Low-Flow Characteristics of Streams in Virginia

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Prepared in cooperation with the Virginia Water Control Board are available for the Rivanna River below Moores Creek near Charlottesville, Va. There are no nearby long-term continuous-record stations with concurrent streamflow data available for correlation. The estimated low-flow values are known to be low but cannot be adjusted.

Low-flow characteristics derived from unregulated periods at a site that has become regulated have only regional importance, and characteristics based on regulated periods are useful only while the regulation scheme remains constant. Extreme caution must be used when discussing characteristics at regulated sites. Generally, low-flow characteristics for stream reaches that are affected by regulation cannot be used for planning purposes or for correlation with unregulated sites. In this report, low-flow values computed from unregulated periods at currently regulated sites are used only for determining regression equations and accuracy of values at ungaged sites.

So far, discussion of errors has involved the collection of flow data. Reliability and limitations of low-flow characteristics due to the use of the Pearson Type III distribution are not analyzed in this report but are discussed in Hardison (1969), Hardison (1971), Kite (1977), and Rao (1980).

Short-Term Continuous-Record Sites and Partial-Record Sites

The reliability of calculated low-flow values at short-term continuous-record sites and partial-record sites depends on the reliability of the flow data collected at the short-term or partial-record site, the flow data and frequency analysis for the index sites, and the relation line between the related sites. In addition to problems for long-term continuous-record sites already mentioned, other time-sampling errors may arise from low-flow data at short-term continuous-record sites and partial-record sites.

Selection of daily mean base-flow discharges at short-term continuous-record sites sampled the full range of base-flow discharges over the entire period of discharge record, so that a representative low-flow value could be computed. Only one daily mean base-flow discharge for a single streamflow recession was selected. The discharge was selected so that the related station was also at base-flow conditions. A relation line was developed using a linear least-squares regression method on the logarithms of the concurrent daily mean discharges. The linear-regression line was plotted with the data and was visually adjusted at lower discharges when necessary. The coefficient of determination, which indicates how well the regression line explains the observed values, was computed for each pair of related sites and is given in appendix 3. There was no method for determining the reliability or error associated with extension of the relation line below the observed values to estimate the *T*-year event; however, the short-term continuous-record sites were related to several index sites when available. Analysis of the variation of the computed values from separate correlations indicates the reliability of the relation between the sites (app. 3) and reduces the possibility of chance correlations. Accuracy of low-flow characteristics estimated from correlation of daily mean base-flow discharges is discussed in Hardison and Moss (1972).

The timing and distribution of base-flow discharge measurements at partial-record sites can influence the accuracy of the predicted low-flow values. By distributing the discharge measurements over several years and selecting the discharge so an adequate range of flows is sampled, a representative low-flow value can be computed. Analyses of measurement notes, climatological data, and hydrographs of the index sites were used to determine if the partial-record site and the index site were at base-flow conditions. Less weight was given to those points that may have been influenced by runoff. Logarithms of the discharge measurement values at the partial-record site were plotted with logarithms of the concurrent daily mean discharge values at the index site. A relation line was visually fitted through the points. Because of the limited number of discharge measurements and the nonlinearity of the relation lines, a statistically based relation line and the associated coefficient of determination were not computed. Like the short-term continuous-record sites, there was no method for determining the reliability or error associated with extension of the relation line below the measured values to estimate the *T*-year event; however, the partial-record sites were related to several index sites when available. Analysis of the variation of the computed values from separate correlations indicates the reliability of the relation between the sites (app. 4) and reduces the possibility of chance correlations. The accuracy of low-flow characteristics estimated from correlation of base-flow measurements is discussed in Hardison and Moss (1972).

Ungaged Sites on Gaged Streams

The flow-routing method predicts low-flow values fairly well along gaged streams when the basin characteristics between the gaged site and ungaged site are homogeneous. Tests were performed on the continuous-record data to determine the maximum distance that data from a gaged site can be reliably transferred to an ungaged site.

The drainage-area ratio range was determined for the flow-routing equation by analyzing predictions at the 77 paired continuous-record sites described in the section "Methods for Determining Low-Flow Characteristics." The paired sites were rank ordered, from maximum to minimum, according to drainage-area ratio. The standard error of estimate, as a percentage of the mean, was calculated for both the 7Q2 and 7Q10 data sets. The pair of sites having the largest drainage-area ratio was excluded from the group, and the standard errors of estimate recalculated. Fifty paired

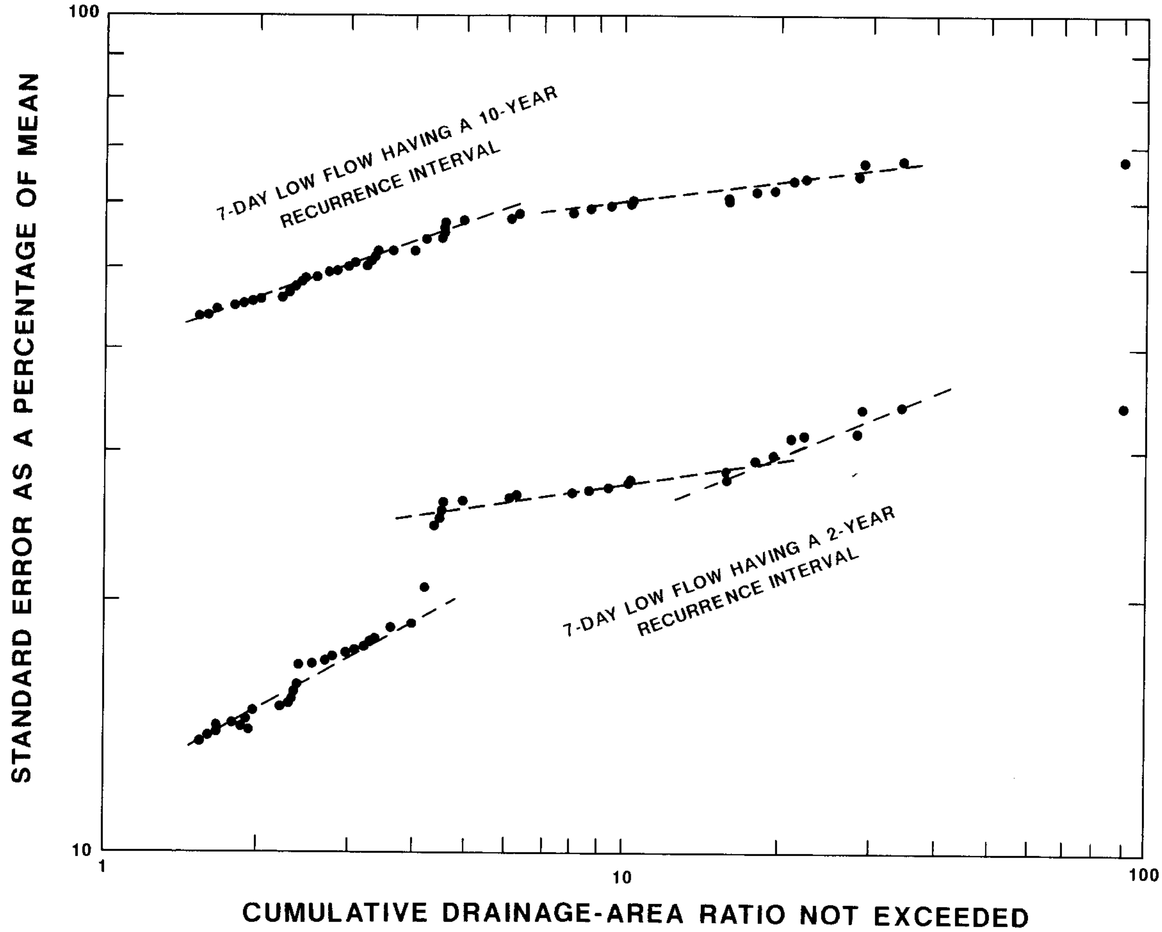

Figure 8. Relation of cumulative drainage-area ratios and standard error of estimate.

sites were eliminated, in order, which reduced the maximum drainage-area ratio from 90.2 to 1.56. The standard error of estimate was calculated for the paired sites remaining in the group after each additional set of paired sites was excluded. The logarithm of the standard error of estimate was plotted against the corresponding logarithm of the maximum drainage-area ratio for each group (fig. 8), and a relation line visually fitted. The slope of the relation line is well defined and linear for maximum drainage-area ratios of 1.6 to 4.0. A significant increase in standard error of estimate for the 7Q2 and a slight increase in standard error of estimate for the 7Q10 occur when the maximum drainage-area ratio exceeds 4.0. A new slope of the relation line is established above the drainage-area ratio of 4.5 and remains constant until the maximum drainage-area ratio exceeds 16. Above this point, the slope of the relation line remains constant for the 7Q10 plot and increases for the 7Q2 plot.

The maximum drainage-area ratio for transferring low-flow characteristics is limited to 4.0 because of the large increase in standard error of estimate for drainage-area ratios of 4.0 to 5.0. This increase probably is not due to outliers, because five of the six paired sites having drainage-area ratios of 4.0 to 5.0 had large percent errors (greater than 100 percent). The exponent in equation 2 was calculated again using only those sites having drainage-area ratios of 0.25 to 4.0 (54 paired sites). The exponent of 1.2 remained valid.

The reliability of estimates for ungaged sites on gaged streams is difficult to determine; however, analysis of standard errors of estimate also can be used to partly understand how well the method predicts low-flow characteristics. The standard error of estimate indicates how well predicted values fit measured values.

Low-flow characteristics at 108 sites (from the 54 paired sites) were estimated using the flow-routing method and equation 2. These values were compared with the values computed from continuous-record data. The standard error of estimate for predicting 7Q2 values at the 108 test sites was 19 ft^3/s, or 19 percent of the mean. The standard error of estimate when predicting 7Q10 values at the same sites was 31 ft^3/s, or 52 percent of the mean. For comparison with the regional regression equations, the standard error of prediction was computed using equation 6. The standard errors of prediction were 32 percent and 57 percent for the 7Q2 and 7Q10 values, respectively.

When values for sites downstream from gaged sites were estimated, the results were well balanced. For 7Q2 values, 25 sites were underestimated, 28 sites were overestimated, and 1 site was estimated exactly. For 7Q10 values, 20 sites were underestimated, 30 sites were overestimated, and 4 sites were estimated exactly.

When values for sites upstream from gaged sites were estimated, the results were also balanced. For 7Q2 values, 27 sites were underestimated, 25 sites were overestimated, and 2 sites were estimated exactly. For 7Q10 values, 28 sites were underestimated, 19 sites were overestimated, and 7 sites were estimated exactly. Errors tended to be greater when the predictions were made at sites having small drainage areas. One explanation is that there is greater variation in basin characteristics.

The reliability of the more complex flow-routing method was determined by selection of 24 stream networks similar to those for the Tye River basin (fig. 6). The stream networks were identified throughout the State where continuous-record stations are located. Predictions were made at the upstream as well as downstream stations. Low-flow values at each station were estimated using equation 2. The values for 84 sites were estimated using this method and compared with the values computed from continuous-record data. The standard error of estimate when predicting 7Q2 values at the 84 test sites was 15 ft^3/s, or 15 percent of the mean. The standard error of estimate when predicting 7Q10 values for the same stations was 13 ft^3/s, or 22 percent of the mean. For comparison with the regional regression equations, the standard error of prediction was computed using equation 6. The standard errors of prediction were 68 percent and 77 percent for the 7Q2 and 7Q10 values, respectively.

When values for sites downstream from gaged sites were estimated, the results were well balanced. For 7Q2 values, 11 sites were underestimated, 12 sites were overestimated, and 1 site was estimated exactly. For the 7Q10 values, 13 sites were underestimated, 10 sites were overestimated, and 1 site was estimated exactly.

When values for sites upstream from gaged sites were estimated, the results were also balanced. For 7Q2 values, 32 sites were underestimated, 24 sites were overestimated, and 4 sites were estimated exactly. For 7Q10 values, 27 sites were underestimated, 31 sites were overestimated, and 1 site was estimated exactly.

The primary strength of the flow-routing method is that the values at a gaged site reflect the overall basin characteristics above the gaged site. These values can be transferred upstream or downstream for a short distance within a basin and still reflect the basin characteristics. An example is the Goose Creek basin in northern Virginia. When the basin is analyzed by itself, characteristics derived from the continuous-record sites and partial-record sites are fairly uniform; 7Q2 values approximate 0.042 $(ft^3/s)/mi^2$, and 7Q10 values approximate 0.009 $(ft^3/s)/mi^2$. However, when the regional regression equations for the Blue Ridge region are used, the low-flow values are greatly overestimated, giving a 7Q2 value of approximately 0.116 $(ft^3/s)/mi^2$ and a 7Q10 value of approximately 0.031 $(ft^3/s)/mi^2$.

Several weaknesses of the flow-routing method must be understood before the method can be applied properly. The most dominant problem is that when transferring a value through a stream confluence, streamflow statistics are added or subtracted. It was assumed in the development of this method that streams in a generalized area will approach the same drought conditions at close to the same time. A similar method for transferring flood discharges would be incorrect because the peak discharges on two streams probably will not arrive at the confluence at the same time. Another problem is that only medium to large basins were used in this analysis. Major tributaries lacking stream record may still need values estimated by another method to transfer values upstream or downstream. Also, if a small basin upstream from large basins is being estimated, the entire error is absorbed by the small basin. Unrealistic numbers can be generated in this case.

Ungaged Sites on Ungaged Streams

The reliability of low-flow characteristics based on regression equations can be estimated by analysis of how well the equations fit the actual data. The standard error of prediction is a good indicator. Standard errors of prediction, in percent, are given in table 2 for each equation.

The standard error of estimate, which normally is used to show reliability, was not used for this portion of the study because it can give misleading results. The standard errors of estimate, given in cubic feet per second or as a percent of the mean sample value, represent the errors near the mean value only. Because the majority of predictions normally are made at smaller basins and have smaller values, the equation for the standard error of estimate was modified to represent the error along the entire regression line. This error, now called the standard error of prediction, in percent, was defined in equation 6. As stated previously, the standard errors of prediction were computed using the split samples of untransformed observed values and predicted values. The standard errors of prediction had to be computed using untransformed values so that the models containing different constants could be compared, and the equations for each region could be compared. Standard errors have little meaning when computed using transformed data with different constants added. The standard errors of prediction in this report should not be compared with errors computed by any other method.

Two equations are given for determining low-flow values in several regions when the basin characteristics may be difficult to obtain. Comparison of the standard errors of prediction for the equations can be used to determine accuracy gained by including other basin characteristics. The standard error of prediction is reduced an average of 7 percent when using the more complex equations.

An additional problem introduced by adding a constant to the dependent variables is that of bias between the actual value and the predicted value. The equations should overpredict as often as they underpredict. Plots of the observed value against the predicted value were made for each equation and region. Approximately half the plots showed that the equations overestimated the value slightly when large values were predicted and underestimated the value slightly when small values were predicted. Because of the fairly large standard errors of prediction, the bias was not considered severe enough to reject the equations or to include a correction.

Many of the basin and climatological characteristics were not significant in the regression analysis, primarily because the regression equations were developed by region. This does not imply that the characteristics do not influence or control low flow, but that they do not account for the variability of the low-flow values. The design of the regions, defined along physiographic boundaries, limits the variability of basin and climatological characteristics within each region. For example, streambed elevations may range from 0 to 150 ft in the Coastal Plain regions, and from 1,000 to 3,000 ft in the Valley and Ridge region; however, the elevations are fairly constant within each of the regions. Had one set of equations been developed for the entire State, characteristics such as streambed slope and streambed elevation may have been highly significant and remained in the equation. Results for each region follow.

Coastal Plain Regions

Plots of unit low-flow values on a map of the gaging stations in the Coastal Plain indicate a difference in the values north and south of the James River. South of the James River (southern region), the area is agriculturally intensive, with a loose, sandy soil and low relief. Three-quarters of the 7Q10 values were less than 0.001 (ft^3/s)/mi^2, resulting in an assigned value of 0.0 ft^3/s. No relation could be determined between the 7Q2 values and drainage area or any other basin characteristic; therefore, no equation was developed. In the southern region, 28 partial-record sites and 4 continuous-record sites were used in the regression analysis. Drainage areas ranged from 0.61 to 456 mi^2.

North of the James River (northern region), there is less agricultural land, soils contain more clay, and there is greater relief. Equations were developed for both the 7Q2 and 7Q10 values; however, drainage area (*A*) was the only basin characteristic that was significant. Standard errors of prediction were 88 percent and 118 percent for the 7Q2 and 7Q10 regression equations, respectively. In the northern region, 62 partial-record sites and 11 continuous-record sites were used in the regression analysis. Drainage areas range from 0.28 to 108 mi^2.

Piedmont Regions

Drainage area (*A*) and percent area underlain by Triassic and Jurassic sedimentary rock (*TJ*) are the two basin characteristics that remained significant during regression analysis of the data for the Piedmont province. The majority of the Piedmont province consists of igneous and metamorphic rock. About 20 percent of the province consists of Triassic and Jurassic sedimentary rock. The Triassic and Jurassic sedimentary rocks produce much lower base flows than the igneous rock. Analysis of residuals plotted on station location maps showed three regional groupings of data—Piedmont northern region, Piedmont southern region, and Piedmont/Blue Ridge transition region.

The regression equations for the Piedmont northern region (Rappahannock River basin and north) have the largest standard errors of prediction among the regression equations. The standard errors of prediction for the equations including drainage area as the only variable are 139 percent and 172 percent for the 7Q2 and 7Q10 regression equations, respectively. Many of the stations used in the regression analysis had small drainage basins (mean drainage area of sites sampled 18 mi^2) and are somewhat urbanized. There are large variations in low-flow values in relation to drainage area. Percent area underlain by Triassic and Jurassic sedimentary rock was significant in the regression of the 7Q2 values but not for the 7Q10 values; therefore, only one additional equation was developed for this region including rock type as a variable. By including percent area underlain by Triassic and Jurassic sedimentary rock in the regression equation, the standard error of prediction decreased to 124 percent for the 7Q2 regression equation. In the northern region, 59 partial-record sites and 23 continuous-record sites were used in the regression analysis. Drainage areas range from 0.08 to 155 mi^2.

In the Piedmont southern region, sites have larger drainage basins (mean drainage area of sites sampled 49 mi^2) and are less urbanized. Decreased variation of the low-flow values is shown by standard errors of prediction of 98 percent and 125 percent for the 7Q2 and 7Q10 regression equations, respectively. Percent area underlain by Triassic sedimentary rock was excluded from the analysis. At only 6 of the 86 sites is more than 20 percent of the basin area underlain by Triassic sedimentary rock. At 69 sites, no area is underlain by Triassic sedimentary rock. In the southern region, 59 partial-record sites and 27 continuous-record sites were used in the regression analysis. Drainage areas range from 0.33 to 269 mi^2.

Piedmont/Blue Ridge Transition Region

The southwestern area of the Piedmont province and the southeastern area of the Blue Ridge province were grouped together. This is considered a transition zone because it is not as mountainous as the Blue Ridge, yet land surface is higher and gradients are steeper than in most of the Piedmont. Drainage area (*A*) was the only basin characteristic that remained significant in the regression analysis. Resulting standard errors of prediction were 60 percent and 90 percent for the 7Q2 and 7Q10 regression equations, respectively. Percent area underlain by Triassic sedimentary rock was not included in the regression analysis because only 2 of the 35 sites were underlain by any Triassic sedimentary rock. In the Piedmont/Blue Ridge transition region, 24 partial-record sites and 11 continuous-record sites were used in the regression analysis. Drainage areas range from 0.46 to 278 mi^2.

Blue Ridge Region

Drainage area (*A*) was the only basin characteristic that remained significant in the regression analysis. As stated earlier, sites in the southeastern Blue Ridge province were grouped together and were included in the Piedmont-/Blue Ridge transition region. Eliminating the stations in the southeastern portion of the province reduced the standard error of prediction for the 7Q2 regression equation from approximately 100 to 85 percent. The standard error of prediction for the 7Q10 regression equation was not reduced substantially and remained at 111 percent. In the Blue Ridge region, 61 partial-record sites and 22 continuous-record sites were used in the regression analysis. Drainage areas range from 0.78 to 188 mi^2.

Valley and Ridge Region

Drainage area (*A*) and percent area underlain by Devonian and Mississippian sedimentary rock (*DM*) were the only basin characteristics that remained significant in the regression analysis. For the equations containing drainage area and percent area underlain by Devonian and Mississippian sedimentary rock, standard errors of prediction are 87 percent and 96 percent for the 7Q2 and 7Q10 values, respectively. The standard errors of prediction are slightly higher—91 percent and 102 percent for the 7Q2 and 7Q10 regression equations, respectively—when drainage area is the only independent variable. The small differences in standard errors indicates that the Devonian and Mississippian sedimentary rock is hydrologically similar to the rest of the basin material, or that the region is well mixed geologically. In the Valley and Ridge region, 58 partial-record sites and 49 continuous-record sites were used in the regression analysis. Drainage areas range from 0.61 to 277 mi^2.

Appalachian Plateaus Region

In the Appalachian Plateaus region, drainage area (*A*), stream length, and strip-mined area (*SM*) remained significant in the regression analysis. Analysis of the correlation matrix showed that stream length was highly related to drainage area and strip-mined area. Therefore, stream length was excluded from the regression equation. The high correlation between stream length and drainage area and strip-mined area may be due to the method of site selection. The basins are small (mean drainage area 13.3 mi^2) and are greatly disturbed by both strip mining and deep mining. For the equations containing drainage area and percent area strip mined, standard errors of prediction are 103 percent and 115 percent for the 7Q2 and 7Q10 values, respectively. The standard errors of prediction are slightly higher—105 percent and 123 percent for the 7Q2 and 7Q10 regression equations, respectively—when drainage area is the only independent variable. In the Appalachian Plateaus region, 107 partial-record sites and 10 continuous-record sites were used in the regression analysis. Drainage areas range from 0.17 to 87.4 mi^2.

The Appalachian Plateaus region is one of the smallest regions in the analysis and contains the largest number of sites. However, the standard errors for the regression equations may not be representative of the errors in relation to the other regions because of possible serial correlation. Ten long-term continuous-record sites were used to estimate low-flow values at 107 partial-record sites. Generally, the partial-record sites correlated well with only one continuous-record site. Also, the basins for the partial-record sites (mean drainage area 10 mi^2) are much smaller than the basins for the continuous-record sites (mean drainage area 245 mi^2). Additional analysis probably would not improve the regression equations significantly, but may adjust the standard errors to be more representative of the errors in relation to the other regions.

SUMMARY

Streamflow data were collected and low-flow characteristics computed for 715 gaged sites in Virginia. Annual minimum average 7-consecutive-day flows range from 0 to 2,195 ft^3/s for a 2-yr recurrence interval and from 0 to 1,423 ft^3/s for a 10-yr recurrence interval. Drainage areas for the sites range from 0.17 to 7,320 mi^2.

Methods for determining low-flow characteristics at gaged sites depend on the type of unregulated surface-water data collected and the length of the record. Existing and discontinued gaged sites were separated into three types: long-term continuous-record sites, short-term continuous-record sites, and partial-record sites. Low-flow characteristics for long-term continuous-record sites were determined from frequency curves of annual minimum average 7-consecutive-day flows. Frequency curves were fitted to the logarithm of the data by use of the Pearson Type III distribution, and plots of the data were checked visually for accuracy of fit. Low-flow characteristics for short-term continuous-record sites were estimated by relating logarithms of daily mean base-flow discharge values at the sites to logarithms of concurrent daily mean discharge values at nearby long-term continuous-record sites having similar basin characteristics. Low-flow characteristics for partial-record sites were estimated by relating base-flow discharge measurements to daily mean discharge values at long-term continuous-record sites. The low-flow characteristics were transferred from the long-term station through the relation line to the short-term or partial-record site.

Information from the continuous-record and partial-record sites in Virginia was used to develop two techniques for estimating low-flow characteristics at ungaged sites. A flow-routing method was developed to estimate low-flow values at ungaged sites on gaged streams. Regional regression equations were developed to estimate low-flow values at ungaged sites on ungaged streams.

The flow-routing method consists of transferring low-flow characteristics from a gaged site, either upstream or downstream, to the ungaged site of interest. A simple drainage-area proration is used to transfer values when there are no major tributaries between the gaged and ungaged site. The flow-routing equation consists of a drainage-area ratio to the 1.2 power and is limited to drainage-area ratios of 0.25 to 4.0. Predicted values were compared with observed values for 108 test sites. Standard errors of estimate were 19 percent of the mean for estimates of low-flow characteristics having a 2-yr recurrence interval and 52 percent of the mean for estimates of low-flow characteristics having a 10-yr recurrence interval.

When major tributaries enter between the gaged and ungaged site, a more complex flow-routing method was used to estimate low-flow characteristics. The system entails the transfer of values to the stream confluence, the addition or subtraction of the values, depending on direction of routing, and the transfer of the combined value to the next confluence until the ungaged site is reached. Twenty-four stream networks were analyzed by comparing predicted values with observed values at 84 test sites. Standard errors of estimate were 15 percent of the mean for estimates of low-flow characteristics having a 2-yr recurrence interval and 22 percent of the mean for estimates of low-flow characteristics having a 10-yr recurrence interval.

The primary strength of the flow-routing method is that the values at a gaged site reflect the overall basin characteristics above that site. Normally, these values can be transferred upstream or downstream for a short distance within a basin and still reflect the basin characteristics. The principal weakness is that as a value is transferred through a stream confluence, streamflow statistics are added or subtracted. It was assumed in the development of the method that the streamflow in each tributary within a basin will reflect similar statistical conditions.

Regional regression equations were developed for estimating low-flow values at ungaged sites on ungaged streams. The State was divided into eight regions on the basis of physiography and the geographic grouping of residuals computed in regression analysis. Basin characteristics that were significant in the regression analysis were drainage area, rock type, and strip-mined area. Standard errors of prediction range from 60 percent to 139 percent for estimates of low-flow characteristics having a 2-yr recurrence interval, and 90 percent to 172 percent for estimates of low-flow characteristics having a 10-yr recurrence interval.

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APPENDIXES 1–4

Appendix 1. Magnitude and frequency of average minimum 7-consecutive-day discharge at continuous-record gaging stations on streams in Virginia

[Low-flow values followed by "g" indicate that the value was determined graphically]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second: 2-year	10-year
01484800	Guy Creek near Nassawadox, Va.	373008	0755222	1.72	0.13	0.04
01613900	Hogue Creek near Hayfield, Va.	391252	0781718	15.0	.75	.37
01615000	Opequon Creek near Berryville, Va.	391040	0780420	57.4	4.5	1.4
01615500	Abrams Creek at Winchester, Va.	390950	0781015	5.60	1.2	.85
01616000	Abrams Creek near Winchester, Va.	391040	0780510	16.5	9.6	6.5
01620500	North River near Stokesville, Va.	382015	0791425	17.2	.68	.21
01621000	Dry River at Rawley Springs, Va.	383010	0790314	72.6	.83	.12
01622000	North River near Burketown, Va.	382025	0785450	379	58	39
01623000	Bell Creek at St Pauls Chapel near Staunton, Va.	381000	0790735	.61	.0	.0
01623500	Bell Creek near Staunton, Va.	381100	0790705	3.80	.0	.0
01624000	Bell Creek at Franks Mill near Staunton, Va.	381310	0790635	9.60	.0	.0
01624300	Middle River near Verona, Va.	381436	0790208	178	39	28
01624800	Christians Creek near Fisherville, Va.	380742	0785941	70.1	17	11
01625000	Middle River near Grottoes, Va.	381542	0785144	375	77	52
01626000	South River near Waynesboro, Va.	380327	0785430	127	30	24
01626500	South River at Waynesboro, Va.	380340	0785350	144	37	26
01626850	South River near Dooms, Va.	380519	0785238	149	55	45
01627500	South River at Harriston, Va.	381307	0785013	212	66	48
01628060	White Oak Run near Grottoes, Va.	381501	0784457	1.94	.0	.0
01628150	Deep Run near Grottoes, Va.	381623	0784536	1.17	.09	.05
01628500	South Fork Shenandoah River near Lynnwood, Va.	381921	0784518	1,084	227	147
01631000	South Fork Shenandoah River at Front Royal, Va.	385450	0781240	1,642	344	235
01632000	North Fork Shenandoah River at Cootes Store, Va.	383813	0785111	210	3.2	.77
01632900	Smith Creek near New Market, Va.	384136	0783835	93.2	14	8.0
01633000	North Fork Shenandoah River at Mount Jackson, Va.	384444	0783821	506	37	18
01633500	Stony Creek at Columbia Furnace, Va.	385155	0783745	79.4	5.8	3.3
01634500	Cedar Creek near Winchester, Va.	390452	0781947	103	7.7	4.3
01635500	Passage Creek near Buckton, Va.	385729	0781601	87.8	2.8	1.3
01638480	Catoctin Creek at Taylorstown, Va.	391516	0773436	89.6	6.8	2.9
01643700	Goose Creek near Middleburg, Va.	385911	0774749	123	6.0	.71
01644000	Goose Creek near Leesburg, Va.	390110	0773440	332	12	2.5
01644291	Stave Run near Reston, Va.	385656	0772216	.08	.0	.0
01644295	Smilax Branch at Reston, Va.	385710	0772204	.32	.0	.0
01646000	Difficult Run near Great Falls, Va.	385833	0771446	57.9	12	3.0
01652500	Fourmile Run at Alexandria, Va.	385036	0770446	13.8	1.7	1.1

Appendix 1. Magnitude and frequency of average minimum 7-consecutive-day discharge at continuous-record gaging stations on streams in Virginia—Continued

[Low-flow values followed by "g" indicate that the value was determined graphically]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second: 2-year	10-year
01653000	Cameron Run at Alexandria, Va.	384820	0770608	33.7	3.1	1.7
01654000	Accotink Creek near Annandale, Va.	384846	0771343	23.5	2.9 g	.43 g
01654500	Long Beach near Annandale, Va.	384839	0771407	3.71	.50	.06
01655000	Accotink Creek near Accotink Station, Va.	384515	0771209	37.0	3.8	.56
01656000	Cedar Run near Catlett, Va.	383812	0773731	93.4	.84	.0
01656100	Cedar Run near Aden, Va.	383658	0773316	155	2.5	.45 g
01656500	Broad Run at Buckland, Va.	384650	0774022	50.5	3.2	.92
01656725	Bull Run near Catharpin, Va.	385321	0773414	25.8	.16	.0
01656960	Cub Run near Bull Run, Va.	384916	0772757	49.9	1.6 g	.15 g
01657500	Occoquan River near Occoquan, Va.	384220	0771935	570	30	8.4
01657655	Hooes Run near Occoquan, Va.	384048	0771725	3.97	.10	.01
01658480	Quantico Creek near Dumfries, Va.	383422	0772051	6.90	.23	.01
01658500	South Fork Quantico Creek near Independent Hill, Va.	383514	0772544	7.64	.08	.0
01658550	South Fork Quantico Creek at Camp 5 near Joplin, Va.	383438	0772436	9.61	.52	.04
01658650	South Fork Quantico Creek near Dumfries, Va.	383418	0772057	16.6	.94	.06
01659000	North Branch Chopawamsic Creek near Independent Hill, Va.	383358	0772548	5.79	.07	.0
01659500	Middle Fork Chopawamsic Creek near Garrisonville, Va.	383326	0772532	4.51	.07	.0
01660000	South Branch Chopawamsic Creek near Garrisonville, Va.	383222	0772530	2.56	.06	.0
01660400	Aquia Creek near Garrisonville, Va.	382925	0772602	34.9	.90 g	.01 g
01660500	Beaverdam Run near Garrisonville, Va.	383025	0772545	12.7	.50	.0
01661800	Bush Mill Stream near Heathsville, Va.	375236	0762942	6.82	.70	.13
01661900	Carter Run near Marshall, Va.	384758	0775209	19.5	1.8	.52
01662000	Rappahannock River near Warrenton, Va.	384105	0775415	195	13	2.5
01662500	Rush River at Washington, Va.	384250	0780905	14.7	.34	.0
01662800	Battle Run near Laurel Mills, Va.	383920	0780427	27.6	2.0	.34
01663000	Thornton River near Laurel Mills, Va.	383741	0780347	142	10.5 g	1.4 g
01663500	Hazel River at Rixeyville, Va.	383530	0775755	287	28	6.1
01664000	Rappahannock River at Remington, Va.	383150	0774850	620	50	11
01664500	Rappahannock River at Kellys Ford, Va.	382838	0774653	641	80	11
01665500	Rapidan River near Ruckersville, Va.	381650	0782025	114	15	4.3
01666500	Robinson River near Locust Dale, Va.	381930	0780545	179	31	9.7
01667000	Rapidan River at Rapidan, Va.	381847	0780350	446	72	14
01668000	Rappahannock River near Fredericksburg, Va.	381920	0773105	1,596	189	48
01668500	Cat Point Creek near Montross, Va.	380223	0764938	45.6	2.0	.08
01668800	Hoskins Creek near Tappahannock, Va.	375538	0765716	15.5	2.8 g	.54 g

Appendix 1. Magnitude and frequency of average minimum 7-consecutive-day discharge at continuous-record gaging stations on streams in Virginia—Continued

[Low-flow values followed by "g" indicate that the value was determined graphically]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second	
					2-year	10-year
01669000	Piscataway Creek near Tappahannock, Va.	375237	0765403	28.0	4.0	0.83
01669500	Dragon Swamp near Church View, Va.	374105	0764337	84.9	3.1	.0
01669520	Dragon Swamp at Mascot, Va.	373801	0764148	108	5.5	.64
01670000	Beaverdam Swamp near Ark, Va.	372814	0763348	6.63	.50	.02 g
01670300	Contrary Creek near Mineral, Va.	380353	0775245	5.53	.16	.04
01671100	Little River near Doswell, Va.	375221	0773048	107	3.5	.58
01671500	Bunch Creek near Boswells Tavern, Va.	380154	0781130	4.37	.17	.0
01672500	South Anna River near Ashland, Va.	374748	0773257	394	34	9.7
01673500	Totopotomoy Creek near Atlee, Va.	374009	0772258	5.89	.20	.06
01673550	Totopotomoy Creek near Studley, Va.	373945	0771529	26.2	3.4	.93
01673800	Po River near Spotsylvania, Va.	381017	0773542	77.4	1.5	.22
01674000	Mattaponi River near Bowling Green, Va.	380342	0772310	257	8.0	.68
01674500	Mattaponi River near Beulahville, Va.	375316	0770948	601	48	14
01677000	Ware Creek near Toano, Va.	372017	0764712	6.29	.58	.22
02011400	Jackson River near Bacova, Va.	380232	0795254	158	26	20
02011460	Back Creek near Sunrise, Va.	381443	0794608	56.7	4.3	2.1
02011480	Back Creek on Rt 600 near Mountain Grove, Va.	380805	0795157	85.8	5.5	2.5
02011500	Back Creek near Mountain Grove, Va.	380410	0795350	134	7.7	3.6
02012000	Falling Springs Creek near Falling Springs, Va.	375205	0795645	11.5	5.4	4.5
02012500	Jackson River at Falling Spring, Va.	375236	0795839	411	81	64
02013000	Dunlap Creek near Covington, Va.	374810	0800250	164	15	11
02014000	Potts Creek near Covington, Va.	374344	0800233	153	24	17
02014500	Smith Creek above Old Dam near Clifton Forge, Va.	375105	0795048	12.4	1.2	.87
02015000	Smith Creek near Clifton Forge, Va.	375103	0795033	12.5	2.6	1.9
02015700	Bullpasture River at Williamsville, Va.	381143	0793414	110	30	25
02016000	Cowpasture River near Clifton Forge, Va.	374730	0794535	461	73	54
02016500	James River at Lick Run, Va.	374625	0794705	1,373	234	185
02017000	Meadow Creek at New Castle, Va.	372935	0800635	13.8	3.1	1.9
02017500	Johns Creek at New Castle, Va.	373022	0800625	104	11	7.8
02018000	Craig Creek at Parr, Va.	373957	0795442	329	43	31
02018500	Catawba Creek near Catawba, Va.	372805	0800020	34.3	4.0	2.1
02019000	Catawba Creek near Fincastle, Va.	373300	0795005	104	11	7.5
02019500	James River at Buchanan, Va.	373150	0794045	2,075	378	271
02020500	Calfpasture River above Mill Creek at Goshen, Va.	375916	0792938	144	4.8	1.7
02021000	Calfpasture River at Goshen, Va.	375910	0792938	190	14	8.5

Appendix 1. Magnitude and frequency of average minimum 7-consecutive-day discharge at continuous-record gaging stations on streams in Virginia—Continued

[Low-flow values followed by "g" indicate that the value was determined graphically]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second: 2-year	10-year
02021500	Maury River at Rockbridge Baths, Va.	375426	0792520	329	24	14
02022500	Kerrs Creek near Lexington, Va.	374932	0792636	35.0	6.8	4.9
02023000	Maury River near Lexington, Va.	374849	0792642	487	66	43
02024000	Maury River near Buena Vista, Va.	374545	0792330	646	89	62
02025000	Pedlar River near Pedlar Mills, Va.	373225	0791510	91.0	9.8	3.0 g
02025500	James River at Holcombs Rock, Va.	373004	0791546	3,259	572	401
02026000	James River at Bent Creek, Va.	373210	0784930	3,683	730	449
02026500	Tye River at Roseland, Va.	374513	0785912	68.0	15	3.1 g
02027000	Tye River near Lovingston, Va.	374255	0785855	92.8	19	5.0
02027500	Piney River at Piney River, Va.	374208	0790140	47.6	7.9	3.2
02027800	Buffalo River near Tye River, Va.	373620	0785525	147	28	7.9
02028000	Tye (Buffalo) River near Norwood, Va.	373740	0785250	360	81	37
02028500	Rockfish River near Greenfield, Va.	375210	0784925	94.6	15	4.1 g
02029000	James River at Scottsville, Va.	374750	0782930	4,584	871	508
02029500	Hardware River near Scottsville, Va.	375024	0782828	104	20	4.2
02030000	Hardware River below Briery Run near Scottsville, Va.	3748450	7827201	16	24 g	7.5 g
02030500	Slate River near Arvonia, Va.	374210	0782240	226	34	9.5
02031000	Mechums River near White Hall, Va.	380609	0783535	95.4	16 g	1.6 g
02031500	North Fork Moormans River near Whitehall, Va.	380825	0784505	11.4	.33	.0
02032000	Moormans River near Whitehall, Va.	380805	0784410	18.0	.0	.0
02032400	Buck Mountain Creek near Free Union, Va.	380916	0783222	37.0	3.9	.88
02032680	North Fork Rivannia River near Proffit, Va.	380516	0782444	176	29.4	8.17
02033500	Rivannia River below Moores Creek near Charlottesville, Va.	380109	0782713	507	48 g	4.8 g
02034500	Willis River at Lakeside Village, Va.	374000	0781000	262	26.8	7.19
02035000	James River at Cartersville, Va.	374015	0780510	6,257	1,120	584
02035500	Lickinghole Creek near Goochland, Va.	374131	0775722	70.0	7.4	4.7
02036500	Fine Creek at Fine Creek Mills, Va.	373552	0774912	22.1	2.0	.47
02038000	Falling Creek near Chesterfield, Va.	372637	0773121	32.8	1.8 g	.64 g
02038850	Holiday Creek near Andersonville, Va.	372455	0783810	8.53	1.6 g	.52 g
02039000	Buffalo Creek near Hampden Sydney, Va.	371525	0782912	69.7	15	6.0
02039500	Appomattox River at Farmville, Va.	371825	0782320	303	52	21
02040000	Appomattox River at Mattoax, Va.	372517	0775133	726	86 g	30 g
02041000	Deep Creek near Mannboro, Va.	371659	0775212	158	12	1.4
02041500	Appomattox River near Petersburg, Va.	371333	0773220	1,334	154	58
02042000	Swift Creek near Chester, Va.	371855	0772940	143	4.2	.75

Appendix 1. Magnitude and frequency of average minimum 7-consecutive-day discharge at continuous-record gaging stations on streams in Virginia—Continued

[Low-flow values followed by "g" indicate that the value was determined graphically]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second: 2-year	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second: 10-year
02042500	Chickahominy River near Providence Forge, Va.	372610	0770340	248	16	4.0
02043500	Cypress Swamp at Cypress Chapel, Va.	363724	0763607	23.8	.0	.0
02044000	Nottoway River near Burkeville, Va.	370440	0781150	38.7	.92	.11
02044500	Nottoway River near Rawlings, Va.	365900	0774800	309	26	4.0
02045000	Nottoway River near Mckenney, Va.	365645	0774355	362	33	4.0
02046000	Stony Creek near Dinwiddie, Va.	370401	0773610	112	4.3 g	.25
02047000	Nottoway River near Sebrell, Va.	364613	0770959	1,421	82	24
02047100	Assamoosick Swamp near Sebrell, Va.	364622	0770557	86.4	.06	.0
02047500	Blackwater River near Dendron, Va.	370130	0765230	294	1.3	.0 g
02048000	Blackwater River at Zuni, Va.	365205	0765007	456	4.1	.07
02048500	Seacock Creek at Unity, Va.	364915	0765300	102	.17	.0
02050500	North Meherrin River near Keysville, Va.	370305	0782520	9.20	.54	.21
02051000	North Meherrin River near Lunenburg, Va.	365950	0782100	55.6	2.6	.49
02051500	Meherrin River near Lawrenceville, Va.	364300	0774955	552	52	16
02051600	Great Creek near Cochran, Va.	364846	0775519	30.7	3.1 g	.35 g
02052000	Meherrin River at Emporia, Va.	364124	0773227	747	60	23
02052500	Fountains Creek near Brink, Va.	363655	0774200	65.2	.76	.0
02053800	South Fork Roanoke River near Shawsville, Va.	370824	0801600	110	21	11 g
02054500	Roanoke River at Lafayette, Va.	371411	0801234	257	42	24
02055000	Roanoke River at Roanoke, Va.	371530	0795620	395	58	35
02055100	Tinker Creek near Daleville, Va.	372503	0795608	11	2.2	1.4
02056650	Back Creek near Dundee, Va.	371340	0795206	56.8	5.5	2.5
02056900	Blackwater River near Rocky Mount, Va.	370242	0794540	115	22	12
02057000	Blackwater River near Union Hall, Va.	370235	0794107	208	66	26 g
02057500	Roanoke (Staunton) River near Toshes, Va.	370203	0793118	1,020	246	142
02058000	Snow Creek at Sago, Va.	365350	0793905	60.0	20	10
02058400	Pigg River near Sandy Level, Va.	365645	0793130	350	96	47
02058500	Pigg River near Toshes, Va.	365901	0793052	394	131	66
02059500	Goose Creek near Huddleston, Va.	371023	0793114	188	40	23
02060500	Roanoke River at Altavista, Va.	370616	0791744	1,789	492	266
02061000	Big Otter River near Bedford, Va.	372150	0792510	116	17	7.3
02061500	Big Otter River near Evington, Va.	371230	0791814	320	69	28
02062000	Big Otter River near Altavista, Va.	371105	0791645	372	51	21
02062500	Roanoke (Staunton) River at Brookneal, Va.	370228	0785702	2,415	648	344
02063000	Caldwells Creek near Appomattox, Va.	371940	0785120	5.10	.84	.40

Appendix 1. Magnitude and frequency of average minimum 7-consecutive-day discharge at continuous-record gaging stations on streams in Virginia—Continued

[Low-flow values followed by "g" indicate that the value was determined graphically]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second: 2-year	10-year
02063500	Falling River at Spring Mills, Va.	371440	0785500	52.2	9.5	3.7
02064000	Falling River near NaRuna, Va.	370736	0785736	173	32	15
02064500	Little Falling River at Hat Creek, Va.	370750	0785450	43.0	4.6	1.5
02065000	Falling River near Brookneal, Va.	370454	0785607	228	63	33
02065500	Cub Creek at Phenix, Va.	370445	0784550	98.0	22	8.2
02066000	Roanoke (Staunton) River at Randolph, Va.	365454	0784428	2,977	847	426
02066500	Roanoke Creek at Saxe, Va.	365549	0783956	135	8.7	.80 g
02067000	Roanoke (Staunton) River near Clover, Va.	365017	0784002	3,230	914	433
02069700	South Mayo River near Nettleridge, Va.	363415	0800747	84.6	44	27
02070000	North Mayo River near Spencer, Va.	363405	0795915	108	44	25
02072500	Smith River at Bassett, Va.	364612	0800004	259	125	95
02073500	Leatherwood Creek near Old Liberty, Va.	363810	0794730	68.0	15	7.5
02074500	Sandy River near Danville, Va.	363710	0793016	112	29	15
02075000	Dan River at Danville, Va.	363515	0792255	2,050	739	515
02076500	Georges Creek near Gretna, Va.	365611	0791842	9.24	3.2	1.6 g
02078000	Hyco River near Omega, Va.	363809	0784820	413	14	2.7 g
02079000	Roanoke (Staunton) River at Clarksville, Va.	363740	0783304	7,320	2,195	1,423
02079640	Allen Creek near Boydton, Va.	364046	0781937	53.4	.94	.03
03164000	New River near Galax, Va.	363850	0805845	1,131	611	400
03165000	Chestnut Creek at Galax, Va.	363845	0805510	39.4	27	17
03165500	New River at Ivanhoe, Va.	365005	0805710	1,340	663	427
03166000	Cripple Creek near Ivanhoe, Va.	365135	0805850	148	38	27
03166800	Glade Creek at Grahams Forge, Va.	365551	0805402	7.15	.14	.10
03167000	Reed Creek at Grahams Forge, Va.	365622	0805313	247	70	52
03167500	Big Reed Island Creek near Allisonia, Va.	365320	0804340	278	146	101
03168000	New River at Allisonia, Va.	365615	0804445	2,202	1,040	725
03168500	Peak Creek at Pulaski, Va.	370250	0804635	60.9	3.8	2.5
03170000	Little River at Graysonton, Va.	370215	0803325	300	109	69
03171500	New River at Eggleston, Va.	371722	0803701	2,941	1,280 g	770 g
03172500	Walker Creek at Staffordsville, Va.	371430	0804240	277	36	24
03173000	Walker Creek at Bane, Va.	371605	0804235	305	44	33
03175500	Wolf Creek near Narrows, Va.	371820	0805100	223	35	23
03176500	New River at Glen Lyn, Va.	372222	0805139	3,768	1,700 g	800 g
03207800	Levisa Fork at Big Rock, Va.	372113	0821145	297	24	8.3 g
03208034	Grissom Creek near Council, Va.	370443	0820225	2.82	.0	.0

Appendix 1. Magnitude and frequency of average minimum 7-consecutive-day discharge at continuous-record gaging stations on streams in Virginia—Continued

[Low-flow values followed by "g" indicate that the value was determined graphically]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second	
					2-year	10-year
03208036	Barton Fork near CounciL, Va.	370437	0820221	1.23	0.02	0.0
03208040	Russell Fork at CounciL, Va.	370441	0820356	10.2	.12	.01
03208100	Russell Fork near Birchleaf, Va.	370950	0821520	87.4	.95	.04
03208500	Russell Fork at Haysi, Va.	371225	0821745	286	8.7 g	1.0 g
03208700	North Fork Pound River at Pound, Va.	370732	0823736	18.5	1.0	.32
03208900	Pound River near Georges Fork, Va.	370951	0823130	82.5	7.1	3.2
03208950	Cranes Nest River near Clintwood, Va.	370726	0822620	66.5	4.6	1.9
03209000	Pound River below Flannagan Dam near Haysi, Va.	371413	0822036	221	4.1	.61
03213590	Knox Creek at Kelsa, Va.	372702	0820334	84.3	3.0	.80
03471500	South Fork Holston River at Riverside near Chilhowie, Va.	364537	0813753	76.1	25	20
03472500	Beaverdam Creek at Damascus, Va.	363740	0814728	56.0	9.5	4.7
03473000	South Fork Holston River near Damascus, Va.	363906	0815039	301	99	73
03473500	Middle Fork Holston River at Groseclose, Va.	365319	0812051	7.39	3.3	2.7
03474000	Middle Fork Holston River at Seven Mile Ford, Va.	364826	0813720	132	34	27
03474500	Middle Fork Holston River at Chilhowie, Va.	364745	0814050	155	40	25
03475000	Middle Fork Holston River near Meadowview, Va.	364247	0814908	211	65	50
03477500	Beaver Creek near Wallace, Va.	363825	0820642	13.7	4.5	3.2
03478400	Beaver Creek at Bristol, Va.	363754	0820802	27.7	11	8.5
03487800	Lick Creek near Chatham Hill, Va.	365744	0812821	25.5	.75	.39
03488000	North Fork Holston River near Saltville, Va.	365348	0814447	222	34	24
03488100	North Fork Holston River near Plasterco, Va.	365152	0815017	259	39	28
03488445	Brumley Creek near Hansonville, Va.	365121	0820243	4.29	.14	.05
03488450	Brumley Creek at Brumley Gap, Va.	364730	0820110	21.1	.43	.15
03488500	North Fork Holston River at Holston, Va.	364629	0820422	402	66	48
03489500	North Fork Holston River at Mendoia, Va.	364205	0821826	493	81	46
03489850	Cove Creek near Hilton, Va.	363908	0822153	17.6	2.1	1.4
03489870	Big Moccasin Creek at Collinwood near Hansonville, Va.	364416	0821925	41.9	5.3	3.5
03489900	Big Moccasin Creek near Gate City, Va.	363847	0823312	79.6	10	6.7
03490000	North Fork Holston River near Gate City, Va.	363631	0823405	672	97	56
03521500	Clinch River at Richlands, Va.	370510	0814652	137	29	19

Appendix 1. Magnitude and frequency of average minimum 7-consecutive-day discharge at continuous-record gaging stations on streams in Virginia—Continued

[Low-flow values followed by "g" indicate that the value was determined graphically]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second	
					2-year	10-year
03522000	Little River at Wardell, Va.	370216	0814752	103	25	18
03523000	Big Cedar Creek near Lebanon, Va.	365429	0820220	51.5	5.1	3.2
03524000	Clinch River at Cleveland, Va.	365641	0820918	528	81	54
03524500	Guest River at Coeburn, Va.	365545	0822723	87.3	5.4	1.8
03524900	Stony Creek at Ka, Va.	364857	0823702	30.9	1.2	.42
03525000	Stony Creek at Fort Blackmore, Va.	364630	0823450	41.4	1.8	.52
03526000	Copper Creek near Gate City, Va.	364026	0823357	106	24	18
03527000	Clinch River at Speers Ferry, Va.	363855	0824502	1,126	148	100
03527500	North Fork Clinch River at Duffield, Va.	364240	0824745	23.1	1.9	.95
03529500	Powell River at Big Stone Gap, Va.	365208	0824632	112	14	6.9
03530000	South Fork Powell River at Big Stone Gap, Va.	365154	0824616	40.0	4.0	2.0
03530500	North Fork Powell River at Pennington Gap, Va.	364626	0830159	71.4	4.0	1.3
03531000	Powell River near Pennington Gap, Va.	364404	0825956	290	28	14
03531500	Powell River near Jonesville, Va.	363943	0830542	319	42	24

Appendix 2. Magnitude and frequency of average minimum 7-consecutive-day discharge at partial-record gaging stations on streams in Virginia

[Dashes indicate that attempts to relate discharge measurements at the partial-record site to daily mean discharge at a continuous-record site were unsuccessful]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second	
					2-year	10-year
01484750	Assawoman Creek at Route 695 near Temperanceville, Va.	375338	0753145	2.8	0.16	0.05
01484755	Whites Creek at Route 679 near Modest Town, Va.	374707	0753527	1.8	.77	.47
01484760	Ross branch at Route 605 near Accomack, Va.	374150	0754006	1.2	.31	.14
01484765	Nickawampus Creek at Route 600 near Melfa, Va.	373811	0754328	1.2	.27	.12
01484780	Mattawoman Creek Tributary at Route 13 near Eastville, Va.	372240	0755519	.3	–	–
01484790	Nassawadox Creek at Route 606 near Nassawadox, Va.	373131	0755237	4.2	.31	.08
01484820	Taylor Branch Painter, Va.	373425	0754827	2.6	.74	.36
01484830	Pungoteague Creek at Route 178 near Onancock, Va.	374023	0754557	1.1	.12	.05
01484840	Taylor Creek at Route 180 at Pungoteague, Va.	373720	0754829	2.6	.27	.10
01484880	Lee Mont Branch at Route 658 near Lee Mont, Va.	374633	0754057	2.1	.15	.04
01484885	Katy Young Branch at Route 658 near Parksley, Va.	374751	0754002	2.7	.34	.11
01484900	Bethel Branch at Route 687 near Bloxom, Va.	375053	0753613	2.7	.17	.10
01613570	Back Creek at Gainesboro, Va.	391709	0781551	34.4	2.8	2.0
01613590	Issac Creek near Gainesboro, Va.	391805	0781650	15.8	.36	.18
01616100	Dry Marsh near Berryville, Va.	391132	0780410	11.4	4.7	2.9
01620690	North River at Route 727 near Bridgewater, Va.	382342	0790155	102	4.9	2.3
01621300	Dry River at Route 257 at Bridgewater, Va.	382427	0785833	120	6.4	3.4
01622230	Middle River below Trimbles Mill near Swoope, Va.	380810	0791306	20.6	3.6	2.7
01626900	Sawmill Run near Dooms, Va.	380546	0784838	3.62	.08	.0
01627100	Meadow Run near Crimora, Va.	380929	0784838	3.45	.15	.03
01627400	Paine Run near Harriston, Va.	381154	0784733	4.92	.2	.02
01628080	Madison Run near Grottoes, Va.	381524	0784606	5.78	.33	.12
01628700	Twomile Run near Mcgaheysville, Va.	382004	0784020	2.17	.05	.02
01628900	Hawksbill Creek Tributary near Swift Run, Va.	382047	0783435	1.32	.13	.03
01629120	East Branch Naked Creek near Jollett, Va.	382807	0782950	4.58	.5	.04

Appendix 2. Magnitude and frequency of average minimum 7-consecutive-day discharge at partial-record gaging stations on streams in Virginia—Continued

[Dashes indicate that attempts to relate discharge measurements at the partial-record site to daily mean discharge at a continuous-record site were unsuccessful]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second	
					2-year	10-year
01629920	Little Hawksbill Creek Tributary near Ida, Va.	383323	0782555	0.78	0.07	0.02
01630542	Pass Run near Thornton Gap, Va.	383905	0782114	2.00	.25	.05
01630585	Jeremys Run near Oak Hill, Va.	384318	0782315	9.72	.02	.0
01630620	Overall Run near Bentonville, Va.	384818	0782034	4.41	.06	.0
01630649	Phils Arm Run near Browntown, Va.	384734	0781429	.98	.07	.01
01630680	Lands Run near Browntown, Va.	384920	0781222	1.38	.13	.04
01630700	Gooney Run near Glen Echo, Va.	385006	0781356	20.6	3.2	1.8
01631500	North Fork Shenandoah River at Route 917 at Fulks Run, Va.	384018	0785547	106	–	–
01632080	Linville Creek at Broadway, Va.	383622	0784813	42.3	6.0	4.0
01632300	Long Meadow near Broadway, Va.	383443	0784540	8.15	.0	.0
01632840	Smith Creek at Route 717 near Lacey Spring, Va.	383218	0784503	21.3	3.1	1.8
01632890	Smith Creek at Route 794 near Lacey Spring, Va.	383651	0784021	72.7	15	9.2
01633475	Riles Run at Route 703 near Conicville, Va.	385039	0784229	5.65	.61	.47
01633485	Stony Creek near Liberty Furnance, Va.	385341	0783957	57.0	6.9	4.4
01633487	Stony Creek Tributary near Liberty Furnance, Va.	385344	0784003	.79	–	–
01633510	Swover Creek near Conicville, Va.	385029	0784039	3.26	.10	.05
01633540	Stony Creek at US HWY 11 at Edinburg, Va.	384921	0783408	104	18	11
01633730	Toms Brook at Toms Brook, Va.	385642	0782632	9.35	.54	.34
01633745	Toms Brook near Toms Brook, Va.	385535	0782530	16.2	1.1	.85
01634340	Cedar Creek near Lebanon Church, Va.	390453	0782530	50.1	4.3	3.2
01635045	Buffalo Marsh Run near Middletown, Va.	390334	0781817	5.27	1.0	.54
01635100	Cedar Creek near Strasburg, Va.	385927	0781942	157	16	11
01635250	Passage Creek at Route 776 near Detrick, Va.	384749	0782742	31.7	1.7	.91
01635300	Peters Mill Run near Detrick, Va.	385148	0782625	4.22	.42	1.2
01636270	Borden Marsh Run at Route 624 near Boyce, Va.	390009	0780551	8.71	2.1	1.2
01636300	Westbrook Run near Boyce, Va.	390422	0780530	1.40	.40	.20
01636690	Piney Run near Lovettsville, Va.	391839	0774306	13.7	.53	.11
01643585	Potomac River Tributary No 1 near Lucketts, Va.	391232	0772839	2.	.10	.04
01643600	Limestone Branch Tributary No 1 near Leesburg, Va.	391027	0773148	6.82	1.2	.6
01643643	Goose Creek at Delaplane, Va.	385451	0775520	45.6	1.6	.20

Appendix 2. Magnitude and frequency of average minimum 7-consecutive-day discharge at partial-record gaging stations on streams in Virginia—Continued

[Dashes indicate that attempts to relate discharge measurements at the partial-record site to daily mean discharge at a continuous-record site were unsuccessful]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second	
					2-year	10-year
01643800	North Fork Goose Creek at Route 722 near Lincoln, Va.	390438	0774152	24.0	1.1	0.34
01643950	Goose Creek at Oatlands, Va.	390138	0773717	276	12	2.9
01643988	Little River near Oatlands, Va.	390025	0773653	47.7	2.1	.5
01643990	Howsers Branch near Oatlands, Va.	390012	0773630	5.98	.0	.0
01644255	South Fork Broad Run at Arcola, Va.	385710	0773209	5.31	.01	.0
01644277	Beaverdam Run near Ashburn, Va.	390253	0772659	11.2	.0	.0
01644280	Broad Run near Lessburg, Va.	390335	0772622	76.1	.28	.02
01644283	Potomac River Tributary No 2 near Sterling, Va.	390338	0772406	3.47	.0	.0
01644300	Sugarland Run at Herndon, Va.	385800	0772217	3.36	.0	.0
01645750	South Fork Little Difficult Run near Fairfax, Va.	385352	0772112	1.59	.19	.03
01645800	Piney Brancy at Vienna, Va.	385406	0771557	.29	.0	.0
01645900	Colvin Run at Reston, Va.	385756	0771836	5.09	.78	.13
01645950	Piney Run at Reston, Va.	385849	0771909	2.06	.17	.0
01646200	Scott Run near Mclean, Va.	385732	0771221	4.69	.73	.12
01646600	Pimmit Run near Falls Church, Va.	385441	0771105	2.8	.09	.0
01646700	Pimmit Run at Arlington, Va.	385605	0770826	8.12	1.1	.07
01652400	Long Branch at Arlington, Va.	385131	0770737	.94	.11	.06
01652600	Holmes Run at Merrifield, Va.	385157	0771245	2.70	.15	.01
01652610	Holmes Run near Annandale, Va.	385047	0771028	7.10	.38	.01
01652620	Tripps Run at Falls Church, Va.	385246	0770814	1.78	.10	.01
01652645	Tripps Run Tributary near Falls Church, Va.	385154	0771016	.50	.0	.0
01652650	Tripps Run near Falls Church, Va.	385137	0770957	4.55	.34	.01
01652710	Backlick Run at Springfield, Va.	384805	0771114	2.02	.0	.0
01652910	Backlich Run at Alexandria, Va.	384811	0770741	13.4	1.7	.32
01653210	Pike Branch at Alexandria, Va.	384735	0770502	2.65	.16	.0
01653447	Penn Daw outfall at Alexandria, Va.	384719	0770354	.82	.06	.03
01653700	Little Hunting Creek at Gum Springs, Va.	384421	0770520	1.78	.23	.08
01653800	Dogue Creek near Accotink, Va.	384308	0770744	10	.7	.3
01653900	Accotink Creek at Fairfax, Va.	385139	0771617	6.80	.45	.06
01653950	Long Branch at Vienna, Va.	385223	0771434	1.18	.04	.0
01655310	Rabbit Branch near Burke, Va.	384806	0771919	3.81	.58	.10
01655350	Pohick Creek near Springfield, Va.	384526	0771337	15.0	1.3	.04
01655370	Middle Run near Lorton, Va.	384501	0771403	3.56	.10	.0
01655380	South Run near Lorton, Va.	384411	0771510	6.54	.20	.0
01655390	Pohick Creek at Lorton, Va.	384214	0771252	31.0	3.0	.06

Appendix 2. Magnitude and frequency of average minimum 7-consecutive-day discharge at partial-record gaging stations on streams in Virginia—Continued

[Dashes indicate that attempts to relate discharge measurements at the partial-record site to daily mean discharge at a continuous-record site were unsuccessful]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second	
					2-year	10-year
01656200	Broad Run near Warrenton, Va.	384825	0774847	2.94	0.11	0.03
01656645	Rocky Branch Tributary near Gainesville, Va.	384543	0773457	2.32	.0	.0
01656655	Kettle Run near Nokesville, Va.	384328	0773632	11.9	.0	.0
01656659	Kettle Run at Brentsville, Va.	384158	0773042	25.0	.0	.0
01656670	Broad Run at Brentsville, Va.	384132	0772942	137	3.3	1.2
01656705	Black Branch near Haymarket, Va.	385446	0773743	3.05	.02	.0
01656715	Chestnut Lick near Catharpin, Va.	385317	0773537	11.1	.01	.0
01656743	Lick Branch at Catharpin, Va.	385058	0773424	3.06	.0	.0
01656750	Little Bull Run near Bull Run, Va.	385032	0773222	27.2	.2	.0
01656768	Flat Branch near Manassas, Va.	384622	0772957	1.10	.0	.0
01656800	Cub Run near Chantilly, Va.	385430	0772801	7.13	.0	.0
01656930	Elklick Run near Chantilly, Va.	385216	0772940	10.9	.0	.0
01657245	Russia Branch at Manassas, Va.	384542	0772637	1.47	.02	.0
01657300	Popes Head Creek near Fairfax, Va.	384857	0772016	3.88	.48	.07
01657400	Popes Head Creek at Clifton, Va.	384654	0772318	17.2	1.2	.11
01657435	Wolf Run near Clifton, Va.	384409	0772151	5.39	.13	.01
01657600	Sandy Run near Fairfax station, Va.	384453	0771923	2.35	.12	.0
01657800	Giles Run near Woodbridge, Va.	384048	0771336	4.54	.60	.12
01657890	Neabsco Creek Tributary near Dale City, Va.	383713	0771635	3.33	.5	.12
01660670	Accokeek Creek near Brooke, Va.	382238	0772126	18.0	.75	.25
01660765	Upper Machodoc Creek near Dahlgren, Va.	381857	0770520	26.2	1.1	.25
01660870	Fox Hall Swamp near Potomac Mills, Va.	380924	0765743	2.28	.26	.13
01661160	Nomini Creek near Neenah, Va.	380228	0764222	9.99	5.0	1.6
01661840	Rappahannock River near Flint Hill, Va.	384532	0780142	65.9	3.0	.46
01662100	Hazel River near Nethers, Va.	383654	0781544	5.15	1.0	.2
01662110	Hazel River at Route 631 near Woodville, Va.	383627	0781415	5.54	1.7	.36
01662150	Hughes River near Nethers, Va.	383427	0781749	9.92	1.8	.3
01662160	Brokenback Run near Nethers, Va.	383416	0781801	4.30	.5	.05
01662190	Ragged Run near Etlan, Va.	383156	0781744	1.14	.09	.02
01662310	Thornton River above Beech Sp Hollow near Sperryville, Va.	383912	0781623	6.40	1.0	.3
01662350	North Fork Thornton River near Sperryville, Va.	384136	0781633	7.21	.5	.09
01662370	Piney River near Sperryville, Va.	384146	0781530	5.58	.5	.10
01662480	Rush River at Route 622 near Washington, Va.	384429	0781308	2.34	.21	.05
01662490	Rush River at State Route 624 at Washington, Va.	384337	0781013	11.1	.34	.0
01664100	Tinpot Run at Remington, Va.	383225	0774819	9.70	.0	.0

Appendix 2. Magnitude and frequency of average minimum 7-consecutive-day discharge at partial-record gaging stations on streams in Virginia—Continued

[Dashes indicate that attempts to relate discharge measurements at the partial-record site to daily mean discharge at a continuous-record site were unsuccessful]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second	
					2-year	10-year
01664690	Browns Run near Elk Run, Va.	383244	0774312	2.55	0.0	0.0
01664750	Marsh Run near Remington, Va.	383029	0774553	37.3	.0	.0
01665100	Jonas Run near Brandy Station, Va.	382920	0775408	11.4	.0	.0
01665150	Mountain Run near Kellys Ford, Va.	382737	0774850	118	4.1	.8
01665220	Deep Run at Route 615 near Goldvein, Va.	382707	0773746	15.4	.53	.10
01665260	Rapidan River near Graves Mill, Va.	382638	0782211	9.74	2.4	.5
01665270	Staunton River near Graves Mill, Va.	382638	0782212	4.21	.9	.14
01665340	Conway River near Kinderhook, Va.	382459	0782617	9.66	1.4	.3
01665400	Conway River near Stannrdsville, Va.	381958	0782353	25.8	1.7	.3
01665440	South River near McMullen, Va.	382201	0782738	4.94	.6	.06
01665740	Robinson River near Syria, Va.	383214	0782049	9.53	1.5	.15
01665800	Rose River near Syria, Va.	383055	0782159	9.15	2.1	.3
01665850	Robinson River at Route 231 near Criglersville, Va.	382654	0781644	47.8	3.0	.45
01667600	Cedar Run Tributary near Culpeper, Va.	382350	0780025	.58	.01	.0
01667650	Cedar Run near Culpeper, Va.	382148	0775832	33.2	.03	.0
01667700	Sumerduck Run near Culpeper, Va.	382219	0775627	11.0	.0	.0
01667750	Potato Run near Stevensburg, Va.	382455	0775500	6.67	.0	.0
01667848	Black Walnut Run at Burr Hill, Va.	382036	0775134	12.1	.35	.05
01667850	Mine Run at Burr Hill, Va.	382036	0775133	31.8	.78	.10
01668100	White Oak Run near Passapatanzy, Va.	381535	0772141	8.29	.0	.0
01668200	Gingoteague Run near Port Royal, Va.	381240	0770910	2.82	.04	.0
01668305	Farmers Hall Creek at Route 631 near Champlain, Va.	380053	0765747	3.65	.14	.0
01669100	Totuskey Creek near Emmerton, Va.	375447	0763929	28.4	4.5	2.5
01669150	Bellwood Swamp near Lancaster, Va.	374647	0762947	8.23	1.6	.61
01669400	Timber Branch Swamp Tributary at Dragonville, Va.	374125	0764625	.61	.08	.01
01669810	Healys Pond Tributary near Harmony Village, Va.	373453	0763024	.72	.29	.16
01669850	Queens Creek near Blakes, Va.	372922	0762255	1.56	.0	.0
01669885	North End Branch Tributary near North, Va.	372817	0762515	1.04	.0	.0
01670010	Beaverdam Swamp Tributary No 2 at Ark, Va.	372635	0763427	1.29	.12	.02
01670020	Beaverdam Swamp at Gloucester, Va.	372534	0763148	22.1	1.5	.12

Appendix 2. Magnitude and frequency of average minimum 7-consecutive-day discharge at partial-record gaging stations on streams in Virginia—Continued

[Dashes indicate that attempts to relate discharge measurements at the partial-record site to daily mean discharge at a continuous-record site were unsuccessful]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second	
					2-year	10-year
01670120	Mountain Run at Route 643 near Gordonsville, Va.	380939	0780606	14.1	0.95	0.20
01670200	Pamunkey Creek at Route 651 near Lahore, Va.	380916	0775702	51.7	4.0	1.0
01671040	Long Creek at Route 655 near Buckner, Va.	375538	0774744	8.01	.35	.10
01671680	South Anna River at Route 208 near Louisa, Va.	375850	0780254	113	6.0	2.0
01671950	Deep Creek at Route 640 near Apple Grove, Va.	375157	0775453	10.1	.42	.10
01672200	Taylors Creek at Route 715 near Montpelter, Va.	374749	0774327	22.0	1.5	.50
01672400	South Anna River Tributary No 6 near Ashland, Va.	374840	0773420	.33	.02	.0
01672800	Newfound River at Route 685 near Ashland, Va.	375035	0773230	36.3	1.4	.40
01673560	Totopotomy Creek near Manquin, Va.	374045	0771308	30.9	3.1	.91
01673600	Matadequin Creek near Tunstall, Va.	373702	0770817	29.1	4.4	1.4
01673620	Acquinton Creek near King William, Va.	374104	0770244	8.93	.1	.0
01673700	Catharpin Run at Route 608 near Brokenburg, Va.	381322	0774330	7.52	.0	.0
01673900	Poni River Tributary No 1 near Guinea, Va.	380907	0772716	6.15	.1	.0
01673960	Mat River near Marye Va.	380623	0773607	14.5	.05	.0
01674172	Polecat Creek near Ladysmith, Va.	375813	0772913	10.8	.17	.0
01674200	Reedy Creek near Dawn, Va.	375255	0772135	16.8	1.2	.10
01674250	Maracossic Creek at Sparta, Va.	375923	0771430	37.6	5.5	2.2
01674300	Maracossic Creek above Beverly Run near Gether, Va.	375515	0771129	72.4	7.0	1.5
01674350	Beverly Run at Route 630 near Alps, Va.	375929	0770910	26.5	3.4	.84
01674400	Beverly Run at Route 721 near Alps, Va.	375708	0771048	46.9	6.0	1.2
01674600	Herring Creek near Aylett, Va.	375012	0771003	28.9	2.4	.9
01674805	Dickeys Swamp near Stevensville, Va.	374403	0765756	19.8	2.5	.92
01675550	GLebe Swamp near Shacklefords, Va.	373321	0764238	4.57	.27	.04
01677100	France Swamp near Toano, Va.	372515	0764706	6.70	1.6	.69
01677200	Skimino Creek Below Barlows Pond near Lightfoot, Va.	372158	0764257	8.19	2.5	1.1
01677900	Moores Creek near Poquoson, Va.	370728	0762515	1.03	.0	.0
02002000	Jackson River at US HWY 220 at Vanderpool, Va.	382205	0793735	13.0	1.4	.90
02015600	Cowpasture River near Head Waters, Va.	381930	0792614	11.3	1.6	1.0
02015800	Thompson Creek at Route 39 near Bath Alum, Va.	380238	0794105	15.7	2.2	1.8
02015930	Pads Creek near Longdale Furnace, Va.	375154	0794356	26.3	.0	.0

Appendix 2. Magnitude and frequency of average minimum 7-consecutive-day discharge at partial-record gaging stations on streams in Virginia—Continued

[Dashes indicate that attempts to relate discharge measurements at the partial-record site to daily mean discharge at a continuous-record site were unsuccessful]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second	
					2-year	10-year
02016600	Craig Creek above Muddy Branch near McDonalds Mill, Va.	372116	0801723	23.0	0.31	0.17
02017300	Craig Creek at New Castle, Va.	373006	0800618	112	.20	.15
02017400	Johns Creek Tributary near New Castle, Va.	373030	0801130	1.57	.09	.06
02019100	Spreading Spring Branch at Springwood, Va.	373257	0794442	6.76	1.0	.55
02020170	East Fork Elk Creek at Belfast Trail near Natural Bridge, Va.	373417	0792931	4.15	.32	.22
02020200	Calfpasture River near West Augusta, Va.	381624	0791802	12.8	.01	.0
02021700	Cedar Grove Branch near Rockbridge Baths, Va.	375300	0792308	12.3	1.8	1.4
02023300	South River near Steeles Tavern, Va.	375550	0790955	15.7	.0	.0
02024240	South Buffalo Creek at Route 611 near Lexington, Va.	374414	0793418	21.1	4.2	3.4
02024760	Reed Creek at Route 637 near Big Island, Va.	373010	0792407	7.46	3.0	1.8
02024900	Pedlar River below Davis Mill Creek near Buena Vista, Va.	374448	0791609	18.2	4.2	3.0
02025650	Harris Creek at Route 675 near Monroe, Va.	372935	0790910	34.5	4.2	1.1
02025800	Burton Creek Tributary at Lynchburg, Va.	372110	0791105	2.36	.30	.10
02025900	Beaver Creek at Route 660 near Bocock, Va.	372116	0790427	24.0	4.6	2.1
02026400	South Fork Tye River at Nash, Va.	375124	0790247	14.2	4.4	2.1
02027600	Buffalo River below Forks of Buffalo, Va.	374047	0791320	15.9	2.0	.69
02027670	Buffalo River near Amherst, Va.	373618	0790135	93.1	14	6.6
02027700	Buffalo River Tributary near Amherst, Va.	373345	0785735	.46	.03	.0
02028450	Sycamore Creek at Route 601 near Howardsville, Va.	374043	0783955	9.94	1.6	.55
02028700	Cove Creek near Covesville, Va.	375206	0784332	4.00	.90	.30
02029200	North Fork Hardware River at Red Hill, Va.	375803	0783704	11.0	3.0	.85
02029400	South Branch North Fork Hardware River near North Garden, Va.	375721	0783935	6.59	1.6	.50
02030150	Slate River at Buckingham, Va.	373308	0783353	63.0	11	3.5
02030300	Slate River near Dillwyn, Va.	373708	0782910	154	22	5.8
02030850	Stockton Creek near Crozet, Va.	380237	0784154	20.4	2.0	.22
02032545	Ivy Creek near Boonesville, Va.	381607	0783645	6.11	.05	.0
02033750	Buck Island Creek below Houchins Creek near Simeon, Va.	375713	0782415	31.0	1.3	.18
02034150	Little Byrd Creek at Route 667 near Fife, Va.	374550	0780524	29.9	.66	.10
02034300	Little Willis River at Curdsville, Va.	372438	0782735	7.07	.95	.40
02035075	Maxey Mill Creek at Ballsville, Va.	373107	0780731	12.0	1.1	.34

Appendix 2. Magnitude and frequency of average minimum 7-consecutive-day discharge at partial-record gaging stations on streams in Virginia—Continued

[Dashes indicate that attempts to relate discharge measurements at the partial-record site to daily mean discharge at a continuous-record site were unsuccessful]

Station Number	Station name	Latitude	Longitude	Drainage area, in square miles	Annual 7-day low flow for indicated recurrence interval, in cubic feet per second	
					2-year	10-year
02035460	Big Lickinghole Creek at Route 613 near Goochland, Va.	374352	0775721	28.7	2.3	0.96
02036700	Bernards Creek near Manakin, Va.	373325	0774033	15.4	.0	.0
02038730	Fourmile Creek near Richmond Heights, Va.	372716	0771953	4.01	.7	.5
02038780	Johnson Creek near Rivermont, Va.	371958	0771937	6.22	.1	.01
02038900	Dry Creek near Farmville, Va.	372045	0782445	3.64	.05	.0
02039600	Briery Creek at US HWY 460 (Bus) near Rice, Va.	371649	0782148	41.5	3.7	1.4
02039700	Sandy River at US HWY 460 near Rice, Va.	371631	0781917	39.7	3.6	1.3
02039800	Angola Creek near Angola, Va.	372216	0781744	6.74	.86	.46
02040500	Flat Creek near Amelia, Va.	372327	0780345	73.0	2.6	.3
02040600	Nibbs Creek Tributary near Amelia, Va.	372345	0775820	.35	.01	.0
02040900	Little Creek near Denaro, Va.	371332	0780110	3.93	.46	.14
02041150	Winterpock Creek at Route 664 near Winterpock, Va.	372138	0774256	3.77	–	–
02041400	Whipponock Creek at Route 627 near Church Road, Va.	371145	0773923	3.27	.12	.01
02042050	Franks Branch at Route 626 near Colonial Heights, Va.	371642	0772835	16.8	.25	.01
02042140	Powell Creek at Garysville, Va.	371454	0770909	14.6	2.7	1.6
02042160	West Run at Barnetts, Va.	372130	0770956	20.3	1.6	.65
02042200	Glebe Creek Tributary near Charles City, Va.	372205	0770415	.70	.0	.0
02042210	Courthouse Creek at Charles City, Va.	372037	0770414	9.79	2.5	2.2
02042450	White Oak Swamp near White Oak Swamp, Va.	372903	0771605	8.26	1.1	.75
02042600	Rumley Marsh near Providence Forge, Va.	372832	0770249	11.9	2.4	1.4
02042700	Collins Run near Providence Forge, Va.	372359	0770254	2.84	.40	.20
02042710	Collins Run Tributary near Providence Forge, Va.	372415	0770250	.28	.02	.0
02042752	Mill Creek at Diasound, Va.	372323	0765205	8.59	1.1	.44
02042754	Yarmouth Creek below Cranstons Pond near Toano, Va.	372048	0764856	6.93	3.0	1.5
02042756	Gordon Creek below Jolly Pond near Lightfoot, Va.	371748	0764910	4.89	.25	.04
02042765	James River Tributary near Five Forks, Va.	371518	0764846	.91	.09	.02
02042780	West Branch Long Hill Swamp near Lightfoot, Va.	371850	0764602	2.47	.94	.4
02042782	Powhattan Creek at Five Forks, Va.	371457	0764623	19.7	1.0	.1
02042784	Grays Creek near Surry, Va.	371006	0765125	8.09	–	–
02042787	Skiffles Creek near Lee Hall, Va.	371248	0763650	1.32	.07	.01