Prepared in cooperation with the
Nebraska Department of Roads

Peak-Flow Frequency Relations and Evaluation of the Peak-Flow Gaging Network in Nebraska

Water-Resources Investigations Report 99–4032

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

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

Peak-Flow Frequency Relations and Evaluation of the Peak-Flow Gaging Network in Nebraska

By **Philip J. Soenksen, Lisa D. Miller, Jennifer B. Sharpe,** *and* **Jason R. Watton**

Water-Resources Investigations Report 99–4032

**Prepared in cooperation with the
Nebraska Department of Roads**

U.S. DEPARTMENT OF THE INTERIOR
Bruce Babbitt, Secretary

U.S. GEOLOGICAL SURVEY
Charles G. Groat, Director

Lincoln, Nebraska, 1999

For additional information write to:

District Chief
U.S. Geological Survey, WRD
406 Federal Building
100 Centennial Mall North
Lincoln, NE 68506

Copies of this report can be purchased from:

U.S. Geological Survey
Branch of Information Services
Box 25286
Denver, CO 80225

CONTENTS

CONTENTS--Continued

CONTENTS--Continued

Tables

CONTENTS--Continued

CONVERSION FACTORS

Multiply	By	To obtain
inch (in.)	2.54	centimeter
inch (in.)	25.4	millimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
square mile (mi^2)	2.590	square kilometer
foot per mile (ft/mi)	0.3048	meter per mile
cubic foot per second (ft^3/s)	0.02832	cubic meter per second
inch per hour (in/hr)	0.0254	meter per hour

Peak-Flow Frequency Relations and Evaluation of the Peak-Flow Gaging Network in Nebraska

By Philip J. Soenksen, Lisa D. Miller, Jennifer B. Sharpe, and Jason R. Watton

ABSTRACT

Estimates of peak-flow magnitude and frequency are required for the efficient design of structures that convey flood flows or occupy floodways, such as bridges, culverts, and roads. The U.S. Geological Survey, in cooperation with the Nebraska Department of Roads, conducted a study to update peak-flow frequency analyses for selected streamflow-gaging stations, develop a new set of peak-flow frequency relations for ungaged streams, and evaluate the peak-flow gaging-station network for Nebraska. Data from stations located in or within about 50 miles of Nebraska were analyzed using guidelines of the Interagency Advisory Committee on Water Data in Bulletin 17B. New generalized skew relations were developed for use in frequency analyses of unregulated streams. Thirty-three drainage-basin characteristics related to morphology, soils, and precipitation were quantified using a geographic information system, related computer programs, and digital spatial data.

For unregulated streams, eight sets of regional regression equations relating drainage-basin to peak-flow characteristics were developed for seven regions of the state using a generalized least squares procedure. Two sets of regional peak-flow frequency equations were developed for basins with average soil permeability greater than 4 inches per hour, and six sets of equations were developed for specific geographic areas, usually based on drainage-basin boundaries. Standard errors of estimate for the 100-year frequency equations (1percent probability) ranged from 12.1 to 63.8 percent. For regulated reaches of nine streams, graphs of peak flow for standard frequencies and distance upstream of the mouth were estimated.

The regional networks of streamflow-gaging stations on unregulated streams were analyzed to evaluate how additional data might affect the average sampling errors of the newly developed peak-flow equations for the 100-year frequency occurrence. Results indicated that data from new stations, rather than more data from existing stations, probably would produce the greatest reduction in average sampling errors of the equations.

INTRODUCTION

Estimates of peak-flow magnitude and frequency are required for the efficient design of structures that convey flood flows, such as bridges and culverts, or of structures that occupy floodways, such as roads. In the fall of 1994, a 4-year cooperative study was begun by the Nebraska Department of Roads and the U.S. Geological Survey (USGS) to update the methods for making these estimates. Objectives of the study included (1) updating of the peak-flow frequency analyses for selected streamflow-gaging stations, (2) development of a new set of regional peak-flow frequency relations for ungaged streams, and (3) evaluation of the peak-flow gaging-station network for Nebraska.

A number of new technologies had recently become available that made improvements in the peak-flow relations possible. New computer programs and procedures had been developed by the USGS for analyzing peak-flow frequency data for gaging stations. A geographic information system (GIS) and digital data could be used to compute drainage-basin characteristics that previously were undefined because they were too difficult or time-consuming to compute manually. For relating drainage-basin characteristics to peak-flow characteristics, a generalized least squares (GLS) regression program was available that could adjust for differences in record length and flow variance, and for cross-correlations among gaging stations. A companion network-analysis program (NET) also was available that could use the output from the GLS program to evaluate how the addition of new data from existing or new peak-flow gaging stations might reduce the average sampling errors of any newly developed peak-flow frequency equations. These two programs were available together as GLSNET from Gary Tasker (USGS, written commun., 1995).

Background

Several methods of computing peak flows for selected frequencies of occurrence had been developed previously by the USGS and others for Nebraska. Furness (1955) presented a method for computing peak flows up to the 50-year frequency (recurrence interval or probability) for two regions in Nebraska. The equations were considered applicable to sites with at least 100 mi^2 of drainage area. Beckman and Hutchison (1962) presented a method for computing peak flows up to the 100-year recurrence interval for sites with less than 300 mi^2 of drainage area. There are 10 hydrologic areas within two regions for this method. Patterson (1966) and Matthai (1968) developed methods for sections of Nebraska as part of regional studies on the Missouri River Basin. All of the above are index-flood methods; they use a dimensionless frequency curve and a relation for predicting the mean-annual flood from hydrologic characteristics to estimate a frequency curve for any location in a region. Beckman (1976) used multiple-regression techniques to develop regional equations for peak flows up to the 100–year recurrence interval. Basin characteristics were used as the explanatory variables in the five sets of regional equations.

Cordes (1993) updated Beckman's (1976) equations based on additional data and the new flood-flow frequency guidelines of Bulletin 17B (Interagency Advisory Committee on Water Data, 1982). He developed a generalized skew coefficient map (of base-10 logarithms of annual maximum peak flows) for Nebraska and included several new explanatory variables in the regional regression analyses of peak-flow frequencies. However, no new hydrologic regions were developed, and no adjustments were made to the default frequency analyses for individual stations (Rollin Hotchkiss, University of Nebraska-Lincoln, oral commun., 1997). The mean-square errors (MSEs) for the updated equations, as reported by Cordes (1993, p. 70), apparently were based on natural logarithms (Rollin Hotchkiss, University of Nebraska-Lincoln, oral commun., 1998). The MSEs were converted to standard errors of estimate (SEEs), in natural logarithms, by taking the square root of the values; those values then were converted to SEEs, in percent, using tabled values from Tasker (1978, p. 87). A comparison of SEEs, in percent, for corresponding equations shows that SEEs are smaller, in all cases, for the Beckman (1976) equations than for the Cordes (1993) equations. Therefore, newly developed equations in this report are compared only to the Beckman (1976) equations.

Experience has shown that the Bulletin 17B default low-outlier tests are not well suited for detecting multiple low outliers and that the log-Pearson Type III (LP3) distribution recommended by Bulletin 17B is sensitive to high outliers. The treatment of outliers can have substantial effects on peak-flow analyses, including skew coefficients from which a generalized skew-coefficient map is developed.

As part of this study, annual peak-flow data for Nebraska were compiled, checked, and published by Boohar and Provaznik (1996). Provaznik also investigated L-moments and several frequency distributions as possible alternatives to the methods recommended in Bulletin 17B. Results of the L-moment investigation can be found in Provaznik (1997), and Provaznik and Hotchkiss (1998).

Purpose and Scope

The purposes of this report are to: (1) present updated peak-flow frequency analyses for selected streamflow-gaging stations in Nebraska; (2) present and describe the development of new methods to estimate peak flows for selected frequencies for ungaged streams in Nebraska; and (3) present an evaluation of the peak-flow gaging-station network in Nebraska. Peak-flow frequency analyses and the network analyses were done for streamflow-gaging stations in or within about 50 miles of Nebraska (fig. 1).

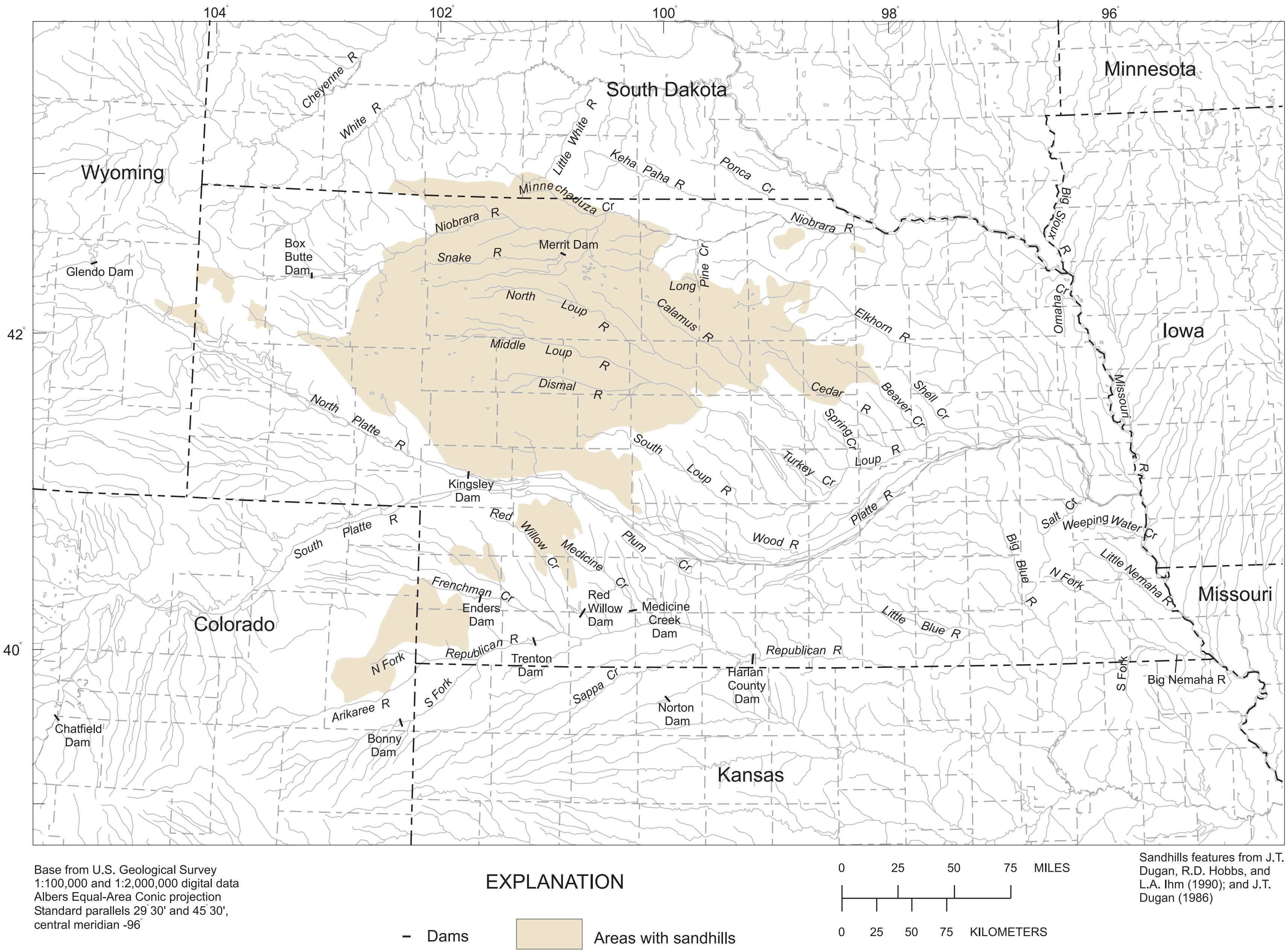


Figure 1. Selected streams and dams, and areas with sandhills in Nebraska and parts of adjacent states.

Acknowledgments

The authors acknowledge Milo Cress of the Federal Highway Administration for his support in initiating this study, and the dedicated USGS student employees who spent many hours digitizing drainage-basin data layers and computing basin characteristics with GIS programs: Christopher P. Stanton, David L. Rus, Cody L. Knutson, John T. Shulters, and Mary Kay Provaznik.

QUANTIFICATION OF DRAINAGE-BASIN CHARACTERISTICS

Morphometric, soil, and precipitation drainage-basin characteristics were determined for streamflow-gaging stations having 10 or more years of record in Nebraska and for selected stations outside of Nebraska. Most of the out-of-state stations had 25 years of record and had basin centroids within 50 miles of Nebraska; however, some stations had as few as 18 years of record or were as far away as about 80 miles. GIS-related programs and procedures were used or modified to quantify drainage-basin characteristics from digital data layers of basin boundaries, elevations, streams, soil, and precipitation.

Morphometric Characteristics

Twenty-seven drainage-basin characteristics were quantified using a modified version of Basinsoft (Harvey and Eash, 1996), a computer program developed by the USGS (Majure and Soenksen, 1991; and Eash, 1994). These morphometric characteristics generally describe the form and structure of a drainage basin and its drainage network, including measurements of area, length, relief, aspect, and stream order (appendix A and table B1). Four source-data layers, representing the surface-water drainage divide (basin boundary), hydrography (stream network), hypsography (elevation contours), and a lattice elevation model of the drainage basin, were required to run Basinsoft.

Existing data layers of drainage-basin boundaries for gaging stations were obtained from the Nebraska Natural Resources Commission and the Iowa City, Iowa, office of the USGS. Boundaries for Nebraska basins had been delineated using 1:24,000-scale USGS topographic maps; those for Iowa basins had been delineated using 1:250,000-scale USGS topographic maps. The remaining basin boundaries for Nebraska and surrounding states were delineated on 1:250,000-scale USGS maps and digitized manually to produce GIS digital data layers. Because of the difficulty in delineating noncontributing drainage area (*NCDA*) over the large sandhills areas of Nebraska (fig. 1), basin-characteristic measurements were made over the total drainage area (*TDA*) rather than over the contributing drainage area (*CDA*). Some basin characteristics were computed from other characteristics rather than being measured directly. Characteristics that required *CDA* in their computations were computed using published values of *CDA*.

Stream-network source-data layers were created by scanning mylar maps of 1:250,000-scale USGS hydrography data, which were converted to digital data layers using ARC/INFO version 7.0.4 (Environmental Systems Research Institute, 1996). Unfortunately, 1:250,000-scale hydrography data did not always extend to some small drainage-area basins. USGS 1:100,000 digital line graph (DLG) Quadrangle Series hydrography data were retrieved from the EROS Data Center of USGS, but these data were not used because of edge-matching problems.

Source-data layers of elevation contours and the lattice elevation model were created from 1:250,000-scale U.S. Defense Mapping Agency digital elevation model (DEM) data. GIS software was used to convert the DEM data into a lattice of point elevations and create elevation contours (Harvey and Eash, 1996). The elevation contour interval was selected to provide at least 10 contour lines per basin.

Manual topographic-map measurements of selected drainage-basin characteristics were made for 11 drainage basins in Iowa by Harvey and Eash (1996) to verify the accuracy of drainage-basin characteristics quantified using Basinsoft. Manual measurements and Basinsoft quantifications were made at identical scales. Comparison tests indicated that Basinsoft quantifications were not significantly different from manual measurements.

As an additional check of Basinsoft quantifications, manual topographic-map measurements of selected drainage-basin characteristics were made for five Nebraska drainage basins. Basinsoft quantifications did not appear to be significantly different than the corresponding manual measurements. Also, all *TDAs* determined using Basinsoft were compared with published values. Basinsoft was unable to compute basin characteristics for several stations; the reasons are not understood. These stations were not used in the development of peak-flow frequency relations for unregulated streams.

Soil Characteristics

Four drainage-basin characteristics (Dugan, 1984) that describe some aspect of the interaction of soil and water were computed from developed equations using ARC/INFO. Soil data for Nebraska and surrounding states were obtained from a digital data layer of the State Soil Geographic Data Base (STATSGO) (Natural Resources Conservation Service, 1994). The upper 60 inches of the soil profile were used to determine the majority of the soil characteristics, which include average permeability rate of the soil profiles (*P60*), average available water capacity of the soil profiles (*AWC*), average permeability of the least permeable layers of the soil profile (*PLP*), and the average maximum soil slope (*MSS*) (appendix A and table B1). Manual calculations were made to verify soil characteristics for selected drainage-basins.

Precipitation Characteristics

Two drainage-basin characteristics describing expected precipitation were quantified using ARC/INFO. The 2-year (recurrence interval), 24-hour (duration) precipitation (*TTP*) 1-inch contours were digitized manually from Weather Bureau Technical Paper 40 (Hershfield, 1961) into a GIS digital data layer. Additionally, 0.1-inch interval contours were interpolated and digitized (fig. A1). Mean annual precipitation (*MAP*) data compiled by the National Oceanic and Atmospheric Administration were retrieved for the period 1961–90 from the National Climatic Data Center Web site (URL *http://www.ncdc.noaa.gov/ol/climate/online/coop-precip.html*). These data were used to create a data layer of points from which Thiessen polygons were created (fig. A2). *TTP* and *MAP* values then were determined by taking the area-weighted average of precipitation polygons coincident to the total drainage area of each basin (table B1). Manual calculations were performed to verify precipitation values for selected drainage basins.

PEAK-FLOW FREQUENCY ANALYSES

Relations between peak flows and frequency of occurrence (recurrence interval or probability of occurrence) for individual drainage basins are basic to the development of peak-flow frequency relations for larger areas. Bulletin 17B of the IACWD (Interagency Advisory Committee on Water Data, 1982) contains guidelines for the development of these basic relations using the log-Pearson Type III (LP3) frequency distribution. Three parameters—the mean, the standard deviation, and the skew coefficient of the logarithms of the annual maximum peak flows—are used to fit the station data to the LP3 distribution. These parameters can be thought of as the middle point, average slope, and bend or shape of a computed peak-flow frequency curve. Increasing the standard deviation or range of the peak-flow data increases the slope or steepness of the frequency curve, and decreasing the standard deviation flattens the slope of the curve. Positive skew coefficients cause the frequency curve to bend upward, negative skews cause the curve to bend downward, and zero skews produce a straight line.

For stations with unregulated (natural) streamflow, station skew coefficients of peak flows should be weighted with generalized skew coefficients for that area or for basins with similar characteristics. The assumption is that skews will be similar for stations that have similar basin characteristics or are in close proximity, and that the accuracy of the applied skew can be improved by incorporating the influence of other stations. The national map of generalized skew coefficients in Bulletin 17B provides default values for areas where local values have not been determined independently. For stations with regulated streamflow, only the station skew coefficients were used in peak-flow frequency analyses because the flow characteristics are based on imposed criteria, not on the characteristics of the drainage basins. Bulletin 17B also provides guidelines for making adjustments for historic data and low outliers. It also provides guidelines for developing composite peak-flow frequency relations for stations with peak flows that are produced by different runoff-producing mechanisms, such as rainfall and snowmelt.

Standard Analyses

Annual peak flows for USGS gaging stations with at least 10 years of record through 1993 and located in or within about 50 miles of Nebraska were retrieved from the USGS's national streamflow data base (Dempster, 1983). Peak-flow data were loaded into a Watershed Data Management (WDM) file (Flynn and others, 1995) and then checked and updated as necessary. Stations in the study area, but with streams that do not flow into Nebraska and with drainage areas that are mostly outside of the study area, were not used. The program PEAKFQ—an updated version of program J407 (Kirby, 1981) that utilizes WDM files— follows the guidelines of Bulletin 17B and was used for the peak-flow frequency analyses for all the gaging stations. The program outputs computed peak flows for standard exceedance probabilities (frequencies) in a tabular form and as a peak-flow frequency curve in graphical form.

Peak flows that were known to have been or could possibly have been affected to some degree by regulation—such as flood control, irrigation diversions, power generation, storage detention, or other factors—were separated from unregulated peaks before further analysis. Determinations generally were based on information from the peak-flow data base, water-data and flood-frequency reports, USGS files, topographic maps, and a statewide data base for dams, which contains location, year of completion, and amount of storage. A rough criterion was developed for estimating possible effects of regulation on peaks using a comparison of the average flow to the amount of storage in the basin. It was developed from data for stations with significant changes in storage during their periods of record by comparing changes in peak-flow frequency relations to the changes in storage for both earlier and later periods of record. The criterion was developed primarily for estimating whether the cumulative storage of numerous small dams might be affecting peaks at downstream stations. Because of the limited data upon which it was based, the criterion was used only as a guideline.

Two sets of standard peak-flow frequency analyses were computed for stations on unregulated streams. The first set of standard analyses was used to determine skew coefficients from the peak-flow data for each station. Using these station skews, several generalized skew relations then were developed. The second set of standard analyses was done using the individual station skews weighted with the newly developed generalized skews. For stations on regulated streams, one set of standard analyses was made based on station skews only. Adjustments were made to individual peak-flow frequency analyses, as appropriate, for historic data, and for high and low outliers as described in the following sections. Results of frequency analyses for peak-flow gaging stations are listed in table B2.

Adjustments for Historic Data

The number of annual peak flows, during which data were collected systematically at a gaging station (systematic record), is used in the computation of the LP3 parameters and in the determination of the plotting positions of the peak flows for the frequency curve. If one or more of the peak flows within the systematic record are known to be the largest in a period longer than the systematic record, the frequency analysis can be adjusted to this historic period. This provides a means to correct, at least partially, for the adverse effects that a very large peak flow might otherwise have on the computed peak-flow frequency curve. Historic peak flows without an associated historic period cannot be added to the record being analyzed. Historic periods for peak-flow data were determined primarily from the peak-flow data base, but also from water-data and flood-frequency reports, USGS files, newspaper accounts of floods, and comparisons with records for other nearby stations.

Adjustments for High and Low Outliers

Extremely high or low annual peak flows that significantly depart from the trend of the rest of the data are outliers that can have a disproportionate effect on the LP3 parameters used to compute frequency curves. High outliers tend to increase both skew coefficients and standard deviations. Low outliers tend to decrease skew coefficients but increase the standard deviations. The outcome can be varied depending on the number of outliers and their values. Decreasing the skew bends the frequency curve downward and reduces expected high-end peak flows; increasing the standard deviation steepens the slope and increases expected high-end peak flows. Statistical tests done by the program PEAKFQ identify both high and low outliers, but adjustments cannot be made for high outliers unless historic data are available, as previously discussed. By default, any identified low outliers are eliminated (censored) by PEAKFQ and a conditional probability adjustment is made based on the assumption that the remaining values are representative of the entire period of record. Experience of the authors has shown that the statistical tests included in Bulletin 17B are not well suited for detecting multiple low outliers for many Nebraska stations. Therefore, adaptations of the existing procedure, other tests, and considerable judgment were used to identify and censor low outliers in those situations. If numerous enough, multiple low outliers can become a special case of mixed populations, as discussed later, requiring the development of composite frequency curves (see Composite Analyses).

The default PEAKFQ procedure for identifying low outliers was adapted to test other peak flows suspected of being low outliers based on a visual inspection of the default peak-flow frequency curve. The gage-base threshold can be set in PEAKFQ to isolate specific peak flows to be tested as low outliers. Peaks below the user-set gage base are not used in PEAKFQ computations, except for determining plotting positions, and a new low-outlier threshold is computed from the remaining data. This allowed the first peak above the gage base to be tested as a low outlier against the remainder of the data. This was done in two ways: (1) by raising sequentially the gage-base threshold from the lowest flows, and (2) by setting the gage-base threshold based on breaks in the data. Data breaks were identified visually on plots of the default peak-flow frequency curves. The sequential test was used when at least one low outlier had already been identified, either by the original outlier test or by a break test. The gage-base threshold was set to the value of the largest identified low outlier and the analysis was recomputed. If a new outlier was identified, the process was repeated until no more low outliers were identified. This worked well if the low-end values were well spaced. If peak flows were grouped together below a data break, then the gage-base threshold was set to the second largest peak flow of the group, to isolate the largest peak flow below the data break, and the analysis was recomputed. Judgment was used in both of the low-outlier identification procedures when the criterion was within at least 90 percent of the peak-flow value being tested.

Another low-outlier test used was to censor peak-flow values, either individually or in groups, and observe the effects on the high end of the peak-flow frequency curve. This was done by setting the low-outlier criterion to the value of interest. For stations with multiple low outliers, this procedure was usually not very effective until most or all of the low outliers were censored. Considerable judgment was used with this procedure, but usually at least a 10-percent change in the 100-year frequency peak flow was required before the censored value or values were considered low outliers. For many stations, although the lower peak-flow values did not appear to be representative, there was no clear-cut data break and the quantitative outlier tests were not definitive. In these cases, a visual evaluation of the fit, especially of the upper half of the peak-flow frequency curve, from which all of the peak-flow frequency values of interest were determined, was the final and overriding test of low outliers.

Generalized Skew Coefficients

Regional equations relating generalized skew coefficients (of base–10 logarithms ($\log_{10}$) of annual maximum peak flows) to basin characteristics were developed for most of the state, and a statewide map of generalized skew coefficients for basins with relatively low soil permeability also was developed. These relations were based on frequency analyses from 224 gaging stations (fig. 2 and table B2) and the procedures given in Bulletin 17B (Interagency Advisory Committee on Water Data, 1982). The national skew coefficient map included in Bulletin 17B was developed originally for Bulletin 17 (U.S. Water Resources Council, 1976), and was based on a relatively small number of stations with minimal evaluation of low outliers, no adjustments for historic data, no identification or treatment of high outliers, and no

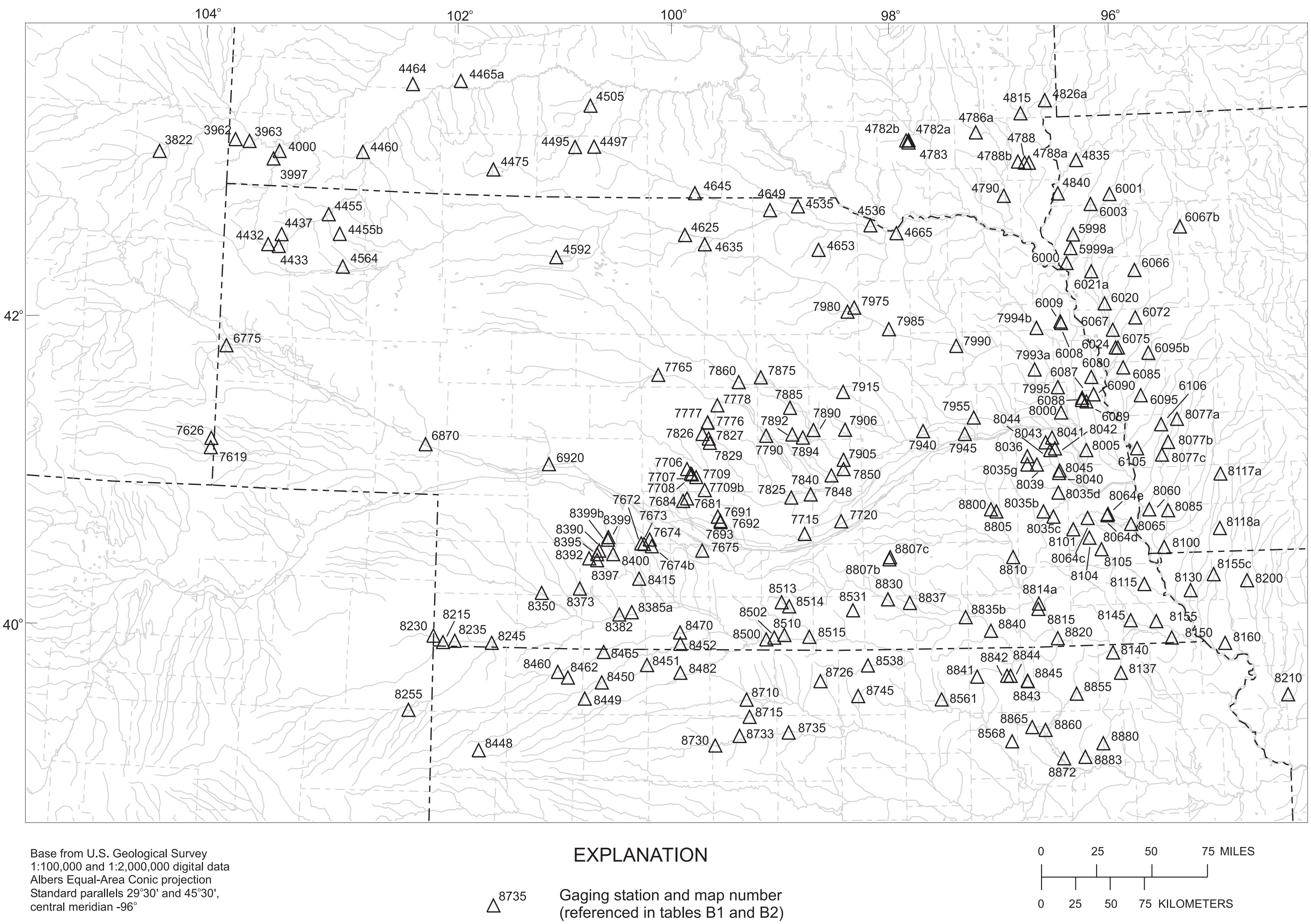


Figure 2. Location of streamflow-gaging stations in Nebraska and adjacent states used to develop generalized skew coefficient relations for log-Pearson Type III peak-flow-frequency analyses.

detailed evaluation of individual peak-flow frequency curves. In Nebraska, values shown by the national map were influenced by the high positive skews from a few stations with drainage areas mostly in the sandhills. Because the map is generalized, this influence went beyond the actual area of the sandhills.

Station skew coefficients were computed using PEAKFQ for stations in or within about 50 miles of Nebraska that, generally, had 25 years or more of unregulated peaks. Several stations with as few as 18 annual peaks were used where data were lacking. Adjustments for historic information and low outliers were made as previously described. Low outliers tend to make the station skew more negative and high outliers tend to make it more positive. Because procedures were applied to reduce the effects of low outliers in most cases, it also was considered necessary to limit the effects of high outliers, identified by PEAKFQ, to limit bias in any skew relations developed.

After other adjustments had been made to the peak-flow frequency analyses, stations with PEAKFQ high outliers were analyzed further to estimate how sensitive the station skew coefficients were to the high outliers. Using the historic adjustment procedure in PEAKFQ, high outliers for a station were assumed to be historic peaks and then the record length was doubled, tripled, and quadrupled arbitrarily. The new skew coefficients were noted and differences from the original values were computed. The skew was considered fairly stable if it did not change by more than 0.20, 0.30, or 0.40, respectively, for sandhills stations, and by more than 0.10, 0.15, or 0.20, respectively, for all other stations. Stations with skew changes greater than these were considered unstable because of the high outlier(s), and those stations were eliminated from further consideration in the skew relations.

Equations to predict skew coefficients were preferred to a skew map because equations eliminate the assumption that basins in close proximity have similar skew values. Rather, skews estimated using equations are based on measurable characteristics for each individual basin. It is more difficult to compute skews with equations compared to determining skews from maps because each of the explanatory variables in the equation must be measured or computed.

A skew equation first was developed for basins with average soil permeability (*P60*) greater than 2.5 in/hr (high-permeability regional skew equation); this eliminated the need to map the high positive skew areas of the sandhills as was done for the national map. A skew map then was developed for basins with *P60* less than 4 in/hr, and for the entire Elkhorn River Basin (see fig. 1 for location of specific streams), which includes basins with *P60* greater than 4 in/hr. This resulted in some overlap with the high-permeability equation. Regional equations, based mostly on geographic areas, also were developed; however, only those with mean-square errors (MSE*s*) less than those for the newly developed skew map were used, as recommended in Bulletin 17B. Because of the importance of *P60* in deciding which skew relation to use, a generalized map of *P60_SS* (appendix A) is presented (fig. A3). For actual measurements of *P60* for a drainage basin, values should be quantified using a GIS, as previously described. Using Statit statistical programs (Statware, Inc., 1990) standard multiple-regression techniques were used to develop skew estimation equations (table 1). Residuals were analyzed to define regions and to try and determine the best combination of explanatory variables. Equations were examined to ensure that they were hydrologically reasonable. The adjusted R-square, MSE, ratio of MSE to variance, and standard error of estimate (SEE) were computed from or taken from Statit output files for each equation (table 1). Regions and skew coefficients that have been defined geographically are shown in figure 3.

High-Permeability Regional Skew Equation

The high-permeability regional skew equation is based on 38 stations with at least 25 years of record and with *P60* greater than 2.5 in/hr, except those in the Elkhorn River Basin. The equation applies to high-permeability basins, not to a distinct geographic area. However, it is uncertain whether the equation is applicable to: right-bank tributaries of the Little White River and adjoining left-bank tributaries of the Niobrara River upstream of and including Minnechaduza Creek; and right-bank

Table 1. Generalized skew equations

[*BS*, basin slope, in feet per mile; *CR*, compactness ratio, dimensionless; *GSkew*, generalized skew coefficient of base–10 logarithms ($\log_{10}$) of annual maximum peak flows, dimensionless; MSE, mean square error; *MSS*, average maximum soil slope, in percent; *P60*, permeability of the 60-inch soil profile, in inches per hour; *PLP*, permeabilitiy of the least permeable layer, in inches per hour; SEE, standard error of estimate; *SR*, slope ratio of main-channel slope to basin slope, dimensionless; >, greater than]

Estimation equation	Adjusted R-square (based on $\log_{10}$ transforms of peak-flow data)	MSE	Ratio of MSE to variance	SEE
High Permeability Skew Region				
(38 stations with 25 or more years of record)				
$GSkew = \frac{-1.261}{CR} + 1.169(\log_{10}P60) - 0.112$	0.74	0.055	0.23	0.234
Northern and Western Skew Region				
(31 stations with 20 or more years of record)				
$GSkew = 0.1716PLP + \frac{1.216}{MSS} - \frac{0.6688}{CR} + 0.109$	.84	.033	.16	.182
Northeastern Skew Region				
(30 stations with 20 or more years of record)				
$GSkew = 0.4811(\log_{10}SR) - \frac{0.4452}{P60} - 0.5595(\log_{10}MSS) + 1.129$	.63	.024	.35	.155
Southeastern Skew Region				
(28 stations with 25 or more years of record)				
$GSkew = -0.001853BS + 0.4928\ (\log_{10}P60) - 0.058$	.54	.018	.46	.134

NOTE: *CR*, *SR*, and *BS* are data-scale dependent.

tributaries of the Niobrara River that are adjacent to the Elkhorn River Basin (left and right banks are referenced to facing in the downstream direction). Stations from these areas were not used because of insufficient record length or problems in computing the basin characteristics. Three stations in the Little White River-Minnechaduza Creek divide area had negative skews, which were not consistent with the equation results of positive skews for stations with high permeabilities and low compactness ratios (*CR*). Therefore, station skews were used in the peak-flow frequency analyses for this area instead of skews estimated from the equations.

Northern and Western Regional Skew Equation

The northern and western regional skew equation is based on 31 stations with at least 20 years of record, from southeastern Wyoming, southern South Dakota, and northern and western Nebraska. Stations are in the following basins: right-bank Cheyenne River, upper White River, Little White River, Missouri River tributaries from the South Dakota-Nebraska state line to and including right-bank tributaries of the Big Sioux River, and the North and South Platte Rivers. This region (fig. 3) overlaps with the northeastern skew region and includes some stations used in the high-permeability regional skew equation.

Northeastern Regional Skew Equation

The northeastern regional skew equation is based on 30 stations with at least 20 years of record, from northeastern Nebraska, southeastern South Dakota, and northwestern Iowa.

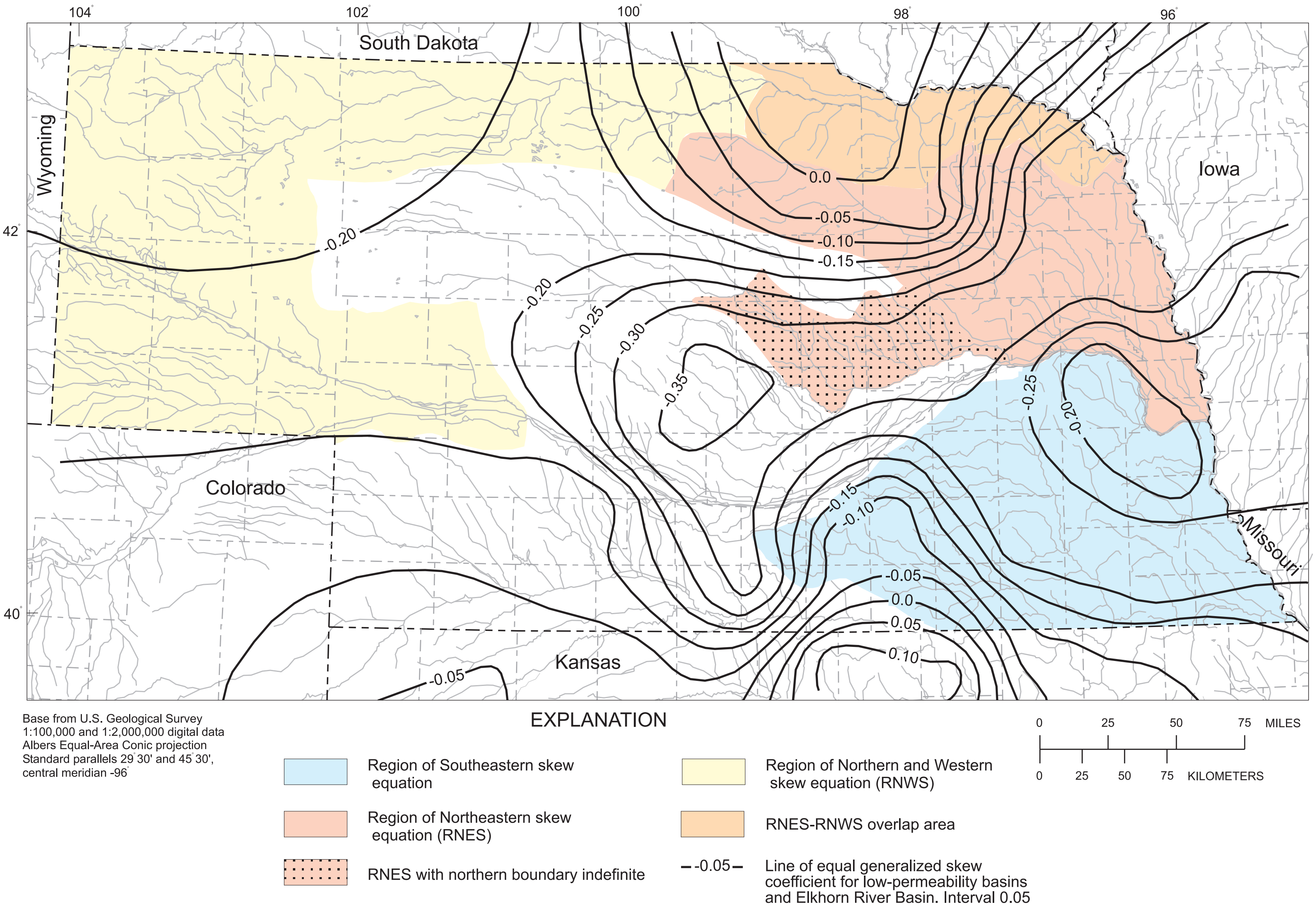


Figure 3. Regions of generalized skew-coefficient equations for Nebraska, and distribution of generalized skew-coefficients for basins with average permeability of the top 60 inches of soil (*P60*) of less than 4 inches per hour but including the entire Elkhorn River Basin. Coefficients are for log-Pearson Type III frequency analyses of unregulated annual peak flows.

Stations are in the following basins: Ponca Creek, lower Niobrara River (adjacent to the Elkhorn River Basin), Missouri River tributaries from the Niobrara River to the Platte River, Middle Loup and Loup River tributaries downstream of and including Turkey Creek, Shell Creek, and the Elkhorn River. The region also is considered to include other left-bank Platte River tributaries downstream of the Loup River. This region (fig. 3) overlaps with the northern and western skew region and includes some stations used in the high-permeability regional skew equation.

Southeastern Regional Skew Equation

The southeastern regional skew equation is based on 28 Nebraska stations with at least 25 years of record, from the Salt and Weeping Water Creek Basins, the Little and Big Nemaha River Basins, and the Little and Big Blue River Basins. The region also is considered to include other right-bank tributaries of the Platte River downstream of Hydrologic Unit 10200103 (U.S. Geological Survey, 1976) (which extends several miles below the mouth of the Loup River) and of the Missouri River between the Platte River and the Nebraska-Kansas state line. The region is shown in figure 3.

Low-Permeability Skew Map

A low-permeability skew map of Nebraska (lines of equal generalized skew coefficient, fig. 3) was developed for basins with *P60* less than 4 in/hr, and including the entire Elkhorn River Basin regardless of soil permeability. Skew values were plotted at the centroid of the drainage area for each station. The skew values were clustered geographically based on judgment with consideration given to such factors as basin similarity and apparent trends. An average skew value, weighted by the number of annual peak years for each station, was computed for each cluster. The weighted-average value then was assigned to every point in the cluster. Lines of equal skew coefficient initially were determined using a contouring program and were revised manually using judgement. Differences between the lines and the actual station skew values were determined and the MSE was computed by summing the squares of the differences and dividing by the total number of stations used. Several clustering schemes were used in an attempt to minimize the MSE while still keeping the lines general enough to represent broad trends. The map became more general as the number of clusters was reduced; a single cluster would result in an overall average skew for the state. The final map (fig. 3) is based on 189 stations and has an MSE of 0.052 and a SEE of 0.24. The skew map in Bulletin 17B has a standard deviation (computed the same as the SEE reported here) of 0.55, but this is not comparable because it is for the whole country. Cordes (1993, p. 59–60) reports that the standard deviation is 0.78 for the Nebraska part of the national map in Bulletin 17B. The skew map for Nebraska presented by Cordes, which includes the high-permeability sandhills areas, as was done for the national map, has a standard deviation of 0.59.

Composite Analyses

Using a conditional probability method suggested by William Kirby (USGS) (Wilbert Thomas, Jr., USGS, written commun., 1995), an alternative set of frequency analyses were computed for selected high-permeability stations that apparently have two different populations of annual peak flows in the data. A pattern that showed different flow characteristics for the largest peaks seemed apparent from the initial peak-flow frequency curves for most of the high-permeability stations. Because sandhills terrain typically includes large areas of noncontributing drainage and high permeability, it was theorized that most of the lower-flow peaks consisted primarily of interflow and baseflow and that the higher-flow peaks had a significantly greater proportion of surface runoff than the lower-flow peaks.

Unit-value flow data were not readily available for using a flow-hydrograph separation technique to test the theory. Therefore, plots of peak flow versus the lower of the 1- or 2-day lag of daily flow were made for several stations to determine if the theory was at least plausible. Three such plots, along with their respective peak-flow frequency plots, are shown in figure 4. The results are not definitive because daily value data are so generalized compared to unit value data (commonly 15-minute intervals) and true recessions are not always apparent, especially if secondary peaks are masked within the daily values. Even so, there is a general tendency for the higher flows to have a greater proportionate drop-off in flow than do the lower flows. This supports the theory because flows with proportionately more surface runoff than interflow or baseflow would have steeper recessions for a given station. Based on the

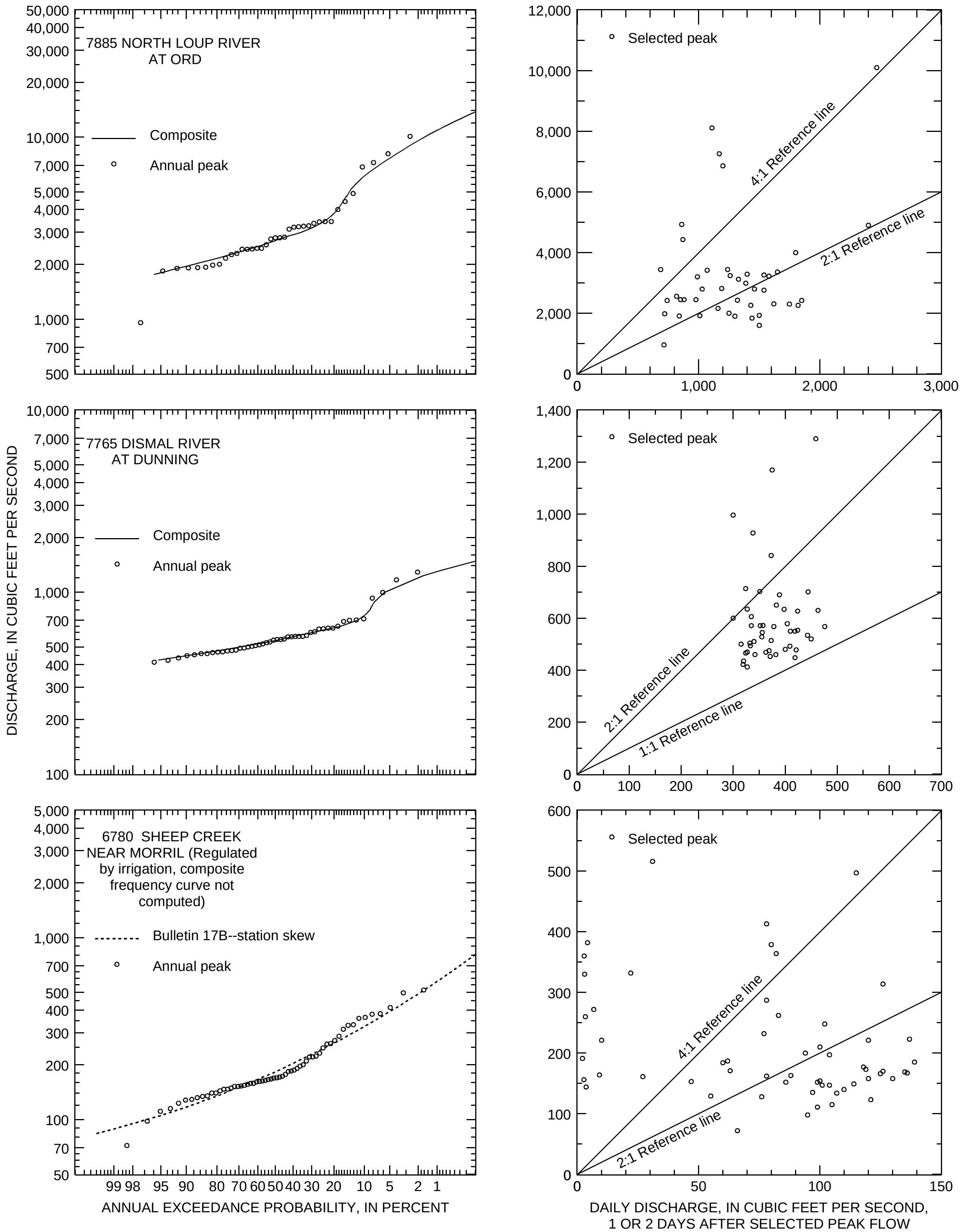


Figure 4. Peak-flow frequency curves and daily discharge lag plots for three Nebraska streamflow-gaging stations.

observed patterns in the peak-flow frequency plots and the lag plots, it was decided to treat the peak flows above and below the breaks on the peak-flow frequency plots as two different populations, or regimes, of flow for an alternative set of frequency analyses.

Kirby's method of developing a composite peak-flow frequency curve for a station requires that there be enough annual peaks of each flow regime to compute separate frequency curves. PEAKFQ requires at least three peaks to make a computation. Peak-flow values for the selected stations were separated into higher- and lower-flow regimes and loaded into special WDM files. Because there were no generalized skew relations established for these situations, analyses were computed with PEAKFQ using station skews only. The use of zero skews or weighted skews might have been preferable in some situations to limit the effects of outliers on curves with already limited data. The results from the individual analyses were combined using conditional probabilities as shown in Kirby's equation modified from Thomas (Wilbert Thomas, Jr., USGS, written commun., 1995):

$$P(F > x) = \begin{array}{l} [P(F > x \backslash F \in H) \times P(F \in H)] + \\ [P(F > x \backslash F \in L) \times P(F \in L)] \end{array} \qquad (1)$$

where: P = probability that

F = annual maximum peak flow

x = given value of peak flow

\ = given that

$F \in H$ = annual maximum peak flow is a higher-regime flow

$F \in L$ = annual maximum peak flow is a lower-regime flow

Composite peak-flow frequency curves were plotted and peak flows for the standard exceedance probabilities were determined visually from the graphs. This was done for 22 high-permeability (*P60* greater than 4 in/hr) stations with unregulated flows (fig. 4 and figs. C1 to C4).

Other types of mixed populations in station data also were apparent, including stations with relatively low permeability and precipitation—especially in northwestern Nebraska—and stations on partially regulated streams. The thorough investigations required to split the data and to do the analyses of all of these other cases were beyond the scope of this study. Low-permeability stations with apparent mixed populations were dropped from the regional analyses of peak-flow frequency but are listed with appropriate notes in table B2. Preliminary composite analyses were done for several Platte River stations, including Platte River at Brady (7660) (fig. 5). However, most stations on partially regulated streams were simply computed with station skews and, where mixed populations appeared to be most apparent, notes were included in the appropriate figures and tables.

In the more arid areas of Nebraska, annual maximum peak flows can be very small or even zero. The lower-regime flows are essentially low outliers from the remaining peak-flow data. When these lower flows comprise a large proportion of the data, they cannot all be censored because Bulletin 17B analyses require that at least half of the data be used. If they are numerous enough and their range in flow is great enough, the computed peak-flow frequency curves are too steep and the indicated high-end peak flows can be unreasonable. Chadron Creek tributary at Chadron Creek State Park near Chadron (4455a) and Antelope Creek tributary near Gordon (4578) are two examples of this situation (fig. 5). For the Chadron Creek tributary station, 12 of the 26 peaks were zero and no more peaks could be cut off in the standard Bulletin 17B analyses or the calculations would abort. For this station the data were simply split into zero and non-zero flows, analyzed separately and then recombined with the conditional probability adjustment.

For the Antelope Creek tributary station (4578), less than half of the non-zero flows appear to be true indicators of flood flow and splitting the data into zero and non-zero flows does not produce a reasonable fit of the largest flows. The fairly obvious break used to split the non-zero flow data for this station is not always as apparent for other stations and is difficult to justify without more investigation. Another solution might be to use a different type of analysis that uses all of the peak flows above a selected base flow in the computations (partial-duration series) rather than just the annual maximum peak flows (annual maximum series). Some, if not all, of the lower peak flows from dry years potentially could be replaced in the analyses with larger peak flows from wetter years. Unfortunately, all of the stations

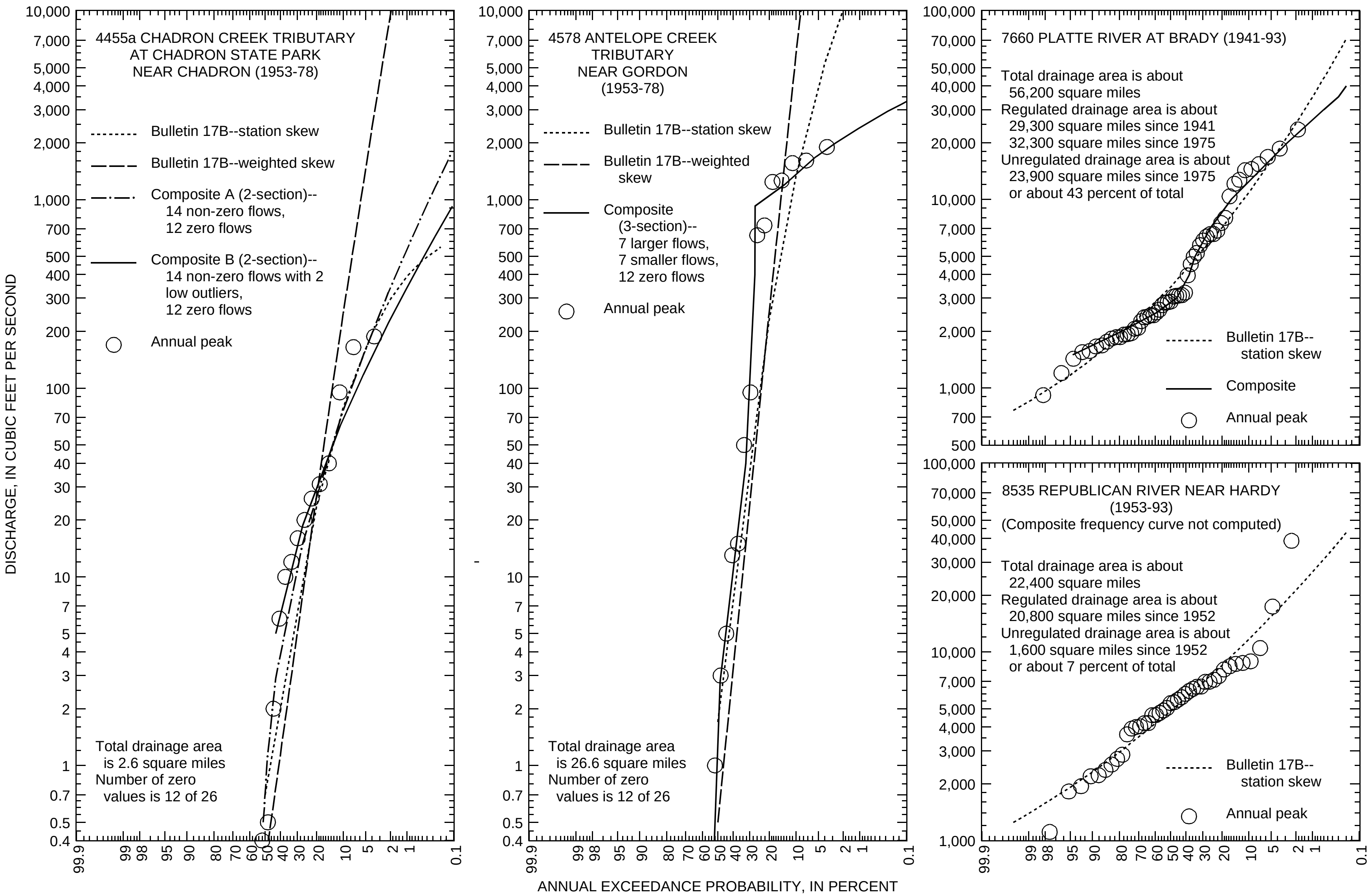


Figure 5. Four examples of Nebraska streamflow-gaging stations requiring composite frequency curves because of apparent mixed populations of data that are not caused by basins with large proportions of noncontributing drainage area or by average soil permeability of the top 60 inches of more than 4 inches per hour.

where this was observed were operated as peak-stage gages where only annual maximum peaks were reported. For both the Chadron Creek and Antelope Creek tributary stations, regional skews were used when analyzing the higher flows.

For regulated or partially regulated streams, the farther downstream from a control structure a station is located, the more likely it is that peaks will be produced from the unregulated drainage area between the structure and the station; even a small amount of drainage area can produce a large peak if a storm over the area is intense enough. The Republican River at Hardy (8535) is an example of a partially regulated station with an apparent mixed population (fig. 5). Based on a comparison with two other long-term stations between the Hardy station and the Harlan County Dam upstream, it is apparent that at least the two largest peaks at the Hardy station, which are distinctly different from the majority of the other peaks, were produced from the unregulated drainage area below the dam.

PEAK-FLOW FREQUENCY RELATIONS

Peak-flow frequency relations were developed for standard exceedance probabilities of 50, 20, 10, 4, 2, 1, 0.5, and 0.2 percent, or frequencies of occurrence (recurrence intervals) of 2, 5, 10, 25, 50, 100, 200, and 500 years, respectively. For unregulated streams, eight sets of regression equations relating drainage-basin characteristics to annual peak flows for selected frequencies of occurrence were developed for seven regions of the state. Two sets of regional peak-flow frequency equations were developed for a high-permeability region that includes basins with *P60* greater than 4 in/hr. Six sets of equations were developed for specific geographic areas, primarily on the basis of drainage-basin boundaries. One set of the high-permeability equations was developed using data from standard frequency analyses and the other was developed using data from composite frequency analyses. In general, the two sets of high-permeability equations were developed for basins with sandhills-type terrain. Statewide regression equations also were computed, but they are not presented because MSEs were larger than those for regional equations. Data from stations in Wyoming, South Dakota, Colorado, and Kansas were used along with data from stations in Nebraska in the development of unregulated peak-flow frequency relations (fig. 6).

Stations along streams with flows that are known to have been or possibly could have been affected to some degree by regulation (flood control, irrigation diversions, power generation, storage detention, or other factors) were excluded from regional analyses relating drainage-basin characteristics to peak-flow characteristics (fig. 7). Log-linear relations of peak-flow frequency and distance upstream from the mouth were developed for parts of nine streams.

Unregulated Streams

Using analyses for stations with at least 10 years of record, preliminary peak-flow frequency equations were developed and regions were defined using ordinary least squares (OLS) multiple-regression procedures. Final equations were developed using a generalized least squares (GLS) multiple-regression procedure. OLS regression procedures were used to identify the most likely combinations of drainage-basin characteristics for the development of peak-flow frequency equations and to define regions.

OLS regression analyses were done using Statit statistical programs (Statware, Inc., 1990). Peak-flow data were transformed to base-10 logarithms ($\log_{10}$). Several additional drainage-basin characteristics were computed using Statit from the existing characteristics before $\log_{10}$ and reciprocal transforms were computed. Correlation coefficients and plots of the data were used to screen out drainage-basin characteristics that were highly correlated with each other or were poorly distributed relative to the peak-flow data for statistical analyses. Multiple-regression programs ALLREG, GREGRES, and REGRES (Statware, Inc., 1990) were used to identify statistically significant combinations of explanatory variables (basin characteristics) for predicting peak flows for standard frequencies of occurrence. Initial selection of explanatory variables for OLS regression equations was based primarily on minimizing the Mallow's Cp statistic in ALLREG. Mallow's Cp was used to achieve a balance between minimizing bias, by including all relevant variables, and minimizing the variance of the estimator, by keeping the number of variables small (E.J. Gilroy, D.R. Helsel, and T.A. Cohen, USGS, written commun., 1991).

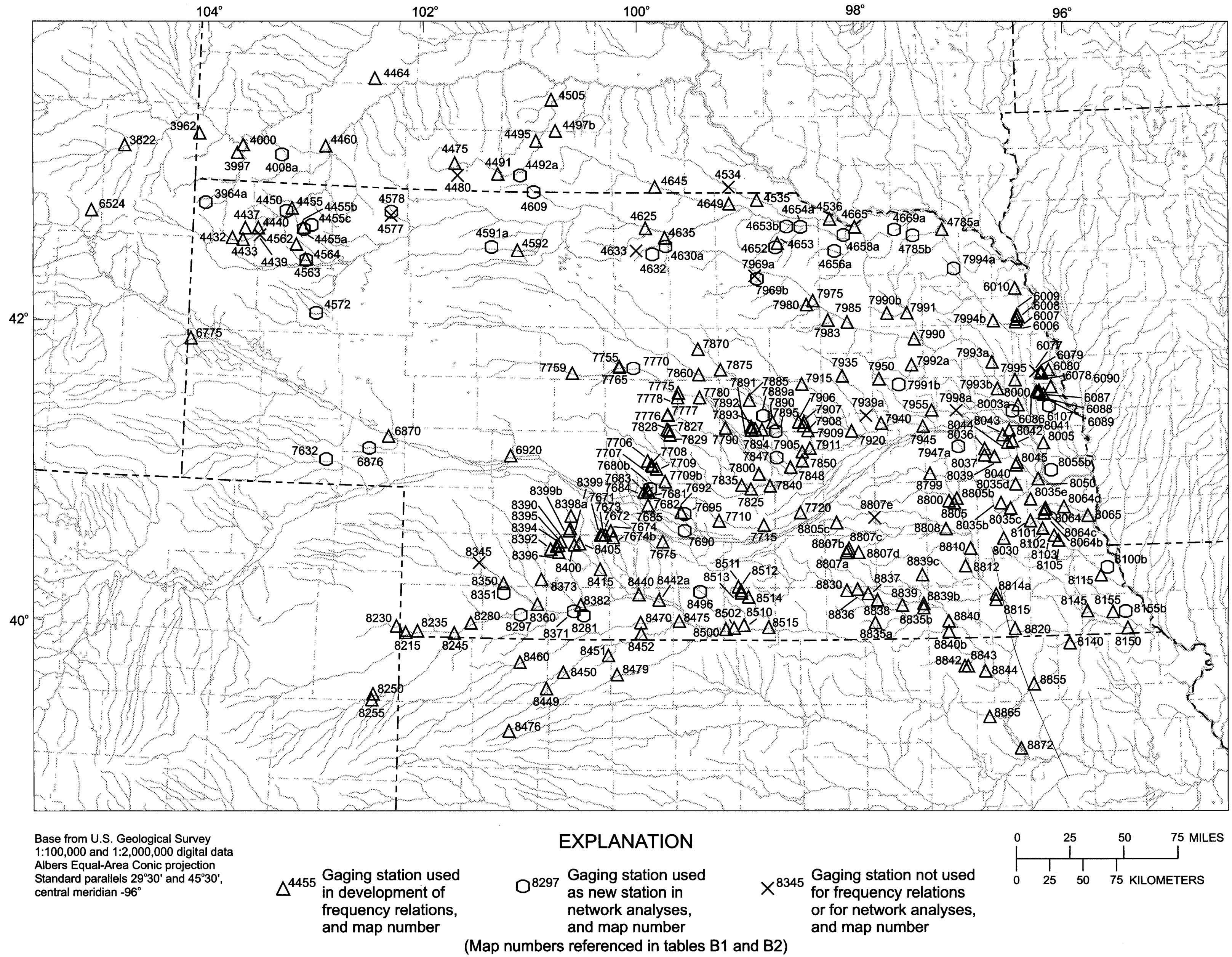
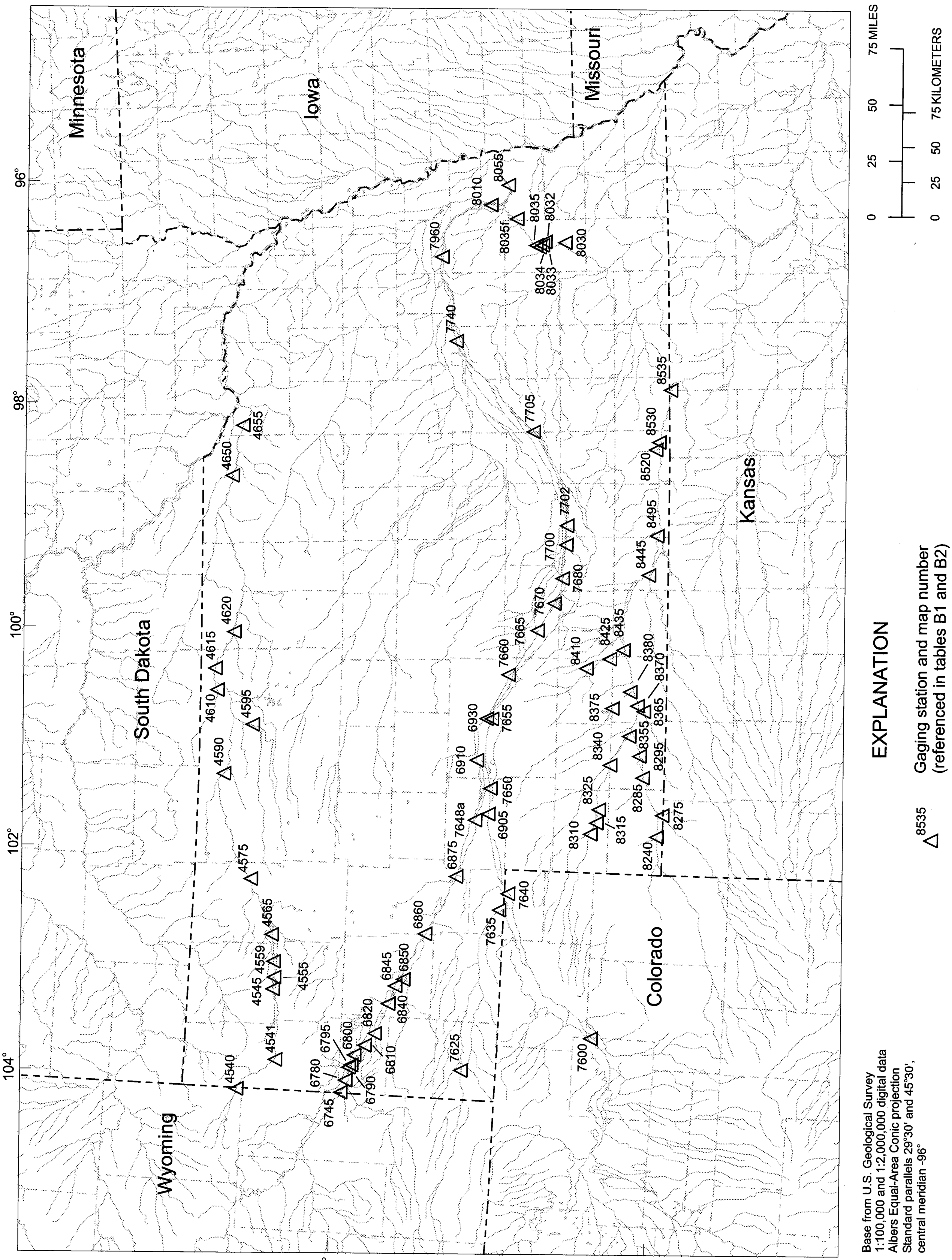


Figure 6. Location of streamflow-gaging stations in Nebraska and selected stations in adjacent states with at least 10 years of unregulated peak-flow record.



Base from U.S. Geological Survey
1:100,000 and 1:2,000,000 digital data
Albers Equal-Area Conic projection
Standard parallels 29°30' and 45°30',
central meridian -96°

Figure 7. Location of streamflow-gaging stations in Nebraska and selected stations in adjacent states with at least 10 years of regulated peak-flow record.

This also usually resulted in minimizing the MSE and in keeping the absolute value of the t-ratios greater than 2. The t-ratio was computed for each explanatory variable as the fitted coefficient divided by its standard error; it was used to test whether or not the coefficient (slope) of each explanatory variable was significantly different than zero.

Regional Equations

Residual values and plots from preliminary OLS regression analyses were used to delineate the six hydrologic regions (fig. 8) based on geography and outlier stations before final regression equations were developed using the GLS program in GLSNET (Gary Tasker, USGS, written commun., 1995). The GLS program adjusts for differences in record lengths, differences in peak-flow variances, and cross-correlations of concurrent peak-flows among stations used in the regression analysis (Tasker and Stedinger, 1989). Only $\log_{10}$ transforms of peak-flow and drainage-basin characteristic data were used for GLS regression analyses. This allowed for the simple transformation of the final equations to exponential form. Selection of drainage-basin characteristics as explanatory variables for GLS regression equations was based primarily on minimizing the GLS version of the prediction error sum of squares, or PRESS statistic, (Gilroy and Tasker, 1989; and E.J. Gilroy, D.R. Helsel, and T.A. Cohen, USGS, written commun., 1991) and, to a lesser extent, on minimizing the standard error of prediction (SEP).

The PRESS statistic is the sum of the squared prediction residuals. The prediction residuals are the differences between each observed value of the dependent variable and its predicted value that is determined from a regression equation computed with all data except that of the observed value for which the residual is being determined. The SEP was preferable to the standard error of estimate (SEE) for equation comparisons because the SEE is based only on the model error (error in the equation that will change only if the equation itself is changed, not by collecting more data) while the SEP also includes the sampling error (error in estimating the true equation parameters from limited data) (Gary Tasker, U.S. Geological Survey, written commun., 1995). The t-ratios for each of the explanatory variables also were examined; those with an absolute value of less than 2 were not used, in most cases. Also, explanatory variables that were not considered hydrologically valid were eliminated from the regression analyses on a case-by-case basis.

Short-record stations with less than 15 years of peak-flow record were not used, except for two regions in eastern and southeastern Nebraska. In general, use of short-record stations added considerable variability to peak-flow frequency relations; commonly, these stations had individual peak-flow frequency relations that did not fit the data well. Stations with an excessive number of low outliers that precluded development of reasonable peak-flow frequency curves, most typically in northern and western Nebraska, also were not used (see previous discussion “Composite Analyses”). In addition, stations with total drainage areas (*TDA*) of less than 1 mi^2 generally were not used. For most regions where a slope characteristic was identified as significant, stations with drainage areas of less than 5 mi^2 were not used. The 1:250,000-scale DEM data used to quantify basin characteristics resulted in some characteristics that were regarded as too low and unreliable for use in the regression analyses—this was particularly evident for basins with small drainage areas and low relief.

For both OLS and GLS regression analyses, allowances were made in the basic selection process to try to keep drainage-basin characteristics consistent for the various peak-flow frequency equations within a region. This was not always possible, however, and some equations for the same region have different sets of characteristics as explanatory variables. Judgement must to be used in the application of these equations in these situations.

For each region, equations were developed for the 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year frequencies of occurrence (recurrence intervals), designated as Q_2, Q_5, Q_{10}, Q_{25}, Q_{50}, Q_{100}, Q_{200}, and Q_{500} respectively. A table of equations for each region with summary statistics follows a discussion of each of the regions. There is overlap between several of the regions where more than one equation can be used to estimate peak flows.

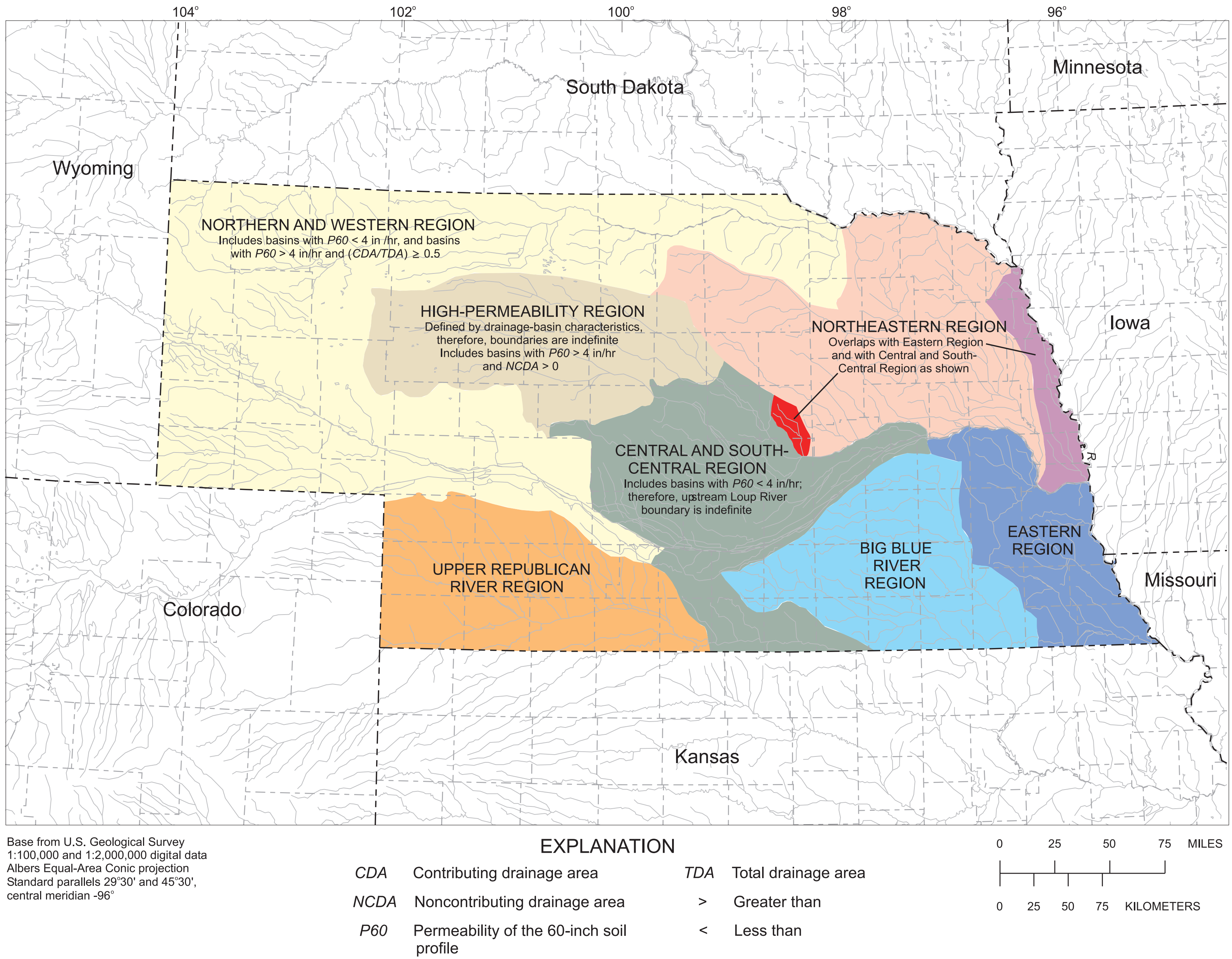


Figure 8. Hydrologic regions in Nebraska for unregulated peak-flow frequency equations.

Tables of equations include: the average sampling error (ASE), average model error (AME), SEP, and SEE— all based on the $\log_{10}$ transforms of the data; SEE in percent of the untransformed data; and the average equivalent years of record (AEYR) for each equation. SEP was computed as the square root of the sum of ASE and AME. SEE was computed as the square root of AME (Gary Tasker, U.S. Geological Survey, written commun., 1995). For comparisons to equations developed by Beckman (1976), for which SEPs were not reported, SEEs in percent were computed from the SEEs in $\log_{10}$ units using tabled values from Tasker (1978, p. 87). The AEYR is an estimate of the number of years of at-site streamflow data that would be required to predict the streamflow characteristic with accuracy equivalent to that of the regression equation (Hardison, 1971, p. C232). The explanatory variables are listed in the equations in the order of decreasing t-ratios from the GLS output. This was done to illustrate the changing significance, if any, among the variables from one frequency of occurrence (recurrence interval) to another.

For unregulated stations, estimated peak flows were computed (table B2) from the applicable regional equations using basin-characteristic data (table B1). Code(s) designating the applicable set of regional equation(s) are also listed for each station.

High Permeability Region

This region generally includes drainage basins with sandhills terrain (figs. 1 and 8); it includes a large area of Nebraska, not all of it contiguous, and smaller areas in Colorado, South Dakota, and Wyoming. The region is nearly coincident with Beckman's Region 2 (1976, p. 10-11), which was defined geographically; in this report the region is defined by basin characteristics. Only basins with *P60* greater than 4 in/hr and with some noncontributing drainage area (*NCDA*) were used to develop the equations. These criteria eliminated the lower Niobrara River Basin stations downstream of Long Pine Creek (fig. 1). Although these basins have values of *P60* greater than 4 in/hr, they have little or no *NCDA* and the terrain is distinctly different from that of the nearby sandhills areas, as determined from visual inspection of topographic maps. Peak-flow frequency data from these basins also did not fit well with that from the sandhills-type basins. Consequently, the lower Niobrara River Basin is included within one of the six geographically based regions.

Equations for the High-Permeability Region and standard-frequency analyses (HPS) (table 2) are based on data from 49 stations with at least 15 years of record and *TDAs* of 94.8 to 15,200 mi^2. The explanatory variables for the HPS equations were not entirely consistent for all frequencies. Contributing drainage area (*CDA*) and mean annual precipitation (*MAP*) were the two most significant variables in all equations. Basin slope (*BS*) was significant at the smaller frequencies, and available water capacity (*AWC*) and main-channel slope (*MCS*) were significant at the middle and larger frequencies. Stations with *TDA*s less than 5 mi^2 were not considered because *BS* and *MCS* were in the equations (see previous discussion of Regional Equations).

Equations for the High-Permeability Region and composite-frequency analyses (*HPC*)(table 2) were based on data from 23 stations with at least 20 years of record and *TDA*s of 172 to 4,490 mi^2. The number of stations used to develop the regression equations was limited because of the amount of time required to compute the composite-frequency curves. Also, not every high-permeability station had enough peaks in the higher-flow regime to which a separate peak-flow frequency curve could be fitted. The explanatory variables for the composite-analysis equations are very similar to those for the standard-analysis equations except for the addition of drainage frequency (*DF*), which is significant for all frequencies.

SEEs for both sets of high-permeability equations are lower than are those corresponding to Beckman's Region 2 (1976, p. 60) equations. The SEEs for the standard equations generally are lower than are those for the composite equations; this could be because of the limited number of stations used to develop the composite equations. However, the peak-flow frequency curves that are the basis for the composite equations are considered to fit the peak-flow frequency data better at the high ends than do the standard peak-flow frequency curves. Judgment is required in determining which equations should be used in a particular instance.

Table 2. Peak-flow equations for the High-Permeability Region

[AEYR, average equivalent years of record; AME, average model error; ASE, average sampling error; *AWC*, available water capacity of 60–inch soil profile, in inches per inch; *BS*, basin slope, in feet per mile; *CDA*, contributing drainage area, in square miles; *DF*, drainage frequency, in first-order streams per square mile; *MAP*, mean annual precipitation, in inches; *MCS*, main-channel slope, in feet per mile; *Q*, peak discharge, in cubic feet per second, for a given recurrence interval, in years; SEE, standard error of estimate; SEP, standard error of prediction]

Estimation equation	ASE (based on variables in $\log_{10}$ units)	AME (based on variables in $\log_{10}$ units)	SEP (based on variables in $\log_{10}$ units)	SEE (based on variables in $\log_{10}$ units)	SEE (percent)	AEYR (years)
Standard analysis						
(49 stations with 25 or more years of record)						
$Q_2 = 0.0662CDA^{0.750}(MAP-15)^{0.548}BS^{0.933}$	0.003	0.030	0.183	0.174	41.8	3.6
$Q_5 = 0.408CDA^{0.777}(MAP-15)^{0.525}BS^{0.653}$	.004	.030	.182	.172	41.2	7.0
$Q_{10} = 8.76CDA^{0.736}(MAP-15)^{0.527}BS^{0.539}AWC^{0.835}$	.005	.031	.189	.176	42.2	9.7
$Q_{25} = 14.8CDA^{0.773}(MAP-15)^{0.695}AWC^{1.17}MCS^{0.546}BS^{0.318}$	.007	.033	.200	.181	43.5	13.2
$Q_{50} = 73.2CDA^{0.779}(MAP-15)^{0.756}AWC^{1.35}MCS^{0.766}$	.007	.036	.208	.189	45.8	15.9
$Q_{100} = 119CDA^{0.777}(MAP-15)^{0.787}AWC^{1.56}MCS^{0.860}$	.008	.038	.214	.195	47.2	18.7
$Q_{200} = 184CDA^{0.774}(MAP-15)^{0.816}AWC^{1.74}MCS^{0.942}$	.009	.041	.224	.203	49.3	20.8
$Q_{500} = 313CDA^{0.769}(MAP-15)^{0.850}AWC^{1.94}MCS^{1.04}$	.011	.047	.240	.217	53.1	22.7
Composite analysis						
(23 stations with 20 or more years of record)						
$Q_2 = 0.127CDA^{0.684}BS^{0.968}(MAP-15)^{0.715}DF^{0.456}$	.006	.022	.167	.149	35.4	3.3
$Q_5 = 1.09CDA^{0.774}(MAP-15)^{0.590}BS^{0.576}DF^{0.454}$	.008	.031	.196	.175	42.0	5.2
$Q_{10} = 21.8CDA^{0.744}(MAP-15)^{0.626}BS^{0.602}DF^{0.399}AWC^{1.17}$	.011	.033	.211	.182	43.9	7.1
$Q_{25} = 159CDA^{0.805}(MAP-15)^{0.718}DF^{0.637}AWC^{1.40}MCS^{0.773}$	.014	.038	.229	.195	47.2	9.2
$Q_{50} = 368CDA^{0.817}(MAP-15)^{0.730}DF^{0.637}AWC^{1.76}MCS^{0.864}$	.016	.040	.238	.201	48.8	11.3
$Q_{100} = 776CDA^{0.828}(MAP-15)^{0.741}AWC^{2.07}DF^{0.641}MCS^{0.941}$	.019	.044	.251	.210	51.4	13.0
$Q_{200} = 1,520CDA^{0.838}AWC^{2.35}(MAP-15)^{0.752}DF^{0.645}MCS^{1.01}$	.022	.050	.267	.223	55.0	14.1
$Q_{500} = 3,390CDA^{0.851}AWC^{2.67}(MAP-15)^{0.767}DF^{0.654}MCS^{1.09}$	.026	.060	.293	.244	61.0	15.0

APPLICABLE RANGES OF VARIABLES:
Standard-analysis equations—*CDA* 8.6–6,230; *MAP* 15.12–26.09; *AWC* 0.07–0.17; *MCS* 4.41–28.22; *BS* 41.0–286
Composite-analysis equations—*CDA* 8.6–1,310; *BS* 55.7–249; *MAP* 16.39–26.09; *DF* 0.05–0.60; *AWC* 0.08–0.15; *MCS* 5.6–19.4

NOTE: *BS*, *MCS*, and *DF* are data-scale dependent.

Northern and Western Region

This region was developed from stations in eastern Wyoming, southern South Dakota, and northern and western Nebraska and includes the Cheyenne, White, and Niobrara River Basins except as noted (figs. 1 and 8). The region is roughly coincident with Beckman's Region 1 (1976, p. 10-11), but excludes (1) the Niobrara River mainstem, (2) the Platte River Basin downstream of where the sandhills near the Platte River end along the left bank of the Platte and downstream of Plum Creek on the right bank, and (3 the Republican River Basin. There is some overlap with the High-Permeability Region, because stations with *P60* greater than 4 in/hr were used if the ratio of *CDA* to *TDA* was at least 50 percent.

Equations for the Northern and Western Region (table 3) are based on data from 34 stations with at least 15 years of record and *TDA*s of 0.6 to 2,160 mi^2. *CDA* and *MAP* are significant explanatory variables at all frequencies. Relative relief (*RR*) and average permeability of the least permeable layer (*PLP*) are significant for the Q_2 through Q_{50} equations, and *BS* is a significant explanatory variable for the Q_{100} through Q_{500} equations. SEEs for all equations, except for Q_2, are lower than Beckman's Region 1 equations (1976, p. 60), especially at the larger frequencies.

Table 3. Peak-flow equations for the Northern and Western Region

[AEYR, average equivalent years of record; AME, average model error; ASE, average sampling error; *BS*, basin slope, in feet per mile; *CDA*, contributing drainage area, in square miles; *MAP*, mean annual precipitation, in inches; *PLP*, permeability of least permeable layer, in inches per hour; *Q*, peak discharge, in cubic feet per second, for a given recurrence interval, in years; *RR*, relative relief, in feet per mile; SEE, standard error of estimate; SEP, standard error of prediction]

Estimation equation	ASE (based on variables in $\log_{10}$ units)	AME (based on variables in $\log_{10}$ units)	SEP (based on variables in $\log_{10}$ units)	SEE (based on variables in $\log_{10}$ units)	SEE (percent)	AEYR (years)
(34 stations with 15 or more years of record)						
$Q_2 = 0.176 CDA^{0.762} RR^{0.878} (MAP-12)^{0.929} PLP^{-0.357}$	0.032	0.180	0.460	0.424	126	1.7
$Q_5 = 0.686 CDA^{0.642} RR^{0.932} (MAP-12)^{1.05} PLP^{-0.360}$	.014	.061	.275	.247	61.8	6.0
$Q_{10} = 1.69 CDA^{0.577} (MAP-12)^{1.08} RR^{0.892} PLP^{-0.337}$	.014	.049	.251	.222	54.5	9.5
$Q_{25} = 5.06 CDA^{0.508} (MAP-12)^{1.07} RR^{0.802} PLP^{-0.302}$	.016	.050	.257	.224	55.2	12.4
$Q_{50} = 10.7 CDA^{0.464} (MAP-12)^{1.06} RR^{0.731} PLP^{-0.272}$	.018	.056	.271	.236	58.5	13.5
$Q_{100} = 35.2 CDA^{0.213} BS^{0.589} (MAP-12)^{0.643}$	.018	.064	.288	.254	63.8	14.0
$Q_{200} = 37.4 CDA^{0.192} BS^{0.629} (MAP-12)^{0.711}$	.020	.067	.295	.259	65.3	15.3
$Q_{500} = 41.6 CDA^{0.168} BS^{0.669} (MAP-12)^{0.786}$	.023	.075	.313	.274	70.0	16.1

APPLICABLE RANGES OF VARIABLES: *CDA* 0.61–2,160; *RR* 4.2–48.3; *MAP* 14.19-24.69; *PLP* 0.10-5.00; *BS* 52.5–462

NOTE: *BS* and *RR* are data-scale dependent.

Northeastern Region

This region covers most of the northeastern part of Nebraska. It includes (1) the right bank Missouri River tributary basins downstream of the Niobrara River and upstream of the Platte River, (2) the left bank Platte River tributary basins downstream of the Loup River, and (3) the left bank Loup River tributary basins downstream of the North Loup River (figs. 1 and 8). It includes all of Beckman's Region 3 (1976, p. 10–11) north of the Platte River plus some other areas farther west. Unlike Beckman’s Region 3, but similar to the Northern and Western Region, there is some overlap of the Northeastern Region with the High-Permeability Region (*P60* greater than 4 in/hr), most notably the entire basins of the Elkhorn and Cedar Rivers and Beaver Creek. The left bank Loup River tributary basins also overlap with the low-permeability Central and South-Central Region discussed next.

Equations for the Northeastern Region (table 4) are based on data from 40 stations with at least 15 years of record and *TDA*s of 1.5 to 6,950 mi^2. *TDA*, shape factor (*SF*), and *DF* are significant explanatory variables for all of the Northeastern Region equations. *PLP* is the second most significant variable for the Q_2 and Q_5 equations, but it becomes less significant at larger frequencies and is not significant for the Q_{200} and Q_{500} equations. SEEs for all equations are lower than Beckman's Region 3 equations (1976, p. 60).

Table 4. Peak-flow equations for the Northeastern Region

[AEYR, average equivalent years of record; AME, average model error; ASE, average sampling error; *DF*, drainage frequency, in first-order streams per square mile; *PLP*, permeabilitiy of the least permeable layer, in inches per hour; *Q*, peak discharge, in cubic feet per second, for a given recurrence interval, in years; SEE, standard error of estimate; SEP, standard error of prediction; *SF*, shape factor, dimensionless; *TDA*, total drainage area, in square miles]

Estimation equation	ASE	AME	SEP	SEE	SEE (percent)	AEYR (years)
	(based on variables in $\log_{10}$ units)					
(40 stations with 15 or more years of record)						
$Q_2 = 132 TDA^{0.676} PLP^{-0.592} SF^{-0.335} DF^{0.295}$	0.007	0.037	0.209	0.191	46.2	4.4
$Q_5 = 395 TDA^{0.652} PLP^{-0.514} SF^{-0.421} DF^{0.323}$	.006	.023	.170	.153	36.3	8.6
$Q_{10} = 715 TDA^{0.633} SF^{-0.469} PLP^{-0.443} DF^{0.338}$	.006	.022	.167	.147	34.9	11.9
$Q_{25} = 1,360 TDA^{0.612} SF^{-0.518} DF^{0.356} PLP^{-0.352}$	.007	.023	.173	.151	35.8	15.2
$Q_{50} = 2,070 TDA^{0.597} SF^{-0.548} DF^{0.370} PLP^{-0.286}$	.008	.025	.182	.157	37.5	16.9
$Q_{100} = 3,000 TDA^{0.583} SF^{-0.573} DF^{0.384} PLP^{-0.223}$	.010	.028	.192	.166	39.6	17.9
$Q_{200} = 5,240 TDA^{0.562} SF^{-0.667} DF^{0.452}$	.009	.031	.201	.176	42.3	19.0
$Q_{500} = 7,030 TDA^{0.551} SF^{-0.655} DF^{0.440}$	.011	.034	.213	.185	44.7	20.1
APPLICABLE RANGES OF VARIABLES: *TDA* 1.50–6,950; *PLP* 0.38–5.56; *SF* 0.49–56.4; *DF* 0.01–1.33						

NOTE: *DF* is data-scale dependent.

Central and South-Central Region

This region consists of low-permeability (*P60* less than 4 in/hr) basins, generally south and east of the central sandhills, that are tributaries within the middle Platte, Loup, and middle Republican River Basins (figs. 1 and 8). It includes (1) left bank Platte River tributary basins downstream of where the sandhills end along the left bank of the Platte River to just downstream of the Loup River but excluding the left-bank Loup River tributary basins downstream of Spring Creek (shortly below the confluences of the Middle and North Loup Rivers)—Beckman's Region 4 (1976, p. 10–11), and (2) Republican River tributary basins in Nebraska downstream of Harlan County Dam—part of Beckman's Region 1 (1976, p. 10–11). The Central and South-Central Region is presumed to include right bank Platte River tributary basins, for which there are no stations, downstream of Plum Creek, to the Loup River. Spring Creek, a left-bank Loup River tributary, overlaps with the Northeastern Region.

Equations for the Central and South-Central Region (table 5) are based on data from 37 stations with at least 15 years of record and with *TDAs* of 1.5 to 711 mi^2. Explanatory variables are the same for all equations, and include *TDA*, *RR*, 2–year, 24–hour precipitation (*TTP*), and *SF*. For the Q_2 and Q_5 equations, *TTP* is the second most significant variable, but for equations Q_{10} and larger, *RR* is more significant. SEEs are lower than Beckman's Region 1 equations (1976, p. 60), and lower than Beckman's Region 4 equations (1976, p. 60) for equations Q_{25} and larger.

Table 5. Peak-flow equations for the Central and South-Central Region

[AEYR, average equivalent years of record; AME, average model error; ASE, average sampling error; *Q*, peak discharge, in cubic feet per second, for a given recurrence interval, in years; *RR*, relative relief, in feet per mile; SEE, standard error of estimate; SEP, standard error of prediction; *SF*, shape factor, dimensionless; *TDA*, total drainage area, in square miles; *TTP*, 2–year, 24–hour precipitation, in inches]

Estimation equation	ASE (based on variables in $\log_{10}$ units)	AME (based on variables in $\log_{10}$ units)	SEP (based on variables in $\log_{10}$ units)	SEE (based on variables in $\log_{10}$ units)	SEE (percent)	AEYR (years)
(37 stations with 15 or more years of record)						
$Q_2 = 54.8TDA^{0.994}(TTP-2)^{4.24}SF^{-0.738}RR^{1.00}$	0.016	0.072	0.297	0.269	68.3	4.1
$Q_5 = 73.4TDA^{0.942}(TTP-2)^{3.98}RR^{1.32}SF^{-0.647}$	.011	.038	.222	.196	47.4	8.2
$Q_{10} = 80.8TDA^{0.931}RR^{1.51}(TTP-2)^{3.92}(SF)^{-0.614}$	.012	.035	.216	.187	45.1	11.0
$Q_{25} = 89.4TDA^{0.923}RR^{1.71}(TTP-2)^{3.88}SF^{-0.587}$	.014	.039	.230	.198	47.9	13.0
$Q_{50} = 96.4TDA^{0.918}RR^{1.83}(TTP-2)^{3.84}SF^{-0.572}$	.016	.045	.247	.212	51.8	13.5
$Q_{100} = 104TDA^{0.914}RR^{1.93}(TTP-2)^{3.83}SF^{-0.560}$	.019	.052	.263	.228	56.4	13.6
$Q_{200} = 111TDA^{0.910}RR^{2.02}(TTP-2)^{3.81}SF^{-0.549}$	.021	.060	.285	.245	61.3	13.5
$Q_{500} = 121TDA^{0.906}RR^{2.12}(TTP-2)^{3.80}SF^{-0.538}$	.025	.072	.310	.268	68.0	13.2
APPLICABLE RANGES OF VARIABLES: *TDA* 1.50–711; *TTP* 2.35–2.55; *SF* 0.89–13.0; *RR* 2.72–21.4						

NOTE: *RR* is data-scale dependent.

Eastern Region

This region consists of Missouri River tributary basins from and including Omaha Creek (several miles below the mouth of the Big Sioux River) to the Nebraska-Kansas state line, but only includes Platte River tributary basins downstream of Hydrologic Unit 10200103 (U.S. Geological Survey, 1976)(which extends several miles below the mouth of the Loup River) along the right bank and downstream of the Elkhorn River along the left bank (figs. 1 and 8). It is a sub-area of Beckman's Region 3 (1976, p. 10-11). The Eastern Region north of the Platte River overlaps with the Northeastern Region.

Equations for the Eastern Region (table 6) are based on data from 42 stations with at least 10 years of record and *TDA*s of 1.6 to 1,640 mi^2. The explanatory variables of *CDA*, *BS* and, *PLP* are consistent for all equations. SEEs are lower than Beckman's Region 3 equations (1976, p. 60), especially at the larger frequencies. Five stations with *TDAs* less than 5 mi^2 were used to develop the equations even though *BS* was a significant explanatory variable; all values of *BS* for the five stations were relatively large (greater than 100 ft/mi) and appeared very reasonable compared to other stations in the region with larger *TDA*s.

Table 6. Peak-flow equations for the Eastern Region

[AEYR, average equivalent years of record; AME, average model error; ASE, average sampling error; *BS*, basin slope, in feet per mile; *CDA*, contributing drainage area, in square miles; *PLP*, permeability of the least permeable layer, in inches per hour; *Q*, peak discharge, in cubic feet per second, for a given recurrence interval, in years; SEE, standard error of estimate; SEP, standard error of prediction]

Estimation equation	ASE (based on variables in $\log_{10}$ units)	AME (based on variables in $\log_{10}$ units)	SEP (based on variables in $\log_{10}$ units)	SEE (based on variables in $\log_{10}$ units)	SEE (percent)	AEYR (years)
(42 stations with 10 or more years of record)						
$Q_2 = 5.70 CDA^{0.558} BS^{0.655} PLP^{-0.470}$	0.006	0.036	0.206	0.191	46.1	4.4
$Q_5 = 21.1 CDA^{0.533} BS^{0.551} PLP^{-0.528}$	.004	.016	.141	.126	29.7	10.9
$Q_{10} = 42.1 CDA^{0.519} BS^{0.495} PLP^{-0.537}$	.004	.012	.125	.107	25.1	18.0
$Q_{25} = 90.2 CDA^{0.504} BS^{0.433} PLP^{-0.520}$	.005	.011	.124	.104	24.3	24.5
$Q_{50} = 151 CDA^{0.494} BS^{0.390} PLP^{-0.498}$	.005	.012	.131	.109	25.4	26.6
$Q_{100} = 242 CDA^{0.485} BS^{0.349} PLP^{-0.474}$	.006	.013	.140	.116	27.2	27.3
$Q_{200} = 377 CDA^{0.476} BS^{0.310} PLP^{-0.450}$	.007	.015	.150	.124	29.3	27.2
$Q_{500} = 650 CDA^{0.465} BS^{0.260} PLP^{-0.417}$	.008	.019	.163	.136	32.2	26.6

APPLICABLE RANGES OF VARIABLES: *CDA* 1.55–1,640; *BS* 12.8–315; *PLP* 0.13–0.60

NOTE: *BS* is data-scale dependent.

Upper Republican River Region

This region was developed from stations in the Republican River Basin upstream of Harlan County Dam, and includes parts of southwestern Nebraska, northeastern Colorado, and northwestern Kansas (figs. 1 and 8). The South Fork of the Republican River (below Bonny Dam in Colorado) and the mainstem of the Republican River downstream of the South Fork are not included in this region because of regulation. Because the upper Republican River Region includes basins with *P60* greater than 4 in/hr, it overlaps with the High-Permeability Region and contains parts of Beckman’s Regions 1 and 2 (1976, p.10–11).

Equations for the Upper Republican River Region (table 7) are based on data from 33 stations with at least 15 years of record and *TDAs* of 6.8 to 7,740 mi^2. The explanatory variables *CDA*, *MCS*, and compactness ratio (*CR*) are included in all of the equations, with *CR* and *MCS* varying in significance after *CDA*. SEEs are lower than Beckman's Region 1 and 2 equations (1976, p. 60), especially for Region 1. Stations with *TDAs* less than 5 mi^2 were not used to develop the equations because *MCS* is a significant explanatory variable (see previous discussion of “Regional Equations”).

Table 7. Peak-flow equations for the Upper Republican River Region

[AEYR, average equivalent years of record; AME, average model error; ASE, average sampling error; *CDA*, contributing drainage area, in square miles; *CR*, compactness ratio, dimensionless; *MCS*, main-channel slope, in feet per mile; *Q*, peak discharge, in cubic feet per second, for a given recurrence interval, in years; SEE, standard error of estimate; SEP, standard error of prediction]

Estimation equation	ASE (based on variables in $\log_{10}$ units)	AME (based on variables in $\log_{10}$ units)	SEP (based on variables in $\log_{10}$ units)	SEE (based on variables in $\log_{10}$ units)	SEE (percent)	AEYR (years)
(33 stations with 15 or more years of record)						
$Q_2 = 1.97CDA^{0.545}MCS^{1.19}CR^{-0.735}$	0.008	0.045	0.229	0.211	51.6	5.0
$Q_5 = 3.67CDA^{0.570}CR^{-0.895}MCS^{1.32}$	.008	.037	.210	.192	46.3	8.1
$Q_{10} = 4.93CDA^{0.583}CR^{-0.937}MCS^{1.39}$	.008	.038	.216	.196	47.5	10.3
$Q_{25} = 6.58CDA^{0.597}MCS^{1.46}CR^{-0.946}$	.010	.044	.233	.211	51.5	12.3
$Q_{50} = 7.84CDA^{0.606}MCS^{1.50}CR^{-0.931}$	.012	.050	.250	.224	55.3	13.3
$Q_{100} = 9.12CDA^{0.613}MCS^{1.54}CR^{-0.905}$	.014	.057	.266	.239	59.6	13.9
$Q_{200} = 10.4CDA^{0.619}MCS^{1.57}CR^{-0.868}$	.016	.065	.284	.255	64.2	14.2
$Q_{500} = 12.2CDA^{0.626}MCS^{1.61}CR^{-0.809}$	.018	.076	.307	.276	70.5	14.5
APPLICABLE RANGES OF VARIABLES: *CDA* 6.78–4,450; *MCS* 7.1–46.3; *CR* 1.22–11.2						

NOTE: *MCS* and *CR* are data-scale dependent.

Big Blue River Region

This region was developed from stations in the Big Blue River Basin, which includes parts of southeastern Nebraska and northeastern Kansas (figs. 1 and 8). It is the same as Beckman's Region 5 (1976, p. 10–11).

Equations for the Big Blue River Region (table 8) are based on data from 32 stations with at least 10 years of record and *TDAs* of 2.0 to 4,450 mi^2. The explanatory variables, *TDA*, average maximum soil slope (*MSS*), and stream density (*SD*) are significant for all equations. *SF* is significant for all equations except Q_2, and *TTP* is significant only for Q_{10} and smaller. Except for the Q_2 equation, SEE*s* are lower than Beckman's Region 5 equations (1976, p. 60), especially for equations Q_{25} and larger.

Application of Equations

The applicability of each of the regional peak-flow frequency equations is limited to the range of values of the drainage-basin characteristics used to develop the equations. The minimum and maximum values of the characteristics used to develop the equations are listed in tables 2–8. For the best compatibility with the equations, drainage-basin characteristics should be determined using the same scale and type of data used in the development of the equations. The same method of quantification (GIS/Basinsoft) also should be used for the measurement of *MCS* and *BS*. For equations that have different explanatory variables for the various frequencies, judgment must be used, because predicted peak flows may not always increase for successively larger frequencies. One approach might be to compute estimated peak-flow values from the equations for each recurrence interval and then plot the results on probability paper. A smoothed curve then could be drawn through the points, perhaps giving more influence to points with lower SEEs.

Table 8. Peak-flow equations for the Big Blue River Region

[AEYR, average equivalent years of record; AME, average model error; ASE, average sampling error; *MSS*, average maximum soil slope, in percent; *Q*, peak discharge, in cubic feet per second, for a given recurrence interval, in years; SEE, standard error of estimate; SEP, standard error of prediction; *SD*, stream density, in miles per square mile; *SF*, shape factor, dimensionless; *TDA*, total drainage area, in square miles; *TTP*, 2–year, 24–hour precipitation, in inches]

Estimation equation	ASE (based on variables in $\log_{10}$ units)	AME (based on variables in $\log_{10}$ units)	SEP (based on variables in $\log_{10}$ units)	SEE (based on variables in $\log_{10}$ units)	SEE (percent)	AEYR (years)
(32 stations with 10 or more years of record)						
$Q_2 = 54.0 TDA^{0.627}(TTP-2)^{1.69}SD^{0.468}MSS^{0.425}$	0.007	0.027	0.185	0.164	39.1	4.9
$Q_5 = 160 TDA^{0.580}MSS^{0.492}SD^{0.533}(TTP-2)^{1.05}SF^{-0.220}$	.004	.006	.103	.079	18.4	19.6
$Q_{10} = 267 TDA^{0.546}MSS^{0.534}SF^{-0.264}SD^{0.511}(TTP-2)^{0.790}$	.004	.002	.075	.044	10.2	49.7
$Q_{25} = 463 TDA^{0.500}MSS^{0.618}SF^{-0.360}SD^{0.631}$	.004	.002	.075	.041	9.5	69.2
$Q_{50} = 607 TDA^{0.491}MSS^{0.638}SF^{-0.372}SD^{0.617}$	.005	.002	.081	.045	10.3	71.2
$Q_{100} = 764 TDA^{0.483}MSS^{0.656}SF^{-0.382}SD^{0.601}$	.006	.003	.091	.052	12.1	67.2
$Q_{200} = 936 TDA^{0.477}MSS^{0.672}SF^{-0.389}SD^{0.584}$	.006	.004	.101	.061	14.1	61.8
$Q_{500} = 1,190 TDA^{0.469}MSS^{0.692}SF^{-0.396}SD^{0.557}$	.008	.005	.116	.074	17.2	55.0

APPLICABLE RANGES OF VARIABLES: *TDA* 2.03–4,450; *TTP* 2.62–3.35; *SD* 0.14–1.39; *MSS* 1.9–14.5; *SF* 0.13–7.60

NOTE: *SD* is data-scale dependent.

Regulated Streams

Peak-flow frequency analyses for stations on regulated streams in Nebraska with at least 10 years of regulated peak flows were done using program PEAKFQ based on Bulletin 17B guidelines and the log-Pearson Type III (LP3) distribution with skew coefficients derived only from each station's peak-flow data. All available peak-flow records within the period of current regulated condition were used for these analyses; they are identified as "REG" under the type of analysis in table B2. For reaches of streams that include more than one station with at least 25 years of regulated record, approximate graphical relations of peak-flow frequency and distance upstream of the mouth also were developed. These relations are very generalized.

Graphical peak-flow frequency relations were developed for the Niobrara, North Platte, South Platte, Platte, and Republican Rivers, and for Salt, Antelope (not shown), Frenchman, and Red Willow Creeks (fig. 1). Peak-flow frequency values for 58 stations were plotted against distance, in miles, as measured upstream from the mouth along their respective streams. Only the 49 stations with at least 25 years of regulated record were used to develop approximate log-linear relations. The remaining stations, with less than 25 years of record, were used only for reference. The periods of the current regulated condition for each of these streams were identified and used to determine the period for which the peak-flow frequency analyses would be computed for each station (table 9). Each of the nine regulated streams is discussed separately in the following sections, and the locations of selected dams are shown on figures 1 and 9.

Niobrara River

The Niobrara River originates in Wyoming, flows through northern Nebraska, and drains as a right-bank tributary into the Missouri River in northeastern Nebraska. Major tributaries to the Niobrara include, in downstream order: Snake River, Minnechaduza Creek, and Keya Paha River. Values of Q_5 through Q_{500} decrease measurably from the station at the Wyoming state line to the station at Agate and they increase from there to the station above Box Butte Reservoir (fig. 10) even for concurrent periods of record (data shown). Patterson (1966, p. 410) noted that the peak flows at Agate are materially affected by diversions for irrigation; however, the ratios of irrigated acres to drainage area are nearly identical (8.0 to 10.4) for all three stations, with Agate actually having the smallest ratio (Boohar and others, 1992, p. 55–57). It is possible that the flow records for one or more of the stations is not representative of their long-term peak-flow characteristics, but the differences are so large that some additional explanation seems warranted. One possible explanation, or contributing factor, could be that the drainage basin narrows and the channel gradient decreases from the state line to Agate; this could result in significant attenuation of flows. Because of the uncertainty, no estimated relations between peak-flow frequency and distance from the mouth were developed for this reach of the Niobrara River.

Two major dams are located in the Niobrara River Basin—Box Butte on the mainstem and Merritt on the Snake River (table 9). Except for Q_2, Box Butte Dam causes large reductions in the peak flows downstream, especially as frequencies increase (fig. 10). The effects of the dam appear to diminish within about 70 mi downstream of the dam. Merritt Dam appears to have little effect on the Niobrara River peak flows, especially considering its small reduction in peak flows for the Snake River itself (table B2).

North Platte River

The North Platte River originates in the mountains of northern Colorado and flows through the mountains and plains of Wyoming to its confluence with the South Platte River in western Nebraska. There are four major dams on the North Platte River—Seminoe, Pathfinder, and Glendo, in Wyoming, and Kingsley in Nebraska (table 9). Glendo was the last of these dams built on the North Platte River, and it is the most downstream of the three Wyoming dams; therefore, its operational date of October 1957 was used as the beginning date of the current regulated condition of the North Platte River between Glendo and Kingsley Dams. The operational date of Kingsley Dam, February 1941, was used as the beginning date for stations downstream of Kingsley Dam because the large storage capacity of Lake McConaughy would be

Table 9. Summary of regulation data for selected stream reaches

[Apr, April; Aug, August; Feb, February; Nov, November; Oct, October; Sept, September; POR, period of record]

Stream name	Stream reach	Period of current regulated condition	Remarks[1]
Niobrara River (fig. 10)	Wyoming state line to Box Butte Dam	Entire POR	Affected by irrigation during entire POR
	Box Butte Dam to Snake River	Oct 1945–	Box Butte Dam (1,460 mi^2, approximately; Oct 1945)
	Snake River to mouth	Feb 1964–	Merrit Dam (640 mi^2, approximately; Feb 1964)
North Platte River (fig. 11)	Wyoming state line to Kingsley Dam	Oct 1957–	Affected by Seminoe (7,230 mi^2, Apr 1939), Pathfinder (10,711 mi^2, Apr 1909), and Glendo (15,545 mi^2, Oct 1957) Dams in Wyoming
	Kingsley Dam to mouth	Feb 1941–	Kingsley Dam (29,300 mi^2, approximately; Feb 1941)
South Platte River (fig. 12)	South Platte River near Balzac, Colorado to mouth	Entire POR	Affected by transmountain and irrigation diversions, storage reservoirs, power generation, and irrigation return flows during entire POR; because of large amount of intervening drainage area, Chatfield Dam (3,018 mi^2, May 1975) assumed not to increase regulation significantly
Platte River (fig. 13)	Confluence of North and South Platte Rivers to mouth	Feb 1941–	Effects of regulation much less below Loup River
Salt Creek (fig. 14)	Hickman Branch to Cardwell Branch	1965–	Olive Creek Lake (8.2 mi^2, 1964), Bluestem Lake (16.6 mi^2, 1963), Wagon Train Lake (15.6 mi^2, 1963), and Stagecoach Lake (9.2 mi^2, 1964) Dams
	Cardwell Branch to Oak Creek	1966–	Yankee Hill Lake (8.4 mi^2, 1965), Conestoga Lake (15.1 mi^2, 1964), Pawnee Lake (35.9 mi^2, 1965), East and West Twin Lakes (11.0 mi^2, 1965), and Holmes Lake (5.4 mi^2, 1962) Dams
	Oak Creek to mouth	1968–	Branched Oak Lake Dam (88.7 mi^2, 1967)
Antelope Creek (fig. 14)	Holmes Lake Dam to mouth	1962–	Holmes Lake Dam (5.4 mi^2, 1962)
Republican River (fig. 15)	South Fork Republican River to Trenton Dam	July 1950–	Bonny Dam (1,820 mi^2, approximately; July 1950)
	Trenton Dam to Frenchman Creek	May 1953–	Trenton Dam (8,620 mi^2, approximately; May 1953)
	Frenchman Creek to Red Willow Creek	May 1953–	Enders Dam (950 mi^2, approximately; Oct 1950)
	Red Willow Creek to Medicine Creek	Sept 1961–	Red Willow Dam (730 mi^2, approximately; Sept 1961)
	Medicine Creek to Harlan County Dam	Sept 1961–	Medicine Creek Dam (880 mi^2, approximately; Aug 1949)
	Harlan County Dam to Kansas state line	Nov 1952–	Harlan County Dam (20,750 mi^2, approximately; Nov 1952)
Frenchman Creek (fig. 16)	Colorado state line to Enders Dam	Entire POR	Affected by irrigation during entire POR
	Enders Dam to mouth	Oct 1950–	Enders Dam (950 mi^2, approximately; Oct 1950)
Red Willow Creek (fig. 16)	Above Red Willow Dam	Entire POR	Peak flows do not appear to be affected substantially by irrigation development although natural streamflow is affected
	Red Willow Dam to mouth	Sept 1961–	Red Willow Dam (730 mi^2, approximately; Sept 1961)

[1]For dams, numbers in parentheses are drainage area and beginning date of operation.

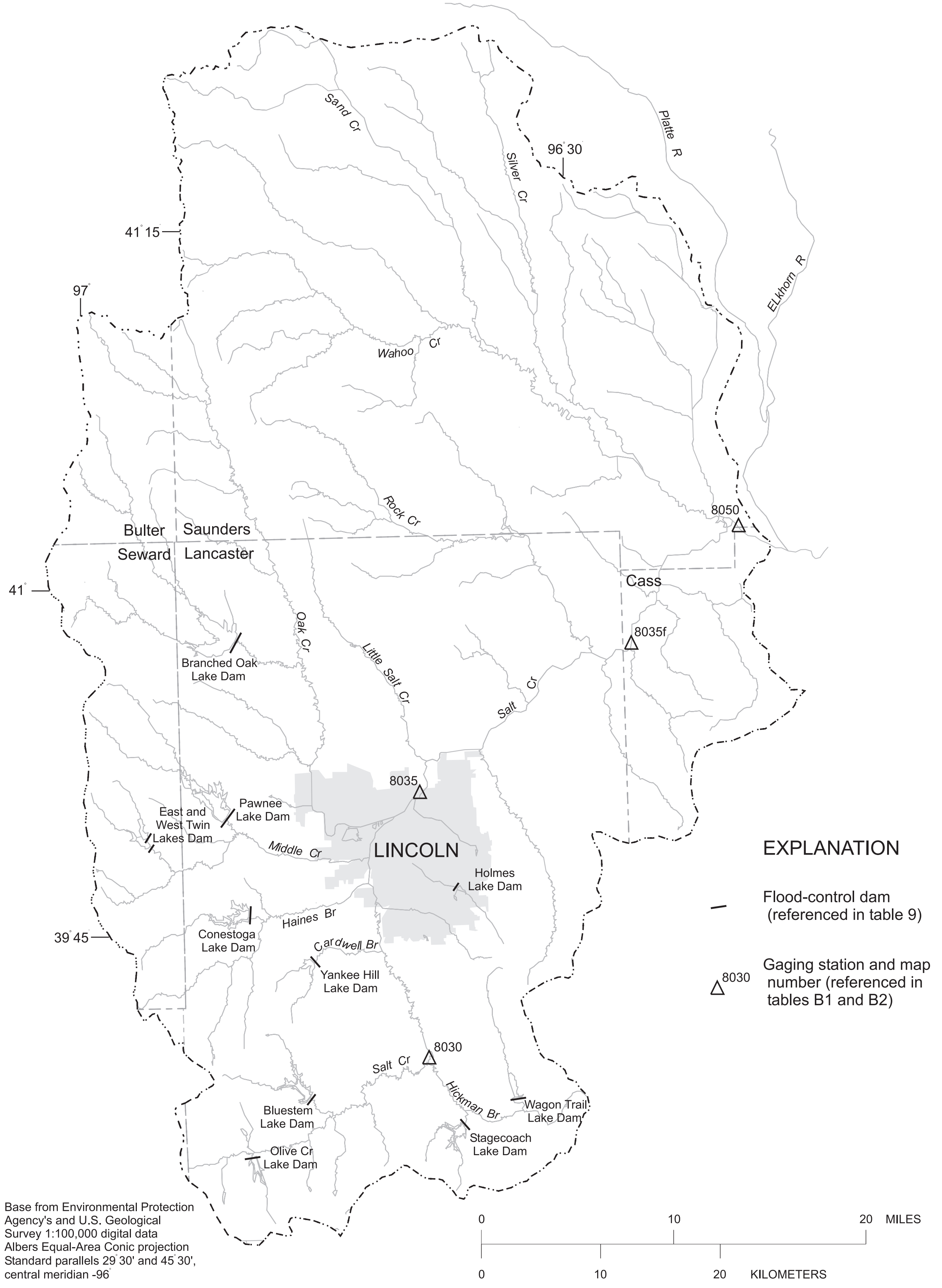


Figure 9. Location of flood-control dams in the Salt Creek drainage basin and of streamflow-gaging stations along the mainstem of Salt Creek.

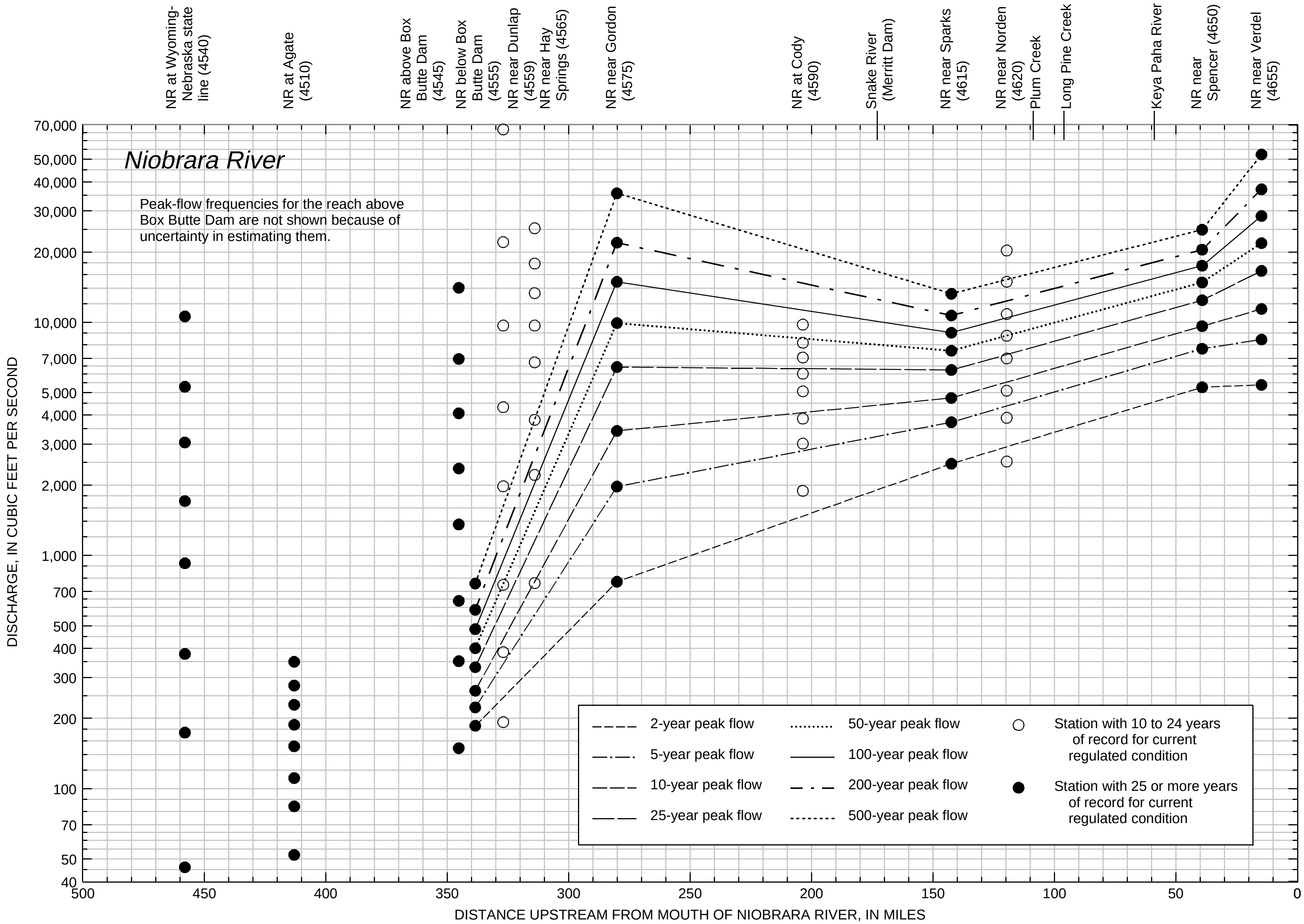


Figure 10. Peak-flow frequencies for the current regulated condition of the Niobrara River (NR) in Nebraska estimated from streamflow-gaging station data (number following station name is map number referred in tables B1 and B2).

expected to mask the effects of the operation of Glendo Dam that began in 1957. Peak-flow frequency relations for the North Platte River downstream of the Wyoming-Nebraska state line are fairly uniform, with a noticeable reduction in peak flows downstream of Kingsley Dam (fig. 11).

South Platte River

The South Platte River originates in the mountains of central Colorado and flows across the plains to its confluence with the North Platte River in western Nebraska. Regulation of the South Platte River began prior to collection of streamflow records. Reservoir storage created by dams in the South Platte River Basin is less than in the North Platte River Basin (Eschner and others, 1983, page A6). Chatfield, the largest dam in the South Platte River Basin, began operation in May 1975. Because Chatfield Dam is located near the upstream end of the basin and controls less than 13 percent of the drainage area upstream of Nebraska, it was assumed that its affect on peak flows in Nebraska was minimal. Therefore, the entire periods of record were used for South Platte River stations. Peak-flow frequency relations decrease in the downstream direction, generally with only small increases for several frequencies from South Platte River at Paxton (7650) to South Platte River at North Platte (7655) (fig. 12).

Platte River

The Platte River begins at the confluence of the North and South Platte Rivers in western Nebraska and drains into the Missouri River as a right-bank tributary in eastern Nebraska. In addition to the mainstem Platte River stations, peak-flow frequency values were computed for Wood River near Alda (7720), Loup River at Columbus (7945), Elkhorn River at Waterloo (8005), and Salt Creek at Ashland (8050) to estimate each tributary's effect on Platte River peak flows. Wood River peak flows were relatively small, but the peak flows for the Loup River were larger than those estimated graphically for the Platte River just upstream of the mouth of the Loup River. Therefore, the peak-flow values for the Loup River are used for the Platte River mainstem at their junction; this results in a discontinuity in the plots at that point (fig. 13). The peak-flow frequency values for the Platte River above and below the Elkhorn River (also a discontinuity on fig. 13) were extrapolated from the values for the Platte River at North Bend (7960) based on respective estimated drainage areas. The effect of Salt Creek could not be determined reliably. Although Kingsley Dam appears to have little effect on the peak-flow frequency values of the Platte River below the Loup River, for consistency, none of the Platte River stations were analyzed for periods prior to the Kingsley Dam operational date of February 1941.

Salt and Antelope Creeks

Salt Creek originates in southeastern Nebraska and flows north and northeast through Lincoln before draining into the Platte River in northwestern Cass County (fig. 9). The upper basin is fan shaped with a number of tributaries converging with the main stream in or near Lincoln, including Antelope Creek (not shown), which flows northwest through the middle of Lincoln. After two large floods in the early 1950s, a series of flood-control dams were constructed on several streams around Lincoln (table 9). Peak-flow frequency analyses for periods since regulation began were computed for three stations on Salt Creek and for three stations on Antelope Creek (fig. 14). Olive Creek, Bluestem Lake, Wagon Train Lake, and Stagecoach Lake Dams are located upstream of Salt Creek at Roca (8030). Yankee Hill Lake, Conestoga Lake, Pawnee Lake, East and West Twin Lakes, Holmes Lake, and Branched Oak Lake Dams are located downstream of Roca and upstream of Salt Creek at Lincoln (8035). Holmes Lake Dam is located upstream of the three Antelope Creek stations (not shown). The peak-flow frequency relations for both Salt and Antelope Creeks increase in the downstream direction with the exception of Q_{500} on the upper reach of Antelope Creek, which decreases slightly (fig. 14).

Republican River

The Republican River Basin is in parts of three states—Colorado, Nebraska, and Kansas. The Republican River begins at the confluence of the North Fork Republican and the Arikaree Rivers, both of which originate in Colorado. It then flows through southern Nebraska, and joins the Smoky

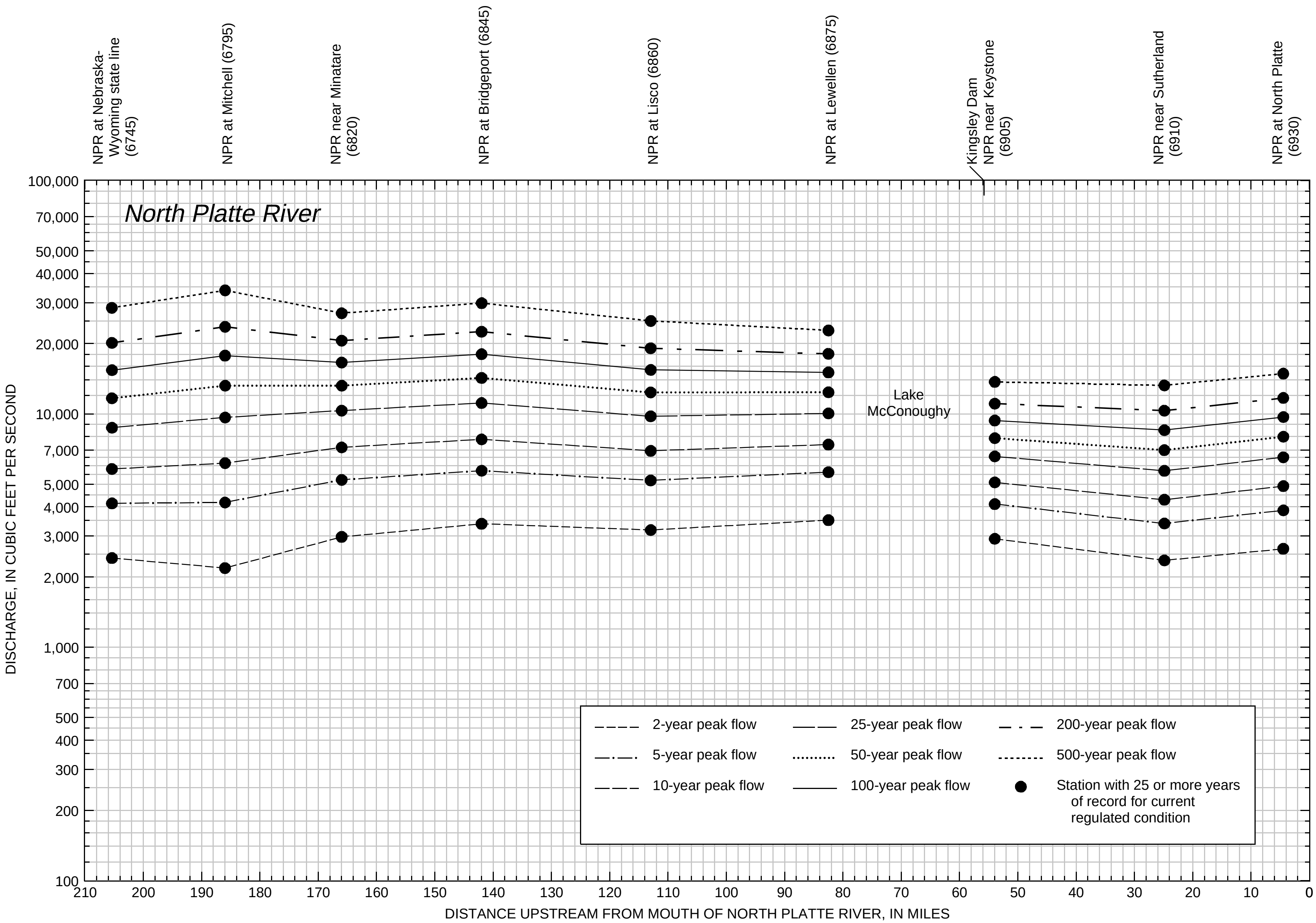


Figure 11. Peak-flow frequencies for the current regulated condition of the North Platte River (NPR) in Nebraska estimated from streamflow-gaging station data (number following station name is map number referred in tables B1 and B2).

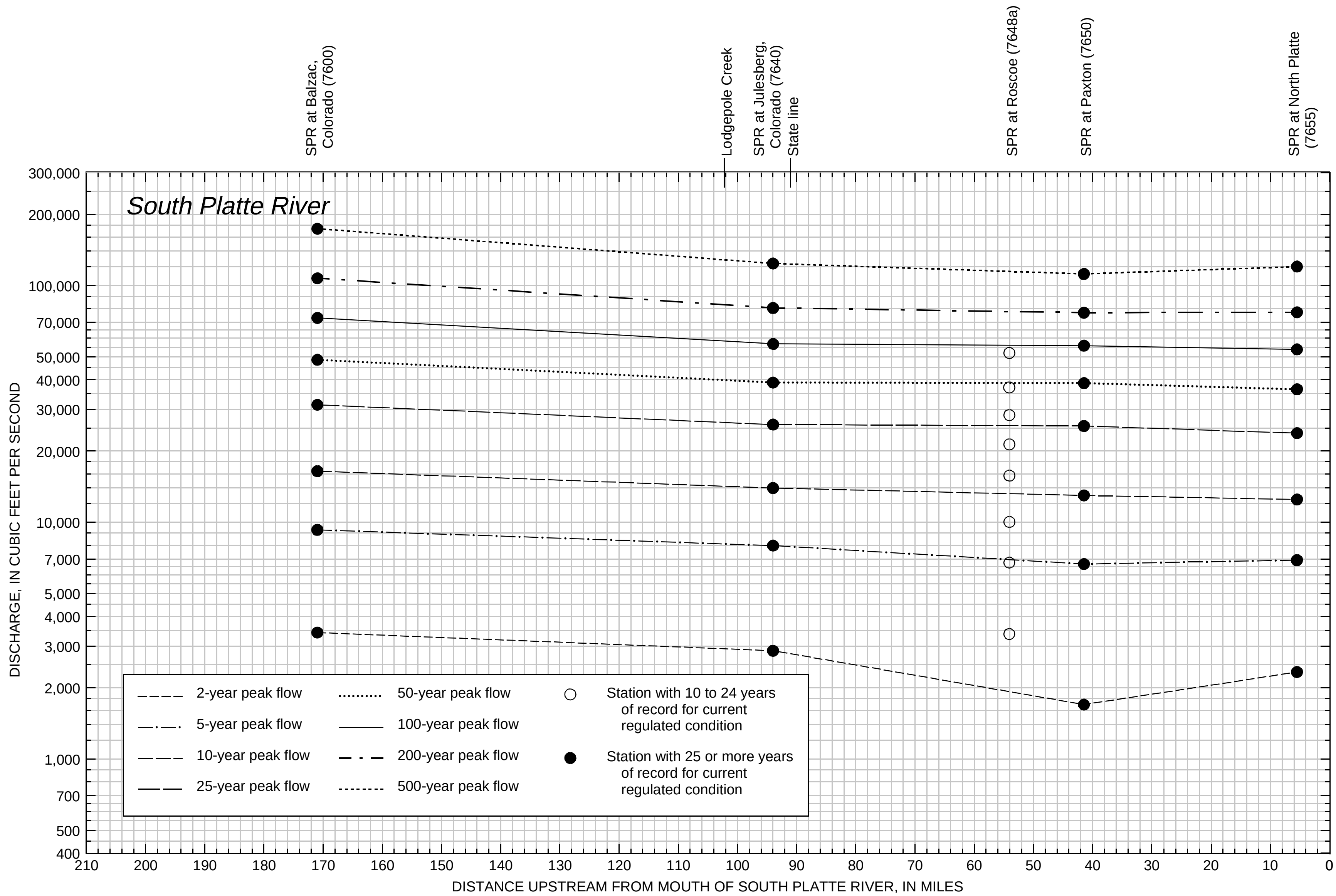


Figure 12. Peak-flow frequencies for the current regulated condition of the South Platte River (SPR) in Nebraska and part of Colorado estimated from streamflow-gaging station data (number following station name is map number referred in tables B1 and B2).

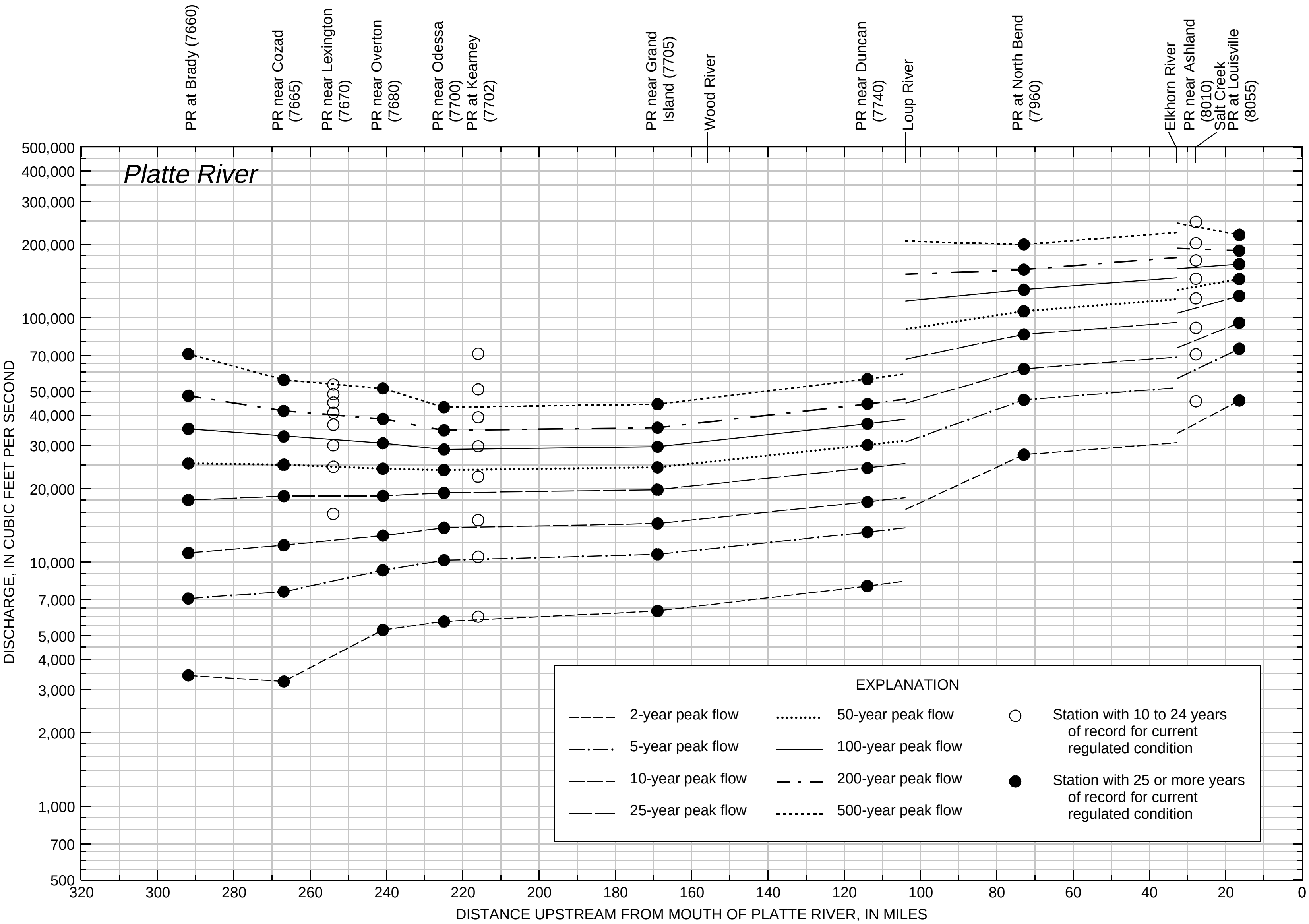


Figure 13. Peak-flow frequencies for the current regulated condition of the Platte River (PR) in Nebraska estimated from streamflow-gaging station data (number following station name is map number referred in tables B1 and B2).

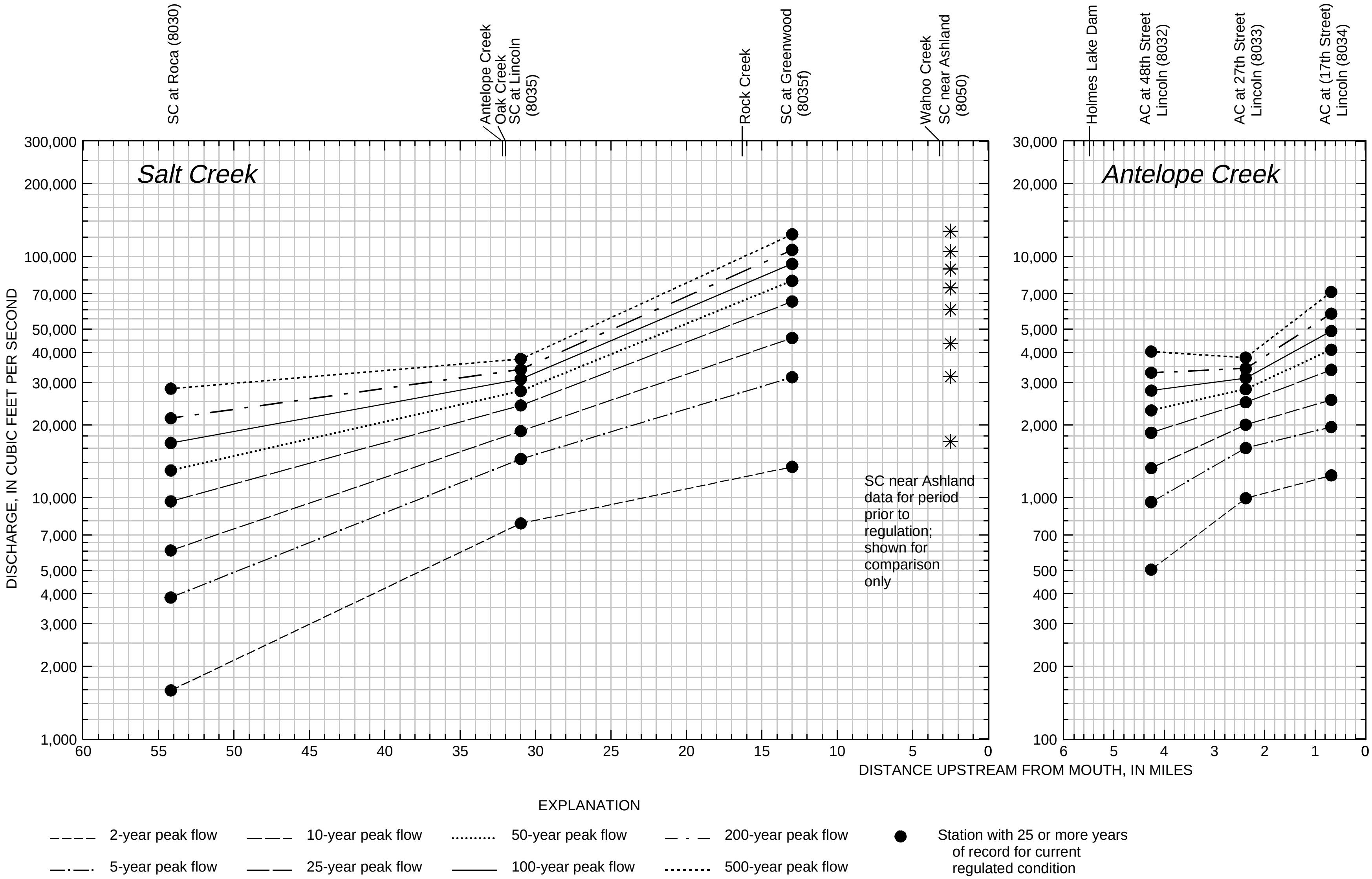


Figure 14. Peak-flow frequencies for the current regulated conditions of Salt (SC) and Antelope Creeks (AC) in Lancaster, Cass, and Saunders Counties of Nebraska estimated from streamflow-gaging station data (number following station name is map number referred in tables B1 and B2).

Hill River to form the Kansas River in north-central Kansas. Two mainstem dams and five tributary dams have been constructed in the Republican River Basin upstream of the Nebraska-Kansas state line. The operational dates for Bonny, Trenton, Enders, Red Willow, Medicine Creek, and Harlan County Dams and their effects on the period of current regulated condition were determined (table 9). Norton Dam is not listed because Prairie Dog Creek, on which it is located, flows directly into Harlan County Lake below which the effects of Norton Dam are masked because of Harlan County Lake's relatively large storage capacity. Analyses for eight mainstem stations were used in estimating peak-flow frequency relations for the Republican River (fig. 15).

The operational date of July 1950 for Bonny Dam on the South Fork of the Republican River in northeastern Colorado was used as the beginning date of the current regulated condition for the South Fork below Bonny Dam and for the Republican River mainstem between the mouth of the South Fork and Trenton Dam farther downstream. Considering the amount of intervening drainage area, the effect of Bonny Dam on most peak flows into Nebraska is probably not very significant. However, it could have had a significant effect, had it existed, on the very large flood of 1935 because much of the flow for that flood originated in the upper part of the basin. See the maximum peak flows for South Fork Republican River near Idalia, Colorado (8250) and Republican River at Max (8280) in table B2.

The peak-flow frequency values for the Republican River above Trenton Dam were extrapolated from those for Republican River at Stratton (8285) based on respective drainage areas. Peak-flow values for the Republican River below Sappa Creek were based on the larger of those computed for Sappa Creek near Stamford (8475) and those for Republican River near Orleans (8445) extrapolated for the increased drainage area from Sappa Creek. The peak-flow values for the Republican River above Harlan County Dam were extrapolated from the values below Sappa Creek, previously described, based on drainage areas.

Trenton and Harlan County Dams cause large reductions in Republican River peak flows, and Enders Dam on Frenchman Creek probably contributes to the decreases in Q_{200} and Q_{500} between the Republican River stations at Trenton (8295) and at McCook (8370) (fig. 15). There are discontinuous increases in peak flows at the junction with Sappa Creek, especially at the larger frequencies. Elsewhere, peak-flow frequency relations increase in the downstream direction with the exception of Q_{500} and Q_{200} between the stations at Guiderock (8530a) and near Hardy (8535), where they decrease slightly.

Frenchman Creek

Frenchman Creek originates in northeastern Colorado and drains as a left-bank tributary into the Republican River in southwestern Nebraska. Irrigation has affected flows in Frenchman Creek since before streamflow gaging began and the entire periods of record were used to compute peak-flow frequency analyses for stations above Enders Dam, the only major dam on Frenchman Creek. The operational date of October 1950 for Enders Dam was used for the beginning date of analyses for stations downstream of the dam. In addition to the Frenchman Creek stations (fig. 16), peak-flow frequency values were computed for Stinking Water Creek near Palisade (8350) to estimate its effect on Frenchman Creek values.

Enders Dam causes reductions in peak flows for Q_{10} through Q_{500}, with increasingly larger reductions for the larger frequencies (fig. 16). Peak flows increase in the downstream direction below the dam, except for Q_2 between the junction with Stinking Water Creek and Frenchman Creek at Culbertson (8355), which decreases slightly.

Red Willow Creek

Red Willow Creek originates in southwestern Nebraska and flows to the southeast before draining as a left-bank tributary into the Republican River. Red Willow Dam is the only major dam on the creek. Its operational date of September 1961 was used as the beginning date for peak-flow frequency analyses of the two stations located downstream of the dam (fig. 16). For comparison, the peak-flow frequency values for an unregulated station, Red Willow Creek above Hugh Butler Lake (8373) located upstream of the dam, also are included on figure 16.

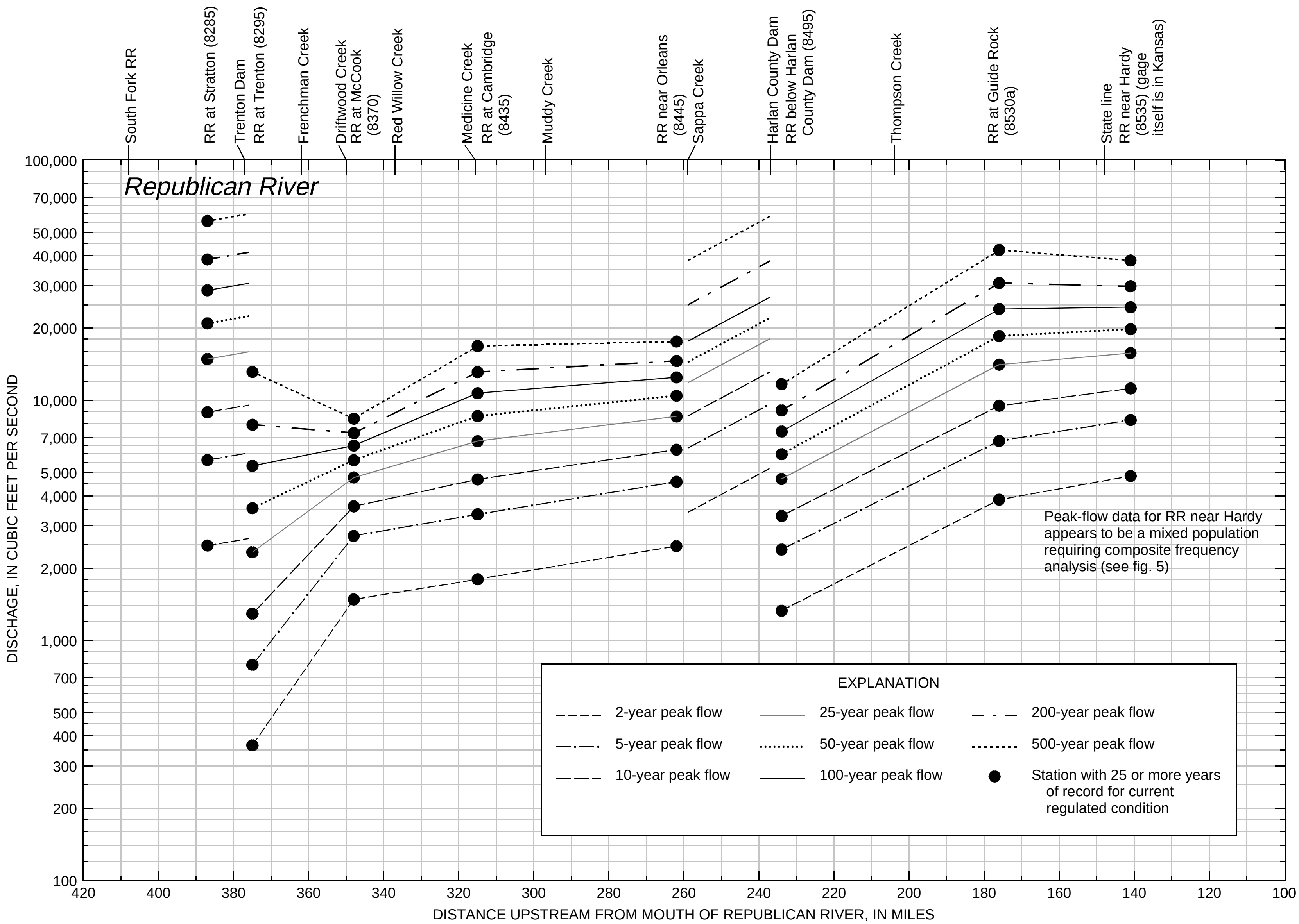


Figure 15. Peak-flow frequencies for the current regulated condition of the Republican River (RR) in Nebraska and part of Kansas estimated from streamflow-gaging data (number following station name is map number referred in tables B1 and B2).

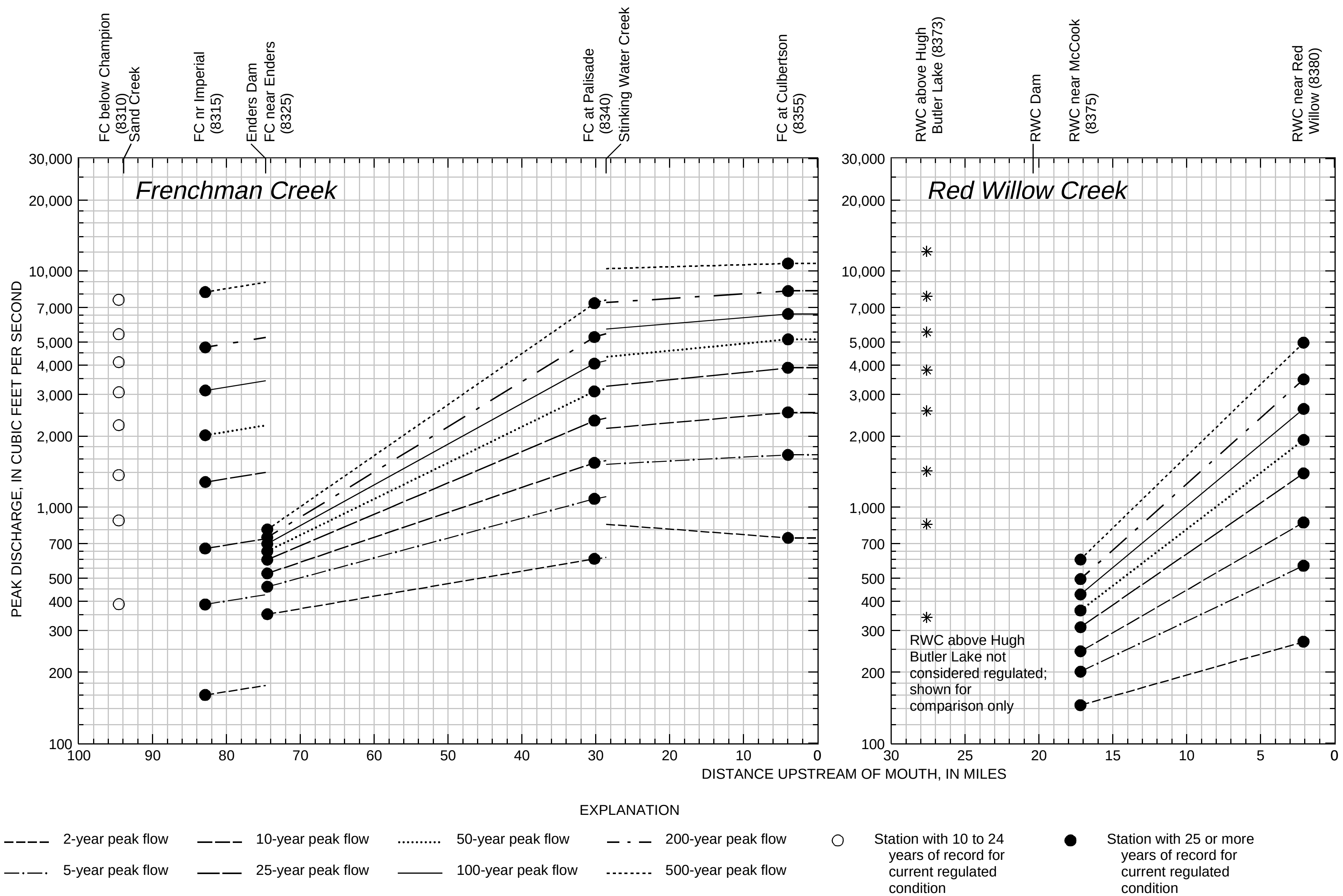


Figure 16. Peak-flow frequencies for the current regulated conditions of Frenchman (FC) and Red Willow (RWC) Creeks in Nebraska estimated from streamflow-gaging station data (number following station name is map number referred in tables B1 and B2).

Red Willow Dam causes large reductions in peak flows compared to the unregulated flows upstream. In the downstream direction below the dam, peak flows increase.

NETWORK EVALUATION

For each peak-flow frequency region, statistical analyses were done to estimate how additional years of peak-flow data might affect the average sampling errors (ASEs) of the newly developed 100-year frequency (recurrence interval) equations. Four different scenarios were evaluated—10- and 20-year periods of additional data collection (planning horizons) with “equation” stations (those stations used in the development of the equations) and 10- and 20-year planning horizons with “equation” stations plus with new stations. Output for the various scenarios for each region can be compared to determine where the largest reduction in ASE of the newly developed peak-flow frequency equations could be gained for the least amount of new data collection, and hence for the least cost.

Station Selection

Three types of stations were identified and used for the network analyses of a particular regional equation: active, inactive, and new. Active stations were “equation” stations that were still being operated as of 1994. For analytical purposes, it was assumed that they would continue to be operated for the planning horizons with existing base-network funds. Inactive stations were “equation” stations that had been discontinued by 1994; it was assumed that they would be operated for the planning horizons but only with new discretionary funds. “New” stations could be completely new stations with no peak-flow record available or they could be stations with some record but not enough to have been used in the development of the equations. In either case, it was assumed they would be operated for the planning horizons but only with new discretionary funds.

The future operation of “new” stations would not only provide additional peak-flow data for updating the regional equations, but potentially could increase the range of the explanatory variables in the regional equation, thereby broadening the applicability of the equations. Before the effects of any “new” stations could be analyzed, their latitude and longitude needed to be known or determined along with values of the explanatory variables that had been used in the development of the equation being evaluated. With the exception of the Eastern and Big Blue River Regions, stations with 10 to 14 years of record were not used in the development of regional peak-flow frequency equations (tables 2–8). However, because basin characteristics already had been determined for most stations with 10 to 14 years of record, they were used as the “new” stations for the network analyses. The special nature of the composite equations prevented their evaluation by the network analysis program for any of the “new” station scenarios.

Analyses and Output

To do the network analyses, output from the GLS (regression) part of the GLSNET program that had been used to compute a particular peak-flow frequency equation was input to the NET program of GLSNET. The stations used in the development of the equation were flagged as either active or inactive. The NET program then was run for each of the planning horizons being considered (10 and 20 years). For the other two scenarios, data for any “new” stations within the region were input, and the program was run again for the two planning horizons.

For each scenario, the expected ASE of the equation was computed first by NET assuming that all available stations had been operated for the given planning horizon. Then the discretionary station that would cause the ASE to increase the least if it were not operated for the planning horizon was identified and removed from the data set, and the ASE was recomputed. This process was repeated internally within NET until only the active stations remained. For each scenario, the output from the NET analysis was used to produce a plot of the number of stations in relation to the ASE (figs. 17 and 18). The analyses that include “new” stations are unique for those sets of stations; a different set of “new” stations would produce different results. Therefore, those analyses should be considered only examples of, not accurate determinations of, how “new” stations would affect the ASEs.

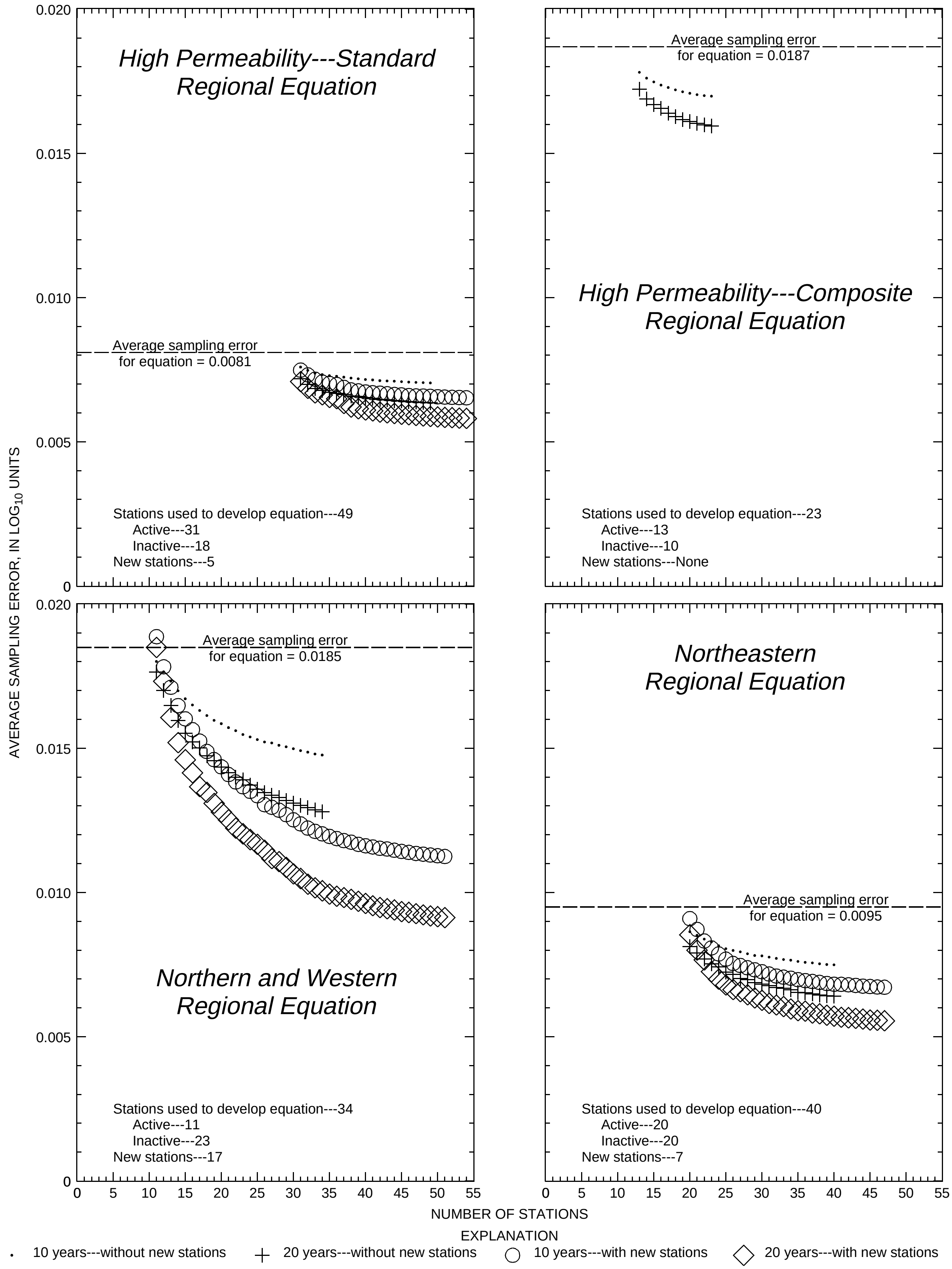


Figure 17. Results of network analyses for 10- and 20-year planning horizons for High-Permeability—Standard, High Permeability—Composite, Northern and Western, and Northeastern regional 100-year peak-flow-frequency equations.

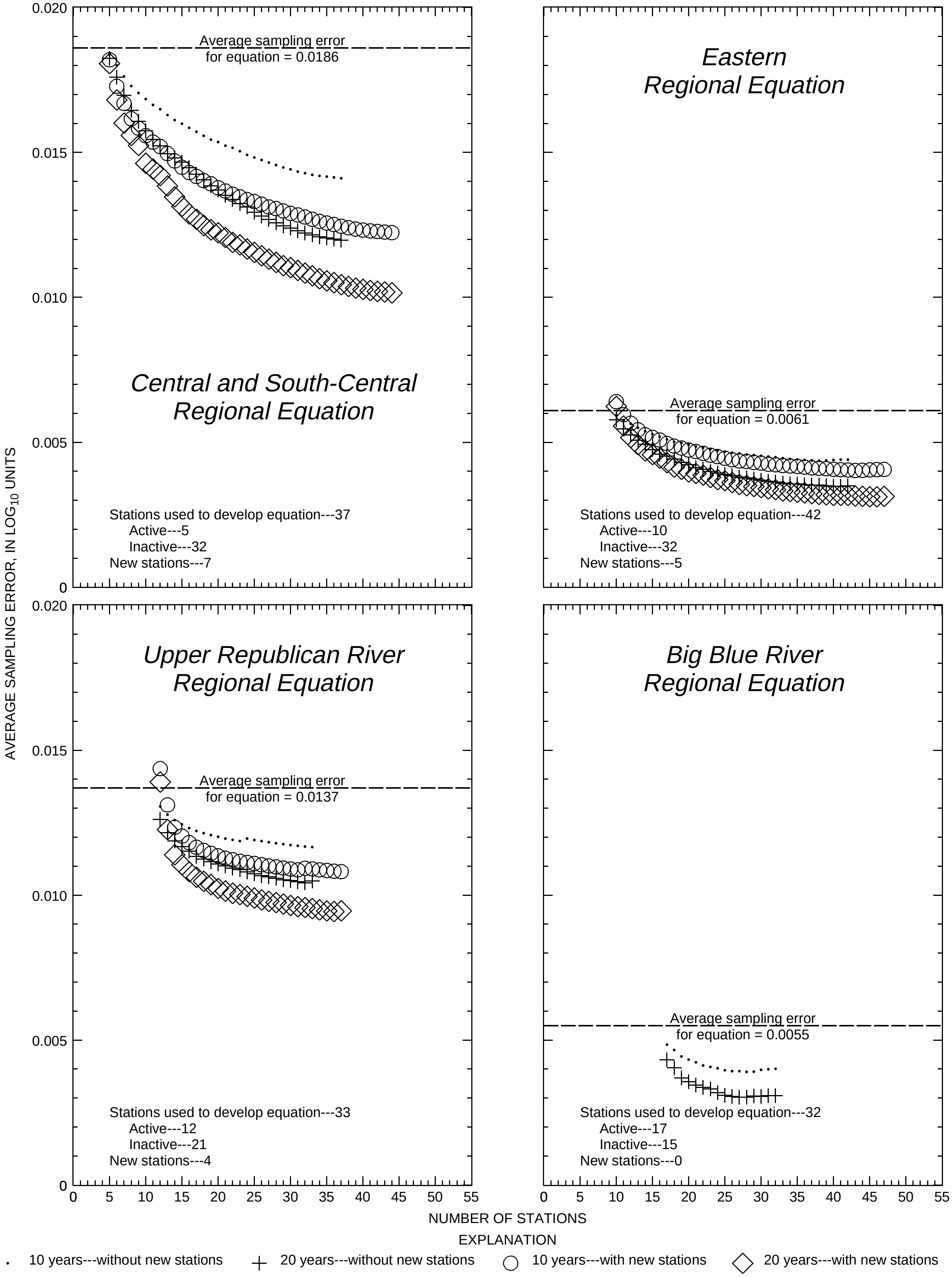


Figure 18. Results of network analyses for 10- and 20-year planning horizons for Central and South-Central, Eastern, Upper Republican River, and Big Blue River regional 100-year peak-flow-frequency equations.

Discussion of Results

For each of the plots (figs. 17 and 18), the point associated with the smallest number of stations represents the ASE with only the active or base-network stations being operated for the various scenarios. The second point represents the ASE with one discretionary station being operated, the one that most reduces the ASE for that scenario. The effect of that station is actually the difference in ASE of the two points. The points associated with the largest number of stations for each plot represent the ASEs with all discretionary stations being operated for the various scenarios. For scenarios with “new” stations, the first stations included after the base-network stations were, in all cases, the “new” stations.The results illustrate that collecting data at “new” stations in a region probably would reduce the ASE for that region’s peak-flow equations more than would collecting the same amount of data at stations that are inactive but that were used in the development of the regional equation.

Note that the ASEs for the active stations only are not the same for scenarios with and without “new” stations, even for the same planning horizon. In most cases, the ASEs actually are larger for the scenarios with “new” stations. This is because NET covers the entire range of basin characteristics, including those of the possible “new” stations, even before the assumed benefits of data from those “new” stations have been incorporated into the analysis. The updated equations would be applicable over a broader range of characteristics than the existing equations, but the ASE could be larger until data actually were available from those stations that had broadened the range of the characteristics.

Based on the plots, it appears that the Northern and Western, and Central and South-Central regional equations, which have the second and third largest ASEs, would benefit the most from additional discretionary peak-flow data, especially if collected at “new” stations. The High-Permeability—Standard, Eastern, and Big Blue River regional equations probably would benefit the least from additional discretionary peak-flow data. Although not directly apparent from the plots, "new" data that could be provided by additional composite analyses for existing stations probably would be of considerable benefit for the High-Permeability—Composite equation, which had the largest ASE and the smallest number of stations of all the regional equations.

Based on the results, data from new stations, rather than more data from stations used to develop the regional peak-flow frequency equations, probably would most reduce the ASE of the equations.

SUMMARY AND CONCLUSIONS

Estimates of peak-flow magnitude and frequency are required for the efficient design of structures that convey flood flows, such as bridges and culverts, or of structures that occupy floodways, such as roads. In the fall of 1994, a cooperative study was begun by the Nebraska Department of Roads and the U.S. Geological Survey (USGS) to update peak-flow frequency analyses for selected streamflow-gaging stations, develop a new set of peak-flow frequency relations for ungaged streams, and evaluate the peak-flow gaging-station network for Nebraska. Using a geographic information system (GIS) and digital spatial data, drainage-basin characteristics—many of which were previously undefined for Nebraska—were quantified. Regional equations relating drainage-basin characteristics to peak-flow frequency characteristics were developed using a generalized least-squares (GLS) regression program. An evaluation of each of the regional gaging-station networks also was made to estimate how additional peak-flow data might reduce average sampling errors (ASEs) of future equations.

Twenty-seven morphometric characteristics were quantified using Basinsoft, a computer program developed by the USGS. Four soil characteristics were quantified using ARC/INFO. Two precipitation characteristics were quantified using ARC/INFO. Manual measurements and calculations were made to verify computer-quantified values for selected drainage basins.

Peak-flow frequency analyses were done for unregulated streamflow-gaging stations with at least 10 years of annual peak-flow record through 1993 and located in or within about 50 miles of Nebraska using the log-Pearson Type III (LP3) frequency distribution and the guidelines in Bulletin 17B of the Interagency Advisory Committee on Water Data. Two sets of standard analyses were made. The first set of standard analyses for unregulated streams was done using skew coefficients derived only from each station’s peak-flow data. These station skews then were used to develop generalized skew relations. The second set of standard analyses was done using station skews weighted with generalized skews from the new skew relations. One set of standard analyses, using station skews only, was done for stations on regulated streams. Adjustments were made to peak-flow frequency analyses, as appropriate, for historic data and high and low outliers. Experience of the authors showed that the statistical tests for low outliers included in Bulletin 17B were not well suited for detecting multiple outliers. Therefore, adaptations of the existing procedure, other tests, and considerable judgment were used to identify and censor low outliers in these situations.

Regional equations relating generalized skew coefficients to basin characteristics were developed for most of the state, and a statewide map of generalized skew coefficients for basins with relatively low average permeability also was developed. Station skew coefficients were computed for stations in or within about 50 miles of Nebraska that, generally, had 25 years or more of unregulated peak flows. Several stations with as few as 18 peak flows were used where data were lacking. After other adjustments had been made, stations with identified high outliers were analyzed further to estimate how sensitive the station skew coefficients were to the high outliers. As a result, some stations were eliminated from further consideration in the development of skew relations.

An equation to estimate skew was developed first for basins with average permeability of the 60-inch soil profile (*P60*) of more than 2.5 inches per hour. A skew map of the state then was developed for basins with *P60* less than 4 inches per hour, except for the Elkhorn River Basin where all basins were included. Regional equations, based on geographic areas, also were developed; those with mean-square errors (MSEs) less than those for the new skew map were adopted. The standard error of estimate (SEE) of the statewide skew map is 0.24. This compares to 0.78 for the Nebraska part of the National skew map and to 0.59 for the map developed by Cordes (1993), both of which include the high-permeability sandhills areas. SEEs for the skew equations ranged from 0.13 to 0.23. The equations were developed using multiple-regression analyses; residuals from the analyses were used to define regions and to determine the best combination of explanatory variables that were reasonable hydrologically.

An alternative set of peak-flow frequency analyses were computed for selected stations using a conditional probability method suggested by William Kirby (USGS). Peak-flow frequency curves for most of the high-permeability stations appeared to indicate a pattern of different characteristics for the larger peak flows. Because of the relatively high permeabilities and large amounts of noncontributing drainage area in typical sandhills terrain, it was theorized that most of the smaller peak flows primarily were interflow and baseflow and that the larger peak-flows included a significantly greater proportion of surface runoff. Plots of peak flow compared to the 1- or 2-day lag of daily flow for several stations appeared to indicate that the theory was plausible.

Other types of mixed populations in peak-flow data also were apparent, including partially regulated stations and low-permeability stations that were usually from the more arid parts of the state. Composite analyses were done for several of these stations; however, the thorough investigations required to justify and split the data, and actually do composite analyses for all of these other stations were beyond the scope of this study. Instead, peak-flow frequencies for partially regulated sites were computed using only station skews, and low-permeability stations were excluded from the regional analyses of peak-flow frequency.

Peak-flow frequency relations were developed for standard probabilities of 50, 20, 10, 4, 2, 1, 0.5, and 0.2 percent or for frequencies of 2, 5, 10, 25, 50, 100, 200, and 500 years, respectively. Streamflow-gaging stations with peak flows that are known to have been or that could have been affected to some degree by regulation (flood control, irrigation diversions, power generation, storage detention, or other factors) were excluded from regional peak-flow frequency analyses. Preliminary regional equations were developed and regions were defined using ordinary least squares (OLS) multiple-regression procedures. Final regression equations were developed using a GLS multiple-regression procedure. The GLS procedure adjusts for differences in record lengths, differences in peak-flow variances, and cross-correlations of concurrent peak flows among stations used in the regression analysis.

For unregulated streams, eight sets of regression equations relating drainage-basin characteristics to peak flows for selected frequencies of occurrence were developed for seven regions of the state. Two sets of regional peak-flow frequency equations were developed for a high-permeability region that includes basins with *P60* greater than 4 inches per hour. Six sets of equations were developed for specific geographic areas, usually based on drainage-basin boundaries. Of the two sets of high-permeability equations, one set was developed using data from standard frequency analyses and the other was developed using data from composite frequency analyses. In general, these two sets of equations are for drainage basins with sandhills-type terrain. The six hydrologic regions based on geography were delineated using residual values and plots from preliminary regression analyses. There is overlap between several of the regions where more than one equation can be used to estimate peak flows.

Tables for each region include the equations, the SEE in $\log_{10}$ units and in percent, the average standard error of prediction (SEP) in $\log_{10}$ units, the average equivalent years of record for each equation, and the applicable range of the explanatory variables used to develop the equations. SEEs for the 100-year recurrence interval equations ranged from 12.1 to 63.8 percent.

For streamflow-gaging stations on regulated streams in Nebraska with at least 10 years of regulated peak flows, peak-flow frequency analyses were done using the LP3 distribution and the guidelines in Bulletin 17B of the Interagency Advisory Committee on Water Data. Skew coefficients used were those derived only from each station's peak-flow data. Peak-flow records within the period of the current regulated condition were used for the station analyses. For nine streams that included more than one station with at least 25 years of regulated record, graphs of peak-flow frequency and distance upstream of the mouth were estimated. Log-linear graphs were developed for the Niobrara, North Platte, South Platte, Platte, and Republican Rivers, and for Salt, Antelope, Frenchman, and Red Willow Creeks.

For the regional peak-flow frequency equations for unregulated streams, statistical analyses were done to estimate how additional years of peak-flow data might affect the ASEs of the equations for the 100-year frequency of occurrence. For each regional equation, analyses were done for four different scenarios—10 and 20 years of additional record from the stations used to develop the equation; and 10 and 20 years of additional record from new stations as well as from the stations used to develop the equation.

Various scenarios and regions can be compared to determine where the greatest overall benefits might be gained for the least amount of new data and hence for the least cost. For each scenario, plots of ASE and number of stations in the network were presented. Based on the results, data from new stations, rather than more data from stations used to develop the regional peak-flow frequency equations, probably would most reduce the ASE of the equations.

SELECTED REFERENCES

Beckman, E.W., 1976, Magnitude and frequency of floods in Nebraska: Water-Resources Investigations Report 76–109, 128 p.

Beckman, E.W., and Hutchison, N.E., 1962, Floods in Nebraska on small drainage areas, magnitude and frequency: Geological Survey Circular 458, 33 p.

Boohar, J.A., and Provaznik, M.K., 1996, Peak flows for the period of record for current and discontinued streamflow stations in Nebraska: U.S. Geological Survey Open-File Report 96-101, 518 p.

Boohar, J.A., Hoy, C.G., and Jelinek, F.J., 1995, Water resources data, Nebraska, water year 1994: U.S. Geological Survey Water-Data Report NE–94–1, 421 p.

Boohar, J.A., Hoy, C.G., and Steele, G.V., 1992, Water resources data, Nebraska, water year 1991: U.S. Geological Survey Water-Data Report NE–91–1, 354 p.

Cordes, K.E., 1993, Design discharges of culverts: Lincoln, Nebr., University of Nebraska, unpublished thesis, 106 p.

Dempster, G.R., Jr., 1983, WATSTORE User's Guide, instructions for streamflow/basin characteristics file—U.S. Geological Survey National Water Data Storage and Retrieval System (WATSTORE): U.S. Geological Survey, v. 4, chap. II, sec. A, 34 p.

Dugan, J.T., 1984, Hydrologic characteristics of Nebraska soils: U.S. Geological Survey Water-Supply Paper 2222, 19 p. and 12 pls.

____ 1986, Hydrologic characteristics of soils in parts of Arkansas, Colorado, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, South Dakota, and Texas: U.S. Geological Survey Hydrologic Investigations Atlas HA–678, 1 sheet.

Dugan, J.T., Hobbs, R.D., and Ihm, L.A., 1990, Hydrologic characteristics of soils in the High Plains, northern Great Plains, and Central Texas Carbonates Regional Aquifer Systems: U.S. Geological Survey Hydrologic Investigations Atlas HA–714, 1 sheet.

Eash, D.A., 1994, A geographic information system procedure to quantify physical drainage-basin characteristics: Water Resources Bulletin, v. 30, no. 1, p. 1–8.

Environmental Systems Research Institute (ESRI), 1996, ARC/INFO user's guide, version 7.0.4: Redlands, Calif., Environmental Systems Research Institute.

Eschner, T.R., Hadley, R.F., and Crowley, K.D., 1983, Hydrologic and morphologic changes in channels of the Platte River Basin in Colorado, Wyoming, and Nebraska—a historical perspective: U.S. Geological Survey Professional Paper 1277–A, 39 p.

Flynn, K.M., Hummel, P.R., Lumb, A.M., and Kittle, J.L., Jr., 1995, User's manual for ANNIE, version 2, a computer program for interactive hydrologic data management: U.S. Geological Survey Water-Resources Investigations Report 95–4085, 211 p.

Furness, L.W., 1955, Floods in Nebraska, magnitude and frequency: Lincoln, Nebr., Nebraska Department of Roads and Irrigation, 103 p.

Gilroy, E.J., and Tasker, G.D., 1989, Multicollinearity and influential observations in hydrologic model selection, *in* Berk, Kenneth, and Malone, Linda, eds., Computing Science and Statistics—Proceedings of the 21st Symposium on the Interface: Alexandria, Va., American Statistical Association, p. 350–354.

Hardison, C.H., 1971, Prediction error of regression estimates of streamflow characteristics at ungaged sites: U.S. Geological Survey Professional Paper 750–C, p. C228-C236.

Harvey, C.A., and Eash, D.A., 1996, Description, instructions, and verification for Basinsoft, a computer program to quantify drainage-basin characteristics: U.S. Geological Survey Water-Resources Investigations Report 95–4287, 25 p.

Hershfield, D.M., 1961, Rainfall frequency atlas of the United States: Washington, D.C., U.S. Department of Commerce, Weather Bureau Technical Paper No. 40, 115 p.

Interagency Advisory Committee on Water Data (IACWD), 1982, Guidelines for determining flood flow frequency: Hydrology Subcommittee Bulletin 17B, U.S. Department of the Interior, 28 p. and 14 appendices.

Kirby, W.H., 1981, Annual flood frequency analysis using U.S. Water Resources Council guidelines (program J407): U.S. Geological Survey Open-File Report 79–1336–I, WATSTORE User's Guide, v. 4, chap. I, sec. C, 56 p.

Majure, J.J., and Soenksen, P.J., 1991, Using a geographic information system to determine physical basin characteristics for use in flood-frequency equations, *in* Balthrop, B.H., and Terry, J.E., eds., U.S. Geological Survey National Computer Technology Meeting—Proceedings, Phoenix, Arizona, November 14–18, 1988: U.S. Geological Survey Water-Resources Investigations Report 90–4162, p. 31–40.

Matthai, H. F., 1968, Magnitude and frequency of floods in the United States, Part 6–B, Missouri River Basin below Sioux City, Iowa: U.S. Geological Survey Water-Supply Paper 1680, 471 p.

Natural Resources Conservation Service, 1994, State soil geographic (STATSGO) data base, data use information: U.S. Department of Agriculture, National Soil Survey Center, Miscellaneous Publication 1492, 110 p.

Patterson, J.L., 1966, Magnitude and frequency of floods in the United States, Part 6–A, Missouri River Basin above Sioux City, Iowa: U.S. Geological Survey Water-Supply Paper 1679, 491 p.

Provaznik, M.K., 1997, Flood frequency for Nebraska using L-moments: Lincoln, Nebr., University of Nebraska, unpublished thesis, 58 p. and 16 appendices.

Provaznik, M.K., and Hotchkiss, R.H., 1998, Analysis of gaging station flood-frequency estimates in Nebraska, using L-moment and region-of-influence methods: Washington, D.C., National Research Council, Transportation Research Board, Transportation Research Record no. 1647, p. 53–60.

Statware, Inc., 1990, Statit statistics reference manual release 2.3x: Corvallis, Oreg., Statware, Inc., chap. 6, 50 p., and chap 10, 42 p.

Tasker, G.D., 1978, Relation between standard errors in log units and standard errors in percent: U.S. Geological Survey, WRD Bulletin, Jan–Mar–Apr–June 1978.

Tasker, G.D., and Stedinger, J.R., 1989, An operational GLS model for hydrologic regression: Amsterdam, Journal of Hydrology, Elsevier Science Publishers, v. 111, p. 361–375.

Ugland, R.C., Cochran, B.J., Hiner, M.M., and Steger, R.D., 1994, Water resources data, Colorado, water year 1993–volume 1–Missouri River Basin, Arkansas River Basin, and Rio Grande River Basin: U.S. Geological Survey Water-Data Report CO–93–1, 518 p.

U.S. Geological Survey, 1976, Hydrologic unit map–1974–State of Nebraska: Reston, Va., U.S. Geological Survey, scale 1:500,000, 1 sheet.

U.S. Water Resources Council, 1976, Guidelines for determining flood flow frequency: Washington, D.C., Bulletin 17 of the Hydrology Committee, Water Resources Council.

APPENDIX A—DESCRIPTIONS OF SELECTED DRAINAGE-BASIN-CHARACTERISTICS QUANTIFIED USING BASIN-SOFT, ARC-INFO, AND RELATED GIS PROGRAMS

Descriptions of Selected Drainage-Basin Characteristics Quantified Using Basinsoft, ARC-INFO, and Related GIS Programs

Morphometric Characteristics

Morphometric characteristics were quantified using Basinsoft (modified from Harvey and Eash, 1996) and data layers representing the basin boundary (originally delineated on 1:24,000-scale maps for Nebraska stations and on 1:250,000-scale maps for stations outside of Nebraska), hydrography (stream network from 1:250,000-scale maps), hypsography (elevation contours created from 1:250,000-scale digital elevation model), and lattice elevation model (created from 1:250,000-scale digital elevation model).

Modifications to Basinsoft

In Basinsoft, noncontributing drainage area (*NCDA*) is intended to be delineated and measured like total drainage area (*TDA*), and contributing drainage area (*CDA*) is to be computed as *CDA* = *TDA* - *NCDA*. Because it was extremely difficult to delineate *NCDA* in the large areas of sandhills, Basinsoft was modified to allow for manual input of *NCDA* instead. Values of *NCDA* were determined from published values of *NCDA* or of *TDA* and *CDA*. This modification did not affect *CDA* computations, but did affect several other characteristics.

Basin slope (*BS*), number of first-order streams (*FOS*), and total stream length (*TSL*) are all intended to be measured only for the *CDA* by excluding the delineated *NCDA*(s) from the measuring process. Because *NCDA*(*s*) were not delineated, measurements for *FOS* and *TSL* were, therefore, made for the *TDA*. For *BS*, *TDA* was substituted for *CDA* in the internal computations and this characteristic, therefore, was representative of the *TDA* and not just of the *CDA*. Slope ratio (*SR*), computed from *BS*, also was affected by this modification.

However, because most stream segments from the 1:250,000-scale data were concentrated in the *CDA*, the values of *FOS* and *TSL* actually are fairly representative of the *CDA* as well as the *TDA*. Therefore, characteristics that use *CDA* and either *FOS* or *TSL* in their computations were not modified; these included drainage frequency (*DF*), stream density (*SD*), constant of channel maintenance (*CCM*), and relative stream density (*RSD*).

Areal-Size Quantifications

TDA—Total drainage area, in square miles, includes all area within the drainage-basin boundary.

NCDA—Noncontributing drainage area, in square miles, includes all area within the drainage-basin boundary that does not contribute directly to surface runoff; from published value (or computed from published values of *TDA* and *CDA*) manually input during Basinsoft computations.

CDA—Contributing drainage area, in square miles, includes all area within the drainage-basin boundary that contributes directly to surface runoff; computed as *CDA* = *TDA* - *NCDA*.

Linear-Size Quantifications

BL—Basin length, in miles, measured along a line areally centered through the drainage-basin boundary data layer from basin outlet to the intersection of the main channel (extended) and the basin boundary.

BP—Basin perimeter, in miles, measured along entire drainage-basin boundary.

BW—Effective basin width, in miles, computed as $BW = CDA / BL$.

Shape Quantifications

CR—Compactness ratio, dimensionless, computed as $CR = BP / 2(\pi CDA)^{0.5}$.

ER—Elongation ratio, dimensionless, computed as $ER = [4CDA/\pi(BL)^2]^{0.5} = 1.13(1/SF)^{0.5}$.

RB—Rotundity of basin, dimensionless, computed as $RB = [\pi(\mathrm{BL})^2]/4CDA = 0.785SF$.

SF—Shape factor, dimensionless, computed as $SF = BL/BW$.

Relief Quantifications

BR—Basin relief, in feet, measured as the elevation difference in the lattice elevation model between the highest grid cell and the grid cell at the basin outlet.

BS—Average basin slope, in feet per mile, quantified using the “contour-band” method and computed as *BS* =[(total length of all selected elevation contours within the *TDA*)(contour interval)]/*TDA*.

RR—Relative relief, in feet per mile, computed as $RR = BR/BP$.

Aspect Quantification

BA—Basin azimuth, in degrees, measured as the compass direction (clockwise from north at 0 degrees) of a line from the intersection of the main channel (extended) and the basin boundary to the basin outlet.

Stream-Network Quantifications

FOS—Number of first-order streams, dimensionless, designated as the Strahler method within the *TDA.*

BSO—Basin stream order, dimensionless, designated as the Strahler stream order of the main channel at the basin outlet.

MCL—Main-channel length, in miles, measured along the main channel from the basin outlet to the intersection of the main channel (extended) and the basin boundary.

TSL—Total stream length, in miles, computed by summing the lengths of all stream segments within the *TDA.*

DF—Drainage frequency, in number of first-order streams per square mile, computed as $DF = FOS/CDA$. Although *FOS* was quantified for *TDA*, *CDA* was used in the computation of *DF* because most stream segments are concentrated in the *CDA*—see "Modifications to Basinsoft".

MCSR—Main-channel sinuosity ratio, dimensionless, computed as $MCSR = MCL/BL$.

SD—Stream density, in miles per square mile, computed as $SD = TSL/CDA$. Although *TSL* was quantified for *TDA*, *CDA* was used in the computation of *SD* because most stream segments are concentrated in the *CDA*—see "Modifications to Basinsoft".

CCM—Constant of channel maintenance, in square miles per mile, computed as $CCM = CDA/TSL = 1/SD$. Although *TSL* was quantified for *TDA*, *CDA* was used in the computation of *CCM* because most stream segments are concentrated in the *CDA*—see "Modifications to Basinsoft."

RSD—Relative stream density, dimensionless, computed as $RSD=(FOS)(CDA)/(TSL)^2=DF/(SD)^2$. Although *TSL* was quantified for *TDA*, *CDA* was used in the computation of *RSD* because most stream segments are concentrated in the *CDA*—see "Modifications to Basinsoft".

Relief-Stream Network Quantifications

MCS—Main-channel slope index, in feet per mile, computed as $MCS=(E_{85}-E_{10})/(0.75MCL)$ where E_{10} and E_{85} are the respective elevations of points 10 and 85 percent of the distance along the main channel upstream from the basin outlet to the basin boundary.

MCSP—Main-channel slope proportion, dimensionless, computed as $MCSP=MCL/(MCS)^{0.5}$.

RN—Ruggedness number, in feet per mile, computed as $RN=(TSL)(BR)/CDA$

SR—Slope ratio, dimensionless, computed as $SR=MCS/BS$.

Soil Characteristics

These were based on characteristics defined by Dugan (1984), quantified using ARC/INFO using equations A1 through A7 and data layers representing the basin boundary (originally delineated on 1:24,000-scale maps for Nebraska stations and on 1:250,000-scale maps for stations outside of Nebraska), and the State Soil Geographic Data Base (STATSGO) (Natural Resources Conservation Service, 1994).

P60—Average permeability rate of 60-inch soil profile for drainage basin, in in/hr, computed from equations A1 through A3 next.

$$PAvgH = (PMinH + PMaxH)/2 \qquad \text{(A1)}$$

where: *PAvgH* = average permeability rate of soil horizon, in in/hr,
PMinH = minimum value for range in permeability of soil horizon, in in/hr, and
PMaxH = maximum value for range in permeability of soil horizon, in in/hr.

$$P60\_SS = (\Sigma(HT \times PAvgH))/60 \qquad \text{(A2)}$$

where: *P60_SS* = average permeability rate of 60-inch soil profile for soil series, in in/hr, (fig. A3) and
HT = thickness of soil horizon, in inches.

$$P60 = \Sigma(P60\_SS \times FA) \qquad \text{(A3)}$$

where: *P60* = average permeability rate of 60-inch soil profile for drainage basin, in in/hr, and
FA = fractional area of drainage basin occupied by soil series.

AWC—Average available water capacity of the 60-inch soil profile for the drainage basin, in in/hr, computed using equations A4 and A5 next.

$$AWC\_SS = (\Sigma(HT \times AWCH)) / 60 \qquad \text{(A4)}$$

$$AWC = \Sigma(AWC\_SS \times FA) \qquad \text{(A5)}$$

PLP—Average of minimum permeabilities of the least permeable layers for drainage basin, in in/hr, computed using equation A6 next.

$$PLP = \Sigma(PLP\_SS \times FA) \qquad \text{(A6)}$$

where: *PLP_SS* = minimum permeability of the least permeable layer for soil series, in in/hr.

MSS—Average maximum soil slope for drainage basin, in percent, computed using equation A7 next.

$$MSS = \Sigma(MSS\_SS \times FA) \qquad \text{(A7)}$$

where: *MSS* = average maximum soil slope for drainage basin, in percent, and

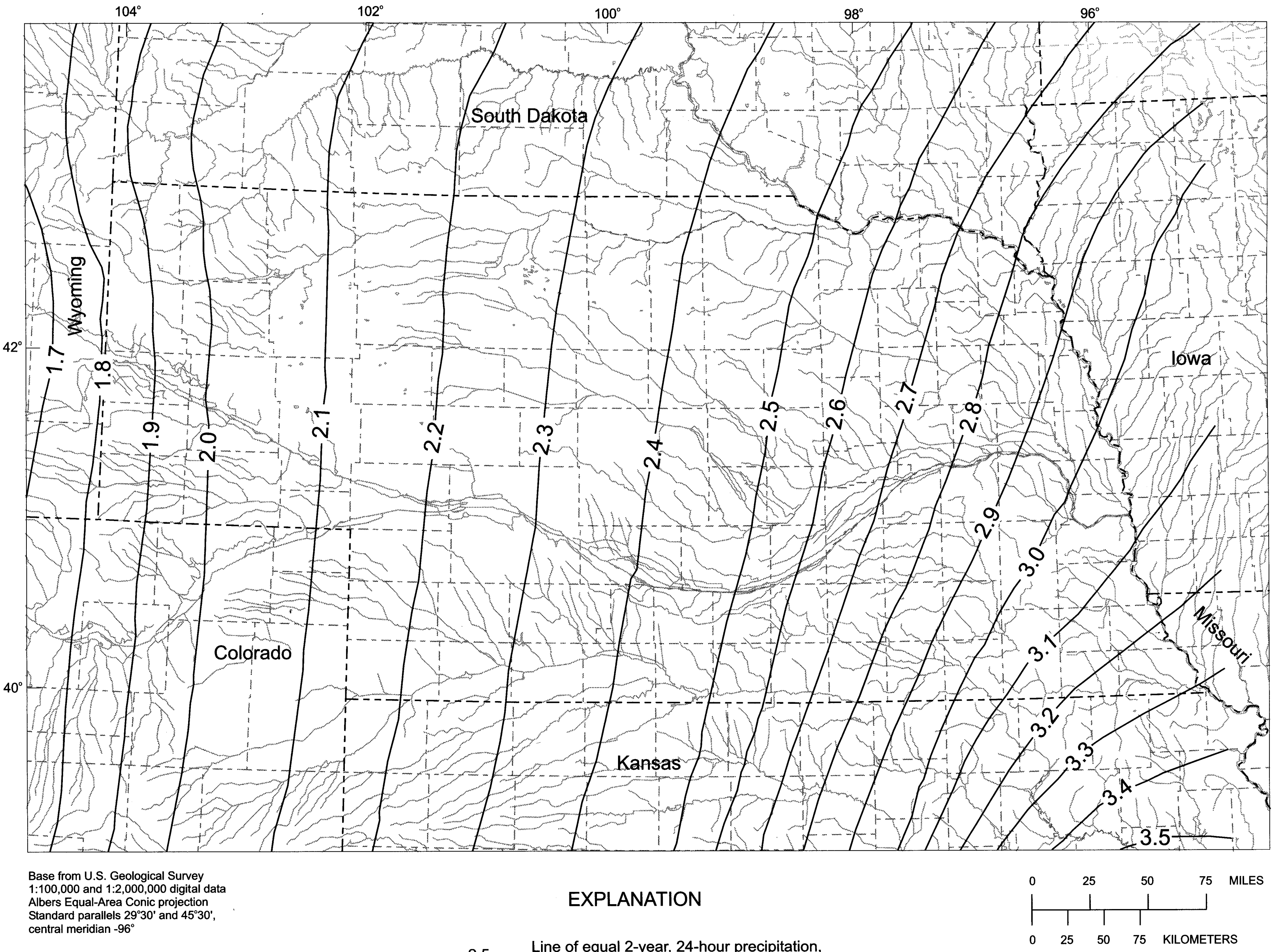
MSS_SS = maximum soil slope for soil series, in percent.

Precipitation Characteristics

These were quantified using ARC/INFO and data layers representing the basin boundary (originally delineated on 1:24,000-scale maps for Nebraska stations and on 1:250,000-scale maps for stations outside of Nebraska), the 2-year (recurrence interval), 24-hour (duration) precipitation contours (from Weather Bureau Technical Paper 40 (Hershfield, 1961)), and Theissen polygons of mean annual precipitation for the period 1961–90 (from the National Climatic Data Center Web site).

TTP—Two-year (recurrence interval), 24-hour (duration) precipitation, in inches, computed as the area-weighted average of precipitation polygons within the *TDA* (fig. A1).

MAP—Mean annual precipitation, in inches, computed as the area-weighted average of precipitation polygons within the *TDA* (fig. A2).



Base from U.S. Geological Survey
1:100,000 and 1:2,000,000 digital data
Albers Equal-Area Conic projection
Standard parallels 29°30' and 45°30',
central meridian -96°

EXPLANATION

—2.5— Line of equal 2-year, 24-hour precipitation,
Interval 0.1 inch

Figure A1. Maximum expected precipitation for Nebraska and parts of adjacent states for a duration of 24 hours and a recurrence interval of 2 years (modified from Hershfield, 1961).

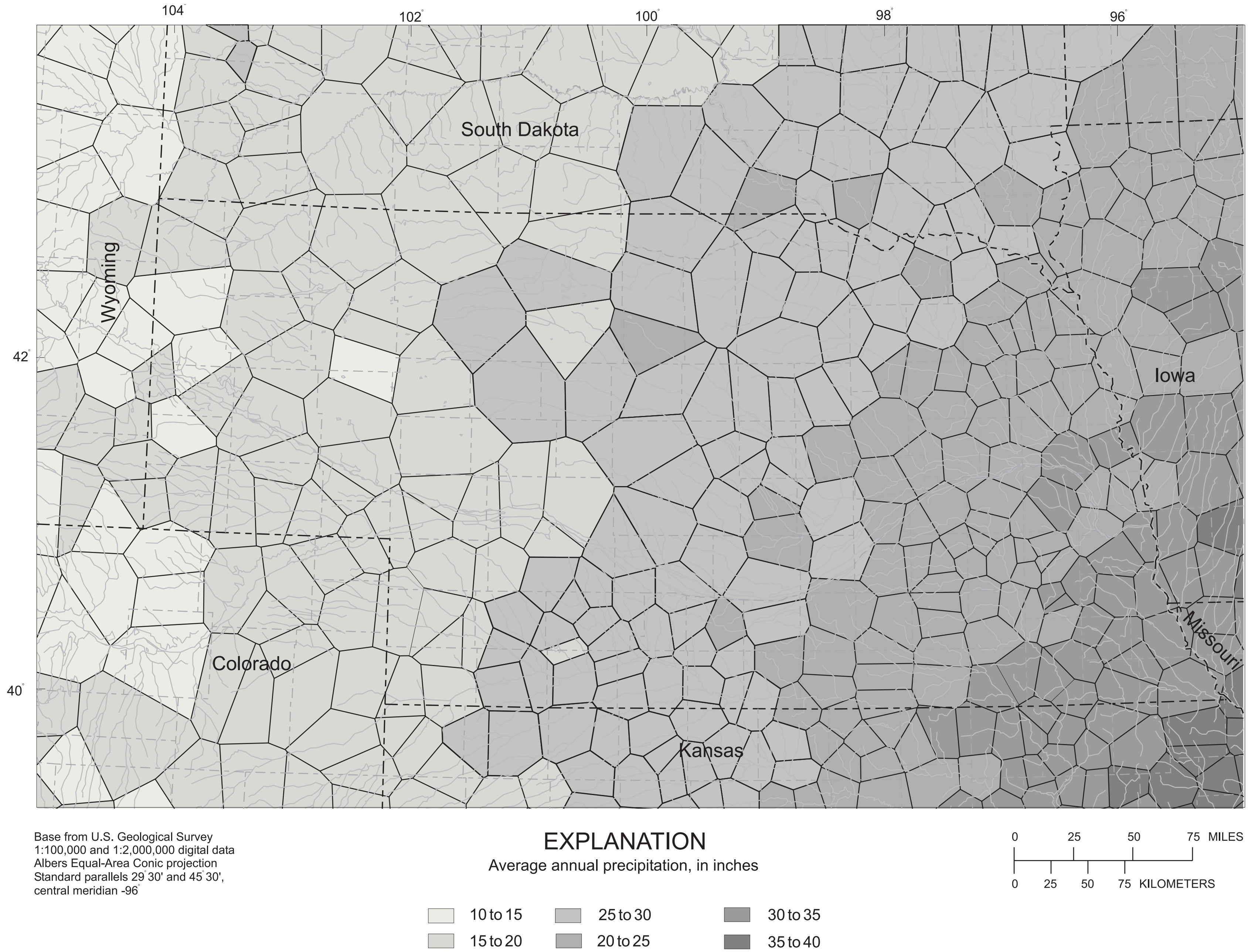


Figure A2. Thiessen polygons of mean annual precipitation for National Oceanic and Atmospheric Administration and National Weather Service rain gages in Nebraska and parts of adjacent states for the period 1961-90.

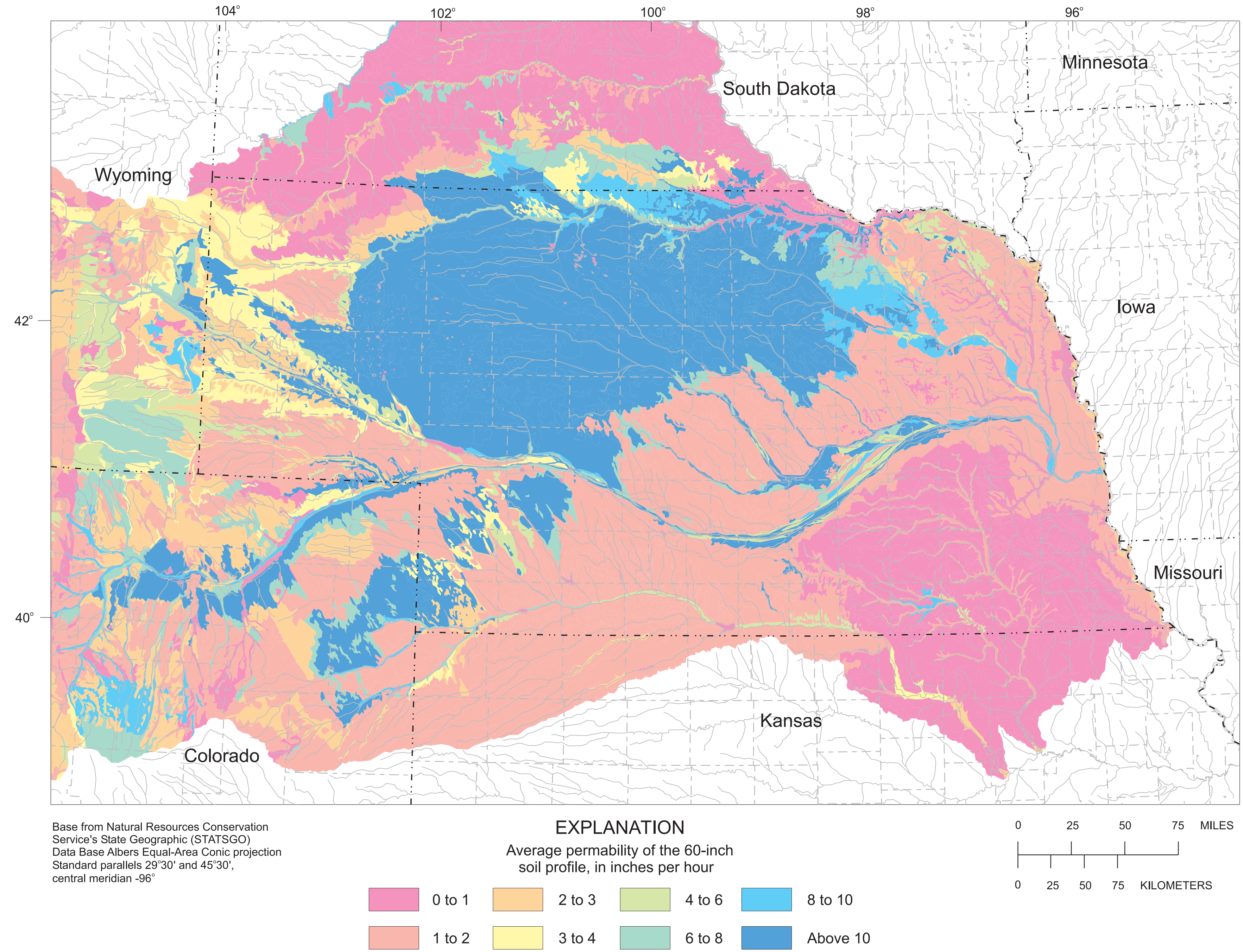


Figure A3. Average permeability of the 60-inch soil profile for nebraska and parts of adjacent states.

APPENDIX B—TABLES OF DRAINAGE-BASIN CHARACTERISTICS AND PEAK-FLOW FREQUENCY DATA

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations

[Drainage-basin characteristics (quantified from 1:250,000-scale data using geographic-information-system procedures, except as noted; see appendix A for descriptions); *AWC*, available water capacity of the 60-inch soil profile, in inches per inch; *BS*, basin slope, in feet per mile; *CDA*, contributing drainage area, in square miles, derived from published data; *CR*, compactness ratio, dimensionless; *DF*, drainage frequency, in streams per square mile; *MAP*, mean annual precipitation, in inches; *MCS*, main channel slope, in feet per mile; *MSS*, maximum soil slope, percentage; *PLP*, permeability of the least permeable layer, in inches per hour; *P60*, permeability of the 60-inch soil profile, in inches per hour; *SR*, slope ratio, dimensionless, ratio of main-channel slope to basin slope; *RR*, relative relief, in feet per mile; *SD*, stream density, in miles per square mile; *SF*, shape factor, dimensionless; *TDA*, total drainage area, in square miles; *TTP*, 2-year (recurrence interval) 24-hour (duration) precipitation, in inches; º, degrees; ’, minutes; ’’, seconds; mi^2, square miles; --, not determined; __, value known to be incorrect; #, number]

Map number	Station number	Station name—remarks	Latitude (º ’ ”)	Longitude (º ’ ”)	Published total drainage area (mi^2)	TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
3822	06382200	Pritchard Draw near Lance Creek, Wyoming	43 12 00	104 40 59	5.10	5.42 5.42	1.64 41.6	126 101	1.17 1.00	1.75 14.91	0.07 0.10	0.369 0.804	27.4 0.93
3962	06396200	Fiddle Creek near Edgemont, South Dakota	43 18 15	103 59 45	0.64	0.61 0.61	1.14 17.3	73.8 75.3	1.50 1.78	1.85 14.19	0.08 0.11	1.64 0.709	17.7 0.63
3963	06396300	Cottonwood Creek tributary near Edgemont, South Dakota	43 17 48	103 52 01	0.09	0.18 0.18	1.10 54.5	171 --	1.07 --	1.95 15.68	0.08 0.11	5.47 --	17.7 0.63
3964a	06396490	Warbonnet Creek near Harrison, Nebraska	42 50 43	103 54 41	24.5	24.4 24.4	1.38 13.3	343 --	1.33 0.596	1.85 16.84	0.12 0.61	0.492 --	15.7 2.23
3997	06399700	Pine Creek near Ardmore, South Dakota	43 11 13	103 38 23	5.47	5.28 5.28	1.34 41.5	106 87.1	1.17 0.880	1.95 15.90	0.08 0.11	0.379 0.819	17.7 0.63
4000	06400000	Hat Creek near Edgemont, South Dakota	43 14 24	103 35 16	1,044	967 967	2.01 6.38	167 9.5	1.73 0.560	1.90 15.99	0.08 0.30	0.288 0.068	20.2 1.00
4008a	06400875	Horsehead Creek at Oelrichs, South Dakota	43 11 17	103 13 34	187	186 186	2.50 9.58	56.3 11.2	1.47 1.19	2.01 16.55	0.07 0.09	-- 0.199	20.2 0.30
4432	06443200	White River tributary near Glen, Nebraska	42 37 11	103 39 09	7.97	7.59 7.59	1.80 38.7	360 98.2	1.34 0.534	1.95 16.84	0.09 1.08	0.132 0.273	24.5 3.58
4433	06443300	Deep Creek near Glen, Nebraska	42 36 36	103 33 21	10.87	10.6 10.6	3.06 48.3	462 117	1.45 0.543	1.95 14.21	0.08 0.95	0.189 0.252	27.9 3.40
4437	06443700	Soldiers Creek near Crawford, Nebraska	42 41 18	103 32 08	52.6	49.3 49.3	2.35 23.5	329 66.5	1.53 0.539	1.95 16.84	0.09 1.07	0.101 0.202	24.5 3.58
4440	06444000	White River at Crawford, Nebraska	42 41 32	103 25 03	313	256 256	2.05 14.1	335 43.5	1.51 0.730	1.93 15.97	0.10 1.04	0.137 0.130	23.6 3.44
4450	06445000	White River below Cottonwood Creek near Whitney, Nebraska	42 48 35	103 10 05	676	635 635	2.24 11.4	294 29.5	1.56 0.816	1.96 15.82	0.10 0.66	0.140 0.100	21.6 2.13
4455	06445500	White River near Chadron, Nebraska	42 49 59	103 07 00	750	709 709	2.52 10.8	293 28.2	1.58 0.820	1.97 15.78	0.07 0.63	0.141 0.096	21.5 2.02
4455a	06445530	Chadron Creek tributary at Chadron State Park near Chadron, Nebraska	42 41 49	103 00 09	2.59	2.75 2.75	5.18 40.5	212 86.7	1.56 1.43	2.05 15.43	0.10 0.31	0.363 0.311	46.3 0.83
4455b	06445560	Chadron Creek at Chadron State Park near Chadron, Nebraska	42 42 27	103 00 33	15.4	14.3 14.3	1.58 29.2	239 83.0	1.28 0.982	2.05 15.43	0.10 0.31	0.280 0.348	46.2 0.83
4455c	06445590	Big Bordeaux Creek near Chadron, Nebraska	42 43 30	102 55 44	9.42	9.01 9.01	1.43 30.3	306 63.7	1.32 1.06	2.05 15.43	0.10 0.31	0.333 1.17	46.3 0.83
4460	06446000	White River near Oglala, South Dakota	43 15 17	102 49 28	2,200	2,160 2,160	3.48 6.98	240 12.2	1.68 0.82	2.02 16.35	0.10 0.39	0.178 0.051	24.2 1.19

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ' ")	Longitude (° ' ")	Published total drainage area (mi^2)	Drainage-basin characteristics TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
4464	06446400	Cain Creek tributary at Imlay, South Dakota	43 42 59	102 23 22	15.8	16.5	3.65	53.5	1.28	2.05	0.08	0.303	28.3
						16.5	21.7	17.9	0.740	15.86	0.78	0.336	2.01
4475	06447500	Little White River near Martin, South Dakota	43 10 00	101 37 46	310	265	4.83	55.7	1.78	2.15	0.12	0.148	13.6
						230	6.02	5.6	0.677	17.08	1.72	0.100	4.27
4480	06448000	Lake Creek above refuge near Tuthill, South Dakota	43 05 07	101 36 03	58	58	--	--	--	2.15	0.10	--	23.3
						23	--	--	--	17.17	3.87	--	8.79
4491	06449100	Little White River near Vetal, South Dakota	43 06 02	101 13 49	590	556	6.13	55.7	2.03	2.15	0.10	0.159	16.8
						415	6.01	8.0	0.688	17.59	2.72	0.144	6.53
4492a	06449250	Spring Creek near St. Francis, South Dakota	43 04 21	101 01 49	57	94.8	4.59	86.4	2.23	2.22	0.08	0.032	21.5
						94.8	6.82	11.6	0.297	18.56	5.21	0.134	12.20
4495	06449500	Little White River near Rosebud, South Dakota	43 19 31	100 52 59	1,020	999	7.99	114	2.41	2.19	0.10	0.130	18.0
						760	5.79	9.0	0.642	18.09	3.01	0.079	7.57
4497	06449700	Little Oak Creek near Mission, South Dakota	43 19 44	100 42 33	2.58	2.42	0.66	54.3	1.12	2.25	0.10	0.414	9.1
						2.42	13.26	0.0	0.596	19.32	0.44	0.000	2.67
4497b	06449750	West Branch Horse Creek near Mission, South Dakota	43 23 35	100 42 32	6.31	6.51	1.67	92.9	1.19	2.25	0.06	0.307	24.7
						6.51	19.2	59.8	1.10	18.96	0.14	0.644	0.63
4505	06450500	Little White River below White River, South Dakota	43 36 05	100 44 57	1,570	1,520	6.66	141	2.31	2.21	0.09	0.200	18.8
						1,310	5.83	10.8	0.759	18.21	2.18	0.077	5.79
4535	06453500	Ponca Creek at Anoka, Nebraska	42 56 25	98 50 30	505	504	5.71	116	1.96	2.39	0.12	0.099	9.5
						504	5.21	8.7	0.608	24.69	0.70	0.075	3.89
4536	06453600	Ponca Creek at Verdel, Nebraska	42 48 39	98 10 34	812	812	9.91	152	2.49	2.41	0.12	0.098	11.6
						812	4.80	8.8	0.624	23.96	0.81	0.058	3.42
4562	06456200	Pebble Creek near Esther, Nebraska	42 35 38	103 03 55	3.07	3.74	3.38	52.5	1.61	2.05	0.14	0.534	13.9
						3.74	19.0	35.2	0.995	15.43	0.36	0.672	1.08
4563	06456300	Pebble Creek near Dunlap, Nebraska	42 29 47	102 58 35	23.5	24.1	5.96	113	1.78	2.05	0.12	0.291	16.9
						24.1	16.7	37.2	1.16	16.66	0.37	0.331	1.13
4564	06456400	Cottonwood Creek near Dunlap, Nebraska	42 29 29	102 58 08	82.2	82.2	2.93	117	1.35	2.05	0.11	0.195	20.2
						82.2	11.9	28.8	0.989	16.90	0.44	0.246	1.36
4572	06457200	Berea Creek near Alliance, Nebraska	42 08 23	102 51 31	32.3	31.3	14.7	49.2	2.03	2.05	0.16	0.383	3.0
						31.3	7.58	17.0	1.37	16.83	0.39	0.346	1.17
4578	06457800	Antelope Creek tributary near Gordon, Nebraska	42 49 57	102 12 09	26.6	25.1	4.76	124.8	1.54	2.13	0.14	0.239	10.5
						25.1	11.9	34.2	1.10	18.55	0.37	0.274	1.10
4591a	06459175	Snake River at Doughboy, Nebraska	42 36 51	101 16 38	405	391	80.0	240	10.6	2.15	0.08	0.231	26.5
						26.0	5.70	14.6	3.17	18.37	5.62	1.13	12.76
4592	06459200	Snake River above Merritt Reservoir, Nebraska	42 35 39	101 02 20	440	426	120	249	12.2	2.16	0.08	0.179	26.6
						28.0	5.24	11.9	3.48	18.65	5.63	0.048	12.76
4609	06460900	Minnechaduza Creek near Kilgore, Nebraska	42 59 10	100 53 55	85	76.5	1.46	103	2.07	2.25	0.08	0.026	17.2
						76.5	8.12	11.9	0.193	18.65	4.48	0.115	10.92

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ' ")	Longitude (° ' ")	Published total drainage area (mi^2)	Drainage-basin characteristics: TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
4625	06462500	Plum Creek at Meadville, Nebraska	42 45 05	99 52 05	600	536 340	4.38 5.31	73.9 13.6	3.03 0.599	2.31 21.50	0.08 4.95	0.056 0.184	19.5 12.17
4630a	06463080	Long Pine Creek near Long Pine, Nebraska	42 37 55	99 40 46	246	230 230	1.03 7.16	119 18.2	1.81 0.239	2.35 22.51	0.08 5.16	0.030 0.153	23.0 12.51
4632	06463200	Bone Creek tributary #2 near Ainsworth, Nebraska	42 34 45	99 48 02	2.18	2.19 2.19	1.26 9.39	34.3 21.2	1.33 1.13	2.35 22.42	0.08 1.62	1.83 0.619	9.1 13.50
4633	06463300	Sand Draw tributary near Ainsworth, Nebraska	42 06 33	99 56 59	1.07	1.08 1.08	-- 10.4	27.8 --	1.54 --	2.35 22.42	0.09 1.09	-- --	2.7 13.36
4635	06463500	Long Pine Creek near Riverview, Nebraska	42 41 20	99 41 20	460	458 458	1.63 6.67	103 19.4	1.78 0.339	2.35 22.38	0.08 4.70	0.052 0.188	21.8 12.47
4645	06464500	Keya Paha River at Wewela, South Dakota	43 01 44	99 46 48	1,070	1,130 1,130	2.76 4.17	82.6 7.6	1.65 0.495	2.30 20.47	1.64 41.61	0.086 0.092	12.6 6.66
4649	06464900	Keya Paha River near Naper, Nebraska	42 55 0 0	99 05 49	1,690	1,690 1,690	4.78 4.57	104 7.4	1.81 0.559	2.32 21.11	0.09 2.31	0.102 0.071	12.5 7.17
4652	06465200	Honey Creek near O'Neill, Nebraska	42 37 28	98 40 24	2.54	2.86 2.86	1.10 6.35	32.8 13.3	1.29 0.692	2.45 23.60	0.08 1.43	0.350 0.404	5.3 13.88
4653	06465300	Camp Creek near O'Neill, Nebraska	42 39 08	98 39 26	1.65	1.60 1.60	1.84 7.42	72.8 14.1	1.58 1.16	2.45 23.10	0.08 1.39	0.627 0.194	5.0 13.82
4653b	06465310	Eagle Creek near Redbird, Nebraska	42 45 51	98 34 13	206	212 212	2.42 8.37	117 20.8	1.51 0.467	2.45 22.83	0.08 2.14	0.071 0.177	11.6 10.80
4654a	06465440	Redbird Creek at Redbird, Nebraska	42 45 36	98 26 26	157	157 157	3.16 8.78	107 21.5	1.54 0.470	2.45 23.30	0.08 1.64	0.051 0.201	8.7 12.10
4656a	06465680	North Branch Verdigre Creek near Verdigre, Nebraska	42 35 51	98 08 03	137	141 141	2.06 6.75	86.1 20.2	1.90 0.287	2.52 23.22	0.10 2.91	0.049 0.235	7.9 10.50
4658a	06465850	Bingham Creek near Niobrara, Nebraska	42 42 12	98 02 54	6.5	6.79 6.79	1.72 16.8	201 49.6	1.92 1.76	2.55 22.01	0.10 0.85	0.736 0.247	20.6 5.14
4665	06466500	Bazile Creek near Niobrara, Nebraska	42 45 25	97 56 50	440	457 457	2.41 4.76	188 13.8	1.98 0.738	2.61 24.50	0.17 1.15	0.153 0.074	10.7 3.69
4669a	06466950	Weigand Creek near Crofton, Nebraska	42 43 36	97 37 55	2.3	2.32 2.32	2.26 34.8	274 51.3	1.36 1.18	2.65 26.32	0.18 0.64	0.431 0.187	8.9 1.95
4782a	06478260	North Branch Dry Creek near Parkston, South Dakota	43 22 12	97 50 51	54.1	54.8 54.8	5.17 7.01	29.8 14.5	1.73 0.550	2.50 23.09	0.18 0.18	0.073 0.487	4.3 0.98
4782b	06478280	South Branch Dry Creek near Parkston, South Dakota	43 21 21	97 49 34	25.8	27.1 27.1	6.17 12.6	45.4 17.7	1.66 0.644	2.55 23.31	0.18 0.16	0.074 0.389	3.7 0.94
4783	06478300	Dry Creek near Parkston, South Dakota	43 22 17	97 49 22	97.2	97.3 97.3	3.23 8.72	37.1 15.2	1.39 0.645	2.52 23.30	0.18 0.17	0.082 0.410	4.0 0.96
4785a	06478518	Bow Creek near St. James, Nebraska	42 43 47	97 08 53	304	302 302	2.50 6.13	176 15.5	1.88 0.638	2.71 25.05	0.18 1.01	0.116 0.089	11.2 2.92

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ' ")	Longitude (° ' ")	Published total drainage area (mi^2)	Drainage-basin characteristics TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
4785b	06478520	West Bow Creek near Fordyce, Nebraska	42 41 30	97 25 06	52.7	53.0 53.0	2.92 10.6	146 25.3	1.75 0.727	2.65 25.90	0.19 0.80	0.170 0.174	9.3 2.03
4788	06478800	Saddlerock Creek near Canton, South Dakota	43 12 19	96 43 36	13.0	12.3 12.3	2.29 9.20	48.9 21.0	1.26 0.440	2.75 23.51	0.18 0.16	0.081 0.430	3.4 0.77
4788b	06478820	Saddlerock Creek tributary near Beresford, South Dakota	43 12 20	96 45 50	2.22	2.07 2.07	3.90 22.1	56.4 31.6	1.45 1.47	2.75 23.51	0.18 0.17	0.483 0.561	4.2 0.79
4788c	06478840	Saddlerock Creek near Beresford, South Dakota	43 12 55	96 49 32	23.1	24.7 24.7	4.98 9.40	47.4 18.8	1.56 0.642	2.75 23.51	0.18 0.15	0.081 0.396	3.1 0.76
6000	06600000	Perry Creek at 38th Street, Sioux City, Iowa	42 32 08	96 24 39	65.1	64.7 64.7	4.82 8.21	187 13.2	1.54 0.739	2.85 26.17	0.21 0.59	0.155 0.071	9.7 1.28
6006	06600600	South Omaha Creek tributary near Walthill, Nebraska	42 06 00	96 29 59	2.64	2.58 2.58	2.20 25.2	167 51.1	1.40 0.964	2.85 27.57	0.20 0.43	0.388 0.305	8.2 1.20
6007	06600700	South Omaha Creek near Walthill, Nebraska	42 07 08	96 29 24	15.1	15.3 15.3	0.688 12.5	212 23.1	1.44 0.749	2.85 27.57	0.20 0.46	0.262 0.109	8.8 1.19
6008	06600800	South Omaha Creek tributary #2 near Walthill, Nebraska	42 08 18	96 28 36	1.65	1.65 1.65	2.29 26.2	236 56.3	1.43 1.42	2.85 27.57	0.21 0.60	1.22 0.238	14.6 1.30
6009	06600900	South Omaha Creek at Walthill, Nebraska	42 08 53	96 28 58	51.2	51.2 51.2	0.491 5.92	300 18.0	1.90 0.629	2.85 27.72	0.20 0.50	0.176 0.060	9.9 1.20
6010	06601000	Omaha Creek at Homer, Nebraska	42 19 28	96 29 42	168	174 174	1.64 5.65	315 11.3	1.59 0.647	2.85 27.58	0.20 0.53	0.155 0.036	12.1 1.21
6067b	06606790	Maple Creek near Alta, Iowa	42 44 56	95 22 16	15.5	16.0 16.0	2.28 10.9	54.2 21.3	1.21 0.385	3.05 29.10	0.19 0.56	0.062 0.392	4.9 1.61
6078	06607800	South Branch Tekamah Creek tributary near Tekamah, Nebraska	41 45 15	96 17 10	4.08	3.91 3.91	0.889 23.2	193 50.1	1.31 1.10	2.95 29.33	0.20 0.46	0.767 0.260	13.9 1.08
6079	06607900	South Branch Tekamah Creek near Tekamah, Nebraska	41 46 00	96 16 59	9.73	9.58 9.58	0.863 4.21	57.8 7.7	1.50 0.717	2.95 29.33	0.19 0.41	0.313 0.134	14.2 0.96
6080	06608000	Tekamah Creek at Tekamah, Nebraska	41 46 30	96 13 09	23.0	22.9 22.9	2.04 12.4	224 24.7	1.50 0.800	2.95 29.33	0.19 0.39	0.305 0.110	14.6 0.91
6085	06608500	Soldier River at Pisgah, Iowa	41 49 51	95 55 50	407	410 410	5.09 4.29	289 9.0	1.65 0.336	3.05 29.64	0.21 0.59	0.044 0.031	11.7 1.28
6086	06608600	New York Creek near Spiker, Nebraska	41 38 00	96 20 00	1.75	1.85 1.85	3.28 17.7	137 25.0	1.42 1.42	2.95 29.33	0.20 0.60	0.541 0.182	11.6 1.28
6087	06608700	New York Creek tributary near Spiker, Nebraska	41 38 23	96 18 27	1.55	1.55 1.55	3.49 17.4	156 27.2	1.28 1.55	2.95 29.33	0.21 0.60	1.29 0.174	13.0 1.29
6088	06608800	New York Creek north of Spiker, Nebraska	41 37 31	96 18 34	6.50	6.66 6.66	2.41 15.7	159 31.5	1.26 1.11	2.95 29.33	0.21 0.60	0.450 0.198	13.2 1.29
6089	06608900	New York Creek east of Spiker, Nebraska	41 36 52	96 16 14	13.9	14.2 14.2	2.45 13.1	162 29.5	1.37 1.32	2.95 29.49	0.21 0.60	0.634 0.183	13.5 1.29

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ' ")	Longitude (° ' ")	Published total drainage area (mi^2)	Drainage-basin characteristics							
						TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
6090	06609000	New York Creek at Herman, Nebraska	41 39 39	96 12 09	25.4	26.1 26.1	1.82 11.2	232 24.9	1.72 1.31	2.95 29.67	0.21 0.60	0.537 0.107	14.0 1.30
6106	06610600	Mosquito Creek at Neola, Iowa	41 26 35	95 36 41	131	130 130	8.67 5.44	233 7.8	1.96 0.333	3.05 32.05	0.21 0.59	0.023 0.033	11.2 1.29
6107	06610700	Big Papillion Creek near Orum, Nebraska	41 32 44	96 13 09	8.52	8.52 8.52	3.05 10.4	140 14.1	1.53 0.827	2.95 30.07	0.20 0.60	0.352 0.100	9.6 1.27
6524	06652400	Watson Draw near Lost Springs, Wyoming	42 45 19	104 57 29	6.95	6.41 6.41	2.39 38.8	143 100	1.15 0.925	1.65 14.25	0.12 0.65	0.312 0.701	19.2 1.58
6775	06677500	Horse Creek near Lyman, Nebraska	41 56 21	103 59 12	1,570	1,700 1,530	5.42 18.1	138 27.4	1.90 0.500	1.70 15.12	0.11 1.51	0.063 0.198	14.9 4.18
6870	06687000	Blue Creek near Lewellen, Nebraska	41 20 07	102 10 21	1,190	1,140 106	10.3 4.05	138 11.8	7.96 0.502	2.06 16.39	0.08 5.26	0.113 0.086	18.2 11.79
6876	06687600	Ash Hollow near Oshkosh, Nebraska	41 15 05	102 20 28	54.9	45.7 45.7	1.84 5.09	32.8 13.0	1.37 0.398	2.05 18.41	0.19 0.58	0.087 0.397	2.4 1.26
6920	06692000	Birdwood Creek near Hershey, Nebraska	41 13 19	101 04 11	940	963. 78.0	10.8 4.81	173 12.6	7.26 0.864	2.20 18.93	0.08 5.75	0.103 0.073	20.8 12.77
7626	06762600	Lodgepole Creek tributary #2 near Albin, Wyoming	41 19 10	104 04 49	5.69	5.67 5.67	-- 16.8	35.2 --	1.22 --	1.79 18.00	0.13 0.53	-- --	7.6 4.67
7632	06763200	Lodgepole Creek tributary near Sunol, Nebraska	41 10 00	102 43 25	15.6	18.1 18.1	2.40 10.7	47.9 20.5	1.67 0.516	2.05 17.29	0.14 0.47	0.166 0.428	8.5 1.89
7671	06767100	South Fork Plum Creek tributary near Farnam, Nebraska	40 42 06	100 15 21	9.81	10.4 10.4	4.89 10.2	102 16.9	1.88 1.11	2.35 20.99	0.20 0.60	0.192 0.165	13.7 1.30
7672	06767200	North Fork Plum Creek tributary near Farnam, Nebraska	40 42 18	100 14 23	1.83	1.83 1.83	4.35 15.2	64.4 11.6	1.45 1.65	2.35 21.01	0.20 0.60	0.547 0.180	13.7 1.30
7673	06767300	Plum Creek tributary at Farnam, Nebraska	40 42 08	100 12 52	19.8	19.3 19.3	4.24 9.74	87.7 14.5	1.73 1.09	2.35 21.17	0.20 0.60	0.259 0.165	13.8 1.30
7674	06767400	North Plum Creek near Farnam, Nebraska	40 43 54	100 09 56	38.3	40.5 40.5	4.61 6.20	139 13.1	1.99 0.694	2.35 21.57	0.20 0.60	0.148 0.094	15.4 1.30
7674b	06767410	Plum Creek near Farnam, Nebraska	40 41 13	100 08 41	80.4	80.6 80.6	3.63 5.93	126 12.6	1.70 0.792	2.35 21.50	0.20 0.60	0.161 0.100	14.2 1.30
7675	06767500	Plum Creek near Smithfield, Nebraska	40 39 39	99 41 59	229	215 215	9.75 4.47	93.2 6.4	2.53 0.841	2.37 21.82	0.20 0.60	0.200 0.069	11.9 1.32
7680b	06768050	Buffalo Creek tributary #1 near Buffalo, Nebraska	41 00 44	99 48 48	2.08	2.09 2.09	1.07 8.69	35.7 62.2	1.55 1.77	2.35 23.54	0.20 0.60	1.44 1.74	21.2 1.30
7681	06768100	East Buffalo Creek near Buffalo, Nebraska	41 00 17	99 50 14	5.21	5.22 5.22	5.86 14.1	140 23.5	1.84 1.50	2.35 23.54	0.20 0.60	0.959 0.168	16.2 1.30
7682	06768200	Buffalo Creek at Buffalo, Nebraska	40 59 20	99 49 51	33.5	32.7 32.7	2.31 8.67	124 16.4	1.87 1.34	2.35 23.54	0.20 0.58	0.674 0.132	19.3 1.28

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ′ ″)	Longitude (° ′ ″)	Published total drainage area (mi²)	Drainage-basin characteristics							
						TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
7684	06768400	West Buffalo Creek near Buffalo, Nebraska	40 59 21	99 52 21	17.1	17.0 17.0	5.08 12.1	150 24.7	1.93 1.58	2.35 23.50	0.20 0.59	0.881 0.165	25.5 1.29
7685	06768500	Buffalo Creek near Darr, Nebraska	40 54 05	99 50 05	63	64.8 64.8	4.47 8.03	121 17.4	1.90 1.44	2.35 23.54	0.20 0.59	0.617 0.145	21.7 1.30
7690	06769000	Buffalo Creek near Overton, Nebraska	40 44 00	99 30 20	175	190 190	9.88 5.96	106 8.6	2.13 1.18	2.39 23.05	0.20 0.62	0.305 0.082	15.8 1.48
7692	06769200	Elm Creek near Sumner, Nebraska	40 51 24	99 32 21	14.94	14.9 14.9	2.97 4.82	34.2 18.7	1.59 0.649	2.45 21.99	0.20 0.60	0.268 0.547	16.5 1.30
7693	06769300	Elm Creek tributary #2 near Overton, Nebraska	40 51 02	99 32 21	5.62	5.65 5.65	-- 4.18	34.4 --	1.59 --	2.45 21.99	0.20 0.60	-- --	20.2 1.30
7695	06769500	Elm Creek near Overton, Nebraska	40 50 40	99 30 20	31.0	33.0 33.0	2.31 3.84	37.6 16.3	1.60 0.528	2.45 21.99	0.20 0.60	0.182 0.433	17.2 1.30
7706	06770600	Wood River tributary near Lodi, Nebraska	41 11 57	99 50 21	2.02	2.05 2.05	2.77 18.1	77.4 28.9	1.50 1.97	2.35 23.54	0.20 0.60	1.46 0.374	23.3 1.34
7707	06770700	Wood River near Lodi, Nebraska	41 10 14	99 48 17	12.9	11.0 11.0	2.66 10.8	102 21.4	2.38 1.86	2.35 23.54	0.20 0.60	0.816 0.211	21.7 1.36
7708	06770800	Wood River near Oconto, Nebraska	41 09 46	99 47 37	26.4	24.6 24.6	1.42 8.84	48.2 20.3	1.94 1.78	2.35 23.54	0.20 0.60	0.814 0.422	21.0 1.35
7709	06770900	Wood River at Oconto, Nebraska	41 08 49	99 45 26	44.8	42.8 42.8	1.51 8.01	136 18.7	1.82 1.67	2.35 23.54	0.20 0.60	0.771 0.137	21.4 1.35
7709b	06770910	Wood River near Lomax, Nebraska	41 03 39	99 40 50	79.6	76.3 74.6	2.74 7.31	116 10.8	1.88 2.16	2.36 23.54	0.20 0.60	0.978 0.093	20.3 1.36
7710	06771000	Wood River near Riverdale, Nebraska	40 47 56	99 11 47	379	369 369	6.08 4.20	94.5 7.0	2.44 0.992	2.43 22.76	0.20 0.60	0.339 0.075	16.9 1.35
7715	06771500	Wood River near Gibbon, Nebraska	40 46 17	98 47 51	572	526 526	12.4 3.68	79.4 6.0	2.83 0.950	2.44 23.36	0.20 0.59	0.281 0.075	14.4 1.36
7720	06772000	Wood River near Alda, Nebraska	40 51 10	98 28 19	599	600 600	13.0 3.64	72.3 5.8	3.12 0.965	2.45 23.54	0.20 0.59	0.265 0.080	13.3 1.42
7755	06775500	Middle Loup River at Dunning, Nebraska	41 49 49	100 05 59	1,830	1,840 79.0	122 3.98	173 12.0	13.1 3.21	2.20 19.75	0.08 5.64	0.278 0.069	21.3 12.72
7759	06775900	Dismal River near Thedford, Nebraska	41 46 45	100 31 29	966	966 30.0	82.6 4.06	286 13.5	17.8 3.37	2.18 18.54	0.08 5.72	0.300 0.047	26.8 12.80
7765	06776500	Dismal River at Dunning, Nebraska	41 49 23	100 06 05	2,040	2,040 45.0	115 3.49	242 11.2	19.1 3.49	2.22 19.84	0.08 5.80	0.267 0.046	25.2 12.85
7770	06777000	Middle Loup River near Milburn, Nebraska	41 49 02	99 58 15	3,690	3,960 360	34.0 3.20	220 11.6	7.83 1.17	2.21 19.84	0.08 5.73	0.100 0.053	23.3 12.79
7775	06777500	Middle Loup River at Walworth, Nebraska	41 39 20	99 33 59	4,340	4,320 433	38.8 3.09	211 10.8	8.19 1.40	2.23 20.18	0.08 5.59	0.196 0.051	23.1 12.49

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ' ")	Longitude (° ' ")	Published total drainage area (mi^2)	Drainage-basin characteristics: TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
7776	06777600	Lillian Creek tributary near Broken Bow, Nebraska	41 30 12	99 39 29	2.02	2.01 2.01	1.36 6.21	11.7 7.3	1.44 2.40	2.35 22.57	0.20 0.60	1.99 0.624	26.8 1.30
7777	06777700	Lillian Creek near Broken Bow, Nebraska	41 30 35	99 39 26	4.77	4.71 4.71	1.85 17.4	134 28.1	1.62 1.22	2.35 22.63	0.20 0.60	1.06 0.210	26.4 1.30
7778	06777800	Lillian Creek tributary near Walworth, Nebraska	41 37 32	99 34 12	2.04	2.05 2.05	3.58 18.4	185 53.3	1.68 1.36	2.45 23.54	0.20 0.60	0.488 0.288	23.6 1.34
7780	06778000	Middle Loup River at Sargent, Nebraska	41 37 35	99 22 15	4,480	4,490 475	41.2 3.02	208 10.4	8.28 1.57	2.23 20.30	0.09 5.43	0.284 0.050	22.8 12.15
7790	06779000	Middle Loup River at Arcadia, Nebraska	41 25 19	99 08 09	5,040	5,020 820	29.5 3.10	191 9.3	6.63 1.30	2.25 20.67	0.09 5.19	0.310 0.049	22.5 11.62
7800	06780000	Middle Loup River at Rockville, Nebraska	41 06 38	98 50 19	5,310	5,310 1,090	24.1 3.02	191 9.1	6.45 1.30	2.26 20.88	0.10 4.99	0.340 0.048	22.4 11.18
7825	06782500	South Loup River at Ravenna, Nebraska	41 00 41	98 54 44	1,570	1,540 842	17.0 3.09	170 6.0	4.41 1.34	2.37 22.61	0.16 2.31	0.445 0.035	18.4 5.40
7826	06782600	South Branch Mud Creek tributary near Broken Bow, Nebraska	41 25 56	99 42 08	0.40	0.41 0.41	4.45 18.3	21.9 23.6	1.59 3.64	2.35 22.50	0.18 1.57	2.46 1.08	6.2 3.75
7827	06782700	South Branch Mud Creek at Broken Bow, Nebraska	41 24 07	99 38 51	9.87	94.8 9.87	8.88 8.25	97.4 23.5	5.64 5.13	2.35 23.04	0.17 1.95	2.63 0.241	11.7 4.43
7828	06782800	North Branch Mud Creek at Broken Bow, Nebraska	41 24 35	99 39 44	15.5	15.8 10.8	2.77 12.3	109 41.0	2.24 1.06	2.35 22.58	0.20 0.76	0.370 0.378	10.4 1.81
7829	06782900	Mud Creek tributary near Broken Bow, Nebraska	41 22 31	99 38 16	5.90	5.93 5.93	2.29 21.4	155 66.0	1.63 1.11	2.43 22.57	0.20 0.76	0.506 0.427	25.6 1.66
7835	06783500	Mud Creek near Sweetwater, Nebraska	41 02 14	98 59 34	707	711 655	4.69 4.82	146 7.8	2.28 1.31	2.43 23.71	0.20 0.79	0.508 0.054	18.6 1.81
7840	06784000	South Loup River at St. Michael, Nebraska	41 01 53	98 44 24	2,320	2,320 1,590	8.33 2.98	172 5.9	3.52 1.31	2.40 23.04	0.17 1.83	0.463 0.035	18.3 4.28
7847	06784700	Turkey Creek near Farwell, Nebraska	41 13 14	98 40 45	27.2	27.3 27.3	5.68 7.12	122 15.8	1.93 1.68	2.53 24.66	0.20 0.61	1.03 0.130	13.4 1.33
7848	06784800	Turkey Creek near Dannebrog, Nebraska	41 09 23	98 33 21	66.2	65.7 65.7	5.96 6.18	85.1 12.4	1.89 1.68	2.54 24.36	0.20 0.61	0.928 0.145	12.6 1.32
7850	06785000	Middle Loup River at St. Paul, Nebraska	41 11 54	98 26 50	8,090	8,080 3,130	8.58 2.75	187 6.3	4.13 1.28	2.32 21.74	0.12 3.87	0.405 0.034	20.6 8.74
7860	06786000	North Loup River at Taylor, Nebraska	41 46 36	99 22 45	2,350	2,350 186	91.6 3.66	125 9.1	9.82 2.07	2.29 21.70	0.08 5.59	0.237 0.073	23.4 12.62
7870	06787000	Calamus River near Harrop, Nebraska	41 56 48	99 23 09	693	693 70.0	47.6 3.22	88.6 9.3	7.72 1.50	2.36 24.14	0.08 5.68	0.114 0.104	25.5 12.81
7875	06787500	Calamus River near Burwell, Nebraska	41 48 34	99 10 55	994	994 100	46.2 2.90	98.9 7.9	8.13 1.45	2.39 23.80	0.08 5.71	0.120 0.080	25.1 12.81

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ' ")	Longitude (° ' ")	Published total drainage area (mi^2)	Drainage-basin characteristics							
						TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
7885	06788500	North Loup River at Ord, Nebraska	41 36 26	98 55 16	3,760	3,760 700	42.6 3.36	122 8.0	6.28 1.41	2.33 22.38	0.09 5.19	0.320 0.066	23.0 11.74
7889a	06788988	Mira Creek near North Loup, Nebraska	41 30 09	98 47 47	65.8	65.8 65.8	1.21 9.10	121 9.2	1.61 1.17	2.45 24.12	0.20 0.60	0.517 0.076	11.6 1.37
7890	06789000	North Loup River at Scotia, Nebraska	41 27 30	98 42 39	4,100	3,970 910	39.0 3.39	131 8.2	5.80 1.36	2.34 22.47	0.10 4.96	0.336 0.062	22.5 11.23
7891	06789100	Davis Creek tributary near North Loup, Nebraska	41 24 21	98 54 07	2.29	2.31 2.31	1.02 19.8	112 24.3	1.32 1.11	2.45 24.72	0.20 0.60	0.865 0.216	26.8 1.30
7892	06789200	Davis Creek tributary #2 near North Loup, Nebraska	41 25 45	98 54 15	6.79	6.79 6.79	1.93 15.2	113 23.5	1.38 1.40	2.45 24.72	0.20 0.60	0.737 0.209	22.9 1.32
7893	06789300	Davis Creek near North Loup, Nebraska	41 24 44	98 52 00	21.1	21.1 21.1	1.81 9.84	135 18.9	1.43 1.35	2.45 24.72	0.20 0.60	0.616 0.140	23.6 1.32
7894	06789400	Davis Creek southwest of North Loup, Nebraska	41 24 32	98 48 32	31.2	31.3 31.3	2.03 9.58	161 19.4	1.54 1.25	2.45 24.64	0.20 0.60	0.543 0.120	22.5 1.32
7895	06789500	Davis Creek near Cotesfield, Nebraska	41 23 50	98 41 00	94.0	81.5 81.5	2.77 2.31	30.0 5.3	1.73 1.13	2.48 24.50	0.20 0.60	0.419 0.176	23.2 1.32
7905	06790500	North Loup River near St. Paul, Nebraska	41 15 34	98 26 50	4,290	4,300 1,240	23.7 3.33	139 7.5	5.37 1.32	2.35 22.63	0.10 4.65	0.369 0.054	21.9 10.54
7906	06790600	East Branch Spring Creek tributary near Wolbach, Nebraska	41 27 28	98 25 44	1.52	1.50 1.50	4.56 13.5	84.4 21.5	1.73 1.76	2.55 25.61	0.20 0.60	1.33 0.255	16.2 1.30
7907	06790700	West Branch Spring Creek at Brayton, Nebraska	41 27 27	98 28 38	19.5	19.5 19.5	4.56 9.75	138 17.9	1.72 1.38	2.55 25.61	0.20 0.61	0.770 0.130	11.5 1.35
7908	06790800	West Branch Spring Creek near Wolbach, Nebraska	41 26 00	98 26 04	36.9	36.9 36.9	3.87 8.08	121 17.1	1.62 1.42	2.55 25.61	0.20 0.61	0.758 0.142	12.1 1.34
7909	06790900	Mary’s Creek at Wolbach, Nebraska	41 24 00	98 23 39	7.63	7.57 7.57	2.27 14.5	165 22.4	1.53 1.40	2.55 25.61	0.20 0.60	0.793 0.136	15.9 1.30
7911	06791100	Spring Creek near Cushing, Nebraska	41 17 08	98 22 42	184	188 188	5.06 5.99	165 9.6	1.74 1.16	2.55 25.37	0.18 1.62	0.464 0.058	11.9 3.60
7915	06791500	Cedar River near Spalding, Nebraska	41 42 41	98 26 48	762	752 50.0	56.4 3.06	91.2 7.2	8.20 3.20	2.48 23.43	0.08 5.57	0.600 0.079	17.6 12.48
7920	06792000	Cedar River near Fullerton, Nebraska	41 23 45	98 00 14	1,220	1,220 480	13.6 3.09	111 6.3	3.77 1.09	2.52 24.51	0.12 3.94	0.310 0.056	15.0 8.92
7935	06793500	Beaver Creek at Loretto, Nebraska	41 45 50	98 04 50	311	372 209	3.91 3.05	61.6 6.4	2.88 0.280	2.54 24.71	0.09 4.74	0.033 0.103	11.9 11.21
7939a	06793995	Skeedee Creek tributary near Genoa, Nebraska	41 29 46	97 52 23	0.59	0.59 0.59	3.10 13.6	43.3 26.2	1.52 2.29	2.65 27.83	0.18 0.27	1.71 0.604	3.9 0.80
7940	06794000	Beaver Creek at Genoa, Nebraska	41 26 31	97 44 10	677	677 429	7.32 3.11	108 5.6	2.95 0.808	2.59 26.09	0.14 2.98	0.207 0.051	10.4 7.03

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ' ")	Longitude (° ' ")	Published total drainage area (mi^2)	Drainage-basin characteristics							
						TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
7945	06794500	Loup River at Columbus, Nebraska	41 25 05	97 21 45	15,200	15,200 6,230	4.12 2.82	177 7.4	3.55 1.18	2.37 22.68	0.12 3.93	0.348 0.042	19.4 8.94
7947a	06794710	Bone Creek near David City, Nebraska	41 16 41	97 02 51	8.75	8.75 8.75	1.18 12.7	149 31.1	1.33 0.919	2.85 29.83	0.19 0.23	0.229 0.208	7.4 1.02
7950	06795000	Shell Creek at Newman Grove, Nebraska	41 44 30	97 45 00	122	121 121	2.84 6.26	153 13.3	1.60 0.862	2.65 27.27	0.20 0.55	0.322 0.087	8.6 1.29
7955	06795500	Shell Creek near Columbus, Nebraska	41 31 32	97 16 54	294	294 294	10.4 4.49	150 6.5	2.28 0.913	2.69 27.36	0.20 0.53	0.316 0.043	7.7 1.26
7969b	06796978	Holt Creek near Emmet, Nebraska	42 25 19	98 51 46	--	289 289	4.75 3.86	76.0 11.6	2.65 0.195	2.42 23.41	0.08 5.37	0.010 0.153	18.0 12.60
7975	06797500	Elkhorn River at Ewing, Nebraska	42 16 03	98 20 10	1,400	1,420 740	6.25 3.19	53.6 5.5	2.73 0.481	2.44 23.28	0.08 5.00	0.042 0.103	11.1 12.44
7980	06798000	South Fork Elkhorn River at Ewing, Nebraska	42 14 29	98 23 53	314	292 204	6.48 4.51	51.8 8.6	2.731 0.397	2.46 22.49	0.07 5.14	0.034 0.166	8.4 12.55
7983	06798300	Clearwater Creek near Clearwater, Nebraska	42 08 20	98 12 9	210	182 150	2.46 3.60	41.0 8.3	1.89 0.381	2.55 24.19	0.09 4.58	0.080 0.203	7.6 11.33
7985	06798500	Elkhorn River at Neligh, Nebraska	42 07 19	98 01 40	2200	2290 1200	6.06 3.03	54.9 5.8	2.63 0.521	2.47 23.27	0.08 4.87	0.058 0.106	9.9 12.10
7990	06799000	Elkhorn River at Norfolk, Nebraska	42 00 14	97 25 30	2,790	2,860 1,790	7.13 2.75	70.8 5.2	2.87 0.508	2.50 23.73	0.10 4.26	0.075 0.074	9.5 10.61
7990b	06799080	Willow Creek near Foster, Nebraska—considerable non-contributing drainage area apparent on 1:24,000-scale topographic maps	42 10 37	97 40 01	137	139 <u>139</u>	<u>3.84</u> 4.79	58.9 8.9	<u>1.85</u> <u>0.187</u>	2.62 24.04	0.11 3.71	<u>0.007</u> 0.151	6.5 9.54
7991	06799100	North Fork Elkhorn River near Pierce, Nebraska	42 10 44	97 29 03	700	701 670	1.18 2.70	79.3 6.0	1.93 0.386	2.65 24.83	0.15 2.20	0.052 0.076	6.2 6.09
7991b	06799190	South Fork Union Creek tributary near Cornlea, Nebraska	41 42 00	97 34 22	6.54	6.51 6.51	0.69 4.28	48.8 6.5	1.27 1.15	2.75 25.90	0.18 0.29	0.768 0.133	4.3 0.84
7992a	06799230	Union Creek at Madison, Nebraska	41 49 51	97 27 18	174	174 174	1.25 4.22	71.7 8.1	1.61 0.416	2.71 25.88	0.19 0.57	0.063 0.113	7.6 1.37
7993a	06799350	Elkhorn River at West Point, Nebraska	41 50 11	96 43 32	5,100	4,680 4,100	6.32 2.38	91.2 4.7	2.56 0.453	2.59 24.55	0.12 3.21	0.080 0.052	8.4 8.14
7993b	06799385	Pebble Creek at Scribner, Nebraska	41 39 34	96 40 59	204	206 206	3.10 6.06	108. 12.8	1.42 0.834	2.85 29.26	0.19 0.39	0.219 0.118	6.8 1.18
7994a	06799423	North Logan Creek near Laurel, Nebraska	42 28 00	97 02 55	25.3	25.4 25.4	3.78 6.37	86.1 7.9	1.59 0.569	2.75 25.73	0.19 0.68	0.079 0.092	7.2 1.87
7994b	06799450	Logan Creek at Pender, Nebraska	42 06 39	96 41 59	731	736 736	2.82 3.42	148 6.5	1.69 0.593	2.77 26.75	0.19 0.56	0.106 0.044	7.5 1.47
7995	06799500	Logan Creek near Uehling, Nebraska	41 42 50	96 31 15	1,030	1,020 1,020	5.71 2.79	146 5.2	2.12 0.612	2.80 27.16	0.19 0.51	0.107 0.035	7.0 1.37

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ′ ″)	Longitude (° ′ ″)	Published total drainage area (mi^2)	TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
7998a	06799850	Pond Creek near Schuyler, Nebraska	41 31 15	97 03 33	0.54	0.52 0.52	1.13 17.2	69.9 0.0	1.19 1.55	2.85 27.73	0.20 0.44	1.91 0.000	8.6 1.26
8000	06800000	Maple Creek near Nickerson, Nebraska	41 32 45	96 30 05	450	369 369	6.65 4.07	156 6.6	2.02 0.767	2.82 25.77	0.20 0.46	0.201 0.042	7.7 1.18
8003a	06800350	Elkhorn River tributary near Nickerson, Nebraska	41 30 34	96 33 06	6.53	6.21 6.21	1.56 6.26	43.5 9.9	1.42 0.637	2.95 30.42	0.19 0.21	0.161 0.229	4.1 1.21
8005	06800500	Elkhorn River at Waterloo, Nebraska	41 17 25	96 17 04	6,900	6,950 5,870	6.59 2.27	105 4.4	2.57 0.588	2.67 25.77	0.15 2.34	0.117 0.042	7.8 6.00
8030	06803000	Salt Creek at Roca, Nebraska	40 39 29	96 39 54	167	167 167	1.25 4.05	168 10.4	1.64 0.779	3.03 30.22	0.16 0.15	0.257 0.062	7.0 0.44
8035b	06803510	Little Salt Creek near Lincoln, Nebraska	40 53 35	96 40 51	43.6	43.6 43.6	4.12 9.23	110 19.8	1.67 1.50	2.95 28.59	0.18 0.20	0.643 0.181	10.6 0.78
8035c	06803520	Stevens Creek near Lincoln, Nebraska	40 51 24	96 35 41	47.8	47.8 47.8	2.53 8.90	120 17.9	1.40 0.812	3.05 31.01	0.18 0.22	0.272 0.149	7.1 0.80
8035d	06803530	Rock Creek near Ceresco, Nebraska	41 00 56	96 32 39	119	120 120	2.87 6.59	106 11.9	1.57 1.25	2.95 30.48	0.19 0.24	0.502 0.112	8.3 0.92
8035e	06803540	Dee Creek near Alvo, Nebraska	40 54 52	96 25 04	7.88	7.90 7.90	2.30 14.0	109 27.6	1.34 0.892	3.05 30.51	0.19 0.23	0.380 0.254	8.0 1.03
8035g	06803570	Dunlap Creek tributary near Weston, Nebraska	41 12 24	96 48 46	0.43	0.42 0.42	2.35 23.2	142 28.6	1.35 2.54	2.95 28.24	0.17 0.18	2.38 0.202	12.8 0.66
8036	06803600	North Fork Wahoo Creek near Prague, Nebraska	41 15 37	96 48 47	15.2	15.4 15.4	1.87 14.5	191 30.8	1.37 1.50	2.88 31.65	0.18 0.22	0.778 0.162	9.4 0.87
8037	06803700	North Fork Wahoo Creek tributary near Weston, Nebraska	41 13 00	96 49 00	8.90	9.03 9.03	1.86 17.2	147 42.3	1.47 1.25	2.94 28.45	0.17 0.19	0.664 0.288	11.8 0.67
8039	06803900	North Fork Wahoo Creek at Weston, Nebraska	41 12 19	96 43 39	43.3	43.5 43.5	2.99 10.9	182 21.7	1.53 1.37	2.92 32.37	0.18 0.23	0.690 0.119	9.3 0.82
8040	06804000	Wahoo Creek at Ithaca, Nebraska	41 8 40	96 32 09	271	273 268	1.01 5.94	148 11.6	1.54 1.03	2.93 32.77	0.19 0.25	0.369 0.078	7.1 0.95
8041	06804100	Silver Creek near Cedar Bluffs, Nebraska	41 22 48	96 35 15	7.00	7.01 6.70	1.03 8.30	61.3 23.2	1.51 0.654	2.95 30.42	0.19 0.29	0.299 0.379	4.2 1.32
8042	06804200	Silver Creek near Colon, Nebraska	41 18 25	96 33 47	30.3	30.0 23.4	3.44 4.07	45.1 5.8	1.98 0.832	2.95 30.56	0.19 0.21	0.299 0.129	2.9 1.07
8043	06804300	Silver Creek tributary near Colon, Nebraska	41 21 02	96 38 44	10.3	10.2 7.30	4.26 3.50	12.8 10.9	1.86 0.770	2.95 30.43	0.19 0.18	0.137 0.849	1.6 1.02
8044	06804400	Silver Creek tributary at Colon, Nebraska	41 17 54	96 36 17	17.6	17.6 14.3	6.60 3.20	14.2 9.1	2.30 0.707	2.95 31.75	0.19 0.18	0.140 0.642	1.6 1.02
8045	06804500	Silver Creek at Ithaca, Nebraska	41 09 43	96 31 38	80	77.0 64.1	6.10 4.29	33.1 7.4	2.13 0.708	2.95 32.37	0.19 0.19	0.156 0.224	2.1 1.04

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ' ")	Longitude (° ' ")	Published total drainage area (mi^2)	Drainage-basin characteristics							
						TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
8050	06805000	Salt Creek near Ashland, Nebraska	41 02 49	96 20 30	1640	1640 1640	1.71 0.81	27.1 1.4	1.63 1.04	2.97 30.34	0.18 0.24	0.372 0.052	7.4 0.88
8055b	06805510	Buffalo Creek near Gretna, Nebraska	41 06 12	96 13 30	4.29	4.32 4.32	0.700 10.6	95.5 26.6	1.35 1.23	3.05 29.66	0.20 0.60	0.695 0.278	9.3 1.27
8064	06806400	Weeping Water Creek at Elmwood, Nebraska	40 50 59	96 16 59	20.8	20.6 20.6	1.32 5.72	86.5 14.9	1.28 1.02	3.05 32.79	0.18 0.18	0.388 0.173	7.0 0.77
8064b	06806420	Stove Creek near Elmwood, Nebraska	40 48 59	96 18 00	5.23	5.28 5.28	0.761 9.44	52.8 29.4	1.28 0.423	3.05 32.87	0.17 0.13	0.189 0.557	6.0 0.47
8064c	06806440	Stove Creek at Elmwood, Nebraska	40 50 31	96 17 36	10.3	10.3 10.3	1.53 7.39	76.5 22.0	1.41 0.634	3.05 32.89	0.17 0.15	0.194 0.287	6.2 0.56
8064d	06806460	Weeping Water Creek at Weeping Water, Nebraska	40 51 17	96 07 10	80.1	80.2 80.2	1.74 5.60	117 14.0	1.64 0.951	3.05 32.91	0.19 0.24	0.337 0.119	6.9 0.95
8064e	06806470	Weeping Water Creek tributary near Weeping Water, Nebraska	40 51 46	96 06 43	0.73	0.73 --	-- --	-- --	-- --	3.05 --	0.19 0.24	-- --	7.7 1.04
8065	06806500	Weeping Water Creek at Union, Nebraska	40 47 35	95 54 39	241	241 241	2.52 4.00	153 12.0	1.80 0.769	3.06 32.81	0.19 0.25	0.220 0.078	7.1 0.89
8077a	06807720	Middle Silver Creek near Avoca, Iowa	41 28 33	95 28 05	3.21	3.38 3.38	2.05 14.4	168 5.3	1.23 0.739	3.05 32.46	0.20 0.59	0.296 0.031	9.4 1.33
8077b	06807760	Middle Silver Creek near Oakland, Iowa	41 19 27	95 33 18	25.7	25.9 25.9	8.70 6.60	187 9.8	2.01 0.589	3.05 32.33	0.20 0.59	0.039 0.052	9.5 1.34
8077c	06807780	Middle Silver Creek at Treynor, Iowa	41 14 36	95 36 53	42.7	42.8 42.8	11.0 5.90	197 9.8	2.11 0.576	3.05 32.33	0.20 0.59	0.047 0.050	9.5 1.34
8100b	06810060	Honey Creek near Peru, Nebraska	40 26 38	95 45 11	3.43	3.43 3.43	0.639 16.0	80.8 42.2	1.25 0.841	3.15 31.73	0.20 0.60	0.583 0.523	10.4 1.28
8101	06810100	Hooper Creek tributary near Palmyra, Nebraska	40 46 09	96 25 22	8.00	8.11 8.11	3.49 11.4	96.0 21.9	1.48 1.06	3.05 32.26	0.17 0.18	0.493 0.228	7.8 0.67
8102	06810200	Hooper Creek near Palmyra, Nebraska	40 43 00	96 19 00	57.6	59.6 59.6	2.29 6.03	111 15.9	1.71 1.02	3.05 32.10	0.16 0.15	0.369 0.143	6.6 0.45
8103	06810300	Wolf Creek near Syracuse, Nebraska	40 40 00	96 13 00	25.4	26.3 26.3	3.79 10.6	128 21.4	1.52 1.06	3.05 30.69	0.16 0.18	0.494 0.167	6.7 0.44
8105	06810500	Little Nemaha River near Syracuse, Nebraska	40 37 57	96 10 45	218	209 209	2.30 5.24	121 12.5	1.59 0.931	3.05 31.69	0.16 0.17	0.301 0.103	6.5 0.44
8115	06811500	Little Nemaha River at Auburn, Nebraska	40 23 32	95 48 46	793	793 793	2.76 3.20	155 6.6	1.74 0.771	3.10 31.65	0.16 0.19	0.207 0.042	6.2 0.54
8130	06813000	Tarkio River at Fairfax, Missouri	40 20 20	95 24 32	508	479 479	8.74 3.17	145 4.7	1.94 0.423	3.20 34.50	0.19 0.49	0.040 0.032	8.8 1.09
8140	06814000	Turkey Creek near Seneca, Kansas	39 56 52	96 06 29	276	277 277	4.43 5.10	131 8.4	1.59 0.879	3.21 32.35	0.15 0.19	0.268 0.064	7.6 0.45

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ' ")	Longitude (° ' ")	Published total drainage area (mi^2)	Drainage-basin characteristics TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
8145	06814500	North Fork Big Nemaha River at Humboldt, Nebraska	40 09 24	95 56 39	548	549 549	5.12 3.01	153 7.8	2.07 0.739	3.13 31.70	0.16 0.19	0.191 0.051	7.3 0.48
8150	06815000	Big Nemaha River at Falls City, Nebraska	40 01 59	95 35 30	1,340	1,340 1,340	4.46 2.55	149 6.2	2.02 0.808	3.20 32.54	0.15 0.18	0.215 0.042	7.6 0.46
8155	06815500	Muddy Creek at Verdon, Nebraska	40 08 40	95 43 09	186	186 186	3.84 4.73	93.4 9.2	1.71 0.821	3.21 32.57	0.16 0.17	0.177 0.098	6.2 0.48
8155b	06815510	Temple Creek near Falls City, Nebraska	40 08 36	95 36 27	2.99	3.03 3.03	2.38 15.6	90.7 39.0	1.36 0.927	3.25 34.08	0.20 0.58	0.331 0.430	8.6 1.24
8155c	06815550	Staples Branch near Burlington Junction, Missouri	40 26 15	95 12 04	0.49	0.43 0.43	2.15 18.5	86.0 4.3	1.22 2.39	3.25 33.37	0.18 0.25	2.33 0.050	10.0 0.83
8160	06816000	Mill Creek at Oregon, Missouri	39 58 55	95 12 04	4.90	4.44 4.44	1.69 12.3	129 20.3	1.11 0.680	3.35 35.96	0.21 0.59	0.225 0.157	20.3 1.29
8200	06820000	White Cloud Creek near Maryville, Missouri	40 23 22	94 54 32	6.00	5.66 5.66	4.84 10.1	114 16.8	1.42 0.969	3.25 34.28	0.18 0.26	0.177 0.147	7.0 1.00
8210	06821000	Jenkins Branch at Gower, Missouri	39 37 28	94 36 00	2.72	2.39 2.39	2.65 11.1	58.4 28.5	1.13 1.09	3.45 38.47	0.18 0.25	0.418 0.487	10.0 0.83
8215	06821500	Arikaree River at Haigler, Nebraska	40 01 45	101 58 09	1,700	1,700 1,020	12.1 9.55	80.8 17.6	2.48 0.838	2.05 16.54	0.14 1.32	0.151 0.218	10.1 4.11
8230	06823000	North Fork Republican River at Colorado-Nebraska state line	40 04 09	102 03 05	2,370	2,360 174	3.81 6.74	71.5 14.8	5.24 4.62	2.06 16.50	0.13 1.84	0.954 0.207	9.7 5.53
8235	06823500	Buffalo Creek near Haigler, Nebraska	40 02 21	101 51 56	172	172 8.60	157 6.05	69.9 14.9	11.2 4.75	2.15 17.67	0.08 4.96	0.233 0.213	17.3 13.01
8245	06824500	Republican River at Benkelman, Nebraska	40 01 54	101 32 30	4,830	4,870 1,230	15.2 7.00	70.4 17.0	3.41 1.46	2.07 16.71	0.13 2.00	0.279 0.242	10.8 5.82
8250	06825000	South Fork Republican River near Idalia, Colorado	39 36 59	102 14 31	1,300	1,460 1,460	3.58 9.74	110 18.5	1.33 0.580	2.06 16.28	0.15 0.96	0.088 0.169	10.7 2.89
8255	06825500	Landsman Creek near Hale, Colorado	39 34 31	102 15 06	268	270 270	8.82 9.58	131 16.8	1.88 0.650	2.11 16.51	0.17 0.45	0.104 0.129	7.2 1.49
8280	06828000	Republican River at Max, Nebraska	40 06 10	101 23 49	7,580	7,740 4,450	4.04 6.83	82.5 15.4	1.91 0.835	2.09 16.78	0.14 1.59	0.161 0.187	10.3 4.58
8281	06828100	North Branch Indian Creek near Max, Nebraska	40 09 52	101 23 51	4.76	3.75 3.75	2.50 30.8	166 61.8	1.24 0.775	2.25 18.43	0.20 0.59	0.267 0.373	8.3 1.29
8297	06829700	Thompson Canyon near Trenton, Nebraska	40 09 44	100 57 31	9.06	9.10 9.10	2.14 19.7	148 52.0	1.25 0.884	2.25 20.80	0.20 0.59	0.220 0.349	8.8 1.29
8345	06834500	Stinking Water Creek near Wauneta, Nebraska—CDA known to be much less based on station 06835000	40 29 20	101 19 30	1,330	1,340 1,340	1.02 5.54	60.2 11.0	1.81 0.256	2.16 18.12	0.13 1.89	0.036 0.182	7.9 5.13
8350	06835000	Stinking Water Creek near Palisade, Nebraska	40 22 09	101 06 50	1,500	1,510 380	6.34 5.64	71.1 11.0	3.69 1.05	2.10 18.26	0.13 1.84	0.155 0.154	7.7 4.95

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ' ")	Longitude (° ' ")	Published total drainage area (mi^2)	Drainage-basin characteristics TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
8351	06835100	Bobtail Creek near Palisade, Nebraska	40 18 17	101 06 40	30.2	29.4 28.2	2.38 15.1	143 28.6	1.41 0.583	2.25 21.15	0.20 0.58	0.142 0.200	6.3 1.28
8360	06836000	Blackwood Creek near Culbertson, Nebraska	40 14 09	100 48 38	320	320 320	5.04 6.66	186 12.9	2.04 0.575	2.25 20.38	0.19 0.76	0.103 0.069	6.6 1.72
8371	06837100	Ash Creek near Red Willow, Nebraska	40 09 45	100 29 24	18.32	18.3 18.3	1.48 12.6	103 23.9	1.27 1.02	2.35 20.71	0.20 0.60	0.273 0.232	15.1 1.30
8373	06837300	Red Willow Creek above Hugh Butler Lake, Nebraska	40 24 05	100 46 45	582	582 194	15.9 4.40	96.8 9.9	3.55 0.770	2.25 18.75	0.14 2.78	0.108 0.102	11.4 6.40
8382	06838200	Coon Creek at Indianola, Nebraska	40 14 03	100 25 37	69.0	68.9 68.9	6.36 10.4	142 15.0	1.71 0.664	2.35 20.39	0.20 0.60	0.102 0.105	14.1 1.29
8390	06839000	Medicine Creek at Maywood, Nebraska	40 39 20	100 36 39	231	256 79.0	11.5 5.88	108.6 17.9	3.24 0.700	2.26 20.25	0.12 4.23	0.127 0.165	19.8 9.42
8392	06839200	Elkhorn Canyon near Maywood, Nebraska	40 36 10	100 42 02	6.74	6.78 6.78	1.94 15.4	253 34.4	1.41 1.17	2.25 20.94	0.20 0.60	0.590 0.136	25.8 1.30
8394	06839400	Elkhorn Canyon southwest of Maywood, Nebraska	40 37 20	100 38 57	13.2	13.2 13.2	2.00 14.5	255 37.4	1.62 0.865	2.29 20.88	0.20 0.60	0.227 0.147	23.9 1.31
8395	06839500	Brushy Creek near Maywood, Nebraska	40 37 50	100 37 46	95	108 72.0	3.13 7.86	183 28.2	2.07 0.853	2.26 21.01	0.17 1.84	0.222 0.154	19.2 4.34
8396	06839600	Frazier Creek near Maywood, Nebraska	40 35 05	100 37 45	11.3	11.3 11.3	2.20 17.9	143 46.3	1.22 0.923	2.34 20.83	0.20 0.60	0.266 0.324	19.3 1.32
8398a	06839850	Fox Creek north of Curtis, Nebraska	40 49 35	100 31 24	13.8	13.4 13.4	1.69 18.4	378 27.2	1.33 1.02	2.35 21.00	0.20 0.60	0.448 0.072	26.8 1.30
8399	06839900	Fox Creek above Cut Canyon near Curtis, Nebraska	40 44 40	100 31 51	31.8	31.4 31.4	3.48 12.6	333 24.0	1.60 0.895	2.35 21.00	0.20 0.60	0.255 0.072	26.0 1.30
8399b	06839950	Cut Canyon near Curtis, Nebraska	40 43 39	100 32 09	25.6	25.6 25.6	8.07 13.7	338 18.2	2.04 0.969	2.34 20.90	0.20 0.60	0.274 0.054	25.7 1.30
8400	06840000	Fox Creek at Curtis, Nebraska	40 37 59	100 29 20	72.6	72.5 72.5	3.90 11.1	318 21.6	1.88 0.923	2.35 20.87	0.20 0.59	0.234 0.068	19.7 1.33
8405	06840500	Dry Creek near Curtis, Nebraska	40 38 32	100 26 39	20.0	21.4 21.4	5.60 14.6	172 23.8	1.67 0.732	2.35 20.99	0.20 0.60	0.094 0.138	20.3 1.33
8415	06841500	Mitchell Creek above Harry Strunk Lake, Nebraska	40 28 19	100 15 24	52	52.2 52.2	7.08 9.66	115 13.6	1.86 0.787	2.35 21.05	0.20 0.59	0.191 0.118	10.8 1.36
8440	06844000	Muddy Creek at Arapahoe, Nebraska	40 18 19	99 54 39	246	242 242	3.94 7.81	149 12.2	1.64 1.01	2.35 22.21	0.20 0.60	0.198 0.081	17.8 1.32
8442a	06844210	Turkey Creek at Edison, Nebraska	40 16 14	99 43 59	74.9	74.6 74.6	8.55 8.59	113 17.8	1.93 0.801	2.45 22.93	0.20 0.60	0.201 0.158	16.0 1.31
8448	06844800	South Fork Sappa Creek tributary near Goodland, Kansas	39 19 13	101 37 56	4.98	4.68 4.68	0.50 10.9	33.5 5.4	1.45 0.346	2.25 18.20	0.21 0.59	0.214 0.161	2.4 1.29

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ′ ″)	Longitude (° ′ ″)	Published total drainage area (mi²)	Drainage-basin characteristics							
						TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
8449	06844900	South Fork Sappa Creek near Achilles, Kansas	39 40 36	100 43 18	446	426 378	10.2 6.82	74.0 9.4	2.11 0.942	2.27 18.87	0.20 0.59	0.288 0.127	4.9 1.29
8450	06845000	Sappa Creek near Oberlin, Kansas	39 47 07	100 34 27	1,086	1,030 1,030	5.85 6.61	98.7 10.8	1.70 0.841	2.27 19.68	0.20 0.60	0.259 0.109	5.8 1.31
8451	06845100	Long Branch Draw near Norcatur, Kansas	39 54 06	100 10 42	31.7	30.9 30.9	3.12 10.2	85.9 21.1	1.36 1.36	2.35 21.43	0.20 0.60	0.614 0.246	10.4 1.29
8452	06845200	Sappa Creek near Beaver City, Nebraska	40 2 45	99 53 23	1,481	1,480 1,480	8.78 5.29	112 8.0	2.26 0.976	2.30 20.53	0.20 0.61	0.313 0.071	7.5 1.35
8460	06846000	Beaver Creek at Ludell, Kansas	39 50 54	100 57 29	1,411	1,430 1,430	5.73 7.22	101 10.0	1.83 0.686	2.20 18.29	0.19 0.57	0.170 0.099	5.9 1.29
8462	06846200	Beaver Creek tributary near Ludell, Kansas	39 48 52	100 52 18	10.2	9.77 9.77	2.15 14.0	96.2 33.8	1.35 1.11	2.25 21.58	0.20 0.58	0.512 0.352	5.8 1.27
8465	06846500	Beaver Creek at Cedar Bluffs, Kansas	39 59 06	100 33 34	1,618	1,670 1,320	9.76 6.74	99.5 9.6	2.32 0.976	2.22 18.81	0.19 0.57	0.255 0.097	6.6 1.29
8470	06847000	Beaver Creek near Beaver City, Nebraska	40 07 11	99 53 34	2,080	2,080 1,760	12.9 5.70	107 8.3	2.73 0.951	2.24 19.42	0.20 0.58	0.250 0.077	7.3 1.29
8475	06847500	Sappa Creek near Stamford, Nebraska	40 07 53	99 33 15	3,840	3,840 3,370	5.61 5.48	108 7.1	2.20 1.01	2.28 20.14	0.20 0.59	0.285 0.066	7.7 1.31
8476	06847600	Prairie Dog Creek tributary at Colby, Kansas	39 23 27	101 02 43	7.53	7.94 7.94	2.94 10.4	42.3 19.2	1.23 0.716	2.25 19.14	0.21 0.59	0.252 0.453	2.4 1.29
8479	06847900	Prairie Dog Creek above Keith Sebelius Lake, Kansas	39 46 13	100 05 59	590	583 583	9.69 6.02	90.2 9.2	2.09 1.12	2.33 20.66	0.20 0.62	0.350 0.102	8.0 1.35
8482	06848200	Prairie Dog Creek tributary near Norton, Kansas	39 51 14	99 53 17	1.02	1.09 1.09	3.09 16.5	82.6 38.6	1.24 1.67	2.45 23.36	0.20 0.60	0.920 0.468	10.4 1.29
8496	06849600	Turkey Creek near Holdrege, Nebraska	40 19 33	99 22 04	22.9	22.6 19.4	2.75 6.01	34.3 11.4	1.50 0.61	2.45 23.68	0.20 0.54	0.103 0.334	6.3 1.21
8500	06850000	Turkey Creek at Naponee, Nebraska	40 04 33	99 08 16	129	132 125	6.88 5.72	54.0 12.2	2.00 0.836	2.47 23.37	0.20 0.58	0.184 0.226	9.6 1.27
8502	06850200	Cottonwood Creek near Bloomington, Nebraska	40 05 08	99 03 56	15.6	16.7 16.7	4.83 10.4	50.8 26.1	1.70 0.960	2.55 24.32	0.20 0.59	0.240 0.513	12.1 1.31
8510	06851000	Center Creek at Franklin, Nebraska	40 06 11	98 58 44	177	180 56	9.15 4.61	32.1 0.00	4.24 1.12	2.48 24.34	0.20 0.48	0.161 0.373	3.5 1.14
8511	06851100	West Branch Thompson Creek at Hildreth, Nebraska	40 21 39	99 01 40	63.9	63.9 18.4	3.51 2.82	18.2 4.4	3.29 0.836	2.47 24.08	0.20 0.46	0.109 0.239	2.1 1.11
8512	06851200	West Branch Thompson Creek near Hildreth, Nebraska	40 20 09	99 00 16	110	104 27.0	1.88 2.72	14.9 4.4	3.14 0.868	2.48 24.44	0.20 0.48	0.111 0.297	2.2 1.15
8513	06851300	West Branch Thompson Creek tributary near Hildreth, Nebraska	40 19 09	99 00 02	11.5	11.5 8.20	0.89 3.99	16.4 4.3	1.62 0.375	2.55 25.66	0.20 0.49	0.122 0.260	2.3 1.20

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ′ ″)	Longitude (° ′ ″)	Published total drainage area (mi²)	Drainage-basin characteristics							
						TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
8514	06851400	West Branch Thompson Creek near Upland, Nebraska	40 17 31	98 56 09	128	147 47.6	3.56 2.80	15.4 3.7	2.78 0.831	2.50 24.65	0.20 0.65	0.105 0.240	2.8 1.59
8515	06851500	Thompson Creek at Riverton, Nebraska	40 05 20	98 45 38	290	293 197	5.01 4.35	30.9 7.5	2.38 0.700	2.53 25.14	0.20 0.71	0.142 0.242	5.3 1.69
8531	06853100	Beaver Creek near Rosemont, Nebraska	40 15 46	98 22 30	0.75	0.74 0.74	2.89 8.75	48.2 9.3	1.36 1.93	2.65 26.15	0.20 0.53	1.36 0.192	12.4 1.19
8538	06853800	White Rock Creek near Burr Oak, Kansas	39 53 54	98 15 05	227	226 226	3.02 5.60	96.5 10.9	1.55 0.910	2.70 26.83	0.18 0.49	0.226 0.112	8.3 1.17
8561	06856100	West Creek near Talmo, Kansas	39 40 00	97 36 47	42.0	40.5 40.5	7.96 6.83	75.6 16.6	1.79 0.723	2.95 29.72	0.17 0.18	0.148 0.220	6.8 0.81
8568	06856800	Moll Creek near Green, Kansas	39 22 48	97 00 27	3.60	3.94 3.94	3.25 10.4	31.4 18.0	1.38 1.14	3.25 30.48	0.18 0.17	0.508 0.572	6.5 0.74
8710	06871000	North Fork Solomon River at Glade, Kansas	39 40 40	99 18 30	849	938 938	16.1 6.00	133 9.4	2.50 0.983	2.40 21.22	0.20 0.59	0.276 0.071	8.5 1.30
8715	06871500	Bow Creek near Stockton, Kansas	39 33 46	99 17 04	341	340 340	22.7 6.01	114 9.2	3.10 1.13	2.42 21.25	0.20 0.63	0.391 0.081	6.3 1.43
8726	06872600	Oak Creek at Bellaire, Kansas	39 47 53	98 39 59	4.75	4.72 4.72	2.50 18.0	103 42.5	1.42 0.719	2.65 24.15	0.19 0.42	0.212 0.411	7.4 1.11
8730	06873000	South Fork Solomon River above Webster Reservoir, Kansas	39 22 26	99 34 54	1,040	1,040 1,040	9.85 6.51	114 10.9	2.19 0.969	2.39 20.63	0.19 0.60	0.253 0.096	7.5 1.41
8733	06873300	Ash Creek tributary near Stockton, Kansas	39 26 15	99 22 16	0.89	0.93 0.93	1.32 26.0	70.7 58.9	1.15 1.20	2.55 22.91	0.19 0.38	1.08 0.833	5.4 1.12
8735	06873500	South Fork Solomon River at Alton, Kansas	39 27 33	98 56 36	1,720	1,670 1,670	11.5 5.88	116 10.0	2.29 0.989	2.44 21.59	0.18 0.54	0.262 0.086	7.5 1.31
8745	06874500	East Limestone Creek near Ionia, Kansas	39 41 52	98 20 19	25.6	26.2 26.2	4.45 9.98	104 17.8	1.43 1.08	2.75 27.76	0.16 0.38	0.343 0.170	9.7 1.02
8799	06879900	Big Blue River at Surprise, Nebraska	41 06 05	97 18 35	345	351 351	5.71 2.11	37.0 4.6	2.39 0.746	2.74 27.67	0.19 0.35	0.259 0.124	1.9 0.95
8800	06880000	Lincoln Creek near Seward, Nebraska	40 54 57	97 08 42	438	438 438	7.60 2.28	38.3 5.0	2.74 0.705	2.77 27.43	0.18 0.28	0.198 0.129	2.3 0.86
8805	06880500	Big Blue River at Seward, Nebraska	40 54 05	97 05 54	1,107	1,110 1,110	2.47 1.96	40.9 4.8	2.04 0.716	2.78 27.86	0.18 0.30	0.221 0.116	2.2 0.88
8805b	06880508	Plum Creek near Seward, Nebraska	40 55 49	97 04 31	85.5	85.4 85.4	4.38 4.14	72.6 8.3	1.69 0.948	2.86 27.85	0.18 0.25	0.304 0.115	2.4 0.81
8805c	06880590	North Branch West Fork Big Blue River tributary at Giltner, Nebraska	40 47 03	98 08 56	7.52	7.24 5.08	5.38 3.14	16.0 9.7	2.74 1.16	2.65 26.66	0.18 0.19	0.197 0.607	2.0 0.72
8807a	06880710	School Creek tributary near Harvard, Nebraska	40 34 59	98 03 59	13.1	13.6 13.6	1.85 3.39	11.1 5.7	1.48 0.395	2.73 27.36	0.18 0.13	0.073 0.515	3.4 0.75

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ' ")	Longitude (° ' ")	Published total drainage area (mi^2)	TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
						Drainage-basin characteristics							
8807b	06880720	School Creek near Harvard, Nebraska	40 35 48	98 03 04	51.5	49.6 49.6	0.96 2.96	12.9 8.7	1.42 0.284	2.70 27.47	0.18 0.15	0.060 0.673	2.9 0.73
8807c	06880730	School Creek tributary #2 near Harvard, Nebraska	40 36 41	98 02 35	16.4	16.5 16.5	0.50 3.45	13.8 11.5	1.39 0.184	2.72 27.33	0.18 0.17	0.061 0.831	2.5 0.72
8807d	06880740	School Creek near Saronville, Nebraska	40 34 58	97 57 24	89.4	87.0 87.0	1.89 2.74	17.3 7.1	1.59 0.385	2.72 27.33	0.18 0.16	0.080 0.408	2.8 0.73
8808	06880800	West Fork Big Blue River near Dorchester, Nebraska	40 43 51	97 10 38	1,192	1,190 1,190	4.05 2.40	43.9 5.2	2.06 0.614	2.75 27.30	0.18 0.25	0.139 0.118	2.6 0.83
8810	06881000	Big Blue River near Crete, Nebraska	40 35 47	96 57 35	2,710	2,710 2,710	2.31 2.07	52.0 4.8	1.79 0.690	2.78 27.65	0.18 0.27	0.185 0.092	2.6 0.85
8812	06881200	Turkey Creek near Wilber, Nebraska	40 28 48	97 00 43	461	461 461	5.68 2.87	40.5 5.2	2.07 0.633	2.87 28.61	0.19 0.22	0.128 0.129	5.5 0.86
8814a	06881450	Indian Creek at Beatrice, Nebraska	40 17 07	96 44 46	74.7	74.5 74.5	4.14 5.06	69.0 7.6	1.61 0.805	3.05 30.23	0.17 0.18	0.228 0.111	5.5 0.56
8815	06881500	Big Blue River at Beatrice, Nebraska	40 15 00	96 45 00	3,900	3,890 3,830	2.77 1.92	59.0 4.1	1.84 0.730	2.83 28.08	0.18 0.26	0.189 0.069	3.6 0.84
8820	06882000	Big Blue River at Barneston, Nebraska	40 3 10	96 35 16	4,447	4,450 4,370	3.30 1.82	66.2 3.8	1.96 0.765	2.87 28.52	0.18 0.25	0.208 0.057	3.9 0.81
8830	06883000	Little Blue River near Deweese, Nebraska	40 19 58	98 03 59	979	984 984	2.39 3.02	29.3 6.4	1.66 0.694	2.62 26.27	0.19 0.66	0.131 0.218	5.6 1.61
8835a	06883540	Spring Creek tributary near Ruskin, Nebraska	40 06 49	97 49 12	2.11	2.03 2.03	2.69 6.53	32.8 5.4	1.49 1.19	2.85 27.73	0.18 0.14	0.493 0.165	2.7 0.72
8835b	06883570	Little Blue River near Alexandria (Gilead), Nebraska	40 12 27	97 23 26	1,560	1,560 1,560	5.28 2.75	44.6 6.3	2.14 0.793	2.69 26.91	0.19 0.53	0.193 0.141	6.3 1.55
8836	06883600	South Fork Big Sandy Creek near Edgar, Nebraska	40 20 09	97 58 19	10.3	10.2 10.2	0.13 2.90	16.8 3.1	1.30 0.138	2.75 26.61	0.19 0.12	0.098 0.186	3.7 0.77
8837	06883700	South Fork Big Sandy Creek near Davenport, Nebraska	40 18 26	97 52 39	28.1	28.3 28.3	2.05 5.84	36.2 10.0	1.46 0.529	2.75 26.61	0.19 0.12	0.212 0.276	3.6 0.76
8838	06883800	South Fork Big Sandy Creek near Carleton, Nebraska	40 15 48	97 47 48	50.4	49.9 49.9	3.41 3.31	27.5 7.6	1.70 0.572	2.79 26.74	0.19 0.13	0.120 0.278	3.8 0.77
8839	06883900	South Fork Big Sandy Creek near Hebron, Nebraska	40 13 40	97 34 34	90.3	103 103	5.95 3.02	30.2 5.8	2.68 0.505	2.81 27.50	0.19 0.17	0.116 0.192	4.4 0.82
8839b	06883940	Big Sandy Creek at Alexandria, Nebraska	40 14 6	97 23 20	607	617 617	4.03 0.86	6.9 2.0	1.91 0.526	2.81 27.96	0.18 0.20	0.107 0.283	5.0 1.10
8839c	06883955	Little Sandy Creek near Ohiowa, Nebraska	40 25 36	97 23 38	11.6	11.3 11.3	1.47 6.30	40.6 18.6	1.23 0.485	2.86 28.96	0.19 0.17	0.177 0.458	5.2 0.80
8840	06884000	Little Blue River near Fairbury, Nebraska	40 06 53	97 10 12	2,350	2,360 2,360	4.26 2.60	47.9 6.0	2.02 0.728	2.74 27.38	0.19 0.43	0.170 0.126	6.1 1.43

Table B1. Selected drainage-basin characteristics for streamflow-gaging stations in Nebraska and for selected out-of-state stations--Continued

Map number	Station number	Station name—remarks	Latitude (° ′ ″)	Longitude (° ′ ″)	Published total drainage area (mi^2)	Drainage-basin characteristics							
						TDA CDA	SF RR	BS MCS	CR SD	TTP MAP	AWC PLP	DF SR	MSS P60
8840b	06884005	Dry Branch tributary near Fairbury, Nebraska	40 02 43	97 10 14	4.51	4.50 4.50	2.59 18.6	162 55.1	1.43 1.39	3.05 30.33	0.13 0.14	0.889 0.341	9.2 0.58
8842	06884200	Mill Creek at Washington, Kansas	39 48 50	97 02 20	344	345 34	2.89 4.05	99.1 8.0	1.47 0.951	3.03 30.92	0.16 0.19	0.229 0.081	6.8 0.75
8843	06884300	Mill Creek tributary near Washington, Kansas	39 48 47	97 00 29	3.20	3.17 3.17	1.36 19.8	111 48.5	1.21 0.654	3.15 31.80	0.14 0.16	0.315 0.439	9.6 0.62
8844	06884400	Little Blue River near Barnes, Kansas	39 46 32	96 51 29	3,324	3,290 3,290	4.86 2.95	78.5 5.6	1.75 0.838	2.83 28.35	0.18 0.36	0.217 0.071	6.4 1.25
8855	06885500	Black Vermillion River near Frankfort, Kansas	39 41 3	96 26 15	410	410 410	1.05 3.73	103 7.4	1.51 0.980	3.27 33.13	0.15 0.12	0.266 0.072	6.0 0.35
8865	06886500	Fancy Creek at Winkler, Kansas	39 28 19	96 49 54	174	174 174	2.17 6.25	110 10.3	1.25 0.787	3.19 30.77	0.14 0.11	0.196 0.094	7.0 0.53
8872	06887200	Cedar Creek near Manhattan, Kansas	39 15 30	96 33 47	13.4	14.7 14.7	2.66 22.2	235 43.9	1.24 1.18	3.35 31.71	0.11 0.08	0.611 0.186	14.5 0.31
8880	06888000	Vermillion Creek near Wamego, Kansas	39 20 59	96 13 09	243	240 240	3.15 6.86	149 9.0	1.45 0.900	3.35 35.28	0.13 0.12	0.241 0.061	10.0 0.36
8883	06888300	Rock Creek near Louisville, Kansas	39 15 53	96 22 47	128	136 136	3.01 9.05	163 17.1	1.39 0.794	3.35 33.75	0.12 0.15	0.192 0.104	11.4 0.48

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams

[BB, Big Blue River Basin; Br, Branch; C&SC, Central and South-Central; CR, continuous record; Cr, Creek; Fk, Fork; HPC, High-Permeability—Composite; HPS, High-Permeability—Standard; LP3S, log-pearson Type III with station skew; LP3W, log-Pearson Type III with weighted skew; N, North; NE, Northeast; N&W, Northern and Western; PS, peak stage; R, River; REG, regulated; S, South; SE, Southeast; *TDA*, total drainage area; trib, tributary; UR, upper Republican River; W, West; WY, water year; ft^3/s, cubic feet per second; mi^2, square miles; >, greater than; <, less than; #, number; drainage areas for regulated streams from Boohar and Provaznik (1996) except as noted. Note: values of generalized skew and peak discharge computed from regression equations might not agree with values in table for stations used in the development of the respective equations because table values for those stations are based on the regression analyses, which used unrounded values of drainage-basin characteristics and equation coefficients]

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak: WY	Discharge
3822	06382200	Pritchard Draw near Lance Creek, Wyo.	PS	674	1,640	2,500	3,820	4,940	6,160	7,480	9,350	LP3W 18	1964–81	1968	4,050
		(-0.251—Skew map -0.399—N&W)		105	467	866	1,510	2,080	1,730	2,310	3,240	—N&W—			
3962	06396200	Fiddle Cr near Edgemont, S. Dak.	PS	16	48	82	143	202	272	355	486	LP3W 25	1956–80	1980	275
		(-0.415—Skew map, N&W -0.259—N&W)		7	36	79	175	285	660	889	1,260	—N&W—			
3963	06396300	Cottonwood Cr trib near Edgemont, S. Dak.	PS	23	42	56	74	89	103	117	137	LP3W 25	1956–80	1965	86
		(-0.238—Skew map, N&W ——)		*TDA* <1 mi^2 Basin characteristics incomplete											
3964a	06396490	Warbonnet Cr near Harrison, Nebr.	PS	59	133	200	303	394	496	610	779	LP3W 10	1969–78	1969	270
		(——— -0.210—New station for N&W network analysis)		100	322	693	1,280	1,890	5,960	8,330	12,200	—N&W—			
3997	06399700	Pine Cr near Ardmore, S. Dak.	PS	849	1,190	1,390	1,630	1,800	1,950	2,100	2,290	LP3W 19	1956–74	1968	1,550
		(-0.319—Skew map -0.378—N&W)		129	594	1,120	1,960	2,700	1,880	2,550	3,640	—N&W—			
4000	06400000	Hat Cr near Edgemont, S. Dak.	CR	682	2,380	4,450	8,470	12,700	18,100	24,900	36,400	LP3W 43	1905,	1967	13,000
		(-0.152—Skew map, N&W -0.163—N&W)		934	2,090	3,090	4,650	6,010	7,560	9,340	12,040	—N&W—	1951–93		
4008a	06400875	Horsehead Cr at Oelrichs, S. Dak.*	CR	64	1,100	4,430	18,400	44,700	96,800	193,000	433,000	LP3W 11	1983–93	1991	8,270
		(——— -0.271—New station for N&W network analysis)		Basin characteristic(s) outside of range for equations								—N&W—			
		*Out-of-state station inadvertently used as new station		Appears to require composite frequency analysis											
4432	06443200	White R trib near Glen, Nebr.	PS	36	174	378	834	1,370	2,100	3,080	4,840	LP3W 18	1953–70	1965	740
		(-0.395—Skew map -0.282—N&W)		86	386	754	1,410	2,050	4,790	6,860	10,360	—N&W—			
4433	06443300	Deep Cr near Glen, Nebr.	PS	24	146	358	895	1,590	2,610	4,080	6,910	LP3W 26	1953–78	1953	3,050
		(-0.257—Skew map, HP, N&W -0.254—N&W)		68	270	500	892	1,270	3,590	4,900	6,980	—N&W—			
4437	06443700	Soldiers Cr near Crawford, Nebr.	PS	113	595	1,380	3,290	5,720	9,320	14,500	24,500	LP3W 24	1955–78	1966	6,160
		(+0.103—Skew map, N&W -0.192—N&W)		232	810	1,430	2,450	3,410	6,770	9,280	13,400	—N&W—			
4439	06443900	White R trib #2 near Crawford, Nebr.	PS	Insufficient data—zero flow for 11 of 18 peaks									1953–70	1960	698
		(——— ———)		No basin characteristics											
4440	06444000	White R at Crawford, Nebr.	CR	322	806	1,290	2,120	2,900	3,850	4,970	6,760	LP3W 75	1931-44,	1991	13,300
		(——— -0.211—N&W)		437	1,190	1,910	3,070	4,120	8,560	11,200	15,300	—N&W—	1948–93		
4450	06445000	White R below Cottonwood Cr near Whitney, Nebr.	CR	872	1,680	2,340	3,330	4,160	5,080	6,090	7,560	LP3W 13	1949–61	1957	4,480
		(——— -0.151—New station for N&W network analysis)		819	1,980	3,000	4,490	5,860	9,370	12,000	15,800	—N&W—			
4455	06445500	White R near Chadron, Nebr.	CR	1,190	2,260	3,130	4,400	5,460	6,610	7,860	9,670	LP3W 34	1931–43,	1947	5,500
		(-0.091—Skew map -0.148—N&W)		859	2,040	3,050	4,590	5,920	9,510	12,060	15,900	—N&W—	1947,		
													1949–52		
4455a	06445530	Chadron Cr trib at Chadron State Park near Chadron, Nebr.	CR	<1	27	254	2,480	10,100	34,400	161,000	360,000	LP3W 26	1953–78	1963	188
		(——— -0.241—New station for N&W network analysis)		47	231	463	878	1,300	2,260	3,170	4,670	—N&W—			
				Appears to require composite frequency analysis—see fig. 5											
4455b	06445560	Chadron Cr at Chadron State Park near Chadron, Nebr.	PS	55	395	1,020	2,650	4,760	7,910	12,400	20,800	LP3W 26	1953–78	1962	2,740
		(-.0372—Skew map, N&W -0.333—N&W)		124	488	891	1,560	2,190	3,450	4,680	6,670	—N&W—			
4455c	06445590	Big Bordeaux Cr near Chadron, Nebr.	CR	20	154	418	1,160	2,200	3,850	6,340	11,400	LP3W 11	1969–79	1977	5,670
		(——— -0.318—New station for N&W network analysis)		90	378	711	1,270	1,830	3,620	5,020	7,300	—N&W—			

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak: WY	Discharge
4460	06446000	White R near Oglala, S. Dak.	PS, CR	866	1,690	2,360	3,330	4,150	5,030	5,980	7,340	LP3W 50	1944–93	1947	5,200
		(-0.089—Skew map -0.173—N&W)		1,850	3,820	5,380	7,670	9,560	11,700	14,600	18,800	—N&W—			
4464	06446400	Cain Cr trib at Imlay, S. Dak.	PS	686	1,310	1,810	2,540	3,130	3,770	4,460	5,440	LP3W 25	1956–80	1962	3,300
		(+0.090—Skew map, N&W -0.237—N&W)		85	329	617	1,140	1,660	1,590	2,040	2,760	—N&W—			
4465a	06446550	White R trib near Interior, S. Dak.	PS	Out-of-state station used only for skew relation(s)									1956–80	1980	575
		(-0.379—Skew map ———)		No basin characteristics											
4475	06447500	Little White R near Martin, S. Dak.	CR	188	409	618	964	1,290	1,670	2,130	2,860	LP3W 35	1932,	1965	1,190
		(+0.235—HP, N&W +0.018—HPS, HPC, N&W)		248	566	1,020	1,220	1,780	2,190	2,680	3,450	—HPS—	1938–40,		
				182	433	841	1,180	1,560	2,040	2,610	3,570	—HPC—	1962–93		
				200	543	926	1,640	2,380	3,410	4,220	5,490	—N&W—			
4480	06448000	Lake Cr above refuge near Tuthill, S. Dak.	CR	79	111	130	152	167	181	194	211	LP3S 21	1938–40,	1966	154
		(——— ———)		Basin characteristics incomplete									1962–79		
4491	06449100	Little White R near Vetal, S. Dak.	CR	313	662	1,010	1,600	2,200	2,930	3,850	5,400	LP3W 34	1960–93	1991	3,540
		(——— +0.268—HPS, N&W)		436	1,000	1,590	2,360	3,710	4,640	5,740	7,500	—HPS—			
				290	742	1,230	2,130	3,060	4,110	5,060	6,530	—N&W—			
4492a	06449250	Spring Cr near St. Francis, S. Dak.*	PS	38	53	62	72	78	84	89	95	LP3S 15	1960-74	1962	65
		(——— +0.678—New station for HPS network analysis)		258	500	644	965	1,390	1,720	2,110	2,790	—HPS—			
		*out-of-state station inadvertently used as new station													
4495	06449500	Little White R near Rosebud, S. Dak.	CR	692	1,460	2,230	3,620	5,020	6,830	9,120	13,100	LP3W 50	1944–93	1967	4,640
		(+0.642—HP, N&W +0.404—HPS, HPC, N&W)		1,480	2,820	3,790	5,290	6,780	8,500	10,500	13,800	—HPS—			
				1,030	2,190	3,070	4,170	5,510	7,140	9,130	12,400	—HPC—			
				466	1,120	1,790	3,000	4,200	7,540	9,200	12,000	—N&W—			
4497	06449700	Little Oak Cr near Mission, S. Dak.	PS	Out-of-state station used only for skew relation(s)									1956–80	1977	970
		(-0.283—Skew map, N&W ———)		Some basin characteristics unreliable											
4497b	06449750	W Br Horse Cr near Mission, S. Dak.	PS	24	127	280	616	998	1,510	2,170	3,310	LP3W 15	1956–70	1968	548
		(——— -0.381—N&W)		120	562	1,100	2,050	2,960	2,640	3,680	5,430	—N&W—			
4505	06450500	Little White R below White R, S. Dak.	CR	1,690	3,660	5,630	9,100	12,500	16,800	22,200	31,300	LP3W 48	1930–32,	1967	13,700
		(+0.458—HP, N&W +0.246—HPS, HPC, N&W)		2,760	5,030	6,100	9,010	11,200	14,000	17,400	22,800	—HPS—	1939–40,		
				2,290	4,690	5,860	9,140	12,000	15,600	20,000	27,300	—HPC—	1951–93		
				809	1,820	2,810	4,470	6,050	9,690	12,200	16,000	—N&W—			
4534	06453400	Ponca Cr near Naper, Nebr.	CR	855	1,600	2,220	3,130	3,900	4,760	5,700	7,080	LP3W 13	1961–74	1962	2,840
		(——— ———)		No basin characteristics Gage itself is in S. Dak.											
4535	06453500	Ponca Cr at Anoka, Nebr.	CR	1,370	3,090	4,700	7,310	9,690	12,500	15,700	20,600	LP3W 45	1949–93	1960	9,810
		(-0.228—Skew map, HP, N&W, NE -0.041—N&W)		1,030	2,830	4,630	7,620	10,400	11,200	14,000	18,600	—N&W—			
4536	06453600	Ponca Cr at Verdel, Nebr.	CR	1,610	3,860	6,060	9,760	13,200	17,400	22,300	30,100	LP3W 36	1958–93	1960	15,700
		(+0.033—Skew map, HP, N&W, NE -0.034—N&W)		1,240	3,180	5,070	8,170	11,000	14,000	18,600	26,000	—N&W—			
4540	06454000	Niobrara R at Wyoming-Nebraska state line ($455\ mi^2$, approximately)	CR	46	174	378	925	1,710	3,050	5,290	10,600	REG 38	1956–93	1977	2,120
4541	06454100	Niobrara R at Agate, Nebr. ($840\ mi^2$)	CR	52	84	111	152	188	229	277	350	REG 35	1958–92	1959	181
4545	06454500	Niobrara R above Box Butte Reservoir, Nebr. ($1,400\ mi^2$)	CR	149	352	639	1,360	2,360	4,070	6,960	14,000	REG 47	1947–93	1951	4950

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak: WY	Discharge
4555	06455500	Niobrara R below Box Butte Reservoir, Nebr. (1,460 mi^2)	CR	186	223	263	332	400	483	585	758	REG 47	1947–93	1968	616
4559	06455900	Niobrara R near Dunlap, Nebr. (1,580 mi^2)	CR	193	385	748	1,980	4,320	9,670	22,100	67,100	REG 10	1931–42, 1962–71	1962	3,230
4562	06456200	Pebble Cr near Esther, Nebr. (——— -0.157—N&W)	PS	8 29	57 131	154 266	438 535	854 822	1,550 1,060	2,640 1,400	5,040 1,940	LP3W 26 —N&W—	1953–78	1953	2,000
4563	06456300	Pebble Cr near Dunlap, Nebr. (——— -0.132—N&W)	PS	11 140	507 523	1,640 955	3,580 1,710	4,900 2,440	5,910 3,010	6,630 4,010	7,230 5,610	LP3S 18 —N&W—	1953–70	1965	3,300
				Appears to require composite frequency analysis											
4564	06456400	Cottonwood Cr near Dunlap, Nebr. (-0.627—Skew map, N&W -0.249—New station for N&W network analysis)	PS	25 160	367 827	1,430 1,430	5,900 2,410	14,500 3,390	32,100 4,130	66,000 5,390	156,000 7,270	LP3W 28 —N&W—	1951–78	1951	28,100
				Appears to require composite frequency analysis											
4565	06456500	Niobrara R near Hay Springs, Nebr. (drainage area not published)	CR	761	2,210	3,810	6,740	9,670	13,300	17,800	25,300	REG 15	1950–64	1951	7,330
4572	06457200	Berea Cr near Alliance, Nebr. (——— +0.250—New station for N&W network analysis)	PS	34 28	73 72	102 118	136 204	160 292	182 404	202 547	226 792	LP3S 26 LP3W 26 —N&W—	1953–78	1977	130
				Basin characteristic(s) outside of range for equations Possibly affected by irrigation											
4575	06457500	Niobrara R near Gordon, Nebr. (4,290 mi^2)	CR	771	1,970	3,420	6,420	9,910	14,900	21,900	35,700	REG 48	1929–32, 1946–93	1962	9,130
4577	06457700	Antelope Cr at Gordon, Nebr. (——— ———)	PS	95	238	377	611	827	1,080	1,380	1,840	LP3W 13	1953–65	1958	444
				Regulated after 1965 No basin characteristics											
4578	06457800	Antelope Cr trib near Gordon, Nebr. (——— -0.148—New station for N&W network analysis)	PS	2 <1 148	230 253 565	1,330 5,840 1,060	5,260 146,000 1,920	10,100 ——— 2,810	16,000 >1,000,000 4,020	22,100 5,500	29,700 ——— 7,910	LP3S 26 LP3W 26 —N&W—	1953–78	1955	1,900
				Appears to require composite frequency analysis—see fig. 5											
4590	06459000	Niobrara R at Cody, Nebr. (5,570 mi^2)	CR	1,890	3,020	3,870	5,050	6,020	7,060	8,170	9,760	REG 10	1948–57	1951	4,170
4591a	06459175	Snake R at Doughboy, Nebr. (——— +1.060—New station for HPS network analysis)	CR	278 247	327 348	362 423	409 544	446 594	485 753	526 943	583 1,290	LP3W 12 —HPS—	1982–93	1991	367
4592	06459200	Snake R above Merritt Reservoir, Nebr. (+0.714—N&W +1.071—HPS, HPC)	CR	436 282 299	546 394 340	629 475 427	748 556 388	846 567 474	952 712 573	1,070 886 688	1,240 1,170 869	LP3W 22 —HPS— —HPC—	1962–81	1962	820
4595	06459500	Snake R near Burge, Nebr. (600 mi^2, approximately, of which about 44 mi^2 contributes directly to surface runoff)	CR	370	471	552	673	777	893	1,020	1,220	REG 30	1947–93	1963	3,170
4609	06460900	Minnechaduza Cr near Kilgore, Nebr. (——— +0.559—New station for HPS network analysis)	CR	64 263	102 484	128 596	160 858	183 1,170	206 1,440	228 1,760	256 2,320	LP3S 17 —HPS—	1958–74	1968	147
4610	06461000	Minnechaduza Cr at Valentine, Nebr. (390 mi^2, approximately, of which about 200 mi^2 contributes directly to surface runoff)	CR	193	364	523	793	1,050	1,370	1,760	2,410	REG 46	1948–93	1960	1,100
4615	06461500	Niobrara R near Sparks, Nebr. (8,090 mi^2, approximately)	CR	2,470	3,720	4,730	6,240	7,550	9,020	10,700	13,200	REG 30	1946–93	1949	10,200

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY	Discharge (ft^3/s) of maximum peak
4620	06462000	Niobrara R near Norden, Nebr. (8,390 mi^2, approximately)	CR	2,340	3,710	4,980	7,110	9,170	11,700	14,900	20,300	REG 21	1953–83, 1986	1983	9,600
4625	06462500	Plum Cr at Meadville, Nebr.	CR	383	677	954	1,430	1,900	2,480	3,200	4,450	LP3W 45	1963–75, 1977–93	1967	2,070
		(+0.707—HP, N&W +0.770—HPS, HPC, N&W)		810	1,680	2,070	4,100	6,630	8,500	10,700	14,400	—HPS—			
				453	969	1,170	2,260	2,870	3,600	4,450	5,830	—HPC—			
				295	816	1,420	2,570	3,790	6,540	8,480	11,600	—N&W—			
4630a	06463080	Long Pine Cr near Long Pine, Nebr.	CR	372	438	481	536	577	619	661	718	LP3W 12	1980–91	1983	507
		(——— +0.578—New station for HPS and N&W network analyses)		1,020	1,820	2,150	4,520	6,820	8,970	11,600	16,400	—HPS—			
				Basin characteristic(s) outside of range for equations								—N&W—			
4632	06463200	Bone Cr trib #2 near Ainsworth, Nebr.	PS	70	227	435	897	1,450	2,270	3,430	5,750	LP3W 11	1958–68	1962	640
		(——— +0.254—New station for N&W network analysis)		Basin characteristic(s) outside of range for equations								—N&W—			
4633	06463300	Sand Draw trib near Ainsworth, Nebr.	PS	71	349	843	2,250	4,320	7,900	13,900	27,900	LP3W 19	1956–74	1962	747
		(——— ———)		Appears to require composite frequency analysis											
				Basin characteristics incomplete											
4635	06463500	Long Pine Cr near Riverview, Nebr.	CR	985	2,080	3,200	5,250	7,360	10,100	13,600	19,900	LP3W 44	1949–53, 1955–93	1962	9,650
		(+0.470—HP, N&W +0.528—HPS, HPC, N&W)		1,480	2,810	3,300	7,610	12,100	16,100	21,000	29,300	—HPS—			
				811	1,540	1,870	3,950	5,220	6,760	8,610	11,700	—HPC—			
				501	1,370	2,320	4,020	5,730	8,970	11,800	16,300	—N&W—			
4645	06464500	Keya Paha R at Wewela, S. Dak.	CR	699	1,560	2,410	3,850	5,230	6,910	8,930	12,200	LP3W 46	1939–40, 1950–93	1952	5,430
		(+0.086—HP, N&W +0.126—N&W)		726	1,700	2,700	4,460	6,190	8,380	10,600	14,000	—N&W—			
4649	06464900	Keya Paha R near Naper, Nebr.	CR	1,800	3,610	5,230	7,820	10,200	12,900	16,100	21,100	LP3W 36	1958–93	1962	9,280
		(+0.022—HP, N&W +0.212—N&W)		1,110	2,510	3,880	6,210	8,420	10,900	13,900	18,400	—N&W—			
4650	06465000	Niobrara R near Spencer, Nebr. (12,100 mi^2, approximately)	CR	5,260	7,700	9,620	12,400	14,800	17,500	20,500	24,900	REG 30	1928–36, 1938–93	1955	27,400
4652	06465200	Honey Cr near O'Neill, Nebr.	PS	24	90	185	410	692	1,120	1,750	3,040	LP3W 11	1958–68	1965	294
		(——— +0.273—New station for N&W network analysis)		Basin characteristic(s) outside of range for equations								—N&W—			
4653	06465300	Camp Cr near O'Neill, Nebr.	PS	8	54	152	482	1,040	2,120	4,120	9,400	LP3W 21	1958–78	1964	833
		(+0.093*—Skew map, N&W, NE +0.318—N&W)		12	66	158	383	670	2,280	3,360	5,260	—N&W—			
		*Revised, NE equation based on original value of +0.564													
4653b	06465310	Eagle Cr near Redbird, Nebr.	CR	596	1,420	2,280	3,830	5,400	7,400	9,910	14,200	LP3W 13	1979–91	1981	3,300
		(——— +0.177—New station for N&W network analysis)		469	1,440	2,510	4,290	6,160	8,440	11,400	16,100	—N&W—			
4654a	06465440	Redbird Cr at Redbird, Nebr.	CR	528	1,150	1,770	2,840	3,890	5,190	6,790	9,480	LP3W 13	1981–93	1990	2,140
		(——— +0.220—New station for N&W network analysis)		447	1,430	2,530	4,360	6,260	7,700	10,500	14,900	—N&W—			
4655	06465500	Niobrara R near Verdel, Nebr. (12,600 mi^2, approximately)	CR	5,390	8,430	11,400	16,600	21,800	28,600	37,200	52,300	REG 30	1938–40, 1959–93	1960	39,000
4656a	06465680	N Br Verdigre Cr near Verdigre, Nebr.	CR	133	242	336	486	621	780	965	1,260	LP3W 13	1980–92	1992	329
		(——— +0.371—New station for N&W network analysis)		264	840	1,530	2,780	4,160	6,590	8,890	12,600	—N&W—			
4658a	06465850	Bingham Cr near Niobrara, Nebr.	PS	15	48	88	171	262	385	547	838	LP3W 11	1968–78	1973	150
		(——— +0.015—New station for N&W network analysis)		81	387	803	1,590	2,460	5,290	7,810	12,200	—N&W—			
4665	06466500	Bazile Cr near Niobrara, Nebr.	CR	2,930	9,100	16,400	30,600	45,700	65,400	90,800	135,000	LP3W 43	1951–93	1957	68,600
		(-0.034—Skew map, HP, N&W, NE -0.39—NE)		3,280	7,490	11,400	17,900	23,700	30,400	39,000	50,600	—NE—			

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak	
4669a	06466950	Weigand Cr near Crofton, Nebr. (——— -0.006—New station for NE network analysis)	PS	74 92 180 Appears to require composite frequency analysis	360 367 465	813 665 762	1,910 1,140 1,290	3,290 1,550 1,820	5,340 1,980 2,460	8,290 2,410 3,340	14,100 2,990 4,520	LP3W 11 LP3S 11 —NE—	1968–78	1970	928
4782a	06478260	N Br Dry Cr near Parkston, S. Dak. (+0.072—N&W ———)	PS	Out-of-state station used only for skew relation(s)									1956-78	1969	3,200
4782b	06478280	S Br Dry Cr near Parkston, S. Dak. (+0.266—Skew map, N&W, NE ———)	PS	Out-of-state station used only for skew relation(s)									1956–80	1960	920
4783	06478300	Dry Cr near Parkston, S. Dak. (+0.107—Skew map, N&W, NE ———)	PS	Out-of-state station used only for skew relation(s)									1956–80, 1989–93	1960	4,210
4785a	06478518	Bow Cr near St James, Nebr. (——— -0.108—NE)	CR	3,340 2,430	7,240 5,490	10,800 8,330	16,400 12,900	21,500 17,000	27,300 21,700	34,000 26,700	44,300 34,800	LP3W 15 —NE—	1979–93	1984	21,400
4785b	06478520	W Bow Cr near Fordyce, Nebr. (——— -0.002—New station for NE network analysis)	PS	379 913	1,360 2,120	2,630 3,240	5,300 5,100	8,310 6,810	12,400 8,750	17,900 10,700	27,900 14,200	LP3W 14 —NE—	1964–65, 1967–78	1967	3,150
4786a	06478690	W Fk Vermillion R near Parker, S. Dak. (-0.392—Skew map ———)	CR	Out-of-state station used only for skew relation(s) No basin characteristics									1962–93	1993	6,300
4788	06478800	Saddlerock Cr near Canton, S. Dak. (+0.184—N&W ———)	PS	Out-of-state station used only for skew relation(s)									1956-78	1965	945
4788b	06478820	Saddlerock Cr trib near Beresford, S. Dak. (-0.070—Skew map, N&W, NE ———)	PS	Out-of-state station used only for skew relation(s)									1956–80	1978	120
4788c	06478840	Saddlerock Cr near Beresford, S. Dak. (-0.169—N&W ———)	PS	Out-of-state station used only for skew relation(s)									1956–70, 1972–80	1965	1,480
4790	06479000	Vermillion R near Wakonda, S. Dak. (+0.008—Skew map ———)	CR, PS	Out-of-state station used only for skew relation(s) No basin characteristics									1946–93	1984	17,000
4815	06481500	Skunk Cr at Sioux Falls, S. Dak. (-0.112—Skew map ———)	CR	Out-of-state station used only for skew relation(s) No basin characteristics									1949–93	1957	29,400
4826a	06482610	Split Rock Cr at Corson, S. Dak. (+0.337—Skew map ———)	CR, PS	Out-of-state station used only for skew relation(s) No basin characteristics									1966–93	1993	18,900
4835	06483500	Rock R near Rock Valley, Iowa (-0.348—Skew map ———)	PS, CR	Out-of-state station used only for skew relation(s) No basin characteristics									1897, 1948–93	1969	40,400
4840	06484000	Dry Cr at Hawarden, Iowa (+0.027—Skew map ———)	CR	Out-of-state station used only for skew relation(s) No basin characteristics									1926, 1934, 1949–69	1953	10,900
5998	06599800	Perry Cr near Merrill, Iowa (-0.389—Skew map ———)	PS	Out-of-state station used only for skew relation(s) No basin characteristics									1953–65, 1968–73, 1976–77	1953	2,540
5999a	06599950	Perry Cr near Hinton, Iowa (-0.200—Skew map ———)	PS	Out-of-state station used only for skew relation(s) No basin characteristics									1953–65, 1967, 1969	1953	4,980
6000	06600000	Perry Cr at 38th Street, Sioux City, Iowa (-0.308—Skew map, NE ———)	CR	Out-of-state station used only for skew relation(s)									1939–69, 1981–93	1944	9,600

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks								Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak
				2	5	10	25	50	100	200	500			
6001	06600100	Floyd R at Alton, Iowa (-0.089—Skew map ———)	CR	Out-of-state station used only for skew relation(s) No basin characteristics									1953, 1956–93	1953 45,500
6003	06600300	W Br Floyd R near Struble, Iowa (-0.312—Skew map ———)	CR	Out-of-state station used only for skew relation(s) No basin characteristics									1956–93	1962 8,060
6006	06600600	S Omaha Cr trib near Walthill, Nebr. (——— -0.004—NE, East)	PS	409 241 412	765 598 924	1,060 954 1,370	1,500 1,560 2,080	1,880 2,120 2,710	2,300 2,780 3,430	2,770 3,440 4,240	3,460 4,660 5,460	LP3W 18 —NE— —East—	1950–67	1957 1,410
6007	06600700	S Omaha Cr near Walthill, Nebr. (——— -0.236—NE, East)	PS	1,320 1,010 1,260	3,850 2,640 2,610	6,530 4,310 3,730	11,200 7,160 5,430	15,700 9,830 6,900	21,100 13,000 8,520	27,600 17,000 10,300	37,700 22,400 12,900	LP3W 18 —NE— —East—	1950–67	1954 10,100
6008	06600800	S Omaha Cr trib #2 near Walthill, Nebr. (-0.414—Skew map, NE -0.166—NE, East)	PS	298 201 343	694 534 734	1,060 892 1,070	1,640 1,550 1,610	2,170 2,200 2,100	2,760 3,010 2,640	3,440 4,370 3,270	4,460 5,870 4,200	LP3W 29 —NE— —East—	1950–78	1954 2,150
6009	06600900	S Omaha Cr at Walthill, Nebr. (-0.230—Skew map, NE -0.388—NE, East)	PS	1,920 2,170 2,970	4,310 5,630 5,760	6,360 9,130 7,930	9,380 15,000 11,100	11,900 20,500 13,700	14,600 26,800 16,600	17,500 35,100 19,600	21,600 45,600 23,800	LP3W 38 —NE— —East—	1951–78	1957 14,200
6010	06601000	Omaha Cr at Homer, Nebr. (——— -0.539—NE, East)	CR	3,400 3,080 5,900	6,590 7,000 11,000	9,060 10,500 14,900	12,500 15,900 20,400	15,100 20,600 25,000	17,900 25,800 29,700	20,700 29,500 34,700	24,600 38,400 41,600	LP3W 73 —NE— —East—	1940, 1946–93	1971 18,100
6020	06602000	W Fk Ditch at Holly Springs, Iowa (-0.296—Skew map ———)	CR	Out-of-state station used only for skew relation(s) No basin characteristics									1939–69	1962 12,400
6021a	06602190	Elliott Cr at Lawton, Iowa (-0.598—Skew map ———)	PS	Out-of-state station used only for skew relation(s) No basin characteristics									1966–90	1984 3,150
6024	06602400	Monona-Harrison Ditch near Turin, Iowa (-0.493—Skew map ———)	CR	Out-of-state station used only for skew relation(s) No basin characteristics									1940–93	1954 21,000
6066	06606600	Little Sioux R at Correctionville, Iowa (+0.014—Skew map ———)	CR	Out-of-state station used only for skew relation(s) No basin characteristics									1919–25, 1929–32, 1937–93	1965 29,800
6067	06606700	Little Sioux R at Kennebec, Iowa (-0.189—Skew map ———)	CR	Out-of-state station used only for skew relation(s) No basin characteristics									1940–69	1965 29,700
6067b	06606790	Maple Cr near Alta, Iowa (-0.054—Skew map ———)	PS	Out-of-state station used only for skew relation(s)									1966–89	1969 5,300
6072	06607200	Maple R at Mapleton, Iowa (-0.505—Skew map ———)	CR	Out-of-state station used only for skew relation(s) No basin characteristics									1942–93	1978 20,800
6075	06607500	Little Sioux R near Turin, Iowa (-0.458—Skew map ———)	CR	Out-of-state station used only for skew relation(s) No basin characteristics									1940–93	1983 31,200
6077	06607700	S Br Tekamah Cr near Craig, Nebr. (——— ———)	PS	615	1,220	1,710	2,430 No basin characteristics	3,020	3,660	4,340	5,320	LP3W 18	1950–67	1950 2,580
6078	06607800	S Br Tekamah Cr trib near Tekamah, Nebr. (——— -0.204—NE, East)	PS	602 504 549	1,220 1,370 1,190	1,730 2,310 1,750	2,490 3,980 2,610	3,140 5,620 3,370	3,850 7,610 4,240	4,620 10,800 5,200	5,740 14,300 6,640	LP3W 29 —NE— —East—	1950–78	1950 5,000

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak: WY	Discharge
6079	06607900	S Br Tekamah Cr near Tekamah, Nebr. (——— -0.401—NE, East)	PS	1,290 773 436	2,130 1,990 1,060	2,720 3,220 1,640	3,480 5,310 2,600	4,040 7,260 3,500	4,600 9,520 4,560	5,160 12,200 5,810	5,910 16,100 7,760	LP3W 18 —NE— —East—	1950–67	1963	4,560
6080	06608000	Tekamah Cr at Tekamah, Nebr. (-0.651—Skew map, NE -0.473—NE, East)	CR	1,740 1,060 1,750	3,730 2,480 3,620	5,330 3,780 5,140	7,550 5,830 7,390	9,300 7,640 9,290	11,100 9,670 11,400	12,900 11,100 13,600	15,400 14,700 16,800	LP3W 31 —NE— —East—	1950–89	1963	6,180
				Dam on S Br Tekamah Cr after 1980											
6085	06608500	Soldier R at Pisgah, Iowa (-0.583—Skew map, NE ———)	CR	Out-of-state station used only for skew relation(s)									1940–93	1993	23,400
6086	06608600	New York Cr near Spiker, Nebr. (——— -0.168—NE, East)	PS	459 152 256	876 380 579	1,220 616 870	1,710 1,030 1,350	2,130 1,430 1,790	2,580 1,920 2,310	3,070 2,540 2,920	3,780 3,460 3,850	LP3W 16 —NE— —East—	1952–67	1960	1,700
6087	06608700	New York Cr trib near Spiker, Nebr. (-0.299—Skew map, NE -0.205—NE, East)	PS	242 171 253	629 438 566	1,010 719 847	1,660 1,220 1,310	2,250 1,720 1,730	2,950 2,340 2,220	3,760 3,270 2,790	5,020 4,420 3,670	LP3W 28 —NE— —East—	1951–78	1957	1,580
6088	06608800	New York Cr north of Spiker, Nebr. (-0.152—Skew map, NE -0.180—NE, East)	PS	1,250 379 577	2,090 941 1,240	2,700 1,510 1,820	3,530 2,480 2,740	4,180 3,410 3,580	4,840 4,510 4,540	5,540 5,900 5,620	6,490 7,910 7,260	LP3W 25 —NE— —East—	1951–75	1960	3,620
6089	06608900	New York Cr east of Spiker, Nebr. (+0.213—Skew map, NE -0.322—NE, East)	PS	776 697 888	2,080 1,710 1,880	3,410 2,710 2,720	5,730 4,420 4,040	7,940 6,030 5,230	10,600 7,940 6,580	13,800 10,400 8,090	18,800 13,800 10,400	LP3W 29 —NE— —East—	1950–78	1960	9,250
6090	06609000	New York Cr at Herman, Nebr. (-0.369—Skew map, NE -0.322—NE, East)	CR	1,400 1,100 1,580	2,890 2,730 3,160	4,110 4,330 4,460	5,860 7,040 6,420	7,290 9,580 8,130	8,810 12,600 10,000	10,400 16,600 12,100	12,700 21,800 15,100	LP3W 24 —NE— —East—	1946–69	1950	5,500
6095	06609500	Boyer R at Logan, Iowa (-0.343—Skew map ———)	CR	Out-of-state station used only for skew relation(s) No basin characteristics									1918–25, 1938–93	1990	30,800
6095b	06609560	Willow Cr near Soldier, Iowa (-0.065—Skew map ———)	PS	Out-of-state station used only for skew relation(s) No basin characteristics									1966–77, 1979–90	1987	4,440
6105	06610500	Indian Cr at Council Bluffs, Iowa (-0.402—Skew map ———)	CR	Out-of-state station used only for skew relation(s) No basin characteristics									1955–76	1965	2,980
6106	06610600	Mosquito Cr at Neola, Iowa (-0.065—Skew map ———)	PS	Out-of-state station used only for skew relation(s)									1952–90	1958	17,300
6107	06610700	Big Papillion Cr near Orum, Nebr. (——— -0.250—New station for NE and East network analyses)	PS	303 384 610	677 927 1,320	1,010 1,450 1,940	1,510 2,340 2,940	1,930 3,180 3,860	2,410 4,140 4,890	2,920 5,180 6,090	3,680 6,960 7,870	LP3W 11 —NE— —East—	1968–78	1971	800
6524	06652400	Watson Draw near Lost Springs, Wyo. (——— -0.159—N&W)	PS	42 45	162 186	326 356	667 663	1,050 968	1,550 1,640	2,220 2,160	3,380 2,970	LP3W 25 —N&W—	1960–84	1961	2,100
6745	06674500	N Platte R at Nebraska-Wyoming state line	CR	2,410	4,140	5,810	8,730	11,700	15,400	20,200	28,500	REG 36	1929–93	1929	17,900
		(22,200 mi^2, of which 1,930 mi^2 is probably noncontributing—modified from Boohar and others, 1992)													
6775	06677500	Horse Cr near Lyman, Nebr. (+0.286—HP, N&W +0.025—HPS, N&W)	CR	745 494 1,480	1,390 983 3,210	1,940 1,390 4,560	2,770 2,110 6,400	3,510 2,730 7,930	4,340 3,520 6,370	5,290 4,450 7,610	6,740 5,910 9,450	LP3W 63 —HPS— —N&W—	1931–93	1967	5,110

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak
6780	06678000	Sheep Cr near Morrill, Nebr. (362 mi^2, of which about 25 mi^2 is noncontributing)	CR	183	263	325	415	491	576	669	809	REG 60	1933–92	1978 516
				Appears to require composite frequency analysis										
6790	06679000	Dry Spottedtail Cr at Mitchell, Nebr. (15.0 mi^2)	CR	332	671	1,010	1,590	2,180	2,910	3,840	5,430	REG 31	1949–79	1951 2,010
6795	06679500	N Platte R at Mitchell, Nebr. (24,300 mi^2, approximately, of which about 22,300 mi^2 contributes directly to surface runoff)	CR	2,180	4,170	6,150	9,660	13,200	17,800	23,600	33,900	REG 36	1901–11, 1916–18, 1920–93	1909 27,500
6800	06680000	Tub Springs near Scottsbluff, Nebr. (drainage area not published)	CR	359	690	968	1,390	1,740	2,140	2,590	3,250	REG 31	1949–79	1952 1,610* *Non-recurrent flow anomaly
6810	06681000	Winters Cr near Scottsbluff, Nebr. (drainage area not published)	CR	380	640	841	1,120	1,360	1,610	1,870	2,260	REG 48	1932–79	1977 1,160
6820	06682000	N Platte R near Minatare, Nebr. (24,700 mi^2, approximately, of which about 22,700 mi^2 contributes directly to surface runoff)	CR	2,970	5,220	7,190	10,300	13,200	16,600	20,600	27,000	REG 36	1916–19, 1921–93	1917 19,500
6840	06684000	Red Willow Cr near Bayard, Nebr. (162 mi^2)	CR	769	1,310	1,720	2,300	2,780	3,280	3,820	4,590	REG 48	1932–79	1956 2,320
6845	06684500	N Platte R at Bridgeport, Nebr. (25,300 mi^2, approximately, of which about 23,300 mi^2 contributes directly to surface runoff)	CR	3,380	5,710	7,780	11,100	14,300	18,000	22,500	29,800	REG 36	1897–1900, 1902–06, 1915–93	1899 24,900
6850	06685000	Pumpkin Cr near Bridgeport, Nebr. (1,020 mi^2)	CR	98	236	468	1,170	2,340	4,700	9,470	23,900	REG 62	1921, 1932–93	1965 7,880
6860	06686000	N Platte R at Lisco, Nebr. (26,700 mi^2, approximately, of which about 24,700 mi^2 contributes directly to surface runoff)	CR	3,180	5,190	6,950	9,760	12,400	15,400	19,100	25,000	REG 36	1916–17, 1932–93	1917 20,100
6870	06687000	Blue Cr near Lewellen, Nebr. (+0.984—HP, N&W +0.988—HPS, HPC)	CR	204 260 171	307 455 312	399 562 374	545 671 430	681 784 531	843 955 646	1,040 1,150 779	1,350 1,470 987	LP3W 63 —HPS— —HPC—	1931–93	1938 720
6875	06687500	N Platte R at Lewellen, Nebr. (28,600 mi^2, approximately, of which about 25,400 mi^2 contributes directly to surface runoff)	CR	3,500	5,630	7,390	10,100	12,400	15,100	18,100	22,800	REG 36	1941–93	1968 13,500
6876	06687600	Ash Hollow near Oshkosh, Nebr. (——— +0.233—New station for N&W network analysis)	PS	14	82	199	501	897	1,500	2,380	4,130	LP3W 9 —N&W—	1968, 1970–78	1968 3,440
				Basin characteristic(s) outside of range for equations										
6905	06690500	N Platte R near Keystone, Nebr. (29,400 mi^2, approximately, of which about 25,900 mi^2 contributes directly to surface runoff)	CR	2,920	4,110	5,090	6,570	7,870	9,360	11,100	13,700	REG 53	1942–93	1983 9,470
6910	06691000	N Platte R near Sutherland, Nebr. (29,800 mi^2, approximately, of which about 26,100 mi^2 contributes directly to surface runoff)	CR	2,360	3,390	4,280	5,700	6,990	8,520	10,300	13,200	REG 53	1937–93	1971 9,090
6920	06692000	Birdwood Cr near Hershey, Nebr. (+1.182—HP, N&W +1.035—HPS, HPC)	CR	353 450 346	522 715 495	670 868 623	908 1,200 694	1,130 1,410 865	1,390 1,780 1,060	1,700 2,220 1,300	2,220 2,950 1,660	LP3W 62 —HPS— —HPC—	1932-93	1949 1,770
6930	06693000	N Platte R at North Platte, Nebr. (30,900 mi^2, approximately, of which about 26,300 mi^2 contributes directly to surface runoff)	CR	2,640	3,860	4,900	6,520	7,980	9,690	11,700	14,900	REG 53	1895–1993	1909 29,600
7600	06760000	S Platte R at Balzac, Colo. (16,900 mi^2—modified from Matthai, 1968)	CR	3,420	9,300	16,400	31,400	48,600	73,100	107,000	174,000	REG 65	1916–80	1965 123,000

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks								Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak	
				2	5	10	25	50	100	200	500				
7619	06761900	Lodgepole Cr trib near Pine Bluffs, Wyo. (+0.090—Skew map ———)	PS	Out-of-state station used only for skew relation(s) No basin characteristics									1960–81	1981	158
7625	06762500	Lodgepole Cr at Bushnell, Nebr. (1,350 mi^2)	CR	195	924	2,200	5,770	11,000	20,000	35,000	70,200	REG 61	1932–92	1950	16,500
7626	06762600	Lodgepole Cr trib #2 near Albin, Wyo. (-0.386—Skew map, HP, N&W ———)	PS	Out-of-state station used only for skew relation(s) Basin characteristic(s) outside of range for equations									1960–84	1967	528
7632	06763200	Lodgepole Cr trib near Sunol, Nebr. (——— -0.067—New station for N&W network analysis)	PS	Insufficient data—zero flow for 8 of 11 peaks Basin characteristic(s) outside of range for equations								—N&W—	1968-78	1968	820
7635	06763500	Lodgepole Cr near Ralton, Nebr. (3,310 mi^2)	CR	50	176	423	1,290	2,920	6,540	14,500	41,100	REG 29	1931, 1951–79	1968	4,560
7640	06764000	S Platte R at Julesburg, Colo. (23,200 mi^2—modified from Ugland and others, 1994)	CR	2,870	7,970	14,000	25,900	39,000	56,700	80,500	124,000	REG 49	1902, 1906–07, 1948–93	1965	37,600
7648a	06764880	S Platte R at Roscoe, Nebr. (drainage area not published)	CR	3,380	6,760	10,000	15,700	21,400	28,400	37,100	52,000	REG 11	1983–93	1983	14,700
7650	06765000	S Platte R at Paxton, Nebr. (24,000 mi^2)	CR	1,700	6,670	13,000	25,500	38,800	55,700	76,900	112,000	REG 30	1940–1969	1965	33,800
7655	06765500	S Platte R at North Platte, Nebr. (24,300 mi^2, approximately)	CR	2,330	6,920	12,500	23,800	36,400	53,800	77,200	120,000	REG 77	1897, 1914–15, 1917, 1921–93	1935	37,100
7660	06766000	Platte R at Brady, Nebr. (56,200 mi^2, approximately, of which about 51,400 mi^2 contributes directly to surface runoff)	CR	3,430	7,090	10,900	18,000	25,400	35,100	48,000	71,100	REG 53	1938–93	1983	23,500
7665	06766500	Platte R near Cozad, Nebr. (56,500 mi^2, approximately, of which about 51,700 mi^2 contributes directly to surface runoff)	CR	3,240	7,560	11,700	18,600	25,100	32,700	41,600	55,800	REG 52	1940–92	1983	21,500
7670	06767000	Platte R near Lexington, Nebr. (61,300 mi^2)	Staff	15,700	24,600	30,100	36,500	40,900	45,000	48,800	53,400	REG 8	1902, 1904–06, 1916–24	1921	35,600
7671	06767100	S Fk Plum Cr trib near Farnam, Nebr. (——— -0.145—N&W)	PS	196 74	535 323	885 654	1,490 1,320	2,070 2,030	2,760 3,640	3,580 5,130	4,880 7,670	LP3W 20 —N&W—	1951–70	1962	2,320
7672	06767200	N Fk Plum Cr trib near Farnam, Nebr. (-0.062—Skew map -0.144—N&W)	PS	22 28	71 153	127 342	234 749	344 1,210	486 1,910	664 2,760	964 4,210	LP3W 27 —N&W—	1952–78	1962	435
7673	06767300	Plum Cr trib at Farnam, Nebr. (-0.010—Skew map -0.144—N&W)	PS	95 116	618 468	1,610 914	4,430 1,770	8,430 2,660	15,000 3,830	25,200 5,320	47,100 7,790	LP3W 46 —N&W—	1947–48, 1951–70	1962	3,110
7674	06767400	N Plum Cr near Farnam, Nebr. (-0.434—Skew map -0.150—N&W)	PS	68 143	361 519	829 983	1,960 1,890	3,350 2,830	5,390 6,070	8,250 8,460	13,700 12,400	LP3W 24 —N&W—	1947, 1951–70	1962	1,600
7674b	06767410	Plum Cr near Farnam, Nebr. (-0.279—Skew map -0.148—N&W)	PS	159 231	722 768	1,540 1,390	3,390 2,560	5,560 3,740	8,610 6,580	12,800 8,990	20,400 13,000	LP3W 32 —N&W—	1947, 1951–78	1962	1,970
7675	06767500	Plum Cr near Smithfield, Nebr. (+0.081—Skew map -0.160—N&W)	CR	384 393	937 1,150	1,450 1,980	2,270 3,490	3,000 4,970	3,820 6,940	4,750 9,200	6,120 12,800	LP3W 32 —N&W—	1947–78	1947	2,800
7680	06768000	Platte R near Overton, Nebr. (56,300 mi^2, approximately, of which about 51,600 mi^2 contributes directly to surface runoff)	CR	5,270	9,250	12,800	18,700	24,100	30,700	38,600	51,400	REG 53	1915–93	1935	37,600

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak	
7680b	06768050	Buffalo Cr trib #1 near Buffalo, Nebr.	PS	13	66	144	317	515	787	1,140	1,780	LP3W 14	1965–78	1968	243
		(——— -0.330—New station for C&SC network analysis)		14	45	77	131	184	243	311	419	—C&SC—			
				Appears to require composite frequency analysis											
7681	06768100	East Buffalo Cr near Buffalo, Nebr.	PS	18	66	122	222	320	436	572	782	LP3W 28	1951–78	1958	208
		(-0.587—Skew map -0.320—C&SC)		13	55	7 115	232	357	519	722	1,060	—C&SC—			
7682	06768200	Buffalo Cr at Buffalo, Nebr.	PS	85	345	673	1,300	1,950	2,750	3,720	5,260	LP3W 17	1951–67	1958	1,570
		(——— -0.330—C&SC)		96	306	534	941	1,340	1,820	2,380	3,270	—C&SC—			
7683	06768300	Buffalo Cr trib #2 near Buffalo, Nebr.	PS	24	102	203	404	613	876	1,200	1,710	LP3W 15	1951–65	1958	172
		(——— ———)		Appears to require composite frequency analysis — zero flow for 6 of 15 peaks											
				No basin characteristics											
7684	06768400	W Buffalo Cr near Buffalo, Nebr.	PS	37	126	225	400	567	765	994	1,350	LP3W 28	1951–78	1958	479
		(+0.399—Skew map -0.320—C&SC)		39	155	298	577	866	1,230	1,680	2,410	—C&SC—			
7685	06768500	Buffalo Cr near Darr, Nebr.	CR	217	703	1,270	2,360	3,500	4,950	6,770	9,840	LP3W 23	1947–69	1947	9,000
		(——— -0.300—C&SC)		108	344	601	1,060	1,500	2,030	2,660	3,630	—C&SC—			
7690	06769000	Buffalo Cr near Overton, Nebr.	CR	136	253	341	461	555	652	750	885	LP3W 10	1949–58	1958	383
		(——— -0.320—New station for C&SC network analysis)		182	535	890	1,520	2,130	2,840	3,630	4,890	—C&SC—			
7691	06769100	Elm Cr trib near Overton, Nebr.	PS	57	99	129	168	198	227	256	294	LP3W 28	1951–78	1965	148
		(-0.480—Skew map ———)		No basin characteristics											
7692	06769200	Elm Cr near Sumner, Nebr.	PS	45	177	344	673	1,020	1,450	1,990	2,880	LP3W 28	1951–78	1965	1,660
		(-0.359—Skew map -0.330—C&SC)		59	155	243	382	507	650	811	1,050	—C&SC—			
7693	06769300	Elm Cr trib #2 near Overton, Nebr.	PS	183	311	400	515	601	687	771	883	LP3W 28	1951–78	1965	679
		(-0.114—Skew map ———)		No basin characteristics											
7695	06769500	Elm Cr near Overton, Nebr.	CR	305	1,440	3,100	6,790	11,100	17,000	25,000	39,300	LP3W 12	1947–58	1947	8,000
		(——— -0.330—New station for C&SC network analysis)		153	334	477	688	871	1,060	1,260	1,560	—C&SC—			
7700	06770000	Platte R near Odessa, Nebr.	CR	5,710	10,200	13,800	19,200	23,800	28,900	34,600	43,100	REG 53	1937–93	1983	22,900
		(58,100 mi^2, approximately, of which about 55,300 mi^2 contributes directly to surface runoff)													
7702	06770200	Platte R near Kearney, Nebr.	CR	5,970	10,500	14,900	22,400	29,800	39,200	51,000	71,400	REG 12	1982–93	1983	23,700
		(57,300 mi^2, approximately, of which about 52,500 mi^2 contributes directly to surface runoff)													
7705	06770500	Platte R near Grand Island, Nebr.	CR	6,310	10,800	13,800	19,200	23,800	28,900	34,600	43,000	REG 53	1934–93	1935	30,000
		(57,600 mi^2, approximately, of which about 52,900 mi^2 contributes directly to surface runoff)													
7706	06770600	Wood R trib near Lodi, Nebr.	PS	10	37	67	124	179	245	323	444	LP3W 27	1952–78	1972	100
		(-0.793—Skew map -0.325—C&SC)		11	53	111	231	364	540	765	1,150	—C&SC—			
7707	06770700	Wood R near Lodi, Nebr.	PS	20	78	147	277	408	568	760	1,060	LP3W 27	1952–78	1978	194
		(-0.436—Skew map -0.330—C&SC)		37	134	248	463	680	950	1,280	1,800	—C&SC—			
7708	06770800	Wood R near Oconto, Nebr.	PS	168	428	666	1,030	1,340	1,680	2,050	2,570	LP3W 29	1952–78	1954	790
		(-0.985—Skew map -0.330—C&SC)		106	329	569	996	1,410	1,910	2,500	3,420	—C&SC—			
7709	06770900	Wood R at Oconto, Nebr.	PS	117	371	648	1,140	1,600	2,160	2,820	3,840	LP3W 29	1952–78	1958	2,390
		(-0.375—Skew map -0.330—C&SC)		159	470	794	1,360	1,900	2,540	3,290	4,460	—C&SC—			
7709b	06770910	Wood R near Lomax, Nebr.	PS	189	606	1,060	1,860	2,630	3,530	4,590	6,210	LP3W 27	1952–78	1960	1,750
		(-0.479—Skew map -0.340—C&SC)		197	573	963	1,630	2,270	3,030	3,900	5,250	—C&SC—			

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak
7710	06771000	Wood R near Riverdale, Nebr. (——— -0.350—C&SC)	CR	505 579	1,440 1,340	2,460 2,020	4,270 3,080	6,060 4,010	8,270 5,050	11,000 6,210	15,300 7,900	LP3W 35 —C&SC—	1923, 1947–80	1947 20,000
7715	06771500	Wood R near Gibbon, Nebr. (-0.214—Skew map -0.340—C&SC)	CR	555 476	1,340 1,100	2,040 1,640	3,110 2,480	4,020 3,210	5,020 4,020	6,100 4,900	7,650 6,200	LP3W 28 —C&SC—	1949–76	1967 4,050
7720	06772000	Wood R near Alda, Nebr. (-0.537—Skew map -0.340—C&SC)	CR	354 589	731 1,340	1,030 2,000	1,460 3,010	1,810 3,880	2,160 4,850	2,540 5,910	3,050 7,450	LP3W 40 —C&SC—	1954–93	1967 1,630
7740	06774000	Platte R near Duncan, Nebr. (59,300 mi^2, approximately, of which about 54,600 mi^2 contributes directly to surface runoff)	CR	7,970	13,300	17,600	24,300	30,200	36,800	44,500	56,200	REG 53	1896–1909, 1911–15, 1928–93	1905 44,100
7755	06775500	Middle Loup R at Dunning, Nebr. (——— +1.083—HPS)	CR	722 504	887 799	1,020 971	1,200 1,350	1,350 1,580	1,510 2,000	1,700 2,510	1,960 3,340	LP3W 48 —HPS—	1946–93	1989 2,160
7759	06775900	Dismal R near Thedford, Nebr. (——— +1.112—HPS)	CR	318 331	447 447	559 527	736 638	897 637	1,090 808	1,310 1,010	1,670 1,350	LP3W 27 —HPS—	1967–93	1983 1,160
7765	06776500	Dismal R at Dunning, Nebr. (+1.619—HP +1.118—HPS, HPC)	CR	541 456 589	680 648 684	789 767 832	948 929 850	1,080 961 1,040	1,230 1,210 1,260	1,390 1,500 1,520	1,640 1,990 1,940	LP3W 49 —HPS— —HPC—	1932, 1946–93	1983 1,290
7770	06777000	Middle Loup R near Milburn, Nebr. (——— +1.021—New station for HPS network analysis)	CR	1,450 1,990	1,830 3,060	2,120 3,390	2,530 4,600	2,860 5,080	3,220 6,350	3,620 7,830	4,200 10,500	LP3W 9 —HPS—	1952–56, 1958, 1961-64	1952 2,440
7775	06777500	Middle Loup R at Walworth, Nebr. (——— +1.016—HPS, HPC)	CR	1,820 2,280 2,220	2,240 3,570 3,300	2,540 4,040 4,000	2,970 5,520 4,660	3,320 6,060 5,930	3,690 7,630 7,440	4,090 9,490 9,260	4,660 12,500 12,200	LP3W 20 —HPS— —HPC—	1941–60	1946 2,990
7776	06777600	Lillian Cr trib near Broken Bow, Nebr. (+0.044—Skew map -0.330—C&SC)	PS	3 6	8 20	11 33	17 56	22 76	27 101	33 129	42 173	LP3W 27 —C&SC—	1952–78	1962, 1978 20
7777	06777700	Lillian Cr near Broken Bow, Nebr. (-0.568—Skew map -0.325—C&SC)	PS	78 33	335 143	675 290	1,360 591	2,090 918	3,020 1,340	4,180 1,880	6,100 2,790	LP3W 29 —C&SC—	1947, 1951–78	1947 930
7778	06777800	Lillian Cr trib near Walworth, Nebr. (-0.285—Skew map -0.325—C&SC)	PS	5 27	49 125	187 260	719 545	1,630 858	3,290 1,270	6,110 1,800	12,500 2,700	LP3W 28 —C&SC—	1951–78	1951 585
7780	06778000	Middle Loup R at Sargent, Nebr. (——— +1.004—HPS, HPC)	CR	1,780 2,440 2,800	2,260 3,840 4,220	2,630 4,490 5,240	3,160 6,170 6,660	3,610 6,810 8,570	4,090 8,620 10,900	4,620 10,800 13,700	5,400 14,300 18,400	LP3W 20 —HPS— —HPC—	1937–38, 1953–70	1962 3,200
7790	06779000	Middle Loup R at Arcadia, Nebr. (+1.032—HP +0.943—HPS)	CR	3,030 3,530	4,780 5,760	6,380 7,020	9,010 9,750	11,500 11,000	14,600 14,000	18,300 17,500	24,500 23,200	LP3W 56 —HPS—	1938–93	1947 18,500
7800	06780000	Middle Loup R at Rockville, Nebr. (——— +0.918—HPS)	CR	2,930 4,460	4,940 7,330	6,870 9,180	10,200 13,000	13,500 14,800	17,600 19,000	22,800 23,900	31,800 32,000	LP3W 17 —HPS—	1956–64, 1968–75	1957 10,400
7825	06782500	S Loup R at Ravenna, Nebr. (+0.507—HP +0.458—HPS	CR	3,660 3,780	8,220 6,340	13,100 12,400	22,200 17,500	31,700 21,000	44,400 28,800	61,000 38,700	90,700 55,600	LP3W 25 —HPS—	1941–58, 1968–75	1947 41,000
7826	06782600	S Br Mud Cr trib near Broken Bow, Nebr. (-0.715—Skew map, HP ———)	PS	65	131	184	258 *TDA* $<$1 mi^2	317	379	444	533	LP3W 28	1951–78	1972 218

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak: WY	Discharge
7827	06782700	S Br Mud Cr at Broken Bow, Nebr. (+0.592—HP +0.420—HPS)	PS	23 83	106 144	256 378	696 1,110	1,370 2,130	2,590 3,420	4,710 5,270	9,970 8,970	LP3W 30 —HPS—	1951–77	1956	1,790
7828	06782800	N Br Mud Cr at Broken Bow, Nebr. (——— -0.330—C&SC)	PS	70 58	386 220	874 417	1,980 796	3,260 1,190	5,000 1,680	7,290 2,280	11,300 3,260	LP3W 17 —C&SC—	1951–67	1956	1,550
7829	06782900	Mud Cr trib near Broken Bow, Nebr. (+0.148—Skew map -0.340—C&SC)	PS	30 103	184 455	441 950	1,070 2,010	1,850 3,190	2,970 4,750	4,520 6,760	7,410 10,200	LP3W 29 —C&SC—	1945, 1951–78	1945	1,500
7835	06783500	Mud Cr near Sweetwater, Nebr. (——— -0.350—C&SC)	CR	866 1,690	1,910 3,840	2,870 5,860	4,420 9,070	5,830 11,900	7,480 15,100	9,380 18,700	12,300 24,000	LP3W 64 —C&SC—	1947–93	1947	27,000
7840	06784000	S Loup R at St. Michael, Nebr. (+0.456—HP +0.266—HPS)	CR	3,100 6,350	7,070 10,800	11,200 21,700	18,700 32,300	26,400 39,300	36,300 54,900	48,900 74,600	70,900 109,000	LP3W 50 —HPS—	1944–93	1947	50,000
7847	06784700	Turkey Cr near Farwell, Nebr. (——— -0.296—New station for C&SC network analysis)	PS	356 208	967 608	1,570 1,020	2,550 1,730	3,440 2,430	4,450 3,240	5,590 4,140	7,290 5,590	LP3W 24 —C&SC—	1953–78	1965	1,450
				Appears to require composite frequency analysis											
7848	06784800	Turkey Cr near Dannebrog, Nebr. (-0.183—Skew map, NE -0.273—C&SC)	CR	759 437	1,390 1,170	1,870 1,920	2,520 3,160	3,030 4,320	3,560 5,660	4,110 7,210	4,860 9,570	LP3W 19 —C&SC—	1967–70, 1979–93	1967	2,680
7850	06785000	Middle Loup R at St. Paul, Nebr. (+0.632—HP +0.684—HPS)	CR	8,350 10,400	14,500 17,600	20,100 25,600	29,400 34,000	38,300 38,500	49,200 49,800	62,500 63,100	84,600 86,300	LP3W 71 —HPS—	1895–99, 1903, 1929–93	1947	72,000
7860	06786000	N Loup R at Taylor, Nebr. (+0.615—HP +1.047—HPS, HPC)	CR	1,420 856 984	1,890 1,510 1,610	2,260 1,860 1,950	2,810 2,620 2,770	3,270 3,300 3,420	3,780 4,110 4,200	4,350 5,080 5,130	5,210 6,660 6,620	LP3W 57 —HPS— —HPC—	1937–93	1983	3,210
7870	06787000	Calamus R near Harrop, Nebr. (——— +1.020—HPS)	CR	476 354	601 662	694 855	823 1,320	929 1,870	1,040 2,340	1,170 2,910	1,350 3,850	LP3W 16 —HPS—	1978–93	1983	801
7875	06787500	Calamus R near Burwell, Nebr. (+1.223—HP +1.028—HPS, HPC)	CR	597 501 457	810 920 751	985 1,160 917	1,250 1,600 1,120	1,480 2,120 1,340	1,750 2,620 1,600	2,050 3,200 1,900	2,520 4,160 2,370	LP3W 53 —HPS— —HPC—	1941–93	1964	1,790
7885	06788500	N Loup R at Ord, Nebr. (+0.720—HP +0.938—HPS, HPC)	CR	2,750 2,400 2,910	4,210 4,400 5,370	5,470 5,600 6,930	7,480 8,100 10,900	9,330 10,400 14,100	11,500 13,100 18,000	14,100 16,300 22,800	18,400 21,400 30,700	LP3W 44 —HPS— —HPC—	1936–38, 1952–93	1962	10,100
7889a	06788988	Mira Cr near North Loup, Nebr. (——— -0.324—New station for C&SC network analysis)	CR	306 981	1,250 2,700	2,480 4,490	5,010 7,710	7,750 10,900	11,300 14,500	15,900 18,600	23,700 25,200	LP3W 14 —C&SC—	1980–93	1981	3,460
				Appears to require composite frequency analysis											
7890	06789000	N Loup R at Scotia, Nebr. (+0.997—HP +0.898—HPS, HPC)	CR	5,250 3,120 3,860	10,200 5,640 7,070	15,500 7,390 9,620	25,400 11,100 15,400	36,000 14,000 20,300	50,300 17,900 26,500	69,500 22,500 34,200	105,000 30,000 47,200	LP3W 33 —HPS— —HPC—	1937–69	1966	37,600
7891	06789100	Davis Cr trib near North Loup, Nebr. (——— -0.336—C&SC)	PS	220 84	740 350	1,320 707	2,370 1,450	3,390 2,260	4,610 3,310	6,030 4,660	8,250 6,940	LP3W 17 —C&SC—	1951–67	1962	1,780
7892	06789200	Davis Cr trib #2 near North Loup, Nebr. (-0.210—Skew map, NE +0.318—C&SC)	PS	119 117	471 449	922 869	1,820 1,710	2,770 2,590	4,000 3,710	5,540 5,110	8,100 7,430	LP3W 20 —C&SC—	1951–70	1966	2,360
7893	06789300	Davis Cr near North Loup, Nebr. (——— -0.364—C&SC)	PS	684 245	1,160 764	1,490 1,340	1,920 2,390	2,230 3,420	2,540 4,680	2,850 6,170	3,260 8,540	LP3W 17 —C&SC—	1951–67	1957	1,820

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak	
7894	06789400	Davis Cr southwest of North Loup, Nebr.	PS	218	823	1,550	2,930	4,310	6,010	8,050	11,300	LP3W 28	1951–78	1957	2,220
		(-0.449—Skew map, NE -0.374—C&SC)		325	993	1,730	3,070	4,380	5,970	7,860	10,800	—C&SC—			
7895	06789500	Davis Cr near Cotesfield, Nebr.	CR	738	1,200	1,530	1,940	2,250	2,560	2,860	3,270	LP3W 11	1948–58	1958	1,720
		(——— -0.333—New station for C&SC network analysis)		Basin characteristic(s) outside of range for equations								—C&SC—			
7905	06790500	N Loup R near St. Paul, Nebr.	CR	5,630	10,800	16,300	26,600	37,500	52,300	72,000	108,000	LP3W 69	1896–97,	1896	90,000
		(+1.196—HP +0.849—HPS, HPC)		4,200	7,500	10,300	15,100	18,700	24,000	30,000	40,600	—HPS—	1899, 1903,		
				5,360	9,820	14,400	21,900	29,600	39,400	51,700	72,800	—HPC—	1929–93		
7906	06790600	East Br Spring Cr trib near Wolbach, Nebr.	PS	68	283	570	1,160	1,810	2,660	3,750	5,600	LP3W 27	1952–78	1966	1,340
		(+0.122—Skew map, NE -0.238—NE, C&SC)		154	387	628	1,060	1,480	1,990	2,730	3,700	—NE—			
				29	118	231	455	691	994	1,370	1,990	—C&SC—			
7907	06790700	W Br Spring Cr at Brayton, Nebr.	PS	527	1,610	2,800	4,940	7,040	9,600	12,700	17,600	LP3W 27	1952–78	1966	12,800
		(——— -0.260—NE, C&SC)		734	1,710	2,620	4,140	5,530	7,170	8,980	11,900	—NE—			
				265	855	1,530	2,770	3,990	5,490	7,280	10,100	—C&SC—			
7908	06790800	W Br Spring Cr near Wolbach, Nebr.	PS	1,050	2,600	4,100	6,540	8,770	11,400	14,300	18,800	LP3W 17	1951–67	1966	12,800
		(——— -0.258—NE, C&SC)		1,190	2,770	4,240	6,640	8,840	11,400	14,300	18,800	—NE—			
				469	1,360	2,310	3,990	5,590	7,520	9,770	13,300	—C&SC—			
7909	06790900	Mary's Cr at Wolbach, Nebr.	PS	172	680	1,340	2,690	4,160	6,090	8,560	12,800	LP3W 16	1952–67	1966	4,700
		(——— -0.302—NE, C&SC)		499	1,260	2,040	3,390	4,690	6,260	8,530	11,300	—NE—			
				258	932	1,770	3,430	5,150	7,340	10,000	14,500	—C&SC—			
7911	06791100	Spring Cr near Cushing, Nebr.	PS	887	2,710	4,750	8,530	12,300	17,100	23,000	32,700	LP3W 31	1948–78	1966	35,000
		(——— -0.226—NE, C&SC)		1,580	3,680	5,740	9,270	12,700	16,800	23,800	31,000	—NE—			
				1,430	3,540	5,640	9,140	12,300	16,000	20,200	26,600	—C&SC—			
7915	06791500	Cedar R near Spalding, Nebr.	CR	620	1,090	1,550	2,370	3,210	4,300	5,700	8,200	LP3W 45	1945–53,	1947	4,000
		(+0.924—HP +1.016—HPS, HPC, NE)		270	498	671	886	1,180	1,460	1,790	2,320	—HPS—	1958–93		
				531	848	1,010	1,720	2,050	2,450	2,920	3,690	—HPC—			
				937	1,900	2,810	4,400	5,970	7,940	11,700	15,400	—NE—			
7920	06792000	Cedar R near Fullerton, Nebr.	CR	2,710	5,880	9,310	15,900	23,000	32,600	45,500	69,500	LP3W 54	1932,	1966	64,700
		(——— +0.664—HPS, NE)		1,890	3,500	5,770	8,500	11,300	14,800	19,200	26,400	—HPS—	1941–93		
				2,110	4,560	6,940	11,000	15,000	19,900	29,300	38,100	—NE—			
7930	06793000	Loup R near Genoa, Nebr.	CR	14,000	26,700	39,400	62,300	85,700	116,000	155,000	225,000	LP3S 54	1929–32,	1966	129,000
		($14,320\ mi^2$, approximately, of which about $5,620\ mi^2$ contributes directly to surface runoff) (——— ———)		Based on comparative analysis of unregulated and regulated periods of record for stations below Loup R Power Canal, peak flows are not considered regulated, although coded as such from 1937. No basin characteristics									1944–93		
7935	06793500	Beaver Cr at Loretto, Nebr.	CR	946	1,980	3,050	5,010	7,040	9,710	13,200	19,400	LP3W 23	1945–53,	1993	5,600
		(——— +0.677—HPS, NE)		591	1,260	1,890	2,870	4,390	5,520	6,860	9,050	—HPS—	1980–93		
				666	1,570	2,540	4,300	6,070	8,270	12,600	16,700	—NE—			
7939a	06793995	Skeedee Cr trib near Genoa, Nebr.	PS	137	238	316	426	516	612	715	863	LP3W 11	1968–78	1969	485
		(——— ———)		*TDA* < $1\ mi^2$											
7940	06794000	Beaver Cr at Genoa, Nebr.	CR	2,240	4,800	7,410	12,100	17,000	23,200	31,200	45,300	LP3W 53	1941–93	1950	21,200
		(+0.458—HP +0.450—HPS, HPC, NE)		1,850	3,420	6,410	9,520	12,900	17,300	22,800	32,100	—HPS—			
				2,050	3,600	7,900	10,100	14,700	20,700	28,600	42,800	—HPC—			
				1,830	4,090	6,330	10,200	13,900	18,400	26,600	34,700	—NE—			

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak
7945	06794500	Loup R at Columbus, Nebr.	CR	16,400	31,000	44,700	67,800	90,000	117,000	151,000	206,000	LP3W 67	1895–1915,	1966 119,000
		(15,200 mi^2, approximately, of which about 6,230 mi^2		17,700	31,000	43,800	67,700	80,700	106,000	137,000	188,000	—HPS—	1933–78	
		contributes directly to surface runoff)		Based on comparative analysis of unregulated and regulated periods of record for										
		(+0.202—HP +0.645—HPS)		stations below Loup R Power Canal, peak flows are not considered regulated,										
				although coded as such from 1937.										
7947a	06794710	Bone Cr near David City, Nebr.	PS	464	979	1,400	2,020	2,530	3,070	3,640	4,440	LP3W 11	1963,	1963 20,900
		(——— -0.331—New station for East network analysis)		1,010	2,300	3,400	5,050	6,450	7,970	9,670	12,100	—East—	1968–78	
7950	06795000	Shell Cr at Newman Grove, Nebr.	CR	1,730	5,160	8,860	15,400	21,800	29,500	38,700	53,300	LP3W 19	1950–67,	1966 14,500
		(——— -0.250—NE)		2,440	5,470	8,150	12,300	16,000	20,000	23,200	30,300	—NE—	1969	
7955	06795500	Shell Cr near Columbus, Nebr.	CR	1,520	2,810	3,770	5,050	6,030	7,020	8,030	9,400	LP3W 80	1947–75,	1990 8,000
		(-0.451—Skew map, NE -0.380—NE)		2,930	5,720	7,860	10,900	13,300	16,000	15,900	20,900	—NE—	1978–93	
7960	06796000	Platte R at North Bend, Nebr.	CR	27,500	46,200	61,800	85,600	107,000	130,000	158,000	200,000	REG 45	1949–93	1960 112,000
		(70,400 mi^2, approximately, of which about 57,800 mi^2 contributes directly to surface runoff)												
7969a	06796973	Elkhorn R near Atkinson, Nebr.	CR	1,000	1,950	2,740	3,910	4,900	6,000	7,200	8,960	LP3W 11	1983–93	1984 2,500
		(——— ———)		Appears to require composite frequency analysis										
				No basin characteristics										
7969b	06796978	Holt Cr near Emmet, Nebr.	CR	292	659	1,010	1,570	2,090	2,710	3,420	4,540	LP3W 11	1979–89	1987 948
		(——— 0.000—New station for NE network analysis)		343	785	1,250	2,090	2,920	3,920	5,590	7,580	—NE—		
7975	06797500	Elkhorn R at Ewing, Nebr.	CR	1,240	3,120	5,190	9,080	13,200	18,600	25,600	37,900	LP3W 47	1947–93	1962 7,500
		(-0.149—Skew map, NE +0.330—HPS, NE)		1,230	2,830	3,530	4,920	7,370	8,740	10,300	12,800	—HPS—		
				1,470	3,250	5,060	8,200	11,300	15,000	21,800	28,700	—NE—		
7980	06798000	S Fk Elkhorn R at Ewing, Nebr.	CR	487	1,200	1,960	3,360	4,800	6,660	9,030	13,100	LP3W 38	1947–53,	1987 5,640
		(+0.205—Skew map, NE +0.202—HPS, NE)		428	964	1,220	2,000	3,270	4,000	4,860	6,240	—HPS—	1961–72,	
				459	1,050	1,670	2,800	3,930	5,340	7,950	10,700	—NE—	1978–93	
7983	06798300	Clearwater Cr near Clearwater, Nebr.	CR	344	656	935	1,380	1,790	2,280	2,850	3,760	LP3W 19	1962–64,	1987 1,510
		(——— +0.263—HPS, NE)		306	726	1,130	2,110	3,870	4,960	6,270	8,440	—HPS—	1978–93	
				636	1,620	2,750	4,900	7,150	10,100	17,100	22,600	—NE—		
7985	06798500	Elkhorn R at Neligh, Nebr.	CR	1,840	4,100	6,260	9,880	13,300	17,400	22,300	30,100	LP3W 78	1932–58,	1987 14,100
		(+0.045—Skew map, NE +0.066—HPS, NE)		1,800	4,180	5,280	7,790	11,800	14,200	17,000	21,300	—HPS—	1960–93	
				2,280	5,040	7,810	12,600	17,200	22,900	33,600	43,800	—NE—		
7990	06799000	Elkhorn R at Norfolk, Nebr.	CR	4,430	8,560	12,000	17,300	21,800	26,800	32,500	40,800	LP3W 61	1897–1903,	1967 16,900
		(-0.163—Skew map, NE -0.005—HPS, NE)		3,180	6,920	9,730	13,900	19,800	24,400	29,900	38,500	—HPS—	1940–93	
				2,940	6,350	9,670	15,300	20,600	27,100	38,500	49,900	—NE—		
7990b	06799080	Willow Cr near Foster, Nebr.	CR	141	327	515	849	1,180	1,600	2,100	3,000	LP3W 18	1976–93	1987 574
		(——— +0.233—NE)		252	572	908	1,490	2,060	2,740	3,640	4,980	—NE—		
7991	06799100	N Fk Elkhorn R near Pierce, Nebr.	CR	1,400	3,500	5,800	9,800	13,900	19,100	25,600	36,800	LP3W 33	1961–93	1971 15,200
		(——— +0.118—HPS, NE)		1,800	3,700	7,400	12,600	19,200	26,300	35,100	50,200	—HPS—		
				2,760	6,760	10,900	18,200	25,200	33,700	49,100	63,600	—NE—		
7991b	06799190	S Fk Union Cr trib near Cornlea, Nebr.	CR	523	1,140	1,680	2,500	3,210	4,010	4,880	6,170	LP3W 12	1967–78	1977 1,830
		(——— -0.179—New station for NE network analysis)		Basin characteristic(s) outside of range for equations								—NE—		

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft³/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft³/s) of maximum peak
7992a	06799230	Union Cr at Madison, Nebr. (——— -0.143—NE)	CR	2,070 2,490	6,740 5,670	12,200 8,560	22,600 13,000	33,300 16,800	46,879 21,000	63,805 23,500	92,090 30,900	LP3W 15 —NE—	1979–93	1990 15,100
7993a	06799350	Elkhorn R at West Point, Nebr. (-0.202—Skew map, NE -0.061—HPS, NE)	CR	11,200 7,870 5,140	21,600 16,300 10,800	30,300 26,200 16,200	43,200 37,800 24,800	54,100 51,300 32,800	66,200 66,000 42,100	79,600 83,300 56,500	99,300 111,000 72,800	LP3W 33 —HPS— —NE—	1961–93	1967 44,000
7993b	06799385	Pebble Cr at Scribner, Nebr. (——— -0.163—NE)	CR	7,270 3,730	14,700 7,880	21,100 11,200	30,700 16,100	38,900 20,000	48,000 24,200	58,100 24,800	73,000 32,400	LP3W 15 —NE—	1979–93	1991 27,900
7994a	06799423	N Logan Cr near Laurel, Nebr. (——— -0.088—New station for NE network analysis)	PS	330 447	1,150 999	2,180 1,490	4,300 2,290	6,640 3,010	9,800 3,800	13,900 4,220	21,400 5,720	LP3W 12 —NE—	1965, 1967–78	1971 3,020
				Appears to require composite frequency analysis										
7994b	06799450	Logan Cr at Pender, Nebr. (-0.454—Skew map, NE -0.318—NE)	CR	6,830 5,870	14,100 12,200	20,000 17,400	28,600 24,800	35,500 30,900	43,000 37,400	50,800 38,900	61,700 50,500	LP3W 28 —NE—	1966–93	1971 36,900
7995	06799500	Logan Cr near Uehling, Nebr. (-0.400—Skew map, NE -0.370—NE)	CR	6,090 6,160	11,300 11,900	15,200 16,100	20,300 21,900	24,300 26,300	28,300 30,900	32,300 29,200	37,600 38,100	LP3W 54 —NE—	1940–93	1971 25,200
7998a	06799850	Pond Cr near Schuyler, Nebr. (——— ———)	PS	10	92	262	741	1,390	2,400	3,850	6,670	LP3W 10	1968-78	1972 500
				TDA < 1 mi²										
8000	06800000	Maple Cr near Nickerson, Nebr. (-0.288—Skew map, NE -0.406—NE)	CR	2,930 3,750	5,520 7,400	7,460 10,200	10,100 14,000	12,100 17,100	14,200 20,400	16,300 19,900	19,200 26,000	LP3W 43 —NE—	1944, 1952–93	1944 35,000
8003a	06800350	Elkhorn R trib near Nickerson, Nebr. (——— +0.112—New station for NE network analysis)	PS	60	188	344	658	1,000	1,470	2,100	3,220	LP3W 11 —NE—	1968–78	1975 225
				Basin characteristic(s) outside of range for equations										
8005	06800500	Elkhorn R at Waterloo, Nebr. (+0.080—Skew map, NE -0.107—HPS, NE)	CR	12,200 12,500 8,940	23,000 25,100 18,400	32,000 44,600 26,600	45,200 65,900 39,600	56,500 87,600 51,100	69,000 116,000 64,400	82,700 150,000 81,500	103,000 206,000 104,000	LP3W 113 —HPS— —NE—	1881, 1899-1903 1911–15, 1929-93	1944 100,000
8010	06801000	Platte R near Ashland, Nebr. (84,200 mi², from state base maps, scale—100,000)	CR	43,900	64,700	79,900	101,000	117,000	135,000	153,000	180,000	REG 30	1929–53, 1989–93	1993 130,000
8030	06803000	Salt Cr at Roca, Nebr. (——— -0.548—East)	CR	4,040 6,890 1,590	9,550 14,800 3,860	14,300 20,900 6,040	21,100 29,200 9,640	26,700 35,600 13,000	32,500 42,300 16,800	38,600 49,100 21,300	47,000 58,400 28,300	LP3W 54 —East— REG 29	1950–93	1950 67,000
				Unregulated prior to 1963; 30 percent of basin regulated after 1964										
8032	06803200	Antelope Cr at 48th Street, Lincoln, Nebr. (7.14 mi²)	PS	503	958	1,330	1,860	2,300	2,780	3,290	4,030	REG 17	1958–78	1958 3,300
8033	06803300	Antelope Cr at 27th Street, Lincoln, Nebr. (10.6 mi²)	PS	994	1,610	2,000	2,480	2,820	3,130	3,430	3,810	REG 17	1957–78	1958 2,570
8034	06803400	Antelope Cr at Lincoln, Nebr. (12.1 mi²)	PS	1,230	1,960	2,540	3,390	4,100	4,900	5,790	7,120	REG 17	1958–78	1967 3,370
8035	06803500	Salt Cr at Lincoln, Nebr. (685 mi²) (——— ———)	CR	8,750 7,820	16,500 14,500	22,300 18,900	30,200 24,100	36,300 27,700	42,500 31,000	48,800 34,000	57,300 37,600	LP3W 101 REG 132	1908, 1950–93	1993 28,400
				Unregulated prior to 1962; 31 percent of basin regulated after 1967 Appears to require composite frequency analysis No basin characteristics										
8035b	06803510	Little Salt Cr near Lincoln, Nebr. (-0.205—Skew map, SE -0.313—East)	CR	1,770 2,140	4,180 4,870	6,380 7,170	9,820 10,500	12,800 13,400	16,200 16,500	20,000 19,900	25,500 24,700	LP3W 25 —East—	1969–93	1993 8,480

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak: WY	Discharge
8035c	06803520	Stevens Cr near Lincoln, Nebr.	CR	1,680	4,690	7,690	12,700	17,200	22,400	28,300	37,100	LP3W 25	1969–93	1989	12,900
		(-0.528—Skew map, SE -0.329—East)		2,330	5,230	7,640	11,200	14,100	17,400	20,800	25,800	—East—			
8035d	06803530	Rock Cr near Ceresco, Nebr.	CR	2,950	6,170	8,890	13,000	16,400	20,200	24,300	30,200	LP3W 24	1970–93	1987	23,300
		(+0.405—Skew map -0.273—East)		3,420	7,550	11,000	16,000	20,200	24,700	29,600	36,700	—East—			
8035e	06803540	Dee Cr near Alvo, Nebr.	PS	1,010	2,200	3,220	4,740	6,030	7,430	8,950	11,100	LP3W 17	1962–78	1978	2,800
		(——— -0.253—East)		780	1,840	2,770	4,200	5,440	6,830	8,380	10,700	—East—			
				Appears to require composite frequency analysis											
8035f	06803555	Salt Cr at Greenwood, Nebr. (1,050 mi²)	CR	11,700	24,900	36,100	52,800	67,000	82,400	99,200	123,000	LP3W 11	1952–93	1984	46,800
		(——— ———)		13,400	31,600	45,900	65,000	79,200	93,100	106,000	123,000	REG 26			
				Unregulated prior to 1962; 20 percent of basin regulated after 1967											
				Appears to require composite frequency analysis No basin characteristics											
8035g	06803570	Dunlap Cr trib near Weston, Nebr.	PS	245	453	607	814	974	1,140	1,300	1,520	LP3W 29	1950–78	1963	923
		(-0.128—Skew map ———)					*TDA* <1 mi²								
8036	06803600	N Fk Wahoo Cr near Prague, Nebr.	PS	1,420	4,350	7,380	12,400	17,000	22,000	27,900	36,400	LP3W 135	1951–78	1963	15,900
		(-0.524—Skew map, SE -0.440—East)		1,660	3,650	5,270	7,620	9,570	11,700	13,900	17,100	—East—			
8037	06803700	N Fk Wahoo Cr trib near Weston, Nebr.	PS	1,330	2,780	3,960	5,650	7,020	8,470	9,990	12,100	LP3W 79	1950–67	1963	13,800
		(——— -0.414—East)		1,100	2,540	3,760	5,550	7,070	8,730	10,500	13,100	—East—			
8039	06803900	N Fk Wahoo Cr at Weston, Nebr.	PS	1,560	4,440	7,320	12,100	16,400	21,400	27,000	35,400	LP3W 77	1951–78	1963	81,400
		(-0.104—Skew map -0.438—East)		2,830	6,080	8,690	12,400	15,500	18,700	22,100	26,900	—East—			
8040	06804000	Wahoo Cr at Ithaca, Nebr.	CR	4,200	9,400	14,100	21,200	27,400	34,400	42,000	53,400	LP3W 150	1950–93	1963	77,400
		(+0.018—Skew map* -0.345—East)		6,580	13,700	19,400	27,300	33,700	40,500	47,600	57,600	—East—			
		*Should have been used for development of SE equation													
8041	06804100	Silver Cr near Cedar Bluffs, Nebr.	PS	475	1,100	1,690	2,620	3,450	4,410	5,500	7,150	LP3W 84	1950–78	1959	4,040
		(-0.004—Skew map, SE -0.113—East)		437	1,080	1,690	2,660	3,560	4,610	5,820	7,700	—East—			
8042	06804200	Silver Cr near Colon, Nebr.	PS	600	1,840	3,250	5,940	8,710	12,300	16,700	24,300	LP3W 84	1950–78	1959	12,000
		(+0.014—Skew map, SE -0.127—East)		842	2,130	3,330	5,230	6,940	8,920	11,200	14,700	—East—			
8043	06804300	Silver Cr trib near Colon, Nebr.	PS	77	270	517	1,030	1,610	2,390	3,430	5,310	LP3W 84	1951–78	1959	5,000
		(+0.115—Skew map, SE -0.077—East)		204	610	1,040	1,790	2,530	3,460	4,590	6,450	—East—			
8044	06804400	Silver Cr trib at Colon, Nebr.	PS	102	386	766	1,580	2,500	3,780	5,500	8,640	LP3W 84	1951–78	1959	4,640
		(-0.055—Skew map, SE -0.080—East)		316	921	1,550	2,620	3,670	4,950	6,510	9,040	—East—			
8045	06804500	Silver Cr at Ithaca, Nebr.	PS	643	2,590	5,220	10,800	17,100	25,800	37,200	57,600	LP3W 84	1950–78	1959	21,600
		(-0.100—Skew map, SE -0.111—East)		1,250	3,190	5,000	7,880	10,500	13,500	16,900	22,200	—East—			
8050	06805000	Salt Cr near Ashland, Nebr.	CR	17,900	32,000	41,700	54,000	63,000	71,600	80,000	90,600	LP3W 21	1947–67	1963	87,000
		(——— -0.135—East)		5,990	14,200	21,600	32,900	42,900	54,200	67,100	86,400	—East—			
8055	06805500	Platte R at Louisville, Nebr.	CR	46,600	76,700	98,400	127,000	150,000	173,000	197,000	229,000	REG 41	1953–93	1993	160,000
		(85,800 mi², approximately, of which about 71,000 mi² contributes directly to surface runoff—from Boohar and others, 1992)													
8055b	06805510	Buffalo Cr near Gretna, Nebr.	PS	Insufficient data—flows unknown for all 11 peaks									1968-78	---	---
		(——— -0.183—New station for East network analysis)		325	743	1,130	1,770	2,370	3,080	3,910	5,200	—East—			
8060	06806000	Waubonsie Cr near Bartlett, Iowa	CR	Out-of-state station used only for skew relation(s)									1946–69	1950	14,500
		(-0.023—Skew map ———)		No basin characteristics											

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak: WY	Discharge
8064	06806400	Weeping Water Cr at Elmwood, Nebr.	PS	1,830	4,640	7,310	11,600	15,400	19,800	24,600	31,900	LP3W 22	1950–67	1951	6,390
		(——— -0.275—East)		1,270	3,050	4,600	6,930	8,940	11,200	13,600	17,200	—East—			
8064b	06806420	Stove Cr near Elmwood, Nebr.	PS	1,210	2,260	3,070	4,180	5,060	5,980	6,920	8,220	LP3W 22	1950–67,	1956	3,430
		(——— -0.317—East)		509	1,350	2,140	3,380	4,480	5,740	7,160	9,310	—East—	1971		
8064c	06806440	Stove Cr at Elmwood, Nebr.	PS	1,310	3,230	4,990	7,750	10,100	12,800	15,800	20,000	LP3W 29	1950–78	1950	9,500
		(-0.398—Skew map, SE -0.323—East)		885	2,210	3,390	5,190	6,740	8,480	10,400	13,200	—East—			
8064d	06806460	Weeping Water Cr at Weeping Water, Nebr.	PS	2,360	6,010	9,450	14,900	19,700	25,200	31,200	40,100	LP3W 96	1947,	1950	30,300
		(-0.575—Skew map, SE -0.286—East)		2,930	6,460	9,380	13,700	17,200	21,100	25,300	31,400	—East—	1950–78		
8064e	06806470	Weeping Water Cr trib near Weeping Water, Nebr.	PS	281	622	924	1,390	1,790	2,240	2,740	3,470	LP3W 29	1950–78	1967	1,570
		(-0.303—Skew map ———)			*TDA* <1mi^2 Basin characteristics incomplete										
8065	06806500	Weeping Water Cr at Union, Nebr.	CR	5,660	15,500	25,100	40,700	54,800	70,700	88,500	115,000	LP3W 44	1950–93	1993	65,100
		(-0.377—Skew map, SE -0.367—East)		6,320	13,200	18,600	26,200	32,300	38,680	45,600	55,100	—East—			
8077a	06807720	Middle Silver Cr near Avoca, Iowa,	PS	Out-of-state station used only for skew relation(s)									1953–84,	1976	1,200
		(-0.254—Skew map ———)											1986		
8077b	06807760	Middle Silver Cr near Oakland, Iowa	PS	Out-of-state station used only for skew relation(s)									1953–90	1973	2,110
		(+0.030—Skew map ———)													
8077c	06807780	Middle Silver Cr at Treynor, Iowa	PS	Out-of-state station used only for skew relation(s)									1953–90	1973	3,700
		(+0.314—Skew map ———)													
8085	06808500	W Nishnabotna R at Randolph, Iowa	CR	Out-of-state station used only for skew relation(s)									1949–93	1987	40,800
		(-0.617—Skew map ———)		No basin characteristics											
8100	06810000	Nishnabotna R above Hamburg, Iowa	CR	Out-of-state station used only for skew relation(s)									1922–23,	1947	55,500
		(-0.244—Skew map ———)		No basin characteristics									1929–93		
8100b	06810060	Honey Cr near Peru, Nebr.	PS	529	1,190	1,800	2,760	3,620	4,610	5,730	7,420	LP3W 11	1968–78	1973	3,200
		(——— -0.155—New station for East network analysis)		256	599	923	1,470	1,990	2,600	3,230	4,470	—East—			
8101	06810100	Hooper Cr trib near Palmyra, Nebr.	PS	710	1,710	2,610	4,000	5,200	6,520	7,970	10,060	LP3W 29	1950–78	1963	4,210
		(-0.064—Skew map, SE -0.323—East)		806	1,950	2,970	4,500	5,840	7,330	8,980	11,400	—East—			
8102	06810200	Hooper Cr near Palmyra, Nebr.	PS	3,400	6,980	9,860	13,900	17,200	20,600	24,100	29,000	LP3W 18	1950–67	1950	47,600
		(——— -0.438—East)		2,930	6,720	9,860	14,400	18,100	22,000	26,300	32,200	—East—			
8103	06810300	Wolf Cr near Syracuse, Nebr.	PS	1,900	4,980	7,850	12,300	16,200	20,400	25,000	31,500	LP3W 18	1950–67	1950	16,000
		(——— -0.469—East)		1,908	4,360	6,420	9,400	11,900	14,600	17,500	21,600	—East—			
8104	06810400	Little Nemaha R trib near Syracuse, Nebr.	PS	199	420	609	890	1,130	1,390	1,670	2,080	LP3W 29	1950-78	1950	1,280
		(-0.406—Skew map ———)		No basin characteristics											
8105	06810500	Little Nemaha R near Syracuse, Nebr.	CR	7,300	14,400	20,200	28,600	35,400	42,700	50,500	61,500	LP3W 140	1950–69	1950	225,000
		(-0.182—Skew map -0.457—East)		6,020	13,200	18,900	26,900	33,400	40,200	47,300	57,100	—East—			
8115	06811500	Little Nemaha R at Auburn, Nebr.	CR	15,800	37,900	56,800	84,400	107,000	130,000	154,000	188,000	LP3W 140	1950–93	1950	164,000
		(-0.374—Skew map, SE -0.479—East)		14,100	29,000	40,300	55,500	67,300	79,400	91,700	108,000	—East—			

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak: WY	Discharge
8117a	06811760	Tarkio R near Elliott, Iowa (-0.065—Skew map ———)	PS	Out-of-state station used only for skew relation(s)									1952–87, 1989–91, 1993	1993	4,640
8118a	06811875	Snake Cr near Yorktown, Iowa (-0.691—Skew map ———)	PS	Out-of-state station used only for skew relation(s)									1966–91	1987	3,080
8130	06813000	Tarkio R at Fairfax, Mo. (-0.431—Skew map ———)	CR	Out-of-state station used only for skew relation(s)									1922–70, 1972–90	1942	16,300
8137	06813700	Tennessee Cr trib near Seneca, Kansas (+0.027—Skew map ———)	PS	Out-of-state station used only for skew relation(s) No basin characteristics									1957–89	1959	1,220
8140	06814000	Turkey Cr near Seneca, Kansas (-0.485—Skew map, SE -0.501—East)	CR	6,920 7,020	12,500 15,000	16,500 21,400	21,600 30,300	25,400 37,400	29,200 44,800	32,900 52,600	37,700 63,300	LP3W —East—	1949–93	1973	21,400
8145	06814500	N Fk Big Nemaha R at Humboldt, Nebr. (-0.266—Skew map, SE -0.501—East)	CR	18,700 11,400	31,900 23,500	41,000 32,900	52,400 45,600	60,600 55,500	68,600 65,800	76,500 76,300	86,500 90,500	LP3W —East—	1953–93	1982	59,500
8150	06815000	Big Nemaha R at Falls City, Nebr. (-0.470—Skew map, SE -0.497—East)	CR	21,000 18,800	33,700 38,400	42,000 53,200	52,000 72,700	59,000 87,800	65,600 103,000	71,900 119,000	79,800 139,000	LP3W 100 —East—	1941, 1944–93	1973	71,600
8155	06815500	Muddy Cr at Verdon, Nebr. (+0.050—Skew map -0.387—East)	CR	9,390 4,730	17,400 10,700	23,300 15,600	31,400 22,600	37,700 28,300	44,100 34,500	50,600 41,100	59,500 50,400	LP3W 21 —East—	1953–73	1973	35,000
8155b	06815510	Temple Cr near Falls City, Nebr. (——— -0.180—New station for East network analysis)	PS	190 262	771 609	1,550 934	3,180 1,470	5,000 1,990	7,440 2,590	10,600 3,300	16,200 4,410	LP3W 11 —East—	1968–78	1973	1,050
				Appears to require composite frequency analysis											
8155c	06815550	Staples Br near Burlington Junction, Mo. (-0.634—Skew map ———)	PS	Out-of-state station used only for skew relation(s)									1959–67, 1969–79	1964	430
8160	06816000	Mill Cr at Oregon, Mo. (-0.183—Skew map ———)	CR	Out-of-state station used only for skew relation(s)									1950–76	1974	4,700
8200	06820000	White Cloud Cr near Maryville, Mo. (+0.270—Skew map ———)	CR	Out-of-state station used only for skew relation(s)									1949–71, 1973–78	1973	7,200
8210	06821000	Jenkins Br at Gower, Mo. (-0.607—Skew map ———)	CR	Out-of-state station used only for skew relation(s)									1950–76	1965	3,460
8215	06821500	Arikaree R at Haigler, Nebr. (-0.026—HP -0.099—HPS, HPC, UR)	CR	1,360 910 587 1,350	4,980 1,960 1,600 3,750	9,890 3,820 3,440 6,400	20,600 8,560 10,600 11,300	33,300 14,700 17,100 16,400	51,400 20,900 26,500 22,900	76,400 28,900 39,600 31,100	124,000 42,700 64,600 44,900	LP3W 62 —HPS— —HPC— —UR—	1932–93	1935	50,000
8230	06823000	N Fk Republican R at Colorado-Nebraska state line (+0.487—HP +0.516—HPS, UR)	CR	234 213 242	513 452 557	809 874 892	1,360 1,640 1,510	1,950 2,740 2,170	2,720 3,750 3,020	3,730 5,030 4,140	5,560 7,200 6,150	LP3W 63 —HPS— —UR—	1931–93	1947	2,110
8235	06823500	Buffalo Cr near Haigler, Nebr. (+0.728—HP +1.078—HPS, HPC, UR)	CR	26 30 35 27	44 58 62 51	63 87 77 77	96 139 173 124	130 217 214 174	173 278 260 243	229 351 315 336	327 474 400 511	LP3W 53 —HPS— —HPC— —UR—	1941–93	1948	140
8240	06824000	Rock Cr at Parks, Nebr. (23.6 mi^2, approximately, of which about 20 mi^2 contributes directly to surface runoff)	CR	38	71	107	177	254	361	509	795	REG 53	1941–93	1965	493

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak
8245	06824500	Republican R at Benkelman, Nebr.	CR	1,090	2,870	4,850	8,630	12,600	17,900	24,800	36,900	LP3W 167	1895,	1935 50,000
		(+0.057—HP +0.413—HPS, UR)		975	2,190	3,940	8,830	15,600	21,600	29,300	42,300	—HPS—	1902–06,	
				1,140	3,000	5,060	8,950	13,000	18,300	25,100	37,000	—UR—	1947–93	
8250	06825000	S Fk Republican R near Idalia, Colo.	CR	3,580	8,270	12,100	17,300	21,400	25,500	29,600	34,900	LP3W 110	1935,	1935 103,000
		(——— -0.523—UR)		2,770	8,620	15,200	27,400	39,500	54,400	72,400	101,000	—UR—	1951–75	
8255	06825500	Landsman Cr near Hale, Colo.	CR	1,380	3,510	5,660	9,350	12,900	17,100	22,200	30,300	LP3W 26	1951–76	1975 13,000
		(-0.096—Skew map -0.090—UR)		762	2,130	3,600	6,260	8,900	12,200	16,200	22,800	—UR—		
8275	06827500	S Fk Republican R near Benkelman, Nebr.	CR	1,310	4,380	7,930	14,500	21,100	29,400	39,300	55,500	REG 44	1903–06,	1958 19,600
		(2,630 mi^2, approximately, of which about 2,100 mi^2 contributes directly to surface runoff)											1931–32,	
													1938–93	
8280	06828000	Republican R at Max, Nebr.	CR	4,800	11,400	17,900	29,000	39,600	52,400	67,900	92,800	LP3W 120	1929–35,	1935 190,000
		(——— +0.002—HPS, UR)		3,030	6,730	12,200	27,100	45,600	63,900	86,900	126,000	—HPS—	1937–46	
				3,120	9,200	16,000	28,800	41,900	58,400	78,800	113,000	—UR—		
8281	06828100	N Br Indian Cr near Max, Nebr.	PS	299	582	824	1,200	1,520	1,890	2,300	2,920	LP3W 9	1962,	1962 12,900
		(——— -0.090—New station for UR network analysis)			Basin characteristic(s) outside of range for equations							—UR—	1970–78	
8285	06828500	Republican R at Stratton, Nebr.	CR	2,480	5,640	8,920	14,900	20,900	28,700	38,700	55,900	REG 44	1950–93	1962 26,800
		(8,200 mi^2, approximately, of which about 3,690 mi^2 contributes directly to surface runoff)												
8295	06829500	Republican R at Trenton, Nebr.	CR	366	791	1,290	2,330	3,560	5,340	7,920	13,100	REG 40	1935,	1935 200,000
		(8,620 mi^2, approximately, of which about 3,940 mi^2 contributes directly to surface runoff)											1946–93	
8297	06829700	Thompson Canyon near Trenton, Nebr.	PS	289	701	1,110	1,810	2,470	3,270	4,230	5,760	LP3W 13	1966–78	1977 1,800
		(——— -0.090—New station for UR network analysis)			Basin characteristic(s) outside of range for equations							—UR—		
8310	06831000	Frenchman Cr below Champion, Nebr.	CR	388	878	1,370	2,220	3,060	4,110	5,400	7,560	REG 22	1935–56	1940 2,850
		(519 mi^2, approximately, of which about 421 mi^2 contribute directly to surface runoff. However, these values do not reflect latest revision of 721 mi^2 to (total) drainage area in Boohar and others (1995); a revised value of contributing drainage area was not published.)												
8315	06831500	Frenchman Cr near Imperial, Nebr.	CR	160	387	668	1,280	2,820	3,120	4,750	8,150	REG 53	1941–93	1960 2,340
		(1,050 mi^2, of which 859 mi^2 contributes directly to surface runoff)												
8325	06832500	Frenchman Cr near Enders, Nebr.	CR	352	460	524	599	650	699	745	804	REG 43	1946–93	1953 763
		(930 mi^2, approximately, of which about 790 mi^2 contributes directly to surface runoff. However, these values do not reflect latest revision of 1,140 mi^2 to (total) drainage area in Boohar and others (1995); a revised value of contributing drainage area was not published.)												
8340	06834000	Frenchman Cr at Palisade, Nebr.	CR	604	1,080	1,540	2,320	3,090	4,060	5,260	7,310	REG 43	1895–96,	1956 5,560
		(1,300 mi^2, approximately, of which about 1,110 mi^2 contributes directly to surface runoff)											1951–93	
8345	06834500	Stinking Water Cr near Wauneta, Nebr.	CR	265	516	729	1,050	1,330	1,640	1,990	2,510	LP3W 10	1941–50	1949 626
		(——— ———)			Noncontributing drainage area known to exist, but amount unknown									
8350	06835000	Stinking Water Cr near Palisade, Nebr.	CR	271	648	1,060	1,830	2,650	3,730	5,150	7,680	LP3W 44	1950–93	1956 3,030
		(+0.353—HP +0.359—HPS, HPC, UR)		581	1,240	2,400	4,560	7,560	10,400	13,900	20,000	—HPS—		
				457	1,090	2,270	5,180	7,820	11,400	16,100	24,600	—HPC—		
				334	798	1,280	2,160	3,060	4,210	5,670	8,190	—UR—		
8351	06835100	Bobtail Cr near Palisade, Nebr.	CR	416	1,550	3,080	6,410	10,300	15,800	23,400	37,600	LP3W 13	1966–78	1972 15,200
		(——— -0.100—New station for UR network analysis)		512	1,520	2,650	4,680	6,600	9,070	11,800	16,600	—UR—		
8355	06835500	Frenchman Cr at Culbertson, Nebr.	CR	741	1,660	2,520	3,890	5,140	6,580	8,230	10,800	REG 43	1931–93	1935 15,000
		(2,990 mi^2, approximately, of which about 1,590 mi^2 contributes directly to surface runoff)												

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak	
8360	06836000	Blackwood Cr near Culbertson, Nebr.	CR	392	929	1,440	2,280	3,060	3,970	5,020	6,660	LP3W 52	1935,	1955	1,650
		(——— -0.120—UR)		571	1,530	2,540	4,340	6,110	8,310	11,000	15,400	—UR—	1946–86		
8365	06836500	Driftwood Cr near McCook, Nebr.	CR	554	1,420	2,380	4,180	6,090	8,580	11,800	17,500	REG 48	1946–93	1950	4,740
		(361 mi^2, approximately, of which about 351 mi^2 contributes directly to surface runoff)													
8370	06837000	Republican R at McCook, Nebr.	CR	1,480	2,730	3,620	4,770	5,630	6,480	7,320	8,400	REG 39	1931–32,	1960	5,890
		(12,240 mi^2, approximately, of which about 6,220 mi^2 contributes directly to surface runoff)											1955–93		
8371	06837100	Ash Cr near Red Willow, Nebr.	CR	Insufficient data—zero or unknown flows for 6 of 12 peaks									1966–77	1968	530
		(——— -0.100—New station for UR network analysis)		353	1,030	1,770	3,070	4,280	5,810	7,480	10,300	—UR—			
8373	06837300	Red Willow Cr above Hugh Butler Lake, Nebr.	CR	341	846	1,420	2,560	3,800	5,510	7,820	12,100	LP3W 33	1961–93	1972	4,020
		(+0.311—HP +0.476—HPS, HPC, UR)		506	970	1,940	3,310	4,920	6,800	9,180	13,300	—HPS—			
				365	714	1,660	2,630	3,970	5,780	8,160	12,500	—HPC—			
				211	493	782	1,300	1,820	2,470	3,300	4,720	—UR—			
8375	06837500	Red Willow Cr near McCook, Nebr.	CR	111	145	201	310	365	427	496	600	REG 32	1941–47,	1947	30,000
		(740 mi^2, approximately, of which about 320 mi^2 contributes directly to surface runoff)											1958–60,		
													1961–93		
8380	06838000	Red Willow Cr near Red Willow, Nebr.	CR	269	564	861	1,390	1,920	2,610	3,470	4,970	REG 32	1940–93	1947	30,000
		(820 mi^2, approximately, of which about 405 mi^2 contributes directly to surface runoff)													
8382	06838200	Coon Cr at Indianola, Nebr.	PS	131	317	491	772	1,020	1,320	1,640	2,140	LP3W 33	1961–93	1968	900
		(-0.634—Skew map -0.130—UR)		337	911	1,510	2,560	3,570	4,810	6,290	8,690	—UR—			
8385a	06838550	Dry Cr at Bartley, Nebr.	CR	161	332	475	686	863	1,060	1,260	1,560	LP3W 33	1961–93	1965	712
		(-0.264—Skew map ———)		No basin characteristics											
8390	06839000	Medicine Cr at Maywood, Nebr.	PS	206	504	860	1,600	2,460	3,700	5,460	8,940	LP3W 28	1951–78	1962	2,650
		(+0.869—HP +0.638—HPS, HPC, UR)		345	621	1,080	2,390	3,830	5,450	7,560	11,300	—HPS—			
				302	499	958	2,180	3,220	4,590	6,380	9,570	—HPC—			
				280	701	1,150	1,960	2,780	3,840	5,180	7,490	—UR—			
8392	06839200	Elkhorn Canyon near Maywood, Nebr.	PS	141	637	1,360	2,990	4,920	7,620	11,300	18,100	LP3W 27	1952–78	1969	3,370
		(+0.310—Skew map -0.130—UR)		295	867	1,480	2,580	3,640	4,950	6,520	9,040	—UR—			
8394	06839400	Elkhorn Canyon southwest of Maywood, Nebr.	PS	503	1,800	3,490	7,010	11,000	16,400	23,700	36,800	LP3W 19	1952–70	1956	8,660
		(——— -0.130—UR)		424	1,250	2,160	3,800	5,450	7,480	9,970	14,100	—UR—			
8395	06839500	Brushy Cr near Maywood, Nebr.	CR	768	3,200	6,540	13,710	21,800	32,900	47,500	73,600	LP3W 101	1951–76	1967	7,140
		(-0.362—Skew map, HP -0.058—HPS, UR)		566	874	1,980	5,740	9,310	15,000	23,200	39,300	—HPS—			
				639	1,820	3,120	5,510	7,940	11,000	14,800	21,200	—UR—			
8396	06839600	Frazier Cr near Maywood, Nebr.	PS	728	2,330	4,260	8,080	12,200	17,600	24,700	37,100	LP3W 19	1952–70	1956	11,200
		(——— -0.130—UR)		618	1,960	3,450	6,170	8,870	12,200	16,200	22,600	—UR—			
8397	06839700	Frazier Cr trib near Maywood, Nebr.	PS	18	93	214	509	880	1,430	2,210	3,720	LP3W 27	1952–78	1967	731
		(-0.279—Skew map ———)		No basin characteristics											
8398a	06839850	Fox Cr north of Curtis, Nebr.	PS	148	652	1,370	2,920	4,710	7,170	10,500	16,300	LP3W 29	1952–70	1959	2,080
		(——— -0.150—UR)		337	983	1,670	2,890	4,070	5,500	7,200	9,910	—UR—			
8399	06839900	Fox Cr above Cut Canyon near Curtis, Nebr.	PS	240	789	1,420	2,600	3,800	5,280	7,090	10,100	LP3W 28	1951–78	1951	2,810
		(+0.151—Skew map -0.140—UR)		406	1,160	1,960	3,400	4,800	6,530	8,620	12,000	—UR—			

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak
8399b	06839950	Cut Canyon near Curtis, Nebr.	PS	320	742	1,120	1,700	2,210	2,780	3,390	4,300	LP3W 28	1951–78	1952 1,560
		(+0.149—Skew map -0.140—UR)		218	573	942	1,590	2,230	3,020	3,980	5,550	—UR—		
8400	06840000	Fox Cr at Curtis, Nebr.	CR, PS	429	1,130	1,820	2,970	4,030	5,250	6,650	8,790	LP3W 34	1951–58, 1961–70, 1978–93	1951 3,340
		(+0.035—Skew map -0.140—UR)		502	1,400	2,370	4,120	5,860	8,020	10,700	15,000	—UR—		
8405	06840500	Dry Cr near Curtis, Nebr.	CR, PS	772	2,050	3,440	6,000	8,630	12,000	16,200	23,500	LP3W 96	1947, 1951–58, 1960–70	1951 4,430
		(——— -0.140—UR)		314	879	1,500	2,540	3,590	4,870	6,420	8,940	—UR—		
8410	06841000	Medicine Cr above Harry Strunk Lake, Nebr.	CR	1,430	3,600	5,960	10,400	15,000	21,000	28,600	42,200	REG 44	1950–93	1967 11,600
		(770 mi^2, approximately, of which about 530 mi^2 contributes directly to surface runoff)												
8415	06841500	Mitchell Cr above Harry Strunk Lake, Nebr.	CR	522	1,680	3,020	5,530	8,120	11,400	15,400	22,100	LP3W 26	1950–74	1951 5,230
		(-0.341—Skew map -0.140—UR)		243	634	1,040	1,740	2,410	3,240	4,220	5,830	—UR—		
8425	06842500	Medicine Cr below Harry Strunk Lake, Nebr.	CR	384	539	665	855	1,020	1,210	1,430	1,760	REG 44	1950–93	1960 1,300
		(900 mi^2, approximately, of which about 655 mi^2 contributes directly to surface runoff)												
8435	06843500	Republican R at Cambridge, Nebr.	CR	1,800	3,350	4,690	6,700	8,600	10,700	13,100	16,800	REG 32	1946–93	1947 160,000
		(14,460 mi^2, approximately, of which about 7,780 mi^2 contributes directly to surface runoff)												
8440	06844000	Muddy Cr at Arapahoe, Nebr.	CR	1,100	2,790	4,500	7,450	10,300	13,700	17,800	24,300	LP3W 39	1947, 1951–72, 1978–93	1986 10,800
		(——— -0.150—UR)		538	1,470	2,440	4,160	5,820	7,830	10,200	14,100	—UR—		
8442a	06844210	Turkey Cr at Edison, Nebr.	CR	364	721	1,010	1,410	1,740	2,080	2,440	2,950	LP3W 16	1978–93	1993 1,040
		(——— -0.210—UR)		395	1,070	1,790	3,070	4,330	5,890	7,790	10,900	—UR—		
8445	06844500	Republican R near Orleans, Nebr.	CR	2,470	4,580	6,240	8,570	10,500	12,500	14,600	17,600	REG 32	1948–93	1948 40,600
		(15,580 mi^2, approximately, of which about 8,880 mi^2 contributes directly to surface runoff)												
8448	06844800	S Fk Sappa Cr trib near Goodland, Kansas	PS	Out-of-state station used only for skew relation(s)									1957–89	1979 3,450
		(+0.027—Skew map ———)												
8449	06844900	S Fk Sappa Cr near Achilles, Kansas	CR	303	1,250	2,550	5,300	8,390	12,600	18,100	27,800	LP3W 34	1960–93	1975 5,310
		(-0.041—Skew map -0.050—UR)		418	1,070	1,740	2,920	4,070	5,490	7,200	10,000	—UR—		
8450	06845000	Sappa Cr near Oberlin, Kansas	CR	866	2,510	4,386	7,970	11,700	16,600	22,900	33,800	LP3W 33	1929–32, 1944–72	1944 10,600
		(+0.224—Skew map -0.050—UR)		1,000	2,770	4,660	8,010	11,300	15,300	20,200	28,000	—UR—		
8451	06845100	Long Br Draw near Norcatur, Kansas	PS	287	737	1,200	1,990	2,770	3,700	4,830	6,650	LP3W 37	1957–93	1957 2,680
		(-0.058—Skew map -0.080—UR)		389	1,120	1,890	3,250	4,560	6,150	8,030	11,000	—UR—		
8452	06845200	Sappa Cr near Beaver City, Nebr.	CR	1,350	2,780	4,040	5,970	7,670	9,580	11,700	15,000	LP3W 48	1937–72	1966 9,500
		(-0.134—Skew map -0.050—UR)		691	1,770	2,900	4,890	6,860	9,300	12,300	17,200	—UR—		
8460	06846000	Beaver Cr at Ludell, Kansas	CR	446	1,110	1,780	2,950	4,070	5,430	7,060	9,700	LP3W 40	1929–32, 1946–53, 1961–88	1965 3,800
		(-0.026—Skew map -0.050—UR)		1,040	2,830	4,740	8,150	11,500	15,600	20,600	28,700	—UR—		
8462	06846200	Beaver Cr trib near Ludell, Kansas	PS	342	621	837	1,140	1,380	1,630	1,900	2,280	LP3W 33	1957–89	1975 880
		(-0.884—Skew map ———)		Out-of-state station used only for skew relation(s) Appears to require composite frequency analysis										

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak: WY	Discharge
8465	06846500	Beaver Cr at Cedar Bluffs, Kansas	CR	439	1,100	1,810	3,090	4,390	6,040	8,110	11,600	LP3W 48	1946–93	1960	7,940
		(+0.560—Skew map ———)		Out-of-state station used only for skew relation(s)											
				Appears to require composite frequency analysis											
8470	06847000	Beaver Cr near Beaver City, Nebr.	CR	319	1,160	2,230	4,430	6,830	10,000	14,200	21,600	LP3W 57	1937–93	1983	9,510
		(-0.234—Skew map -0.050—UR)		688	1,730	2,810	4,770	6,730	9,180	12,200	17,300	—UR—			
8475	06847500	Sappa Cr near Stamford, Nebr.	CR	736	2,360	4,350	8,380	12,800	18,800	26,800	41,000	LP3W 50	1944, 1946–93	1966	43,400
		(——— -0.050—UR)		955	2,470	4,050	6,870	9,650	13,100	17,300	24,100	—UR—			
8476	06847600	Prairie Dog Cr trib at Colby, Kansas	PS	217	510	802	1,310	1,800	2,390	3,120	4,310	LP3W 37	1957–93	1975	4,300
		(——— -0.050—UR)		177	495	821	1,380	1,900	2,510	3,240	4,360	—UR—			
8479	06847900	Prairie Dog Cr above Keith Sebelius Lake, Kansas	CR	674	1,490	2,270	3,580	4,820	6,320	8,100	11,000	LP3W 31	1963–93	1972	8,880
		(——— -0.060—UR)		522	1,350	2,210	3,720	5,210	7,030	9,240	12,900	—UR—			
8482	06848200	Prairie Dog Cr trib near Norton, Kansas	PS	Out-of-state station used only for skew relation(s)									1957–91	1957	620
		(-0.435—Skew map ———)													
8495	06849500	Republican R below Harlan County Dam, Nebr.	CR	1,330	2,390	3,300	4,710	5,970	7,420	9,090	11,700	REG 41	1953–93	1957	4,320
		($20,820\ mi^2$, approximately, of which about $13,590\ mi^2$ contributes directly to surface runoff)													
8496	06849600	Turkey Cr near Holdrege, Nebr.	PS	562	1,150	1,640	2,350	2,940	3,590	4,280	5,270	LP3W 12	1941,1960, 1967–78	1967	1,750
		(——— -0.280—New station for C&SC network analysis)		133	355	563	905	1,220	1,580	1,970	2,580	—C&SC—			
				Appears to require composite frequency analysis											
8500	06850000	Turkey Cr at Naponee, Nebr.	PS	634	1,190	1,610	2,190	2,650	3,130	3,620	4,290	LP3W 37	1948–53, 1962–89, 1991–93	1993	2,200
		(-0.412—Skew map -0.290—C&SC)		380	1,010	1,640	2,680	3,630	4,740	6,000	7,910	—C&SC—			
8502	06850200	Cottonwood Cr near Bloomington, Nebr.	PS	218	480	702	1,030	1,300	1,600	1,910	2,360	LP3W 26	1948–56, 1962–78	1955	1,100
		(-0.221—Skew map -0.280—C&SC)		232	776	1,410	2,590	3,770	5,230	6,990	9,810	—C&SC—			
8510	06851000	Center Cr at Franklin, Nebr.	CR	507	1,110	1,600	2,330	2,920	3,540	4,200	5,120	LP3W 38	1948–56, 1963–75, 1978–93	1950	3,150
		(-0.133—Skew map -0.300—C&SC)		369	920	1,440	2,260	3,000	3,830	4,770	6,170	—C&SC—			
8511	06851100	W Br Thompson Cr at Hildreth, Nebr.	PS	154	460	777	1,310	1,810	2,390	3,050	4,040	LP3W 18	1953–70	1958	1,290
		(——— -0.300—C&SC)		155	319	445	625	775	937	1,110	1,360	—C&SC—			
8512	06851200	W Br Thompson Cr near Hildreth, Nebr.	PS	352	878	1,360	2,120	2,770	3,500	4,300	5,450	LP3W 18	1953–70	1957	1,670
		(——— -0.300—C&SC)		438	815	1,100	1,500	1,830	2,180	2,550	3,080	—C&SC—			
8513	06851300	W Br Thompson Cr trib near Hildreth, Nebr.	PS	253	481	656	894	1,080	1,270	1,470	1,740	LP3W 26	1953–78	1957	907
		(-0.459—Skew map -0.300—C&SC)		214	457	657	958	1,220	1,500	1,820	2,280	—C&SC—			
8514	06851400	W Br Thompson Cr near Upland, Nebr.	PS	389	878	1,310	1,960	2,520	3,130	3,800	4,770	LP3W 26	1953–78	1957	2,040
		(-0.262—Skew map -0.300—C&SC)		458	888	1,220	1,700	2,090	2,510	2,960	3,600	—C&SC—			
8515	06851500	Thompson Cr at Riverton, Nebr.	CR	1,900	3,920	5,580	8,000	10,000	12,100	14,400	17,700	LP3W 38	1949–56, 1962–75, 1978–93	1950	12,200
		(-0.302—Skew map -0.290—C&SC)		1,350	2,970	4,450	6,760	8,770	11,000	13,500	17,200	—C&SC—			
8520	06852000	Elm Cr at Amboy, Nebr. ($39.2\ mi^2$)	CR	978	2,200	3,540	6,100	8,870	12,600	17,600	26,800	REG 39	1948–53, 1959, 1961–93	1983	7,800

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak	
8530a	06853020	Republican R at Guide Rock, Nebr. (Includes record for Republican R near Guide Rock, 06853000, 1950-1984) (22,030 mi^2, approximately, of which about 14,560 mi^2 contributes directly to surface runoff)	CR	3,860	6,780	9,500	14,100	18,500	24,000	30,800	42,300	REG 41	1950–93	1957	29,200
8531	06853100	Beaver Cr near Rosemont, Nebr. (-0.229—Skew map ———)	CR	192	433	655	1,010	1,330 *TDA* <1 mi^2	1,710	2,130	2,790	LP3W 40	1939–78	1959	970
8535	06853500	Republican R near Hardy, Nebr. (22,400 mi^2, of which about 7,500 mi^2 does not contribute directly to surface runoff—from Boohar and others, 1995)	CR	4,850	8,490	11,700	16,700	21,200	26,600	32,900	42,800	REG 41	1903–15, 1932–93	1935	225,000
8538	06853800	White Rock Cr near Burr Oak, Kansas (+0.476—Skew map ———)	CR	Out-of-state station used only for skew relation(s)									1955–93	1973	15,800
8561	06856100	West Cr near Talmo, Kansas (+0.401—Skew map ———)	PS	Out-of-state station used only for skew relation(s)									1941, 1957–89	1941	15,000
8568	06856800	Moll Cr near Green, Kansas (-0.224—Skew map ———)	PS	Out-of-state station used only for skew relation(s)									1957–90	1964	1,780
8710	06871000	N Fk Solomon R at Glade, Kansas (-0.217—Skew map ———)	CR	Out-of-state station used only for skew relation(s)									1952–93	1957	23,300
8715	06871500	Bow Cr near Stockton, Kansas (+0.222—Skew map ———)	CR	Out-of-state station used only for skew relation(s)									1950–93	1951	12,900
8726	06872600	Oak Cr at Bellaire, Kansas (-0.198—Skew map ———)	PS	Out-of-state station used only for skew relation(s)									1957–89	1957	1,500
8730	06873000	S Fk Solomon R above Webster Reservoir, Kansas (-0.095—Skew map ———)	CR	Out-of-state station used only for skew relation(s)									1908, 1935, 1945–93	1951	55,200
8733	06873300	Ash Cr trib near Stockton, Kansas (-0.010—Skew map ———)	PS	Out-of-state station used only for skew relation(s)									1957–93	1987	760
8735	06873500	S Fk Solomon R at Alton, Kansas (+0.117—Skew map ———)	CR	Out-of-state station used only for skew relation(s)									1919–25, 1928–32, 1942–57	1951	91,900
8745	06874500	East Limestone Cr near Ionia, Kansas (-0.216—Skew map ———)	CR	Out-of-state station used only for skew relation(s)									1934–38, 1957–89	1935	3,920
8799	06879900	Big Blue R at Surprise, Nebr. (——— -0.137—BB)	CR	1,690 1,490	2,990 2,800	4,010 3,990	5,450 5,770	6,630 7,130	7,900 8,590	9,260 10,200	11,200 12,400	LP3W 30 —BB—	1964–93	1965	10,700
8800	06880000	Lincoln Cr near Seward, Nebr. (-0.180—Skew map, SE -0.161—BB)	CR	1,450 1,910	3,010 3,300	4,350 4,610	6,360 6,300	8,100 7,800	10,000 9,400	12,100 11,100	15,300 13,600	LP3W 40 —BB—	1954–93	1957	10,100
8805	06880500	Big Blue R at Seward, Nebr. (-0.222—Skew map, SE -0.162—BB)	CR	3,230 3,430	6,770 7,180	9,810 10,100	14,400 14,600	18,300 18,100	22,700 21,900	27,500 25,900	34,500 31,600	LP3W 40 —BB—	1954–93	1957	15,300
8805b	06880508	Plum Cr near Seward, Nebr. (——— -0.239—BB)	PS	626 968	1,160 1,950	1,580 2,840	2,160 4,210	2,630 5,300	3,120 6,460	3,640 7,730	4,370 9,540	LP3W 12 —BB—	1963, 1968–78	1973	1,900
8805c	06880590	N Br W Fk Big Blue R trib at Giltner, Nebr. (——— -0.159—BB)	PS	317 130	594 336	814 562	1,130 1,150	1,390 1,470	1,660 1,810	1,960 2,180	2,380 2,710	LP3W 11 —BB—	1968–78	1974	945

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map num-ber	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak
8807a	06880710	School Cr trib near Harvard, Nebr. (——— -0.140—BB)	PS	42 65	215 502	488 874	1,150 1,620	1,970 2,130	3,170 2,710	4,880 3,360	8,160 4,370	LP3W 19 —BB—	1952–70	1961 999
8807b	06880720	School Cr near Harvard, Nebr. (-0.056—Skew map, SE -0.148—BB)	PS	263 303	774 924	1,330 1,520	2,340 2,900	3,340 3,810	4,580 4,840	6,070 6,020	8,500 7,820	LP3W 26 —BB—	1953–78	1961 2,690
8807c	06880730	School Cr trib #2 near Harvard, Nebr. (-0.018—Skew map, SE -0.155—BB)	PS	166 122	388 429	594 793	922 1,480	1,220 1,980	1,550 2,570	1,930 3,250	2,510 4,320	LP3W 26 —BB—	1953–78	1961 1,120
8807d	06880740	School Cr near Saronville, Nebr. (——— -0.158—BB)	PS	518 506	1,330 1,300	2,140 2,120	3,490 3,570	4,760 4,600	6,250 5,760	7,990 7,050	10,700 9,000	LP3W 19 —BB—	1952–70	1960 3,720
8807e	06880775	Beaver Cr trib near Henderson, Nebr. (——— ———)	PS	19	36	49	68 No basin characteristics	84	101	120	146	LP3W 11	1968–78	1968 52
8808	06880800	W Fk Big Blue R near Dorchester, Nebr. (——— -0.180—BB)	CR	3,460 3,370	6,720 6,510	9,450 9,180	13,500 13,000	17,000 16,100	20,900 19,400	25,200 23,000	31,400 28,200	LP3W 103 —BB—	1950, 1958–93	1993 12,400
8810	06881000	Big Blue R near Crete, Nebr. (-0.385—Skew map, SE -0.189—BB)	CR	6,000 6,370	11,700 13,100	16,200 18,100	22,700 25,300	28,000 31,300	33,700 37,600	39,800 44,500	48,400 54,200	LP3W 124 —BB—	1945–93	1950 27,600
8812	06881200	Turkey Cr near Wilber, Nebr. (——— -0.166—BB)	CR	2,430 3,300	5,220 5,910	7,710 8,400	11,600 11,400	15,100 14,400	19,000 17,600	23,500 21,200	30,300 26,500	LP3W 34 —BB—	1960–93	1984 33,000
8814a	06881450	Indian Cr at Beatrice, Nebr. (-0.495—Skew map, SE -0.311—BB)	PS	1,530 1,630	2,810 3,070	3,760 4,450	5,060 5,990	6,080 7,690	7,120 9,560	8,190 11,600	9,650 14,700	LP3W 34 —BB—	1960–93	1973 5,700
8815	06881500	Big Blue R at Beatrice, Nebr. (-0.345—Skew map, SE -0.205—BB)	CR	8,900 10,600	19,300 20,200	28,200 27,300	41,600 36,400	53,000 44,900	65,400 54,100	78,900 64,000	98,500 78,200	LP3W 127 —BB—	1902–03, 1906–93	1984 55,100
8820	06882000	Big Blue R at Barneston, Nebr. (-0.249—Skew map, SE -0.225—BB)	CR	13,700 12,900	24,000 23,200	31,500 30,700	41,600 39,300	49,400 48,300	57,300 58,100	65,500 68,600	76,500 83,600	LP3W 127 —BB—	1903, 1919–25, 1929–93	1941 57,700
8830	06883000	Little Blue R near Deweese, Nebr. (+0.000—Skew map, SE -0.010—BB)	CR	4,220 4,140	8,560 8,260	12,400 13,000	18,400 24,500	23,700 31,000	29,700 38,100	36,600 45,900	47,100 57,300	LP3W 41 —BB—	1951–72, 1975–93	1969 25,100
8835a	06883540	Spring Cr trib near Ruskin, Nebr. (——— -0.189—BB)	PS	161 106	386 292	602 496	955 957	1,280 1,250	1,660 1,580	2,090 1,930	2,770 2,460	LP3W 12 —BB—	1967–78	1976 1,660
8835b	06883570	Little Blue R near Alexandria (Gilead), Nebr. (+0.115—Skew map, SE -0.046—BB)	CR	6,190 5,760	11,800 11,700	16,500 17,000	23,600 27,200	29,700 33,900	36,400 41,200	44,000 49,200	55,200 60,700	LP3W 34 —BB—	1959–72, 1975–92	1992 32,600
8836	06883600	S Fk Big Sandy Cr near Edgar, Nebr. (——— -0.146—BB)	PS	81 99	334 468	682 943	1,430 1,970	2,290 2,740	3,460 3,650	5,020 4,720	7,830 6,460	LP3W 18 —BB—	1953–70	1965 765
8837	06883700	S Fk Big Sandy Cr near Davenport, Nebr. (-0.213—Skew map, SE -0.182—BB)	PS	231 348	680 939	1,170 1,570	2,050 2,830	2,920 3,690	3,990 4,650	5,290 5,730	7,380 7,350	LP3W 28 —BB—	1952–78	1960 1,870
8838	06883800	S Fk Big Sandy Cr near Carleton, Nebr. (——— -0.165—BB)	PS	325 568	1,000 1,310	1,770 2,070	3,170 3,390	4,580 4,360	6,330 5,450	8,480 6,650	12,000 8,460	LP3W 19 —BB—	1952–70	1960 3,690
8839	06883900	S Fk Big Sandy Cr near Hebron, Nebr. (——— -0.157—BB)	PS	790 933	1,520 1,810	2,120 2,730	3,000 4,000	3,740 5,110	4,540 6,340	5,410 7,700	6,660 9,760	LP3W 19 —BB—	1952–70	1960 3,220

Table B2. Peak-flow frequency data for streamflow-gaging stations in Nebraska and for selected out-of-state stations, and drainage areas for regulated streams--Continued

Map number	Station number	Station name (station skew—skew relations generalized skew—peak-flow regional equations or remarks)	Gage type	Peak discharge (ft^3/s) for given recurrence interval (years) and/or remarks: 2	5	10	25	50	100	200	500	Type and length (years) of analysis —regional equation—	Period of peak-flow record	WY and discharge (ft^3/s) of maximum peak: WY	Discharge
8839b	06883940	Big Sandy Cr at Alexandria, Nebr. (——— -0.051—BB)	CR	3,990 3,110	9,380 6,090	14,600 8,860	23,200 12,600	31,300 15,900	40,900 19,500	52,200 23,600	69,900 29,600	LP3W 14 —BB—	1980–93	1984	21,900
8839c	06883955	Little Sandy Cr near Ohiowa, Nebr. (——— -0.181—BB)	PS	308 275	738 777	1,140 1,330	1,790 2,370	2,380 3,150	3,050 4,040	3,810 5,050	4,960 6,610	LP3W 11 —BB—	1968–78	1977	1,370
8840	06884000	Little Blue R near Fairbury, Nebr. (-0.040—Skew map, SE -0.070—BB)	CR	8,500 7,960	17,400 15,700	25,100 22,300	37,100 33,500	47,500 41,700	59,400 50,700	72,800 60,500	92,900 74,700	LP3W 73 —BB—	1908–15, 1929–56, 1957–93	1992	54,000
8840b	06884005	Dry Br trib near Fairbury, Nebr. (——— -0.473—BB)	PS	225 450	697 1,150	1,180 1,890	1,980 3,370	2,690 4,480	3,490 5,720	4,380 7,100	5,670 9,160	LP3W 11 —BB—	1968–78	1973	1,270
8841	06884100	Mulberry Cr trib near Haddam, Kansas (-0.101—Skew map ———)	PS	Out-of-state station used only for skew relation(s) No basin characteristics									1957–72, 1974–89	1968	2,000
8842	06884200	Mill Cr at Washington, Kansas (-0.342—Skew map -0.130—BB)	CR	5,100 4,880	8,610 9,630	11,200 13,600	14,700 18,600	17,500 23,700	20,300 29,300	23,300 35,400	27,300 44,200	LP3W 34 —BB—	1960–93	1993	14,600
8843	06884300	Mill Cr trib near Washington, Kansas (+0.117—Skew map -0.110—BB)	PS	543 302	1,140 816	1,670 1,390	2,510 2,280	3,260 3,100	4,110 4,040	5,090 5,120	6,580 6,800	LP3W 37 —BB—	1957–93	1983	2,500
8844	06884400	Little Blue R near Barnes, Kansas (-0.155—Skew map -0.080—BB)	CR	13,700 12,800	23,500 22,900	30,900 31,000	41,300 42,300	49,700 52,400	58,500 63,300	67,900 75,200	81,100 92,300	LP3W 36 —BB—	1958–93	1973	53,700
8845	06884500	Little Blue R at Waterville, Kansas (-0.076—Skew map ———)	PS, CR	Out-of-state station used only for skew relation(s) No basin characteristics									1903, 1922–25, 1929–57	1903	73,000
8855	06885500	Black Vermillion R near Frankfort, Kansas (-0.176—Skew map -0.150—BB)	CR	7,800 7,460	16,200 15,900	23,300 21,900	34,200 27,500	43,500 35,300	53,900 43,800	65,400 53,100	82,300 66,700	LP3W 41 —BB—	1953–93	1959	38,300
8860	06886000	Big Blue R at Randolph, Kansas (+0.118—Skew map ———)	CR	Out-of-state station used only for skew relation(s)									1918–60	1951	77,800
8865	06886500	Fancy Cr at Winkler, Kansas (-0.148—Skew map -0.110—BB)	CR	6,120 3,730	10,800 7,320	14,400 10,400	19,500 13,200	23,600 17,000	28,000 21,200	32,600 25,900	39,300 32,900	LP3W 35 —BB—	1954–73, 1975–89	1972	24,000
8872	06887200	Cedar Cr near Manhattan, Kansas (-0.273—Skew map -0.120—BB)	PS	1,560 1,630	3,610 3,420	5,510 5,150	8,560 7,260	11,300 9,630	14,500 12,300	18,100 15,300	23,600 19,900	LP3W 37 —BB—	1957–93	1972	8,800
8880	06888000	Vermillion Cr near Wamego, Kansas (-0.090—Skew map ———)	CR	Out-of-state station used only for skew relation(s)									1915, 1936–46, 1951, 1954–85	1915	38,500
8883	06888300	Rock Cr near Louisville, Kansas (-0.067—Skew map ———)	CR	Out-of-state station used only for skew relation(s)									1959–90	1968	20,000

APPENDIX C—GRAPHS OF COMPOSITE PEAK-FLOW FREQUENCY CURVES FOR SELECTED STATIONS

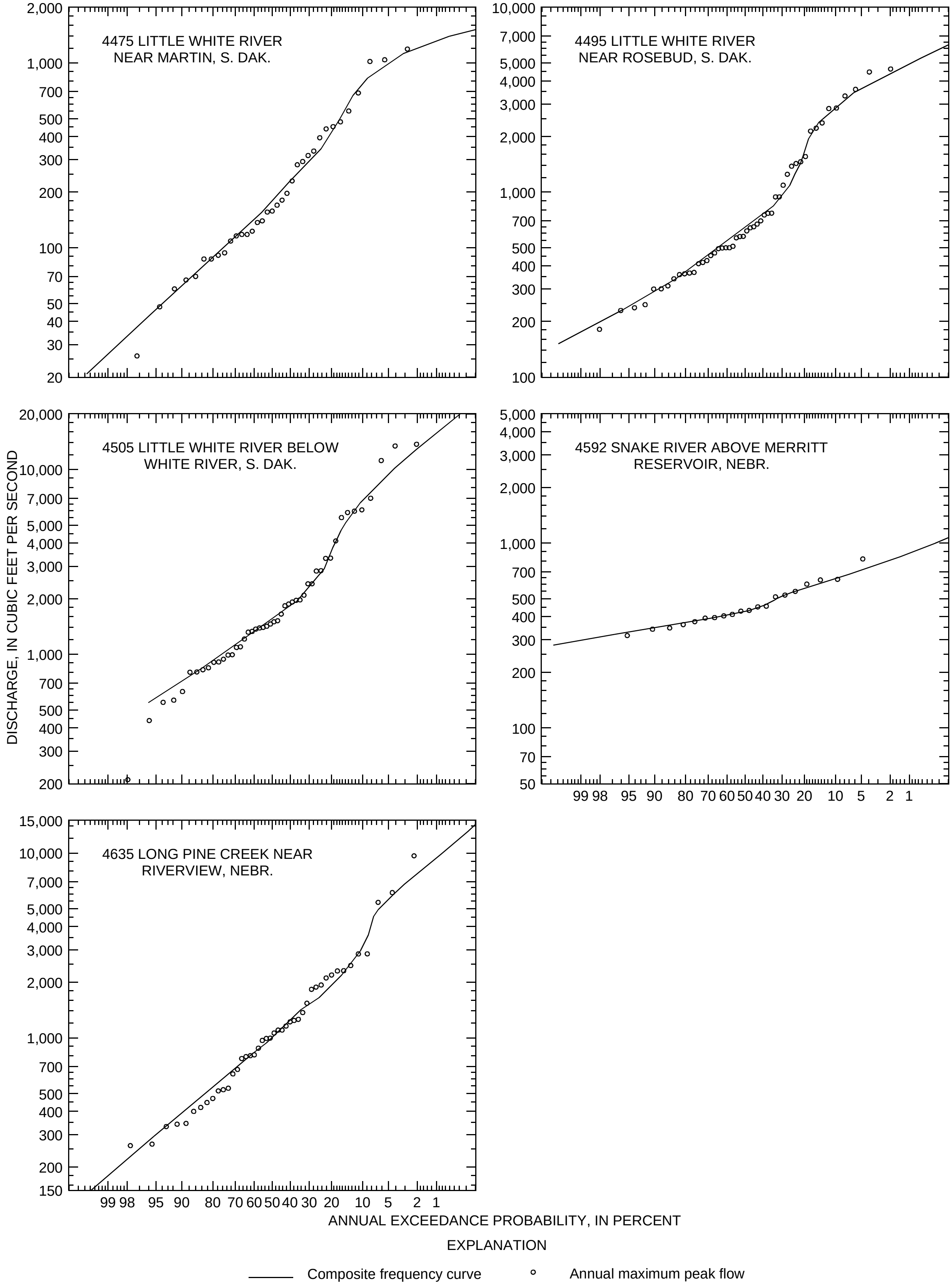


Figure C1. Composite peak-flow frequency curves for selected Nebraska and South Dakota streamflow-gaging stations in the White and Niobrara River Basins with average soil permeability of the top 60 inches of more than 4 inches per hour.

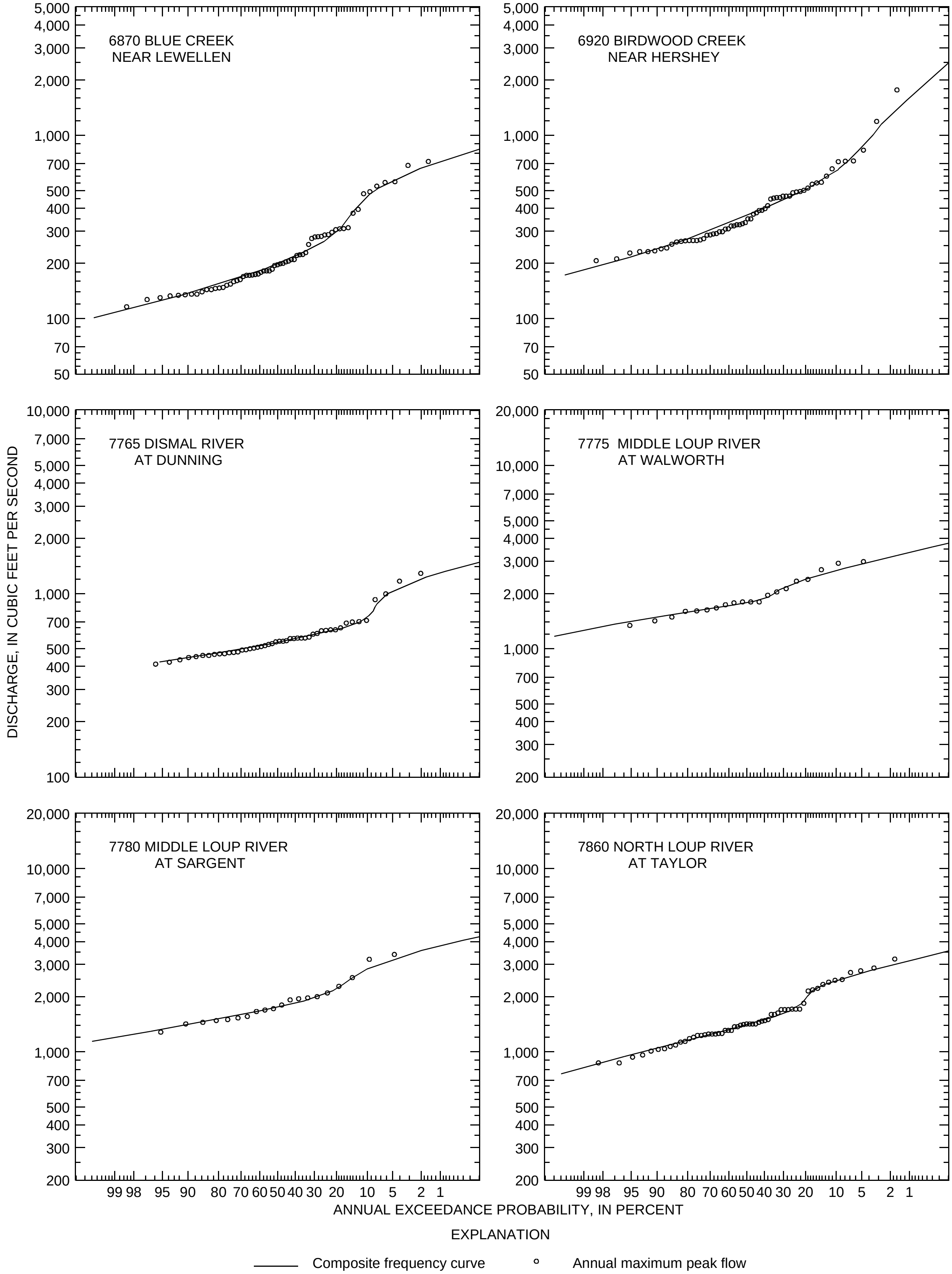


Figure C2. Composite peak-flow frequency curves for selected Nebraska streamflow-gaging stations in the North Platte and Platte River Basins with average soil permeability of the top 60 inches of more than 4 inches per hour.

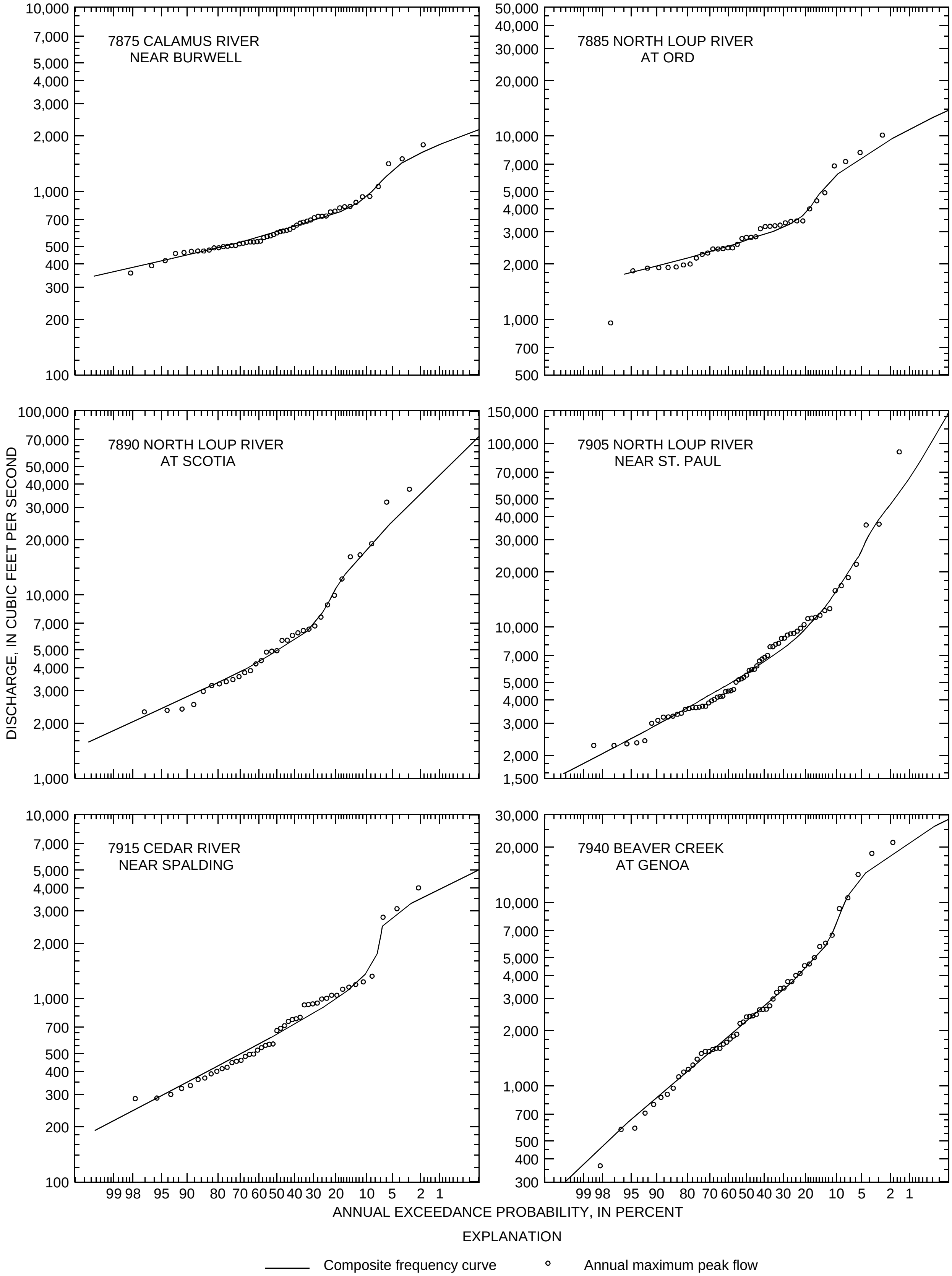


Figure C3. Composite peak-flow frequency curves for selected Nebraska streamflow-gaging stations in the Platte River Basin with average soil permeability of the top 60 inches of more than 4 inches per hour.

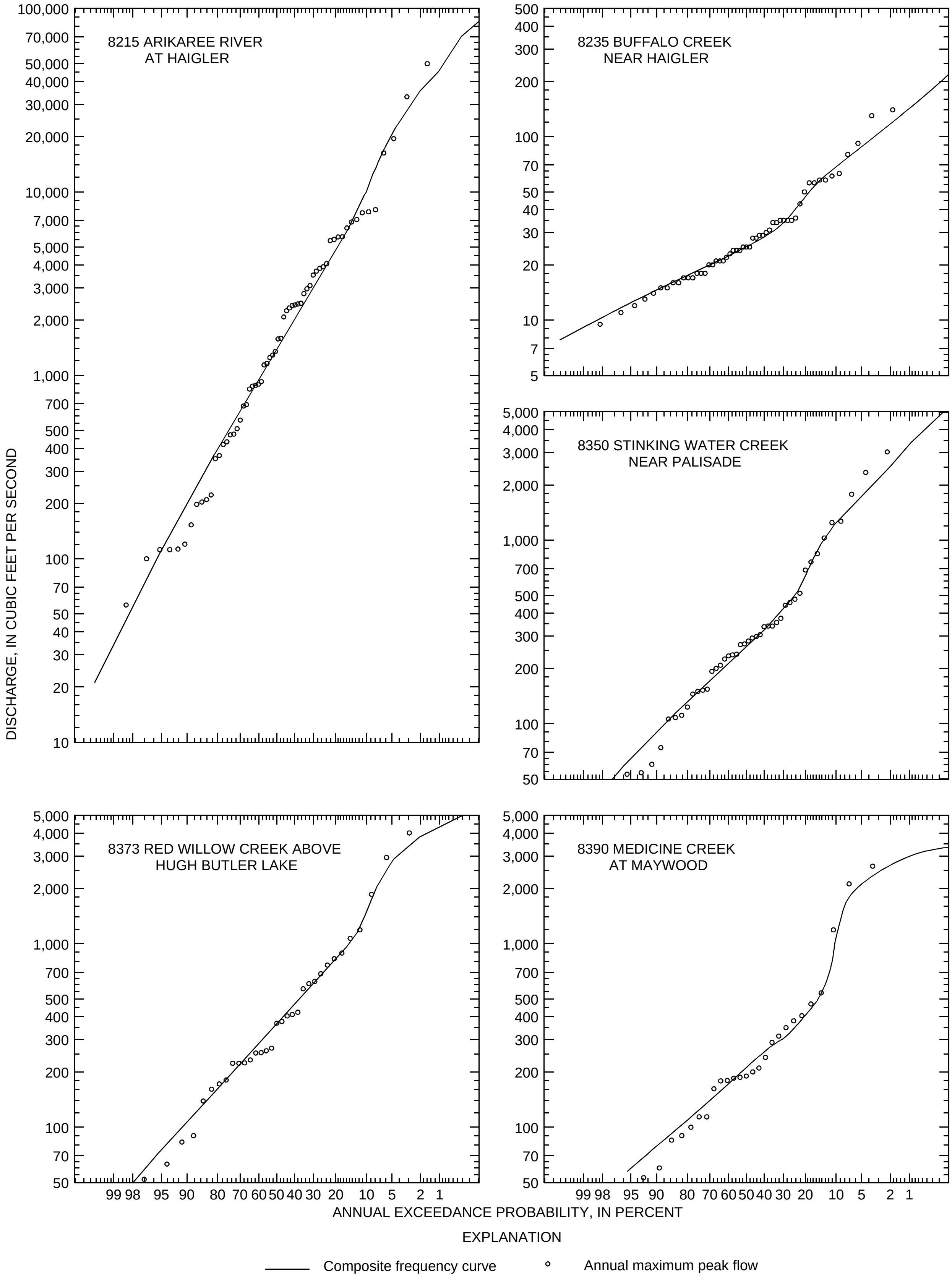


Figure C4. Composite peak-flow frequency curves for selected Nebraska streamflow-gaging stations in the Republican River Basin with average soil permeability of the top 60 inches of more than 4 inches per hour.