental peak-streamflow frequencies for stations in Arkansas, Louisiana, New Mexico, and Oklahoma were obtained from the USGS offices in these states. Peak-streamflow frequency estimates for all the stations, along with selected basin characteristics and ancillary information, are listed in table 1 (at end of report). Locations of the stations are shown on plate 1; site numbers on the plate refer to those in table 1.

The following sections discuss the use of historical flood information, estimation of low-outlier thresholds, and use of skew coefficients in the peak-streamflow frequency estimations for the stations in Texas. An example of the peak-streamflow frequency analysis for a selected station in Texas is shown in figure 2 and illustrates, through visual evaluation of the LPIII distribution's fit to the data, that careful consideration of historical flood information, low outliers, and skew coefficients is necessary for reliable analysis of peak-streamflow frequency. The figure indicates that large changes in peak-streamflow frequency, especially for the larger recurrence intervals, can result when historical flood information, low-outlier thresholds, and weighted skew coefficients are considered. For many stations, these considerations can result in as much as a 1-order magnitude change in the 100-year peak discharge (for example, 1,000 to 10,000 ft^3/s or 100,000 to 1,000,000 ft^3/s).

Historical Peak Streamflows

In addition to the collection of peak-streamflow data in Texas, the USGS routinely collects, through newspaper accounts and interviews with local residents, information about historical peak streamflows and historical peak stages—consequently, historical peak elevations above mean sea level can be determined. A historical peak streamflow is the highest peak streamflow since a known date preceding the installation of the station; historical peak streamflow can occur either before or after installation of a station. Historical information is critical for evaluating peak-streamflow frequency estimates for the larger recurrence intervals (see "high outliers," fig. 2). Many historical peak streamflows are associated with catastrophic storms. These large storms in the State can cause some flood peaks to exceed those that can be estimated accurately by analyses of available precipitation or annual peak-streamflow data alone. Therefore, where available, historical data are included in peak-streamflow frequency analyses.

Historical peak-streamflow data are available for about 33 percent of the 559 Texas stations included in this study—historical peak-stage data also are available for many stations (Slade and Asquith, 1996). The mean historical record length is 88 years, and about 11 percent of the 559 Texas stations have historical record lengths exceeding 100 years. Inclusion of historical peak streamflow in frequency estimations is done by the

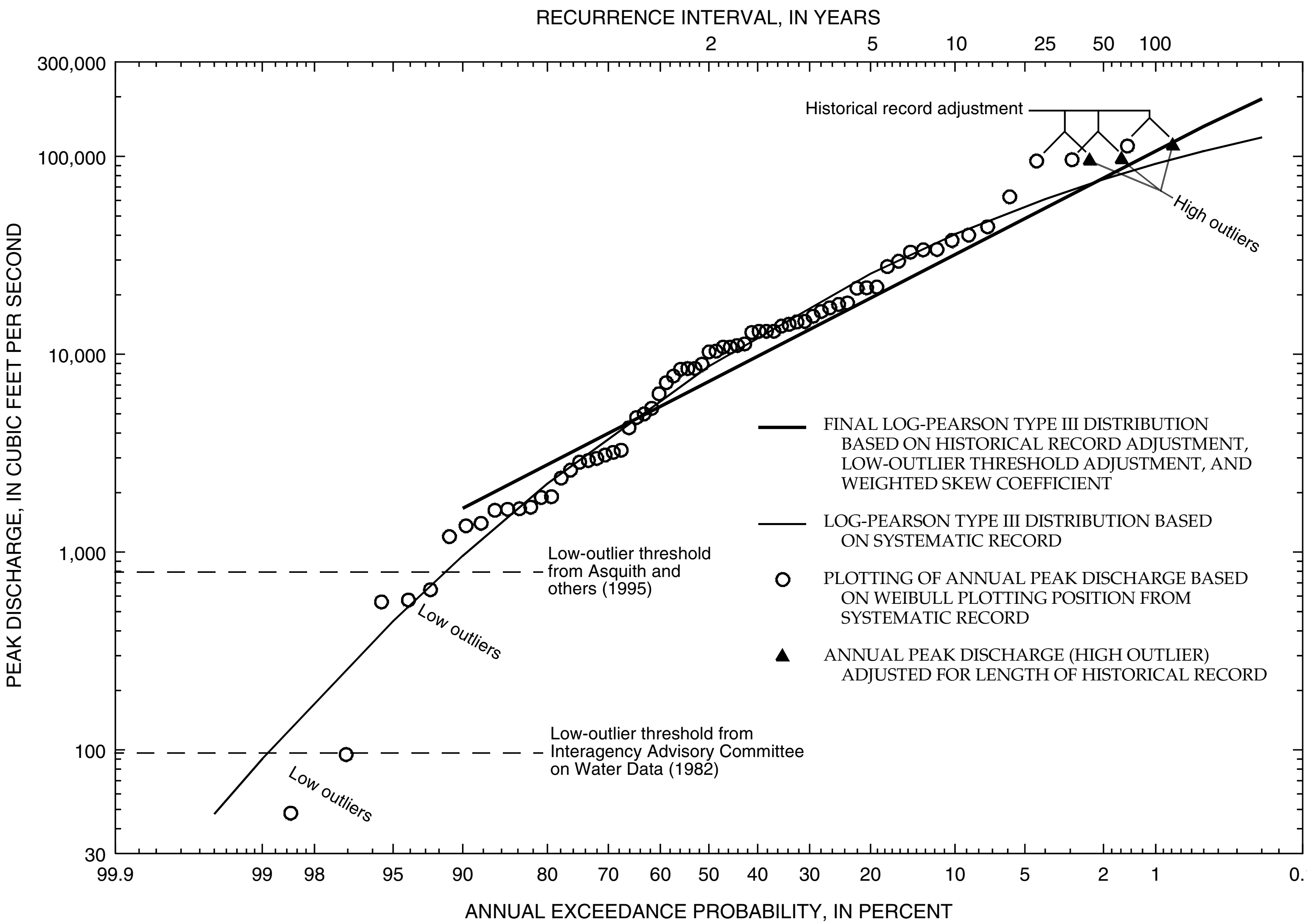

Figure 2. Example of peak-streamflow frequency analysis for station 08171000, Blanco River at Wimberley, Texas.

specification of a high-outlier threshold and a historical record length. The historical record length, high-outlier threshold, and number of high outliers (historical peak discharges) for each of the 559 Texas stations are listed in table 1. Figure 2 shows the historical flood information (see "historical record adjustment") available for station 08171000, Blanco River at Wimberley, Texas (site 528). That station has a systematic record length of 67 years, but the three highest peaks, 113,000, 96,400, and 95,000 ft^3/s, are known to be the greatest in the past 125 years. With consideration of LPIII fit to the data, the high outlier threshold is set at 95,000 (third highest peak in 125 years) and the historical record is set at 125 years. Therefore the number of high outliers is three (table 1).

Special consideration of historical information was done for a small number of stations as indicated by the footnotes in table 1. These considerations were necessary to produce more accurate peak-streamflow frequency analyses for these stations. For many of these stations (generally those with short periods of record), one of the systematic peak discharges is considerably larger than the other peak discharges—that peak is historically significant. Although no official documentation of the historical significance of the peak discharge is available, historical perspective was developed through consideration of flood information from pertinent nearby stations. For the remaining stations, the footnotes document the historical adjustments deemed necessary to produce a better fit of the LPIII distribution to the peak-streamflow data.

Extreme flood potential of Texas has been documented in a report by Asquith and Slade (1995a). Comparison of the extreme flood potential presented in Asquith and Slade (1995a) to the 100-year peak-discharge estimates in table 1 indicates that the extreme flood potential exceeds the 100-year peak discharge by as much as 300 percent, with the maximum exceedances occurring in central Texas (regions 4 and 5). Therefore, the potential exists for extraordinarily large peak streamflows for many areas of the State.

Low-Outlier Thresholds

The climatic and physiographic characteristics of Texas occasionally produce extremely small annual peak-streamflow values (low outliers). Typically, low outliers are identified by visually fitting the LPIII distribution curve to the distribution of the peak-streamflow data. The presence of low outliers in the data 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-streamflow values (including zero) below the threshold are excluded from the fitting of the LPIII distribution. For example, one calculation of the 100-year peak streamflow for a station on the Nueces River in south-central Texas is 1,480,000 ft^3/s; however, many low outliers are present in the data. Using an appropriate low-outlier threshold reduces the 100-year peak to 282,000 ft^3/s—a more reasonable value considering the fact that 550,000 ft^3/s is the highest documented peak streamflow at this station in at least 158 years (adapted from Asquith and others, 1995).

The IACWD guidelines provide a procedure for low-outlier threshold selection; however, Asquith and others (1995) demonstrate that the IACWD procedure for low-outlier threshold estimation generally does not produce appropriate low-outlier thresholds for stations with natural basins in Texas, and an equation to estimate low-outlier thresholds for these stations is presented. The equation estimates low-outlier thresholds by using the values for the mean, standard deviation, and skew of the logarithms for the systematically collected annual peak discharges. However, the equation presented by Asquith and others (1995) does not always produce the best values for low-outlier threshold; about 13 percent of the 559 Texas stations required a threshold other than that estimated by the equation presented in Asquith and others (1995). Figure 2 shows an example of the two low-outlier thresholds discussed above and identifies low outliers; the threshold from Asquith and others (1995) was used for this station. The low-outlier threshold with its origin for each station is listed in table 1.

Skew Coefficients

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

The IACWD guidelines recommend and the program PEAKFQ allows three types of skew coefficients to be used with peak-streamflow frequency estimation. These coefficients are (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 the generalized skew map (Interagency Advisory Committee on Water Data, 1982); and (3) the weighted skew coefficient—calculated using the IACWD generalized and station skews.

A recent study of generalized skew coefficients was done for Texas (Judd and others, 1996) that used skew coefficients from stations with at least 20 years of peak-streamflow data. That study updates the generalized skew coefficients recommended by the IACWD (based on data through 1973) and includes data collected since 1973. The weighted skew coefficient generally is preferred for peak-streamflow frequency estimations; however, for many stations, the station skew coefficient was required for a better fit of the LPIII distribution. For each station, the skew used and its origin are listed in table 1. Weighted skew coefficients (station skews and generalized skews from Judd and others (1996)) were used in about 90 percent of the stations in Texas; station skew coefficients were used for the remaining stations.

Selected Basin Characteristics

Selected basin characteristics were aggregated for each station (table 1)—2-year, 24-hour precipitation; mean annual precipitation; contributing drainage area; stream length; basin shape factor; and stream slope. These characteristics were identified as being pertinent during previous investigations of peak-streamflow frequency in Texas (Schroeder and Massey, 1977; Slade and others, 1995; Asquith and others, 1996). However, as discussed in the section "Regression Analysis," not all of these characteristics were used for this investigation. The 2-year, 24-hour precipitation and mean annual precipitation (in inches) are determined for the approximate centroid of each basin. The contributing drainage area (CDA) is expressed in square miles. The stream length represents the length, in miles, of the longest mapped channel from the station to the headwaters, based on quadrangle maps prepared by the USGS (scale, 1:100,000). The basin shape factor is the ratio of the square of the stream length to the contributing drainage area, which mathematically represents the ratio of the longest stream length to the mean width of the basin. The stream slope, expressed in feet per mile, is the ratio of (1) the change in elevation of the longest mapped channel from the station to the headwaters to (2) the length of the longest mapped channel.

Other basin characteristics (drainage density and mean annual runoff) were investigated for estimation of peak-streamflow frequency. Drainage density, expressed in miles per square mile, is defined as the ratio of (1) the total number of miles of mapped channels upstream from the station to (2) the contributing drainage area. Mean annual runoff for a basin is expressed in inches per year. Each of these characteristics has strong statistical correlations to peak-streamflow frequency; however, they proved to be insignificant for estimation of peak-streamflow frequency when the other basin characteristics (presented in previous paragraph) are used. Additionally, considerable effort and expense is required to determine drainage densities. Therefore, drainage density and mean annual runoff were not considered pertinent for estimation of peak-streamflow frequency in Texas. Values for drainage density and mean annual runoff are not presented in this report.

REGIONAL EQUATIONS FOR ESTIMATION OF PEAK-STREAMFLOW FREQUENCY

Regression Analysis

Multiple-regression analysis was used to establish the statistical relations between one dependent and one or more independent variables. The 2-, 5-, 10-, 25-, 50-, and 100-year peak discharges, respectively, were used as dependent variables, and the selected basin characteristics were used as independent variables. Logarithmic transformations of the dependent and independent variables were used to increase the linearity between the dependent and independent variables.

A forward stepwise weighted least-squares (WLS) regression procedure was used for the development of the equations to estimate peak-streamflow frequency for stream sites in natural basins in Texas. In WLS regression, each data point can be given a weight different from the others; these weights generally are representative of the relative accuracy of each value for the dependent variable; greater weights are assigned to values that have greater accuracy.

Empirical equations (G.D. Tasker, U.S. Geological Survey, written commun., 1994) based on Monte Carlo simulations (Tasker and Thomas, 1978; Stedinger and Cohn, 1986) were used to calculate a weight factor, which represents an equivalent "years of record" for each station with historical information. This weight factor is based on the length of systematic record, length of historical record, and number of high outliers; the weight factor for each of the stations is listed in table 1. The weight factors in table 1 were used as the weights for the WLS regression procedure presented in this report.

In forward stepwise regression, the independent variable having the highest mathematical correlation to the dependent variable is entered into the equation, and successively, the remaining independent variables are tested for their statistical significance to the dependent variable. Each independent variable that tests as statistically significant (F ratio > 1.5) is entered into the equation. Thus, each independent variable (basin characteristic) in the final equation is statistically significant, and its inclusion contributes to the explanation of the variance in the dependent variable (the peak-streamflow frequency).

The climatic characteristics of each watershed (2-year, 24-hour precipitation and mean annual precipitation) were considered in the WLS regression analysis but are not used in the final analyses presented in this report. Inclusion of climatic characteristics into an equation often causes other basin characteristics to be excluded. Their inclusion might produce a more statistically "robust" equation—meaning that any significant variables are present in the equation—but the equation consequently can produce less reliable—meaning that the robust equation does not produce intuitively appropriate peak discharges—peak-streamflow frequency estimates.

For example, two nearby watersheds, having similar contributing drainage areas, will have similar climatic characteristics because of the proximity of the watersheds. Therefore, equations including the drainage area (drainage area generally is the most predictive basin characteristic of flood peaks) and one or both of the climatic characteristics will produce similar peak discharges for each station. However, if the basin shape factor and stream slope are different, the flood characteristics of the two stations could be expected to be dissimilar.

All stations within each region were identified, and the relation between peak-streamflow frequency (2-, 5-, 10-, 25-, 50-, and 100-year peak discharges) and contributing drainage area was investigated. The 100-year peak discharge was selected for further investigation because this discharge information most often is needed by water managers and planners. Therefore, priority is given to reliable 100-year peak-discharge estimates. Contributing drainage area was used because it is the most significant independent variable for each regression equation. For several of the regions, this relation is curvilinear. The curvilinear relation is attributed to the relation between areal storm extent and contributing drainage area. In general, storms frequently do not fully encompass large drainage areas; thus the entire drainage area does not actually contribute during most runoff events.

The relation between the 100-year peak discharge and associated contributing drainage area for stations in regions 5 and 7 is shown in figure 3. A basic assumption of the WLS regression procedure is that the relation between dependent and independent variables is linear; therefore, an appropriate boundary—shown as the "break line" in figure 3—was used in those regions for which the relation was determined to be nonlinear. The placement of an appropriate break line is based on visual inspection of the relation described above and comparison of the break line to those for nearby regions. A separate WLS regression was performed for each side of the break line—represented as the "best-fit" lines in figure 3 using data from stations on each side of the break line. Separate equations for each side of the break line are believed to provide more reliable estimates of peak-streamflow frequency. Break lines were determined for regions 3, 4, 5, 7, and 10 (see fig. 1 and pl. 1 for the locations of these regions); break lines were not considered necessary for the remaining regions. The value for the break line is 32 mi^2 (1.5 $\log_{10}$ units) for each region where used.

For regions in which a break line was determined, except region 5, a "region of overlap" was determined as well. This region of overlap is defined as one-half a log cycle on either side of the break line, from 10 to 100 mi^2. Data from stations within the region of overlap were shared between the two WLS regressions. For example, the equation to the left of the break line (region 7) uses data from about 0.2 to 100 mi^2, while the representative best-fit line to the right of the break line uses data from 10 to about 3,000 mi^2. The use of overlapping data produces a smoother transition of peak-discharge estimates for drainage areas within the overlapping region and also provides more data points for each equation.

The representative best-fit line on either side of the break line is indicated for region 5 (fig. 3). A large change in the slope of these lines is evident. The inclusion of overlapping or shared data within the

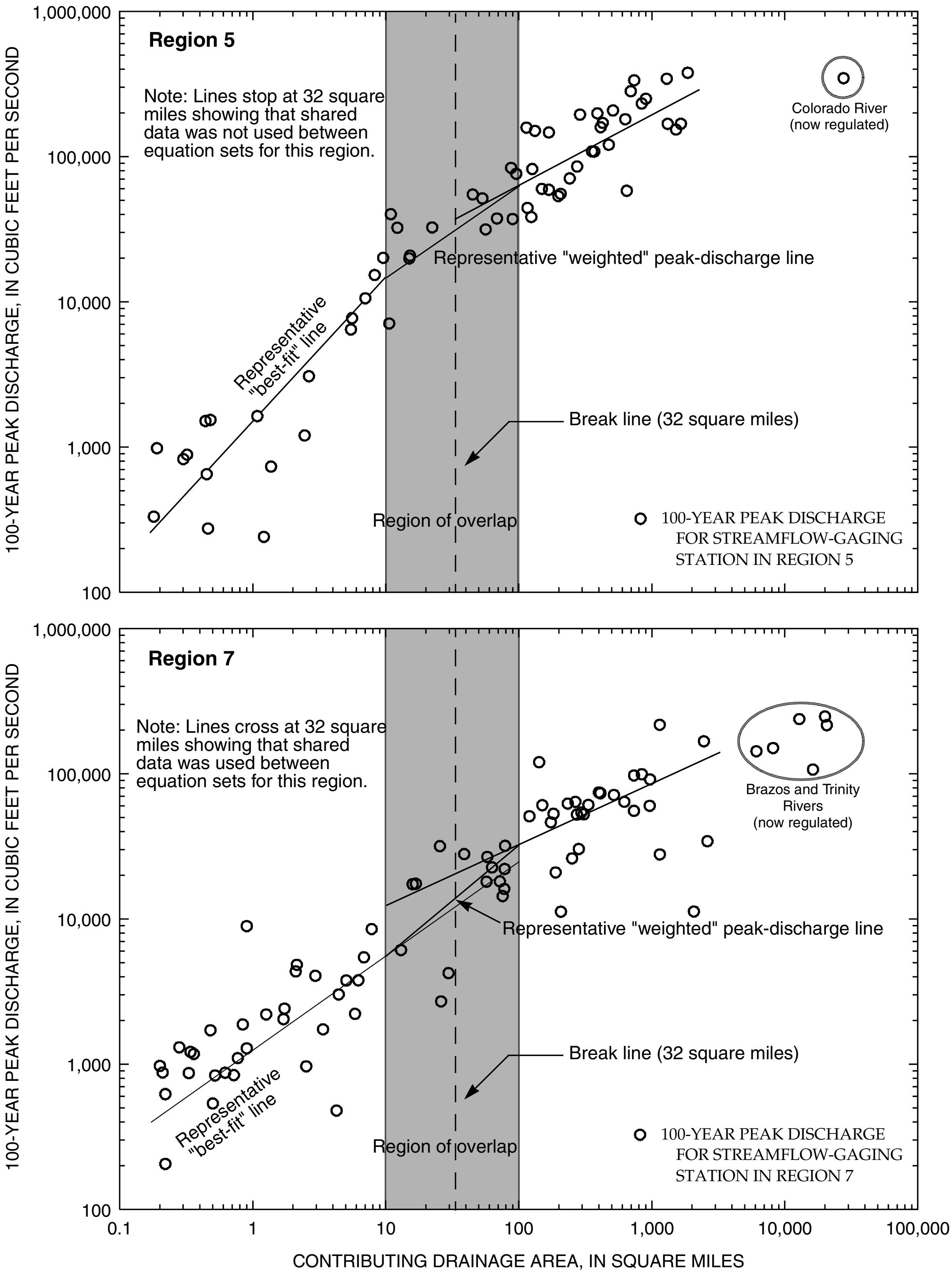

Figure 3. Relation between 100-year peak discharge and contributing drainage area for streamflow-gaging stations in regions 5 and 7 of Texas.

region of overlap for region 5 was determined to be inappropriate because of the substantial nonlinear relation of the 100-year peak discharge to contributing drainage area. Therefore, overlapping data were not used between the two region 5 equations unlike regions 3, 4, 7, and 10. The lines for region 5 in figure 3 represent the data used.

Also, as part of the regression analysis, stations were identified in several regions for exclusion from the WLS regression—such as those circled in figure 3. These stations were excluded because their contributing drainage areas are so large (on the order of 10,000 mi^2 or more) that they unduly affect the regression. Additionally, the watershed for each of the excluded stations is now regulated, thus peak-streamflow frequency estimates from equations based on natural streamflow data are not needed for these basins. Very few large unregulated drainage basins remain in Texas; therefore, a total of 527 of the original 559 stations was used in the development of the regression equations.

Regression Equations

Weighted least-squares regression (described in the section "Regression Analysis") was done for each of the 11 regions of the State (fig. 1, pl. 1). The WLS equations and break-line values, where appropriate, to estimate peak-streamflow frequency at stream sites with natural basins in each of the hydrologic regions are listed as 16 sets of equations in table 2 (at end of report). Additionally, the range of the independent variables (basin characteristics), the adjusted R-squared value, and the weighted standard error of estimate (sometimes referred to as "root mean square error" or "RMS error") in percent and $\log_{10}$ units, are presented for each equation. A weighted standard error of estimate, hereafter referred to as the standard error of estimate, is calculated for each equation on the basis of the weight factors from table 1. The equations are based only on peak-streamflow frequency for stations in Texas (peak-streamflow frequency for stations outside Texas are presented only for comparative purposes). The 16 sets of equations are appropriate for applicable stream sites within each equation's corresponding region. Procedures for evaluation of equation applicability are presented later in this report.

The confidence limits of any discharge estimate for a site from the regression equations in table 2 can be computed from the relation (Helsel and Hirsch, 1992, p. 300):

$$\log Q_T - t_{(\alpha/2,n-p)}\sqrt{s^2(1+h_o)} \le \log Q_T \le \log Q_T + t_{(\alpha/2,n-p)}\sqrt{s^2(1+h_o)}\,, \qquad (1)$$

where

$\log Q_T$ = $\log_{10}$ of T-year recurrence interval peak discharge for a site from a regression equation,

$t_{(\alpha/2,n-p)}$ = critical value of t-distribution for a 100 (1-α)-percent confidence interval,

n = number of stations in region-based regression equation,

p = number of independent variables (basin characteristics) plus one (for regression constant),

s^2 = square of standard error of estimate of regression equation, and

h_o = leverage of site.

The leverage expresses the distance of the site's basin characteristics from the center of the space defined by the independent variables in the regression. The confidence limits are related directly to the magnitude of the leverage. The leverage of a site is computed by the following equation (Helsel and Hirsch, 1992, p. 300):

$$h_o = \mathbf{x_o}\{\mathbf{X}^T\mathbf{W}^{-1}\mathbf{X}\}^{-1}\mathbf{x_o}^{\mathrm{T}}\,, \qquad (2)$$

where

$\mathbf{x_o}$ = row vector of basin characteristics of site,

$\{\mathbf{X}^T\mathbf{W}^{-1}\mathbf{X}\}^{-1}$ = covariance matrix of regression model, and

$\mathbf{x_o}^{\mathrm{T}}$ = column vector of basin characteristics of site.

Critical values of the t-distribution for selected confidence limits pertinent to the regression equations in table 2 are listed in table 3 (at end of report). The covariance matrices for the regression equations are listed in table 4 (at end of report); the covariance matrices are in $\log_{10}$ units.

Example:

The calculations of the 50- and 90-percent confidence limits are illustrated by the following example. To estimate the 100-year peak discharge at a 900-mi^2 contributing drainage-area site in region 5 with a basin shape factor of 6.00 and a stream slope of 14 ft/mi, the Q_{100} is obtained from the 100-year equation for sites

with contributing drainage area greater than 32 mi^2 in region 5.
Where

$$Q_{100} = 9{,}180(900)^{0.594}(6)^{-0.420},$$
$$Q_{100} = 246{,}000\ ft^3/s,$$
$$n = 38 \text{ (number of stations), and}$$
$$p = 3 \text{ (area + shape + constant),} \qquad (3)$$

the critical values for the t-distribution at the 50-percent and 90-percent levels ($\alpha = 0.50$ and α=0.10) are 0.6816 and 1.690, respectively (table 3).

The weighted standard error of estimate in $\log_{10}$ units for the equation is 0.17 (table 2), resulting in an s^2 of $(0.17)^2 = 0.0289$. The covariance matrix for the regression equation from table 4 is

$$\{\mathbf{X}^T\mathbf{W}^{-1}\mathbf{X}\}^{-1} = \begin{bmatrix} 0.15134 & -0.092122 & -0.30560 \\ -0.092122 & 0.65384 & -0.31408 \\ -0.30560 & -0.31408 & 1.0618 \end{bmatrix}.$$

The vector $\mathbf{x_o}$ = [log(900) log(6) 1] = [2.9542 0.77815 1], where 1 is the regression constant. Using principles of matrix multiplication (documented in many statistical textbooks and linear algebra textbooks), the leverage h_o is

$$h_o = [2.9542\ 0.77815\ 1]$$

$$\begin{bmatrix} 0.15134 & -0.092122 & -0.30560 \\ -0.092122 & 0.65384 & -0.31408 \\ -0.30560 & -0.31408 & 1.0618 \end{bmatrix} \begin{bmatrix} 2.9542 \\ 0.77815 \\ 1 \end{bmatrix},$$

$$h_o = 0.061335.$$

Now using relation 1, the lower 50-percent confidence limit is:

$$\log(246{,}000) - 0.6816\sqrt{0.0289(1 + 0.061335)}$$
$$= 5.2716 \log ft^3/s = 187{,}000\ ft^3/s,$$

while the upper 50-percent confidence limit is:

$$\log(246{,}000) + 0.6816\sqrt{0.0289(1 + 0.061335)}$$
$$= 5.5103 \log ft^3/s = 324{,}000\ ft^3/s.$$

There is a 50-percent chance that the confidence limits constructed in this way contain the true 100-year peak discharge at this site in region 5 and that the true value is within the interval 187,000 to 324,000 ft^3/s. In a similar fashion, the lower and upper 90-percent confidence limits are 124,000 and 486,000 ft^3/s; therefore, there is a 90-percent chance that the true 100-year peak discharge is within this interval.

Discussion of Regression Equations and Application

Review of the equations in table 2 results in several generalities. Contributing drainage area proved to be the most significant variable in all the regression equations. In general, when two or more variables were identified as significant, stream slope proved to be the second most significant variable. Negative exponents on basin shape factor or stream slope indicate that these variables are inversely proportional to the discharge. This inverse proportionality on slope might seem counterintuitive because higher peak discharges normally are associated with larger slopes. However, because of the multi-collinearity[1] of the independent variables and the lack of full understanding of local hydrologic processes producing peak discharges, negative exponents do not indicate that the equations are unreliable when used to make estimations within the range of the independent variables (Helsel and Hirsch, 1992, p. 305).

Review of the equations (table 2) indicates that the standard errors of estimate (SEE) generally are larger for regions in western and southern Texas (regions 1, 2, 3, 4, and 6). The climate of these regions is characterized as arid or semiarid, resulting in greater nonuniformity of precipitation; consequently more variance in peak-streamflow frequency estimates occurs. The SEEs for the less-than-32-mi^2 equations generally are higher than SEEs for the greater-than-32-mi^2 equations. This higher SEE for the less-than-32-mi^2 equations can be attributed to a larger proportion of the less-than-32-mi^2 stations having short record (less than 20 years); consequently, the peak-streamflow frequency for the short record stations exhibits greater variability.

Two potential problems associated with the equations are identified for discussion. The first problem is that there is the potential for a peak discharge for one recurrence interval to be larger than the peak discharge corresponding to a greater recurrence interval. This problem can happen when different independent variables are used for differing recurrence intervals.

[1]Multi-collinearity occurs when at least one explanatory variable is closely correlated to one or more other explanatory variables. For example, flatter or smaller slopes generally are associated with larger drainage areas; consequently, there is an inverse proportionality between slope and area. This inverse proportionality is represented in the negative exponent for some variables in some regions. The strength of the inverse proportionality depends on the data and flood characteristics available for each region.

This problem also could occur for a site where basin characteristics, relative to each other, are unique from all or most of the stations in the region. In general, a site is "unique" when its basin characteristics are near or outside the ranges for which the equations are based. The ranges of the basin characteristics (table 2) for each set of equations represent the extreme or outlier values used. The actual distribution of the variables within these ranges could be non-uniform or non-normal. For cases where variable distribution is highly non-uniform or non-normal, the applicable ranges of the equations are smaller than those indicated in table 2; therefore, a technique is available for evaluation of equation applicability.

The technique for evaluating the applicability of an equation to a site is to graphically compare the basin characteristics of the site with the station basin characteristics involved in the regression analysis. This technique is done by using the relations between the basin characteristics. The relations between the basin characteristics (CDA, stream slope, and basin shape factor) for each of the 11 regions are shown in figures 4–14 (at end of report). Sites whose basin characteristics plot near or outside the approximate region defined by the basin characteristics, indicated by shaded area, potentially could have peak-discharge estimation problems using the regression equations. The shaded area for a few graphs in the figures purposely is drawn to not include one or more stations; this was done because these stations ("outliers") plot substantially far away from the majority of the other stations. Thus, some uncertainty in the equation applicability exists for basin characteristics near in value to those of the "outlier" stations. As a consequence, the equations become less applicable if the basin characteristics of the site plot away from the shaded areas. Although, for some equations, either stream slope or basin shape factor do not appear in the equations, each is intrinsically involved in the sense that their values were part of the data considered. For example, if stations with substantially different stream slope or basin shape factor were available, then either of these variables could have proved statistically significant and therefore been included in the equations. Thus, if a site has any basin characteristic that plots outside the shaded regions of figures 4–14, then the applicability of the equation for that site is questionable. An example illustrating this discussion, the site in region 5 that was used in the example of confidence limit calculation (see "Regression Equations" section) is plotted in figure 8. As seen in figure 8, the site plots within the shaded regions; therefore, the equations are applicable.

The second problem is that there might be discontinuity in peak discharges for sites with contributing drainage areas of about 32 mi^2 (see best-fit lines at the break line, fig. 3). For regions that have a break line (regions 3, 4, 5, 7, and 10), a weighted peak discharge can be calculated for sites with contributing drainage areas ranging from 10 to 100 mi^2 (region of overlap, fig. 3). A weighted peak discharge is preferred on the basis that within the region of overlap, both equation sets are applicable. Although shared data, as identified by the region of overlap, was not used for the regression analyses for region 5, the use of a weighted peak discharge is appropriate.

The weighted peak streamflow is based on the peak-streamflow estimates from both equations, based on the contributing drainage area for the site relative to the logarithms of 10 and 100 mi^2. The following equation can be used to calculate weighted peak discharges for such sites because it weights according to the location of the site CDA within the region of overlap.

$$Q_W = [2 - \log(A)]Q_1 + [\log(A) - 1]Q_2 \quad , \quad (4)$$

Where

Q_W = weighted peak discharge associated with T-year recurrence interval,

Q_1 = peak discharge associated with equation for sites with contributing drainage areas less than 32 mi^2,

Q_2 = peak discharge associated with equation for sites with contributing drainage areas greater than 32 mi^2, and

$\log(A)$ = contributing drainage area of site in $\log_{10}$ units and A in mi^2.

A CDA of 32 mi^2 results in equal weighting of both the Q_1 and Q_2; whereas a CDA of 10 mi^2 results in 100-percent weighting on Q_1, and a CDA of 100 mi^2 results in 100-percent weighting on Q_2. For some equations, Q_1 and Q_2 are based on different basin characteristics. However, each equation is based only on those independent variables that are statistically significant. Contributing drainage area is the most significant characteristic for each equation; the characteristics uncommon to Q_1 and Q_2 thus are the second and (or) third most significant characteristics.

The confidence limits (50, 67, or 90 percent) of a weighted discharge for a site within the region of overlap can be estimated by the following equations (which are analogous to eqn. 4):

$$Q_{WU} = [2 - \log(A)]Q_{1U} + [\log(A) - 1]Q_{2U} \quad ,(5)$$

and

$$Q_{WL} = [2 - \log(A)]Q_{1L} + [\log(A) - 1]Q_{2L} \quad ,(6)$$

where

Q_{WU} = upper confidence limit of Q_W (eqn. 4),
Q_{1U} = upper confidence limit for Q_1 (eqn. 4) peak discharge computed in above example,
Q_{2U} = upper confidence limit for Q_2 (eqn. 4) peak discharge,
log (*A*) = contributing drainage area of site in $\log_{10}$ units and *A* in mi^2,
Q_{WL} = lower confidence limit of Q_W (eqn. 4),
Q_{1L} = lower confidence limit for Q_1, and
Q_{2L} = lower confidence limit for Q_2.

Consideration of the relation between peak-streamflow frequency and contributing drainage area (fig. 3) results in equations that produce estimates of peak-streamflow frequency having lower SEE and bias removal. A comparison of equations for 100-year peak-discharge estimates for region 5 (fig. 15 at end of report) shows the resulting improvement in peak-streamflow frequency estimation.

The top graph in figure 15 compares (1) the 100-year peak-discharge estimates from a regression equation using all the Texas stations in the region to (2) the 100-year peak-discharge estimates from LPIII analysis. The SEE for this comparison, as a whole, is 57 percent. The SEE for the stations with contributing drainage areas less than 32 mi^2 is 96 percent, and the SEE for the stations with drainage areas greater than 32 mi^2 is 43 percent.

The bottom graph in figure 15 compares (1) the 100-year peak-discharge estimates from the regression equations in table 2 using a break line and removal of the very large Colorado River station to (2) the 100-year peak-discharge estimates for the estimates from LPIII analysis. The weighted peak discharge (eqn. 4) was used for those stations within the region of overlap. The SEE for the stations with contributing drainage areas less than 32 mi^2 is 69 percent, and the SEE for the stations with contributing drainage areas greater than 32 mi^2 is 38 percent.

The data points (fig. 15) surrounding the X equals Y line (top graph) for discharges between about 200 to 2,000 ft^3/s show that a regression equation using all stations in region 5 provides discharge values that are too high (positive bias), and the distribution of points surrounding the correlation lines for discharges between about 2,000 to 20,000 ft^3/s shows that an equation using all stations provides discharge values that are too low (negative bias). A comparison of the two graphs in figure 15 also indicates that the points in the bottom graph generally are closer to the X equals Y line than those in the top graph. The SEE using two regression equations (bottom graph—43 percent) is less than the SEE using one equation (top graph—57 percent). Incidentally, the 43-percent error is not equal to the mean of the error for each equation [(69 + 38) / 2] because 43 percent is a weighted error. Also the longer record stations generally have contributing drainage areas greater than 32 mi^2.

For sites at or near the stations included in the regression analyses, the discharges from individual stations should be considered for inclusion with discharges from the regression equations. For sites at or near the stations, the regression equations might provide peak-discharge estimates that conflict with discharges for the stations, thus a weighted discharge calculated from both discharges (table 1) can be considered for these cases. The weight factors for the regression discharge can be determined from the square of the 67-percent confidence limits, and the square of the 67-percent confidence limits for the station discharge can be determined from PEAKFQ (confidence limits set at 83.5 percent)[2] documented by Slade and Asquith (1996). However, the development of a quantifiable procedure is problematic for the following reasons: (1) the number of years of record available at the stations should be considered; peak discharges calculated from the regression equations might be weighted more heavily in cases of short record (on the order of 20 years or less); (2) the fit of the LPIII distribution to the station data is critical to prevent erroneous peak-streamflow frequency values; and (3) the presence of low and high outliers in the data can greatly affect the resulting LPIII distribution. Another problem in developing an appropriate weighting procedure is how to quantify an analysis for a site "near" a station. The peak-streamflow frequency at a station becomes increasingly less applicable to the stream for sites increasingly further away

[2]The computer program PEAKFQ uses a different definition of confidence limits than used in the current report. The 67-percent confidence limits of this report are the {100 - (100 - 67)/2} = 83.5-percent confidence limits in PEAKFQ.

from the station; however, quantification of the applicability is difficult.

A direct statistical comparison of the equations from Schroeder and Massey (1977) to the equations from the current investigation is not possible because of differing data and regions upon which the equations are based. Schroeder and Massey defined 6 regions compared to the 11 regions in the current investigation. However, a review of the SEE of the equations indicates the errors in the 1977 study are generally about 25-percent less than those in the current investigation. However, separate regression analysis (not included in this report) was done using data from the current investigation and the regional delineation of Schroeder and Massey (1977). The SEEs of the resulting equations are about 33-percent greater than those in the 1977 study, and these SEEs are larger than those of the equations presented in this report.

The equations of the current investigation differ from those of Schroeder and Massey (1977) because (1) much peak-streamflow data has been collected since 1974 (the data ending date of the 1977 study); (2) weighted regression procedures are used; (3) regions are smaller in areal extent, thus they can be considered hydrologically more similar; (4) a "break-line" is used in the regression analysis; (5) true confidence limits of any estimation from the regression equations in this study is possible; and (6) the ranges of independent variables are greater for the current investigation than in the 1977 study; therefore, the equations of the current investigation are applicable for a wider range of sites.

SUMMARY

For this investigation, 559 stations within Texas and 105 stations near Texas were identified as having at least 8 years of annual peak discharges from natural basins. Peak-streamflow frequency was estimated and documented for each of the Texas stations. More than 16,000 annual peak discharges are recorded for the 664 stations included in this report.

The climate and physiography of Texas vary considerably across the State. Accordingly, climatic and physiographic factors typically cause peak streamflows to be nonuniformly distributed; peak streamflows can range by as much as 5 orders of magnitude at a specific stream site. The variability of the climate and physiography of Texas cause difficulty in determining reliable estimations of peak-streamflow frequency using streamflow data from a single station. Therefore, regionalization of peak-streamflow frequency characteristics in Texas is essential for producing reliable estimates of peak-streamflow frequency for any stream site (gaged or ungaged).

For more than 45 years, the USGS has been involved in the development and use of procedures for regionalization of peak-streamflow frequency characteristics. These procedures are used to transfer peak-streamflow frequency information, such as 100-year peak discharges, from gaged basins to ungaged basins. The basis for these procedures is the comparison of the statistical relation between peak-streamflow frequency and watershed (drainage-basin) and climatic characteristics. The watershed and climatic characteristics are collectively referred to as basin characteristics.

The Interagency Advisory Committee on Water Data provides a standard procedure for peak-streamflow frequency estimation that involves a standard frequency distribution—the log-Pearson Type III (LPIII) distribution. The LPIII distribution uses systematically collected and historical peak-streamflow values to define its frequency distribution. The curvature in the shape of the distribution is defined by a skew coefficient that is used in the calculation procedure.

Because of variations in the climatic and physiographic characteristics in Texas, the LPIII distribution does not always adequately define the proper distribution of peak-streamflow data. An improper fit of the LPIII distribution to the distribution of peak-streamflow data (the distribution of the data is defined by Weibull plotting positions) can produce erroneous values for peak-streamflow frequency. Therefore, for the estimation of peak-streamflow frequency for the Texas stations, historical flood information (where available), low-outlier thresholds, and skew coefficients were all carefully considered.

In order to regionalize the flood characteristics in Texas, data for the Texas stations were used as the basis for developing regression equations for peak-streamflow frequency estimation for each of 11 regions. Multiple-regression analysis using weighted least squares was done for each of the 11 regions of the State. Sixteen sets of equations for peak-streamflow frequency estimated from the weighted least-squares regression are presented along with a general discussion of their application and limitations. The relation between the logarithmic values of peak-streamflow frequency and contributing drainage area is non-linear for some of the regions. Therefore, for 5 of the 11

regions, one set of equations was developed for drainage areas less than 32 mi^2, and another set was developed for drainage areas greater than 32 mi^2. Procedures are presented to compute the 50-, 67-, and 90-percent confidence limits for any estimation from the equations. A procedure is presented for determining a weighted discharge for certain sites in those regions for which two equations are available. Additionally, graphical procedures are presented to evaluate equation applicability for sites based on relations between basin characteristics. The regression equations from this investigation were compared to regression equations used in a previous study, and the equations from this study can be considered more reliable for peak-streamflow frequency estimation.

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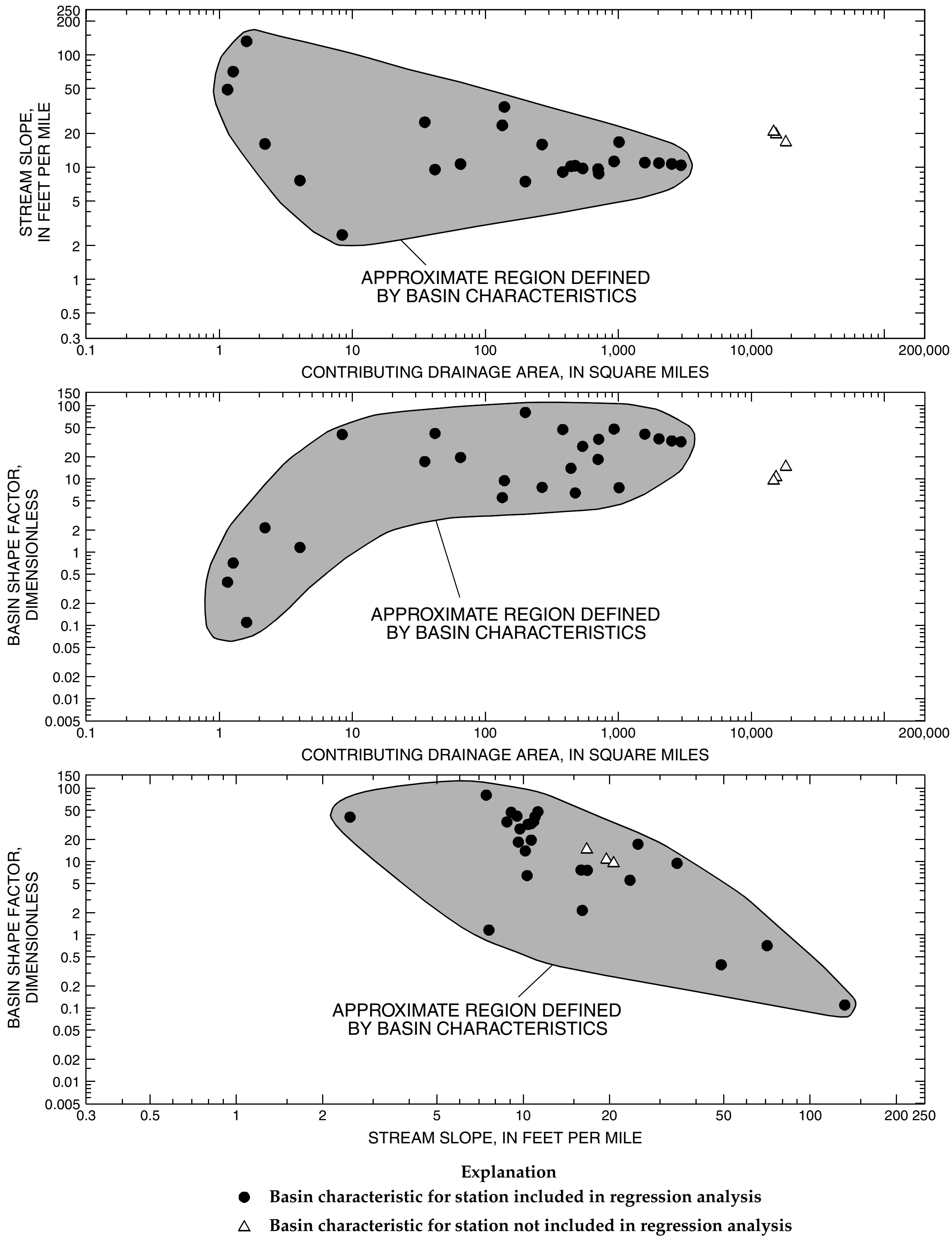


Figure 4. Relation between basin characteristics for region 1.

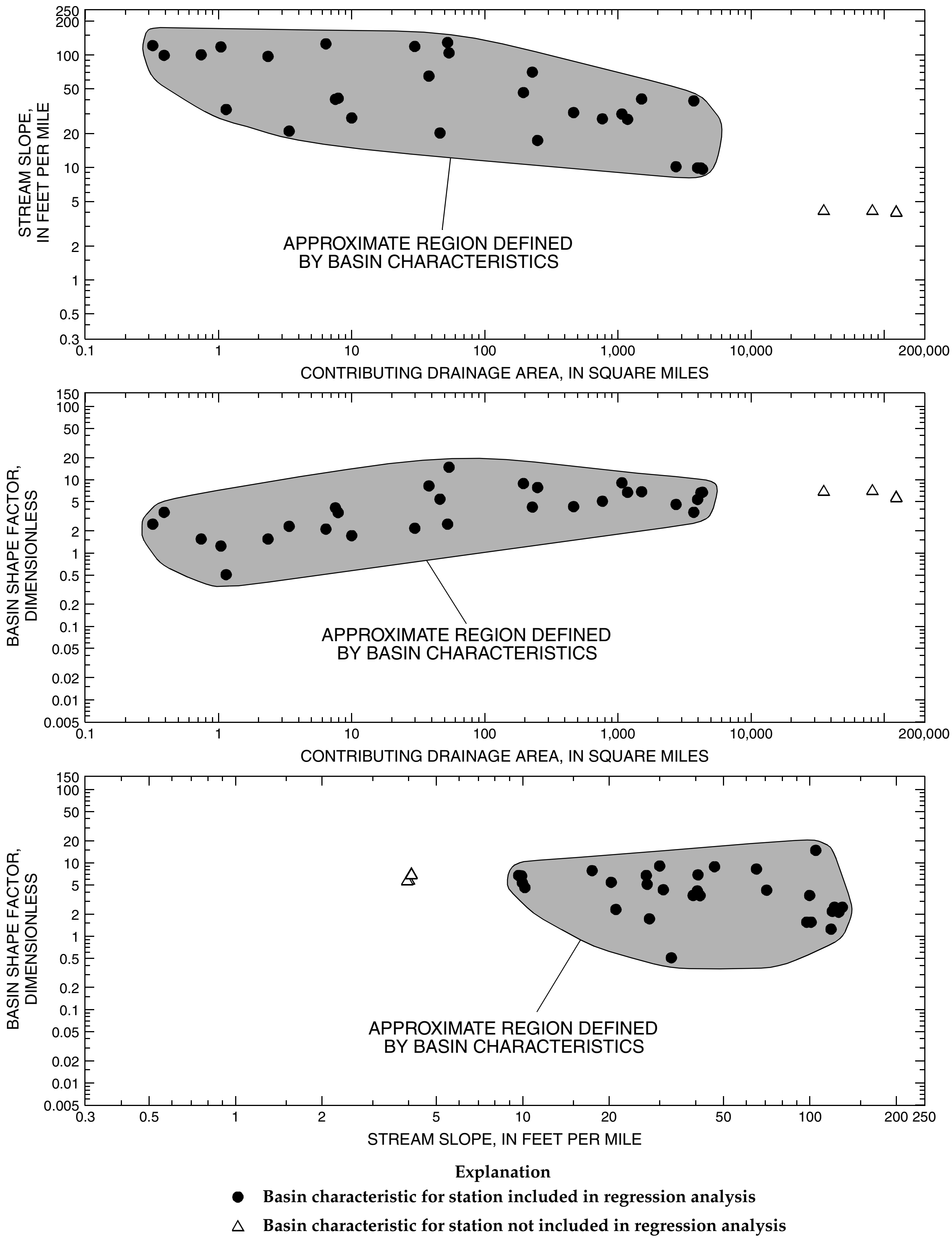
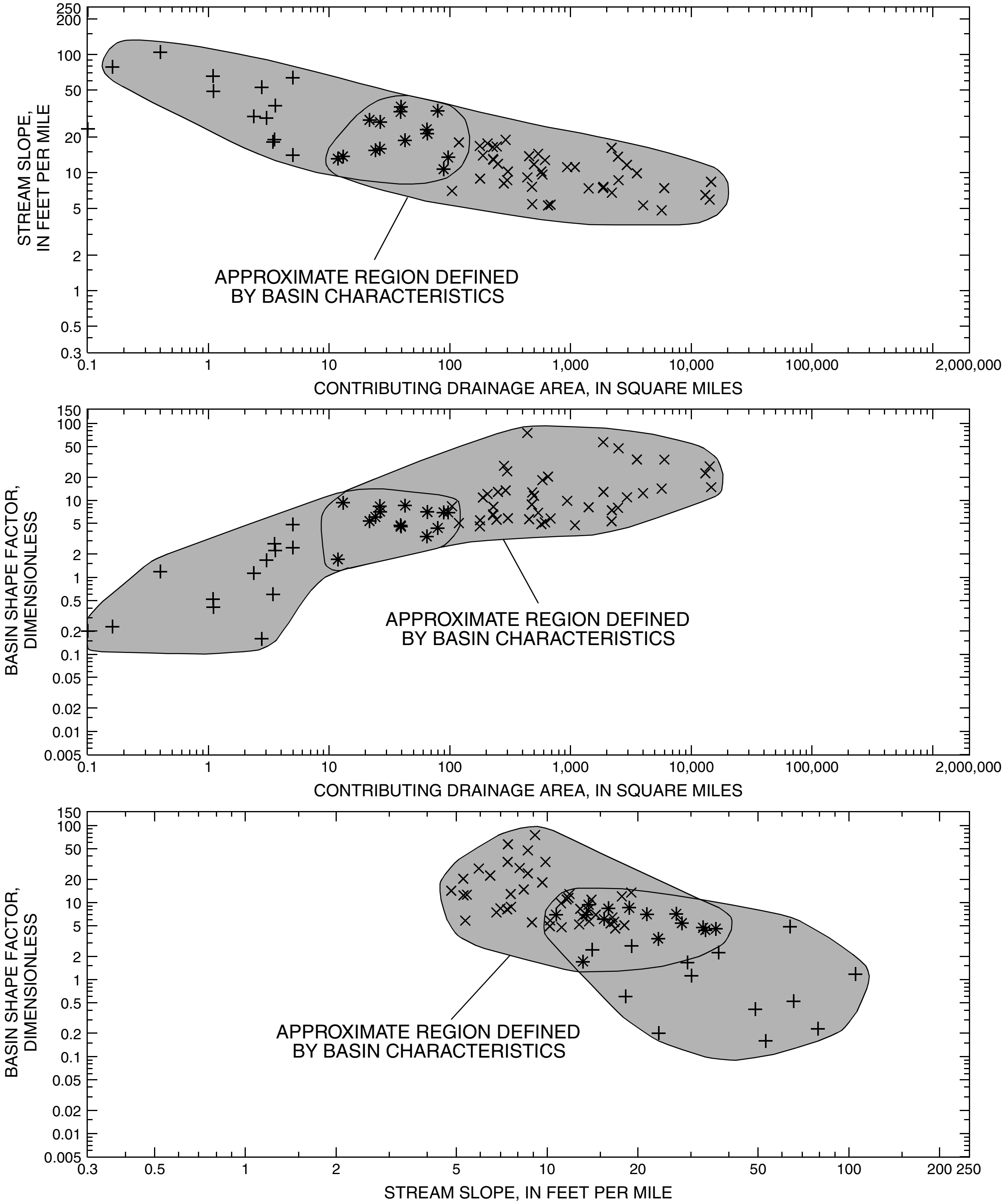


Figure 5. Relation between basin characteristics for region 2.

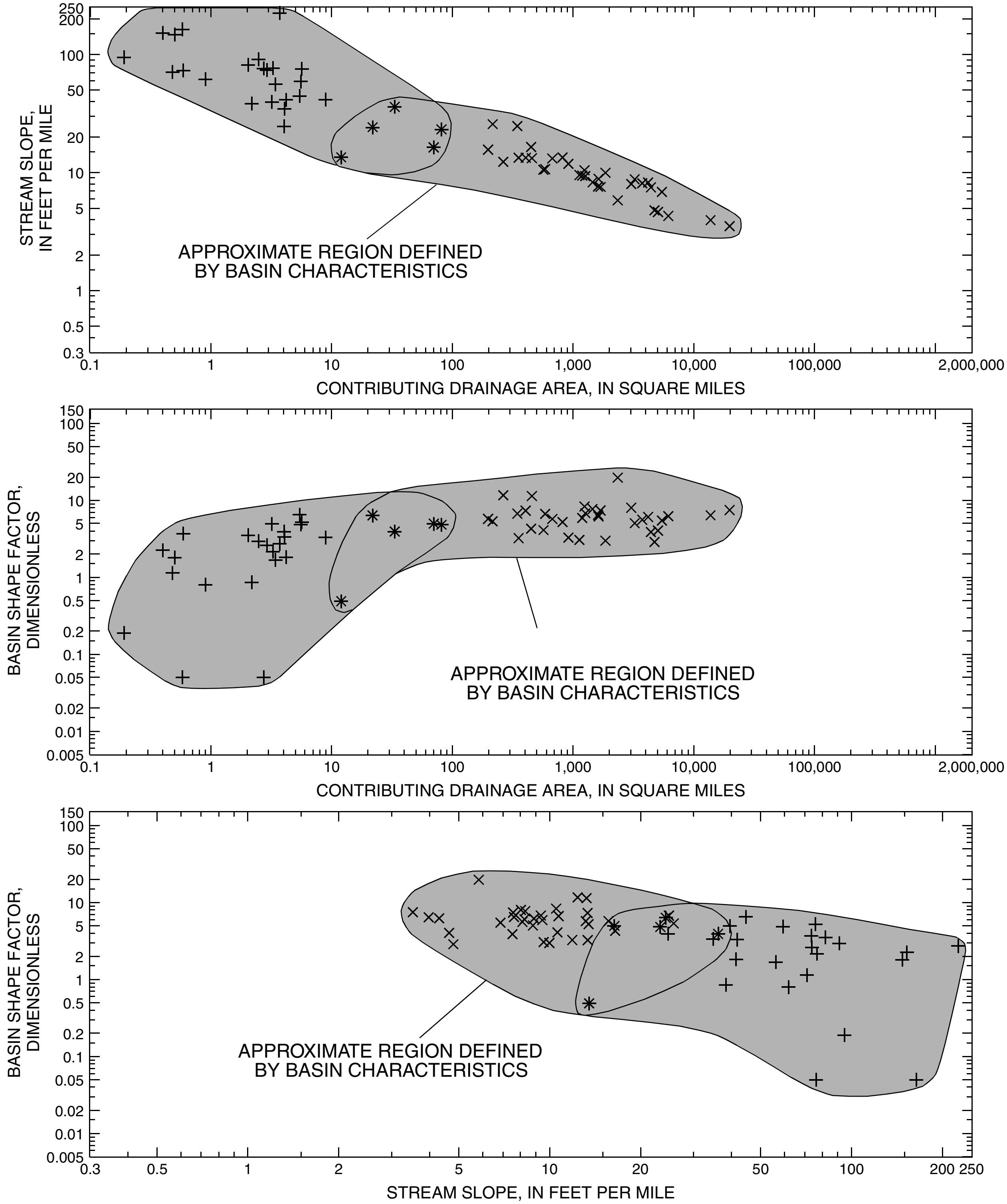


Explanation

+ **Basin characteristic for station included in regression analysis for contributing drainage area less than 32 square miles—** ✱ symbol represents station included in both sets of equations (table 2).

× **Basin characteristic for station included in regression analysis for contributing drainage area greater than 32 square miles—** ✱ symbol represents station included in both sets of equations (table 2).

Figure 6. Relation between basin characteristics for region 3.



Explanation

+ **Basin characteristic for station included in regression analysis for contributing drainage area less than 32 square miles**—✳ symbol represents station included in both sets of equations (table 2).

× **Basin characteristic for station included in regression analysis for contributing drainage area greater than 32 square miles**—✳ symbol represents station included in both sets of equations (table 2).

Figure 7. Relation between basin characteristics for region 4.

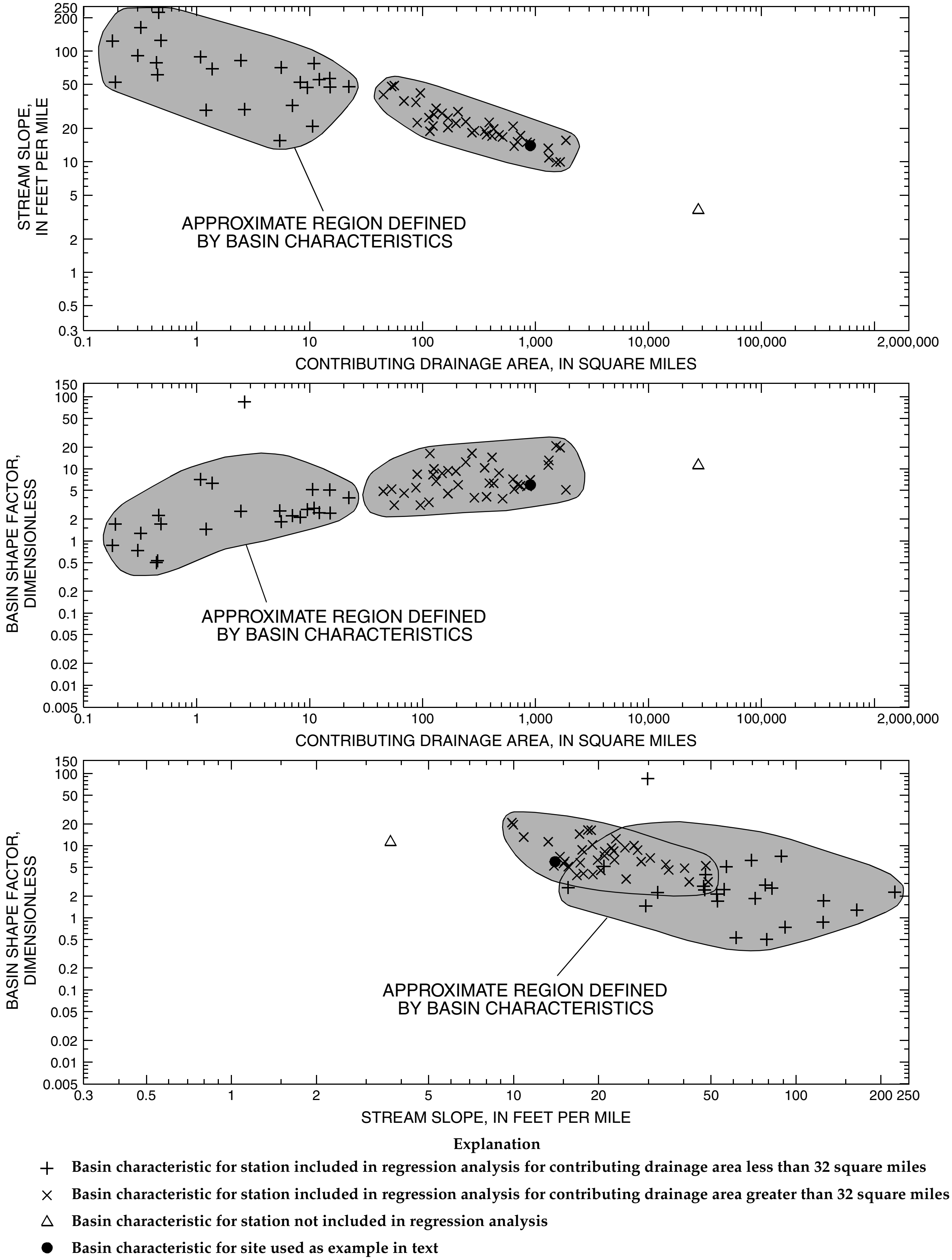
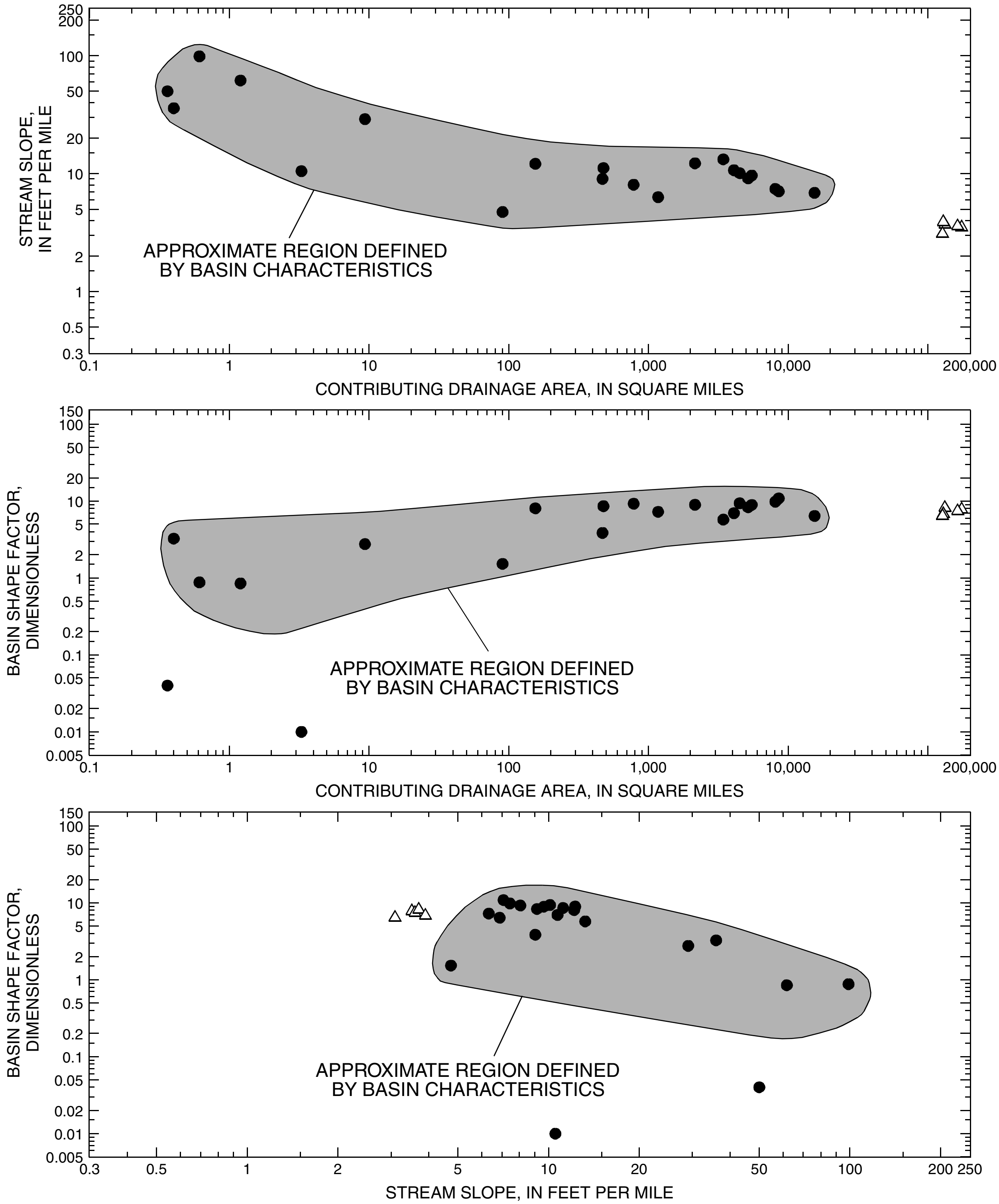


Figure 8. Relation between basin characteristics for region 5.

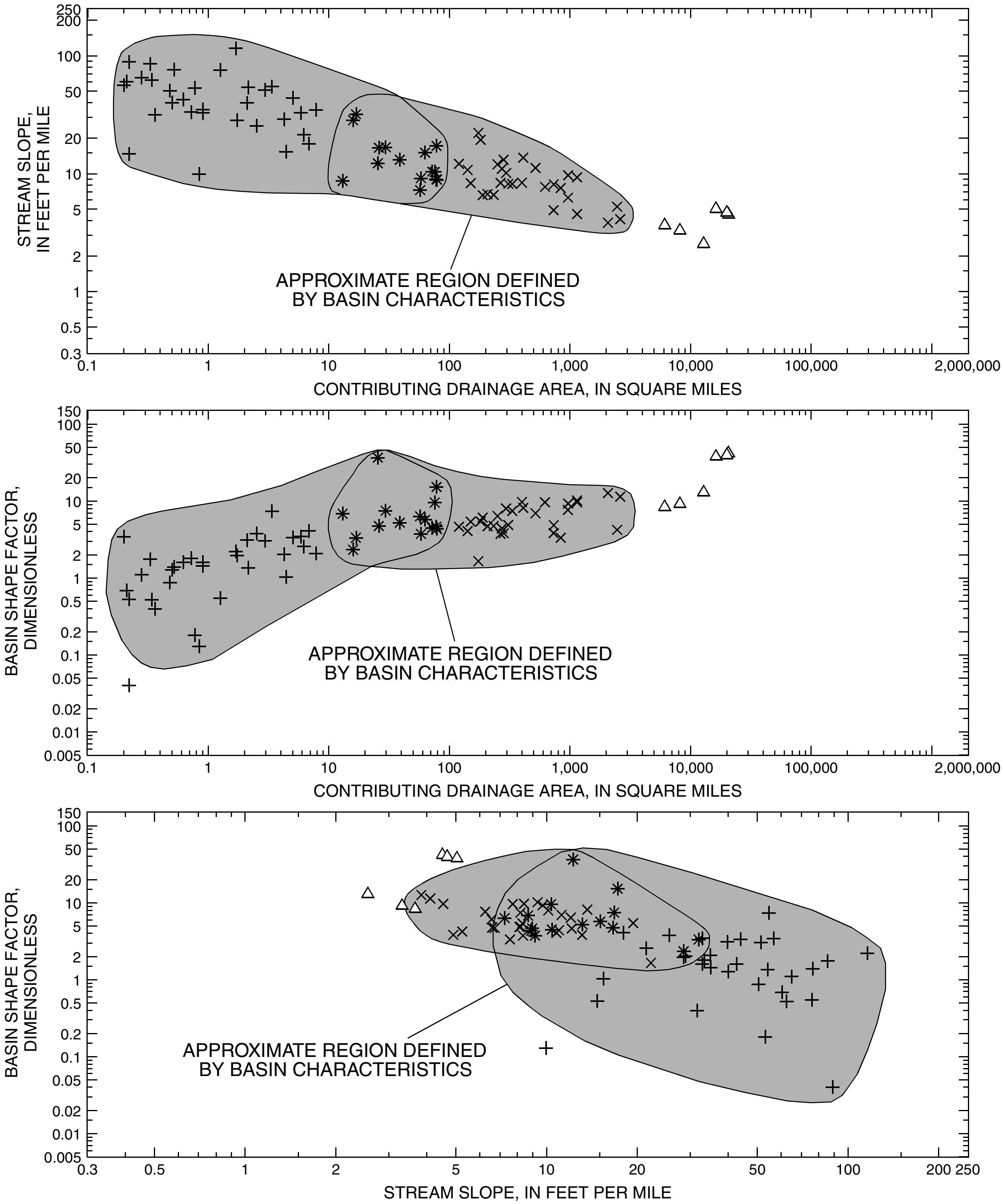


Explanation

● **Basin characteristic for station included in regression analysis**

△ **Basin characteristic for station not included in regression analysis**

Figure 9. Relation between basin characteristics for region 6.



Explanation

- + **Basin characteristic for station included in regression analysis for contributing drainage area less than 32 square miles—**✱ symbol represents station included in both sets of equations (table 2).
- × **Basin characteristic for station included in regression analysis for contributing drainage area greater than 32 square miles—**✱ symbol represents station included in both sets of equations (table 2).
- △ **Basin characteristic for station not included in regression analysis**

Figure 10. Relation between basin characteristics for region 7.

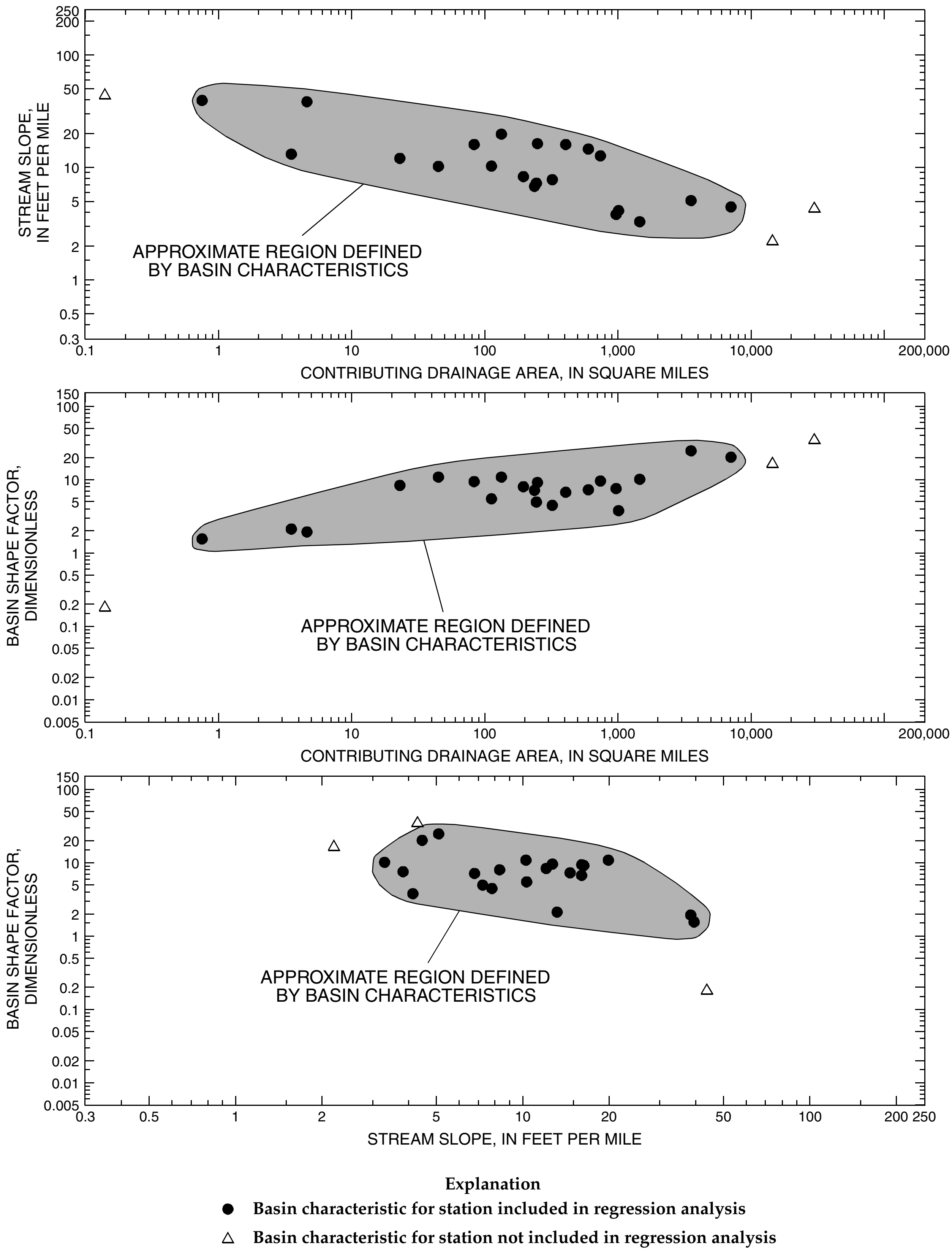
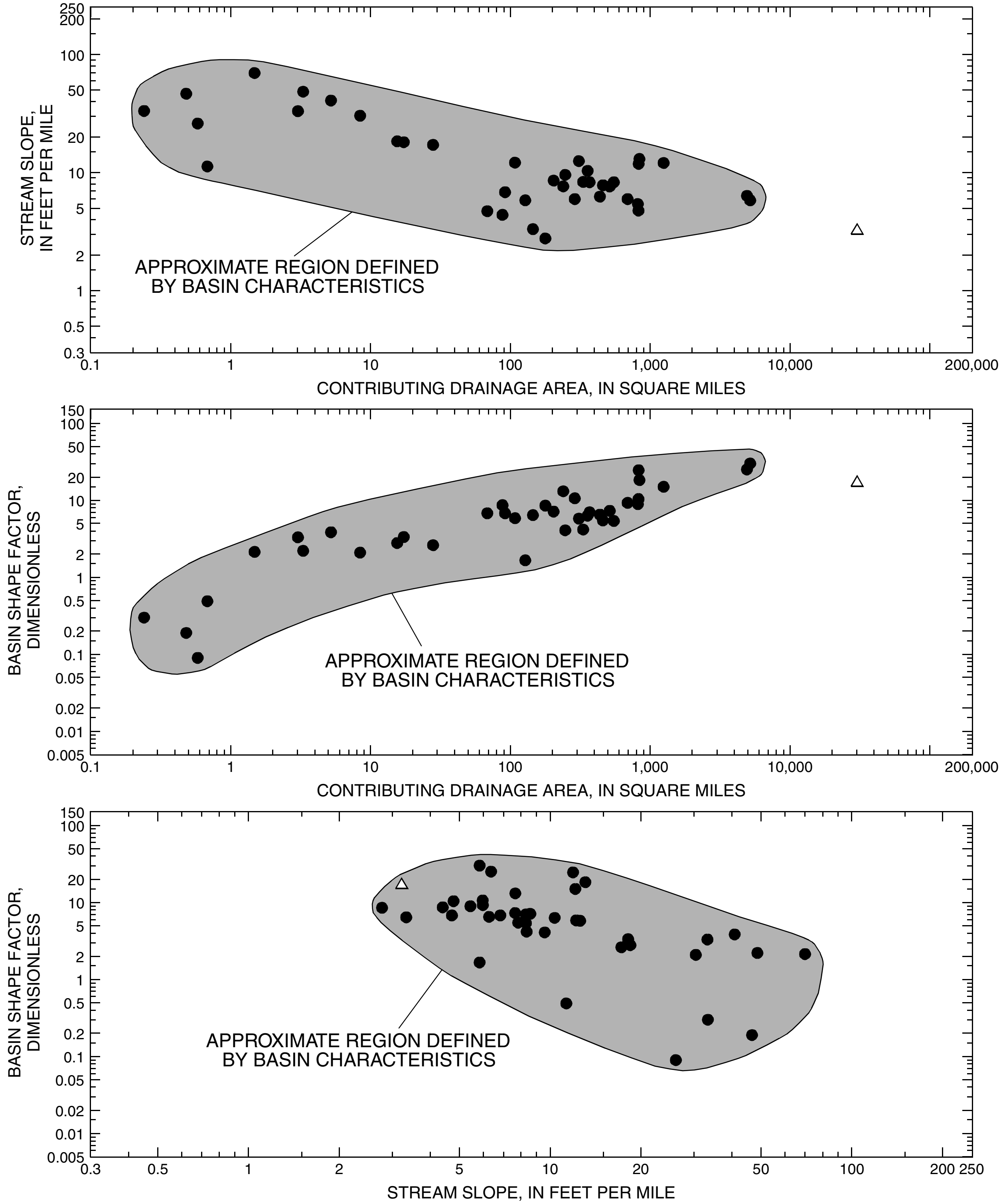


Figure 11. Relation between basin characteristics for region 8.

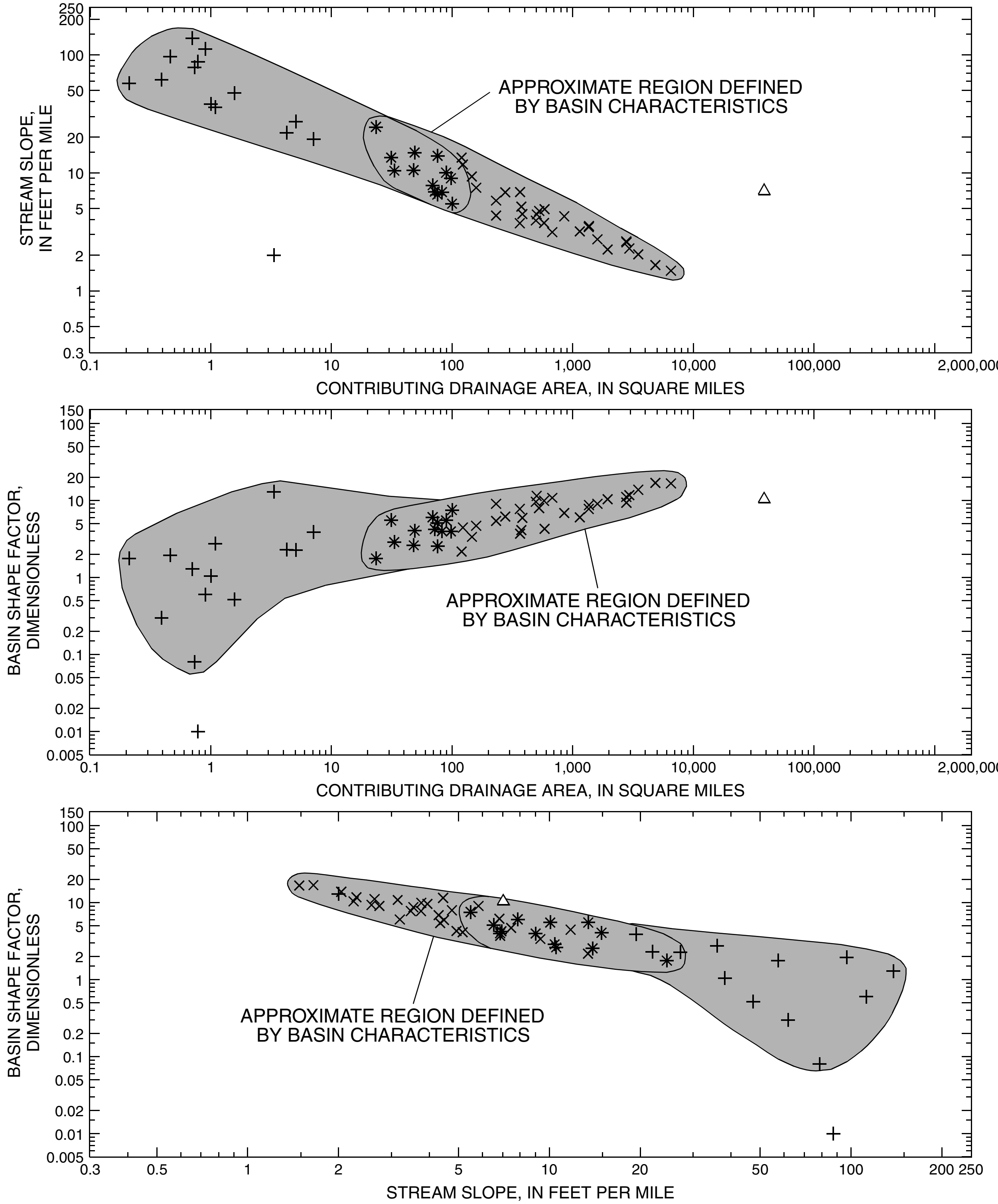


Explanation

● **Basin characteristic for station included in regression analysis**

△ **Basin characteristic for station not included in regression analysis**

Figure 12. Relation between basin characteristics for region 9.



Explanation

+ **Basin characteristic for station included in regression analysis for contributing drainage area less than 32 square miles—**✳ symbol represents station included in both sets of equations (table 2).

× **Basin characteristic for station included in regression analysis for contributing drainage area greater than 32 square miles—**✳ symbol represents station included in both sets of equations (table 2).

△ **Basin characteristic for station not included in regression analysis**

Figure 13. Relation between basin characteristics for region 10.

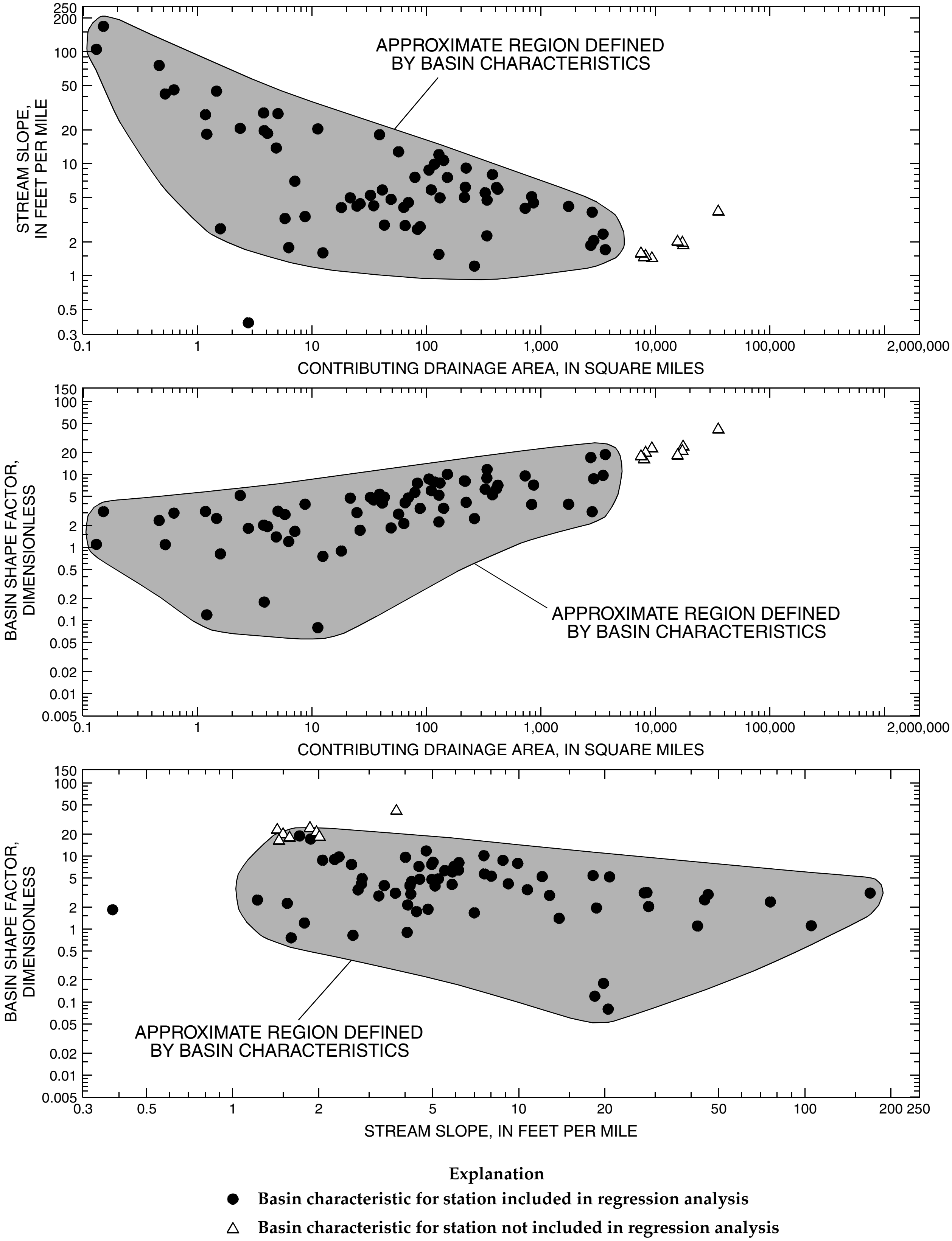


Figure 14. Relation between basin characteristics for region 11.

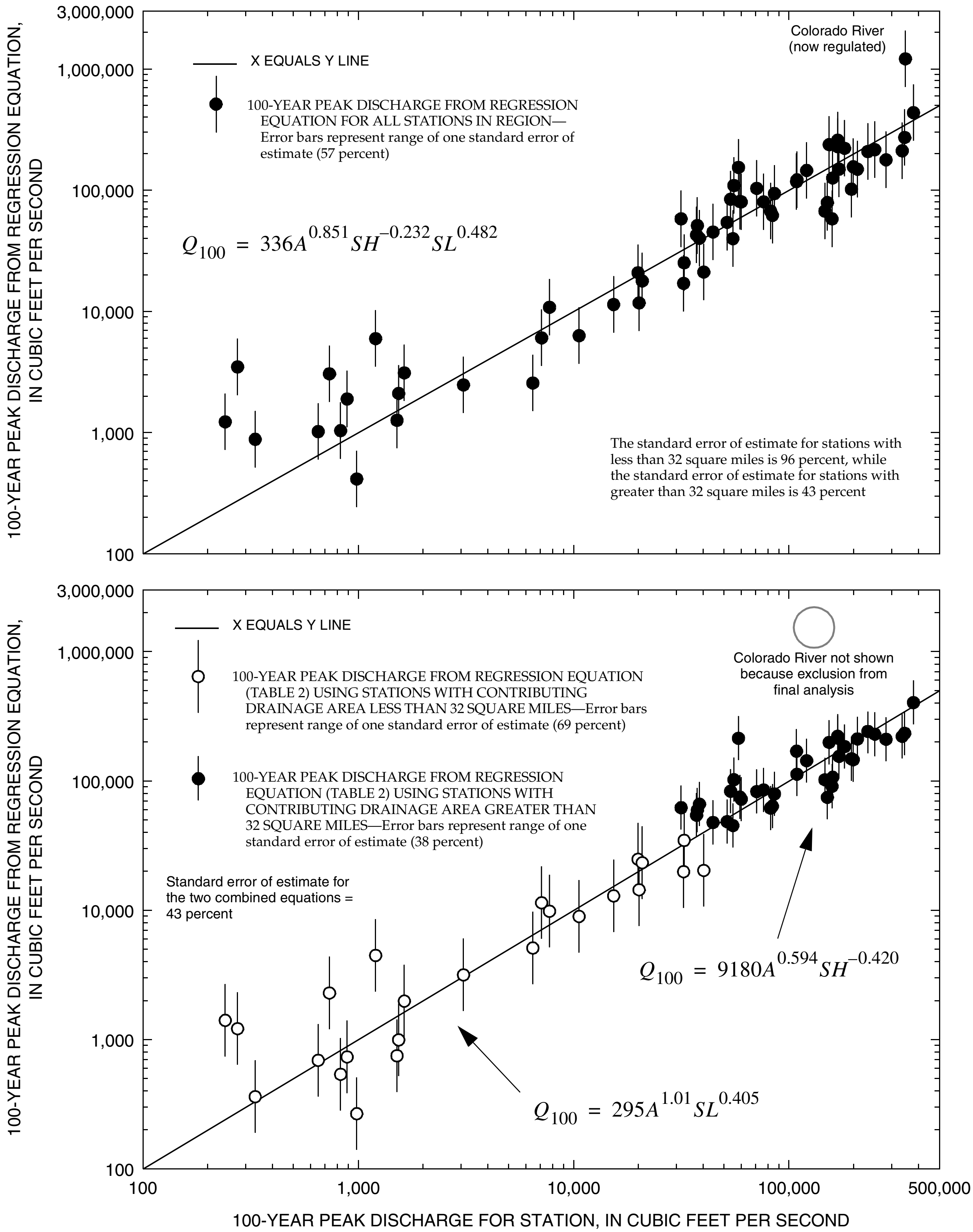


Figure 15. Comparison of weighted least-squares regression analyses for region 5.

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

[USGS, U.S. Geological Survey; yrs, years; ft^3/s, cubic feet per second; yr, year; LPIII, log Pearson Type III; hr, hour; in., inches; mi^2, trib., tributary; NONE, either no high-outlier threshold available because of absence of historical streamflow data or high-outlier threshold is zero or no low-outlier threshold used; WTD, weighted skew coefficient used in peak-streamflow frequency analysis; EQN, low-outlier generalized or weighted skew not used; SH, State Highway; VISUAL, low-outlier threshold other than that provided by regression equation

Site no. (pl. 1)	USGS station no.	USGS station name	Hydrologic region (pl. 1)	Latitude	Longitude	Available systematic record (yrs)[1]	Historical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier threshold (ft^3/s)	No. of high outliers
1	07153500	Dry Cimarron River near Guy, New Mexico	n/a	36°59'24"	103°25'12"	43	--	43	--	--
2	07154400	Carrizozo Creek near Kenton, Oklahoma	n/a	36°52'48"	103°01'12"	41	--	41	--	--
3	07154500	Cimarron River near Kenton, Oklahoma	n/a	36°55'37"	102°57'32"	43	--	43	--	--
4	07154650	Tesesquite Creek near Kenton, Oklahoma	n/a	36°53'53"	102°54'04"	21	--	21	--	--
5	07155000	Cimarron River above Ute Creek near Boise City, Oklahoma	n/a	36°55'12"	102°36'00"	14	--	14	--	--
6	07155100	Cold Springs Creek near Wheeless, Oklahoma	n/a	36°46'19"	102°48'14"	18	--	18	--	--
7	07157960	Buffalo Creek near Lovedale, Oklahoma	n/a	36°46'08"	99°21'58"	28	--	28	--	--
8	07225000	Pajarito Creek at Newkirk, New Mexico	n/a	35°04'12"	104°15'00"	40	--	40	--	--
9	07225500	Ute Creek near Gladstone, New Mexico	n/a	36°18'00"	103°55'48"	17	--	17	--	--
10	07226300	Carrizo Creek near Roy, New Mexico	n/a	36°03'00"	103°57'36"	38	--	38	--	--
11	07226500	Ute Creek near Logan, New Mexico	n/a	35°26'24"	103°31'48"	53	--	53	--	--
12	07227000	Canadian River at Logan, New Mexico	n/a	35°21'36"	103°25'12"	18	--	18	--	--
13	07227050	Plaza Largo Creek trib. near Ragland, New Mexico	n/a	34°49'48"	103°45'00"	41	--	41	--	--
14	07227100	Revuelto Creek near Logan, New Mexico	n/a	35°20'24"	103°23'24"	17	--	17	--	--
15	07227200	Tramperos Creek near Stead, New Mexico	n/a	36°04'12"	103°12'00"	27	--	27	--	--
16	07227295	Sandy Arroyo trib. near Clayton, New Mexico	n/a	36°23'24"	103°19'12"	40	--	40	--	--
17	07227460	East Fork Cheyenne Creek trib. near Channing, Texas	1	35°40'35"	102°16'55"	10	0	10	NONE	0
18	07227470	Canadian River at Tascosa, Texas	1	35°31'08"	102°15'35"	9	0	9	NONE	0
19	07227480	Tecovas Creek trib. near Bushland, Texas	1	35°15'55"	102°00'20"	8	0	8	NONE	0
20	07227500	Canadian River near Amarillo, Texas	1	35°28'13"	101°52'45"	58	0	58	NONE	0
21	07227920	Dixon Creek near Borger, Texas	1	35°39'53"	101°21'02"	15	0	15	NONE	0
22	07228000	Canadian River near Canadian, Texas	1	35°56'06"	100°22'13"	26	0	26	NONE	0
23	07232500	Beaver River near Guymon, Oklahoma	n/a	36°43'23"	101°29'31"	50	--	50	--	--
24	07232650	Aqua Frio Creek near Felt, Oklahoma	n/a	36°33'22"	102°47'10"	12	--	12	--	--
25	07233000	Coldwater Creek near Hardesty, Oklahoma	n/a	36°38'38"	101°12'36"	26	--	26	--	--
26	07233500	Palo Duro Creek near Spearman, Texas	1	36°12'08"	101°18'20"	35	44	39	26,100	2
27	07234150	White Woman Creek trib. near Darrouzett, Texas	1	36°24'00"	100°16'30"	9	0	9	NONE	0
28	07234290	Clear Creek trib. near Catesby, Oklahoma	n/a	36°29'31"	99°57'22"	19	--	19	--	--
29	07235000	Wolf Creek at Lipscomb, Texas	1	36°14'19"	100°16'31"	37	0	37	NONE	0
30	07235700	Little Wolf Creek trib. near Gage, Oklahoma	n/a	36°14'28"	99°46'30"	11	--	11	--	--
31	07237750	Cottonwood Creek near Vici, Oklahoma	n/a	36°08'46"	99°12'00"	21	--	21	--	--
32	07237800	Bent Creek near Seiling, Oklahoma	n/a	36°11'28"	99°00'36"	17	--	17	--	--
33	07295500	Tierra Blanca Creek above Buffalo Lake near Umbarger, Texas	1	34°50'55"	102°10'32"	21	36	27	11,300	1
34	07297500	Prairie Dog Town Fork Red River near Canyon, Texas	1	35°00'38"	101°53'29"	15	0	15	NONE	0
35	07297910	Prairie Dog Town Fork Red River near Wayside, Texas	1	34°50'15"	101°24'49"	26	0	26	NONE	0
36	07298000	North Tule Draw at Reservoir near Tulia, Texas	1	34°33'34"	101°42'33"	31	0	31	NONE	0

Footnotes at end of table.

of annual peak-streamflow data from natural basins within and near Texas

square miles; mi, miles; ft/mi, feet per mile; n/a, not applicable, station is outside of Texas; --, data not available, station outside of Texas; that provided by Interagency Advisory Committee on Water Data (1982) guidelines if historical record and number of high outliers equal threshold estimated from regression equation (Asquith and others, 1995); STA, station skew used in peak-streamflow frequency analysis—used in peak-streamflow frequency analysis—LPIII frequency distribution could not be fitted adequately to data]

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s)						Skew calculation option	Station skew	Final skew for LPIII distribution	Low-outlier threshold source	Low-outlier threshold (ft^3/s)	2-yr 24-hr precipitation (in.)	Mean annual precipitation (in.)	Contributing drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimensionless)	Stream slope (ft/mi)
	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr											
1	2,870	6,650	10,700	18,300	26,400	37,000	--	--	--	--	--	2.40	16.0	545	54.00	5.35	50.00
2	1,760	4,680	7,680	12,900	17,800	23,800	--	--	--	--	--	2.40	15.4	111	34.20	10.54	38.00
3	5,140	11,500	18,000	29,800	41,800	57,200	--	--	--	--	--	2.40	14.0	1,038	104.00	10.42	26.20
4	1,730	4,130	6,280	9,550	12,300	15,400	--	--	--	--	--	2.40	15.5	25.40	11.40	5.12	36.50
5	6,200	12,700	18,300	26,800	34,300	42,600	--	--	--	--	--	2.20	16.5	1,879	138.00	10.14	21.00
6	87	406	921	2,230	3,960	6,680	--	--	--	--	--	2.40	15.8	11	8.10	5.96	29.10
7	1,100	3,910	7,370	14,100	21,300	30,500	--	--	--	--	--	2.90	23.0	408	38.70	3.67	12.76
8	958	1,750	2,400	3,390	4,240	5,190	--	--	--	--	--	1.98	14.1	55	16.00	4.65	41.00
9	6,160	9,280	11,500	14,500	16,900	19,400	--	--	--	--	--	2.10	15.6	256	33.50	4.38	44.00
10	408	682	907	1,250	1,550	1,880	--	--	--	--	--	2.14	14.5	68	19.10	5.36	34.00
11	5,900	13,000	19,800	31,200	42,100	55,300	--	--	--	--	--	2.21	15.0	2,060	120.70	7.07	25.70
12	42,400	87,600	128,000	191,000	247,000	312,000	--	--	--	--	--	2.22	16.0	10,031	267.50	7.13	27.00
13	177	333	467	675	859	1,070	--	--	--	--	--	2.40	16.0	.36	1.15	3.67	360.00
14	5,980	11,000	15,400	22,600	29,200	37,100	--	--	--	--	--	2.22	15.0	786	63.10	5.07	13.20
15	1,050	2,910	4,960	8,730	12,600	17,500	--	--	--	--	--	2.40	16.0	556	40.00	2.88	25.00
16	44	112	181	304	425	575	--	--	--	--	--	2.37	16.0	1.25	2.67	5.70	53.00
17	80	487	1,250	3,420	6,550	11,800	WTD	0.012	-0.002	EQN	NONE	2.60	17.0	1.60	.42	.11	132.02
18	18,700	23,800	27,000	30,700	33,400	36,000	WTD	-.533	-.100	EQN	NONE	2.20	10.0	14,713	373.65	9.49	20.66
19	10	30	52	96	144	207	WTD	.955	.145	EQN	NONE	2.69	18.5	1.27	.95	.71	70.75
20	23,100	42,200	57,800	80,700	100,000	121,000	WTD	-.034	-.020	EQN	5,008	2.30	11.0	15,376	404.71	10.65	19.50
21	949	2,510	4,090	6,810	9,390	12,500	WTD	-.679	-.163	EQN	NONE	2.76	19.0	134	27.30	5.56	23.55
22	29,300	58,800	84,400	124,000	159,000	198,000	WTD	-.064	-.025	EQN	6,496	2.40	14.0	18,178	515.93	14.64	16.65
23	7,130	19,200	30,700	48,500	64,000	81,200	--	--	--	--	--	2.40	17.0	1,175	203.00	35.07	14.80
24	147	663	1,430	3,220	5,400	8,520	--	--	--	--	--	2.40	15.6	31	15.40	7.65	23.00
25	2,720	7,310	12,100	20,600	28,900	39,100	--	--	--	--	--	2.60	20.0	767	156.00	31.73	11.40
26	2,440	6,470	11,000	19,600	28,700	40,700	WTD	.380	.174	EQN	381	2.64	17.5	440	78.43	13.98	10.17
27	75	207	354	626	906	1,260	WTD	.072	.014	EQN	NONE	2.86	21.0	4.03	2.16	1.16	7.59
28	274	871	1,570	2,910	4,310	6,120	--	--	--	--	--	2.90	21.0	8.57	4.10	1.96	34.70
29	1,350	5,170	10,200	20,500	31,800	47,000	WTD	-.430	-.179	EQN	63	2.80	19.5	475	55.36	6.45	10.31
30	618	1,840	3,070	5,200	7,050	9,170	--	--	--	--	--	3.00	21.6	17.80	8.00	3.60	23.00
31	488	1,300	2,070	3,350	4,500	5,760	--	--	--	--	--	3.20	24.6	11.80	7.20	4.39	38.30
32	2,870	6,000	8,710	12,800	16,400	20,400	--	--	--	--	--	3.20	24.5	139	20.00	2.88	16.50
33	1,000	3,010	5,240	9,290	13,300	18,300	WTD	-.433	-.186	EQN	74	2.53	15.0	538	122.41	27.85	9.73
34	1,050	2,450	3,800	6,060	8,170	10,700	WTD	-.164	-.044	EQN	NONE	2.60	16.0	711	157.22	34.77	8.76
35	9,140	19,600	29,600	46,300	62,100	81,200	WTD	.406	.143	EQN	1,750	2.66	17.0	930	211.12	47.93	11.24
36	784	2,650	4,870	9,170	13,700	19,400	WTD	-.481	-.180	EQN	45	2.75	17.5	65	35.73	19.65	10.65

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft^3/s)	No. of high out-liers
37	07298150	Rock Creek trib. near Silverton, Texas	1	34°28'40"	101°25'50"	9	0	9	NONE	0
38	07298500	Prairie Dog Town Fork Red River near Brice, Texas	1	34°37'40"	100°56'25"	11	0	11	NONE	0
39	07299200	Prairie Dog Town Fork Red River near Lakeview, Texas	1	34°34'23"	100°44'43"	17	0	17	NONE	0
40	07299300	Little Red River near Turkey, Texas	1	34°32'27"	100°46'13"	14	0	14	NONE	0
41	07299500	Prairie Dog Town Fork Red River near Estelline, Texas	1	34°30'20"	100°26'10"	12	0	12	NONE	0
42	07299540	Prairie Dog Town Fork Red River near Childress, Texas	1	34°34'09"	100°11'37"	29	0	29	NONE	0
43	07299570	Red River near Quanah, Texas	3	34°24'47"	99°44'03"	23	0	23	NONE	0
44	07299575	North Groesbeck Creek trib. near Kirkland, Texas	3	34°24'00"	100°03'00"	9	0	9	NONE	0
45	07299670	Groesbeck Creek at SH 6 near Quanah, Texas	3	34°21'16"	99°44'24"	32	0	32	NONE	0
46	07299940	Oklahoma Draw trib. near Hedley, Texas	1	34°53'12"	100°37'18"	8	0	8	NONE	0
47	07300000	Salt Fork Red River near Wellington, Texas	1	34°57'27"	100°13'14"	15	30	21	146,000	1
48	07300150	Bear Creek near Vinson, Oklahoma	n/a	34°54'11"	99°58'52"	21	--	21	--	--
49	07300500	Salt Fork Red River at Mangum, Oklahoma	n/a	34°51'30"	99°30'30"	50	--	50	--	--
50	07301300	North Fork Red River near Shamrock, Texas	1	35°15'51"	100°14'29"	30	0	30	NONE	0
51	07301410	Sweetwater Creek near Kelton, Texas	1	35°28'23"	100°07'14"	31	0	31	NONE	0
52	07301455	Turkey Creek near Erick, Oklahoma	n/a	35°12'04"	99°47'56"	17	--	17	--	--
53	07301480	Short Creek near Sayre, Oklahoma	n/a	35°18'22"	99°39'14"	19	--	19	--	--
54	07301500	North Fork Red River near Carter, Oklahoma	n/a	35°10'05"	99°30'25"	43	--	43	--	--
55	07303400	Elm Fork of North Fork Red River near Carl, Oklahoma	n/a	35°00'43"	99°01'59"	20	--	20	--	--
56	07303450	Deer Creek near Plainview, Oklahoma	n/a	35°02'49"	99°46'08"	12	--	12	--	--
57	07303500	Elm Fork of North Fork Red River near Magnum, Oklahoma	n/a	34°55'37"	99°30'00"	29	--	29	--	--
58	07307500	Quitaque Creek near Quitaque, Texas	1	34°14'24"	101°07'03"	14	0	14	NONE	0
59	07307720	Cottonwood Creek trib. near Afton, Texas	3	33°44'20"	100°50'30"	8	0	8	NONE	0
60	07307800	Pease River near Childress, Texas	3	34°13'39"	100°04'24"	29	0	29	NONE	0
61	07308000	Pease River near Crowell, Texas	3	34°05'45"	99°43'47"	23	0	23	NONE	0
62	07308200	Pease River near Vernon, Texas	3	34°10'44"	99°16'40"	32	0	32	NONE	0
63	07308220	Plum Creek near Vernon, Texas	3	34°06'38"	99°13'22"	8	0	8	1,269	0
64	07308500	Red River near Burkburnett, Texas	3	34°06'36"	98°31'53"	34	103	58	103,000	1
65	07309480	Canyon Creek near Medicine Park, Oklahoma	n/a	34°49'55"	98°32'10"	11	--	11	--	--
66	07311200	Blue Beaver Creek near Cache, Oklahoma	n/a	34°37'23"	98°33'47"	22	--	22	--	--
67	07311500	Deep Red Run near Randlett, Oklahoma	n/a	34°13'16"	98°27'11"	36	--	36	--	--
68	07311600	North Wichita River near Paducah, Texas	3	33°57'02"	100°03'52"	21	0	21	NONE	0
69	07311700	North Wichita River near Truscott, Texas	3	33°49'14"	99°47'10"	33	0	33	NONE	0
70	07311790	South Fork Wichita River at Ross Ranch near Benjamin, Texas	3	33°39'18"	100°00'49"	9	0	9	NONE	0
71	07311800	South Fork Wichita River near Benjamin, Texas	3	33°38'39"	99°48'02"	33	0	33	NONE	0
72	07311900	Wichita River near Seymour, Texas	3	33°42'01"	99°23'18"	19	0	19	NONE	0
73	07312140	Beaver Creek trib. near Crowell, Texas	3	33°58'54"	99°41'30"	9	0	9	NONE	0
74	07312200	Beaver Creek near Electra, Texas	3	33°54'21"	98°54'17"	19	0	19	10,738	0
75	07312850	Nine Mile Beaver Creek near Elgin, Oklahoma	n/a	34°46'41"	98°15'25"	21	--	21	--	--
76	07312950	Little Beaver Creek near Marlow, Oklahoma	n/a	34°40'55"	98°00'29"	12	--	12	--	--

Footnotes at end of table.

of annual peak-streamflow data from natural basins within and near Texas—Continued

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s)						Skew calculation option	Station skew	Final skew for LPIII distribution	Low-outlier threshold source	Low-outlier threshold (ft^3/s)	2-yr 24-hr precipitation (in.)	Mean annual precipitation (in.)	Contributing drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimensionless)	Stream slope (ft/mi)
	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr											
37	16	41	60	86	104	121	STA	-0.897	-0.897	EQN	1	2.86	20.0	2.20	2.18	2.16	16.06
38	22,600	36,500	47,000	61,500	73,200	85,600	WTD	-.192	.007	EQN	NONE	2.75	18.5	1,581	253.99	40.80	10.98
39	21,200	37,100	50,600	71,400	89,800	111,000	WTD	.836	.270	EQN	NONE	2.75	18.5	2,023	267.34	35.33	10.87
40	2,620	3,420	3,790	4,140	4,340	4,490	STA	-1.063	-1.063	EQN	NONE	2.97	20.0	139	36.29	9.47	34.35
41	22,100	39,500	53,500	73,600	90,400	109,000	WTD	-.567	-.043	EQN	NONE	2.75	19.5	2,524	289.14	33.12	10.67
42	16,000	32,200	47,300	72,000	95,100	123,000	WTD	.358	.202	EQN	3,482	2.80	19.5	2,956	308.17	32.13	10.38
43	19,900	35,900	49,200	69,300	86,800	107,000	WTD	.074	.129	EQN	NONE	2.84	20.0	3,552	346.44	33.79	9.87
44	22	50	77	125	171	228	WTD	.103	.122	EQN	2	3.24	21.0	.16	.19	.23	78.97
45	1,790	4,710	8,000	14,300	21,100	30,100	WTD	.321	.224	EQN	175	3.27	22.0	303	42.06	5.84	10.22
46	72	113	142	182	213	245	WTD	-.745	-.079	EQN	NONE	2.98	21.0	1.15	.67	.39	48.97
47	17,200	41,300	66,100	111,000	155,000	211,000	WTD	.265	.141	EQN	2,604	2.92	21.0	1,013	87.69	7.59	16.72
48	811	1,780	2,550	3,660	4,480	5,360	--	--	--	--	--	3.20	23.0	7.24	5.00	3.45	41.90
49	14,400	27,000	37,100	51,800	64,000	77,300	--	--	--	--	--	3.00	22.5	1,357	132.00	12.84	13.80
50	4,420	8,040	10,900	15,100	18,600	22,400	WTD	-.175	-.071	EQN	846	2.86	20.0	703	114.04	18.50	9.61
51	537	1,060	1,500	2,160	2,720	3,340	WTD	-.298	-.118	EQN	76	2.92	21.5	267	45.23	7.66	15.89
52	1,140	2,480	3,530	5,100	6,300	7,420	--	--	--	--	--	3.10	23.8	19.80	7.00	2.47	17.70
53	485	862	1,150	1,560	1,890	2,240	--	--	--	--	--	3.20	23.8	9.12	6.70	4.92	31.10
54	7,400	13,600	18,900	26,700	33,300	40,400	--	--	--	--	--	2.90	23.0	1,938	110.00	6.24	12.50
55	5,310	9,260	12,300	16,400	19,800	23,300	--	--	--	--	--	3.00	23.2	416	53.00	6.75	19.40
56	884	1,720	2,420	3,440	4,290	5,230	--	--	--	--	--	3.20	23.0	27.80	10.20	3.74	34.00
57	7,800	16,600	24,200	36,000	46,100	57,500	--	--	--	--	--	3.10	23.2	838	79.20	7.49	14.10
58	1,060	2,140	3,150	4,830	6,410	8,310	WTD	.916	.240	EQN	184	2.95	19.5	35	24.57	17.25	25.10
59	391	757	1,070	1,530	1,930	2,380	WTD	-.558	-.046	EQN	NONE	3.07	21.0	1.09	.75	.52	65.62
60	7,040	11,600	14,900	19,100	22,200	25,400	STA	-.299	-.299	EQN	992	3.05	20.0	2,195	108.40	5.35	16.22
61	38,400	64,600	84,200	111,000	133,000	155,000	WTD	-.729	-.106	EQN	5,557	3.10	20.0	2,478	140.98	8.02	13.66
62	10,200	19,000	26,500	37,900	47,900	59,100	WTD	-.105	.070	EQN	1,786	3.13	20.0	2,929	179.28	10.97	11.60
63	349	630	874	1,260	1,600	2,010	WTD	.767	.292	EQN	19	3.52	25.0	4.99	3.49	2.44	14.10
64	28,500	49,200	65,300	88,400	108,000	128,000	WTD	-.103	-.007	EQN	6,862	2.90	21.0	14,634	465.19	14.79	8.36
65	1,000	1,690	2,200	2,890	3,430	4,000	--	--	--	--	--	3.60	31.0	3.35	3.00	2.69	59.10
66	1,050	2,470	3,780	5,860	7,720	9,850	--	--	--	--	--	3.65	29.6	24.60	16.20	10.67	36.40
67	5,770	12,500	18,400	27,400	35,200	43,800	--	--	--	--	--	3.60	28.1	617	64.20	6.68	8.51
68	2,560	5,340	7,470	10,300	12,500	14,700	STA	-.568	-.568	EQN	NONE	3.21	21.5	540	61.14	6.92	14.49
69	4,640	9,330	13,800	21,300	28,600	37,400	WTD	.650	.330	EQN	1,105	3.26	22.0	937	95.90	9.82	11.12
70	786	1,640	2,390	3,580	4,650	5,870	WTD	-.711	-.033	EQN	NONE	3.22	21.5	499	75.60	11.45	11.76
71	2,980	5,770	8,550	13,500	18,600	25,100	STA	.680	.680	EQN	NONE	3.25	22.0	584	103.20	18.24	9.63
72	8,970	14,200	18,200	23,700	28,200	33,000	WTD	-.127	.085	EQN	NONE	3.31	22.5	1,874	155.18	12.85	7.57
73	153	357	557	898	1,230	1,620	WTD	-.538	.035	EQN	NONE	3.41	24.0	3.43	1.44	.60	18.23
74	2,890	4,660	6,090	8,230	10,100	12,200	WTD	.822	.364	EQN	NONE	3.52	25.0	652	115.17	20.34	5.27
75	922	1,880	2,660	3,780	4,710	5,760	--	--	--	--	--	3.60	29.9	6.29	4.20	2.80	42.20
76	883	2,050	3,150	4,890	6,440	8,230	--	--	--	--	--	3.60	32.7	35.40	8.10	1.85	23.80

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft^3/s)	No. of high out-liers
77	07313000	Little Beaver Creek near Duncan, Oklahoma	n/a	34°29'35"	98°06'43"	15	--	15	--	--
78	07314200	North Fork Little Wichita River trib. near Archer City, Texas	3	33°39'50"	98°43'30"	9	0	9	NONE	0
79	07314500	Little Wichita River near Archer City, Texas	3	33°39'45"	98°36'46"	15	0	15	NONE	0
80	07315200	East Fork Little Wichita River near Henrietta, Texas	3	33°48'46"	98°05'05"	30	74	48	15,500	3
81	07315680	Cottonwood Creek trib. near Loco, Oklahoma	n/a	34°18'40"	97°34'01"	20	--	20	--	--
82	07315700	Mud Creek near Courtney, Oklahoma	n/a	34°00'22"	97°34'01"	27	--	27	--	--
83	07315880	Demijohn Creek near Wilson, Oklahoma	n/a	34°08'10"	97°25'19"	10	--	10	--	--
84	07316140	Brier Creek near Powell, Oklahoma	n/a	33°59'53"	96°49'34"	20	--	20	--	--
85	07316200	Mineral Creek near Sadler, Texas	7	33°42'08"	96°50'51"	8	0	8	NONE	0
86	07317500	Sandstone Creek Subwatershed 16A near Cheyenne, Oklahoma	n/a	35°28'08"	99°40'08"	21	--	21	--	--
87	07318500	Sandstone Creek Subwatershed 14 near Cheyenne, Oklahoma	n/a	35°28'41"	99°36'11"	13	--	13	--	--
88	07320000	Sandstone Subwatershed 10A near Elk City, Oklahoma	n/a	35°28'01"	99°33'22"	20	--	20	--	--
89	07321500	Sandstone Subwatershed 3 near Elk City, Oklahoma	n/a	35°30'40"	99°30'40"	14	--	14	--	--
90	07324000	Sandstone Subwatershed 1 near Cheyenne, Oklahoma	n/a	35°34'01"	99°30'11"	18	--	18	--	--
91	07332070	Rock Creek near Achille, Oklahoma	n/a	33°48'36"	96°22'37"	10	--	10	--	--
92	07332400	Blue Creek at Milburn, Oklahoma	n/a	34°15'04"	96°33'04"	21	--	21	--	--
93	07332500	Blue River near Blue, Oklahoma	n/a	34°00'00"	96°14'24"	52	--	52	--	--
94	07332600	Bois d'Arc Creek near Randolph, Texas	7	33°28'32"	96°12'52"	23	64	38	19,200	1
95	07332602	Cooper Creek near Bonham, Texas	7	33°32'24"	96°12'03"	9	0	9	NONE	0
96	07333500	Chickasaw Creek near Stringtown, Oklahoma	n/a	34°27'36"	96°01'48"	19	--	19	--	--
97	07335310	Rock Creek near Boswell, Oklahoma	n/a	33°57'58"	95°52'01"	19	--	19	--	--
98	07335320	Bokchito Creek near Soper, Oklahoma	n/a	34°02'20"	95°40'08"	11	--	11	--	--
99	07335500	Red River at Arthur City, Texas	10	33°52'30"	95°30'06"	14	0	14	NONE	0
100	07336500	Kiamichi River near Belzoni, Oklahoma	n/a	34°12'00"	95°28'48"	48	--	48	--	--
101	07336520	Frazier Creek near Oleta, Oklahoma	n/a	34°11'49"	95°21'00"	21	--	21	--	--
102	07336710	Rock Creek near Sawyer, Oklahoma	n/a	34°01'52"	95°21'40"	11	--	11	--	--
103	07336750	Little Pine Creek near Kanawha, Texas	10	33°50'26"	95°15'55"	12	33	20	30,200	1
104	07336780	Perry Creek near Idabel, Oklahoma	n/a	33°53'46"	94°53'17"	10	--	10	--	--
105	07336800	Pecan Bayou near Clarksville, Texas	10	33°41'07"	94°59'41"	16	0	16	NONE	0
106	07336940	McKinney Bayou near Leary, Texas	10	33°31'33"	94°11'32"	8	0	8	NONE	0
107	07339800	Pepper Creek near DeQueen, Arkansas	n/a	34°03'00"	94°18'00"	26	--	26	--	--
108	07340200	West Flat Creek near Foreman, Arkansas	n/a	33°45'00"	94°23'24"	22	--	22	--	--
109	07340530	Mill Slough trib. near Locksburg, Arkansas	n/a	33°58'12"	94°11'24"	22	--	22	--	--
110	07341100	Rock Creek near Dierks, Arkansas	n/a	34°06'36"	94°02'24"	24	--	24	--	--
111	07341700	Caney Creek near Hope, Arkansas	n/a	33°41'24"	93°38'24"	20	--	20	--	--
112	07342350	McKinney Bayou near Garland, Arkansas	n/a	33°24'46"	93°48'27"	41	--	41	--	--
113	07342450	Nelson Branch near Leonard, Texas	7	33°21'20"	96°13'25"	9	0	9	NONE	0
114	07342470	South Sulphur River near Commerce, Texas	7	33°13'11"	95°51'45"	12	21	16	27,100	1
115	07342500	South Sulphur River near Cooper, Texas	10	33°21'20"	95°35'39"	51	0	51	NONE	0
116	07343000	North Sulphur River near Cooper, Texas	10	33°28'29"	95°35'15"	44	79	57	90,600	1

Footnotes at end of table.

of annual peak-streamflow data from natural basins within and near Texas—Continued

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s)						Skew calcu-lation option	Station skew	Final skew for LPIII distri-bution	Low-outlier thresh-old source	Low-outlier thresh-old (ft^3/s)	2-yr 24-hr precip-itation (in.)	Mean annual precip-itation (in.)	Contrib-uting drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimen-sionless)	Stream slope (ft/mi)
	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr											
77	11,500	29,900	47,100	73,900	97,100	123,000	--	--	--	--	--	3.70	32.5	158	23.00	3.35	12.10
78	79	135	180	247	304	368	WTD	0.228	0.205	EQN	NONE	3.64	27.0	.10	.14	.20	23.43
79	3,150	6,380	9,500	14,800	20,000	26,500	WTD	.897	.359	EQN	NONE	3.62	27.5	481	78.11	12.68	5.42
80	1,510	4,420	8,110	16,100	25,500	39,100	WTD	.557	.392	EQN	312	3.73	28.0	178	31.32	5.51	8.90
81	534	1,100	1,580	2,220	2,760	3,300	--	--	--	--	--	3.80	33.4	1.74	2.00	2.30	50.60
82	4,410	9,450	13,800	20,400	26,100	32,300	--	--	--	--	--	3.80	33.0	572	45.00	3.54	6.50
83	1,900	2,170	2,320	2,480	2,590	2,690	--	--	--	--	--	3.80	34.8	5.74	3.20	1.78	43.40
84	3,190	4,820	5,970	7,500	8,600	9,640	--	--	--	--	--	3.90	35.5	12	6.40	3.41	13.60
85	1,910	2,170	2,320	2,490	2,600	2,710	WTD	.183	-.002	VISUAL	1,000	3.93	36.0	26	11.09	4.73	16.57
86	467	1,080	1,650	2,570	3,400	4,360	--	--	--	--	--	3.10	24.0	5.16	3.33	2.15	57.60
87	302	692	1,050	1,630	2,150	2,740	--	--	--	--	--	3.10	24.0	1.02	1.35	1.79	147.00
88	643	1,420	2,080	3,050	3,840	4,670	--	--	--	--	--	3.10	24.0	2.87	2.13	1.58	58.00
89	357	742	1,080	1,580	2,020	2,500	--	--	--	--	--	3.10	24.0	.62	1.35	2.94	94.10
90	1,050	2,440	3,740	5,840	7,740	9,930	--	--	--	--	--	3.10	24.0	5.33	3.80	2.71	60.70
91	416	693	890	1,150	1,350	1,550	--	--	--	--	--	4.00	40.0	.72	.90	1.13	35.60
92	9,470	16,500	21,700	28,700	34,200	39,800	--	--	--	--	--	4.00	39.5	203	43.70	9.41	12.80
93	9,280	16,900	22,700	30,600	36,800	43,400	--	--	--	--	--	4.00	39.5	476	112.00	26.35	5.99
94	9,000	11,800	13,400	15,400	16,800	18,200	WTD	-.212	-.187	VISUAL	6,000	4.03	39.0	72	17.97	4.49	10.41
95	2,530	2,950	3,180	3,440	3,620	3,790	WTD	-.292	-.186	VISUAL	1,000	4.05	39.0	6.21	3.99	2.56	21.39
96	7,150	11,600	14,800	18,900	22,000	25,100	--	--	--	--	--	4.00	44.5	32.70	10.60	3.44	24.20
97	254	436	568	744	881	1,020	--	--	--	--	--	4.05	44.8	.94	1.30	1.80	22.60
98	3,000	4,840	6,370	7,980	9,400	10,800	--	--	--	--	--	4.10	45.4	16.60	16.60	16.60	4.60
99	89,100	172,000	242,000	348,000	441,000	544,000	WTD	.476	-.018	EQN	NONE	3.65	28.0	38,595	633.10	10.39	7.03
100	34,300	48,600	57,100	68,900	76,900	84,700	--	--	--	--	--	4.00	49.0	1,423	121.00	10.29	3.08
101	2,540	4,050	5,200	6,590	7,600	8,760	--	--	--	--	--	4.10	49.0	19.40	7.40	2.82	57.60
102	809	1,170	1,410	1,690	1,910	2,110	--	--	--	--	--	4.10	46.5	3.39	2.60	1.99	34.40
103	5,950	10,100	13,400	18,300	22,400	26,900	WTD	.572	.139	EQN	1,218	4.18	45.5	75.40	19.60	5.10	6.53
104	2,030	2,940	3,530	4,280	4,820	5,330	--	--	--	--	--	4.20	50.0	7.53	3.20	1.36	31.60
105	4,190	7,910	10,900	15,400	19,000	23,100	WTD	-.229	-.125	EQN	706	4.22	46.0	100	27.52	7.57	5.48
106	97	154	194	249	293	338	WTD	-.093	-.044	EQN	NONE	4.40	47.0	3.33	6.56	12.92	2.00
107	1,030	2,430	3,640	5,470	7,030	8,690	--	--	--	--	--	4.40	51.0	6.41	6.40	6.39	47.70
108	1,590	2,660	3,390	4,310	4,980	5,620	--	--	--	--	--	4.40	49.0	10.60	6.78	4.34	12.00
109	189	346	466	625	752	879	--	--	--	--	--	4.40	50.0	.64	1.97	6.06	60.50
110	2,090	4,520	6,510	9,320	11,600	14,000	--	--	--	--	--	4.30	52.0	9.48	6.40	4.32	50.00
111	2,110	3,600	4,770	6,500	7,980	9,570	--	--	--	--	--	4.40	51.0	12.90	5.88	2.68	17.50
112	2,830	4,400	5,470	6,820	7,800	8,760	--	--	--	--	--	4.45	47.0	169	46.50	12.79	1.80
113	127	229	309	425	520	623	WTD	.142	-.090	VISUAL	30	4.07	40.0	.22	.34	.53	14.71
114	11,100	13,800	15,600	17,800	19,400	21,000	WTD	2.217	.145	VISUAL	5,000	4.12	41.0	189	33.95	6.10	6.57
115	13,100	21,900	28,300	37,000	43,800	50,900	WTD	-.216	-.174	EQN	2,879	4.14	41.0	527	64.94	8.00	4.75
116	35,700	48,800	56,900	66,400	73,100	79,500	WTD	-.421	-.303	EQN	7,762	4.12	42.0	276	41.32	6.18	6.83

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft^3/s)	No. of high out-liers
117	07343200	Sulphur River near Talco, Texas	10	33°23'10"	95°07'56"	37	86	56	58,600	2
118	07343300	Cuthand Creek near Bogata, Texas	10	33°32'51"	95°10'22"	11	24	16	20,400	1
119	07343350	Dial Branch near Bagwell, Texas	10	33°37'46"	95°10'12"	9	0	9	NONE	0
120	07343500	White Oak Creek near Talco, Texas	10	33°19'20"	95°05'33"	44	0	44	NONE	0
121	07343800	White Oak Creek below Talco, Texas	10	33°18'00"	95°01'00"	13	81	37	83,100	1
122	07343900	Buck Creek near Cookville, Texas	10	33°11'10"	94°52'20"	9	0	9	NONE	0
123	07344000	Sulphur River near Darden, Texas	10	33°15'00"	94°37'00"	47	48	47	157,000	1
124	07344320	Mill Creek trib. near Fouke, Arkansas	n/a	33°18'00"	93°55'12"	23	--	23	--	--
125	07344450	Paw Paw Bayou near Greenwood, Louisiana	n/a	32°31'00"	93°58'20"	31	--	31	--	--
126	07344486	Brushy Creek at Scroggins, Texas	10	32°58'32"	95°11'03"	15	0	15	NONE	0
127	07344490	Dragoo Creek near Mount Pleasant, Texas	10	33°09'36"	95°01'51"	8	0	8	NONE	0
128	07344500	Big Cypress Creek near Pittsburg, Texas	10	33°01'15"	94°52'55"	27	75	44	58,500	1
129	07344600	Williamson Creek near Pittsburg, Texas	10	33°02'53"	94°52'37"	8	0	8	NONE	0
130	07345000	Boggy Creek near Daingerfield, Texas	10	33°02'10"	94°47'15"	34	78	50	28,900	1
131	07346000	Big Cypress Creek near Jefferson, Texas	10	32°44'58"	94°29'55"	45	105	68	37,900	2
132	07346010	Big Cypress Creek trib. near Jefferson, Texas	10	32°42'50"	94°25'52"	9	0	9	NONE	0
133	07346045	Black Cypress Bayou at Jefferson, Texas	10	32°46'40"	94°21'26"	25	0	25	NONE	0
134	07346050	Little Cypress Creek near Ore City, Texas	10	32°40'21"	94°45'03"	31	92	53	23,500	1
135	07346070	Little Cypress Creek near Jefferson, Texas	10	32°42'50"	94°20'44"	48	50	49	35,500	1
136	07346072	Taylor Branch near Smithland, Texas	10	32°47'20"	94°15'02"	9	0	9	NONE	0
137	07346140	Frazier Creek near Linden, Texas	10	33°03'14"	94°17'24"	27	0	27	NONE	0
138	07346450	Black Bayou at Rodessa, Louisiana	n/a	32°57'30"	93°59'40"	12	--	12	--	--
139	07346500	Black Bayou near Hosston, Louisiana	n/a	32°52'55"	93°53'55"	12	--	12	--	--
140	07346800	East Fork Kelley Bayou trib. at Kiblah, Arkansas	n/a	33°03'00"	93°54'00"	20	--	20	--	--
141	07347000	Kelly Bayou near Hosston, Louisiana	n/a	32°51'25"	93°52'20"	25	--	25	--	--
142	07351000	Boggy Bayou near Keithville, Louisiana	n/a	32°22'35"	93°49'20"	43	--	43	--	--
143	07351500	Cypress Bayou near Keithville, Louisiana	n/a	32°18'00"	93°49'40"	55	--	55	--	--
144	08016700	Bear Head Creek near Singer, Louisiana	n/a	30°35'35"	93°28'48"	15	--	15	--	--
145	08016800	Bear Head Creek near Starks, Louisiana	n/a	30°19'59"	93°37'44"	31	--	31	--	--
146	08017200	Cowleech Fork Sabine River at Greenville, Texas	7	33°07'58"	96°04'36"	35	0	35	NONE	0
147	08017300	South Fork Sabine River near Quinlan, Texas	7	32°53'52"	96°15'11"	35	0	35	NONE	0
148	08017700	Burnett Branch near Canton, Texas	7	32°32'17"	95°51'44"	9	0	9	NONE	0
149	08018500	Sabine River near Mineola, Texas	10	32°36'49"	95°29'08"	22	70	40	76,000	1
150	08018730	Burke Creek near Yantis, Texas	10	32°59'26"	95°37'18"	10	0	10	NONE	0
151	08019000	Lake Fork Creek near Quitman, Texas	10	32°45'47"	95°27'46"	42	90	61	51,600	3
152	08019500	Big Sandy Creek near Big Sandy, Texas	10	32°36'14"	95°05'29"	24	88	47	24,000	1
153	08020000	Sabine River near Gladewater, Texas	10	32°31'37"	94°57'36"	29	69	46	69,300	3
154	08020200	Prairie Creek near Gladewater, Texas	10	32°28'45"	94°57'14"	9	0	9	NONE	0
155	08020500	Sabine River near Longview, Texas	10	32°28'00"	94°46'50"	11	0	11	NONE	0
156	08020700	Rabbit Creek at Kilgore, Texas	10	32°23'17"	94°54'11"	13	0	13	NONE	0

Footnotes at end of table.

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s)						Skew calculation option	Station skew	Final skew for LPIII distribution	Low-outlier threshold source	Low-outlier threshold (ft^3/s)	2-yr 24-hr precipitation (in.)	Mean annual precipitation (in.)	Contributing drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimensionless)	Stream slope (ft/mi)
	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr											
117	29,500	42,700	51,200	61,600	69,200	76,500	WTD	-0.388	-0.266	EQN	NONE	4.18	42.0	1,365	109.28	8.75	3.54
118	4,770	7,670	9,920	13,100	15,800	18,700	WTD	.794	.167	EQN	942	4.21	44.0	69	20.47	6.07	7.85
119	595	725	800	888	948	1,010	WTD	-.367	-.151	VISUAL	200	4.22	45.0	1	1.03	1.05	38.22
120	13,600	22,800	29,500	38,300	45,100	52,000	WTD	-.497	-.260	EQN	2,472	4.24	43.0	494	69.05	9.65	3.94
121	21,900	32,300	39,100	47,500	53,600	59,600	WTD	-.426	-.273	EQN	NONE	4.25	43.0	579	75.97	9.97	3.76
122	331	460	543	648	725	801	WTD	-.441	-.107	EQN	NONE	4.34	45.0	.78	.08	.01	87.50
123	28,200	51,500	70,000	96,400	118,000	142,000	WTD	-.221	-.126	EQN	5,856	4.24	43.0	2,774	175.60	11.12	2.63
124	272	491	643	830	961	1,090	--	--	--	--	--	4.50	46.0	1.43	1.51	1.59	36.30
125	2,860	5,950	8,650	12,800	16,400	20,500	--	--	--	--	--	4.60	45.0	78	14.50	2.70	9.40
126	1,580	3,050	4,320	6,290	8,040	10,000	WTD	.343	.074	EQN	241	4.32	43.0	23.40	6.43	1.77	24.49
127	1,010	1,330	1,530	1,770	1,940	2,100	WTD	-.774	-.159	EQN	NONE	4.32	44.0	4.27	3.14	2.31	21.94
128	7,210	14,200	20,500	30,600	40,000	50,900	WTD	.325	.186	EQN	1,496	4.32	44.0	366	36.79	3.70	6.87
129	427	887	1,280	1,880	2,400	2,970	WTD	-1.054	-.162	EQN	NONE	4.36	44.5	7.11	5.25	3.87	19.38
130	2,630	5,560	8,410	13,300	18,000	23,900	WTD	.474	.265	EQN	526	4.36	45.0	72	17.48	4.25	6.94
131	6,220	13,800	20,800	32,400	43,100	55,700	WTD	-.013	.001	EQN	1,293	4.37	45.0	850	76.45	6.88	4.29
132	18	69	139	292	471	723	WTD	-.268	-.018	EQN	NONE	4.48	45.5	.21	.61	1.77	57.38
133	3,260	6,050	8,290	11,500	14,200	17,200	WTD	-.375	-.108	EQN	489	4.43	45.5	365	53.37	7.80	3.75
134	4,050	7,920	11,400	17,000	22,200	28,300	STA	.198	.198	VISUAL	1,500	4.38	44.0	383	47.76	5.96	4.47
135	4,510	9,320	13,800	21,300	28,300	36,700	WTD	.313	.176	EQN	730	4.39	44.5	675	85.52	10.84	3.14
136	134	286	427	655	864	1,110	WTD	-.014	.025	EQN	NONE	4.49	46.0	.73	.25	.08	78.74
137	1,360	3,260	5,110	8,200	11,100	14,500	WTD	-.227	-.082	EQN	166	4.41	46.0	48	11.22	2.62	10.53
138	2,550	4,960	6,810	9,320	11,300	13,300	--	--	--	--	--	4.40	49.0	177	28.20	4.49	3.70
139	2,290	3,420	4,140	5,000	5,610	6,190	--	--	--	--	--	4.50	47.0	231	35.00	5.30	2.90
140	18	39	57	84	108	134	--	--	--	--	--	4.50	46.0	.13	.56	2.41	109.00
141	1,430	2,040	2,440	2,960	3,350	3,750	--	--	--	--	--	4.50	47.0	116	27.20	6.38	4.20
142	3,420	6,420	8,680	11,800	14,100	16,600	--	--	--	--	--	4.60	48.0	79	15.00	2.85	8.60
143	4,990	8,980	12,000	16,100	19,400	22,800	--	--	--	--	--	4.70	47.0	66	11.50	2.00	12.00
144	2,580	5,250	7,520	10,900	13,900	17,100	--	--	--	--	--	5.10	57.0	45.60	16.20	5.76	5.70
145	3,560	6,230	8,330	11,300	13,800	16,400	--	--	--	--	--	5.20	56.0	177	39.40	8.77	3.80
146	5,360	7,950	9,780	12,200	14,100	16,100	WTD	.283	.051	EQN	1,098	4.13	40.5	77.70	19.03	4.66	8.96
147	9,640	15,700	19,700	24,800	28,400	32,000	STA	-.434	-.434	VISUAL	2,000	4.10	38.0	78.70	18.48	4.34	8.88
148	152	291	405	573	714	869	WTD	-.632	-.100	EQN	NONE	4.32	41.0	.33	.76	1.75	85.52
149	21,500	40,600	54,400	72,500	86,000	99,400	STA	-.507	-.507	EQN	2,187	4.19	40.0	1,357	103.03	7.82	3.47
150	2,820	3,890	4,600	5,490	6,150	6,800	WTD	.117	-.047	VISUAL	700	4.24	42.0	33.10	9.77	2.88	10.41
151	11,800	22,100	30,400	42,300	52,300	63,100	WTD	-.199	-.126	EQN	2,231	4.24	41.5	585	50.05	4.28	4.92
152	2,690	5,240	7,510	11,100	14,400	18,300	WTD	.232	.163	EQN	508	4.33	43.0	231	45.74	9.06	5.81
153	19,100	45,300	68,500	104,000	134,000	166,000	WTD	-.843	-.371	VISUAL	10,000	4.31	41.0	2,791	161.87	9.39	2.57
154	910	2,190	3,490	5,760	7,980	10,700	WTD	.124	.074	EQN	NONE	4.44	44.5	48.90	14.11	4.07	14.88
155	12,200	19,500	24,000	29,400	33,000	36,400	STA	-.608	-.608	EQN	NONE	4.32	42.0	2,947	186.13	11.76	2.29
156	2,240	5,310	8,390	13,800	19,000	25,500	WTD	.112	.083	EQN	350	4.47	45.0	75.80	13.91	2.55	13.91

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft^3/s)	No. of high out-liers
157	08020800	Grace Creek trib. at Longview, Texas	10	32°31'02"	94°44'23"	8	0	8	3,074	0
158	08021000	Cherokee Bayou near Elderville, Texas	10	32°20'00"	94°42'00"	9	0	9	NONE	0
159	08022000	Sabine River near Tatum, Texas	10	32°22'11"	94°27'28"	22	77	42	123,000	1
160	08022010	Redmon Branch near Hallsville, Texas	10	32°29'41"	94°28'47"	9	0	9	631	0
161	08022400	Socagee Creek near Carthage, Texas	10	32°13'54"	94°05'31"	12	0	12	NONE	0
162	08022500	Sabine River at Logansport, Louisianna	10	31°58'20"	94°00'22"	57	77	65	61,300	2
163	08022680	Bushneck Bayou trib. near Keatchie, Louisiana	n/a	32°10'30"	93°58'00"	14	--	14	--	--
164	08023000	Bayou Castor near Logansport, Louisiana	n/a	31°58'25"	93°58'10"	28	--	28	--	--
165	08023200	Tenaha Creek near Shelbyville, Texas	10	31°45'56"	94°05'02"	30	0	30	NONE	0
166	08023400	Bayou San Patricio near Benson, Louisiana	n/a	31°52'30"	93°39'30"	31	--	31	--	--
167	08023424	Bayou San Patricio trib. No. 2 near Converse, Louisiana	n/a	31°49'40"	93°41'00"	13	--	13	--	--
168	08023500	Bayou San Patricio near Noble, Louisiana	n/a	31°43'15"	93°42'25"	16	--	16	--	--
169	08024000	Bayou San Miguel near Zwolle, Louisiana	n/a	31°39'10"	93°39'10"	20	--	20	--	--
170	08024030	Bayou Scie at Zwolle, Louisiana	n/a	31°37'45"	93°37'40"	39	--	39	--	--
171	08024080	Lewis Creek near Many, Louisiana	n/a	31°35'35"	93°31'40"	10	--	10	--	--
172	08024200	Bayou La Nana near Zwolle, Louisiana	n/a	31°30'56"	93°39'04"	11	--	11	--	--
173	08024290	Dorsey Branch near Milam, Texas	10	31°30'44"	93°50'45"	8	0	8	NONE	0
174	08024400	Sabine River near Milam, Texas	10	31°28'01"	93°44'41"	30	83	52	69,100	3
175	08024500	Palo Gaucho Bayou near Hemphill, Texas	10	31°23'10"	93°50'08"	14	0	14	NONE	0
176	08025400	Bayou Toro near Florien, Louisiana	n/a	31°22'50"	93°25'40"	15	--	15	--	--
177	08025500	Bayou Toro near Toro, Louisiana	n/a	31°18'25"	93°30'56"	35	--	35	--	--
178	08026000	Sabine River near Burkeville, Texas	11	31°03'50"	93°31'10"	10	0	10	NONE	0
179	08026700	West Anacoco Creek near Hornbeck, Louisiana	n/a	31°18'00"	93°22'10"	29	--	29	--	--
180	08027200	East Anacoco Creek near Anacoco, Louisiana	n/a	31°13'30"	93°19'50"	15	--	15	--	--
181	08027500	Bayou Anacoco near Leesville, Louisiana	n/a	31°09'35"	93°21'05"	17	--	17	--	--
182	08028500	Sabine River near Bon Weir, Texas	11	30°44'49"	93°36'30"	42	0	42	NONE	0
183	08028505	Moore Branch near Newton, Texas	11	30°53'00"	93°40'59"	8	0	8	228	0
184	08028700	Hoosier Creek near Merryville, Louisiana	n/a	30°43'32"	93°33'36"	27	--	27	--	--
185	08029500	Big Cow Creek near Newton, Texas	11	30°49'08"	93°47'07"	42	0	42	NONE	0
186	08030000	Cypress Creek near Buna, Texas	11	30°25'52"	93°54'28"	32	0	32	NONE	0
187	08030500	Sabine River near Ruliff, Texas	11	30°18'13"	93°44'37"	54	83	65	110,000	2
188	08030700	Adams Bayou trib. near Deweyville, Texas	11	30°14'53"	93°48'56"	8	0	8	1,343	0
189	08031000	Cow Bayou near Mauriceville, Texas	11	30°11'10"	93°54'30"	34	47	39	4,600	1
190	08031100	Bethlehem Branch near Van, Texas	10	32°29'04"	95°38'35"	9	0	9	NONE	0
191	08031200	Kickapoo Creek near Brownsboro, Texas	10	32°18'34"	95°36'19"	28	0	28	NONE	0
192	08032000	Neches River near Neches, Texas	10	31°53'32"	95°25'50"	23	0	23	NONE	0
193	08032100	Hurricane Creek trib. near Palestine, Texas	10	31°52'10"	95°34'20"	8	0	8	94	0
194	08032300	Squirrel Creek near Elkhart, Texas	10	31°37'09"	95°30'15"	8	0	8	NONE	0
195	08032500	Neches River near Alto, Texas	10	31°34'45"	95°09'55"	18	101	47	50,000	1
196	08033000	Neches River near Diboll, Texas	11	31°07'58"	94°48'35"	24	88	49	80,000	2

Footnotes at end of table.

of annual peak-streamflow data from natural basins within and near Texas—Continued

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s)						Skew calculation option	Station skew	Final skew for LPIII distribution	Low-outlier threshold source	Low-outlier threshold (ft^3/s)	2-yr 24-hr precipitation (in.)	Mean annual precipitation (in.)	Contributing drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimensionless)	Stream slope (ft/mi)
	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr											
157	946	1,600	2,130	2,920	3,600	4,370	WTD	1.718	0.223	EQN	NONE	4.48	46.0	5.05	3.38	2.27	27.18
158	3,390	7,890	12,300	19,700	26,800	35,300	WTD	-.308	.009	EQN	NONE	4.50	45.0	120	16.12	2.17	13.43
159	19,000	39,200	57,500	86,900	114,000	145,000	WTD	.050	.060	EQN	NONE	4.32	42.0	3,493	219.97	13.85	2.04
160	129	255	371	562	739	951	WTD	1.421	.234	EQN	NONE	4.52	46.0	.46	.95	1.96	96.84
161	1,730	3,240	4,590	6,720	8,670	11,000	WTD	.810	.243	EQN	183	4.60	47.0	82.60	18.17	4.00	6.86
162	17,600	31,200	42,200	58,800	72,900	88,700	WTD	.102	.105	EQN	4,467	4.38	43.0	4,842	286.05	16.90	1.65
163	63	118	162	226	279	336	--	--	--	--	--	5.00	46.0	1.27	1.80	2.55	20.90
164	1,960	3,690	5,050	6,960	8,500	10,100	--	--	--	--	--	4.60	48.0	96.50	19.20	3.82	7.20
165	2,830	6,310	9,750	15,700	21,500	28,600	WTD	.244	.170	EQN	491	4.72	49.0	97.80	19.69	3.96	9.00
166	3,540	7,230	10,400	15,100	19,100	23,500	--	--	--	--	--	4.70	51.0	80.20	14.00	2.44	7.30
167	151	350	523	780	995	1,230	--	--	--	--	--	4.70	50.0	.89	.90	.91	43.70
168	2,490	5,630	8,430	12,800	16,500	20,700	--	--	--	--	--	4.70	51.0	154	25.30	4.16	5.30
169	2,350	5,420	8,280	12,900	17,100	21,900	--	--	--	--	--	4.80	52.0	111	20.60	3.82	6.90
170	2,160	5,110	8,010	12,900	17,600	23,300	--	--	--	--	--	4.80	52.0	45.90	9.60	2.01	9.40
171	1,210	1,920	2,440	3,160	3,720	4,320	--	--	--	--	--	4.80	53.0	12.50	5.80	2.69	16.80
172	2,710	5,130	7,150	10,200	12,800	15,700	--	--	--	--	--	4.80	53.0	130	19.50	2.93	8.00
173	149	239	309	410	494	586	WTD	.260	.196	VISUAL	20	4.82	50.0	.70	.95	1.29	138.14
174	22,600	37,700	49,700	67,300	82,000	98,300	WTD	.115	.146	EQN	NONE	4.50	46.0	6,508	329.49	16.68	1.48
175	2,270	5,090	7,960	13,100	18,300	24,900	WTD	.576	.294	EQN	NONE	4.82	49.0	123	23.43	4.46	11.76
176	3,170	8,080	13,100	22,000	30,600	41,200	--	--	--	--	--	4.80	54.0	78.60	13.40	2.28	11.90
177	4,070	8,690	13,100	20,400	27,300	35,600	--	--	--	--	--	4.90	54.0	148	22.60	3.45	8.90
178	22,400	35,000	44,900	59,300	71,300	84,600	WTD	.310	.301	EQN	NONE	4.60	46.0	7,482	364.44	17.75	1.58
179	2,040	4,480	6,660	10,100	13,100	16,600	--	--	--	--	--	4.90	55.0	22.40	9.70	4.20	11.00
180	2,390	4,850	6,940	10,100	12,700	15,700	--	--	--	--	--	4.90	56.0	40.60	12.30	3.73	9.60
181	4,860	13,200	22,000	37,500	52,600	71,200	--	--	--	--	--	4.90	56.0	115	19.70	3.37	7.90
182	31,400	49,000	62,600	81,900	97,800	115,000	WTD	.139	.222	EQN	NONE	4.65	47.0	8,229	403.79	19.81	1.50
183	113	155	186	228	262	297	WTD	1.176	.418	VISUAL	10	5.02	54.0	3.77	2.77	2.03	28.43
184	835	1,400	1,860	2,520	3,090	3,720	--	--	--	--	--	5.00	56.0	13.10	7.70	4.53	11.40
185	2,560	5,180	7,770	12,300	16,900	22,600	WTD	.737	.475	EQN	676	4.98	52.0	128	25.84	5.22	12.06
186	2,110	3,560	4,700	6,350	7,730	9,250	WTD	-.169	.104	EQN	NONE	5.20	55.0	69.20	18.24	4.81	4.50
187	37,300	56,300	70,600	90,600	107,000	124,000	WTD	.183	.227	EQN	11,600	4.68	48.0	9,329	460.62	22.74	1.43
188	138	382	683	1,320	2,060	3,130	WTD	1.854	.441	EQN	NONE	5.36	57.0	12.40	3.07	.76	1.60
189	1,360	2,290	3,070	4,270	5,330	6,550	WTD	.441	.365	EQN	280	5.32	56.5	83.30	25.20	7.62	2.60
190	183	335	463	656	823	1,010	WTD	.346	.096	EQN	NONE	4.32	41.5	1.09	1.73	2.75	36.03
191	3,450	6,750	9,630	14,100	18,000	22,600	STA	.048	.048	VISUAL	900	4.31	40.0	232	35.52	5.44	4.34
192	7,990	16,000	23,000	33,900	43,600	54,700	WTD	-.136	.017	EQN	1,351	4.37	41.0	1,145	83.33	6.06	3.19
193	43	61	74	91	105	119	WTD	1.268	.248	EQN	NONE	4.45	40.5	.39	.34	.30	61.76
194	186	249	291	343	382	420	WTD	-.235	.015	VISUAL	60	4.51	42.0	1.57	.90	.52	47.39
195	8,830	18,900	28,500	44,400	59,500	77,600	WTD	.141	.127	EQN	1,823	4.43	41.0	1,945	142.11	10.38	2.24
196	11,400	23,800	35,100	53,600	70,500	90,400	WTD	.052	.068	EQN	1,873	4.50	43.0	2,724	215.65	17.07	1.87

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft^3/s)	No. of high out-liers
197	08033250	Piney Creek trib. near Pennington, Texas	11	31°12'12"	95°06'58"	8	0	8	NONE	0
198	08033300	Piney Creek near Groveton, Texas	11	31°08'25"	95°05'11"	28	0	28	NONE	0
199	08033450	Shawnee Creek trib. near Huntington, Texas	11	31°13'17"	94°30'51"	8	0	8	NONE	0
200	08033480	Greenwood Creek trib. near Colmesneil, Texas	11	30°58'48"	94°24'22"	8	0	8	NONE	0
201	08033500	Neches River near Rockland, Texas	11	31°01'29"	94°23'55"	56	77	64	62,000	1
202	08033700	Striker Creek near Summerfield, Texas	10	32°00'10"	94°59'35"	9	66	32	9,450	2
203	08033900	East Fork Angelina River near Cushing, Texas	10	31°51'36"	94°49'23"	26	0	26	NONE	0
204	08034500	Mud Creek near Jacksonville, Texas	10	31°58'35"	95°09'38"	10	0	10	NONE	0
205	08037000	Angelina River near Lufkin, Texas	10	31°27'26"	94°43'34"	28	0	28	NONE	0
206	08037050	Bayou Lanana at Nacogdoches, Texas	10	31°36'58"	94°38'28"	27	38	31	13,500	1
207	08037300	Gingham Branch near Mount Enterprise, Texas	10	31°55'14"	94°33'33"	8	0	8	NONE	0
208	08038000	Attoyac Bayou near Chireno, Texas	10	31°30'15"	94°18'15"	55	129	85	28,000	4
209	08038500	Angelina River near Zavalla, Texas	11	31°12'41"	94°17'40"	14	0	14	NONE	0
210	08039100	Ayish Bayou near San Augustine, Texas	10	31°23'46"	94°09'03"	36	0	36	NONE	0
211	08039500	Angelina River at Horger, Texas	11	31°02'08"	94°07'48"	23	66	39	82,000	1
212	08039900	Little Sandy Creek trib. near Jasper, Texas	11	30°56'39"	93°56'16"	8	0	8	NONE	0
213	08041000	Neches River at Evadale, Texas	11	30°21'20"	94°05'35"	32	67	46	102,000	2
214	08041400	Drakes Branch near Spurger, Texas	11	30°41'02"	94°15'32"	8	0	8	NONE	0
215	08041500	Village Creek near Kountze, Texas	11	30°23'52"	94°15'48"	58	0	58	NONE	0
216	08041700	Pine Island Bayou near Sour Lake, Texas	11	30°06'21"	94°20'04"	26	77	44	25,000	1
217	08042000	Taylor Bayou near Labelle, Texas	11	29°52'30"	94°09'34"	33	0	33	NONE	0
218	08042500	Hillebrandt Bayou near Lovell Lake, Texas	11	29°55'44"	94°06'35"	30	44	35	15,000	1
219	08042550	West Fork Double Bayou near Anahuac, Texas	11	29°45'39"	94°38'00"	8	0	8	627	0
220	08042700	North Creek near Jacksboro, Texas	3	33°16'57"	98°17'53"	18	59	35	5,700	2
221	08042800	West Fork Trinity River near Jacksboro, Texas	3	33°17'36"	98°04'43"	19	74	43	27,000	6
222	08043500	West Fork Trinity River at Bridgeport, Texas	7	33°12'05"	97°45'21"	25	0	25	NONE	0
223	08044000	Big Sandy Creek near Bridgeport, Texas	7	33°13'54"	97°41'40"	19	69	40	53,000	3
224	08044200	Walker Creek near Boyd, Texas	7	33°04'32"	97°34'58"	9	0	9	2,515	0
225	08045500	West Fork Trinity River at Lake Worth Dam above Fort Worth, Texas	7	32°47'27"	97°24'54"	10	0	10	NONE	0
226	08046000	Clear Fork Trinity River near Aledo, Texas	7	32°38'28"	97°33'51"	9	0	9	NONE	0
227	08047500	Clear Fork Trinity River at Fort Worth, Texas	7	32°43'56"	97°21'31"	29	53	39	74,300	2
228	08048000	West Fork Trinity River at Fort Worth, Texas	7	32°45'39"	97°19'56"	11	66	31	85,000	1
229	08048500	Marine Creek at Fort Worth, Texas	7	32°48'16"	97°21'48"	8	51	24	24,400	1
230	08048900	Deer Creek trib. near Crowley, Texas	7	32°35'06"	97°21'04"	8	0	8	NONE	0
231	08049550	Big Bear Creek near Grapevine, Texas	7	32°54'48"	97°07'44"	13	0	13	NONE	0
232	08049580	Mountain Creek near Venus, Texas	7	32°39'07"	96°59'24"	8	0	8	NONE	0
233	08049700	Walnut Creek near Mansfield, Texas	7	32°34'51"	97°06'06"	33	0	33	NONE	0
234	08050000	Mountain Creek near Grand Prairie, Texas	7	32°42'20"	96°58'00"	9	0	9	34,934	0
235	08050200	Elm Fork Trinity Subwatershed No. 6–0 near Muenster, Texas	7	33°37'13"	97°24'15"	17	0	17	NONE	0
236	08050400	Elm Fork Trinity River at Gainesville, Texas	7	33°27'27"	97°09'22"	8	0	8	NONE	0

Footnotes at end of table.

of annual peak-streamflow data from natural basins within and near Texas—Continued

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s)						Skew calcu-lation option	Station skew	Final skew for LPIII distri-bution	Low-outlier thresh-old source	Low-outlier thresh-old (ft^3/s)	2-yr 24-hr precip-itation (in.)	Mean annual precip-itation (in.)	Contrib-uting drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimen-sionless)	Stream slope (ft/mi)
	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr											
197	142	412	717	1,290	1,880	2,630	WTD	-0.620	-0.036	EQN	NONE	4.71	43.0	1.17	1.91	3.13	27.45
198	1,430	3,740	5,270	6,900	7,840	8,570	STA	-1.303	-1.303	VISUAL	1,000	4.70	43.0	79	21.20	5.69	7.58
199	116	238	348	521	678	859	WTD	-.507	.033	EQN	NONE	4.82	44.0	.52	.76	1.10	42.11
200	47	91	131	196	256	327	WTD	.250	.228	EQN	NONE	4.91	47.0	.15	.68	3.11	168.87
201	14,400	26,300	35,600	48,600	59,200	70,300	STA	-.211	-.211	EQN	2,770	4.55	43.0	3,636	261.63	18.83	1.71
202	3,050	5,280	7,080	9,760	12,000	14,600	WTD	.148	.128	EQN	NONE	4.50	44.5	146	22.18	3.37	9.32
203	3,720	8,400	12,800	20,000	26,700	34,500	WTD	-.300	-.044	EQN	518	4.61	45.5	158	27.23	4.69	7.47
204	4,960	11,100	16,900	26,800	36,300	47,700	WTD	.045	.089	EQN	NONE	4.45	43.0	376	39.41	4.13	5.16
205	8,240	16,300	23,500	34,900	45,200	57,300	WTD	.129	.112	EQN	1,411	4.54	44.5	1,600	120.33	9.05	2.73
206	2,090	4,250	6,210	9,350	12,200	15,600	WTD	.064	.083	EQN	314	4.68	45.0	31.30	13.16	5.54	13.46
207	109	217	315	471	614	782	WTD	.341	.141	EQN	NONE	4.63	46.0	.90	.73	.60	112.36
208	6,230	13,600	19,800	28,900	36,600	44,800	STA	-.326	-.326	VISUAL	1,000	4.69	47.0	503	76.14	11.52	4.44
209	9,100	18,000	26,200	39,600	52,200	67,300	WTD	.455	.254	EQN	1,397	4.62	45.0	2,892	159.29	8.77	2.06
210	3,740	7,610	10,800	15,500	19,500	23,700	STA	-.240	-.240	EQN	531	4.78	48.5	89	22.18	5.53	10.06
211	17,500	30,400	40,900	56,400	69,700	84,500	WTD	.031	.124	EQN	NONE	4.67	45.5	3,486	184.31	9.74	2.35
212	24	41	54	75	93	114	WTD	.495	.332	EQN	NONE	4.98	51.0	.46	1.04	2.35	75.71
213	32,600	56,500	75,800	104,000	128,000	155,000	WTD	-.014	.109	EQN	NONE	4.70	44.0	7,951	358.54	16.17	1.45
214	235	463	680	1,050	1,410	1,840	WTD	.959	.400	EQN	NONE	5.03	52.0	5.03	3.98	3.15	28.02
215	8,810	19,200	29,500	47,900	66,300	89,500	WTD	.344	.323	EQN	NONE	5.00	51.0	860	78.56	7.18	4.47
216	4,130	7,620	10,700	15,800	20,400	25,900	WTD	.368	.339	EQN	NONE	5.27	51.0	336	54.83	8.95	2.27
217	5,570	7,100	8,060	9,220	10,100	10,900	WTD	-.466	-.008	EQN	NONE	5.50	53.0	262	25.54	2.49	1.22
218	5,590	7,860	9,430	11,500	13,100	14,700	WTD	-.107	.097	VISUAL	2,500	5.50	54.0	128	16.97	2.25	1.55
219	259	385	479	612	722	840	WTD	1.977	.324	EQN	NONE	5.45	49.0	6.25	2.76	1.21	1.78
220	1,770	3,270	4,440	6,100	7,460	8,900	WTD	-.569	-.177	EQN	NONE	3.73	27.5	21.60	10.79	5.39	27.97
221	3,080	7,310	12,000	21,100	31,000	44,400	WTD	.744	.475	EQN	NONE	3.72	27.5	683	63.11	5.83	5.35
222	7,080	11,500	14,900	19,700	23,600	27,900	WTD	-.084	.094	EQN	NONE	3.76	28.0	1,147	105.50	9.70	4.54
223	3,200	8,900	15,500	28,400	42,400	61,200	WTD	.170	.180	EQN	580	3.80	30.0	333	49.71	7.42	8.18
224	483	987	1,470	2,290	3,090	4,070	WTD	1.528	.324	EQN	24	3.88	31.5	2.95	3.00	3.06	51.35
225	4,800	6,500	7,640	9,090	10,200	11,300	WTD	-.124	.057	EQN	NONE	3.80	30.0	2,069	162.17	12.71	3.84
226	3,350	6,750	9,920	15,200	20,200	26,200	WTD	.838	.252	EQN	NONE	3.86	30.5	251	40.10	6.41	12.03
227	8,730	17,800	26,400	40,800	54,700	71,600	WTD	.497	.286	EQN	2,399	3.88	30.5	518	60.06	6.96	11.20
228	8,710	13,600	17,500	23,400	28,600	34,400	WTD	1.091	.485	EQN	NONE	3.82	30.0	2,615	172.34	11.36	4.11
229	359	1,380	2,850	6,350	10,800	17,500	WTD	.296	.194	EQN	37	3.93	31.0	16.80	7.50	3.35	31.92
230	772	1,140	1,390	1,720	1,970	2,220	WTD	-.784	-.074	VISUAL	200	3.95	32.0	5.86	4.50	3.45	32.84
231	1,320	2,020	2,520	3,190	3,710	4,250	WTD	-.289	-.041	VISUAL	400	3.94	31.5	29.60	14.88	7.48	16.76
232	3,050	7,200	11,200	18,000	24,300	31,800	WTD	-.319	-.053	EQN	NONE	4.00	34.0	25.50	30.56	36.62	12.24
233	3,350	6,730	9,670	14,200	18,200	22,700	WTD	-.086	-.036	EQN	483	3.98	32.0	62.80	18.94	5.71	15.07
234	6,390	13,300	19,700	30,300	40,400	52,400	WTD	1.292	.179	EQN	NONE	3.99	33.0	273	34.64	4.40	10.99
235	300	472	604	788	940	1,100	WTD	.258	.146	VISUAL	60	3.85	33.0	.77	.37	.18	53.20
236	11,900	19,500	25,200	33,200	39,600	46,400	WTD	-.226	-.023	EQN	NONE	3.80	33.0	174	17.00	1.66	22.19

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft^3/s)	No. of high out-liers
237	08050800	Timber Creek near Collinsville, Texas	7	33°33'16"	96°56'49"	8	0	8	NONE	0
238	08051000	Isle du Bois Creek near Pilot Point, Texas	7	33°24'23"	97°00'45"	37	0	37	NONE	0
239	08051500	Clear Creek near Sanger, Texas	7	33°20'21"	97°10'51"	16	74	37	104,000	1
240	08052630	Little Elm Creek Subwatershed No. 10 near Gunter, Texas	7	33°24'33"	96°48'41"	11	0	11	NONE	0
241	08052700	Little Elm Creek near Aubrey, Texas	7	33°17'00"	96°53'33"	9	0	9	NONE	0
242	08053100	Jones Valley Creek trib. near Forestburg, Texas	7	33°33'15"	97°37'05"	9	0	9	NONE	0
243	08053500	Denton Creek near Justin, Texas	7	33°07'08"	97°17'25"	14	0	14	NONE	0
244	08054000	Denton Creek near Roanoke, Texas	7	33°02'24"	97°12'17"	21	0	21	NONE	0
245	08054200	Gamble Branch near Argyle, Texas	7	33°04'53"	97°11'48"	9	0	9	NONE	0
246	08055500	Elm Fork Trinity River near Carrollton, Texas	7	32°57'57"	96°56'39"	28	86	49	145,000	1
247	08057000	Trinity River at Dallas, Texas	7	32°46'29"	96°49'18"	30	68	44	184,000	1
248	08057500	Honey Creek Subwatershed No. 11 near McKinney, Texas	7	33°18'12"	96°41'22"	21	0	21	NONE	0
249	08058000	Honey Creek Subwatershed No. 12 near McKinney, Texas	7	33°18'20"	96°40'12"	25	0	25	NONE	0
250	08059200	Arls Branch near Westminster, Texas	7	33°21'31"	96°26'31"	9	0	9	NONE	0
251	08061500	East Fork Trinity River near Rockwall, Texas	7	32°55'25"	96°30'20"	30	0	30	NONE	0
252	08061540	Rowlett Creek near Sachse, Texas	7	32°57'35"	96°36'51"	25	0	25	NONE	0
253	08062500	Trinity River near Rosser, Texas	7	32°25'35"	96°27'46"	15	46	28	133,000	2
254	08062850	Bachelor Creek near Terrell, Texas	7	32°42'42"	96°17'52"	8	0	8	NONE	0
255	08062900	Kings Creek near Kaufman, Texas	7	32°30'48"	96°19'44"	9	30	18	33,800	2
256	08063000	Cedar Creek near Mabank, Texas	7	32°19'45"	96°10'05"	27	77	47	35,400	2
257	08063005	Red Oak Branch near Eustace, Texas	7	32°18'36"	95°57'38"	9	0	9	NONE	0
258	08063180	Briar Creek trib. near Corsicana, Texas	7	32°02'54"	96°34'49"	9	0	9	NONE	0
259	08063500	Richland Creek near Richland, Texas	7	31°57'02"	96°25'16"	24	0	24	NONE	0
260	08063550	Alvarado Branch near Alvarado, Texas	7	32°24'49"	97°12'20"	9	0	9	NONE	0
261	08063620	Kings Branch near Reagor Springs, Texas	7	32°20'41"	96°47'02"	10	0	10	NONE	0
262	08064500	Chambers Creek near Corsicana, Texas	7	32°06'29"	96°22'14"	22	74	43	48,000	2
263	08064630	Saline Branch trib. near Bethel, Texas	7	31°55'46"	95°55'58"	8	0	8	NONE	0
264	08064700	Tehuacana Creek near Streetman, Texas	7	31°50'54"	96°17'23"	26	62	39	85,700	1
265	08064800	Catfish Creek near Tennessee Colony, Texas	7	31°52'51"	95°52'07"	28	0	28	NONE	0
266	08065000	Trinity River near Oakwood, Texas	7	31°38'54"	95°47'21"	29	63	43	164,000	2
267	08065200	Upper Keechi Creek near Oakwood, Texas	7	31°34'11"	95°53'17"	32	0	32	NONE	0
268	08065320	Mayes Branch near Latexo, Texas	7	31°25'58"	95°28'29"	8	0	8	NONE	0
269	08065500	Trinity River near Midway, Texas[4]	8	31°04'28"	95°41'57"	14	38	24	145,000	2
270	08065700	Caney Creek near Madisonville, Texas	8	30°56'12"	95°56'07"	13	0	13	NONE	0
271	08065800	Bedias Creek near Madisonville, Texas	8	30°53'03"	95°46'39"	26	0	26	NONE	0
272	08066000	Trinity River at Riverside, Texas	11	30°51'33"	95°23'55"	51	88	65	116,000	2
273	08066100	White Rock Creek near Trinity, Texas	11	31°03'06"	95°22'40"	20	0	20	NONE	0
274	08066170	Kickapoo Creek near Onalaska, Texas	11	30°54'25"	95°05'18"	28	0	28	NONE	0
275	08066200	Long King Creek at Livingston, Texas	11	30°42'58"	94°57'31"	31	0	31	NONE	0
276	08066280	Bluff Creek trib. near Livingston, Texas	11	30°41'52"	94°46'58"	8	0	8	NONE	0

Footnotes at end of table.

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s)						Skew calculation option	Station skew	Final skew for LPIII distribution	Low-outlier threshold source	Low-outlier threshold (ft^3/s)	2-yr 24-hr precipitation (in.)	Mean annual precipitation (in.)	Contributing drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimensionless)	Stream slope (ft/mi)
	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr											
237	2,890	6,620	10,200	16,100	21,600	28,000	WTD	-0.077	-0.035	EQN	NONE	3.83	35.0	38.80	14.24	5.23	13.13
238	6,270	14,400	22,300	35,800	48,600	64,200	WTD	.133	.052	EQN	1,121	3.92	35.0	266	31.48	3.73	8.34
239	6,300	13,800	20,700	31,900	42,100	54,100	WTD	-.053	-.023	EQN	584	3.87	33.0	295	48.56	7.99	10.13
240	1,200	1,920	2,450	3,180	3,750	4,360	WTD	.099	-.019	EQN	306	3.96	37.5	2.10	2.56	3.12	39.74
241	3,180	5,580	7,430	10,000	12,200	14,400	WTD	-.464	-.113	EQN	762	3.96	37.5	75.50	26.94	9.61	10.35
242	216	470	717	1,140	1,550	2,050	WTD	.383	.189	EQN	NONE	3.83	31.0	1.70	1.95	2.23	116.09
243	4,050	11,400	19,700	35,600	52,500	74,500	WTD	.155	.084	EQN	NONE	3.85	31.0	400	62.36	9.72	8.41
244	9,810	18,900	26,800	39,500	50,900	64,200	WTD	.441	.165	EQN	2,130	3.86	32.0	621	77.35	9.63	7.72
245	155	244	309	397	466	537	WTD	-.439	-.051	EQN	NONE	3.93	33.0	.50	.80	1.28	40.00
246	19,100	39,800	59,700	93,800	127,000	168,000	WTD	.521	.296	EQN	NONE	3.91	34.0	2,459	101.90	4.22	5.25
247	19,000	38,400	56,100	84,900	112,000	143,000	WTD	.282	.160	EQN	NONE	3.89	32.0	6,106	226.04	8.37	3.66
248	625	1,380	2,050	3,050	3,900	4,850	STA	-.272	-.272	EQN	93	3.99	38.0	2.14	1.70	1.35	54.12
249	544	986	1,290	1,670	1,940	2,200	STA	-.596	-.596	EQN	99	3.99	38.0	1.26	.83	.55	75.90
250	437	558	631	718	779	838	WTD	-.181	-.130	EQN	NONE	4.03	39.0	.52	.85	1.39	76.47
251	20,100	36,900	50,100	68,600	83,600	99,500	WTD	-.421	-.202	EQN	5,337	4.03	39.0	840	52.95	3.34	7.56
252	10,300	19,500	26,400	35,900	43,400	51,100	STA	-.350	-.350	EQN	2,352	4.01	36.0	120	23.57	4.63	12.11
253	31,500	55,400	74,500	102,000	125,000	151,000	WTD	.023	.012	EQN	NONE	3.91	34.0	8,146	273.38	9.17	3.31
254	827	1,710	2,490	3,730	4,840	6,120	WTD	.246	.003	EQN	NONE	4.19	38.0	13	9.45	6.87	8.68
255	7,900	16,600	24,500	37,200	48,800	62,400	WTD	.110	.045	EQN	NONE	4.14	37.0	233	33.31	4.76	6.60
256	14,700	24,500	31,500	40,900	48,200	55,600	WTD	-.386	-.222	EQN	4,114	4.20	39.0	733	52.94	3.82	4.90
257	128	583	1,300	3,080	5,390	8,950	WTD	.202	.056	EQN	NONE	4.28	40.0	.90	1.14	1.44	35.09
258	422	540	616	708	775	842	WTD	.261	.046	EQN	NONE	4.20	36.5	.72	1.14	1.81	33.33
259	22,200	38,500	51,000	68,400	82,500	97,500	WTD	-.331	-.117	EQN	5,385	4.17	35.0	734	59.77	4.87	8.12
260	556	880	1,110	1,410	1,640	1,880	WTD	-1.205	-.173	EQN	NONE	3.98	33.0	.84	.33	.13	9.94
261	342	481	575	694	784	875	WTD	-.105	-.021	VISUAL	200	4.10	36.0	.62	1.00	1.61	42.65
262	16,600	27,200	34,700	44,700	52,400	60,300	WTD	-.368	-.210	EQN	4,463	4.10	36.0	963	85.89	7.66	6.26
263	63	97	121	154	179	206	WTD	-.225	-.010	EQN	NONE	4.36	39.0	.22	.09	.04	88.89
264	6,790	14,900	25,100	47,800	76,300	120,000	STA	1.278	1.278	EQN	NONE	4.27	38.0	142	24.06	4.08	10.77
265	1,190	2,620	4,000	6,330	8,550	11,200	WTD	.217	.109	EQN	NONE	4.36	39.0	207	31.23	4.71	6.72
266	39,200	73,300	103,000	149,000	191,000	239,000	WTD	.299	.173	EQN	NONE	4.05	34.0	12,833	408.47	13.00	2.55
267	4,010	10,800	18,100	31,200	44,400	60,800	WTD	-.055	-.032	EQN	595	4.38	40.0	150	28.42	5.39	8.31
268	214	288	336	395	438	480	WTD	-.669	-.067	EQN	NONE	4.56	41.5	4.26	2.95	2.04	28.94
269	35,800	62,300	84,300	117,000	146,000	178,000	WTD	.528	.198	EQN	NONE	4.10	36.0	14,450	486.49	16.38	2.20
270	4,570	8,820	12,400	17,900	22,700	28,100	WTD	.342	-.008	EQN	676	4.50	40.0	112	24.82	5.50	10.31
271	9,330	19,600	28,700	42,800	55,300	69,500	WTD	-.141	-.089	EQN	1,692	4.55	41.0	321	37.84	4.46	7.80
272	36,400	59,500	76,200	98,600	116,000	134,000	WTD	-.296	-.157	EQN	8,949	4.12	36.5	15,589	532.93	18.22	2.01
273	5,230	11,600	16,600	23,500	28,800	34,200	STA	-.568	-.568	EQN	681	4.65	43.0	222	30.39	4.16	9.18
274	5,140	9,420	13,200	19,100	24,400	30,700	WTD	.594	.270	EQN	1,283	4.76	44.0	57	12.82	2.88	12.80
275	5,680	11,600	17,200	26,600	35,600	46,600	WTD	.442	.275	EQN	1,271	4.88	47.0	141	22.07	3.46	10.70
276	44	126	219	400	592	845	WTD	-.515	.087	EQN	NONE	4.95	48.5	.62	1.36	2.97	45.84

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydrologic region (pl. 1)	Latitude	Longitude	Available systematic record (yrs)[1]	Historical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier threshold (ft^3/s)	No. of high outliers
277	08066300	Menard Creek near Rye, Texas	11	30°28'52"	94°46'46"	28	0	28	NONE	0
278	08066400	Big Creek near Shepherd, Texas	11	30°30'59"	94°59'06"	24	41	31	22,000	1
279	08066500	Trinity River at Romayor, Texas	11	30°25'30"	94°51'02"	30	46	36	111,000	1
280	08067000	Trinity River at Liberty, Texas[5]	11	30°03'27"	94°49'05"	14	51	28	114,000	1
281	08067500	Cedar Bayou near Crosby, Texas	11	29°58'20"	94°59'10"	22	0	22	NONE	0
282	08067550	Welch Branch near Huntsville, Texas	11	30°38'33"	95°40'47"	9	0	9	NONE	0
283	08067750	Landrum Creek trib. near Montgomery, Texas	11	30°21'03"	95°41'50"	9	0	9	NONE	0
284	08068000	West Fork San Jacinto River near Conroe, Texas	11	30°14'40"	95°27'25"	37	60	46	101,000	1
285	08068300	Mill Creek trib. near Dobbin, Texas	11	30°15'37"	95°46'14"	8	0	8	NONE	0
286	08068500	Spring Creek near Spring, Texas[6]	11	30°06'37"	95°26'10"	37	115	64	48,300	1
287	08068520	Spring Creek at Spring, Texas	11	30°05'31"	95°24'21"	56	115	76	48,300	1
288	08068720	Cypress Creek at Katy-Hockley Road near Hockley, Texas	11	29°57'00"	95°48'29"	18	0	18	NONE	0
289	08068740	Cypress Creek at House-Hahl Road near Cypress, Texas	11	29°57'32"	95°43'03"	19	0	19	NONE	0
290	08068780	Little Cypress Creek near Cypress, Texas	11	30°00'57"	95°41'50"	11	0	11	NONE	0
291	08068800	Cypress Creek at Grant Road near Cypress, Texas	11	29°58'24"	95°35'54"	11	0	11	NONE	0
292	08069500	West Fork San Jacinto River near Humble, Texas	11	30°01'37"	95°15'28"	26	90	51	187,000	2
293	08069850	Bear Creek near Cleveland, Texas	11	30°26'58"	95°13'11"	8	0	8	NONE	0
294	08070000	East Fork San Jacinto River near Cleveland, Texas	11	30°20'11"	95°06'14"	54	94	69	53,500	2
295	08070200	East Fork San Jacinto River near New Caney, Texas	11	30°08'43"	95°07'27"	9	0	9	NONE	0
296	08070500	Caney Creek near Splendora, Texas	11	30°15'34"	95°18'08"	50	54	52	35,000	1
297	08071000	Peach Creek at Splendora, Texas	11	30°13'57"	95°10'05"	34	83	54	24,700	3
298	08071280	Luce Bayou above Lake Houston near Huffman, Texas	11	30°06'34"	95°03'35"	9	0	9	NONE	0
299	08071500	San Jacinto River near Huffman, Texas	11	29°59'40"	95°08'00"	17	78	41	237,000	2
300	08072300	Buffalo Bayou near Katy, Texas	11	29°44'35"	95°48'24"	13	0	13	NONE	0
301	08072700	South Mayde Creek near Addicks, Texas	11	29°48'03"	95°41'32"	10	0	10	NONE	0
302	08072730	Bear Creek near Barker, Texas	11	29°49'50"	95°41'12"	14	0	14	1,998	0
303	08072760	Langham Creek at West Little Yourk Road near Addicks, Texas	11	29°52'01"	95°38'47"	13	0	13	NONE	0
304	08072800	Langham Creek near Addicks, Texas	11	29°50'08"	95°37'30"	11	0	11	NONE	0
305	08073800	Bering Ditch at Woodway Drive at Houston, Texas	11	29°45'22"	95°29'44"	9	0	9	NONE	0
306	08074020	Whiteoak Bayou at Alabonson Road at Houston, Texas	11	29°52'14"	95°28'49"	9	0	9	NONE	0
307	08074100	Cole Creek at Guhn Road at Houston, Texas	11	29°51'24"	95°30'55"	8	0	8	NONE	0
308	08074900	Willow Waterhole Bayou at Landsdowne Street at Houston, Texas	11	29°39'01"	95°29'11"	8	0	8	NONE	0
309	08075300	Sims Bayou at Carlsbad Street at Houston, Texas	11	29°37'33"	95°29'56"	8	0	8	NONE	0
310	08075600	Berry Bayou trib. at Globe Street at Houston, Texas	11	29°39'00"	95°14'48"	8	0	8	NONE	0
311	08075700	Berry Creek at Galveston Road at Houston, Texas	11	29°40'59"	95°15'11"	8	0	8	NONE	0
312	08075750	Hunting Bayou trib. at Cavalcade Street at Houston, Texas	11	29°48'00"	95°20'02"	8	0	8	NONE	0
313	08077550	Cowart Creek near Friendswood, Texas	11	29°30'46"	95°13'21"	9	0	9	NONE	0
314	08078000	Chocolate Bayou near Alvin, Texas	11	29°22'09"	95°19'14"	47	0	47	15,306	0
315	08079500	North Fork Double Mountain Fork Brazos River at Lubbock, Texas	1	33°35'08"	101°49'40"	12	0	12	NONE	0
316	08079570	Barnum Springs Draw near Post, Texas	3	33°16'54"	101°23'30"	9	0	9	NONE	0

Footnotes at end of table.

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft³/s) 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	Skew calcu-lation option	Station skew	Final skew for LPIII distri-bution	Low-outlier thresh-old source	Low-outlier thresh-old (ft³/s)	2-yr 24-hr precip-itation (in.)	Mean annual precip-itation (in.)	Contrib-uting drainage area (mi²)	Stream length (mi)	Basin shape factor (dimen-sionless)	Stream slope (ft/mi)
277	2,220	4,890	7,520	12,100	16,500	22,000	WTD	0.125	0.200	EQN	358	4.97	48.0	152	39.18	10.10	7.54
278	732	1,910	3,310	6,180	9,470	14,100	WTD	.975	.474	EQN	124	4.94	47.0	38.80	14.45	5.38	18.16
279	39,600	61,500	77,400	98,800	116,000	133,000	WTD	-.267	-.010	EQN	NONE	4.22	38.0	17,186	599.50	20.91	1.96
280	37,900	60,400	77,600	102,000	122,000	144,000	WTD	.096	.147	EQN	NONE	4.25	38.5	17,468	648.70	24.09	1.86
281	2,120	3,230	4,030	5,130	6,000	6,920	WTD	-.055	.062	EQN	NONE	5.15	49.0	64.90	16.34	4.11	2.81
282	208	488	767	1,250	1,710	2,280	WTD	.233	.056	EQN	15	4.69	43.0	2.35	3.48	5.16	20.74
283	77	116	143	178	204	230	WTD	-.765	-.139	VISUAL	20	4.80	43.0	.13	.38	1.11	105.26
284	10,700	26,700	43,100	71,900	100,000	135,000	WTD	-.068	.005	EQN	1,691	4.75	43.5	828	56.73	3.89	5.09
285	260	1,320	2,980	6,910	11,700	18,700	WTD	-.979	-.187	EQN	15	4.78	43.0	4.07	2.81	1.94	18.68
286	4,950	12,400	20,000	33,000	45,400	60,400	WTD	-.130	-.071	EQN	652	4.82	44.0	409	51.18	6.40	6.15
287	5,630	12,700	19,100	29,300	38,500	49,100	WTD	-.239	-.132	EQN	803	4.83	44.0	419	54.75	7.15	5.93
288	1,290	1,760	2,070	2,440	2,710	2,980	WTD	-.352	-.139	VISUAL	700	4.82	42.5	110	25.80	6.05	5.85
289	1,500	2,010	2,340	2,730	3,020	3,290	WTD	-.399	-.143	VISUAL	700	4.83	43.0	131	31.72	7.68	4.96
290	1,240	2,240	3,030	4,150	5,070	6,050	WTD	-.412	-.116	EQN	NONE	4.85	44.0	41	12.91	4.07	5.84
291	2,400	3,820	4,820	6,120	7,100	8,100	WTD	-.188	-.211	EQN	NONE	4.85	44.0	214	41.89	8.20	5.01
292	16,400	32,300	47,600	74,100	100,000	133,000	WTD	.812	.469	EQN	5,173	4.81	43.0	1,741	82.72	3.93	4.16
293	123	527	1,150	2,680	4,680	7,770	WTD	-.148	.133	EQN	11	4.92	46.0	1.46	1.91	2.51	44.59
294	5,080	12,400	20,100	34,000	48,200	66,100	WTD	.141	.161	EQN	969	4.85	45.0	325	45.22	6.29	5.51
295	4,580	8,230	11,300	16,000	20,100	24,800	WTD	.291	.172	EQN	NONE	4.83	45.0	338	63.05	11.76	4.74
296	2,620	5,310	7,890	12,300	16,700	22,000	WTD	.631	.371	EQN	NONE	4.86	43.0	105	30.24	8.71	8.79
297	1,510	4,140	7,160	13,000	19,300	27,700	WTD	.191	.181	EQN	231	4.94	46.0	117	30.45	7.93	9.91
298	4,620	10,500	16,400	26,600	36,600	48,900	WTD	.177	.152	EQN	NONE	4.90	48.0	218	42.03	8.10	6.17
299	25,500	52,700	80,000	128,000	176,000	237,000	WTD	.765	.440	EQN	6,846	4.87	45.0	2,800	93.22	3.10	3.70
300	1,920	2,540	2,930	3,390	3,710	4,020	WTD	-.868	-.201	VISUAL	700	4.84	43.0	63.30	11.65	2.14	4.08
301	989	1,790	2,460	3,470	4,340	5,320	WTD	.625	.105	EQN	NONE	4.93	44.0	32.30	12.55	4.88	5.23
302	633	982	1,240	1,600	1,890	2,190	WTD	.435	.090	EQN	NONE	4.87	43.0	21.50	10.11	4.76	4.96
303	775	1,260	1,620	2,080	2,450	2,820	WTD	-.739	-.173	EQN	NONE	4.90	44.0	24.60	8.61	3.01	4.19
304	1,210	2,000	2,620	3,490	4,210	4,990	WTD	.328	.062	EQN	NONE	4.94	44.0	48.90	9.54	1.86	4.81
305	940	1,420	1,760	2,210	2,560	2,920	WTD	-.172	-.021	VISUAL	100	4.98	44.0	2.77	2.26	1.84	.38
306	4,250	6,780	8,620	11,100	13,000	15,000	WTD	-.481	-.085	EQN	NONE	4.96	44.0	34.50	12.44	4.49	4.22
307	476	729	907	1,140	1,320	1,500	WTD	-.664	-.108	VISUAL	80	4.95	44.0	7.05	3.43	1.67	6.98
308	864	1,360	1,710	2,180	2,550	2,930	WTD	-.625	-.080	EQN	NONE	5.00	44.0	11.20	.96	.08	20.51
309	327	418	474	541	589	635	WTD	-.698	-.089	VISUAL	150	5.00	44.0	3.81	.83	.18	19.76
310	174	252	305	373	425	477	WTD	-.671	-.059	EQN	NONE	5.20	48.0	1.58	1.14	.82	2.63
311	451	622	738	886	998	1,110	WTD	.067	.057	EQN	NONE	5.18	48.0	4.86	2.61	1.40	13.83
312	153	206	243	290	325	362	WTD	1.096	.181	EQN	NONE	5.08	48.0	1.20	.38	.12	18.42
313	997	1,290	1,470	1,690	1,850	2,000	WTD	-.530	-.033	VISUAL	600	5.18	48.0	18	4.03	.90	4.07
314	2,270	3,940	5,360	7,560	9,520	11,800	WTD	.663	.333	EQN	469	5.12	50.0	87.70	17.36	3.44	2.74
315	57	636	2,120	7,290	15,800	31,300	WTD	-.955	-.217	EQN	NONE	2.70	17.5	200	127.22	80.93	7.43
316	111	221	315	459	585	727	WTD	-.139	-.048	EQN	NONE	2.92	19.0	4.99	4.94	4.88	63.77

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft^3/s)	No. of high out-liers
317	08079575	North Fork Double Mountain Fork Brazos River near Post, Texas	3	33°14'52"	101°20'24"	10	0	10	NONE	0
318	08079580	Rattlesnake Creek near Post, Texas		33°13'36"	101°23'30"	9	0	9	1,563	0
319	08079600	Double Mountain Fork Brazos River at Justiceburg, Texas	3	33°02'18"	101°11'50"	32	0	32	NONE	0
320	08080500	Double Mountain Fork Brazos River near Aspermont, Texas	3	33°00'29"	100°10'49"	65	95	76	91,400	1
321	08080510	Guest-Flowers Draw near Aspermont, Texas	3	33°07'25"	100°08'15"	10	0	10	NONE	0
322	08080540	McDonald Creek near Post, Texas	3	33°21'03"	101°13'36"	13	0	13	12,180	0
323	08080700	Running Water Draw at Plainview, Texas	1	34°10'44"	101°42'08"	37	99	59	12,000	1
324	08080750	Callahan Draw near Lockney, Texas	1	33°59'48"	101°32'54"	9	0	9	NONE	0
325	08080918	Red Mud Creek near Spur, Texas	3	33°19'24"	100°55'18"	9	0	9	14,770	0
326	08081200	Croton Creek near Jayton, Texas	3	33°17'18"	100°25'52"	27	0	27	NONE	0
327	08081500	Salt Croton Creek near Aspermont, Texas	3	33°24'03"	100°24'29"	21	0	21	NONE	0
328	08082000	Salt Fork Brazos River near Aspermont, Texas	3	33°20'02"	100°14'16"	27	64	41	52,200	1
329	08082100	Stinking Creek near Aspermont, Texas	3	33°14'00"	100°12'47"	18	0	18	NONE	0
330	08082180	North Croton Creek near Knox City, Texas	3	33°22'59"	100°04'51"	21	66	38	32,100	1
331	08082500	Brazos River at Seymour, Texas	3	33°34'51"	99°16'02"	50	68	57	95,400	1
332	08082700	Millers Creek near Munday, Texas	3	33°19'45"	99°27'53"	30	32	31	34,600	1
333	08082900	North Elm Creek near Throckmorton, Texas	3	33°10'50"	99°22'05"	9	0	9	NONE	0
334	08083100	Clear Fork Brazos River near Roby, Texas	3	32°47'15"	100°23'18"	32	0	32	NONE	0
335	08083240	Clear Fork Brazos River at Hawley, Texas	3	32°35'53"	99°48'53"	22	0	22	NONE	0
336	08083245	Mulberry Creek near Hawley, Texas	3	32°34'04"	99°47'32"	21	0	21	NONE	0
337	08083400	Little Elm Creek near Abilene, Texas	3	32°23'29"	99°51'08"	16	0	16	NONE	0
338	08083420	Cat Claw Creek at Abilene, Texas	3	32°28'31"	99°44'56"	9	0	9	NONE	0
339	08083470	Cedar Creek at Abilene, Texas	3	32°26'56"	99°43'13"	9	0	9	NONE	0
340	08084000	Clear Fork Brazos River at Nugent, Texas	3	32°41'24"	99°40'09"	16	0	16	46,562	0
341	08084800	California Creek near Stamford, Texas	3	32°55'51"	99°38'32"	31	97	54	40,000	1
342	08085300	Humphries Draw near Haskell, Texas	3	33°10'40"	99°34'30"	9	0	9	NONE	0
343	08085500	Clear Fork Brazos River at Fort Griffin, Texas[7]	3	32°56'04"	99°13'27"	17	103	47	149,000	1
344	08086050	Deep Creek at Moran, Texas	3	32°33'33"	99°10'11"	13	0	13	9,789	1
345	08086100	Hubbard Creek near Albany, Texas	3	32°41'21"	99°09'52"	14	0	14	NONE	0
346	08086150	North Fork Hubbard Creek near Albany, Texas[8]	3	32°42'27"	99°16'29"	28	103	54	103,000	1
347	08086212	Hubbard Creek below Albany, Texas[8]	3	32°43'58"	99°08'25"	27	118	58	330,000	1
348	08086260	Pecan Creek near Eolian, Texas	3	32°35'01"	99°01'57"	9	0	9	NONE	0
349	08086290	Big Sandy Creek above Breckenridge, Texas[8]	3	32°38'54"	99°00'15"	17	118	52	80,000	1
350	08086300	Big Sandy Creek near Breckenridge, Texas	3	32°39'52"	99°00'01"	14	0	14	NONE	0
351	08086500	Hubbard Creek near Breckenridge, Texas	3	32°50'13"	98°56'52"	8	0	8	NONE	0
352	08087300	Clear Fork Brazos River at Eliasville, Texas[7]	3	32°57'36"	98°45'59"	31	102	56	68,000	1
353	08088000	Brazos River near South Bend, Texas	3	33°01'27"	98°38'37"	23	0	23	NONE	0
354	08088100	Salt Creek at Olney, Texas	3	33°22'13"	98°44'40"	20	0	20	NONE	0
355	08088300	Briar Creek near Graham, Texas	3	33°12'43"	98°37'06"	31	0	31	NONE	0
356	08088450	Big Cedar Creek near Ivan, Texas	3	32°49'39"	98°43'25"	25	0	25	NONE	0

Footnotes at end of table.

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s)						Skew calculation option	Station skew	Final skew for LPIII distribution	Low-outlier threshold source	Low-outlier threshold (ft^3/s)	2-yr 24-hr precipitation (in.)	Mean annual precipitation (in.)	Contributing drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimensionless)	Stream slope (ft/mi)
	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr											
317	2,610	4,350	5,620	7,330	8,650	10,000	WTD	-1.166	-0.199	EQN	NONE	2.92	19.0	438	181.22	74.98	9.11
318	138	392	686	1,260	1,880	2,720	WTD	1.255	.146	EQN	NONE	2.92	19.0	2.77	.66	.16	53.03
319	8,570	20,000	30,900	48,800	65,400	84,800	WTD	-.184	-.091	EQN	1,449	2.91	19.0	244	36.99	5.61	16.67
320	15,600	29,900	41,600	58,800	73,400	89,400	WTD	-.210	-.102	EQN	2,902	2.90	19.0	1,864	326.26	57.11	7.41
321	99	217	325	501	662	849	WTD	-.503	-.017	EQN	NONE	3.35	22.0	3.02	2.25	1.67	29.16
322	1,010	2,670	4,530	8,090	11,900	16,900	WTD	.963	.187	EQN	NONE	2.95	20.0	79.20	18.63	4.38	33.46
323	230	1,010	2,170	4,850	8,100	12,800	WTD	-.113	-.079	EQN	17	2.68	17.0	382	134.24	47.17	9.07
324	136	252	349	498	627	774	WTD	.544	.093	EQN	4	2.83	19.0	8.37	18.42	40.54	2.49
325	2,010	4,740	7,550	12,600	17,700	24,000	WTD	1.407	.194	EQN	NONE	3.05	20.5	65.10	21.44	7.06	21.42
326	2,970	5,960	8,050	10,600	12,400	14,000	STA	-.780	-.780	EQN	349	3.15	21.0	290	62.55	13.49	18.99
327	2,820	7,610	13,000	23,100	33,800	47,600	WTD	.209	.115	VISUAL	600	3.20	21.5	64.30	14.78	3.40	23.31
328	16,600	26,300	33,100	42,200	49,200	56,400	WTD	-.331	-.141	EQN	NONE	2.86	19.0	2,496	344.29	47.49	8.62
329	587	1,300	1,990	3,170	4,290	5,660	WTD	.200	.124	EQN	NONE	3.30	22.0	88.80	24.85	6.96	10.69
330	1,180	3,420	6,090	11,500	17,400	25,500	WTD	.249	.185	EQN	214	3.31	22.0	251	56.74	12.83	11.85
331	24,400	44,000	60,000	83,700	104,000	127,000	WTD	-.059	.042	EQN	5,959	3.00	20.5	5,972	448.91	33.74	7.40
332	443	2,030	4,620	11,300	20,400	34,800	WTD	.103	.150	EQN	35	3.52	24.5	104	29.54	8.39	7.00
333	313	767	1,240	2,090	2,950	4,020	WTD	-.235	.119	EQN	NONE	3.56	25.0	3.58	2.83	2.24	37.04
334	1,080	2,950	5,010	8,850	12,800	17,900	WTD	.053	.057	EQN	148	3.22	22.5	228	38.86	6.62	13.09
335	2,000	3,910	5,670	8,560	11,300	14,500	WTD	.650	.265	EQN	NONE	3.33	23.0	1,416	107.32	8.13	7.37
336	960	1,700	2,290	3,150	3,860	4,650	WTD	-.222	-.006	EQN	NONE	3.48	23.5	205	49.71	12.06	17.69
337	540	1,190	1,780	2,740	3,610	4,620	WTD	-.486	-.053	VISUAL	100	3.50	23.5	39.10	13.58	4.72	32.85
338	765	1,050	1,240	1,490	1,680	1,880	WTD	.502	.172	EQN	NONE	3.53	24.0	13	11.01	9.32	13.71
339	685	2,040	3,680	7,060	10,900	16,100	WTD	.678	.202	EQN	NONE	3.54	24.0	119	24.57	5.07	18.02
340	7,870	14,500	20,400	29,800	38,400	48,600	WTD	1.013	.317	EQN	1,786	3.40	23.0	2,199	127.69	7.42	6.78
341	2,000	4,010	5,950	9,280	12,500	16,600	WTD	.573	.404	VISUAL	500	3.45	23.0	478	64.88	8.81	7.58
342	1,050	1,520	1,850	2,280	2,610	2,960	WTD	-.458	.060	EQN	NONE	3.52	24.5	3.51	3.10	2.74	19.05
343	8,860	16,900	24,400	37,100	49,400	64,300	WTD	.631	.453	EQN	NONE	3.45	23.0	3,988	222.26	12.39	5.28
344	5,610	7,120	8,090	9,300	10,200	11,100	WTD	.020	.155	VISUAL	2,000	3.63	25.0	228	38.25	6.42	16.47
345	6,560	12,900	18,300	26,500	33,600	41,600	WTD	-.882	-.039	EQN	945	3.62	25.0	454	50.80	5.68	13.76
346	1,040	3,650	7,250	15,400	25,400	40,300	WTD	.228	.219	EQN	NONE	3.59	25.0	39.30	13.39	4.57	36.26
347	5,240	15,900	28,800	55,100	84,400	125,000	WTD	.118	.142	EQN	836	3.60	25.0	613	56.36	5.18	12.75
348	388	492	562	651	719	789	WTD	1.162	.340	EQN	NONE	3.66	26.0	26.40	13.72	7.13	26.78
349	2,780	5,010	7,080	10,600	13,900	17,900	WTD	.876	.581	EQN	1,057	3.62	26.5	280	88.70	28.10	8.10
350	4,660	6,710	8,160	10,100	11,600	13,100	WTD	-.251	.087	EQN	NONE	3.62	26.5	298	84.39	23.90	8.63
351	13,100	20,800	26,900	35,800	43,300	51,600	WTD	.594	.265	EQN	NONE	3.63	25.0	1,089	72.07	4.77	11.15
352	11,100	17,500	22,300	29,100	34,600	40,400	WTD	.215	.089	VISUAL	3,000	3.53	23.5	5,697	284.58	14.22	4.81
353	25,700	43,200	57,000	77,100	94,000	113,000	WTD	.007	.130	EQN	5,110	3.10	21.0	13,107	541.97	22.41	6.47
354	474	1,140	1,860	3,260	4,760	6,770	WTD	1.155	.412	EQN	NONE	3.65	26.0	11.80	4.50	1.71	13.13
355	687	1,620	2,570	4,270	5,960	8,070	WTD	.114	.164	EQN	111	3.68	27.5	24.20	12.14	6.09	15.41
356	1,760	6,240	12,100	24,400	38,400	57,700	WTD	-.412	-.010	EQN	138	3.69	27.5	97	26.06	7.00	13.47

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft^3/s)	No. of high out-liers
357	08089000	Brazos River near Palo Pinto, Texas	3	32°51'45"	98°18'08"	17	0	17	NONE	0
358	08089100	Elm Creek trib. near Graford, Texas	3	32°54'35"	98°17'35"	9	0	9	NONE	0
359	08090500	Palo Pinto Creek near Santo, Texas	3	32°37'51"	98°10'50"	13	84	38	45,100	1
360	08090850	Cidwell Branch near Granbury, Texas	7	32°35'41"	97°46'24"	9	0	9	NONE	0
361	08091000	Brazos River near Glen Rose, Texas	7	32°16'18"	97°39'48"	17	0	17	NONE	0
362	08091500	Paluxy River at Glen Rose, Texas	7	32°13'53"	97°46'37"	35	106	60	59,000	1
363	08091700	Panter Branch near Tolar, Texas	7	32°20'59"	97°51'25"	9	0	9	NONE	0
364	08092000	Nolan River at Blum, Texas	7	32°09'02"	97°24'09"	16	0	16	NONE	0
365	08093200	Bond Branch near Hillsboro, Texas	7	32°02'16"	97°06'27"	10	0	10	NONE	0
366	08093250	Hackberry Creek at Hillsboro, Texas	7	32°00'20"	97°08'59"	12	0	12	NONE	0
367	08093500	Aquilla Creek near Aquilla, Texas	7	31°50'40"	97°12'04"	41	93	59	74,200	1
368	08094000	Green Creek Subwatershed No. 1 near McKinney, Texas	4	32°09'57"	98°20'28"	23	0	23	NONE	0
369	08095000	North Bosque River near Clifton, Texas[7]	7	31°47'09"	97°34'04"	45	138	76	200,000	1
370	08095200	North Bosque River at Valley Mills, Texas[7]	7	31°40'10"	97°28'09"	9	138	52	220,000	1
371	08095220	South Bosque River near McGregor, Texas	7	31°23'22"	97°22'54"	8	0	8	NONE	0
372	08095250	Willow Branch at McGregor, Texas	7	31°26'24"	97°25'18"	8	0	8	NONE	0
373	08095300	Middle Bosque River near McGregor, Texas	7	31°30'33"	97°21'56"	33	0	33	NONE	0
374	08095400	Hog Creek near Crawford, Texas	7	31°33'20"	97°21'22"	20	0	20	NONE	0
375	08096500	Brazos River at Waco, Texas	7	31°32'06"	97°04'22"	42	94	60	246,000	1
376	08096550	Box Branch at Robinson, Texas	7	31°29'28"	97°08'47"	9	0	9	NONE	0
377	08096800	Cow Bayou Subwatershed No. 4 near Bruceville, Texas	7	31°19'59"	97°16'02"	18	0	18	NONE	0
378	08097500	Brazos River near Marlin, Texas	7	31°17'18"	96°58'10"	13	0	13	NONE	0
379	08098203	Brushy Creek Watershed C near Riessel, Texas	7	31°31'11"	96°53'34"	32	0	32	NONE	0
380	08098206	Brushy Creek Watershed D near Riessel, Texas	7	31°30'38"	96°53'32"	28	0	28	NONE	0
381	08098227	Brushy Creek Watershed Y-2 near Riessel, Texas	7	31°28'30"	96°52'46"	37	0	37	NONE	0
382	08098239	Brushy Creek Watershed Y near Riessel, Texas	7	31°28'36"	96°52'36"	36	0	36	NONE	0
383	08098242	Brushy Creek Watershed G near Riessel, Texas	7	31°28'59"	96°52'06"	24	0	24	NONE	0
384	08098263	Brushy Creek Watershed W-1 near Riessel, Texas	7	31°27'27"	96°52'48"	38	0	38	NONE	0
385	08098281	Brushy Creek Watershed W-2 near Riessel, Texas	7	31°27'19"	96°52'55"	38	0	38	NONE	0
386	08098300	Little Pond Creek near Burlington, Texas	8	31°01'35"	96°59'17"	20	0	20	NONE	0
387	08099300	Sabana River near De Leon, Texas	4	32°06'50"	98°36'19"	19	0	19	NONE	0
388	08099350	Sabana River trib. near De Leon, Texas	4	32°06'44"	98°33'58"	9	0	9	131	0
389	08099500	Leon River near Hasse, Texas	4	31°57'28"	98°27'32"	15	46	27	38,500	1
390	08100100	Edison Creek near Hamilton, Texas	4	31°46'10"	98°07'25"	9	0	9	NONE	0
391	08100400	Bermuda Branch near Gatesville, Texas	4	31°32'26"	97°47'53"	8	0	8	NONE	0
392	08100500	Leon River at Gatesville, Texas[5]	4	31°25'58"	97°45'42"	9	52	25	70,000	1
393	08100800	Hoffman Branch near Hamilton, Texas	4	31°35'01"	98°11'45"	9	0	9	NONE	0
394	08101000	Cowhouse Creek at Pidcoke, Texas[5]	4	31°17'05"	97°53'05"	43	112	67	110,000	1
395	08102500	Leon River near Belton, Texas	8	31°04'12"	97°26'28"	31	42	36	56,500	2
396	08102900	School Branch near Lampasas, Texas	4	31°13'48"	98°09'25"	8	0	8	83	0

Footnotes at end of table.

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s)						Skew calcu-lation option	Station skew	Final skew for LPIII distri-bution	Low-outlier thresh-old source	Low-outlier thresh-old (ft^3/s)	2-yr 24-hr precip-itation (in.)	Mean annual precip-itation (in.)	Contrib-uting drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimen-sionless)	Stream slope (ft/mi)
	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr											
357	36,700	57,400	72,400	92,500	108,000	125,000	WTD	-0.811	-0.052	EQN	NONE	3.20	22.0	14,245	627.67	27.66	5.93
358	25	34	40	47	53	59	WTD	-.326	.103	VISUAL	7	3.76	29.0	1.10	.67	.41	48.93
359	10,400	18,500	25,300	35,700	44,700	55,000	WTD	.151	.169	EQN	2,427	3.78	29.0	573	53.08	4.92	10.20
360	130	328	536	907	1,280	1,740	WTD	-.462	.051	EQN	NONE	3.88	30.5	3.37	4.98	7.35	54.70
361	39,300	55,800	67,400	82,700	94,700	107,000	WTD	.415	.136	EQN	5,893	3.50	24.0	16,252	784.02	37.82	5.04
362	9,680	24,300	36,000	51,500	62,800	73,700	STA	-.811	-.811	VISUAL	9,000	3.85	30.0	410	57.73	8.13	13.64
363	1,200	2,380	3,450	5,160	6,710	8,540	WTD	.210	.131	EQN	31	3.88	30.0	7.82	4.04	2.09	34.92
364	11,700	16,400	19,700	23,900	27,100	30,400	WTD	.687	.091	EQN	1,228	3.95	32.0	282	32.79	3.81	13.11
365	179	372	533	769	966	1,180	WTD	-.907	-.278	EQN	NONE	4.07	34.0	.36	.38	.40	31.59
366	3,720	7,780	11,300	16,800	21,500	26,800	WTD	-.023	-.132	EQN	NONE	4.05	34.0	57.90	14.69	3.73	9.15
367	9,930	18,100	24,800	34,700	43,200	52,700	WTD	.149	.029	EQN	NONE	4.04	34.0	308	38.85	4.90	8.19
368	783	2,000	3,380	6,070	9,010	13,000	WTD	.725	.346	EQN	145	3.83	29.0	4.19	2.77	1.83	41.45
369	18,700	34,300	46,400	63,400	77,100	91,600	WTD	-.251	-.213	EQN	3,617	3.90	30.0	968	94.77	9.28	9.69
370	28,700	61,200	90,000	135,000	174,000	218,000	WTD	-.120	-.134	EQN	5,420	3.91	30.0	1,146	108.03	10.18	9.32
371	1,680	4,220	6,590	10,400	13,700	17,400	WTD	-1.089	-.326	EQN	NONE	4.08	34.0	15.90	6.10	2.34	28.48
372	339	500	610	752	860	969	WTD	.513	-.081	EQN	NONE	4.07	34.0	2.52	3.09	3.79	25.49
373	11,800	21,200	28,300	37,900	45,400	53,100	WTD	-.463	-.302	EQN	1,341	4.01	32.0	182	31.47	5.44	19.39
374	6,820	10,900	13,600	17,100	19,600	22,100	WTD	-.715	-.344	EQN	480	3.99	32.5	78.20	34.53	15.25	17.20
375	51,000	89,600	121,000	167,000	205,000	249,000	WTD	.227	.075	EQN	14,409	3.40	23.0	20,007	893.32	39.89	4.68
376	94	252	411	677	926	1,220	WTD	-.422	-.240	EQN	NONE	4.14	34.0	.34	.42	.52	62.49
377	909	1,590	2,090	2,750	3,260	3,780	WTD	-.662	-.323	VISUAL	350	4.13	34.0	5.04	4.11	3.36	43.90
378	49,300	85,900	114,000	153,000	184,000	216,000	WTD	.008	-.148	EQN	NONE	3.40	23.0	20,645	930.43	41.93	4.51
379	256	470	640	880	1,080	1,290	WTD	-.113	-.163	EQN	29	4.20	36.0	.90	1.20	1.60	32.83
380	426	813	1,130	1,600	1,990	2,420	WTD	.029	-.107	EQN	36	4.20	36.0	1.73	1.85	1.97	28.44
381	88	214	332	519	687	877	WTD	-.314	-.249	EQN	NONE	4.21	36.0	.21	.38	.69	60.44
382	167	412	643	1,010	1,340	1,720	WTD	-.374	-.273	EQN	13	4.21	36.0	.48	.65	.88	50.47
383	934	1,820	2,550	3,610	4,490	5,450	STA	-.183	-.183	VISUAL	200	4.21	36.0	6.84	5.29	4.10	17.97
384	167	377	559	831	1,060	1,310	WTD	-.522	-.332	EQN	18	4.21	36.0	.28	.55	1.10	65.04
385	92	237	371	583	768	974	STA	-.373	-.373	EQN	6	4.21	36.0	.20	.83	3.44	56.63
386	3,230	5,190	6,500	8,130	9,300	10,400	STA	-.432	-.432	VISUAL	1,000	4.25	35.0	23	13.87	8.36	12.06
387	4,880	8,190	10,200	12,300	13,700	14,900	STA	-.878	-.878	EQN	637	3.77	26.5	264	55.41	11.63	12.37
388	54	79	98	125	147	171	WTD	1.597	.357	EQN	NONE	3.78	27.0	.48	.74	1.14	71.11
389	6,060	14,500	22,800	36,900	50,400	66,800	WTD	-.168	-.004	EQN	NONE	3.72	27.0	1,261	92.52	6.79	9.33
390	289	536	748	1,080	1,360	1,700	WTD	.528	.143	EQN	NONE	3.88	28.0	2.91	2.75	2.60	73.97
391	65	121	170	244	309	383	WTD	.900	.090	VISUAL	10	3.96	32.0	.50	.95	1.81	147.37
392	7,170	16,200	25,000	39,800	53,900	71,000	WTD	.211	.073	EQN	NONE	3.80	28.0	2,342	214.75	19.69	5.81
393	185	1,240	3,310	9,260	17,900	32,200	WTD	-.651	-.079	EQN	11	3.88	27.5	5.56	5.20	4.87	59.28
394	12,300	28,400	43,000	66,000	86,300	109,000	WTD	-.308	-.225	EQN	1,045	3.90	28.0	455	71.88	11.36	13.24
395	17,300	28,900	37,600	49,500	58,900	68,800	WTD	-.051	-.116	EQN	3,709	3.85	28.0	3,542	296.12	24.76	5.09
396	50	63	71	81	88	95	WTD	1.478	.157	EQN	1	3.92	29.0	.90	.85	.80	61.76

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft³/s)	No. of high out-liers
397	08103800	Lampasas River near Kempner, Texas	4	31°04'54"	98°00'59"	31	0	31	NONE	0
398	08103900	South Fork Rocky Creek near Briggs, Texas	4	30°54'41"	98°02'12"	31	90	52	31,200	1
399	08104000	Lampasas River at Youngsport, Texas	4	30°57'26"	97°42'30"	49	0	49	NONE	0
400	08104700	North Fork San Gabriel River near Georgetown, Texas	8	30°39'42"	97°42'40"	11	0	11	NONE	0
401	08104850	South Fork San Gabriel River near Bertram, Texas	4	30°43'14"	98°06'15"	8	0	8	NONE	0
402	08104900	South Fork San Gabriel River at Georgetown, Texas	8	30°37'32"	97°41'27"	26	0	26	NONE	0
403	08105000	San Gabriel River at Georgetown, Texas	8	30°39'14"	97°39'18"	39	122	70	155,000	2
404	08105100	Berry Creek near Georgetown, Texas	8	30°41'28"	97°39'21"	26	0	26	NONE	0
405	08105400	San Gabriel River near Circleville, Texas	8	30°37'43"	97°28'23"	19	0	19	NONE	0
406	08105700	San Gabriel River at Laneport, Texas	8	30°41'39"	97°16'43"	15	0	15	NONE	0
407	08105900	Avery Branch near Taylor, Texas	8	30°29'11"	97°27'27"	8	0	8	2,353	0
408	08106500	Little River at Cameron, Texas	8	30°49'53"	96°57'01"	36	102	59	647,000	1
409	08108200	North Elm Creek near Cameron, Texas	8	30°55'52"	97°01'13"	11	0	11	NONE	0
410	08108800	Little Branch near Bryan, Texas	8	30°45'14"	96°28'01"	9	0	9	NONE	0
411	08109000	Brazos River near Bryan, Texas	8	30°36'52"	96°29'10"	21	0	21	NONE	0
412	08109700	Middle Yegua Creek near Dime Box, Texas	8	30°20'21"	96°54'16"	31	81	49	12,500	1
413	08109800	East Yegua Creek near Dime Box, Texas	8	30°24'26"	96°49'02"	31	0	31	NONE	0
414	08110000	Yegua Creek near Somerville, Texas	8	30°19'18"	96°30'26"	42	0	42	NONE	0
415	08110100	Davidson Creek near Lyons, Texas	8	30°25'10"	96°32'24"	31	91	52	23,200	1
416	08110350	Plummers Creek at Mexia, Texas	7	31°39'45"	96°29'56"	9	0	9	NONE	0
417	08110430	Big Creek near Freestone, Texas	7	31°30'25"	96°19'31"	14	0	14	15,948	0
418	08110500	Navasota River near Easterly, Texas	8	31°10'12"	96°17'51"	37	117	64	90,000	1
419	08111000	Navasota River near Bryan, Texas[9]	8	30°52'10"	96°11'32"	12	0	12	NONE	0
420	08111100	Winkleman Creek near Brenham, Texas	8	30°15'19"	96°15'44"	9	0	9	NONE	0
421	08111700	Mill Creek near Bellville, Texas	11	29°52'51"	96°12'18"	30	0	30	NONE	0
422	08114000	Brazos River at Richmond, Texas	11	29°34'56"	95°45'27"	21	0	21	NONE	0
423	08114900	Seabourne Creek near Rosenberg, Texas	11	29°31'27"	95°48'28"	8	0	8	NONE	0
424	08115000	Big Creek near Needville, Texas	11	29°28'35"	95°48'45"	46	0	46	NONE	0
425	08115500	Fairchild Creek near Needville, Texas	11	29°26'45"	95°45'41"	8	0	8	NONE	0
426	08116400	Dry Creek near Rosenberg, Texas	11	29°30'42"	95°44'48"	21	48	31	2,410	1
427	08117500	San Bernard River near Boling, Texas	11	29°18'48"	95°53'37"	39	0	39	NONE	0
428	08118500	Bull Creek near Ira, Texas	3	32°36'00"	101°05'38"	10	31	18	22,400	1
429	08119000	Bluff Creek near Ira, Texas	3	32°35'29"	101°03'02"	18	0	18	4,311	0
430	08120500	Deep Creek near Dunn, Texas	3	32°34'25"	100°54'27"	34	106	61	36,400	2
431	08121500	Morgan Creek near Westbrook, Texas	3	32°23'42"	101°01'32"	9	42	22	18,600	1
432	08123500	Champion Creek near Colorado City, Texas	3	32°19'01"	100°49'28"	12	0	12	NONE	0
433	08123620	Sulphur Springs Draw near Wellman, Texas	1	33°04'36"	102°27'54"	9	0	9	NONE	0
434	08123750	Coahoma Draw trib. near Big Spring, Texas	3	32°21'17"	101°24'18"	10	0	10	NONE	0
435	08123760	Bull Creek trib. near Forsan, Texas	3	32°08'23"	101°10'53"	9	0	9	NONE	0
436	08123900	Colorado River near Silver, Texas	4	32°01'10"	100°44'08"	14	0	14	NONE	0

Footnotes at end of table.

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s)						Skew calculation option	Station skew	Final skew for LPIII distribution	Low-outlier threshold source	Low-outlier threshold (ft^3/s)	2-yr 24-hr precipitation (in.)	Mean annual precipitation (in.)	Contributing drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimensionless)	Stream slope (ft/mi)
	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr											
397	10,800	24,600	37,600	58,400	77,400	99,400	WTD	-0.196	-0.115	EQN	1,289	3.89	28.0	818	65.33	5.22	13.46
398	3,100	6,490	9,480	14,100	18,200	22,900	WTD	-.085	-.084	VISUAL	400	3.96	30.0	33.30	11.44	3.93	36.15
399	16,200	31,500	44,200	63,000	78,900	96,400	WTD	-.108	-.118	EQN	2,604	3.91	29.0	1,240	101.61	8.33	10.49
400	7,090	15,900	24,100	37,700	50,300	65,100	WTD	.374	-.015	EQN	312	3.98	31.0	248	47.70	9.17	16.30
401	690	1,810	2,990	5,140	7,290	9,990	WTD	.640	.021	EQN	NONE	3.97	30.0	8.90	5.42	3.30	41.75
402	7,590	15,600	22,400	32,500	41,000	50,300	WTD	-.395	-.215	EQN	879	4.00	31.0	133	38.03	10.88	19.84
403	13,000	26,600	38,900	58,600	76,600	97,500	WTD	.157	.074	EQN	2,072	3.98	31.0	405	52.23	6.73	16.02
404	4,290	8,250	11,400	15,900	19,600	23,600	WTD	-.419	-.230	EQN	116	4.03	32.0	83.10	28.01	9.44	16.04
405	16,800	33,600	47,600	68,400	85,900	105,000	WTD	-.237	-.175	EQN	NONE	4.01	32.0	599	66.06	7.29	14.60
406	14,100	23,100	28,700	35,200	39,500	43,500	STA	-.700	-.700	EQN	1,812	4.05	32.0	738	84.12	9.59	12.68
407	691	1,190	1,580	2,150	2,620	3,140	WTD	1.892	.043	EQN	NONE	4.19	33.0	3.52	2.74	2.13	13.17
408	28,600	62,100	94,700	151,000	204,000	271,000	WTD	.433	.194	EQN	7,832	3.95	31.0	7,065	377.85	20.21	4.46
409	3,710	5,040	5,890	6,930	7,680	8,420	WTD	.096	-.135	VISUAL	1,000	4.24	35.0	44.80	22.08	10.88	10.25
410	58	81	95	113	126	138	WTD	-.091	-.179	EQN	NONE	4.45	38.0	.14	.16	.18	43.75
411	70,100	99,500	119,000	145,000	164,000	183,000	WTD	.358	-.024	EQN	NONE	3.70	27.0	29,949	1,016.45	34.50	4.30
412	1,620	4,590	7,420	11,800	15,500	19,500	WTD	-.963	-.555	EQN	112	4.32	35.0	236	41.08	7.15	6.79
413	2,140	5,130	7,790	11,800	15,300	19,000	WTD	-.732	-.385	EQN	205	4.35	36.0	244	34.84	4.97	7.25
414	6,790	17,000	26,700	42,500	56,800	73,200	WTD	-.289	-.241	EQN	587	4.39	36.0	1,009	61.83	3.79	4.14
415	3,800	8,120	11,700	17,000	21,300	25,900	WTD	-.444	-.346	EQN	512	4.42	36.0	195	39.52	8.01	8.30
416	1,180	1,690	2,020	2,430	2,730	3,030	WTD	-.514	-.179	EQN	NONE	4.28	38.0	4.42	2.13	1.03	15.41
417	2,040	4,400	6,630	10,400	13,900	18,100	WTD	1.148	.118	EQN	485	4.32	39.0	57.10	19.00	6.32	7.25
418	12,800	28,300	41,800	62,100	79,200	98,000	WTD	-.360	-.301	EQN	1,823	4.30	38.0	968	85.66	7.58	3.83
419	11,900	29,500	46,600	75,000	101,000	133,000	WTD	.002	-.152	EQN	1,376	4.33	38.0	1,454	121.28	10.12	3.30
420	302	555	748	1,010	1,220	1,440	WTD	-.819	-.290	EQN	20	4.62	39.0	.75	1.08	1.56	39.49
421	13,600	22,800	29,900	39,800	47,900	56,500	WTD	.098	-.014	VISUAL	5,500	4.60	40.0	376	44.62	5.30	8.01
422	59,100	81,800	96,600	115,000	128,000	141,000	WTD	-.425	-.125	EQN	NONE	3.80	29.0	35,441	1,207.80	41.16	3.73
423	269	395	479	586	667	747	WTD	-1.052	-.142	EQN	NONE	4.90	43.0	5.78	4.06	2.84	3.24
424	2,480	4,140	5,380	7,120	8,520	10,000	WTD	-.121	-.052	EQN	NONE	4.88	43.0	42.80	14.47	4.89	2.83
425	997	1,680	2,210	2,940	3,530	4,160	WTD	-.399	-.045	EQN	NONE	4.92	43.0	26.20	6.73	1.73	4.39
426	689	995	1,220	1,530	1,790	2,060	STA	.307	.307	EQN	NONE	4.93	43.0	8.65	5.83	3.93	3.38
427	6,910	12,000	16,100	22,100	27,100	32,600	WTD	.051	.037	EQN	1,574	4.75	42.0	727	83.45	9.58	4.01
428	1,460	3,070	4,550	6,930	9,130	11,700	WTD	.531	.057	EQN	160	3.03	19.5	26.30	14.82	8.35	15.94
429	968	1,680	2,260	3,120	3,850	4,670	WTD	.626	.132	EQN	103	3.05	19.5	42.60	19.10	8.56	18.72
430	2,370	5,610	9,020	15,300	21,700	29,900	WTD	.430	.260	EQN	334	3.08	20.0	188	45.17	10.85	14.02
431	1,660	3,660	5,630	9,030	12,300	16,400	WTD	.551	.193	EQN	NONE	2.98	18.0	230	43.60	8.27	12.87
432	3,280	7,260	10,900	16,800	22,000	28,100	WTD	-.223	-.090	EQN	NONE	3.19	21.0	177	28.48	4.58	16.82
433	32	116	223	439	674	986	WTD	-.251	-.135	EQN	NONE	2.53	16.0	41.80	41.80	41.80	9.50
434	370	747	1,070	1,540	1,940	2,390	WTD	-.386	-.162	EQN	NONE	2.94	17.5	2.38	1.64	1.13	30.01
435	36	226	555	1,390	2,450	4,020	WTD	-1.924	-.273	VISUAL	10	3.00	18.0	.40	.69	1.18	105.22
436	6,370	12,100	17,000	24,300	30,500	37,600	WTD	.154	-.014	EQN	NONE	2.70	15.5	4,737	116.53	2.87	4.79

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft^3/s)	No. of high out-liers
437	08123920	Bitter Creek near Silver, Texas	4	31°58'48"	100°42'52"	8	0	8	NONE	0
438	08124000	Colorado River at Robert Lee, Texas	4	31°53'07"	100°28'49"	14	0	14	NONE	0
439	08126500	Colorado River at Ballinger, Texas	4	31°43'58"	99°57'13"	61	0	61	NONE	0
440	08127000	Elm Creek at Ballinger, Texas	4	31°44'57"	99°56'51"	49	76	59	50,000	1
441	08127100	Dry Creek near Christoval, Texas	4	31°05'21"	100°20'56"	10	0	10	NONE	0
442	08128000	South Concho River at Christoval, Texas	4	31°11'15"	100°30'06"	63	112	80	115,000	1
443	08128400	Middle Concho River above Tankersley, Texas	4	31°25'38"	100°42'39"	33	0	33	NONE	0
444	08128500	Middle Concho River near Tankersley, Texas	4	31°22'35"	100°36'50"	31	0	31	NONE	0
445	08129300	Spring Creek above Tankersley, Texas	4	31°19'48"	100°38'24"	32	0	32	NONE	0
446	08130500	Dove Creek at Knickerbocker, Texas	4	31°16'24"	100°37'45"	32	0	32	NONE	0
447	08131000	Spring Creek near Tankersley, Texas	4	31°21'30"	100°32'05"	30	112	58	82,100	1
448	08131400	Pecan Creek near San Angelo, Texas	4	31°18'32"	100°26'44"	25	79	44	30,500	1
449	08133300	Quarry Creek near Sterling City, Texas	4	31°50'47"	101°09'20"	10	0	10	1,700	0
450	08133500	North Concho River at Sterling City, Texas[10]	4	31°49'48"	100°59'36"	54	58	55	16,300	1
451	08133800	Broome Creek near Broome, Texas	4	31°46'05"	100°51'09"	10	0	10	NONE	0
452	08134000	North Concho River near Carlsbad, Texas	4	31°35'33"	100°38'12"	69	141	93	94,600	1
453	08134300	Nolke Station Creek near San Angelo, Texas	4	31°31'34"	100°33'46"	10	0	10	NONE	0
454	08134400	Gravel Pit Creek near San Angelo, Texas	4	31°27'54"	100°31'17"	10	0	10	NONE	0
455	08135000	North Concho River at San Angelo, Texas	4	31°27'57"	100°26'51"	17	99	46	184,000	1
456	08136000	Concho River at San Angelo, Texas	4	31°27'16"	100°24'37"	36	99	60	230,000	2
457	08136200	Puddle Creek near Veribest, Texas	4	31°30'38"	100°09'31"	9	0	9	NONE	0
458	08136500	Concho River at Paint Rock, Texas	4	31°30'57"	99°55'09"	36	99	61	176,000	3
459	08136900	Mukewater Creek Subwatershed No. 10–A near Trickham, Texas	4	31°39'01"	99°13'30"	8	0	8	NONE	0
460	08137000	Mukewater Creek Subwatershed No. 9 near Trickham, Texas	4	31°41'36"	99°12'12"	17	0	17	NONE	0
461	08137500	Mukewater Creek at Trickham, Texas	4	31°35'24"	99°13'36"	10	0	10	NONE	0
462	08138000	Colorado River at Winchell, Texas	4	31°28'04"	99°09'43"	24	0	24	NONE	0
463	08139000	Deep Creek Subwatershed No. 3 near Placid, Texas	4	31°17'25"	99°09'22"	24	0	24	2,945	0
464	08140000	Deep Creek Subwatershed No. 6 near Mercury, Texas	4	31°23'58"	99°08'14"	20	0	20	NONE	0
465	08141100	McCall Branch near Coleman, Texas	4	31°50'57"	99°33'12"	9	0	9	NONE	0
466	08143700	Brown's Creek trib. near Goldthwaite, Texas	4	31°31'01"	98°34'00"	9	0	9	NONE	0
467	08144500	San Saba River at Menard, Texas	4	30°55'08"	99°47'07"	78	0	78	NONE	0
468	08144600	San Saba River near Brady, Texas	4	31°00'14"	99°16'07"	14	0	14	NONE	0
469	08145000	Brady Creek at Brady, Texas	4	31°08'17"	99°20'05"	15	73	38	50,300	2
470	08145100	Brady Creek trib. near Brady, Texas	4	31°05'05"	99°17'33"	8	0	8	3,122	0
471	08146000	San Saba River at San Saba, Texas	4	31°12'47"	98°43'09"	64	81	70	203,000	1
472	08147000	Colorado River near San Saba, Texas	4	31°13'04"	98°33'51"	35	74	50	184,000	2
473	08148500	North Llano River near Junction, Texas	4	30°31'06"	99°48'39"	62	103	78	84,000	2
474	08150000	Llano River near Junction, Texas	4	30°29'51"	99°43'19"	78	119	92	319,000	1
475	08150200	Llano River trib. near London, Texas	4	30°38'22"	99°35'52"	8	0	8	NONE	0
476	08150700	Llano River near Mason, Texas	4	30°39'38"	99°06'32"	26	119	64	218,000	4

Footnotes at end of table.

of annual peak-streamflow data from natural basins within and near Texas—Continued

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s) 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	Skew calcu-lation option	Station skew	Final skew for LPIII distri-bution	Low-outlier thresh-old source	Low-outlier thresh-old (ft^3/s)	2-yr 24-hr precip-itation (in.)	Mean annual precip-itation (in.)	Contrib-uting drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimen-sionless)	Stream slope (ft/mi)
437	50	275	663	1,680	3,030	5,150	WTD	-0.060	-0.071	EQN	NONE	3.20	19.5	3.71	3.18	2.73	225.94
438	20,600	27,500	31,800	37,000	40,600	44,100	WTD	-.725	-.197	VISUAL	10,000	2.80	15.5	5,047	142.82	4.04	4.64
439	16,200	27,400	35,900	47,700	57,300	67,500	WTD	-.200	-.068	EQN	3,821	2.85	16.0	6,160	195.95	6.23	4.30
440	5,940	12,800	19,600	31,200	42,700	56,800	WTD	.366	.255	EQN	1,342	3.52	24.5	450	43.96	4.29	16.49
441	127	461	880	1,720	2,610	3,780	WTD	-.490	-.196	EQN	NONE	3.40	20.0	2.73	.38	.05	76.32
442	2,760	12,000	25,900	58,300	98,400	157,000	STA	-.029	-.029	VISUAL	1,000	3.32	20.0	354	33.85	3.24	13.37
443	2,730	6,660	9,720	13,700	16,600	19,300	STA	-.824	-.824	VISUAL	1,000	3.00	17.0	1,611	102.12	6.47	7.61
444	9,620	17,600	23,400	31,100	36,900	42,800	STA	-.423	-.423	VISUAL	4,000	3.01	17.0	1,685	111.58	7.39	7.56
445	285	2,080	6,050	19,400	41,700	83,700	WTD	.303	.143	EQN	20	3.15	18.0	405	54.50	7.33	13.36
446	1,000	5,200	12,100	28,000	46,800	72,800	WTD	-.925	-.388	VISUAL	1,000	3.25	19.0	198	33.72	5.74	15.66
447	8,380	17,500	25,000	35,700	44,400	53,600	WTD	-.500	-.358	EQN	674	3.20	18.0	671	62.01	5.73	13.17
448	321	2,010	5,070	13,300	24,400	41,900	WTD	-.183	-.157	EQN	9	3.38	20.0	81.10	19.76	4.82	23.24
449	294	610	899	1,370	1,800	2,300	WTD	1.319	.089	EQN	NONE	3.03	17.0	3.25	2.65	2.16	76.76
450	1,490	4,270	7,720	13,500	18,800	24,700	STA	-.627	-.627	EQN	1,490	3.00	17.0	568	48.27	4.10	10.60
451	32	132	273	586	954	1,470	WTD	.007	-.082	EQN	NONE	3.16	18.5	2.03	2.68	3.54	82.02
452	3,340	14,000	31,400	62,300	88,800	116,000	STA	-1.065	-1.065	EQN	3,340	3.09	18.0	1,191	83.80	5.90	9.44
453	27	116	247	553	928	1,480	WTD	.360	-.015	EQN	NONE	3.28	19.0	.59	1.48	3.70	73.65
454	18	32	42	57	69	83	WTD	.679	.038	EQN	NONE	3.31	19.0	.19	.19	.19	94.74
455	7,950	22,400	38,500	68,400	99,000	138,000	WTD	.024	-.016	EQN	1,130	3.13	18.5	1,450	105.95	7.74	8.30
456	21,500	46,900	70,000	106,000	139,000	176,000	WTD	-.120	-.114	EQN	2,603	3.05	17.0	4,411	130.70	3.87	7.53
457	63	97	121	152	176	201	WTD	-.326	-.093	EQN	NONE	3.45	21.0	12	2.43	.49	13.50
458	20,500	43,600	66,000	104,000	142,000	187,000	WTD	.354	.241	EQN	4,728	3.18	18.0	5,443	172.40	5.46	6.87
459	787	1,160	1,420	1,780	2,070	2,370	WTD	.169	.174	EQN	NONE	3.66	26.0	21.80	11.77	6.36	24.25
460	371	697	988	1,450	1,880	2,390	WTD	.540	.279	EQN	51	3.67	26.0	4.02	3.99	3.95	24.67
461	2,590	6,420	10,500	18,000	25,600	35,500	WTD	.214	.173	EQN	NONE	3.67	26.0	70	18.65	4.97	16.36
462	27,500	41,300	50,800	63,000	72,200	81,500	WTD	-.758	-.134	EQN	NONE	2.92	17.0	13,788	297.40	6.41	3.97
463	346	734	1,170	2,020	2,970	4,300	STA	.854	.854	EQN	NONE	3.70	25.0	3.42	2.40	1.68	56.05
464	475	1,300	2,260	4,160	6,220	9,000	WTD	.450	.221	EQN	63	3.70	25.5	5.41	5.94	6.52	44.74
465	433	606	722	871	983	1,100	WTD	-1.347	-.002	EQN	16	3.59	25.0	2.17	1.37	.86	38.32
466	118	250	375	584	782	1,020	WTD	.588	.182	EQN	NONE	3.82	26.5	2.48	2.70	2.94	91.06
467	5,950	22,100	43,200	86,900	136,000	202,000	WTD	-.171	-.115	EQN	433	3.47	21.0	1,128	58.72	3.06	9.55
468	5,960	26,600	56,800	125,000	207,000	324,000	WTD	-.840	-.132	EQN	375	3.53	22.0	1,626	100.26	6.18	8.87
469	4,940	11,800	19,400	33,900	49,500	70,200	WTD	.700	.400	EQN	NONE	3.59	24.5	588	62.54	6.65	10.70
470	125	486	1,030	2,340	4,060	6,720	WTD	1.739	.247	EQN	15	3.68	25.0	4.05	3.68	3.34	34.77
471	10,600	26,800	44,300	76,500	110,000	152,000	WTD	.186	.145	EQN	1,816	3.59	24.0	3,039	156.24	8.03	8.02
472	31,700	59,500	85,500	129,000	171,000	223,000	WTD	1.119	.489	EQN	11,940	3.10	19.0	19,819	385.16	7.49	3.52
473	10,300	35,300	58,700	92,300	118,000	143,000	STA	-.904	-.904	VISUAL	5,000	3.53	22.0	914	54.71	3.27	11.87
474	13,700	50,100	88,200	149,000	202,000	258,000	STA	-.724	-.724	VISUAL	10,000	3.55	22.5	1,851	74.29	2.98	9.98
475	19	39	58	87	113	143	WTD	.554	-.007	EQN	NONE	3.63	23.5	.58	.16	.05	164.04
476	25,700	75,300	125,000	208,000	283,000	369,000	WTD	-.642	-.413	EQN	1,758	3.60	23.0	3,242	128.04	5.06	8.79

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft^3/s)	No. of high out-liers
477	08150800	Beaver Creek near Mason, Texas	4	30°38'36"	99°05'44"	30	0	30	NONE	0
478	08150900	Stone Creek trib. near Art, Texas	4	30°44'17"	99°03'29"	9	0	9	NONE	0
479	08151000	Llano River near Castell, Texas[11]	4	30°43'00"	98°53'00"	15	119	51	388,000	1
480	08151300	Johnson Creek near Valley, Texas	4	30°51'38"	98°49'52"	8	0	8	NONE	0
481	08151500	Llano River at Llano, Texas	4	30°45'04"	98°40'10"	54	119	76	380,000	1
482	08152000	Sandy Creek near Kingsland, Texas	4	30°33'30"	98°28'19"	27	113	57	163,000	1
483	08152700	Little Flatrock Creek near Marble Falls, Texas	4	30°30'52"	98°18'44"	8	0	8	NONE	0
484	08152800	Spring Creek near Frederickburg, Texas	5	30°18'09"	99°03'23"	8	44	22	42,500	1
485	08152900	Pedernales River near Fredericksburg, Texas	5	30°13'13"	98°52'10"	15	87	41	64,000	1
486	08153000	Pedernales River at Stonewall, Texas[12]	5	30°15'00"	98°40'00"	10	135	52	170,000	1
487	08153100	Cane Branch at Stonewall, Texas	5	30°14'07"	98°39'21"	9	0	9	NONE	0
488	08153500	Pedernales River near Johnson City, Texas	5	30°17'30"	98°23'57"	54	135	81	441,000	1
489	08154000	Pedernales River near Spicewood, Texas[12]	5	30°25'15"	98°04'50"	15	135	55	452,000	1
490	08154700	Bull Creek at Loop 360 near Austin, Texas	5	30°22'19"	97°47'04"	15	0	15	NONE	0
491	08155200	Barton Creek at SH 71 near Oak Hill, Texas	5	30°17'46"	97°55'31"	12	0	12	NONE	0
492	08155300	Barton Creek at Loop 360 at Austin, Texas	5	30°14'40"	97°48'07"	18	65	35	39,400	1
493	08158000	Colorado River at Austin, Texas	5	30°14'40"	97°41'39"	39	95	60	481,000	2
494	08158700	Onion Creek near Driftwood, Texas	5	30°04'59"	98°00'29"	14	0	14	NONE	0
495	08158810	Bear Creek below Farm Road 1826 near Driftwood, Texas	5	30°09'19"	97°56'23"	15	79	38	14,200	1
496	08158840	Slaughter Creek at Farm Road 1826 near Austin, Texas	5	30°12'32"	97°54'11"	16	0	16	NONE	0
497	08158900	Fox Branch near Oak Hill, Texas	5	30°14'01"	97°52'29"	9	0	9	NONE	0
498	08159150	Wilbarger Creek near Pflugerville, Texas	8	30°27'16"	97°36'02"	17	87	42	2,300	1
499	08159450	Reeds Creek near Bastrop, Texas	9	30°00'26"	97°15'03"	10	0	10	NONE	0
500	08160000	Dry Creek at Buescher Lake near Smithville, Texas	9	30°02'32"	97°09'34"	26	32	28	1,870	1
501	08160800	Redgate Creek near Columbus, Texas	9	29°47'56"	96°31'55"	32	0	32	NONE	0
502	08161000	Colorado River at Columbus, Texas	9	29°42'22"	96°32'12"	21	0	21	NONE	0
503	08161580	Dry Branch trib. near Altair, Texas	9	29°34'39"	96°28'16"	8	0	8	NONE	0
504	08162600	Tres Palacios River near Midfield, Texas	9	28°55'40"	96°10'15"	23	0	23	NONE	0
505	08163500	Lavaca River at Hallettsville, Texas	9	29°26'35"	96°56'39"	54	154	90	93,100	2
506	08164000	Lavaca River near Edna, Texas	9	28°57'35"	96°41'10"	55	114	77	73,000	2
507	08164300	Navidad River near Hallettsville, Texas	9	29°28'00"	96°48'45"	32	0	32	NONE	0
508	08164350	Navidad River near Speaks, Texas	9	29°19'18"	96°42'32"	8	0	8	NONE	0
509	08164450	Sandy Creek near Louise, Texas	9	29°09'34"	96°32'47"	14	0	14	NONE	0
510	08164500	Navidad River near Ganado, Texas	9	29°01'32"	96°33'08"	42	105	66	88,000	2
511	08164503	West Mustang Creek near Ganado, Texas	9	29°04'17"	96°28'01"	14	0	14	NONE	0
512	08164600	Garcitas Creek near Inez, Texas	9	28°53'28"	96°49'08"	23	91	47	19,100	1
513	08164800	Placedo Creek near Placedo, Texas	9	28°43'30"	96°46'07"	23	27	25	18,300	1
514	08165300	North Fork Guadalupe River near Hunt, Texas[13]	5	30°03'36"	99°23'40"	26	142	65	140,000	1
515	08165500	Guadalupe River at Hunt, Texas	5	30°04'08"	99°19'23"	28	142	66	206,000	1
516	08166000	Johnson Creek near Ingram, Texas	5	30°06'00"	99°16'58"	50	142	81	138,000	1

Footnotes at end of table.

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s)						Skew calcu-lation option	Station skew	Final skew for LPIII distri-bution	Low-outlier thresh-old source	Low-outlier thresh-old (ft^3/s)	2-yr 24-hr precip-itation (in.)	Mean annual precip-itation (in.)	Contrib-uting drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimen-sionless)	Stream slope (ft/mi)
	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr											
477	5,300	14,300	23,600	39,800	55,500	74,400	WTD	-0.283	-0.145	EQN	413	3.75	26.0	215	33.90	5.35	25.74
478	106	201	278	390	484	584	WTD	-.786	-.151	EQN	6	3.75	25.5	.40	.95	2.26	152.63
479	42,100	83,300	120,000	176,000	227,000	285,000	WTD	.092	.058	EQN	8,814	3.62	23.0	3,742	145.06	5.62	8.12
480	361	562	706	899	1,050	1,200	WTD	-.533	-.069	EQN	11	3.79	26.0	5.66	5.44	5.23	75.95
481	30,500	78,400	126,000	207,000	284,000	374,000	STA	-.156	-.156	EQN	3,606	3.63	23.5	4,192	159.74	6.09	8.24
482	8,420	18,300	27,100	41,200	53,800	68,200	WTD	.036	-.089	EQN	963	3.85	28.0	346	48.34	6.75	24.84
483	220	749	1,400	2,690	4,080	5,900	WTD	-.163	-.113	EQN	NONE	3.94	30.0	3.20	3.98	4.95	39.57
484	717	2,050	3,530	6,290	9,100	12,700	WTD	.875	-.043	EQN	111	3.78	28.0	15.20	6.09	2.44	47.40
485	7,170	21,700	36,600	61,200	83,300	109,000	WTD	-.626	-.454	EQN	573	3.77	28.0	369	38.86	4.09	17.64
486	9,720	18,100	25,400	36,600	46,700	58,300	WTD	.335	.168	EQN	NONE	3.78	28.5	647	58.17	5.23	13.88
487	51	138	229	389	544	734	WTD	.248	-.127	EQN	NONE	3.88	30.5	1.37	2.94	6.31	69.39
488	22,300	53,200	84,000	137,000	188,000	251,000	WTD	.094	.028	EQN	2,874	3.82	30.0	901	79.69	7.05	14.57
489	17,800	48,700	84,900	157,000	236,000	345,000	WTD	.435	.261	EQN	2,443	3.85	30.0	1,294	120.96	11.31	13.26
490	2,950	7,480	11,800	18,900	25,300	32,600	WTD	-.805	-.264	EQN	284	4.09	31.5	22.30	9.40	3.96	47.82
491	2,760	7,460	12,200	20,400	28,100	37,200	WTD	-.652	-.216	EQN	251	4.00	32.0	89.70	27.41	8.38	22.62
492	3,790	9,820	15,700	25,400	34,200	44,400	WTD	-.403	-.263	VISUAL	1,000	4.04	32.0	116	43.53	16.33	18.84
493	55,200	101,000	142,000	209,000	272,000	347,000	WTD	.946	.425	EQN	18,957	3.30	21.0	27,606	556.26	11.21	3.66
494	2,900	7,880	12,900	21,300	29,200	38,400	WTD	-.787	-.260	EQN	177	4.01	32.5	124	31.99	8.25	15.59
495	839	3,300	6,620	13,700	21,600	32,400	WTD	-.175	-.147	EQN	47	4.06	33.0	12.20	5.49	2.47	55.55
496	789	2,390	4,200	7,570	11,000	15,300	WTD	-.191	-.125	EQN	94	4.07	32.5	8.24	4.20	2.14	52.32
497	49	99	142	208	267	332	WTD	.244	-.036	EQN	NONE	4.08	32.0	.18	.40	.87	124.32
498	596	980	1,240	1,550	1,780	2,000	WTD	-.816	-.480	EQN	NONE	4.15	32.0	4.61	2.99	1.94	38.44
499	230	840	1,660	3,450	5,550	8,520	WTD	.537	.042	EQN	20	4.32	36.0	5.22	4.49	3.86	40.91
500	226	756	1,390	2,590	3,840	5,440	WTD	-.314	-.184	EQN	21	4.35	36.5	1.48	1.78	2.15	69.96
501	1,840	3,240	4,270	5,670	6,760	7,880	WTD	-.557	-.279	EQN	NONE	4.60	40.5	17.30	7.61	3.35	18.11
502	50,600	82,400	107,000	142,000	170,000	201,000	WTD	.521	.087	EQN	8,803	3.50	22.0	30,237	714.84	16.90	3.22
503	133	283	417	626	811	1,020	WTD	-.128	-.091	EQN	8	4.65	41.0	.68	.58	.49	11.31
504	5,090	7,950	10,000	12,800	15,000	17,300	WTD	-.106	-.023	EQN	NONE	4.79	42.0	145	30.55	6.44	3.33
505	7,660	16,400	24,600	38,000	50,500	65,200	WTD	.085	.071	EQN	1,368	4.43	38.0	108	25.23	5.89	12.18
506	11,500	22,300	31,400	44,900	56,500	69,300	WTD	-.112	-.079	EQN	1,943	4.47	37.5	817	85.59	8.97	5.44
507	9,390	19,600	28,500	42,000	53,800	66,900	WTD	-.334	-.143	EQN	1,496	4.47	38.5	332	37.31	4.19	8.35
508	6,480	12,100	16,700	23,500	29,300	35,600	WTD	-.354	-.061	EQN	NONE	4.48	39.0	437	53.39	6.52	6.27
509	4,690	7,980	10,500	13,900	16,700	19,600	WTD	-.433	-.105	EQN	NONE	4.60	41.0	289	55.48	10.65	5.97
510	13,600	25,800	36,700	54,200	70,500	89,700	WTD	.452	.283	EQN	2,467	4.57	40.0	826	92.67	10.40	4.78
511	3,810	6,340	8,310	11,100	13,400	15,900	WTD	.241	.061	EQN	NONE	4.70	41.0	178	39.05	8.56	2.77
512	4,100	7,900	11,000	15,600	19,400	23,600	WTD	-.227	-.145	EQN	543	4.51	37.0	91.70	24.98	6.81	6.83
513	5,970	10,700	14,300	19,300	23,400	27,700	WTD	-.505	-.175	EQN	684	4.53	38.0	68.30	21.57	6.81	4.72
514	7,000	24,900	44,700	78,900	111,000	147,000	WTD	-.637	-.528	EQN	190	3.68	27.0	168	27.57	4.53	20.35
515	9,180	28,900	51,600	94,500	139,000	195,000	WTD	-.083	-.143	EQN	524	3.70	27.5	288	33.85	3.98	19.10
516	1,850	9,120	21,200	52,100	93,600	159,000	WTD	.158	.036	EQN	131	3.72	27.0	114	19.80	3.44	25.03

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft^3/s)	No. of high out-liers
517	08166200	Guadalupe River at Kerrville, Texas[14]	5	30°03'09"	99°09'54"	8	142	57	141,000	2
518	08166300	Turtle Creek trib. near Kerrville, Texas	5	29°58'11"	99°11'02"	9	0	9	NONE	0
519	08167000	Guadalupe River at Comfort, Texas	5	29°58'10"	98°53'33"	64	146	91	240,000	1
520	08167500	Guadalupe River near Spring Branch, Texas	5	29°51'38"	98°22'58"	71	0	71	NONE	0
521	08167600	Rebecca Creek near Spring Branch, Texas	5	29°55'06"	98°22'10"	14	0	14	NONE	0
522	08168500	Guadalupe River above Comal River at New Braunfels, Texas	5	29°42'53"	98°06'35"	35	0	35	NONE	0
523	08168720	Trough Creek near New Braunfels, Texas[15]	5	29°46'20"	98°15'58"	9	47	24	2,510	1
524	08168750	West Prong Dry Comal Creek trib. near New Braunfels, Texas[15]	5	29°42'48"	98°17'26"	9	47	24	1,090	1
525	08169500	Guadalupe River at New Braunfels, Texas	5	29°41'52"	98°06'23"	13	0	13	NONE	0
526	08169750	Walnut Branch near Seguin, Texas	5	29°34'47"	97°58'46"	8	0	8	NONE	0
527	08169850	East Pecan Branch near Gonzales, Texas	9	29°29'58"	97°31'36"	9	0	9	NONE	0
528	08171000	Blanco River at Wimberley, Texas	5	29°59'39"	98°05'19"	67	125	90	95,000	3
529	08171300	Blanco River near Kyle, Texas[16]	5	29°58'45"	97°54'35"	37	125	70	115,000	2
530	08172000	San Marcos River at Luling, Texas	9	29°39'54"	97°38'59"	54	0	54	NONE	0
531	08172100	West Elm Creek near Niederwald, Texas	5	29°59'04"	97°44'39"	9	0	9	NONE	0
532	08173000	Plum Creek near Luling, Texas	9	29°41'58"	97°36'12"	34	96	56	78,500	1
533	08173500	San Marcos River at Ottine, Texas	9	29°35'36"	97°35'22"	28	0	28	NONE	0
534	08174600	Peach Creek below Dilworth, Texas	9	29°28'26"	97°18'59"	20	40	28	76,800	1
535	08175000	Sandies Creek near Westhoff, Texas	9	29°12'54"	97°26'57"	38	130	69	92,700	1
536	08176000	Guadalupe River below Cuero, Texas	9	29°03'05"	97°15'52"	23	0	23	NONE	0
537	08176200	Irish Creek near Cuero, Texas	9	29°08'02"	97°12'10"	8	0	8	NONE	0
538	08176500	Guadalupe River at Victoria, Texas	9	28°47'34"	97°00'46"	27	129	62	179,000	1
539	08176600	Threemile Creek near Cuero, Texas	9	29°02'00"	97°20'52"	9	0	9	NONE	0
540	08176900	Coleto Creek at Arnold Road near Schroeder, Texas	9	28°51'41"	97°13'34"	14	122	56	46,700	3
541	08177000	Coleto Creek near Schroeder, Texas	9	28°49'53"	97°11'10"	31	108	62	46,700	4
542	08177300	Perdido Creek at Farm Road 622 near Fannin, Texas	9	28°45'05"	97°19'01"	15	0	15	NONE	0
543	08177500	Coleto Creek near Victoria, Texas	9	28°43'51"	97°08'18"	18	106	49	236,000	1
544	08178500	San Pedro Creek at Furnish Street at San Antonio, Texas	5	29°24'22"	98°30'38"	14	0	14	NONE	0
545	08178600	Panther Springs Creek at Farm Road 2696 near San Antonio, Texas	5	29°37'31"	98°31'06"	9	0	9	NONE	0
546	08178640	West Elm Creek at San Antonio, Texas	5	29°37'23"	98°26'29"	13	0	13	NONE	0
547	08178736	Salado Creek trib. at Bee Street at San Antonio, Texas	5	29°26'37"	98°27'13"	8	0	8	NONE	0
548	08178880	Medina River at Bandera, Texas	5	29°43'26"	99°04'13"	11	0	11	NONE	0
549	08179000	Medina River near Pipe Creek, Texas	5	29°40'31"	98°58'33"	42	103	63	281,000	1
550	08179100	Red Bluff Creek near Pipe Creek, Texas	5	29°40'51"	98°57'19"	25	77	44	46,900	1
551	08179200	Medina River trib. near Pipe Creek, Texas	5	29°38'20"	98°56'18"	8	0	8	NONE	0
552	08181000	Leon Creek trib. at Farm Road 1604 at San Antonio, Texas	5	29°35'14"	98°37'40"	12	0	12	NONE	0
553	08181200	French Creek trib. near Helotes, Texas	5	29°33'43"	98°39'26"	9	0	9	NONE	0
554	08181400	Helotes Creek at Helotes, Texas	5	29°34'42"	98°41'29"	25	0	25	NONE	0
555	08182400	Calaveras Creek Subwatershed No. 6 near Elmendorf, Texas	5	29°22'49"	98°17'33"	21	0	21	NONE	0
556	08183900	Cibolo Creek near Boerne, Texas	5	29°46'26"	98°41'50"	15	86	44	18,200	3

Footnotes at end of table.

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft³/s)						Skew calcu-lation option	Station skew	Final skew for LPIII distri-bution	Low-outlier thresh-old source	Low-outlier thresh-old (ft³/s)	2-yr 24-hr precip-itation (in.)	Mean annual precip-itation (in.)	Contrib-uting drainage area (mi²)	Stream length (mi)	Basin shape factor (dimen-sionless)	Stream slope (ft/mi)
	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr											
517	7,530	26,500	49,900	95,900	145,000	208,000	WTD	-0.143	-0.189	EQN	973	3.69	27.0	510	44.31	3.85	16.73
518	80	132	167	211	244	275	WTD	-.815	-.440	EQN	NONE	3.78	29.0	.46	1.03	2.28	224.06
519	12,200	35,800	62,500	113,000	165,000	232,000	WTD	.058	-.039	EQN	1,783	3.75	28.5	839	68.87	5.65	15.01
520	12,700	31,400	51,100	86,800	123,000	168,000	WTD	.362	.122	EQN	2,571	3.80	30.0	1,315	131.27	13.10	10.85
521	1,530	5,640	10,500	19,700	28,900	40,200	WTD	-1.124	-.374	VISUAL	1,000	3.96	33.0	10.90	5.57	2.84	77.79
522	10,300	26,800	44,600	77,300	111,000	154,000	WTD	.363	.093	EQN	1,717	3.83	31.0	1,518	177.73	20.81	9.86
523	81	252	441	784	1,120	1,540	WTD	-.337	-.245	EQN	10	4.00	32.5	.48	.91	1.73	125.27
524	61	165	273	466	655	887	WTD	-.004	-.078	EQN	NONE	4.00	32.5	.32	.64	1.28	164.06
525	13,100	34,300	55,700	92,200	127,000	169,000	WTD	-.327	-.150	EQN	1,967	3.85	31.5	1,652	179.58	19.52	9.98
526	713	1,590	2,410	3,750	5,000	6,460	WTD	.098	-.012	EQN	NONE	4.12	33.0	5.46	3.79	2.63	15.58
527	81	141	188	257	314	377	WTD	.025	.036	EQN	NONE	4.28	34.5	.24	.27	.30	33.33
528	7,900	21,000	34,600	58,300	81,100	109,000	WTD	-.123	-.122	EQN	798	3.95	32.5	355	60.39	10.27	19.02
529	11,500	32,400	53,500	89,000	122,000	160,000	WTD	-.443	-.321	EQN	1,407	3.97	32.5	412	77.08	14.42	17.11
530	10,500	23,900	36,500	57,100	76,200	98,700	WTD	-.080	-.044	EQN	1,773	4.03	33.0	838	124.26	18.43	13.07
531	185	402	599	910	1,190	1,510	WTD	-.208	-.082	EQN	NONE	4.16	34.0	.44	.47	.50	78.72
532	6,330	15,600	25,400	43,200	61,200	84,300	WTD	.242	.156	EQN	1,289	4.19	35.0	309	42.30	5.79	12.56
533	14,800	39,900	68,900	126,000	189,000	273,000	WTD	.763	.259	EQN	3,245	4.10	33.5	1,249	137.12	15.05	12.11
534	7,420	16,000	24,100	37,200	49,300	63,600	WTD	.003	.033	EQN	1,380	4.32	36.5	460	50.28	5.50	7.83
535	4,140	14,200	27,600	57,600	93,700	146,000	WTD	.242	.199	EQN	587	4.25	33.0	549	54.54	5.42	8.30
536	16,400	38,000	60,200	99,800	139,000	189,000	WTD	.513	.204	EQN	3,449	4.16	34.0	4,923	352.33	25.22	6.37
537	1,550	5,380	10,300	20,300	31,400	46,400	WTD	-.662	-.053	EQN	NONE	4.41	35.0	15.50	6.59	2.80	18.43
538	19,800	38,800	55,000	79,700	101,000	125,000	WTD	-.023	-.017	VISUAL	6,000	4.17	34.0	5,198	395.85	30.15	5.83
539	76	269	531	1,110	1,810	2,820	WTD	.482	.148	EQN	7	4.37	34.0	.48	.30	.19	46.67
540	8,990	20,800	31,100	46,600	59,700	73,900	WTD	-.589	-.368	VISUAL	1,000	4.35	34.0	357	47.53	6.33	10.35
541	10,200	25,000	38,900	61,600	82,000	106,000	WTD	-.326	-.213	EQN	1,453	4.36	34.0	369	50.98	7.04	8.30
542	3,000	9,010	15,700	27,800	39,800	54,700	WTD	-.758	-.178	EQN	83	4.38	34.0	28	8.58	2.63	17.21
543	9,850	26,500	45,400	81,600	120,000	171,000	WTD	.314	.167	EQN	1,911	4.37	34.0	514	61.32	7.32	7.65
544	603	1,160	1,580	2,160	2,610	3,080	WTD	-.962	-.387	EQN	NONE	3.97	30.0	2.64	14.97	84.89	29.81
545	736	2,510	4,700	9,090	13,800	20,100	WTD	.601	-.097	EQN	NONE	3.96	32.0	9.54	5.09	2.72	47.05
546	352	564	713	907	1,050	1,200	WTD	-.283	-.230	EQN	20	3.98	32.0	2.45	2.52	2.58	82.13
547	291	393	458	537	595	651	WTD	.262	-.133	EQN	NONE	3.98	30.0	.45	.49	.53	61.22
548	4,580	19,900	39,700	79,000	120,000	171,000	WTD	-.551	-.431	EQN	474	3.80	30.0	427	51.78	6.28	19.83
549	10,900	25,600	40,300	65,800	90,500	121,000	WTD	.340	.075	EQN	1,883	3.78	30.0	474	64.33	8.73	17.49
550	2,350	6,820	11,200	18,300	24,600	31,600	WTD	-.542	-.478	EQN	111	3.85	30.0	56.30	13.30	3.14	48.84
551	139	290	408	571	697	827	WTD	-1.042	-.493	EQN	NONE	3.86	30.0	.30	.47	.74	91.49
552	176	806	1,670	3,420	5,300	7,720	WTD	-.844	-.407	EQN	NONE	3.93	31.0	5.57	3.21	1.85	71.50
553	216	468	689	1,020	1,310	1,640	WTD	.196	-.212	EQN	NONE	3.93	31.0	1.08	2.78	7.16	88.51
554	682	2,690	5,140	9,740	14,300	19,900	WTD	-.719	-.445	EQN	40	3.92	31.0	15	8.74	5.09	56.70
555	1,160	2,640	4,010	6,240	8,260	10,600	WTD	-.020	-.098	EQN	81	4.04	30.0	7.01	3.96	2.24	32.31
556	3,820	9,500	14,700	22,800	29,800	37,500	WTD	-.417	-.376	EQN	587	3.88	32.0	68.40	17.71	4.59	35.38

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft³/s)	No. of high out-liers
557	08184000	Cibolo Creek near Bulverde, Texas	5	29°43'33"	98°25'37"	20	0	20	NONE	0
558	08185000	Cibolo Creek at Selma, Texas	5	29°35'38"	98°18'39"	35	112	62	65,000	1
559	08186000	Cibolo Creek near Falls City, Texas	9	29°00'50"	97°55'48"	63	104	77	35,000	1
560	08186500	Ecleto Creek near Runge, Texas	9	28°55'12"	97°46'19"	28	87	52	58,400	3
561	08187000	Escondido Creek Subwatershed No. 1 near Kenedy, Texas	9	28°46'41"	97°53'41"	19	0	19	NONE	0
562	08187900	Escondido Creek Subwatershed No. 11 near Kenedy, Texas	9	28°51'39"	97°50'39"	20	0	20	NONE	0
563	08188400	Baugh Creek at Goliad, Texas	9	28°39'50"	97°25'05"	9	0	9	NONE	0
564	08189200	Copano Creek near Refugio, Texas	9	28°18'12"	97°06'44"	23	0	23	NONE	0
565	08189300	Medio Creek near Beeville, Texas[17]	9	28°28'58"	97°39'23"	16	64	34	105,000	1
566	08189500	Mission River at Refugio, Texas	9	28°17'30"	97°16'44"	54	95	70	60,200	2
567	08189600	Olmos Creek trib. near Skidmore, Texas	9	28°15'27"	97°44'15"	8	0	8	NONE	0
568	08189700	Aransas River near Skidmore, Texas	9	28°16'56"	97°37'14"	30	80	48	82,800	1
569	08189800	Chiltipin Creek at Sinton, Texas	9	28°02'48"	97°30'13"	21	0	21	NONE	0
570	08190000	Nueces River at Laguna, Texas	5	29°25'42"	99°59'49"	71	128	94	210,000	4
571	08190500	West Nueces River near Brackettville, Texas[18]	5	29°28'21"	100°14'10"	48	158	84	550,000	1
572	08192000	Nueces River below Uvalde, Texas	5	29°07'25"	99°53'40"	66	158	96	616,000	1
573	08192500	Nueces River near Cinonia, Texas	6	28°47'00"	99°50'00"	8	0	8	NONE	0
574	08193000	Nueces River near Asherton, Texas	6	28°30'00"	99°40'54"	54	0	54	NONE	0
575	08194000	Nueces River at Cotulla, Texas[18]	6	28°25'34"	99°14'23"	70	158	99	82,600	1
576	08194200	San Casimiro Creek near Freer, Texas	6	27°57'53"	98°58'00"	32	40	35	65,200	2
577	08194500	Nueces River near Tilden, Texas	6	28°18'31"	98°33'25"	52	92	69	47,900	4
578	08194550	Plant Creek near Tilden, Texas	6	28°24'15"	98°33'11"	9	0	9	NONE	0
579	08194600	Nueces River at Simmons, Texas	6	28°25'16"	98°17'03"	13	103	50	58,500	4
580	08195000	Frio River at Concan, Texas	5	29°29'18"	99°42'16"	68	125	87	162,000	1
581	08196000	Dry Frio River near Reagan Wells, Texas	5	29°30'16"	99°46'52"	41	114	68	64,700	2
582	08197500	Frio River below Dry Frio River near Uvalde, Texas	5	29°14'44"	99°40'27"	42	0	42	NONE	0
583	08198000	Sabinal River near Sabinal, Texas	5	29°29'35"	99°29'49"	51	0	51	NONE	0
584	08198500	Sabinal River at Sabinal, Texas	5	29°18'47"	99°28'46"	41	75	53	60,000	1
585	08198900	East Elm Creek near Sabinal, Texas	5	29°18'49"	99°23'58"	8	0	8	4,758	0
586	08200000	Hondo Creek near Tarpley, Texas	5	29°34'10"	99°14'47"	41	87	59	58,500	2
587	08200500	Hondo Creek near Hondo, Texas[19]	5	29°27'05"	99°11'07"	12	0	12	60,976	0
588	08200700	Hondo Creek at King Waterhole near Hondo, Texas	5	29°23'26"	99°09'04"	33	62	44	51,800	1
589	08200900	Bone Creek near Hondo, Texas	5	29°33'17"	99°06'12"	9	0	9	NONE	0
590	08201500	Seco Creek at Miller Ranch near Utopia, Texas	5	29°34'23"	99°24'10"	32	93	54	52,600	1
591	08202000	Seco Creek near Utopia, Texas[20]	5	29°33'01"	99°24'22"	9	93	39	52,600	1
592	08202500	Seco Creek near D'Hanis, Texas	5	29°29'20"	99°23'16"	12	30	19	72,000	1
593	08202700	Seco Creek at Rowe Ranch near D'Hanis, Texas	5	29°21'43"	99°17'05"	33	0	33	NONE	0
594	08203500	Leona River trib. near Uvalde, Texas	5	29°17'30"	99°45'31"	9	0	9	185	0
595	08205500	Frio River near Derby, Texas	6	28°44'11"	99°08'40"	78	134	97	230,000	1
596	08206600	Frio River at Tilden, Texas	6	28°28'02"	98°32'50"	14	62	32	20,900	1

Footnotes at end of table.

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s)						Skew calcu-lation option	Station skew	Final skew for LPIII distri-bution	Low-outlier thresh-old source	Low-outlier thresh-old (ft^3/s)	2-yr 24-hr precip-itation (in.)	Mean annual precip-itation (in.)	Contrib-uting drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimen-sionless)	Stream slope (ft/mi)
	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr											
557	2,510	9,710	17,500	30,400	41,500	53,600	STA	-0.724	-0.724	VISUAL	100	3.92	32.5	198	42.81	9.25	22.22
558	2,790	13,200	25,500	46,600	65,300	85,600	STA	-.805	-.805	VISUAL	2,000	3.94	32.5	274	67.14	16.45	18.32
559	7,640	14,800	21,700	30,600	37,100	43,400	STA	-.806	-.806	VISUAL	7,640	4.04	32.0	827	142.80	24.66	11.90
560	2,090	4,880	8,020	14,200	20,900	30,100	WTD	1.570	.550	EQN	418	4.19	32.0	239	56.11	13.17	7.66
561	894	1,940	2,910	4,500	5,950	7,670	WTD	-.161	.015	EQN	NONE	4.21	30.0	3.29	2.70	2.22	48.60
562	473	1,880	3,970	8,970	15,400	25,100	WTD	.359	.168	EQN	57	4.22	31.0	8.43	4.21	2.10	30.39
563	506	1,250	2,030	3,400	4,780	6,490	WTD	.431	.078	EQN	NONE	4.36	33.5	3.02	3.16	3.31	33.22
564	1,030	2,490	3,910	6,260	8,440	11,000	WTD	-.427	-.139	EQN	113	4.46	38.0	87.80	27.61	8.68	4.40
565	1,570	3,380	5,250	8,630	12,100	16,600	WTD	1.418	.433	EQN	167	4.24	30.0	204	38.21	7.16	8.59
566	5,370	12,700	20,300	34,300	48,600	67,000	WTD	.443	.269	VISUAL	1,000	4.30	32.0	690	80.15	9.31	5.98
567	260	503	705	1,000	1,260	1,530	WTD	-.700	-.114	EQN	NONE	4.28	31.5	.58	.23	.09	26.09
568	3,870	11,200	19,800	36,500	54,400	78,100	WTD	.130	.081	EQN	344	4.27	31.0	247	31.82	4.10	9.59
569	2,870	7,310	11,900	20,000	28,000	37,800	WTD	-.022	-.007	EQN	281	4.33	33.0	128	14.64	1.67	5.83
570	10,600	39,800	76,900	151,000	231,000	336,000	WTD	-.164	-.220	EQN	746	3.58	24.5	737	65.39	5.80	17.21
571	4,890	30,300	66,400	136,000	204,000	282,000	STA	-.782	-.782	VISUAL	100	3.50	22.0	694	64.77	6.04	15.15
572	11,600	46,600	90,900	177,000	266,000	378,000	WTD	-.383	-.376	EQN	386	3.56	24.0	1,861	97.66	5.12	15.62
573	1,480	3,390	5,010	7,400	9,370	11,500	WTD	-1.195	-.415	EQN	110	3.58	24.0	2,150	138.74	8.95	12.25
574	5,400	11,300	16,000	22,600	27,800	33,300	WTD	-.658	-.416	EQN	264	3.60	22.5	4,082	168.66	6.97	10.70
575	6,110	13,700	21,100	33,700	45,900	60,800	WTD	.211	.133	EQN	937	3.62	22.5	5,171	207.69	8.34	9.15
576	2,080	9,390	20,800	48,900	85,100	141,000	WTD	.012	.043	VISUAL	2,000	3.92	23.0	469	42.53	3.86	9.03
577	6,990	18,200	29,500	49,200	68,000	90,800	WTD	-.204	-.113	EQN	1,040	3.73	21.5	8,093	281.58	9.80	7.44
578	51	105	153	230	301	385	WTD	.601	.120	EQN	3	4.03	23.5	.36	.12	.04	50.00
579	7,660	18,000	29,200	50,300	72,500	102,000	WTD	.571	.376	EQN	1,509	3.74	21.5	8,561	305.23	10.88	7.08
580	7,620	27,900	52,000	97,300	143,000	199,000	WTD	-.342	-.361	EQN	614	3.65	26.5	389	49.65	6.34	22.73
581	3,650	13,600	24,700	44,000	61,800	82,200	WTD	-.687	-.571	EQN	180	3.63	26.0	126	35.51	10.00	26.70
582	8,860	32,600	58,200	101,000	139,000	181,000	WTD	-1.209	-.644	EQN	84	3.64	26.0	631	67.36	7.19	20.94
583	6,230	15,300	23,300	35,200	45,000	55,500	WTD	-.586	-.485	EQN	458	3.70	27.5	206	35.15	6.00	28.28
584	8,030	19,400	29,400	44,400	57,100	70,800	WTD	-.432	-.418	EQN	2,000	3.71	27.0	241	54.64	12.39	23.00
585	394	1,180	2,050	3,620	5,180	7,100	WTD	1.288	-.185	EQN	20	3.76	26.5	10.60	7.38	5.14	20.89
586	6,540	16,200	25,700	42,100	57,600	76,200	WTD	.107	-.071	EQN	573	3.76	28.5	95.60	17.33	3.14	41.84
587	7,320	16,600	28,600	56,500	92,800	151,000	STA	1.337	1.337	VISUAL	3,000	3.78	28.0	132	29.86	6.75	30.44
588	7,420	16,700	24,900	37,400	48,100	60,000	WTD	-.172	-.271	VISUAL	2,500	3.78	28.0	149	35.95	8.67	27.47
589	71	200	330	549	750	983	WTD	-.034	-.330	EQN	NONE	3.82	28.5	.19	.57	1.71	52.63
590	3,860	10,500	17,400	29,300	40,900	54,900	STA	-.153	-.153	VISUAL	1,000	3.73	28.0	45	14.82	4.88	40.29
591	1,560	4,820	9,240	19,400	32,200	51,600	STA	.490	.490	EQN	399	3.73	28.0	53.20	16.70	5.24	47.94
592	1,870	6,200	12,500	28,300	49,500	83,800	STA	.599	.599	EQN	NONE	3.73	28.0	87.40	21.91	5.49	34.59
593	3,800	13,200	22,400	36,400	47,700	59,200	STA	-.803	-.803	EQN	196	3.76	27.5	168	39.70	9.38	24.79
594	21	54	85	137	185	241	WTD	1.327	-.172	EQN	NONE	3.68	24.5	1.21	1.33	1.46	29.32
595	5,040	13,900	24,100	44,300	66,200	95,900	STA	.218	.218	EQN	577	3.70	26.0	3,429	140.26	5.74	13.22
596	3,420	8,560	13,300	20,500	26,800	33,600	STA	-.394	-.394	EQN	370	3.75	26.0	4,493	205.11	9.36	10.11

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft^3/s)	No. of high out-liers
597	08206700	San Miguel Creek near Tilden, Texas	6	28°35'14"	98°32'44"	30	0	30	NONE	0
598	08207000	Frio River at Calliham, Texas[21]	6	28°29'31"	98°20'47"	52	134	80	80,200	1
599	08207200	Rutledge Hollow Creek at Poteet, Texas	6	29°02'35"	98°34'22"	8	0	8	NONE	0
600	08208000	Atascosa River at Whitsett, Texas	6	28°37'18"	98°17'02"	63	113	82	106,000	2
601	08210000	Nueces River near Three Rivers, Texas	6	28°25'38"	98°10'40"	71	112	85	141,000	1
602	08210400	Lagarto Creek near George West, Texas	6	28°03'34"	98°05'48"	17	103	50	29,500	2
603	08211520	Oso Creek at Corpus Christi, Texas	6	27°42'40"	97°30'06"	21	75	41	12,100	1
604	08211550	Pintas Creek trib. near Banquete, Texas	6	27°42'36"	97°49'57"	9	0	9	NONE	0
605	08212400	Los Olmos Creek near Falfurrias, Texas	6	27°15'51"	98°08'08"	17	0	17	NONE	0
606	08365800	Government Ditch at El Paso, Texas	2	31°47'02"	106°26'41"	20	0	20	NONE	0
607	08370200	Camp Rice Arroyo trib. near Fort Hancock, Texas	2	31°17'51"	105°48'52"	9	0	9	NONE	0
608	08370800	Wildhorse Creek trib. near Van Horn, Texas	2	31°02'55"	104°40'13"	8	0	8	NONE	0
609	08374000	Alamito Creek near Presidio, Texas	2	29°31'15"	104°17'40"	52	0	52	41,876	0
610	08374500	Terlingua Creek near Terlingua, Texas	2	29°12'00"	103°36'15"	52	0	52	NONE	0
611	08376300	Sanderson Canyon at Sanderson, Texas	2	30°07'46"	102°23'06"	12	46	27	20,000	3
612	08377500	Rio Grande at Langtry, Texas	2	29°48'00"	101°34'00"	58	68	62	204,000	1
613	08377600	Rio Grande trib. near Langtry, Texas	2	29°48'17"	101°29'01"	9	0	9	NONE	0
614	08383200	Pintada Arroyo trib. near Clines Corners, New Mexico	n/a	34°50'24"	105°34'48"	26	--	26	--	--
615	08383300	Pintada Arroyo near Santa Rosa, New Mexico	n/a	34°53'24"	104°43'48"	28	--	28	--	--
616	08383370	Pecos River trib. near Puerto de Luna, New Mexico	n/a	34°52'48"	104°38'24"	33	--	33	--	--
617	08385530	Alamosa Creek trib. near Jordan, New Mexico	n/a	34°48'00"	103°58'12"	30	--	30	--	--
618	08385600	Yeso Creek near Fort Sumner, New Mexico	n/a	34°16'12"	104°16'48"	42	--	42	--	--
619	08393200	Rocky Arroyo above Two River Reservoir near Roswell, New Mexico	n/a	33°16'48"	104°48'00"	9	--	9	--	--
620	08393600	North Spring River at Roswell, New Mexico	n/a	33°24'00"	104°33'00"	28	--	28	--	--
621	08393900	Eight Mile Draw near Roswell, New Mexico	n/a	33°25'12"	104°39'00"	39	--	39	--	--
622	08394500	Rio Felix at Old Highway Bridge near Hagerman, New Mexico	n/a	33°07'12"	104°20'24"	56	94	69	--	--
623	08396500	Pecos River near Artesia, New Mexico	n/a	32°50'24"	104°19'12"	41	--	41	--	--
624	08400000	Fourmile Draw near Lakewood, New Mexico	n/a	32°40'12"	104°22'12"	41	74	53	--	--
625	08401200	South Seven Rivers near Lakewood, New Mexico	n/a	32°35'24"	104°25'12"	30	--	30	--	--
626	08401800	Rocky Arroyo near Carlsbad, New Mexico	n/a	32°28'12"	104°28'12"	14	51	28	--	--
627	08401900	Rocky Arroyo at highway bridge near Carlsbad, New Mexico	n/a	32°30'36"	104°22'12"	30	--	30	--	--
628	08405050	Last Chance Canyon trib. near Carlsbad Caverns, New Mexico	n/a	32°17'24"	104°36'36"	34	--	34	--	--
629	08405100	Mosley Canyon near White City, New Mexico	n/a	32°15'25"	104°22'44"	34	--	34	--	--
630	08405500	Black River above Malaga, New Mexico	n/a	32°13'48"	104°09'00"	48	86	62	--	--
631	08407800	Delaware River trib. near Orla, Texas	2	31°55'46"	104°28'52"	9	0	9	1,298	0
632	08408500	Deleware River near Red Bluff, New Mexico	n/a	32°01'12"	104°03'00"	56	83	66	--	--
633	08411500	Salt Screwbean Draw near Orla, Texas	2	31°52'40"	103°56'50"	14	48	27	40,600	1
634	08424500	Madera Canyon near Toyahvale, Texas	2	30°52'04"	103°58'09"	18	65	35	5,120	1
635	08431700	Limpia Creek above Fort Davis, Texas	2	30°36'48"	104°00'04"	20	0	20	NONE	0
636	08431800	Limpia Creek below Fort Davis, Texas	2	30°40'52"	103°47'30"	16	74	37	14,200	1

Footnotes at end of table.

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s) 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	Skew calculation option	Station skew	Final skew for LPIII distribution	Low-outlier threshold source	Low-outlier threshold (ft^3/s)	2-yr 24-hr precipitation (in.)	Mean annual precipitation (in.)	Contributing drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimensionless)	Stream slope (ft/mi)
597	5,020	10,100	13,900	18,900	22,700	26,500	STA	-0.548	-0.548	EQN	612	3.92	24.5	783	85.18	9.27	8.05
598	6,950	14,300	21,100	32,600	43,500	56,700	WTD	.320	.233	EQN	1,484	3.78	26.0	5,491	221.33	8.92	9.64
599	714	2,650	5,040	9,720	14,600	20,800	WTD	-.876	-.275	EQN	59	3.98	27.5	9.33	5.08	2.76	29.06
600	4,990	12,600	21,000	37,000	54,100	76,800	WTD	.442	.283	EQN	732	4.03	27.0	1,171	92.21	7.26	6.33
601	12,900	26,200	39,100	61,000	82,200	108,000	WTD	.464	.331	EQN	3,031	3.80	25.0	15,427	314.10	6.40	6.88
602	62	634	2,120	7,630	17,400	36,400	WTD	-.131	-.036	EQN	1	4.14	27.0	155	35.37	8.07	12.15
603	2,520	4,130	5,290	6,810	7,970	9,160	WTD	-.248	-.232	EQN	261	4.36	31.0	90.30	11.77	1.53	4.74
604	213	650	1,150	2,110	3,100	4,360	WTD	-.583	-.083	EQN	9	4.30	30.0	3.28	.19	.01	10.53
605	406	1,430	2,800	5,840	9,480	14,700	WTD	.354	.141	EQN	6	4.11	25.0	476	64.00	8.60	11.18
606	242	424	551	714	833	950	WTD	-.962	-.467	EQN	NONE	1.50	8.0	6.40	3.69	2.13	125.91
607	58	113	155	213	258	305	WTD	-.878	-.379	VISUAL	20	1.62	8.5	2.35	1.92	1.56	97.40
608	26	143	333	787	1,340	2,150	WTD	-.399	-.264	EQN	NONE	1.88	11.0	.74	1.07	1.56	100.86
609	7,690	12,900	17,000	23,000	28,000	33,500	WTD	.455	.116	EQN	NONE	2.00	13.0	1,504	101.60	6.86	40.69
610	13,400	20,200	24,900	30,900	35,500	40,100	WTD	-.109	-.146	VISUAL	6,000	2.24	12.0	1,070	98.53	9.07	29.97
611	5,690	12,700	19,500	31,200	42,600	56,500	WTD	.606	.151	EQN	NONE	2.72	14.0	195	41.60	8.87	46.53
612	29,000	55,200	78,100	114,000	146,000	184,000	WTD	.480	.163	EQN	7,768	2.00	14.0	81,429	755.06	7.00	4.09
613	77	111	133	161	181	200	WTD	-.373	-.232	EQN	20	3.03	17.0	.32	.89	2.48	121.65
614	91	163	221	305	377	455	--	--	--	--	--	1.62	16.0	29.20	8.00	2.19	144.00
615	2,320	3,080	3,560	4,170	4,610	5,050	--	--	--	--	--	1.78	13.52	896	68.20	5.19	35.00
616	133	320	507	828	1,140	1,510	--	--	--	--	--	1.80	13.0	.37	1.05	2.98	371.00
617	43	150	289	583	917	1,380	--	--	--	--	--	2.40	15.5	9.71	5.00	2.57	20.00
618	1,420	3,180	4,840	7,580	10,100	13,100	--	--	--	--	--	2.14	13.0	242	34.00	4.78	27.00
619	790	2,380	4,230	7,820	11,600	16,600	--	--	--	--	--	1.98	13.4	31	14.60	6.88	110.00
620	13	69	166	424	777	1,340	--	--	--	--	--	1.95	12.0	19.50	4.60	1.09	47.80
621	303	1,640	4,010	10,500	19,700	34,700	--	--	--	--	--	1.93	14.29	397	64.40	10.45	39.00
622	5,300	12,200	18,900	30,100	40,700	53,300	--	--	--	--	--	1.95	16.0	932	108.00	12.52	39.40
623	10,200	20,000	28,600	41,700	53,200	66,200	--	--	--	--	--	1.97	14.0	15,300	505.00	16.67	40.00
624	436	2,650	6,810	18,600	35,700	64,000	--	--	--	--	--	2.00	14.0	265	64.80	15.85	40.10
625	967	6,160	16,200	45,600	88,800	162,000	--	--	--	--	--	2.00	14.0	220	41.00	7.64	77.00
626	5,650	16,600	29,000	52,900	77,800	110,000	--	--	--	--	--	2.00	13.2	254	43.30	7.38	50.00
627	2,200	10,600	24,000	57,400	101,000	168,000	--	--	--	--	--	2.00	14.5	285	40.00	5.61	70.00
628	111	266	420	684	937	1,240	--	--	--	--	--	2.00	13.9	.20	.65	2.11	15.00
629	1,690	3,400	4,900	7,240	9,310	11,700	--	--	--	--	--	2.00	14.5	14.60	7.50	3.85	72.00
630	1,960	8,260	17,500	39,000	65,400	104,000	--	--	--	--	--	2.00	15.0	343	56.70	9.37	47.60
631	15	102	273	775	1,520	2,770	WTD	1.169	-.029	EQN	NONE	1.96	9.5	38	17.70	8.24	65.06
632	3,380	10,100	17,800	32,700	48,400	68,900	--	--	--	--	--	2.00	14.0	689	60.20	5.26	39.50
633	1,930	4,480	6,950	11,100	15,000	19,600	WTD	.165	-.019	EQN	338	2.05	9.5	464	44.65	4.30	30.86
634	1,130	2,450	3,390	4,550	5,350	6,090	STA	-.851	-.851	EQN	110	2.03	17.0	53.80	28.23	14.81	104.71
635	532	2,150	4,220	8,330	12,700	18,200	WTD	-.648	-.337	EQN	25	2.01	18.0	52.40	11.39	2.48	129.62
636	1,970	3,170	4,130	5,540	6,750	8,100	WTD	.857	.308	VISUAL	1,000	2.03	17.0	227	31.03	4.24	70.63

Table 1. Peak-streamflow frequency estimates, analysis information, and basin characteristics for stations with at least 8 years

Site no. (pl. 1)	USGS station no.	USGS station name	Hydro-logic region (pl. 1)	Latitude	Longitude	Available system-atic record (yrs)[1]	His-torical record length (yrs)[2]	Weight factor (yrs)[3]	High-outlier thresh-old (ft^3/s)	No. of high out-liers
637	08434000	Toyah Creek below Toyah Lake near Pecos, Texas	2	31°21'00"	103°24'00"	12	0	12	NONE	0
638	08435700	Sunny Glen Canyon near Alpine, Texas	2	30°22'52"	103°44'08"	9	0	9	NONE	0
639	08435800	Coyanosa Draw near Fort Stockton, Texas	2	31°02'27"	103°08'15"	14	0	14	NONE	0
640	08436800	Courtney Creek trib. near Fort Stockton, Texas	2	31°00'28"	103°04'20"	9	0	9	NONE	0
641	08444400	Three Mile Mesa Creek near Fort Stockton, Texas	2	30°50'16"	102°50'26"	10	0	10	296	0
642	08447020	Independence Creek near Sheffield, Texas	2	30°27'07"	101°43'58"	11	0	11	NONE	0
643	08447200	Howards Creek trib. near Ozuna, Texas	2	30°41'18"	101°20'51"	8	0	8	NONE	0
644	08447400	Pecos River near Shumla, Texas	2	29°50'00"	101°23'00"	66	0	66	NONE	0
645	08449000	Devils River near Juno, Texas	2	29°57'48"	101°08'42"	35	92	55	393,000	1
646	08449400	Devils River at Pafford Crossing near Comstock, Texas	2	29°40'35"	101°00'00"	16	0	16	NONE	0
647	08449470	Rough Canyon trib. near Del Rio, Texas	2	28°35'50"	100°51'51"	8	0	8	NONE	0
648	08449500	Devils River near Del Rio, Texas	2	29°29'00"	101°00'00"	46	0	46	NONE	0
649	08449600	Evans Creek trib. near Del Rio, Texas	2	29°33'00"	101°04'58"	9	0	9	NONE	0
650	08450500	Devils River near Mouth at Del Rio, Texas	2	29°28'10"	101°03'25"	13	0	13	NONE	0
651	08450900	Rio Grande below Amistad Dam near Del Rio, Texas	2	29°25'00"	101°02'00"	15	0	15	739,027	0
652	08452500	Rio Grande near Del Rio, Texas	2	29°20'00"	100°56'00"	50	0	50	798,111	0
653	08453000	San Felipe Creek near Del Rio, Texas	2	29°19'55"	100°53'20"	29	0	29	NONE	0
654	08453100	Zorro Creek near Del Rio, Texas	2	29°19'52"	100°49'54"	9	0	9	NONE	0
655	08454900	East Perdido Creek near Brackettville, Texas	2	29°20'50"	100°34'32"	9	0	9	NONE	0
656	08455000	Pinto Creek near Del Rio, Texas	2	29°08'45"	100°43'05"	53	0	53	180,751	0
657	08458000	Rio Grande at Eagle Pass, Texas	2	28°42'50"	100°30'25"	70	223	118	1,236,000	1
658	08458700	Rio Grande at San Antonio Crossing, Texas	2	28°21'00"	100°18'00"	15	0	15	720,571	0
659	08459000	Rio Grande at Laredo, Texas	2	27°29'45"	99°29'25"	66	223	116	950,000	1
660	08459600	Arroyo San Bartolo at Zapata, Texas	2	26°55'39"	99°17'20"	9	0	9	NONE	0
661	08460500	Rio Grande near Zapata, Texas	2	26°52'00"	99°18'00"	21	0	21	NONE	0
662	08464700	Rio Grande City at Fort Ringgold in Rio Grande City, Texas[22]	2	26°22'05"	98°48'20"	10	223	77	590,000	1
663	08466100	Rio Grande trib. near Rio Grande City, Texas	2	26°18'58"	98°39'45"	9	0	9	NONE	0
664	08466200	Rio Grande trib. near Sullivan City, Texas	2	26°17'12"	98°35'16"	9	0	9	NONE	0

[1] Available systematic record reflects number of annual peak discharges from natural basins. Many stations became regulated during period of operation. Regulated annual peak discharges not included in peak-streamflow frequency analysis.
[2] Historical record length reflects that known when peak-streamflow frequency analysis was done (1994–95). For many stations this represents a minimum historical record.
[3] Weight factor calculated from empirical equations (G.D. Tasker, U.S. Geological Survey, written commun., 1994).
[4] Only two high outliers used in analysis because of fit of LPIII distribution to the data, although others are available.
[5] Only one high outlier used in analysis because of fit of LPIII distribution to the data, although others are available.
[6] Historical record length assumed equal to that for nearby station 08068520.
[7] High outlier occurred after basin became regulated. Historical record length assumed to extend to date of high outlier occurrence because of extreme magnitude of flood.
[8] Historical record length assumed equal to that for nearby station 08085500.
[9] Published high outlier is regulated peak; its inclusion in analysis caused poor fit of LPIII distribution. Therefore, no high outlier used in analysis.
[10] Historical record length assumed equal to that for nearby station 08134000.
[11] Historical record length assumed equal to that for nearby station 08150700.

Site no. (pl. 1)	Peak discharge for indicated recurrence interval (ft^3/s) 2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	Skew calcu- lation option	Station skew	Final skew for LPIII distri- bution	Low- outlier thresh- old source	Low- outlier thresh- old (ft^3/s)	2-yr 24-hr precip- itation (in.)	Mean annual precip- itation (in.)	Contrib- uting drainage area (mi^2)	Stream length (mi)	Basin shape factor (dimen- sionless)	Stream slope (ft/mi)
637	409	1,620	3,250	6,670	10,500	15,700	WTD	-0.095	-0.171	VISUAL	100	2.20	12.0	3,709	115.57	3.60	39.18
638	51	340	857	2,180	3,870	6,380	WTD	-.902	-.321	EQN	NONE	2.15	15.0	29.70	8.07	2.19	119.52
639	904	2,430	4,100	7,190	10,400	14,400	WTD	1.281	.057	EQN	96	2.31	15.0	1,182	89.16	6.73	26.90
640	33	58	77	104	126	149	WTD	.401	-.086	EQN	2	2.44	12.0	1.14	.76	.51	32.89
641	87	144	188	250	301	355	WTD	1.330	.013	EQN	NONE	2.53	13.0	1.04	1.14	1.25	118.42
642	2,490	9,090	18,000	37,200	59,600	91,200	WTD	1.195	.021	EQN	136	2.79	15.0	763	62.35	5.10	27.10
643	195	849	1,790	3,880	6,350	9,810	WTD	.013	-.146	EQN	NONE	3.00	18.0	7.53	5.59	4.15	40.50
644	17,000	50,900	79,500	113,000	134,000	150,000	STA	-1.283	-1.283	VISUAL	17,000	2.20	12.0	35,162	489.47	6.81	4.09
645	15,800	63,000	123,000	240,000	362,000	517,000	STA	-.349	-.349	VISUAL	10,000	3.21	20.0	2,730	112.27	4.62	10.17
646	27,400	115,000	201,000	319,000	404,000	482,000	STA	-.245	-1.107	VISUAL	5,000	3.28	20.5	3,961	146.02	5.38	9.95
647	728	2,730	5,360	10,800	17,000	25,300	WTD	.423	-.117	EQN	NONE	3.32	18.0	7.90	5.31	3.57	41.40
648	15,600	78,600	175,000	397,000	662,000	1,040,000	STA	-.252	-.252	VISUAL	10,000	3.28	20.5	4,185	166.65	6.64	9.90
649	101	206	292	417	520	631	WTD	-.692	-.289	EQN	NONE	3.22	19.0	.39	1.18	3.60	99.68
650	35,400	74,100	102,000	137,000	162,000	186,000	STA	-1.253	-.745	EQN	2,293	3.28	20.5	4,305	170.57	6.76	9.67
651	62,200	148,000	233,000	381,000	524,000	699,000	WTD	1.842	.050	EQN	16,415	2.00	14.0	123,143	830.20	5.60	3.96
652	46,500	113,000	184,000	314,000	450,000	625,000	WTD	1.106	.248	EQN	15,957	2.00	14.0	123,303	840.03	5.72	4.01
653	6,690	13,500	19,500	28,900	37,300	46,900	WTD	.409	.013	EQN	585	3.34	18.0	46	15.82	5.44	20.32
654	159	605	1,170	2,310	3,520	5,110	WTD	-.302	-.242	EQN	NONE	3.35	18.0	10	4.16	1.73	27.59
655	65	203	358	647	941	1,310	WTD	.296	-.159	EQN	NONE	3.46	20.5	3.39	2.80	2.32	21.09
656	4,160	13,600	25,400	49,600	76,600	114,000	WTD	.318	.045	EQN	293	3.48	21.0	249	44.23	7.85	17.43
657	58,400	142,000	236,000	417,000	613,000	877,000	WTD	.681	.405	EQN	17,562	2.00	14.0	127,312	904.42	6.42	3.09
658	52,100	142,000	243,000	435,000	637,000	901,000	WTD	1.112	.117	EQN	16,099	2.00	14.0	129,226	941.09	6.85	3.90
659	58,100	123,000	189,000	309,000	431,000	589,000	WTD	.629	.472	EQN	17,626	2.00	14.0	132,578	1,041.79	8.19	3.71
660	346	603	802	1,080	1,310	1,550	WTD	-1.625	-.091	EQN	15	3.90	21.5	.61	.73	.88	98.87
661	66,300	115,000	155,000	215,000	267,000	325,000	WTD	.395	.192	EQN	NONE	2.50	15.5	163,344	1,101.62	7.43	3.60
662	112,000	159,000	191,000	234,000	266,000	300,000	WTD	.063	.065	EQN	NONE	2.50	15.5	174,362	1,166.58	7.81	3.52
663	99	112	120	129	135	141	WTD	-.421	-.020	VISUAL	70	4.18	22.0	1.20	1.01	.85	61.72
664	64	127	182	267	342	427	WTD	-.263	.005	EQN	NONE	4.21	22.0	.40	1.14	3.25	35.96

[12] Historical record length assumed equal to that for nearby station 08153500.
[13] Historical record length assumed equal to that for nearby stations 08166000 and 08166200.
[14] Two high outliers used in analysis. Flood in 1987 of 141,000 ft^3/s assumed to be second highest.
[15] Historical record based on data from Comal River flow (USGS station 08169000, not presented in this report).
[16] Historical record length assumed equal to that for nearby station 08171000.
[17] Only one high outlier used in analysis because of fit of LPIII distribution to the data.
[18] Historical record length assumed equal to that for nearby station 08192000.
[19] No high outliers used in analysis because of fit of LPIII distribution to the data; questionable historical information.
[20] Historical record length assumed equal to that for nearby station 08201500. Only one high outlier used in analysis because of fit of LPIII distribution to the data, although others are available.
[21] Historical record length assumed equal to that for nearby station 08205500.
[22] Historical record length assumed equal to that for nearby stations 08458000 and 08459000.

Table 2. Regression equations for estimation of peak-streamflow frequency for hydrologic regions of Texas

[yr, year; A, contributing drainage area in square miles; SH, basin shape factor—ratio of length of longest mapped channel (stream length) squared to contributing drainage area (dimensionless); SL, stream slope in feet per mile—ratio of change in elevation of (1) longest mapped channel from site (or station) to headwaters to (2) length of longest mapped channel]

Hydrologic region and recurrence interval	Weighted least-squares regression equation for corresponding recurrence interval	Range of indicated independent variables in corresponding region (units as noted)	Adjusted R-squared[1]	Weighted standard error of estimate (percent)	Weighted standard error of estimate ($\log_{10}$ units)	No. of stations in analysis for equation
Region 1						
2 yr	$Q_2 = 16.1\ A^{1.04}\ SH^{-.537}$	A: 1.15 to 2,956	0.67	160	0.49	25
5 yr	$Q_5 = 53.2\ A^{.958}\ SH^{-.444}$		.73	111	.39	25
10 yr	$Q_{10} = 96.0\ A^{.921}\ SH^{-.400}$	SH: 0.11 to 80.9	.75	103	.37	25
25 yr	$Q_{25} = 178\ A^{.885}\ SH^{-.356}$		.73	103	.37	25
50 yr	$Q_{50} = 263\ A^{.864}\ SH^{-.330}$	SL: 2.49 to 132	.71	111	.39	25
100 yr	$Q_{100} = 371\ A^{.847}\ SH^{-.307}$		.68	120	.41	25
Region 2						
2 yr	$Q_2 = 826\ A^{.376}\ SL^{-.689}\ SH^{.869}$	A: 0.32 to 4,305	.77	120	.41	29
5 yr	$Q_5 = 6500\ A^{.372}\ SL^{-.933}\ SH^{.738}$		.85	92	.34	29
10 yr	$Q_{10} = 18100\ A^{.369}\ SL^{-1.05}\ SH^{.673}$	SH: 0.51 to 14.8	.86	88	.33	29
25 yr	$Q_{25} = 55300\ A^{.366}\ SL^{-1.19}\ SH^{.604}$		.86	92	.34	29
50 yr	$Q_{50} = 108000\ A^{.363}\ SL^{-1.27}\ SH^{.566}$	SL: 9.67 to 130	.85	99	.36	29
100 yr	$Q_{100} = 199000\ A^{.361}\ SL^{-1.34}\ SH^{.531}$		.84	107	.38	29
Region 3 (sites with contributing drainage area less than 32 square miles)[2]						
2 yr	$Q_2 = 119\ A^{.592}$	A: 0.10 to 97.0	.69	75	.29	27
5 yr	$Q_5 = 252\ A^{.629}$		.69	78	.30	27
10 yr	$Q_{10} = 373\ A^{.652}$	SH: 0.16 to 9.32	.67	88	.33	27
25 yr	$Q_{25} = 566\ A^{.679}$		.63	103	.37	27
50 yr	$Q_{50} = 743\ A^{.698}$	SL: 10.7 to 105	.60	120	.41	27
100 yr	$Q_{100} = 948\ A^{.715}$		.58	134	.44	27
Region 3 (sites with contributing drainage area greater than 32 square miles)[2]						
2 yr	$Q_2 = 8.05\ A^{.668}\ SL^{.659}\ SH^{.189}$	A: 11.8 to 14,635	.79	60	.24	57
5 yr	$Q_5 = 42.0\ A^{.626}\ SL^{.574}$		.76	57	.23	57
10 yr	$Q_{10} = 91.9\ A^{.579}\ SL^{.537}$	SH: 1.71 to 75.0	.71	60	.24	57
25 yr	$Q_{25} = 233\ A^{.523}\ SL^{.476}$		.63	66	.26	57
50 yr	$Q_{50} = 448\ A^{.484}\ SL^{.425}$	SL: 4.81 to 36.3	.55	72	.28	57
100 yr	$Q_{100} = 835\ A^{.447}\ SL^{.372}$		.47	92	.30	57

Footnotes at end of table.

Table 2. Regression equations for estimation of peak-streamflow frequency for hydrologic regions of Texas—Continued

Hydrologic region and recurrence interval	Weighted least-squares regression equation for corresponding recurrence interval	Range of indicated independent variables in corresponding region (units as noted)	Adjusted R-squared[1]	Weighted standard error of estimate (percent)	Weighted standard error of estimate ($\log_{10}$ units)	No. of stations in analysis for equation
Region 4 (sites with contributing drainage area less than 32 square miles)[2]						
2 yr	$Q_2 = 97.1\ A^{.626}$	A: 0.19 to 81.1	0.49	134	0.44	28
5 yr	$Q_5 = 196\ A^{.650}\ SH^{.257}$		.70	96	.35	28
10 yr	$Q_{10} = 293\ A^{.697}\ SH^{.281}$	SH: 0.05 to 6.52	.74	92	.34	28
25 yr	$Q_{25} = 455\ A^{.741}\ SH^{.311}$		.75	99	.36	28
50 yr	$Q_{50} = 53\ A^{.927}\ SL^{.558}\ SH^{.333}$	SL: 13.5 to 226	.74	107	.38	28
100 yr	$Q_{100} = 51\ A^{.968}\ SL^{.627}\ SH^{.353}$		.72	120	.41	28
Region 4 (sites with contributing drainage area greater than 32 square miles)[2]						
2 yr	$Q_2 = 0.00660\ A^{1.29}\ SL^{2.09}$	A: 12 to 19,819	.68	72	.28	39
5 yr	$Q_5 = 0.0212\ A^{1.24}\ SL^{2.18}$		.76	51	.21	39
10 yr	$Q_{10} = 0.0467\ A^{1.20}\ SL^{2.18}$	SH: 0.49 to 19.7	.76	49	.20	39
25 yr	$Q_{25} = 0.102\ A^{1.16}\ SL^{2.18}$		.70	54	.22	39
50 yr	$Q_{50} = 0.166\ A^{1.13}\ SL^{2.19}$	SL: 3.52 to 36.1	.64	60	.24	39
100 yr	$Q_{100} = 0.252\ A^{1.11}\ SL^{2.19}$		.57	69	.27	39
Region 5 (sites with contributing drainage area less than 32 squares miles)[2]						
2 yr	$Q_2 = 159\ A^{.680}$	A: 0.18 to 22.3	.73	75	.29	24
5 yr	$Q_5 = 396\ A^{.773}$		.82	63	.25	24
10 yr	$Q_{10} = 624\ A^{.820}$	SH: 0.50 to 84.9	.83	66	.26	24
25 yr	$Q_{25} = 997\ A^{.866}$		.83	69	.27	24
50 yr	$Q_{50} = 278\ A^{.973}\ SL^{.360}$	SL: 20.9 to 224	.83	72	.28	24
100 yr	$Q_{100} = 295\ A^{1.01}\ SL^{.405}$		.83	78	.30	24
Region 5 (sites with contributing drainage area greater than 32 squares miles)[2]						
2 yr	$Q_2 = 377\ A^{.498}$	A: 45.0 to 1,861	.60	43	.18	38
5 yr	$Q_5 = 1270\ A^{.534}\ SH^{-.145}$		.78	28	.12	38
10 yr	$Q_{10} = 2310\ A^{.552}\ SH^{-.221}$	SH: 3.14 to 20.8	.79	28	.12	38
25 yr	$Q_{25} = 4330\ A^{.571}\ SH^{-.307}$		.75	31	.13	38
50 yr	$Q_{50} = 6450\ A^{.583}\ SH^{-.366}$	SL: 9.86 to 48.8	.72	36	.15	38
100 yr	$Q_{100} = 9180\ A^{.594}\ SH^{-.420}$		.69	41	.17	38

Footnotes at end of table.

Table 2. Regression equations for estimation of peak-streamflow frequency for hydrologic regions of Texas—Continued

Hydrologic region and recurrence interval	Weighted least-squares regression equation for corresponding recurrence interval	Range of indicated independent variables in corresponding region (units as noted)	Adjusted R-squared[1]	Weighted standard error of estimate (percent)	Weighted standard error of estimate (log_{10} units)	No. of stations in analysis for equation
Region 6						
2 yr	$Q_2 = 66.2\ A^{.630}\ SH^{-.423}$	A: 0.36 to 15,428	0.68	96	0.35	21
5 yr	$Q_5 = 931\ A^{.424}\ SL^{-.410}$		.80	60	.24	21
10 yr	$Q_{10} = 1720\ A^{.410}\ SL^{-.419}$	SH: 0.011 to 10.9	.84	49	.20	21
25 yr	$Q_{25} = 3290\ A^{.398}\ SL^{-.428}$		.82	51	.21	21
50 yr	$Q_{50} = 4970\ A^{.391}\ SL^{-.434}$	SL: 6.88 to 98.9	.76	63	.25	21
100 yr	$Q_{100} = 1780\ A^{.440}$		.69	75	.29	21
Region 7 (sites with contributing drainage area less than 32 square miles)[2]						
2 yr	$Q_2 = 832\ A^{.568}\ SL^{-.285}$	A: 0.20 to 78.7	.88	57	.23	47
5 yr	$Q_5 = 584\ A^{.610}$		.90	46	.19	47
10 yr	$Q_{10} = 831\ A^{.592}$	SH: 0.037 to 36.6	.90	43	.18	47
25 yr	$Q_{25} = 1196\ A^{.576}$		.89	46	.19	47
50 yr	$Q_{50} = 1505\ A^{.566}$	SL: 7.25 to 116	.86	51	.21	47
100 yr	$Q_{100} = 1842\ A^{.558}$		.84	57	.23	47
Region 7 (sites with contributing drainage area greater than 32 square miles)[2]						
2 yr	$Q_2 = 129\ A^{.578}\ SL^{.364}$	A: 13.0 to 2,615	.51	66	.26	44
5 yr	$Q_5 = 133\ A^{.605}\ SL^{.578}$		.58	54	.22	44
10 yr	$Q_{10} = 178\ A^{.644}\ SL^{.699}\ SH^{-.239}$	SH: 1.66 to 36.6	.61	51	.21	44
25 yr	$Q_{25} = 219\ A^{.651}\ SL^{.776}\ SH^{-.267}$		.60	51	.21	44
50 yr	$Q_{50} = 261\ A^{.653}\ SL^{.817}\ SH^{-.291}$	SL: 3.85 to 31.9	.58	54	.22	44
100 yr	$Q_{100} = 313\ A^{.654}\ SL^{.849}\ SH^{-.316}$		.54	60	.24	44
Region 8						
2 yr	$Q_2 = 30.7\ A^{.672}\ SL^{.652}$	A: 0.75 to 7,065	.81	51	.21	21
5 yr	$Q_5 = 87.6\ A^{.668}\ SL^{.520}$		.86	43	.18	21
10 yr	$Q_{10} = 134\ A^{.675}\ SL^{.475}$	SH: 1.94 to 24.8	.87	43	.18	21
25 yr	$Q_{25} = 191\ A^{.690}\ SL^{.444}$		.87	46	.19	21
50 yr	$Q_{50} = 229\ A^{.703}\ SL^{.433}$	SL: 3.83 to 39.5	.87	49	.20	21
100 yr	$Q_{100} = 261\ A^{.718}\ SL^{.429}$		.86	51	.21	21

Footnotes at end of table.

Table 2. Regression equations for estimation of peak-streamflow frequency for hydrologic regions of Texas—Continued

Hydrologic region and recurrence interval	Weighted least-squares regression equation for corresponding recurrence interval	Range of indicated independent variables in corresponding region (units as noted)	Adjusted R-squared[1]	Weighted standard error of estimate (percent)	Weighted standard error of estimate (log_{10} units)	No. of stations in analysis for equation
Region 9						
2 yr	$Q_2 = 278\ A^{.526}$	A: 0.24 to 5,198	0.79	54	0.22	39
5 yr	$Q_5 = 329\ A^{.645}\ SL^{.220}\ SH^{-.246}$		.81	49	.20	39
10 yr	$Q_{10} = 350\ A^{.691}\ SL^{.343}\ SH^{-.321}$	SH: 0.091 to 30.1	.82	46	.19	39
25 yr	$Q_{25} = 382\ A^{.743}\ SL^{.466}\ SH^{-.413}$		.81	49	.20	39
50 yr	$Q_{50} = 409\ A^{.778}\ SL^{.541}\ SH^{-.477}$	SL: 2.77 to 70.0	.80	49	.20	39
100 yr	$Q_{100} = 438\ A^{.811}\ SL^{.607}\ SH^{-.539}$		.78	54	.22	39
Region 10 (sites with contributing drainage area less than 32 square miles)[2]						
2 yr	$Q_2 = 54.9\ A^{.788}\ SL^{.279}$	A: 0.21 to 100	.87	54	.22	27
5 yr	$Q_5 = 80.7\ A^{.835}\ SL^{.330}$		.92	40	.17	27
10 yr	$Q_{10} = 98.2\ A^{.860}\ SL^{.359}$	SH: 0.008 to 1.05	.93	38	.16	27
25 yr	$Q_{25} = 122\ A^{.887}\ SL^{.390}$		.94	38	.16	27
50 yr	$Q_{50} = 141\ A^{.904}\ SL^{.408}$	SL: 2.00 to 138	.93	41	.17	27
100 yr	$Q_{100} = 159\ A^{.920}\ SL^{.426}$		.92	43	.18	27
Region 10 (sites with contributing drainage areas greater than 32 square miles)[2]						
2 yr	$Q_2 = 16.9\ A^{.798}\ SL^{.777}$	A: 23.4 to 6,507	.59	63	.25	42
5 yr	$Q_5 = 33.0\ A^{.790}\ SL^{.795}$		.67	51	.21	42
10 yr	$Q_{10} = 51.3\ A^{.775}\ SL^{.785}$	SH: 1.77 to 16.9	.71	43	.18	42
25 yr	$Q_{25} = 87.9\ A^{.752}\ SL^{.760}$		.74	38	.16	42
50 yr	$Q_{50} = 129\ A^{.733}\ SL^{.735}$	SL: 1.48 to 24.5	.76	36	.15	42
100 yr	$Q_{100} = 187\ A^{.713}\ SL^{.708}$		.77	36	.15	42
Region 11						
2 yr	$Q_2 = 159\ A^{.669}\ SH^{-.262}$	A: 0.13 to 3,636	.91	43	.18	66
5 yr	$Q_5 = 191\ A^{.696}\ SL^{.130}\ SH^{-.186}$		.91	43	.18	66
10 yr	$Q_{10} = 199\ A^{.718}\ SL^{.221}\ SH^{-.151}$	SH: 0.082 to 18.8	.90	49	.20	66
25 yr	$Q_{25} = 201\ A^{.713}\ SL^{.313}$		.88	54	.22	66
50 yr	$Q_{50} = 207\ A^{.735}\ SL^{.380}$	SL: 0.38 to 169	.86	60	.24	66
100 yr	$Q_{100} = 213\ A^{.755}\ SL^{.442}$		.85	66	.26	66

[1] Adjusted R-squared presented so equations based on different numbers of stations and using different independent variables—contributing drainage area, basin shape factor, and stream slope—can be compared.

[2] Use equation 4 in text to calculate a weighted discharge for stream sites with contributing drainage area within the region of overlap (10 to 100 square miles).

Table 3. Critical values of the t-distribution for selected confidence limits for regression equations

[Degrees of freedom are those associated with regression equations (table 2). n, number of stations upon which a regression equation is based; p, number of significant independent variables in regression equation plus 1 (for regression constant)]

Degrees of freedom (n - p)	Critical value of t-distribution for 50-percent confidence limits ($\alpha = 0.50$)[1]	Critical value of t-distribution for 67-percent confidence limits ($\alpha = 0.33$)[1]	Critical value of t-distribution for 90-percent confidence limits ($\alpha = 0.10$)[1]
18	0.6884	1.001	1.734
19	.6876	.9997	1.729
21	.6864	.9972	1.721
22	.6858	.9962	1.717
24	.6849	.9943	1.711
25	.6844	.9935	1.708
26	.6840	.9927	1.706
35	.6816	.9879	1.690
36	.6814	.9875	1.688
37	.6812	.9871	1.687
39	.6808	.9864	1.685
40	.6807	.9861	1.684
41	.6805	.9858	1.683
44	.6801	.9850	1.680
45	.6800	.9848	1.679
53	.6791	.9832	1.674
54	.6791	.9830	1.674
62	.6785	.9818	1.670
63	.6784	.9817	1.669

[1] Critical values of t-distribution reflect a two-tailed test; therefore, a 50-percent confidence limit ($\alpha = 0.50$) uses a $\alpha/2$ (0.25) critical t-value.

Table 4. Covariance matrix for regression equations

[Matrices can be used to compute upper and lower confidence limits for any estimate from regression equations (table 2). Matrix qualifications listed in table. Some numbers in scientific notation—for example, -7.4307E-4 = -0.00074307]

Region 1 (all recurrence intervals)

	Area	Shape	Constant
Area	0.10711	-0.11009	-0.12750
Shape	-0.11009	0.24287	-0.022165
Constant	-0.12750	-0.022165	0.37272

Region 2 (2-year recurrence interval)

	Area	Shape	Slope	Constant
Area	0.073035	-0.12774	0.12569	-0.27070
Shape	-0.12774	0.73770	-0.12219	-0.038896
Slope	0.12569	-0.12219	0.49006	-0.95043
Constant	-0.27070	-0.038896	-0.95043	2.1359

Region 2 (recurrence intervals greater than 2-year)

	Area	Slope	Shape	Constant
Area	0.073035	0.12569	-0.12774	-0.27070
Slope	0.12569	0.49006	-0.12219	-0.95043
Shape	-0.12774	-0.12219	0.73770	0.038896
Constant	-0.27070	-0.95043	-0.038896	2.1359

Region 3 (contributing drainage area less than 32 square miles and all recurrence intervals)

	Area	Constant
Area	0.069975	-0.082020
Constant	-0.082020	0.13318

Table 4. Covariance matrix for regression equations—Continued

Region 3 (contributing drainage area greater than 32 square miles and 2-year recurrence interval)

	Area	Slope	Shape	Constant
Area	0.063865	0.12106	-0.045171	-0.25199
Slope	0.12106	0.75422	0.090103	-1.2004
Shape	-0.045171	0.090103	0.25245	-0.22949
Constant	-0.25199	-1.2004	-0.22949	2.1771

Region 3 (contributing drainage area greater than 32 square miles and recurrence intervals greater than 2-year)

	Area	Slope	Constant
Area	0.055783	0.13718	-0.29305
Slope	0.13718	0.72206	-1.1185
Constant	-0.29305	-1.1185	1.9685

Region 4 (contributing drainage area less than 32 square miles and 2-year recurrence interval)

	Area	Constant
Area	0.070227	-0.054414
Constant	-0.054414	0.077877

Region 4 (contributing drainage area less than 32 square miles and 5-, 10-, and 25-year recurrence intervals)

	Area	Shape	Constant
Area	0.096864	-0.073950	-0.048446
Shape	-0.073950	0.20529	-0.016569
Constant	-0.048446	-0.016569	0.079214

Region 4 (contributing drainage area less than 32 square miles and 50- and 100-year recurrence intervals)

	Area	Shape	Slope	Constant
Area	0.19104	-0.074162	0.32967	-0.67338
Shape	-0.074162	0.20529	-7.4307E-4	-0.015161
Slope	0.32967	-7.4307E-4	1.1540	-2.1876
Constant	-0.67338	-0.015161	-2.1876	4.2262

Region 4 (contributing drainage area greater than 32 square miles and all recurrence intervals)

	Area	Slope	Constant
Area	0.40976	1.0625	-2.3260
Slope	1.0625	3.3389	-6.6232
Constant	-2.3260	-6.6232	13.829

Region 5 (contributing drainage area less than 32 square miles and 2-, 5-, 10-, and 25-year recurrence intervals)

	Area	Constant
Area	0.089459	-0.042645
Constant	-0.042645	0.061995

Region 5 (contributing drainage area less than 32 square miles and 50- and 100-year recurrence intervals)

	Area	Slope	Constant
Area	0.14054	0.23520	-0.48936
Slope	0.23520	1.0829	-2.0568
Constant	-0.48936	-2.0568	3.9684

Region 5 (contributing drainage area greater than 32 square miles and 2-year recurrence interval)

	Area	Constant
Area	0.13836	-0.34985
Constant	-0.34985	0.91094

Region 5 (contributing drainage area greater than 32 square miles and 5-, 10-, 25-, 50-, and 100-year recurrence intervals)

	Area	Shape	Constant
Area	0.15134	-0.092122	-0.30560
Shape	-0.092122	0.65384	-0.31408
Constant	-0.30560	-0.31408	1.0618

Region 6 (2-year recurrence interval)

	Area	Shape	Constant
Area	0.097111	-0.16596	-0.18497
Shape	-0.16596	0.55383	0.10792
Constant	-0.18497	0.10792	0.56032

Region 6 (5-, 10-, 25-, 50-year recurrence intervals)

	Area	Slope	Constant
Area	0.074275	0.21725	-0.45192
Slope	0.21725	1.7549	-2.4175
Constant	-0.45192	-2.4175	3.8698

Region 6 (100-year recurrence interval)

	Area	Constant
Area	0.047378	-0.15262
Constant	-0.15262	0.53929

Region 7 (contributing drainage area less than 32 square miles and 2-year recurrence interval)

	Area	Slope	Constant
Area	0.079614	0.19151	-0.32236
Slope	0.19151	0.66027	-1.0641
Constant	-0.32236	-1.0641	1.7439

Table 4. Covariance matrix for regression equations—Continued

Region 7 (contributing drainage area less than 32 square miles and 5-, 10-, 25-, 50-, and 100-year recurrence intervals)

	Area	Constant
Area	0.024065	-0.013728
Constant	-0.013728	0.029106

Region 7 (contributing drainage area greater than 32 square miles and 2- and 5-year recurrence intervals)

	Area	Slope	Constant
Area	0.13654	0.26728	-0.59495
Slope	0.26728	1.2211	-1.8376
Constant	-0.59495	-1.8376	3.2641

Region 7 (contributing drainage area greater than 32 square miles and 10-, 25-, 50-, and 100-year recurrence intervals)

	Area	Slope	Shape	Constant
Area	0.14900	0.28119	-0.096212	-0.56427
Slope	0.28119	1.2366	-0.10739	-1.8034
Shape	-0.096212	-0.10739	0.74283	-0.23686
Constant	-0.56427	-1.8034	-0.23686	3.3397

Region 8 (all recurrence intervals)

	Area	Slope	Constant
Area	0.16975	0.38321	-0.78705
Slope	0.38321	1.4031	-2.2877
Constant	-0.78705	-2.2877	4.1821

Region 9 (2-year recurrence interval)

	Area	Constant
Area	0.037766	-0.089740
Constant	-0.089740	0.23888

Region 9 (5- and 10-year recurrence intervals)

	Area	Shape	Slope	Constant
Area	0.19332	-0.28044	0.22198	-0.43536
Shape	-0.28044	0.64673	-0.15191	0.26289
Slope	0.22198	-0.15191	0.75348	-1.1268
Constant	-0.43536	0.26289	-1.1268	1.9260

Region 9 (25-, 50-, and 100-year recurrence intervals)

	Area	Slope	Shape	Constant
Area	0.19332	0.22198	-0.28044	-0.43536
Slope	0.22198	0.75348	-0.15191	-1.1268
Shape	-0.28044	-0.15191	0.64673	0.26289

Region 10 (contributing drainage area less than 32 square miles and all recurrence intervals)

	Area	Slope	Constant
Area	0.18721	0.32999	-0.62684
Slope	0.32999	0.81005	-1.3718
Constant	-0.62684	-1.3718	2.4478

Region 10 (contributing drainage area greater than 32 square miles and all recurrence intervals)

	Area	Slope	Constant
Area	0.60170	1.3692	-2.5188
Slope	1.3692	3.4902	-5.9766
Constant	-2.5188	-5.9766	10.728

Region 11 (2-year recurrence interval)

	Area	Shape	Constant
Area	0.030010	-0.050613	-0.030238
Shape	-0.050613	0.2191	-0.042323
Constant	-0.030238	-0.042323	0.11073

Region 11 (5-year recurrence interval)

	Area	Shape	Slope	Constant
Area	0.039771	-0.054407	0.039783	-0.077090
Shape	-0.054407	0.22057	-0.015459	-0.024117
Slope	0.039783	-0.015459	0.16216	-0.19099
Constant	-0.077090	-0.024117	-0.19099	0.33567

Region 11 (10-year recurrence interval)

	Area	Slope	Shape	Constant
Area	0.039771	0.039783	0.054407	-0.077090
Slope	0.039783	0.16216	-0.15459	-0.19099
Shape	-0.054407	-0.015459	0.22057	-0.027117
Constant	-0.077090	-0.19099	-0.024117	0.33567

Region 11 (25-, 50-, and 100-year recurrence intervals)

	Area	Slope	Constant
Area	0.026351	0.035969	-0.083039
Slope	0.035969	0.16107	-0.19268
Constant	-0.083039	-0.19268	0.33304