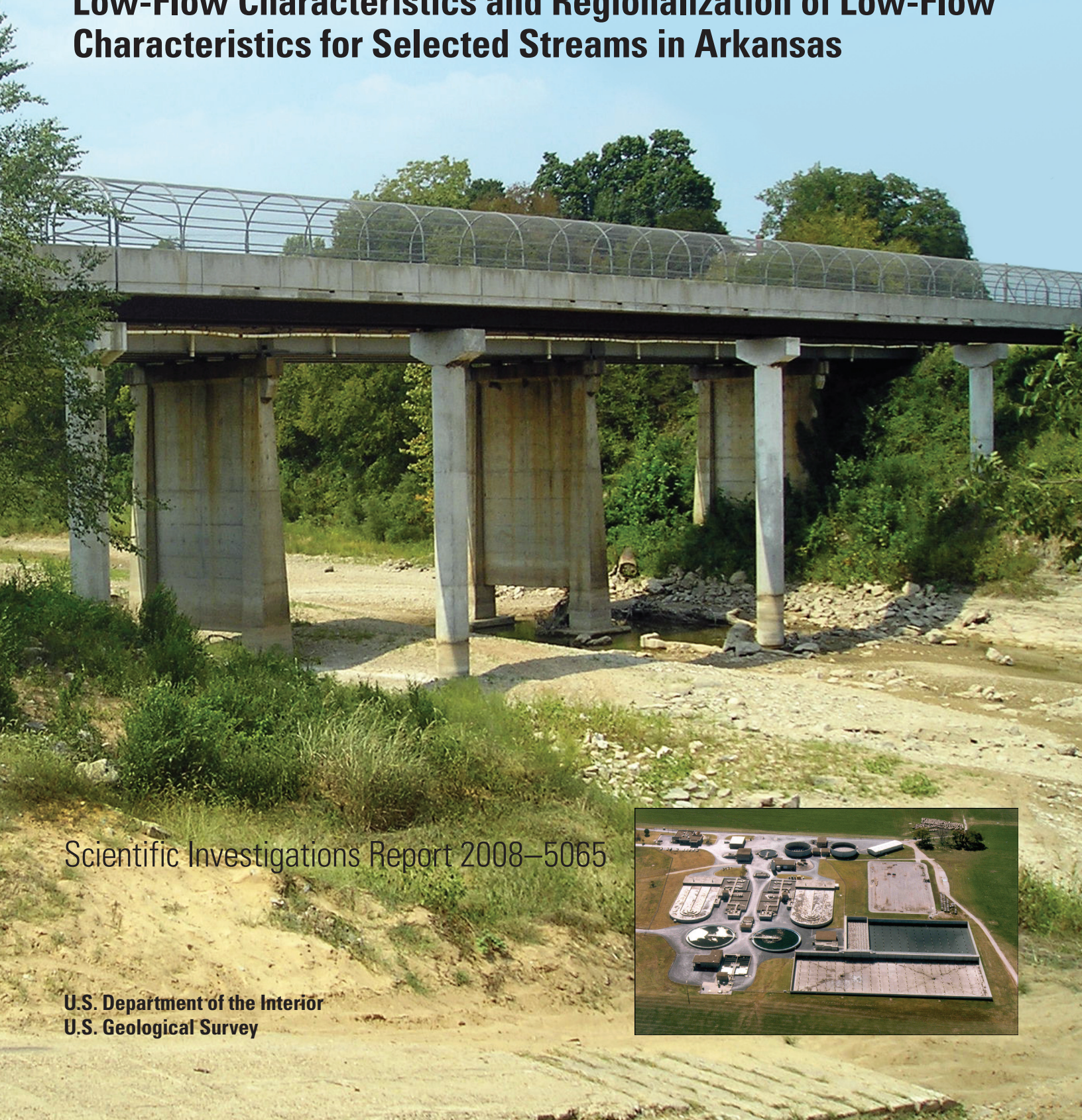


Prepared in cooperation with the Arkansas Department of Environmental Quality

Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas



Scientific Investigations Report 2008–5065

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



Cover photograph. Crooked Creek at the State Highway 14 bridge crossing at Yellville, Arkansas. Photograph by U.S. Geological Survey. Inset photograph is Wastewater Treatment Plant , Rogers, Arkansas (courtesy of Rogers Water Utilities).

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By Jaysson E. Funkhouser, Ken Eng, and Matthew W. Moix

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U.S. Geological Survey

U.S. Department of the Interior
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Contents

Abstract.....	1
Introduction.....	1
Purpose and Scope	2
Previous Studies	12
Continuous-Streamflow Record Gaging Network.....	12
Methods of Analysis at Gaging Stations.....	12
Low-Flow Frequency	12
Calculation of Low-Flow Characteristics of Continuous-Streamflow Record Gaging Stations	12
Calculation of Low-Flow Characteristics at Partial-Record Gaging Stations	13
Calculation of Low-Flow Characteristics at Partial-Record Gaging Stations Using the Base-Flow Correlation Method.....	13
Calculation of Low-Flow Characteristics at Partial-Record Stations Using the Graphical Method	13
Methods of Analysis at Ungaged Basins.....	30
Regional Regression Models for Low-Flow Characteristics.....	30
Basin Attributes Considered	30
Basin Attribute Selection	30
Base-Flow Recession Constant, tau (τ).....	34
Performance Metrics for Evaluation of Regression Models.....	34
Low-Flow Characteristics at Continuous-Streamflow and Partial-Record Gaging Stations.....	39
Regionalization of Low-Flow Characteristics	39
Low-Flow Regions of the State.....	39
Low-Flow Characteristics at Ungaged Basins	41
Use of Regression Models	41
Use of Computer Program	53
Summary.....	53
Selected References.....	54
Appendix 1. Description of Base-Flow Correlation Method	136
Appendix 2. Regional Regression Models	137
Appendix 3. Basin Attributes Tested for Significance in the Regression Analysis.....	142
Appendix 4. Basin Attribute Selection.....	144

Figures

1. Map showing continuous-streamflow record and partial-record gaging stations analyzed for low-flow characteristics	3
2. Graph showing relation between daily-mean discharge at continuous streamflow-record gaging station Buffalo River near St. Joe, Arkansas, and measured discharge at partial-record station, Buffalo River near Boxley, Arkansas	13
3-7. Maps showing:	
3. Geographic distribution of tau values for the annual $Q_{7,10}$	35
4. Geographical distribution of tau values for the November through December $Q_{7,10}$	36
5. Geographical distribution of tau values for the January through February $Q_{7,10}$	37
6. Geographical distribution of tau values for the March through April $Q_{7,10}$	38
7. Physiographic sections of Arkansas	40

Tables

1. Continuous streamflow-record and partial-record gaging stations analyzed for low-flow characteristics	4
2. Partial-record gaging stations analyzed for low-flow characteristics and the method and index station used for this analysis.....	14
3. Basin attributes tested for significance in the regression analysis	31
4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.....	58
5. Partial-record gaging stations analyzed for low-flow characteristics and the results of this analysis	123
6. Logistic regression models and associated performance metrics for each low-flow characteristic of interest.....	42
7. Multiple linear weighted least squares regression models for each region in Arkansas	44
8. Continuous-streamflow and partial-record gaging stations used to form the weighted least squares regression models	46
9. Logistic regression models: Basin attribute ranges	50
10. Weighted least squares regression models: Basin attribute ranges	51
2-1. Statistical summary of the coefficient values used in the regression models for each low-flow characteristics of interest	139
4-1. Basin Attribute Selection	144
4-2. Values of basin attributes found to be significant in the regression model	145

Conversion Factors

Multiply	By	To obtain
Length		
inch (in.)	2.54	centimeter (cm)
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
Area		
section (640 acres or 1 square mile)	259.0	square hectometer (hm ²)
square mile (mi ²)	259.0	hectare (ha)
square mile (mi ²)	2.590	square kilometer (km ²)
Volume		
million gallons (Mgal)	3,785	cubic meter (m ³)
cubic foot (ft ³)	0.02832	cubic meter (m ³)
Flow rate		
cubic foot per second (ft ³ /s)	0.02832	cubic meter per second (m ³ /s)

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

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

Altitude, as used in this report, refers to distance above the vertical datum.

Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

By Jaysson E. Funkhouser, Ken Eng, and Matthew W. Moix

Abstract

Water use in Arkansas has increased dramatically in recent years. Since 1990, the use of water for all purposes except power generation has increased 53 percent (4,004 cubic feet per second in 1990 to 6,113 cubic feet per second in 2005). The biggest users are agriculture (90 percent), municipal water supply (4 percent) and industrial supply (2 percent). As the population of the State continues to grow, so does the demand for the State's water resources.

The low-flow characteristics of a stream ultimately affect its utilization by humans. Specific information on the low-flow characteristics of streams is essential to State water-management agencies such as the Arkansas Department of Environmental Quality, the Arkansas Natural Resources Commission, and the Arkansas Game and Fish Commission when dealing with problems related to irrigation, municipal and industrial water supplies, fish and wildlife conservation, and dilution of waste. Low-flow frequency data are of particular value to management agencies responsible for the development and management of the State's water resources.

This report contains the low-flow characteristics for 70 active continuous-streamflow record gaging stations, 59 inactive continuous-streamflow record stations, and 101 partial-record gaging stations. These characteristics are the annual 7-day, 10-year low flow and the annual 7-day, 2-year low flow, and the seasonal, bimonthly, and monthly 7-day, 10-year low flow for the 129 active and inactive continuous-streamflow record and 101 partial-record gaging stations.

Low-flow characteristics were computed on the basis of streamflow data for the period of record through September 2005 for the continuous-streamflow record and partial-record streamflow gaging stations. The low-flow characteristics of these continuous- and partial-record streamflow gaging stations were utilized in a regional regression analysis to produce equations for estimating the annual, seasonal, bimonthly, and monthly (November through April) 7-day, 10-year low flows and the annual 7-day, 2-year low flow for ungaged streams in the western two-thirds of Arkansas.

Introduction

Water use in Arkansas has increased dramatically in recent years. Since 1990, the use of water for all purposes except power generation has increased 53 percent (4,004 cubic feet per second (ft³/s) in 1990 to 6,113 ft³/s in 2005). The biggest users are agriculture (90 percent), municipal water supply (4 percent) and industrial supply (2 percent) (Terrance W. Holland, U.S. Geological Survey, written commun., 2007). As the population of Arkansas continues to grow, so does the demand for the State's water resources.

The low-flow characteristics of a stream ultimately affect its utilization by humans. Few streams in Arkansas are completely unaffected by regulation or diversion (Ludwig, 1992). There are approximately 2,600 lakes and reservoirs in Arkansas with surface areas of 5 acres or more (Ludwig, 1992). The majority of every major drainage basin in the State contains one or more of these lakes (Arkansas Soil and Water Conservation Commission, 1981). The effects of regulation are slight downstream from small retention reservoirs that are used for sediment control, livestock wastewater-treatment facilities, and small municipal-water supplies. However, in basins where major control structures have been built or large numbers of diversions for irrigation occur, streamflow no longer reflects short-term variations in natural flow.

In some instances, municipal water supplies are withdrawn upstream from a gaging station and treated wastewater is discharged into another drainage basin. For example, Beaver Water District withdraws 80 Mgal/d (52 ft³/s) from the White River Basin (Beaver Lake). Treated wastewater from municipalities served by the Beaver Water District is discharged into the White River and Arkansas River Basins (Galloway and others, 2005; Galloway and Green, 2006).

Specific information on the low-flow characteristics of streams is essential to State water-management agencies such as the Arkansas Department of Environmental Quality (ADEQ), Arkansas Natural Resources Commission (ANRC), and Arkansas Game and Fish Commission (AGFC) when dealing with problems related to irrigation, municipal and industrial water supplies, fish and wildlife conservation, and

2 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

dilution of waste. Low-flow frequency data are of particular value to management agencies responsible for the development and management of the State's water resources.

The ADEQ issues and periodically renews National Pollutant Discharge Elimination System (NPDES) permits to municipalities, industries, and other entities with facilities desiring to discharge a treated wastewater into a surface water of the State. For the purpose of protecting public health and aquatic environments, NPDES permits issued by the ADEQ impose limits on the quantity of pollutants in wastewater discharge to surface waters ensuring compliance with Federal regulations and Arkansas water-quality standards (Arkansas Department of Environmental Quality, written commun., 2004).

Historically, limits imposed by NPDES permits issued by the ADEQ for wastewater discharge into streams have been based upon the annual 7-day, 10-year low flow ($Q_{7,10}$) at the location of the wastewater discharge. In 2005, the ADEQ acquired approval from the U.S. Environmental Protection Agency (USEPA) to issue NPDES permits with limits for ammonia toxicity based upon a monthly $Q_{7,10}$ during the months of November through April. This approval allows regulatory agencies, such as the ADEQ, to better manage the available water resources by allowing an increase of wastewater discharge into streams during periods of higher flows that do not occur in the period of July through October in Arkansas. Consequently, low flow characteristics for the November through April period are also of interest.

The $Q_{7,10}$ is widely used in addressing water-quality regulatory issues and represents the averaged consecutive 7-day minimum discharge that is not exceeded 9 out of every 10 years. The $Q_{7,2}$ also is used in addressing water-quality regulatory issues and represents the averaged consecutive 7-day minimum discharge that is not exceeded 1 out of every 2 years. In Arkansas, the minimum 7-day average flow (Q_7) generally occurs between July and October during the dry season (late summer and early fall). At any given stream location during the remainder of the year, the minimum Q_7 is usually higher.

Low-flow analyses typically are based upon an annual series with values that are considered random and independent. When the streamflow record is partitioned into shorter time-period segments of seasons or months, the risk of the minimum Q_7 falling across them increases (that is, the averaged consecutive 7-day minimum discharge for a given year may occur between the last few days of October and the first few days of November). However, the introduction of seasonal and monthly low-flow frequency analyses enables water planners to better estimate streamflow behavior for a given month or season.

To provide the low-flow frequency data needed by the various water-management agencies, the U.S. Geological Survey (USGS) currently (2007) collects streamflow data at more than 130 gaging stations throughout the State. Periodically, these data are analyzed by the USGS to update the low-flow characteristics of streams analyzed in previous low-flow

studies in the State. Data used in the streamflow analyses presented in this report were collected by the USGS in cooperation with many State and Federal agencies, principally the ADEQ, ANRC, and the U.S. Army Corps of Engineers. The analysis of the data and preparation of this report were done in cooperation with the ADEQ.

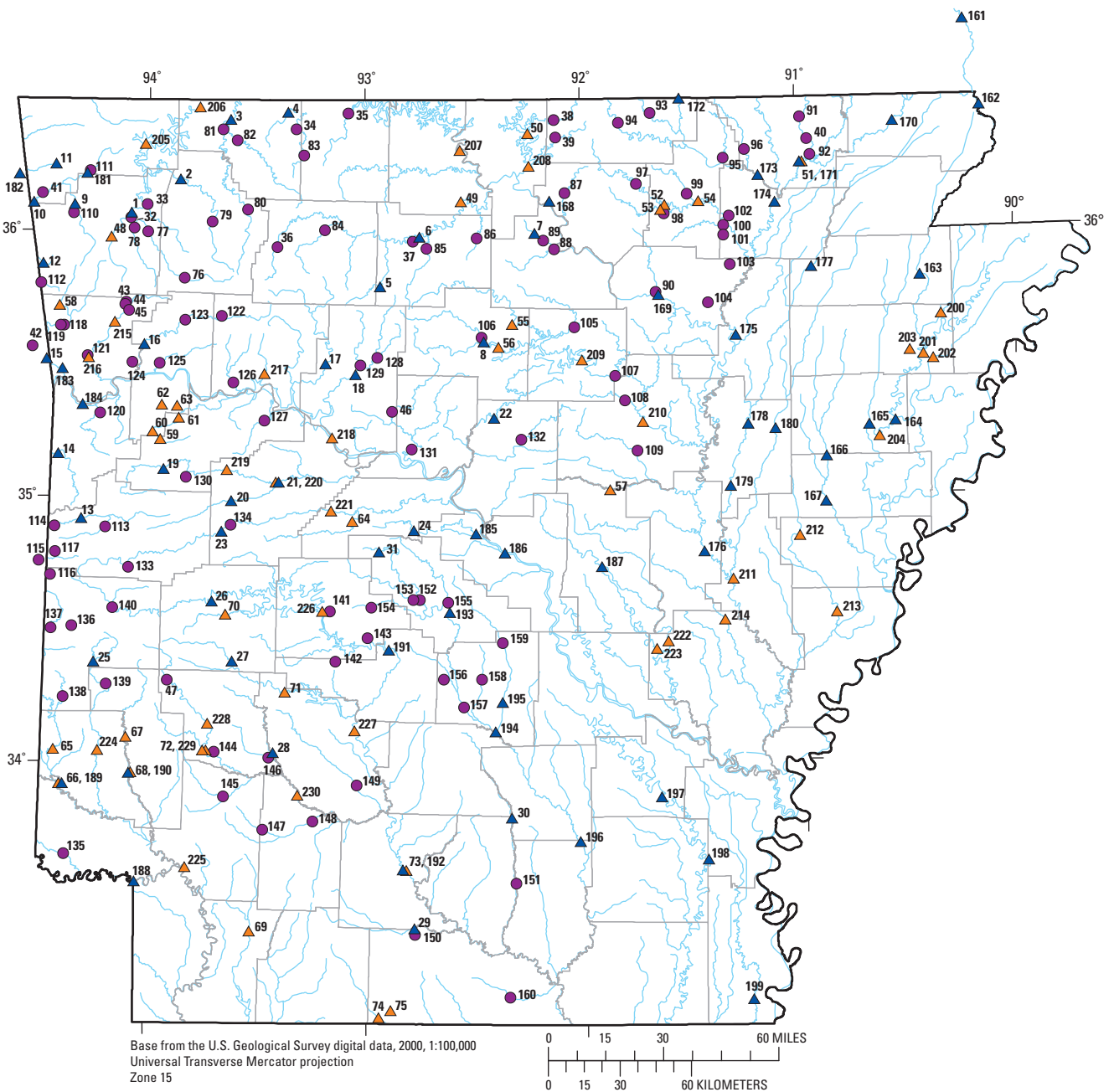
Purpose and Scope

The purpose of this report is to present the low-flow characteristics for:

- 70 active continuous-streamflow record gaging stations,
- 59 inactive continuous-streamflow record stations,
- 101 partial-record stations,

and to present regional regression equations for predicting selected low-flow characteristics for streams in ungaged basins in the western two-thirds of Arkansas. These characteristics and regression equations were calculated using streamflow records collected through September 2005. The report updates previously published low-flow characteristics for streams in Arkansas and presents low-flow characteristics for streamflow gaging stations established after 1990. In addition, the report also includes estimates of the annual $Q_{7,10}$ and $Q_{7,2}$ and the seasonal, bimonthly, and monthly $Q_{7,10}$ for the 129 active and inactive continuous-streamflow record and 101 partial-record gaging stations, which were not provided in previous low-flow reports. Low-flow characteristics were computed on the basis of streamflow data for the period of record for discontinued continuous-streamflow record gaging stations and through September 2005 for active continuous-streamflow record and partial-record streamflow gaging stations. The low-flow characteristics of these continuous- and partial-record streamflow gaging stations were utilized in a regional regression analysis to produce equations for estimating the annual, seasonal, bimonthly, and monthly (November through April) $Q_{7,10}$ and the annual $Q_{7,2}$ for streams in ungaged basins in the western two-thirds of Arkansas (fig. 1) (table 1). The eastern one-third of Arkansas has been excluded from the study because extensive irrigation practices render it impossible to estimate low-flow characteristics at gaged or partial-record streamflow-gaging stations or to determine equations to estimate low-flow characteristics in this region. A computer program is included on a compact disk at the back of the report for calculation of low-flow characteristics.

This report is an update, based on the additional period of record (1990 – 2005), of the information contained in Ludwig (1992) and includes an ordinary least squares (OLS) logistic regression model and a multiple linear regression model with a weighted least squares parameter estimation procedure to estimate the annual $Q_{7,2}$ and $Q_{7,10}$ as well as the seasonal, bimonthly, and monthly $Q_{7,10}$.



EXPLANATION

- ▲ 11 Active continuous-streamflow record gaging station and identifier (table 1)
- ▲ 48 Inactive continuous-streamflow record gaging station and identifier (table 1)
- 41 Partial-record gaging station and identifier (table 1)

Figure 1. Continuous-streamflow record and partial-record gaging stations analyzed for low-flow characteristics.

4 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 1. Continuous streamflow-record and partial-record gaging stations analyzed for low-flow characteristics.

[ACR, active continuous record with minimal alterations in basin; SACR(PR), short-term active continuous record with minimal alterations in basin (analyzed and listed as partial-record stations); ICR, inactive continuous record with minimal alterations in basin; PR, partial record with minimal alterations in basin; HAACR, highly altered (numerous anthropogenic changes) active continuous record; HAICR, highly altered (numerous anthropogenic changes) inactive continuous record; stations listed twice had an ACR and a HAACR period of record analyzed]

Identifier number (figure 1, plate 1)	Station number	Station name	Latitude (degrees and decimal degrees)	Longitude (degrees and decimal degrees)	Station type
1	07048600	White River near Fayetteville, Ark.	36.0730	94.0810	ACR
2	07049000	War Eagle Creek near Hindsville, Ark.	36.2000	93.8550	ACR
3	07050500	Kings River near Berryville, Ark.	36.4260	93.6230	ACR
4	07053250	Yocum Creek near Oak Grove, Ark.	36.4540	93.3560	ACR
5	07055875	Richland Creek near Witts Spring, Ark.	35.7970	92.9290	ACR
6	07056000	Buffalo River near St. Joe, Ark.	35.9830	92.7480	ACR
7	07060710	North Sylamore Creek near Fifty-Six, Ark.	35.9950	92.2130	ACR
8	07075300	South Fork of Little Red River at Clinton, Ark.	35.5870	92.4520	ACR
9	07194800	Illinois River at Savoy, Ark.	36.1030	94.3440	ACR
10	07195430	Illinois River south of Siloam Springs, Ark.	36.1090	94.5340	ACR
11	07195800	Flint Creek at Springtown, Ark.	36.2550	94.4340	ACR
12	07196900	Baron Fork at Dutch Mills, Ark.	35.8800	94.4860	ACR
13	07247000	Poteau River at Cauthron, Ark.	34.9190	94.2990	ACR
14	07249400	James Fork near Hackett, Ark.	35.1630	94.4070	ACR
15	07249985	Lee Creek near Short, Okla.	35.5190	94.4660	ACR
16	07252000	Mulberry River near Mulberry, Ark.	35.5770	94.0160	ACR
17	07257006	Big Piney Creek at Highway 164 near Dover, Ark.	35.5060	93.1810	ACR
18	07257500	Illinois Bayou near Scottsville, Ark.	35.4660	93.0410	ACR
19	07258500	Petit Jean River near Booneville, Ark.	35.1070	93.9240	ACR
20	07260000	Dutch Creek at Waltreak, Ark.	34.8870	93.6130	ACR
21 ¹	07260500	Petit Jean River at Danville, Ark.	35.0590	93.3960	ACR
22	07261000	Cadron Creek near Guy, Ark.	35.2990	92.4040	ACR
23	07261500	Fourche LaFave River near Gravelly, Ark.	34.8730	93.6570	ACR
24	07263295	Maumelle River at Williams Junction, Ark.	34.8760	92.7740	ACR
25	07340300	Cossatot River near Vandervoort, Ark.	34.3790	94.2360	ACR
26	07356000	Ouachita River near Mount Ida, Ark.	34.6100	93.6970	ACR
27	07359610	Caddo River near Caddo Gap, Ark.	34.3830	93.6060	ACR
28	07361500	Antoine River at Antoine, Ark.	34.0390	93.4180	ACR
29	07362100	Smackover Creek near Smackover, Ark.	33.3760	92.7770	ACR
30	07362500	Moro Creek near Fordyce, Ark.	33.7920	92.3330	ACR
31	07362587	Alum Fork Saline River near Reform, Ark.	34.7970	92.9330	ACR

Table 1. Continuous streamflow-record and partial-record gaging stations analyzed for low-flow characteristics.—Continued

[ACR, active continuous record with minimal alterations in basin; SACR(PR), short-term active continuous record with minimal alterations in basin (analyzed and listed as partial-record stations); ICR, inactive continuous record with minimal alterations in basin; PR, partial record with minimal alterations in basin; HAACR, highly altered (numerous anthropogenic changes) active continuous record; HAICR, highly altered (numerous anthropogenic changes) inactive continuous record; stations listed twice had an ACR and a HAACR period of record analyzed]

Identifier number (figure 1, plate 1)	Station number	Station name	Latitude (degrees and decimal degrees)	Longitude (degrees and decimal degrees)	Station type
32	07048550	West Fork White River east of Fayetteville, Ark.	36.0540	94.0830	SACR(PR)
33	07048800	Richland Creek at Goshen, Ark.	36.1040	94.0080	SACR(PR)
34	07053207	Long Creek at Denver, Ark.	36.3900	93.3170	SACR(PR)
35	07054410	Bear Creek near Omaha, Ark.	36.4490	93.0750	SACR(PR)
36	07055646	Buffalo River near Boxley, Ark.	35.9450	93.4030	SACR(PR)
37	07055893	Calf Creek near Silver Hill, Ark.	35.9680	92.7760	SACR(PR)
38	07058980	Bennetts River at Vidette, Ark.	36.4220	92.1190	SACR(PR)
39	07059450	Big Creek near Elizabeth, Ark.	36.3570	92.1130	SACR(PR)
40	07068890	Fourche River above Pochahontas, Ark.	36.3390	90.9420	SACR(PR)
41	07195400	Illinois River at Hwy 16 near Siloam Springs, Ark.	36.1450	94.4940	SACR(PR)
42	07249800	Lee Creek at Short, Okla.	35.5660	94.5320	SACR(PR)
43	07250935	Jones Creek at Winfrey, Ark.	35.7360	94.1030	SACR(PR)
44	07250965	Frog Bayou near Winfrey, Ark.	35.7270	94.1070	SACR(PR)
45	07250974	Jack Creek near Winfrey, Ark.	35.7050	94.0890	SACR(PR)
46	07260673	West Fork Point Remove Creek near Hattieville, Ark.	35.3250	92.8730	SACR(PR)
47	07360200	Little Missouri River near Langley, Ark.	34.3110	93.8990	SACR(PR)
48	07048000	West Fork White River at Greenland, Ark.	35.9830	94.1720	ICR
49	07057000	Buffalo River near Rush, Ark.	36.1170	92.5540	ICR
50	07059000	North Fork River near Henderson, Ark.	36.3720	92.2400	ICR
51 ¹	07069000	Black River at Pochahontas, Ark.	36.2540	90.9700	ICR
52	07073000	Strawberry River near Evening Shade, Ark.	36.0990	91.6080	ICR
53	07073500	Piney Fork at Evening Shade, Ark.	36.0810	91.6110	ICR
54	07074000	Strawberry River near Poughkeepsie, Ark.	36.1100	91.4500	ICR
55	07075000	Middle Fork Little Red River at Shirley, Ark.	35.6530	92.3190	ICR
56	07075500	South Fork Little Red River near Clinton, Ark.	35.5670	92.3830	ICR
57	07076850	Cypress Bayou near Beebe, Ark.	35.0250	91.8730	ICR
58	07249500	Cove Creek near Lee Creek, Ark.	35.7220	94.4080	ICR
59	07253000	Sixmile Creek at Chismville, Ark.	35.2210	93.9390	ICR
60	07253500	Sixmile Creek near Branch, Ark.	35.2490	93.9740	ICR
61	07255000	Sixmile Creek at Caulksville, Ark.	35.3010	93.8540	ICR

6 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 1. Continuous streamflow-record and partial-record gaging stations analyzed for low-flow characteristics.—Continued

[ACR, active continuous record with minimal alterations in basin; SACR(PR), short-term active continuous record with minimal alterations in basin (analyzed and listed as partial-record stations); ICR, inactive continuous record with minimal alterations in basin; PR, partial record with minimal alterations in basin; HAACR, highly altered (numerous anthropogenic changes) active continuous record; HAICR, highly altered (numerous anthropogenic changes) inactive continuous record; stations listed twice had an ACR and a HAACR period of record analyzed]

Identifier number (figure 1, plate 1)	Station number	Station name	Latitude (degrees and decimal degrees)	Longitude (degrees and decimal degrees)	Station type
62	07255500	Hurricane Creek near Branch, Ark.	35.3510	93.9340	ICR
63	07256000	Hurricane Creek near Caulksville, Ark.	35.3470	93.8630	ICR
64	07263000	South Fourche LaFave River near Hollis, Ark.	34.9110	93.0560	ICR
65	07339500	Rolling Fork near DeQueen, Ark.	34.0470	94.4130	ICR
66 ¹	07340000	Little River near Horatio, Ark.	33.9190	94.3870	ICR
67	07341000	Saline River near Dierks, Ark.	34.0960	94.0840	ICR
68 ¹	07341200	Saline River near Lockesburg, Ark.	33.9623	94.0616	ICR
69	07349430	Bodcau Creek at Stamps, Ark.	33.3670	93.5220	ICR
70	07356500	South Fork Ouachita River at Mount Ida, Ark.	34.5600	93.6360	ICR
71	07359800	Caddo River near Alpine, Ark.	34.2670	93.3620	ICR
72 ¹	07361000	Little Missouri River near Murfreesboro, Ark.	34.0490	93.7200	ICR
73 ¹	07362000	Ouachita River at Camden, Ark.	33.5960	92.8180	ICR
74	07365800	Cornie Bayou near Three Creeks, Ark.	33.0390	92.9380	ICR
75	07365900	Three Creeks near Three Creeks, Ark.	33.0670	92.8840	ICR
76	07047976	White River at Combs, Ark.	35.8280	93.8320	PR
77	07047980	White River at Elkins, Ark.	36.0010	94.0040	PR
78	07047985	Middle Fork White River near Fayetteville, Ark.	36.0160	94.0660	PR
79	07048960	War Eagle Creek near Huntsville, Ark.	36.0420	93.7050	PR
80	07050225	Kings River near Kingston, Ark.	36.0880	93.5420	PR
81	07050250	Kings River near Pleasant Valley, Ark.	36.3890	93.6590	PR
82	07050390	Osage Creek southwest of Berryville, Ark.	36.3490	93.5910	PR
83	07053200	Long Creek at Alpena, Ark.	36.2920	93.2820	PR
84	07055700	Little Buffalo River near Jasper, Ark.	36.0100	93.1840	PR
85	07056510	Bear Creek near Marshall, Ark.	35.9410	92.7130	PR
86	07057100	Big Creek near Big Flat, Ark.	35.9790	92.4810	PR
87	07060520	Piney Creek near Calico Rock, Ark.	36.1470	92.0710	PR
88	07060700	South Sylamore Creek at Allison, Ark.	35.9360	92.1210	PR
89	07060720	North Sylamore Creek near Allison, Ark.	35.9680	92.1710	PR
90	07060900	Polk Bayou at Batesville, Ark.	35.7710	91.6550	PR
91	07068880	Mud Creek near Ingram, Ark.	36.4230	90.9750	PR
92	07068900	Fourche River near Pocahontas, Ark.	36.2810	90.9290	PR
93	07069265	Myatt Creek near Salem, Ark.	36.4440	91.6700	PR

Table 1. Continuous streamflow-record and partial-record gaging stations analyzed for low-flow characteristics.—Continued

[ACR, active continuous record with minimal alterations in basin; SACR(PR), short-term active continuous record with minimal alterations in basin (analyzed and listed as partial-record stations); ICR, inactive continuous record with minimal alterations in basin; PR, partial record with minimal alterations in basin; HAACR, highly altered (numerous anthropogenic changes) active continuous record; HAICR, highly altered (numerous anthropogenic changes) inactive continuous record; stations listed twice had an ACR and a HAACR period of record analyzed]

Identifier number (figure 1, plate 1)	Station number	Station name	Latitude (degrees and decimal degrees)	Longitude (degrees and decimal degrees)	Station type
94	07069270	South Fork Spring River near Salem, Ark.	36.4090	91.8180	PR
95	07069350	Martins Creek near Williford, Ark.	36.2730	91.3330	PR
96	07069400	Janes Creek at Ravenden Springs, Ark.	36.3030	91.2330	PR
97	07072900	Strawberry River near Franklin, Ark.	36.1780	91.7390	PR
98	07073600	Mill Creek at Evening Shade, Ark.	36.0660	91.6100	PR
99	07073995	North Big Creek near Evening Shade, Ark.	36.1380	91.5030	PR
100	07074248	South Big Creek near Strawberry, Ark.	36.0200	91.3360	PR
101	07074250	Reeds Creek near Strawberry, Ark.	35.9830	91.3370	PR
102	07074260	Cooper Creek near Smithville, Ark.	36.0530	91.3100	PR
103	07074400	Curia Creek near Dowdy, Ark.	35.8710	91.3100	PR
104	07074450	Dota Creek near Newark, Ark.	35.7290	91.4140	PR
105	07075200	Devils Fork Little Red River near Brownsville, Ark.	35.6390	92.0320	PR
106	07075390	Archey Creek at Clinton, Ark.	35.6040	92.4600	PR
107	07076510	Big Creek near Pangburn, Ark.	35.4560	91.8450	PR
108	07076530	Big Creek near Letona, Ark.	35.3620	91.8010	PR
109	07076800	Bayou Des Arc near Garner, Ark.	35.1720	91.7460	PR
110	07194790	Muddy Fork Illinois River near Savoy, Ark.	36.0700	94.3480	PR
111	07194950	Little Osage Creek near Healing Springs, Ark.	36.2330	94.2770	PR
112	07196950	Evansville Creek at Evansville, Ark.	35.8060	94.4960	PR
113	07246970	Jones Creek near Waldron, Ark.	34.8870	94.1880	PR
114	07247010	Poteau River near Bates, Ark.	34.8890	94.4200	PR
115	07247100	Black Fork near Page, Okla	34.7600	94.4900	PR
116	07247200	Big Creek at Howard, Ark.	34.7070	94.4370	PR
117	07247300	Haws Creek near Black Fork, Ark.	34.7930	94.4160	PR
118	07249600	Lee Creek at Natural Dam, Ark.	35.6460	94.3940	PR
119	07249700	Mountain Fork Creek at Natural Dam, Ark.	35.6450	94.3970	PR
120	07250600	Vache Grasse Creek near Lavaca, Ark.	35.3180	94.2150	PR
121	07251400	Cedar Creek near Rudy, Ark.	35.5290	94.2780	PR
122	07251800	Little Mulberry Creek near Oark, Ark.	35.6860	93.6600	PR
123	07251900	Mulberry River near Cass, Ark.	35.6690	93.8290	PR
124	07252100	Little Mulberry Creek near Mulberry, Ark.	35.5100	94.0710	PR

8 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 1. Continuous streamflow-record and partial-record gaging stations analyzed for low-flow characteristics.—Continued

[ACR, active continuous record with minimal alterations in basin; SACR(PR), short-term active continuous record with minimal alterations in basin (analyzed and listed as partial-record stations); ICR, inactive continuous record with minimal alterations in basin; PR, partial record with minimal alterations in basin; HAACR, highly altered (numerous anthropogenic changes) active continuous record; HAICR, highly altered (numerous anthropogenic changes) inactive continuous record; stations listed twice had an ACR and a HAACR period of record analyzed]

Identifier number (figure 1, plate 1)	Station number	Station name	Latitude (degrees and decimal degrees)	Longitude (degrees and decimal degrees)	Station type
125	07252300	White Oak Creek near Ozark, Ark.	35.5070	93.9460	PR
126	07256200	Horsehead Creek at Hartman, Ark.	35.4350	93.6060	PR
127	07256700	Big Shoal Creek near New Blaine, Ark.	35.2920	93.4600	PR
128	07257470	Middle Fork Illinois Bayou near Hector, Ark.	35.5280	92.9410	PR
129	07257480	North Fork Illinois Bayou near Scottsville, Ark.	35.5000	93.0190	PR
130	07258700	Sugar Creek near Sugar Grove, Ark.	35.0770	93.8190	PR
131	07260700	Point Remove Creek near Morrilton, Ark.	35.1820	92.7840	PR
132	07261200	East Fork Cadron Creek near Enola, Ark.	35.2180	92.2790	PR
133	07261400	Mill Creek near Boles, Ark.	34.7370	94.0800	PR
134	07261600	Gafford Creek near Bluffton, Ark.	34.8980	93.6120	PR
135	07336900	Walnut Bayou near Foreman, Ark.	33.6540	94.3590	PR
136	07338700	Twomile Creek near Hatfield, Ark.	34.5140	94.3370	PR
137	07338720	Mountain Fork near Hatfield, Ark.	34.5050	94.4310	PR
138	07339200	Rolling Fork near Grannis, Ark.	34.2470	94.3730	PR
139	07340400	Cossatot River near Umpire, Ark.	34.2960	94.1770	PR
140	07355810	Ouachita River near Mena, Ark.	34.5840	94.1520	PR
141	07357710	Glazypeau Creek at Mountain Pine, Ark.	34.5720	93.1590	PR
142	07358010	Fourche A Loupe Creek near Hot Springs, Ark.	34.3830	93.1330	PR
143	07358700	Gulpha Creek near Hot Springs, Ark.	34.4710	92.9860	PR
144	07361025	Prairie Creek near Murfreesboro, Ark.	34.0430	93.6840	PR
145	07361160	North Fork Ozan Creek near McCaskill, Ark.	33.8730	93.6420	PR
146	07361540	Wolf Creek near Antoine, Ark.	34.0200	93.4380	PR
147	07361640	Little Terre Rouge Creek near Emmet, Ark.	33.7490	93.4630	PR
148	07361650	Terre Rouge Creek near Prescott, Ark.	33.7790	93.2360	PR
149	07361800	Terre Noire Creek near Gurdon, Ark.	33.9170	93.0360	PR
150	07362090	Camp Creek near Smackover, Ark.	33.3530	92.7740	PR
151	07362550	Moro Creek near Banks, Ark.	33.5440	92.3170	PR
152	07362600	Alum Fork Saline River at Crows, Ark.	34.6160	92.7490	PR
153	07362700	Middle Fork Saline River at Crows, Ark.	34.6150	92.7790	PR
154	07362800	South Fork Saline River near Hot Springs, Ark.	34.5860	92.9700	PR

Table 1. Continuous streamflow-record and partial-record gaging stations analyzed for low-flow characteristics.—Continued

[ACR, active continuous record with minimal alterations in basin; SACR(PR), short-term active continuous record with minimal alterations in basin (analyzed and listed as partial-record stations); ICR, inactive continuous record with minimal alterations in basin; PR, partial record with minimal alterations in basin; HAACR, highly altered (numerous anthropogenic changes) active continuous record; HAICR, highly altered (numerous anthropogenic changes) inactive continuous record; stations listed twice had an ACR and a HAACR period of record analyzed]

Identifier number (figure 1, plate 1)	Station number	Station name	Latitude (degrees and decimal degrees)	Longitude (degrees and decimal degrees)	Station type
155	07362900	North Fork Saline River near Benton, Ark.	34.6050	92.6190	PR
156	07363110	Big Creek at Poyen, Ark.	34.3140	92.6400	PR
157	07363160	Saline River near Leola, Ark.	34.2100	92.5480	PR
158	07363180	Lost Creek near Sheridan, Ark.	34.3140	92.4660	PR
159	07363276	Hurricane Creek near Ico, Ark.	34.4510	92.3720	PR
160	07364060	Bayou Lapile at Strong, Ark.	33.1150	92.3460	PR
161	07040000	St. Francis River at Fisk, Mo.	36.7810	90.2020	HAACR
162	07040100	St. Francis River at St. Francis, Ark.	36.4560	90.1370	HAACR
163	07040450	St. Francis River at Lake City, Ark.	35.8210	90.4320	HAACR
164	07047800	St. Francis River at Parkin, Ark.	35.2730	90.5590	HAACR
165	07047900	St. Francis Bay at Riverfront, Ark.	35.2590	90.6800	HAACR
166	07047942	L'Anguille River near Colt, Ark.	35.1440	90.8780	HAACR
167	07047950	L'Anguille River at Palestine, Ark.	34.9730	90.8850	HAACR
168	07060500	White River at Calico Rock, Ark.	36.1160	92.1430	HAACR
169	07061000	White River at Batesville, Ark.	35.7600	91.6410	HAACR
170	07064000	Black River near Corning, Ark.	36.4020	90.5410	HAACR
171 ¹	07069000	Black River at Pocahontas, Ark.	36.2540	90.9700	HAACR
172	07069190	Mammoth Spring at Mammoth Spring, Ark.	36.4980	91.5360	HAACR
173	07069500	Spring River at Imboden, Ark.	36.2050	91.1720	HAACR
174	07072500	Black River at Black Rock, Ark.	36.1040	91.0970	HAACR
175	07074500	White River at Newport, Ark.	35.6050	91.2870	HAACR
176	07077000	White River at DeValls Bluff, Ark.	34.7900	91.4460	HAACR
177	07077380	Cache River at Egypt, Ark.	35.8580	90.9330	HAACR
178	07077500	Cache River at Patterson, Ark.	35.2690	91.2370	HAACR
179	07077555	Cache River near Cotton Plant, Ark.	35.0350	91.3220	HAACR
180	07077700	Bayou DeView near Morton, Ark.	35.2520	91.1100	HAACR
181	07195000	Osage Creek near Elm Springs, Ark.	36.2219	94.2883	HAACR
182	07195855	Flint Creek near West Siloam Springs, Ark.	36.2161	94.6042	HAACR
183	07250085	Lee Creek at Lee Creek Reservoir near Van Buren, Ark.	35.4840	94.3930	HAACR
184	07250550	Arkansas River at James W. Trimble Lock & Dam near Van Buren, Ark.	35.3490	94.2980	HAACR
185	07263300	Maumelle River at Maumelle Dam at Natural Steps, Ark.	34.8640	92.4890	HAACR

10 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 1. Continuous streamflow-record and partial-record gaging stations analyzed for low-flow characteristics.—Continued

[ACR, active continuous record with minimal alterations in basin; SACR(PR), short-term active continuous record with minimal alterations in basin (analyzed and listed as partial-record stations); ICR, inactive continuous record with minimal alterations in basin; PR, partial record with minimal alterations in basin; HAACR, highly altered (numerous anthropogenic changes) active continuous record; HAICR, highly altered (numerous anthropogenic changes) inactive continuous record; stations listed twice had an ACR and a HAACR period of record analyzed]

Identifier number (figure 1, plate 1)	Station number	Station name	Latitude (degrees and decimal degrees)	Longitude (degrees and decimal degrees)	Station type
186	07263450	Arkansas River at Murray Dam near Little Rock, Ark.	34.7910	92.3590	HAACR
187	07264000	Bayou Meto near Lonoke, Ark.	34.7370	91.9160	HAACR
188	07337000	Red River at Index, Ark.	33.5520	94.0410	HAACR
189 ¹	07340000	Little River near Horatio, Ark.	33.9190	94.3870	HAACR
190 ¹	07341200	Saline River near Lockesburg, Ark.	33.9620	94.0610	HAACR
191	07359002	Ouachita River at Rammel Dam above Jones Mill, Ark.	34.4260	92.8910	HAACR
192 ¹	07362000	Ouachita River at Camden, Ark.	33.5960	92.8180	HAACR
193	07363000	Saline River at Benton, Ark.	34.5680	92.6110	HAACR
194	07363200	Saline River near Sheridan, Ark.	34.1150	92.4060	HAACR
195	07363400	Hurricane Creek below Sheridan, Ark.	34.2280	92.3720	HAACR
196	07363500	Saline River near Rye, Ark.	33.7010	92.0260	HAACR
197	07364133	Bayou Bartholomew at Garrett Bridge, Ark.	33.8664	91.6561	HAACR
198	07364150	Bayou Bartholomew near McGehee, Ark.	33.6280	91.4460	HAACR
199	07369680	Bayou Macon at Eudora, Ark.	33.1000	91.2530	HAACR
200	07046600	Right Hand Chute of Little River at Rivervale, Ark.	35.6720	90.3380	HAICR
201	07047500	St. Francis River at Marked Tree, Ark.	35.5220	90.4240	HAICR
202	07047600	Tyronza River near Tyronza, Ark.	35.5050	90.3800	HAICR
203	07047810	St. Francis River Floodway near Marked Tree, Ark.	35.5380	90.4850	HAICR
204	07047902	St. Francis River at Latitude of Wittsburg, Ark.	35.2170	90.6330	HAICR
205	07049500	Beaver Lake at Highway 12 bridge near Rogers, Ark.	36.3320	94.0190	HAICR
206	07050000	White River at Beaver Ark.	36.4720	93.7650	HAICR
207	07055000	White River near Flippin, Ark.	36.3100	92.5580	HAICR
208	07060000	North Fork River at Norfolk Dam near Norfolk, Ark.	36.2490	92.2380	HAICR
209	07076000	Little Red River near Heber Springs, Ark.	35.5170	91.9970	HAICR
210	07076620	Little Red River near Searcy, Ark.	35.2820	91.7190	HAICR
211	07077800	White River at Clarendon, Ark.	34.6860	91.3150	HAICR
212	07077930	Big Creek near Moro, Ark.	34.8470	91.0100	HAICR
213	07077950	Big Creek at Popular Grove, Ark.	34.5560	90.8460	HAICR
214	07078000	LaGrue Bayou near Stuttgart, Ark.	34.5320	91.3560	HAICR
215	07251000	Frog Bayou near Mountainburg, Ark.	35.6611	94.1528	HAICR

Table 1. Continuous streamflow-record and partial-record gaging stations analyzed for low-flow characteristics.—Continued

[ACR, active continuous record with minimal alterations in basin; SACR(PR), short-term active continuous record with minimal alterations in basin (analyzed and listed as partial-record stations); ICR, inactive continuous record with minimal alterations in basin; PR, partial record with minimal alterations in basin; HAACR, highly altered (numerous anthropogenic changes) active continuous record; HAICR, highly altered (numerous anthropogenic changes) inactive continuous record; stations listed twice had an ACR and a HAACR period of record analyzed]

Identifier number (figure 1, plate 1)	Station number	Station name	Latitude (degrees and decimal degrees)	Longitude (degrees and decimal degrees)	Station type
216	07251500	Frog Bayou at Rudy, Ark.	35.5256	94.2717	HAICR
217	07256500	Spadra Creek at Clarksville, Ark.	35.4680	93.4630	HAICR
218	07258000	Arkansas River at Dardanelle, Ark.	35.2260	93.1490	HAICR
219	07259500	Petit Jean River near Waveland, Ark.	35.1047	93.6314	HAICR
220 ¹	07260500	Petit Jean River at Danville, Ark.	35.0590	93.3960	HAICR
221	07262500	Fourche LaFave River near Nimrod, Ark.	34.9506	93.1544	HAICR
222	07264500	Bayou Meto near Stuttgart, Ark.	34.4540	91.6160	HAICR
223	07265000	Crooked Creek near Humphrey, Ark.	34.4260	91.6680	HAICR
224	07340500	Cossatot River near DeQueen, Ark.	34.0460	94.2120	HAICR
225	07341500	Red River at Fulton, Ark.	33.6070	93.8140	HAICR
226	07357501	Ouachita River at Blakely Mountain Dam near Hot Springs, Ark.	34.5720	93.1940	HAICR
227	07360000	Ouachita River at Arkadelphia, Ark.	34.1210	93.0460	HAICR
228	07360501	Little Missouri River at Narrows Dam near Murfreesboro, Ark.	34.1480	93.7150	HAICR
229 ¹	07361000	Little Missouri River near Murfreesboro, Ark.	34.0490	93.7200	HAICR
230	07361600	Little Missouri River near Boughton, Ark.	33.8780	93.3040	HAICR

¹ A site analyzed as ICR and HAACR station type.

Previous Studies

This report is the sixth in a series of reports dealing with low-flow characteristics of Arkansas streams. The first report by Hines (1965) contained information on low-flow frequency and flow duration for unregulated sites. The second report (Hines, 1975) contained updated low-flow characteristics for regulated and unregulated streams. Hunrichs (1983) identified perennial streams in most areas of Arkansas based on a range of $Q_{7,10}$. Streams with $Q_{7,10}$ above zero were considered to be perennial. Ludwig (1992) updated the low-flow characteristics for all of the streamflow gaging stations included in Hines (1975) with streamflow data collected through 1990. Ludwig and Tasker (1993) used an ordinary least squares (OLS) logistic regression and multiple linear regression model with a generalized least squares parameter estimation procedure to estimate the $Q_{7,2}$ and $Q_{7,10}$ at ungaged streams in Arkansas.

Continuous-Streamflow Record Gaging Network

Data used in this report were collected at 129 active and inactive continuous-streamflow gaging stations and 101 partial-record gaging stations. A continuous-streamflow gaging station is a gaging station on a stream where gage height is recorded continuously and for which daily mean discharge is computed. A partial-record station is a station on a stream where selected hydrologic data, such as discharge measurements, are collected periodically.

In 2005, the entire daily-discharge data network consisted of 216 active and inactive continuous-streamflow record gaging stations. Collection of daily-discharge data began in Arkansas in 1903 at the Ouachita River near Malvern. By 1939, daily-discharge data were collected at 64 gaging stations. In 2005, 85 (39 percent) of the 216 active and inactive continuous-streamflow record gaging stations had 30 or more years of record, and 100 sites (46 percent) of the active and inactive continuous-record streamflow gaging stations had 20 or more years of record.

Methods of Analysis at Gaging Stations

Streamflow is a continuous process varying over time. Basins can undergo natural variations in streamflow because of climatic changes and also non-natural alterations, such as withdrawals for water supply, reservoirs and dams, inputs from wastewater-treatment plants, and urbanization.

For this study, 70 active continuous-streamflow record (31 minimally altered and 39 highly altered), 59 inactive continuous-streamflow record (28 minimally altered and 31 highly altered), 16 short-term active continuous record (analyzed and listed as partial-record stations), and 85 partial-

record stations (fig. 1, table 1) were used in the analysis. To be of use, the streamflow data collected at these sites were analyzed and discretized into daily, monthly, bimonthly, and annual time periods. For this low-flow study, the entire period of record of mean-daily streamflows for the minimally altered active continuous-streamflow record stations was investigated. For highly altered (numerous anthropogenic alterations, such as input from sewage-treatment plants or basins with numerous dams and reservoirs) stations with a minimum of 10 years of minimally altered continuous-streamflow record, a separate analysis was performed for the minimally altered and the highly altered periods of record. For highly altered sites with less than 10 years of minimally altered continuous-streamflow record, an analysis was performed on the highly altered period of record only. Mean-daily discharge is the arithmetic mean of the individual daily-mean discharges for the designated period, usually the entire period of record.

The low-flow characteristics calculated from streamflows generated from minimally altered basins at the sites described above were analyzed and used to determine the coefficients of the regression models to estimate low-flow characteristics for streams in ungaged basins. The minimally altered periods of the highly altered sites were not used in the regression models. Only continuous-streamflow record-gaging stations in minimally altered basins, active and inactive, with 10 or more years of streamflow record and drainage areas of less than 1,000 square miles (mi^2) were included in the analysis. This criterion for drainage area was applied to basins to minimize the potential undocumented alterations, such as urbanization, within the basin. Partial-record stations were classified as stations located in minimally altered basins that had less than 10 years of continuous-streamflow record or stations that had at least six sporadic low-flow discharge measurements and drainage areas of less than 1,000 mi^2 .

Low-Flow Frequency

To compute return period low-flow values at continuous-streamflow record gaging stations, such as the $Q_{7,10}$, a low-flow frequency analysis was performed. For the frequency analysis, an annual time series of the averaged consecutive 7-day minimum discharges (Riggs, 1972) was calculated for every continuous-streamflow record gaging station. The annual period is defined as the climatic year (April 1 through March 31). Typically, the climatic year is used for low-flow analyses because the low-flow events fall within the middle of this time span. For this study, the climatic year was used for calculation of all annual Q_7 series values.

Calculation of Low-Flow Characteristics of Continuous-Streamflow Record Gaging Stations

The annual series data calculated at continuous-streamflow record gaging stations were assumed to fit a parametric distribution so that return period flows could be estimated.

The log Pearson Type III distribution was used to fit the annual series values. However, other distributions, such as the log normal and Weibull distributions, have been shown in other studies (Tasker, 1987) to fit annual low flows equally as well. From the fitted distribution and associated probability plot, return period flows can be computed based on the desired non-exceedence probability. For example, a stream's Q_7 that has a non-exceedence probability of 0.1 has a 10 percent chance of the discharge being equal to or less than the Q_7 value each year. The d -day, T -year low flows were computed by solving the equation:

$$\log_{10} (Q_{d\text{-day}, T\text{-year}}) = \hat{X} + K\hat{S} \tag{1}$$

where

- Q is the d -day, T -year low flow,
- \hat{X} is the estimate of the mean of the logarithms of the low-flow series,
- K is a frequency factor for Pearson Type III distributions (Interagency Advisory Committee on Water Data, 1982), and
- \hat{S} is the estimate of the standard deviation of the logs of the annual low-flow series.

Equation 1 is based on log (base 10) logarithms, so a conditional probability adjustment (SWSTAT version 4.1; conditional probability adjustment based on methods by Tasker (1987)) was used on time series that contained values equal to zero or outlier values.

Continuous-streamflow record gaging stations involved in the frequency analysis were required to have 10 years or more of continuous-streamflow record. Continuous-streamflow record gaging stations having less than 10 years of continuous-streamflow record were analyzed by the same procedures as those used for partial-record stations and were labeled as such.

Calculation of Low-Flow Characteristics at Partial-Record Gaging Stations

Partial-record stations and those continuous-streamflow record stations with less than 10 years of streamflow record (also listed as partial-record stations in this report) have insufficient data for fitting the log Pearson Type III distribution. However, daily-mean discharge from short-term continuous-streamflow record gaging stations and discharge measurements made during base-flow periods at partial-record stations may be estimated from daily-mean discharge at nearby long-term continuous-streamflow record stations (index stations).

Low-flow frequencies at partial-record gaging stations were estimated by the use of two different methods (table 2). Streamflow data for most of the 101 partial-record gaging stations were analyzed by the base-flow correlation method

(Stedinger and Thomas, 1985); however, if the base-flow correlation method could not be used, the graphical method (Riggs, 1972) was used.

Calculation of Low-Flow Characteristics at Partial-Record Gaging Stations Using the Base-Flow Correlation Method

For most of the partial-record gaging stations analyzed in this study, the base-flow correlation method was used. A detailed explanation is included in appendix 1. In summary, the base-flow correlation method computes an annual time series, mean, and a standard deviation of averaged consecutive 7-day minimum discharge from the index site to the partial-record site, and computes a return period flow using equation 1-1. The index stations were selected based on geographic proximity and by maximization of the correlation coefficient between concurrent flows.

Calculation of Low-Flow Characteristics at Partial-Record Stations Using the Graphical Method

There were several stations for which the graphical method was used to determine the low-flow characteristics. The graphical method was used when there were fewer than 10 discharge measurements at the partial-record stations or when relations between the log of the discharge measurements at the partial-record station and index site were not linear.

The graphical method involves plotting (on log-log paper) the measured discharges at partial-record stations and the concurrent daily-mean discharge at the nearby index site to define the relation between the two sets of data. Low-flow characteristics at the partial-record station can then be estimated by transferring the low-flow characteristics from the index station using the visually determined relation to the partial-record station (fig. 2).

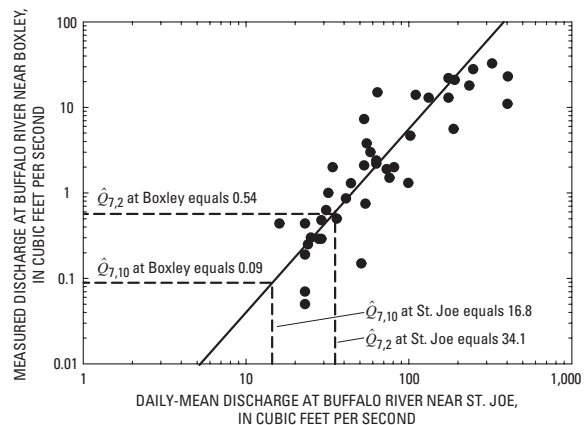


Figure 2. Relation between daily-mean discharge at continuous streamflow-record gaging station Buffalo River near St. Joe, Arkansas, and measured discharge at partial-record station, Buffalo River near Boxley, Arkansas.

14 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 2. Partial-record gaging stations analyzed for low-flow characteristics and the method and index station used for this

[lat, latitude; long, longitude; mi, mile; mi², square mile; ft³/s, cubic foot per second; Horizontal datum is NAD of 1927 or NAD of 1983; S, Stedinger and

Station number	Station name	Station location
07047976	White River at Combs	Lat 35°49'40" long 93°49'54", NW 1/4 sec. 2, T.13 N., R.27 W., at bridge on state Highway 295, 0.3 mile northeast of Combs.
07047980	White River at Elkins	Lat 36°00'03", long 94°00'13", SE 1/4 sec. 1, T.15 N., R.29 W., at highway bridge at Elkins.
07047985	Middle Fork White River near Fayetteville	Lat 36°00'58", long 94°03'59" SE 1/4 sec. 33, T.16 N., R.29 W., at ford on farm road, 2.0 miles south of State Highway 16, and 5.9 miles southeast of Fayetteville.
07048550	West Fork White River east of Fayetteville	Lat 36°03'14", long 94°04'59" in NE 1/4 NW 1/4 sec. 20, T.16 N., R.29 W., Washington County, Ark. Hydrologic Unit 11010001, attached to the upstream wingwall on left bank, on Mally Wagnon Road, 6 miles east of Fayetteville, about 1.4 miles above the confluence with the White River.
07048800	Richland Creek at Goshen	Lat 36°06'15", long 94°00'27" in NW 1/4 NW 1/4 sec. 31, T.17 N., R.28 W., Washington County, Ark. Hydrologic Unit 11010001, on upstream left end of bridge on Ark. Highway. 45, 0.9 mile west of Goshen, 0.2 mile upstream from Mill Branch, 0.5 mile upstream from White River.
07048960	War Eagle Creek near Huntsville	Lat 36°02'30", long 93°42'17", SE 1/4 NW 1/4 sec. 23, T.16 N., R.26 W., at bridge on State Highway 23 and 3.6 miles south of Huntsville.
07050225	Kings River near Kingston	Lat 36°05'17", long 93°32'30", SE 1/4 sec. 33, T.17 N., R.24 W., at bridge on State Highway 21 and 3.5 miles northwest of Kingston.
07050250	Kings River near Pleasant Valley	Lat 36°23'22", long 93°39'33", NE 1/4 sec. 20, T.20 N., R.25 W., at bridge on county road, 2.1 miles downstream from Keets Creek, and 2.7 miles west of Pleasant Valley.
07050390	Osage Creek southwest of Berryville	Lat 36°20'55", long 93°35'26", NW 1/4 sec. 5, T.19 N., R.24 W., at bridge on State Highway 221, 1.7 miles southwest of Berryville.
07053200	Long Creek at Alpena	Lat 36°17'31", long 93°16'54", NW 1/4 sec. 24, T.19 N., R.22 N., at bridge on U.S. Highway 62, 0.7 mile east of Alpena.
07053207	Long Creek at Denver	Lat 36°23'23", long 93°19'01" NW 1/4 NE 1/4 SE 1/4 sec. 16, T.20 N., R.22 W., Carroll County, Ark. Hydrologic Unit 11010001, on left bank, at the downstream side of county road, 0.2 miles southwest of Denver and 0.4 mile upstream from Dry Creek.

analysis.

Thomas base-flow correlation methods (1985); G, graphical (Riggs, 1972)]

Period of measurements	Identifier number (figure 1, plate 1, table 1)	Number of measurements	Drainage area (mi ²)	Method	Index station number	Index station identifier number (figure 1, plate 1, table 1)
7/1964 - 9/1967, 8/1988 - 10/1988	76	12	89.6	S	07048600	1
8/1957 - 7/1963, 9/1987 - 10/1988	77	20	182	S	07048000	48
7/1964 - 9/1967, 9/1987 - 10/1988, 11/1999 - 9/2004	78	23	72.2	S	07048600	1
9/1985 - 6/1996, 3/1999 - 8/2005	32	44	122	S	07048600	1
8/1954 - 8/1963, 10/1998 - 8/2005	33	41	140	S	07049000	2
7/1964 - 9/1967	79	9	105	G	07049000	2
11/1963 - 9/1967	80	10	100	S	07050500	3
11/1963 - 9/1967	81	9	348	G	07050500	3
4/1997 - 6/2005	82	11	150	S	07050500	3
8/1957 - 11/1963	83	14	67.4	G	07050500	3
8/1993 - 9/2005	34	27	103	S	07053250	4

16 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 2. Partial-record gaging stations analyzed for low-flow characteristics and the method and index station used for this

[lat, latitude; long, longitude; mi, mile; mi², square mile; ft³/s, cubic foot per second; Horizontal datum is NAD of 1927 or NAD of 1983; S, Stedinger and

Station number	Station name	Station location
07054410	Bear Creek near Omaha	Lat 36°26'50", long 92°56'00" in NE 1/4 NE 1/4 NW 1/4 sec. 26, T.21 N., R.20 W., Boone County, Ark. Hydrologic Unit 11010003, attached to downstream end of bridge pier near right bank on State Highway 14, 6.5 miles east of Omaha.
07055646	Buffalo River near Boxley	Lat 35°56'19.77", long 93°24'17.56" in SW 1/4 SE 1/4 sec. 22, T.15 N., R.23 W., Newton County, Ark. Hydrologic Unit 11010005, on right bank 1.8 miles upstream from Highway 43 bridge, 0.8 mile upstream from Smith Creek, 2.6 miles south of Boxley, and at mile 108.
07055700	Little Buffalo River near Jasper	Lat 36°00'37", long 93°11'02", SE 1/4 sec. 27, T.16 N., R.21 W., at bridge on State Highway 7 at Jasper.
07055893	Calf Creek near Silverhill	Lat 35°58'01", long 92°46'32" in SW 1/4 SE 1/4 sec. 3, T.15 N., R.17 W., Searcy County, Ark. Hydrologic Unit 11010005.
07056510	Bear Creek near Marshall	Lat 35°56'23", long 92°42'47", SW 1/4 sec. 17, T.15 N., R.16 W., at bridge on U.S. Highway 65, 5.0 miles northwest of Marshall.
07057100	Big Creek near Big Flat	Lat 35°58'43", long 92°28'53", NW 1/4 sec. 4, T.15 N., R.14 W., at bridge on State Highway 14, 4.7 miles southwest of Big Flat.
07058980	Bennetts River at Vidette	Lat 36°25'19", long 92°07'07" SW 1/4 SE 1/4 SE 1/4 sec. 2, T.20 N., R. 11 W., Fulton County, Ark. Hydrologic Unit 11010006, on State Highway 87, 2.9 miles north from intersection with State Highway 62, 0.4 mile south of Vidette.
07059450	Big Creek near Elizabeth	Lat 36°21'25", long 92°06'48" NW 1/4 SE 1/4 NW 1/4 sec. 36, T.20 N., R. 11 W., Fulton County, Ark. Hydrologic Unit 11010006, at downstream right bank bridge abutment on State Highway 87, 1.9 miles northwest of Elizabeth.
07060520	Piney Creek near Calico Rock	Lat 36°08'49", long 92°28'53", NW 1/4 sec. 4, T.15 N., R.14 W., at bridge on State Highway 14, 4.7 miles southwest of Big Flat.
07060700	South Sylamore Creek at Allison	Lat 35°56'09", long 92°07'17", near center of sec. 14, T.15 N., R.11 W., at bridge on State Highway 14 at Allison.
07060720	North Sylamore Creek near Allison	Lat 35°58'05", long 92°10'16", NE 1/4 sec. 5, T.15 N., R.11 W., at low-water crossing on country road at Blanchard Springs recreation area, 1.5 miles north of State Highway 14, and 4.0 miles northwest of Allison.
07060900	Polk Bayou at Batesville	Lat 35°46'16", long 91°39'18", NE 1/4 sec. 5, T.13 N., R.6 W., at bridge on State Highway 69 at Batesville.

analysis.—Continued

Thomas base-flow correlation methods (1985); G, graphical (Riggs, 1972)]

Period of measurements	Identifier number (figure 1, plate 1, table 1)	Number of measurements	Drainage area (mi ²)	Method	Index station number	Index station identifier number (figure 1, plate 1, table 1)
7/1997 - 9/2005	35	30	133	S	07053250	4
7/1993 - 9/2005	36	41	59.2	G	07056000	6
10/1953 - 9/1967, 7/1974 - 8/1978, 8/1987 - 7/1991	84	25	126	S	07056000	6
7/1993 - 9/2005	37	18	45.1	S	07056000	6
9/1958 - 11/1963, 6/1969, 9/1987 - 11/1990	85	14	80.8	S	07056000	6
6/1969, 4/2001 - 10/2003	86	33	91.0	S	07056000	6
7/1964 - 6/1969, 8/1987 - 10/1988	38	29	68.3	S	07053250	4
8/1957 - 9/1967, 8/1987 - 10/1988	39	33	52.1	S	07056000	6
7/1994 - 8/2005	87	12	78.4	S	07074000	54
9/1994 - 5/2005	88	19	142	S	07074000	54
7/1964 - 9/1967, 9/1987 - 10/1988	89	8	68.5	G	07060710	7
8/1958 - 8/1963, 9/1987 - 10/1988	90	20	168	S	07074000	54

18 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 2. Partial-record gaging stations analyzed for low-flow characteristics and the method and index station used for this

[lat, latitude; long, longitude; mi, mile; mi², square mile; ft³/s, cubic foot per second; Horizontal datum is NAD of 1927 or NAD of 1983; S, Stedinger and

Station number	Station name	Station location
07068880	Mud Creek near Ingram	Lat 36°25'33", long 90°58'30", SW 1/4 sec. 33, T.21 N., R.1 E., at low-water crossing on country road, 2.5 miles northeast of Ingram and State Highway 251.
07068890	Fourche River above Pocahontas	Lat 36°20'21", long 90°56'33", NE 1/4 NW 1/4 sec. 35, T.20 N., R.1 E., at bridge on State Highway 115, 5.6 miles north of Pocahontas.
07068900	Fourche River near Pocahontas	Lat 36°16'52", long 90°55'46", NW 1/4 sec. 24, T.19 N., R.1 E., at bridge on U.S. Highway 67, 2.7 miles northeast of Pocahontas.
07069265	Myatt Creek near Salem	Lat 36°26'39", long 91°40'11", SW 1/4 sec. 36, T.21 N., R.6 W., at bridge on State Highway 9, 10 miles northeast of Salem.
07069270	South Fork Spring River near Salem	Lat 36°24'31", long 91°49'04", near center and on line between secs.10 and 11, T.20 N., R.8 W., at low-water crossing on county road, 2.7 miles north of Salem.
07069350	Martins Creek near Williford	Lat 36°16'23", long 91°19'59", NE 1/4 sec. 30, T.19 N., R.3 W., at bridge on U.S. Highway 63, 2.0 miles northeast of Williford.
07069400	Janes Creek at Ravenden Springs	Lat 36°18'09", long 91°13'58", SW 1/4 sec. 7, T.19 N., R.2 W., at bridge on State Highway 90, 1.0 mile south of Ravenden Springs.
07072900	Strawberry River near Franklin	Lat 36°10'4", long 91°44'19", NW 1/4 sec. 33, T.18 N., R.7 W., at bridge on State Highway 56, 2.3 miles east of Franklin.
07073600	Mill Creek at Evening Shade	Lat 36°03'56", long 91°36'37", NE 1/4 sec. 3, T.16 N., R.6 W., at highway bridge 0.1 miles east of U.S. Highway 167 and 0.5 mile southeast of Evening Shade.
07073995	North Big Creek near Evening Shade	Lat 36°08'17", long 91°30'12", NW 1/4 sec. 10, T.17 N., R.5 W., at bridge on county road, 6.0 miles northeast of U.S. Highway 167, and 8.0 miles northeast of Evening Shade.
07074248	South Big Creek near Strawberry	Lat 36°01'12", long 91°20'09", N 1/2 and on line between secs. 19 and 20, T.16.N., R.3 W., at bridge on State Highway 117, 4.0 miles north of Strawberry.
07074250	Reeds Creek near Strawberry	Lat 35°58'58", long 91°20'12", SW 1/4 SW 1/4 sec. 32, T.16 N., R.3 W., at bridge on State Highway 117, 1.4 miles northwest of Strawberry.
07074260	Cooper Creek near Smithville	Lat 36°03'11", long 91°18'36", SW sec. 4, T.16 N., R.3 W., a bridge on State Highway 115, 2. miles south of Smithville.

analysis.—Continued

Thomas base-flow correlation methods (1985); G, graphical (Riggs, 1972)]

Period of measurements	Identifier number (figure 1, plate 1, table 1)	Number of measurements	Drainage area (mi ²)	Method	Index station number	Index station identifier number (figure 1, plate 1, table 1)
12/1965 - 9/1967, 9/1987 - 10/1988	91	10	34.3	S	07074000	54
9/1957 - 9/1964, 8/1987 - 10/1988	40	46	229	S	07074000	54
7/1964 - 9/1967, 9/1987 - 10/1988	92	14	299	S	07074000	54
10/1964 - 9/1970, 6/1978 - 8/1978, 8/1987 - 8/1988	93	9	102	G	07074000	54
8/1958 - 9/1963, 1/1967, 10/1987	94	7	170	G	07074000	54
7/1964 - 11/1966, 9/1987 - 10/1988	95	11	67.0	S	07074000	54
10/1964 - 11/1966, 9/1987	96	22	79.2	G	07074000	54
9/1953, 7/1964 - 9/1967, 9/1987 - 10/1988	97	9	153	G	07074000	54
8/1958 - 10/1965, 9/1987 - 10/1988	98	20	12.1	S	07074000	54
7/1964 - 9/1967, 9/1987	99	11	74.8	S	07074000	54
9/1956 - 8/1963, 9/1987 - 10/1988	100	17	69.4	S	07056000	6
7/1964 - 11/1966, 9/1987 - 10/1988, 9/2002	101	17	35.0	S	07074000	54
7/1964 - 9/1967, 9/1987 - 10/1988, 8/2001 - 9/2002	102	10	32.2	S	07074000	54

20 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 2. Partial-record gaging stations analyzed for low-flow characteristics and the method and index station used for this

[lat, latitude; long, longitude; mi, mile; mi², square mile; ft³/s, cubic foot per second; Horizontal datum is NAD of 1927 or NAD of 1983; S, Stedinger and

Station number	Station name	Station location
07074400	Curia Creek near Dowdy	Lat 35°52'15", long 91°18'36", NE 1/4 sec. 9, T.14 N., R.3 W., at bridge on state Highway 25, and 1.3 miles north of Dowdy.
07074450	Dota Creek near Newark	Lat 35°43'43", long 91°24'51", W 1/2 and on line between sec. 27 and 34, T.13 N., R.4 W., at bridge on State Highway 122, 2.5 miles northeast of Newark.
07075200	Devils Fork Little Red River near Brownsville	Lat 35°38'82", long 92°01'57", NW 1/4 sec. 35, T.12 N., R.10 W., at highway bridge 3.0 miles northeast of Brownsville.
07075390	Archey Creek at Clinton	Lat 35°36'15", long 92°27'35", SE 1/4 sec. 10, T.11 N., R.14 W., at bridge on U.S. Highway 65 at northeast city limits of Clinton.
07076510	Big Creek near Pangburn	Lat 35°27'22", long 91°50'42", NW 1/4 sec. 34, T.10 N., R.8 W., at bridge on county road, and 2.0 miles north of Pangburn.
07076530	Big Creek near Letona	Lat 35°21'43", long 91°48'04", SE 1/4 sec. 36, T.9 N., R.8 W., at bridge on State Highway 16, 1.8 miles east of Letona.
07076800	Bayou Des Arc near Garner	Lat 35°10'19", long 91°44'47", SE 1/4 sec. 3, T.6 N., R.7 W., at bridge on U.S. Highway 367, 2.7 miles northeast of Garner.
07194790	Muddy Fork Illinois River near Savoy	Lat 36°04'12", long 94°20'45", NW 1/4 sec. 14, T.16 N., R.32 W., at bridge on county road, 2.0 miles south of State Highway 16, and 3.0 miles south of Savoy.
07194950	Little Osage Creek near Healing Springs	Lat 36°13'57", long 94°16'37", NW 1/4 sec. 15, R.31 W., 1.5 miles south of Healing Springs.
07195400	Illinois River at Highway 16 near Siloam Springs	Lat 36°08'41.00", long 94°29'41.00" SW 1/4 SW 1/4 sec. 15, T.17 N., R.33 W., Benton County, Ark. Hydrologic Unit 11110103, at bridge on State Highway 16, 8.2 miles downstream from Osage Creek and 4.6 miles southeast of Siloam Springs.
07196950	Evansville Creek at Evansville	Lat 35°48'20", long 94°29'45", near south edge of and on line between sec. 15 and 16, T.13 N., R.33 W., at bridge on State Highway 59, 1.0 mile north of Evansville.
07246970	Jones Creek near Waldron	Lat 34°53'14", long 94°11'18", SE 1/4 sec. 28, T.3 N., R.30 W., at bridge on Forest Service road, 6.0 miles west of Waldron.
07247010	Poteau River near Bates	Lat 34°53'20", long 94°25'11", SE 1/4 SW 1/4 sec. 29, T.3 N., R.32 W., at low-water crossing on county road, 2.1 miles upstream from Oklahoma State line and 2.3 miles southwest of Bates.

analysis.—Continued

Thomas base-flow correlation methods (1985); G, graphical (Riggs, 1972)]

Period of measurements	Identifier number (figure 1, plate 1, table 1)	Number of measurements	Drainage area (mi ²)	Method	Index station number	Index station identifier number (figure 1, plate 1, table 1)
10/1964 - 11/1966, 9/1987 - 10/1988, 1/2002 - 9/2002	103	12	55.6	S	07074000	54
7/1964 - 11/1966, 9/1987 - 10/1989	104	13	56.6	S	07074000	54
10/1963 - 11/1966, 9/1987	105	16	195	S	07261000	22
10/1963 - 11/1966, 9/1987 - 10/1989	106	10	119	S	07075300	8
9/1957 - 10/1961, 7/1968, 9/1987 - 10/1988	107	11	84.3	S	07261000	22
7/1964 - 9/1967, 9/1987 - 10/1988	108	11	72.5	S	07261000	22
7/1964 - 9/1967, 8/1988 - 10/1988	109	16	96.9	S	07261000	22
7/1964 - 9/1967, 10/1988	110	9	73.5	G	07049000	2
9/1957 - 8/1963, 9/1987	111	21	46.1	S	07049000	2
11/1963 - 9/1967	41	21	510	S	07194800	9
8/1954 - 7/1963	112	22	23.6	S	07196900	12
7/1979 - 12/1981, 8/1985 - 9/1986, 3/1996 - 2/2006	113	9	70.4	G	07196900	12
6/1958 - 10/1963 , 9/1987 - 10/1988	114	10	251	S	07196900	12

22 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 2. Partial-record gaging stations analyzed for low-flow characteristics and the method and index station used for this

[lat, latitude; long, longitude; mi, mile; mi², square mile; ft³/s, cubic foot per second; Horizontal datum is NAD of 1927 or NAD of 1983; S, Stedinger and

Station number	Station name	Station location
07247100	Black Fork near Page, Okla.	Lat 34°45'35", long 94°29'34", sec. 5, T.3 N., R.27 E., at highway bridge, 2.0 miles west of Arkansas-Oklahoma State line and 5.0 miles northeast of Page.
07247200	Big Creek at Howard	Lat 34°42'24", long 94°26'14", sec. 31, T.1 N., R.32 W., 300 feet north of U.S. Highway 270, 1.0 mile east of Arkansas-Oklahoma State line at Howard.
07247300	Haws Creek near Black Fork	Lat 34°47'36", long 94°24'58", sec. 32, T.2 N., R.32 W., at highway bridge, 2.0 miles east of Arkansas-Oklahoma State line and 2.0 miles north of Black Fork.
07249600	Lee Creek at Natural Dam	Lat 35°38'46", long 94°23'37", SW 1/4 sec. 10, T.11 N., R.32 W., at bridge on State Highway 59 at natural Dam.
07249700	Mountain Fork Creek at Natural Dam	Lat 35°38'43", long 94°23'49", SE 1/4 sec. 9, T.11 N., R.32 W., at bridge on State Highway 59 at Natural Dam.
07249800	Lee Creek at Short, Okla.	Lat 35°33'57", long 94°31'56" in SE 1/4 sec. 27, T.13 N., R.26 E., Sequoyah County, Okla., Hydrologic Unit 11110104, on right bank at right downstream end of bridge on State Highway 101, 0.5 mile west of Short, Okla.
07250600	Vache Grasse Creek near Lavaca	Lat 35°19'03", long 94°12'55", NW 1/4 sec. 5, T.7 N., R.30 W., at bridge on State Highway 22, 2.5 miles south of Lavaca.
07250935	Jones Creek at Winfrey	Lat 35°44'12", long 94°06'11" in SE 1/4 SW 1/4 sec. 5, T.12 N., R.29 W., Crawford County, Ark. Hydrologic Unit 11110201, near left bank in pasture 300 feet upstream of bridge on Winfrey Valley Cutoff, 3 miles northeast of junction of U.S. Highway 71 and Winfrey Valley Cutoff, and 10.6 miles northeast of Mountainburg, Ark.
07250965	Frog Bayou near Winfrey	Lat 35°43'37", long 94°06'26" in SE 1/4 SE 1/4 sec. 7, T.12 N., R.29 W., Crawford County, Ark. Hydrologic Unit 11110201, near right bank in pasture, 4.0 miles southeast of junction of U.S. Highway 71 and Winfrey Valley Cutoff, and 11.6 miles northeast of Mountainburg, Ark.
07250974	Jack Creek near Winfrey	Lat 35°42'19", long 94°05'21" in NE 1/4 NE 1/4 sec. 20, T.12 N., R.29 W., Crawford County, Ark. Hydrologic Unit 11110201, 2100 feet upstream of mouth at Lake Shepherd SpringS., 8.7 miles northeast of the junction of U.S. Highway 71 and State Highway 282, and 11.3 miles northeast of Mountainburg, Ark.
07251400	Cedar Creek near Rudy	Lat 35°31'45", long 94°16'39", 1/4 sec. 22, T.10 N., R.31 W., 200 feet upstream from mouth and 0.5 mile northwest of Rudy.

analysis.—Continued

Thomas base-flow correlation methods (1985); G, graphical (Riggs, 1972)]

Period of measurements	Identifier number (figure 1, plate 1, table 1)	Number of measurements	Drainage area (mi ²)	Method	Index station number	Index station identifier number (figure 1, plate 1, table 1)
11/1964 - 10/1963 , 9/1987 - 10/1988	115	13	47.0	S	07249400	14
11/1964 - 10/1963 , 9/1987 - 10/1988	116	17	11.1	S	07249400	14
8/1958 - 4/1963, 8/1988 - 10/1989	117	17	8.0	S	07249400	14
8/1958 - 4/1963, 8/1987 - 10/1989	118	35	169	S	07249985	15
8/1958 - 4/1963, 8/1988 - 9/1988	119	32	14.9	S	07196900	12
9/1957 - 10/1963, 8/1968, 3/1971 - 11/1973, 8/1988 - 10/1988	42	43	242	S	07249985	15
6/1958 - 7/1963, 3/1971 - 3/1974, 8/1987 - 10/1988	120	25	105	S	07249985	15
8/1958 - 7/1963, 8/1987 - 10/1988, 9/1999 - 6/2005	43	18	20.3	S	07252000	16
8/1958 - 8/1963, 8/1987 - 9/1988, 2/2003 - 1/2004	44	16	54.9	S	07249985	15
4/2001 - 6/2005	45	14	6.9	S	07249985	15
4/2001 - 6/2005	121	21	51.4	S	07249985	15

24 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 2. Partial-record gaging stations analyzed for low-flow characteristics and the method and index station used for this

[lat, latitude; long, longitude; mi, mile; mi², square mile; ft³/s, cubic foot per second; Horizontal datum is NAD of 1927 or NAD of 1983; S, Stedinger and

Station number	Station name	Station location
07251800	Little Mulberry Creek near Oark	Lat 35°41'11", long 93°39'45", SW 1/4 sec. 21, T.12 N., R.25 W., at bridge on Forest Service road, 3.7 miles west of end of State Highway 103 and 5.0 miles west of Oark.
07251900	Mulberry River near Cass	Lat 35°40'10", long 93°49'46", NE 1/4 sec. 35, T.12 N., R.27 W., at bridge on State Highway 23, 1.5 miles southwest of Cass.
07252100	Little Mulberry Creek near Mulberry	Lat 35°30'37", long 94°04'15", SW 1/4 sec. 27, T.10 N., R.29 W., at bridge on U.S. Highway 64, 1.2 miles northwest of Mulberry.
07252300	White Oak Creek near Ozark	Lat 35°30'24", long 93°56'45", SW 1/4 sec. 26, T.10 N., R.28 W., at bridge on U.S. Highway 64, 7.0 miles west of Ozark.
07256200	Horsehead Creek at Hartman	Lat 35°26'06", long 93°36'21", SE 1/4 sec. 13, T.9 N., R.25 W., at bridge on U.S. Highway 64, 0.5 mile east of Hartman.
07256700	Big Shoal Creek near New Blaine	Lat 35°17'30", long 93°27'35", SE 1/4 sec. 5, T.7 N., R.23 W., at bridge on State Highway 22, 2.3 miles west of New Blaine.
07257470	Middle Fork Illinois Bayou near Hector	Lat 35°31'42", long 92°56'29", E 1/2 sec. 7, T.10 N., R.18 W., at bridge on State Highway 27, 4.9 miles northeast of Hector.
07257480	North Fork Illinois Bayou near Scottsville	Lat 35°30'00", long 93°01'07", S 1/2 sec. 21, T.10 N., R.19 W., at bridge on Forest Service road, 2.4 miles southwest of State Highway 27 and 4.0 miles northeast of Scottsville.
07258700	Sugar Creek near Sugar Grove	Lat 35°04'38", long 93°49'08", NE 1/4 sec. 25, T.5 N., R.27 W., at bridge on State Highway 217, 1.1 miles west of Sugar Grove.
07260673	West Fork Point Remove Creek near Hattievville	Lat 35°19'29", long 92°52'23" NE 1/4 SE 1/4 sec. 23, T.08 N., R.18 W., Pope County, Ark., Hydrologic Unit 11110203, on right bank about 300 ft upstream from State Highway 247 bridge, 5.5 miles northwest of Hattievville, and about 7.8 miles northeast of Atkins.
07260700	Point Remove Creek near Morrilton	Lat 35°10'56", long 92°47'01", NW 1/4 sec. 11, T.6 N., R.17 W., at bridge on U.S. Highway 64, 3.0 miles northwest of Morrilton.
07261200	East Fork Cadron Creek near Enola	Lat 35°13'06", long 92°16'44", NE 1/4 sec. 28, T.7 N., R.12 W., at bridge on county road, 2.1 miles south of State Highway 225, and 4.5 miles west of Enola.
07261400	Mill Creek near Boles	Lat 34°44'14", long 94°04'49", SE 1/4 SE 1/4 sec. 16, T.1 N., R.29 W., at bridge on U.S. Highway 71, 4.0 miles south of Boles.

analysis.—Continued

Thomas base-flow correlation methods (1985); G, graphical (Riggs, 1972)]

Period of measurements	Identifier number (figure 1, plate 1, table 1)	Number of measurements	Drainage area (mi ²)	Method	Index station number	Index station identifier number (figure 1, plate 1, table 1)
11/2001 - 6/2005	122	12	67.2	S	07252000	16
8/1958 - 8/1963, 8/1987 - 10/1988	123	12	267	S	07252000	16
11/1963 - 9/1967, 8/1988 - 10/1988	124	22	51.4	S	07252000	16
11/1963 - 9/1967, 9/1987 - 10/1988	125	20	75.5	S	07252000	16
8/1957 - 7/1963, 10/1988	126	22	126	S	07257006	17
8/1957 - 7/1963, 9/1987 - 10/1988	127	25	48.8	S	07257006	17
9/1952, 8/1957 - 7/1963, 8/1973, 9/1987 - 10/1988	128	9	57.4	G	07257500	18
8/1957 - 8/1963, 9/1987 - 10/1988, 12/2002	129	9	86.7	G	07257500	18
11/1963 - 9/1967	130	17	95.0	S	07260000	20
11/1963 - 9/1967	46	63	221	S	07257006	17
10/1957 - 9/1967	131	15	489	G	07257006	17
6/1978 - 6/2005	132	17	122	S	07261000	22
9/1952, 9/1957 - 8/1963	133	17	50.4	S	07261500	23

Table 2. Partial-record gaging stations analyzed for low-flow characteristics and the method and index station used for this[lat, latitude; long, longitude; mi, mile; mi², square mile; ft³/s, cubic foot per second; Horizontal datum is NAD of 1927 or NAD of 1983; S, Stedinger and

Station number	Station name	Station location
07261600	Gafford Creek near Bluffton	Lat 34°53'53", long 93°36'44", sec. 24, T.3 N., R.25 W., at bridge on State Highway 28, 0.8 mile southwest of Bluffton.
07336900	Walnut Bayou near Foreman	Lat 33°39'14", long 94°21'33", on east line sec. 12, T.13 S., R.32 W., at highway bridge 5.0 miles southeast of Foreman.
07338700	Twomile Creek near Hatfield	Lat 34°30'52", long 94°20'14", NW 1/4 NW 1/4 sec. 8, T.3 S., R.31 W., at bridge on U.S. Highway 71, 3.1 miles northeast of Hatfield.
07338720	Mountain Fork near Hatfield	Lat 34°30'18", long 94°25'50", E 1/2 and on line between sec. 8 and 17, T.3 S., R.32 W., at bridge on State Highway 246, 3.5 miles northwest of Hatfield.
07339200	Rolling Fork near Grannis	Lat 34°14'48", long 94°22'21", NW 1/4 sec. 14, T.6 S., R.32 W., at bridge on county road 2.0 miles west of Grannis.
07340400	Cossatot River near Umpire	Lat 34°17'45", long 94°10'39", SE 1/4 SW 1/4 sec. 23, T.5 S., R.30 W., at bridge on State Highway 4, 7.5 miles west of Umpire.
07355810	Ouachita River near Mena	Lat 34°35'01", long 94°09'06", NW 1/4 NE 1/4 sec. 13, T.2 S., R.30 W. at bridge on State Highway 88, 4.7 miles east of Mena.
07357710	Glazypeau Creek at Mountain Pine	Lat 34°34'18", long 93°09'83" SE 1/4 sec. 8, T.2 S., R.20 W., at bridge on State Highway 227, 0.5 mile east of Mountain Pine.
07358010	Fourche A Loupe Creek near Hot Springs	Lat 34°23'00", 93°07'57", SW 1/4 sec. 15, T.4 S., R.20 W., at bridge on State Highway 7 and 9.2 miles southwest of Hot Springs.
07358700	Gulpha Creek near Hot Springs	Lat 34°28'16", long 92°59'09", E 1/2 sec. 13, T.3 S., R.19 W., at bridge on U.S. Highway 270, 4.6 miles southeast of Hot Springs.
07360200	Little Missouri River near Langley	Lat 34°18'41.9", long 93°53'59.4" in NW 1/4 SW 1/4 sec. 16, T.5 S., R.27 W., Pike County, Ark., Hydrologic Unit 08040103, at bridge on State Highway 84, 3.3 miles west of Langley.
07361025	Prairie Creek near Murfreesboro	Lat 34°02'34", long 93°41'02", NE 1/4 sec. 20, T.8 S., R.25 W., at bridge on State Highway 301, 1.5 miles south of Murfreesboro.
07361160	North Fork Ozan Creek near McCaskill	Lat 33°52'24", long 93°38'30", near center and on line between secs. 14 and 23, T.10 S., R.25 W., at bridge on county road, 3.0 miles south of McCaskill.
07361540	Wolf Creek near Antoine	Lat 34°01'11", long 93°26'15", SE 1/4 sec. 27, T.8 S., R.23 W., at bridge on State Highway 29, 1.5 miles southwest of Antoine.

analysis.—Continued

Thomas base-flow correlation methods (1985); G, graphical (Riggs, 1972)]

Period of measurements	Identifier number (figure 1, plate 1, table 1)	Number of measurements	Drainage area (mi ²)	Method	Index station number	Index station identifier number (figure 1, plate 1, table 1)
6/1958 - 8/1963, 9/1987 - 10/1988	134	23	41.4	S	07261500	23
9/1957 - 8/1963, 7/1984, 9/1988	135	17	90.1	S	07261500	23
8/1957 - 8/1963 7/1984, 9/1987 - 8/1988	136	27	15.9	S	07356000	26
9/1958 - 8/1963	137	67	168	S	07356000	26
11/1963 - 9/1967, 9/1987 - 8/1988	138	9	31.1	G	07339500	65
5/1971 - 11/1973, 5/1986 - 8/2005	139	13	141	S	07356000	26
7/1964 - 9/1967	140	10	39.5	S	07356000	26
11/1963 - 9/1967, 9/1987 - 9/1988	141	11	30.1	S	07356500	70
7/1964 - 11/1966, 9/1987 - 8/1988	142	13	4.7	S	07356500	70
7/1964 - 9/1967, 9/1987 - 10/1988	143	19	38.9	S	07356500	70
7/1964 - 9/1967, 9/1987 - 10/1988	47	119	67.7	S	07356500	70
9/1957 - 8/1963, 8/1988 - 10/1988	144	10	32.0	S	07356500	70
6/1974 - 9/ 2205	145	5	97.3	G	07356500	70
1/1963 - 11/1966, 9/1987 - 8/1988	146	10	37.5	S	07356500	70

28 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 2. Partial-record gaging stations analyzed for low-flow characteristics and the method and index station used for this

[lat, latitude; long, longitude; mi, mile; mi², square mile; ft³/s, cubic foot per second; Horizontal datum is NAD of 1927 or NAD of 1983; S, Stedinger and

Station number	Station name	Station location
07361640	Little Terre Rouge Creek near Emmet	Lat 33°44'56", long 93°27'45", NE 1/4 sec. 34, T.11 S., R.23 W., at bridge on U.S. Highway 67, 1.4 miles northeast of Emmet.
07361650	Terre Rouge Creek near Prescott	Lat 33°46'46", long 93°14'10", SW 1/4 sec. 14, T.11 S., R.21 W., at bridge on State Highway 24, 8.5 miles east of Prescott.
07361800	Terre Noire Creek near Gurdon	Lat 33°55'02", long 93°02'08", SW 1/4 sec. 27, T.2 S., R.19 W., at highway bridge 7.0 miles east of Gurdon.
07362090	Camp Creek near Smackover	Lat 33°21'12", long 92°46'28", NE 1/4 sec. 8 T.16 S., R.16 W., at bridge on State Highway 160, 2.0 miles west of Smackover city limits.
07362550	Moro Creek near Banks	Lat 33°32'38", long 92°19'00", NW 1/4 sec. 35, T.13 S., R.12 W., at bridge on State Highway 4, 3.5 miles southwest of Banks.
07362600	Alum Fork Saline River at Crows	Lat 34°36'56", long 92°44'55", NW 1/4 sec. 29, T.1 S., R.16 W., at bridge on State Highway 5, 1.0 mile east of Crows.
07362700	Middle Fork Saline River at Crows	Lat 34°36'54", long 92°46'44", NW 1/4 sec 25, T.1 S., R.17 W., at bridge on State Highway 5, 0.5 mile west of Crows.
07362800	South Fork Saline River near Hot Springs	Lat 34°35'10", long 92°58'11", SE 1/4 sec. 6, T.2 S., R.18 W., at bridge on State Highway 5, 7.0 miles northeast of Hot Springs.
07362900	North Fork Saline River near Benton	Lat 34°36'18", long 92°37'67", SW 1/4 sec. 28, T.1 S., R.15 W., at bridge on State Highway 5, 4.0 miles northwest of Benton.
07363110	Big Creek at Poyen	Lat 34°18'52", long 92°38'25", SE 1/4 sec. 5, T.5 S., R.15 W., at bridge of State Highway 229, 0.7 mile south of Poyen.
07363160	Saline River near Leola	Lat 34°12'37", long 92°32'52", in NW 1/4 SW 1/4 sec 8, T.6 S., R.14 W., at bridge on State Highway 46, 3.8 miles northeast of Leola.
07363180	Lost Creek near Sheridan	Lat 34°18'52", long 92°27'58", SE 1/4 sec. 1, T.5 S., R.14 W., at bridge on U.S. Highway 270, 4.0 miles west of Sheridan.
07363276	Hurricane Creek near Ico	Lat 34°27'05", long 92°22'18", NE, NE, sec. 23, T.3 S., R.13 W., at bridge on county road, 1.2 miles west of Ico.
07364060	Bayou Lapile at Strong	Lat 33°06'53", long 92°20'47", N 1/2 sec. 33, T.18 S., R.12 W., at highway bridge 0.5 mile northeast of Strong.

analysis.—Continued

Thomas base-flow correlation methods (1985); G, graphical (Riggs, 1972)]

Period of measurements	Identifier number (figure 1, plate 1, table 1)	Number of measurements	Drainage area (mi ²)	Method	Index station number	Index station identifier number (figure 1, plate 1, table 1)
7/1964 - 9/1967	147	9	40.7	G	07349430	69
11/1963 - 11/1966, 8/1988	148	17	232	S	07349430	69
10/1958 - 8/1963, 9/1968	149	12	43.1	S	07365800	74
8/1960 - 9/1967	150	14	121	S	07356500	70
10/1958 - 8/1963, 9/1968	151	12	43.1	S	07365800	74
10/1958 - 6/1966	152	32	405	G	07362500	30
8/1960 - 9/1967	153	14	121	S	07356500	70
8/1958 - 11/1962, 8/1966, 7/1974 - 11/1983, 7/2002 - 2/2006	154	16	102	S	07356500	70
8/1958 - 8/1963	155	18	12.5	S	07356500	70
9/1957 - 10/1963	156	18	133	G	07356500	70
10/1957 - 7/1964	157	8	932	S	07363500	196
7/1964 - 9/1967	158	4	67.9	G	07363400	195
7/1964 - 8/1965, 9/1987 - 10/1989	159	9	88.8	G	07363400	195
10/1965 - 9/1967 6/1963 - 11/1964, 9/1987 - 10/1989 10/1958 - 8/1965	160	18	88.8	S	07349430	69

An assumption for the graphical technique is that the moments, such as the estimated skew and standard deviation, of the log Pearson Type III distribution transfer from the index stations to the partial-record stations. Additionally, the $Q_{7.2}$ and $Q_{7.10}$ characteristics for the selected index station had to be greater than zero.

Methods of Analysis at Ungaged Basins

Two types of regression analysis were used in this study to regionalize low-flow characteristics based upon data observed at continuous-streamflow record gaging stations and partial-record stations. Logistic regression was used to estimate the probability of an annual minimum flow at a site being zero and weighted least-squares regression was used to estimate the $Q_{7.10}$ values. The independent variables in both models are the basin attributes.

Regional Regression Models for Low-Flow Characteristics

Many streams in Arkansas experience zero flow as their minimum flow each year. A logistic regression model was used to estimate the probability of an annual d -day low-flow, such as the annual Q_7 , equal to zero at an ungaged location (Hortness, 2006; Bent and Steeves, 2006; Ludwig and Tasker, 1993). The form of the logistic regression model is given by:

$$p_{zero} = 1 - \left(\frac{e^{\hat{\beta}_0 + \hat{\beta}_1 \log_{10}(x_1) + \dots + \hat{\beta}_k \log_{10}(x_k)}}{1 + e^{\hat{\beta}_0 + \hat{\beta}_1 \log_{10}(x_1) + \dots + \hat{\beta}_k \log_{10}(x_k)}} \right) \quad (2)$$

where

- p_{zero} is the probability of the annual d -day low flow being zero,
- k is the number of basin attributes,
- x_k is the value of the k th basin attribute, and
- $\hat{\beta}_0, \hat{\beta}_1, \hat{\beta}_k$ are the coefficients determined by maximizing the log-likelihood function (described in more detail in appendix 2).

On one hand, if p_{zero} was greater than the non-exceedence probability ($=1/T$, where T is the return period of interest), a low-flow characteristic of interest, such as the $Q_{7.10}$, was set to equal 0 ft³/s. On the other hand, if p_{zero} was less than the non-exceedence probability, an estimate of the low-flow characteristic was calculated by a multiple linear regression model using a weighted least squares (WLS) parameter fit.

The form of the multiple linear regression model used was:

$$\log_{10} (Q_{d-day, T-year}) = \hat{\beta}_0 + \hat{\beta}_1 \log_{10}(x_1) + \dots + \hat{\beta}_k \log_{10}(x_k) + \nu \quad (3)$$

where

- $Q_{d-day, T-year}$ is the historical estimate of the d -day, T -year low flow,
- $\hat{\beta}_0, \hat{\beta}_1, \hat{\beta}_k$ are the estimated coefficients of the model using a modified WLS parameter fitting approach by Tasker (1980), and
- ν is the sum of the model error and time-sampling errors (appendix 2).

The conventional weights of WLS by Tasker (1980) apply only to continuous-streamflow record gaging stations and not to the partial-record stations, so a modified WLS approach was used to properly weight both types of stations (appendix 2).

In addition to performing regression analyses on the data for streams in each region, an analysis also was performed for the entire State. Several times these analyses yielded “state-wide” regression models that were better (lower error statistics) than the regional models. When this was the case, or if there were insufficient data for no-flow events in a region, the statewide regression model was used in place of a regression model specific to that region.

Basin Attributes Considered

The low-flow characteristics of streams are directly related to the physical properties of the drainage basin. In most instances, drainage area is considered to be the predominant factor in explaining streamflow variability. Variations in low-flow yields can be closely associated with physiography (Hines, 1975). For example, drainage basins that are underlain by substrata that have high permeability and porosity almost always have greater base flows than basins that are underlain by substrata with low permeability and porosity. A variable that explains a substantial amount of the variability in low-flow characteristics is the base-flow recession time constant, tau (τ), and can be estimated at partial-record gaging stations (Eng and Milly, 2007).

Other factors such as precipitation, soil hydrologic group, forest cover, basin slope, land use, and basin length (described in appendix 3) could substantially affect low-flow variability. In total, a group of 75 basin attributes (table 3) was tested for statistical significance in regression models.

Basin Attribute Selection

Each of the 75 basin attributes was examined for moderate correlation to other attributes ($p > 0.5$) by Pearson correlations (Helsel and Hirsch, 2002). If a moderate correlation existed among two basin attributes, one was eliminated from consideration in the study (appendix 4). A set of basin attributes was selected to form the final regression model when they were found to be statistically significant ($p < 0.05$) (appendix 4).

Table 3. Basin attributes tested for significance in the regression analysis.

[WMS, Watershed Modeling System; NAVD 88, North American Vertical Datum of 1988; NLCD, National Land Cover Dataset; GIS, Geographic Information System; PRISM, Parameter-elevation Regressions on Independent Slopes Model (Prism Group, Oregon Climatic Service of Oregon State University); STATSGO, State Soil Geographic (Schwartz and Alexander, 1995; U.S. Department of Agriculture, 2001); Kn, Nacatoch Sand; Kt, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Physical Metrics (WMS)

- Drainage area (square miles)
- Basin slope (foot/foot or mile/mile)
- Overland flow (mile)
- Percent facing north (percent)
- Percent facing south (percent)
- Maximum flow distance (mile)
- Maximum flow slope (foot/foot or mile/mile)
- Maximum stream length (mile)
- Maximum stream slope (foot/foot or mile/mile)
- Basin length (mile)
- Effective basin width (mile)
- Basin shape factor (dimensionless)
- Basin perimeter (mile)
- Basin sinuosity factor
- Basin average elevation (feet, NAVD 88)

Landcover Characteristics (NLCD using GIS)

- Deciduous forest (percent)
- Evergreen forest (percent)
- Mixed forest (percent)
- Total forest (percent)
- Pasture/hay (percent)
- Row crops (percent)

Precipitation, at stream-gaging station location (PRISM using GIS)

- Precipitation 1971-2000, at gage, Mean annual (inches)
- Precipitation 1971-2000, November at gage, Mean monthly (inches)
- Precipitation 1971-2000, December at gage, Mean monthly (inches)
- Precipitation 1971-2000, January at gage, Mean monthly (inches)
- Precipitation 1971-2000, February at gage, Mean monthly (inches)
- Precipitation 1971-2000, March at gage, Mean monthly (inches)
- Precipitation 1971-2000, April at gage, Mean monthly (inches)
- Precipitation 1971-2000, November-December at gage, Mean seasonal (inches)
- Precipitation 1971-2000, January-February at gage, Mean seasonal (inches)
- Precipitation 1971-2000, March-April at gage, Mean seasonal (inches)

Table 3. Basin attributes tested for significance in the regression analysis.—Continued

[WMS, Watershed Modeling System; NAVD 88, North American Vertical Datum of 1988; NLCD, National Land Cover Dataset; GIS, Geographic Information System; PRISM, Parameter-elevation Regressions on Independent Slopes Model (Prism Group, Oregon Climatic Service of Oregon State University); STATSGO, State Soil Geographic (Schwartz and Alexander, 1995; U.S. Department of Agriculture, 2001); Kn, Nacatoch Sand; Kt, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Precipitation, at stream-gaging station location (PRISM using GIS)—Continued

Precipitation 1961-1990 at gage, Mean annual (inches)
 Precipitation 1961-1990, November at gage, Mean monthly (inches)
 Precipitation 1961-1990, December at gage, Mean monthly (inches)
 Precipitation 1961-1990, January at gage, Mean monthly (inches)
 Precipitation 1961-1990, February at gage, Mean monthly (inches)
 Precipitation 1961-1990, March at gage, Mean monthly (inches)
 Precipitation 1961-1990, April at gage, Mean monthly (inches)
 Precipitation 1961-1990, November-December at gage, Mean seasonal (inches)
 Precipitation 1961-1990, January-February at gage, Mean seasonal (inches)
 Precipitation 1961-1990 March-April at gage, Mean seasonal (inches)

Precipitation, drainage basin average (PRISM using GIS)

Precipitation 1971-2000, basin average, Mean annual (inches)
 Precipitation 1971-2000, November basin average, Mean monthly (inches)
 Precipitation 1971-2000, December basin average, Mean monthly (inches)
 Precipitation 1971-2000, January basin average, Mean monthly (inches)
 Precipitation 1971-2000, February basin average, Mean monthly (inches)
 Precipitation 1971-2000, March basin average, Mean monthly (inches)
 Precipitation 1971-2000, April basin average, Mean monthly (inches)
 Precipitation 1971-2000, November-December basin average, Mean seasonal (inches)
 Precipitation 1971-2000, January-February basin average, Mean seasonal (inches)
 Precipitation 1971-2000, March-April basin average, Mean seasonal (inches)
 Precipitation 1971-2000, November-April basin average, Mean seasonal (inches)
 Precipitation 1961-1990, basin average, Mean annual (inches)
 Precipitation 1961-1990, November basin average, Mean monthly (inches)
 Precipitation 1961-1990, December basin average, Mean monthly (inches)
 Precipitation 1961-1990, January basin average, Mean monthly (inches)
 Precipitation 1961-1990, February basin average, Mean monthly (inches)
 Precipitation 1961-1990, March basin average, Mean monthly (inches)
 Precipitation 1961-1990, April basin average, Mean monthly (inches)
 Precipitation 1961-1990, November-December basin average, Mean seasonal (inches)
 Precipitation 1961-1990, January-February basin average, Mean seasonal (inches)
 Precipitation 1961-1990 March-April basin average, Mean seasonal (inches)
 Precipitation 1961-1990, November-April basin average, Mean seasonal (inches)

Table 3. Basin attributes tested for significance in the regression analysis.—Continued

[WMS, Watershed Modeling System; NAVD 88, North American Vertical Datum of 1988; NLCD, National Land Cover Dataset; GIS, Geographic Information System; PRISM, Parameter-elevation Regressions on Independent Slopes Model (Prism Group, Oregon Climatic Service of Oregon State University); STATSGO, State Soil Geographic (Schwartz and Alexander, 1995; U.S. Department of Agriculture, 2001); Kn, Nacatoch Sand; Kt, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Soil Characteristics STATSGO

Soil permeability (inches/hour)
 Soil drainage (dimensionless)
 Soil hydrologic group (dimensionless)

Surficial Geology (Arkansas Geology Map (Haley and others, 1976))

Percent Mississippian (percent)
 Percent Ordovician (percent)
 Percent Mississippian and Ordovician (percent)
 Percent Mississippian, Ordovician, Kn, Kt, Kto and Tw (percent)

Tau, Baseflow Recession Constant (Ken Eng, with GIS using kriging interpolation to develop GIS raster grid)

Tau annual (days)
 Tau annual (days)
 Tau, November-December (days)
 Tau, January-February (days)
 Tau, March-April (days)

Base-Flow Recession Constant, tau (τ)

Boussinesq (1903) formulated the idealized problem of outflow from a horizontal, unconfined aquifer discharging into a fully penetrating stream. Brutsaert and Nieber (1977) showed that several available solutions of the Boussinesq problem follow the general power relation:

$$\frac{dQ}{dt} = -aQ^b \tag{4}$$

where

- Q is streamflow,
- t is time, and
- a and b are constants.

For application to the low-flow problem addressed herein only the large-time behavior was analyzed, which is generally associated with a value of b equal to 1 (Brutsaert and Lopez, 1998; Eng and Brutsaert, 1999). For large-time solution, a is given by:

$$a = \frac{1}{\tau} = \frac{\pi^2 KpdL_s^2}{fA^2} \tag{5}$$

and thus;

$$Q_{t+\Delta t} = Q_t e^{-\Delta t/\tau} \tag{6}$$

where

- Q_t is the streamflow at time t ,
- Δt is change in time,
- $Q_{t+\Delta t}$ is the streamflow at time $t+\Delta t$
- τ is the reciprocal of a (see equation 4),
- K is the hydraulic conductivity,
- f is the drainable porosity,
- d is the aquifer thickness,
- L_s is the upstream strenght lenght,
- A is the drainage area, and
- p is approximately 0.3465 (Brutsaert and Nieber, 1977).

The parameter τ is a long-term base-flow-recession time constant, which characterizes the rate of recession of base flow (Brutsaert and Lopez, 1998; Eng and Brutsaert, 1999). Instead of using equation (5), an effective value of τ can be calculated from daily streamflow measurements by use of equation (6) for partial-record and continuous-streamflow record gaging stations (Eng and Milly, 2007). For continuous-streamflow record gaging stations, an empirical Monte Carlo approach was used to identify 400 pairs of days. The associated daily streamflow measurements for these days were then used to calculate 400 τ values by equation (6) for each continuous-streamflow record gaging station. Because the sampling strat-

egy for existing data in the partial-record network of Arkansas was not suitable for use in the methods described by Eng and Milly (2007), their method was only applied to the continuous-streamflow record gaging stations, and a kriged map (figs. 3-6) of mean τ values was developed from them. From the kriged maps, a τ value can be determined for any stream in the State except for eastern Arkansas (not included in the study area) and used in the regression models. τ is assumed to be mostly spatially dependent for a kriged map, which is not necessarily true, but a map was needed to spatially distribute the τ data for use in the regression models.

The τ values are seasonally dependent because they are derived from discharge records from recession periods that are affected by evapotranspiration (Brutsaert, 1982; Zecharias and Brutsaert, 1988; Brutsaert, 2005). To examine if the seasonality of τ values affects the estimates of low-flow characteristics, average 2-month τ values were calculated and used as potential predictor variables in conventional multiple linear regression models. Recession flows during periods that were completely within the November to December, January to February, and March to April periods were used to compute seasonal τ values.

Performance Metrics for Evaluation of Regression Models

The potential effect of the basin attributes on the coefficients of the regression model can be measured by the leverage statistic. This statistic is based upon basin attribute information, period of record, mean, standard deviation and skew of the annual series, and the log-Pearson Type III deviate, so it can be calculated before the regression model is formed. For WLS regression, it can be given by:

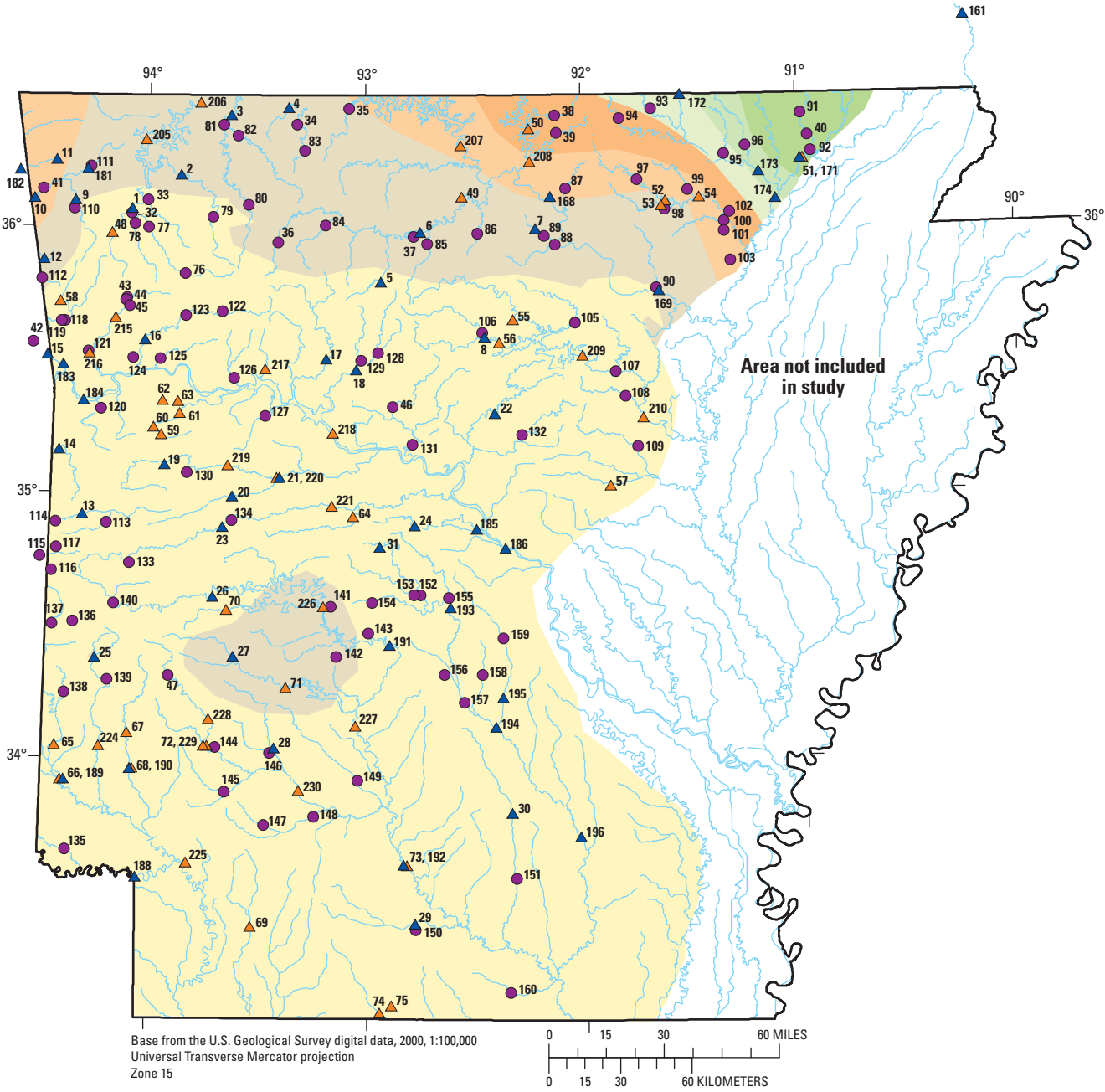
$$\mathbf{h} = \mathbf{X}(\mathbf{X}^T \mathbf{W}^{-1} \mathbf{X})^{-1} \mathbf{X}^T \mathbf{W}^{-1} \tag{7}$$

where

- \mathbf{h} is the matrix containing the leverage values for all basins,
- \mathbf{X} is the matrix of all basin attributes at all basins in the regression augmented by a column of ones,
- \mathbf{T} is the transpose of a matrix, and
- \mathbf{W} is the WLS weighting matrix.

For a basin's attributes to have large effect on the determination of the coefficients of a regression model it must be equal to or greater than the leverage threshold that is given by:

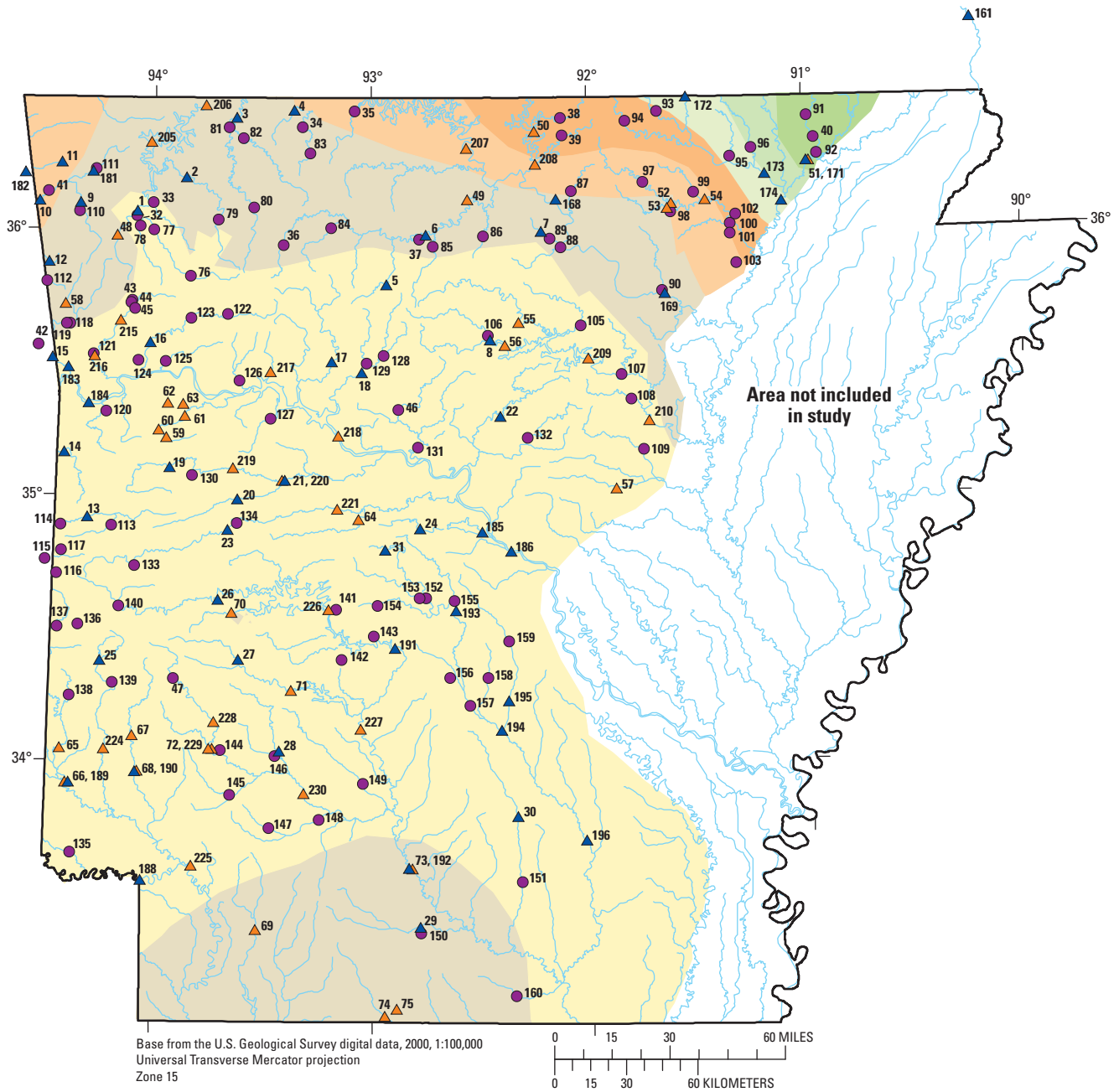
$$h_{\text{limit}} = \frac{2 \sum_{i=1}^n h_{ii}}{n} \tag{8}$$



EXPLANATION

- | | |
|---|--|
| <ul style="list-style-type: none"> ▲ 11 Active continuous-streamflow record gaging station and identifier ▲ 48 Inactive continuous-streamflow record gaging station and identifier ● 41 Partial-record gaging station and identifier | <p>Tau values for annual $Q_{7,10}$, in days</p> <ul style="list-style-type: none"> 10 15 20 25 30 35 40 |
|---|--|

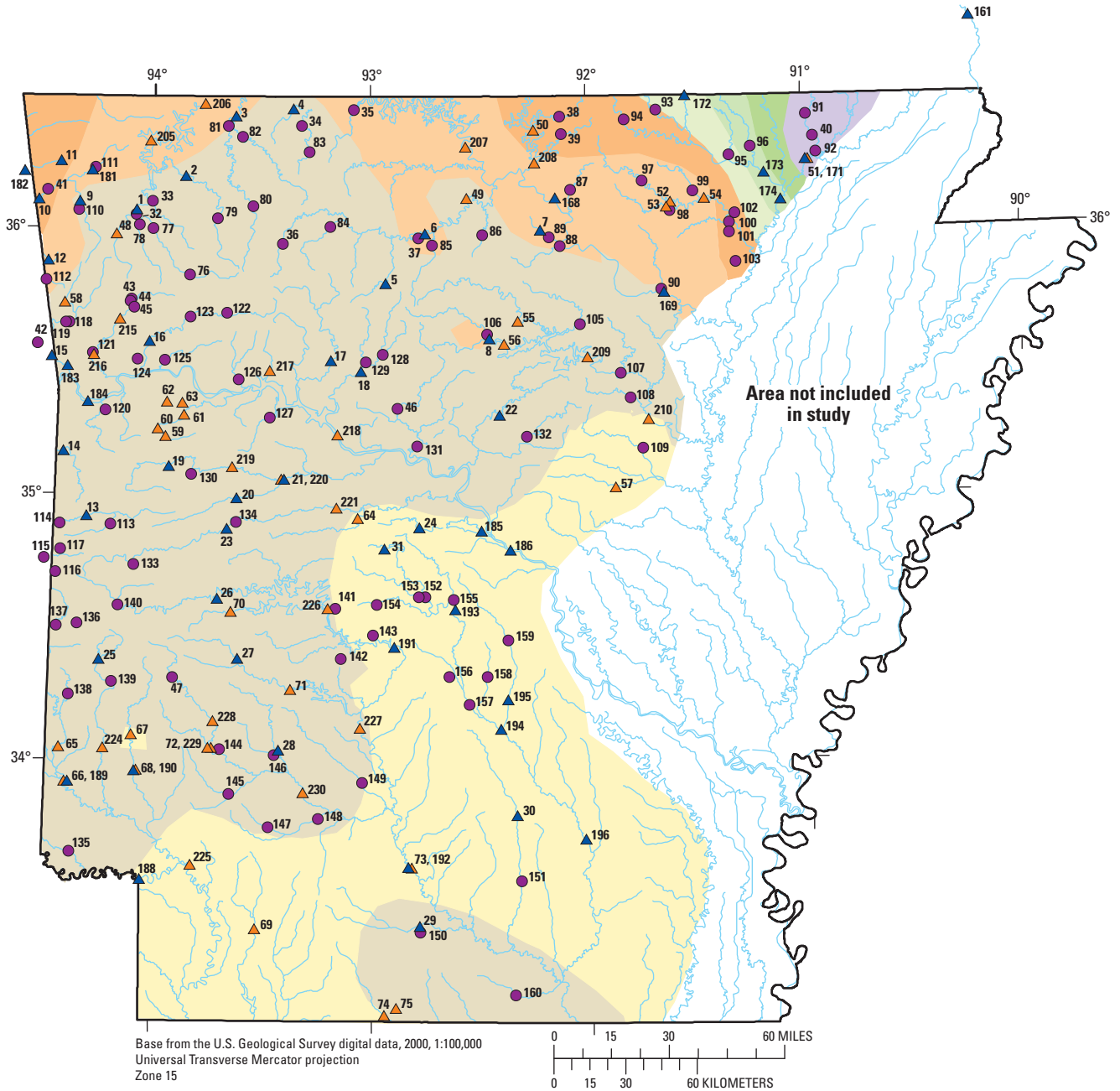
Figure 3. Geographic distribution of tau values for the annual $Q_{7,10}$



EXPLANATION

- | | | |
|------|---|----|
| ▲ 11 | Active continuous-streamflow record gaging station and identifier | 10 |
| ▲ 48 | Inactive continuous-streamflow record gaging station and identifier | 15 |
| ● 41 | Partial-record gaging station and identifier | 20 |
| | | 25 |
| | | 30 |
| | | 35 |
| | | 40 |
- Tau values for November through December**
 $Q_{7,10}$, in days

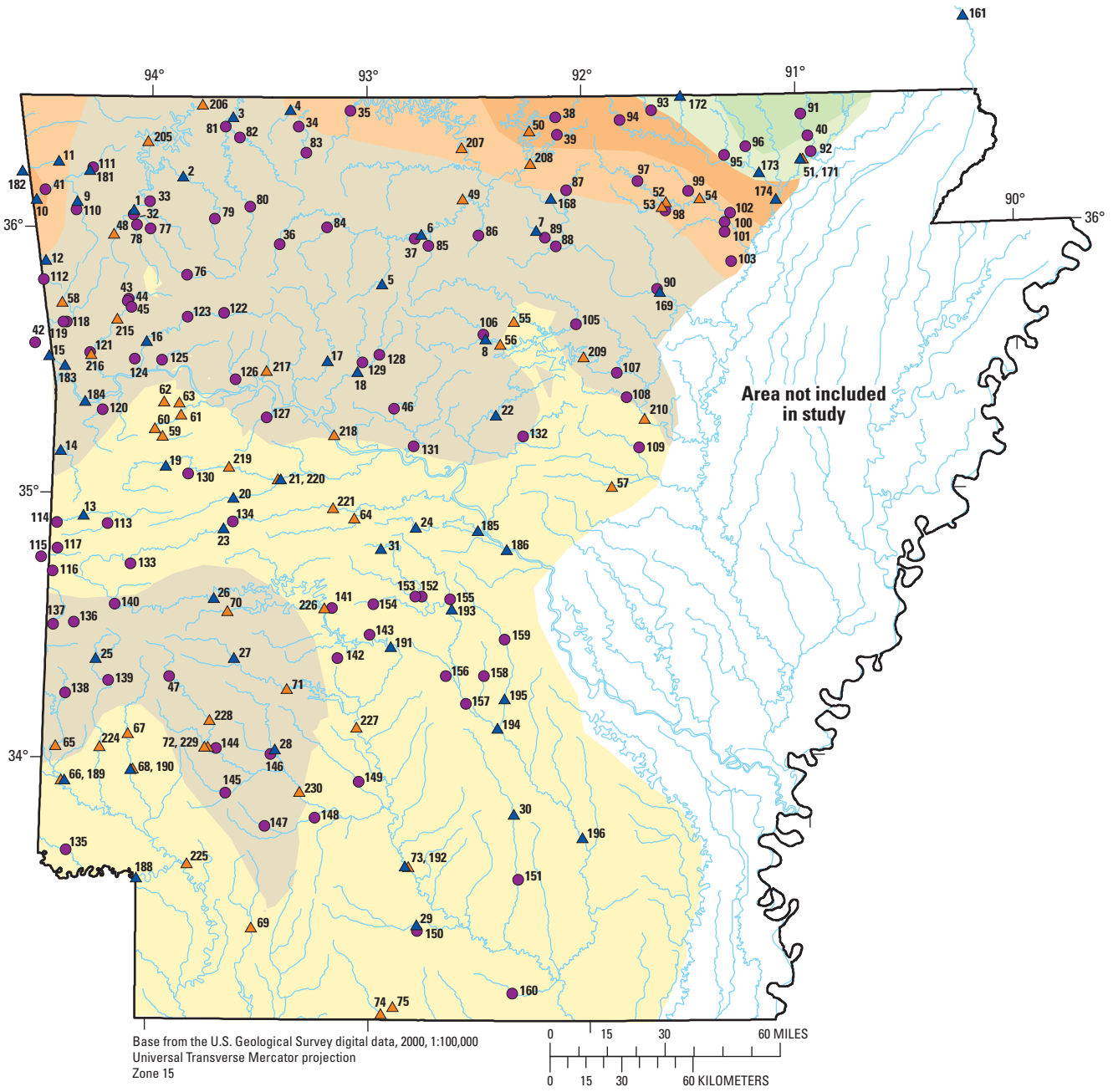
Figure 4. Geographic distribution of tau values for the November through December $Q_{7,10}$.



EXPLANATION

- Tau values for January through February $Q_{7,10}$, in days**
- ▲ 11 Active continuous-streamflow record gaging station and identifier
 - ▲ 48 Inactive continuous-streamflow record gaging station and identifier
 - 41 Partial-record gaging station and identifier
- 8
 - 12
 - 16
 - 20
 - 24
 - 28
 - 32
 - 36

Figure 5. Geographic distribution of tau values for the January through February $Q_{7,10}$



EXPLANATION

- | | | |
|------|---|----|
| ▲ 11 | Active continuous-streamflow record gaging station and identifier | 8 |
| ▲ 48 | Inactive continuous-streamflow record gaging station and identifier | 12 |
| ● 41 | Partial-record gaging station and identifier | 16 |
| | | 20 |
| | | 24 |
| | | 28 |
- Tau values for March through April $Q_{7,10}$, in days**

Figure 6. Geographic distribution of tau values for the March through April $Q_{7,10}$

where

- n is the number of basins in the regression model, and
 h_{ii} values are the main diagonal components of the \mathbf{h} matrix from equation 7.

Basins whose leverage values exceed the limit given by equation 8 were removed to evaluate the effect on the coefficients of the regression model. If the coefficients changed by more than 20 percent from their original values, the basin was removed. If not, the basin was retained in the regression model. The removed basins also were checked to see if some previously unknown alteration to the watershed had occurred.

The performance of the two types of regression models was evaluated using different methods. The performance of the logistic regression models was evaluated using the percentage of basins incorrectly estimated to have zero flow (misclassification percentage). The evaluation metric for the conventional WLS multiple linear regression models was the average variance of prediction (Tasker and Stedinger, 1986), AVP, modified for use for WLS regression and given by:

$$AVP = \sigma_s^2 + \left(\frac{1}{n}\right) \sum_{i=1}^n \mathbf{x}_i (\mathbf{X}^T \mathbf{W}^{-1} \mathbf{X})^{-1} \mathbf{x}_i^T \quad (9)$$

where

- σ_s^2 is the model error variance,
 n is the number of basins in the regression model, and
 \mathbf{x}_i is the vector containing the basin attributes of the i^{th} basin augmented by a value of one.

The conventional performance metric based on the AVP is the average standard error of prediction, S_p , which is an error reported as a percent of the observed value. The S_p metric is given by (Aitchison and Brown, 1957, modified for use of common logarithms):

$$S_p = 100 \left[e^{(\ln 10)^2 AVP} - 1 \right]^{0.5} \quad (10)$$

In addition to the S_p metric, the amount of variability accounted for by the regression model for the estimated low-flow characteristic is calculated by the pseudo R^2 metric. The pseudo R^2 metric is a more suitable metric than the conventional and adjusted R^2 metrics for weighted and generalized least squares regression models (Griffis and Stedinger, 2007), because unlike the conventional and adjusted R^2 metrics, the pseudo R^2 measures the amount of variability accounted for only by the model. Pseudo R^2 is given by (Griffis and Stedinger, 2007):

$$Pseudo R^2 = 1 - \frac{\sigma_k^2}{\sigma_o^2} \quad (11)$$

where

- σ_o^2 is the model error variance of a constant regression model, and
 σ_k^2 is the model error variance for a regression model containing the final k predictors.

Low-Flow Characteristics at Continuous-Streamflow and Partial-Record Gaging Stations

In general, $Q_{7,10}$ and $Q_{7,2}$ (tables 4 and 5, located at end of the report) values were lowest during August through September. Streams that were located in large basins and highly regulated generally had higher $Q_{7,10}$ and $Q_{7,2}$ values than streams that were located in small, unregulated streams. Often, unregulated streams with drainage areas less than 100 mi² experienced $Q_{7,10}$ values of 0.0 ft³/s, particularly in the Boston Mountains and Arkansas Valley physiographic sections (fig. 7).

Regionalization of Low-Flow Characteristics

A regression analysis was used to develop regional flow models that related basin characteristics and precipitation to low-flow characteristics at continuous-streamflow record gaging stations and partial-record gaging stations in Arkansas. These regional flow models, subsequently presented herein, can be used to estimate low-flow characteristics at any desired location on streams in the study area.

Low-Flow Regions of the State

Hines (1975) first associated physiographic areas of the State with corresponding low-flow yields from the streams in Arkansas. For regionalization purposes, Ludwig and Tasker (1993) divided the western two-thirds of the State into three low-flow regions of well sustained and poorly sustained flow. This subdivision was further supported by the regression models in each region for Ludwig and Tasker (1993). Minor changes to Region 2 were made because of enhanced geographical information systems capabilities, but for the most part, they remained the same for this report (plate 1).

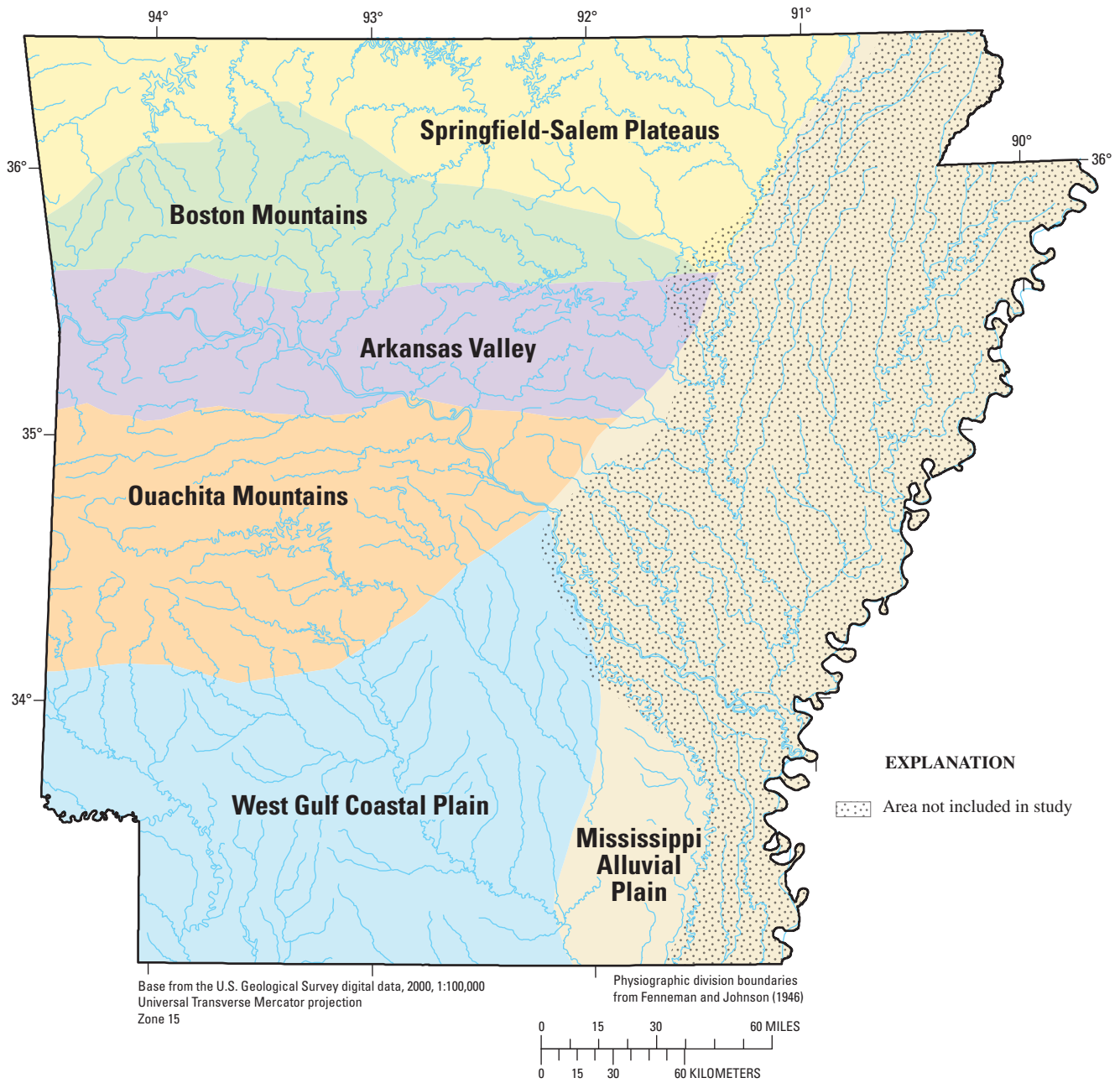


Figure 7. Physiographic sections of Arkansas.

Region 1 encompasses most of the upper White River Basin and parts of the Arkansas River Basin in Arkansas. The region is underlain by a series of limestone units, and, because of this, exhibits numerous characteristics of karst terrain (Ludwig and Tasker, 1993). Streams in the region are sustained by discharges from numerous springs, which are issued from a well-developed system of solution channels. The well-sustained nature of the spring flow is indicative of a regional source of ground water that is supplemented during extended periods of precipitation by a local component of flow.

Region 2 includes two separate areas that are geologically and physiographically different but are similar with respect to base flow. The northern area of this region includes the Boston Mountains, Arkansas Valley, and the northern part of the Ouachita Mountains physiographic sections (Fenneman and Johnson, 1946) (fig. 7). These sections are composed of densely consolidated sandstone and shale deposits. Because only small amounts of ground water are available from the joints and fractures in these sections, many of the streams in this area recede to zero flow each year.

The southern part of Region 2 lies within the West Gulf Coastal Plain physiographic section (Fenneman and Johnson, 1946; Ludwig and Tasker, 1993). The area is underlain by consolidated deposits of sand, silt, and clay. The streams in this area generally do not have sustained base flow because, in part, the stream channels are not incised deeply enough to intercept the water table, and, in part, because the surficial deposits have low permeability and porosity.

Region 3 lies in the southern Ouachita Mountains and extends southward into the West Gulf Coastal Plain. It includes much of the upper Ouachita River Basin and parts of the Red River Basin. Base flows within the Ouachita Mountain section are derived from formations that are composed primarily of fine-grained sandstone and chert deposits. These formations typically have high porosity and permeability, which enhances the recharge potential of the rocks. Base flows within the Coastal Plain section are derived as surplus recharge from the productive aquifers in the area including the Sparta Sand and the Nacatoch Sand.

Low-Flow Characteristics at Ungaged Basins

The basin attribute selection procedures applied to the 75-candidate basin attributes resulted in 15 that were determined to be statistically significant in the logistic and WLS regression models (appendix 4; table 4-2). No more than three basin attributes were allowed to enter any of the regression models. Despite the amount of error introduced by kriging, it was found statistically significant ($p < 0.05$) in all the logistic regression models and in the majority of the WLS regression models.

Basins with leverage values that exceeded the h_{limit} , and affected the coefficients of either the logistic or WLS regression model were removed from that regression model and

are listed in appendix 2, table 2-1. Table 6 contains the final logistic regression models and associated performance metrics (misclassification percentage) for each low-flow characteristic of interest. The p_{zero} values for seasonal low-flow characteristics are generally more accurate than the p_{zero} values for the annual ones except in Region 2. The only basin attribute to appear in all logistic regression models was τ , which indicates its importance in estimating p_{zero} values.

The final WLS regression models and their associated performance metrics (Pseudo R^2 and S_p) are presented in table 7. The list of continuous-streamflow record and partial-record gaging stations used within each of the three region's sets of regression models is located in table 8. For Regions 2 and 3, the annual low-flow characteristics inherently have larger S_p and lower Pseudo R^2 values than those for the seasonal low-flow characteristics. In Region 1, the amount of error among the seasonal and annual low-flow characteristics is roughly equivalent. These differences among the annual and seasonal low-flow characteristics are mainly because of the varying amount of sustained base flow during different parts of the climatic year. The computed low-flow characteristics of basins in Region 1 generally are much larger on average than those in Regions 2 and 3 indicating that basins in Region 1 have longer periods of sustained base flow. The differences in the annual and seasonal analysis in Regions 2 and 3 indicate that the basins in these regions have more variation in the amount of sustained base flow than in Region 1. In general, the period of the climatic year from November to April is not when the lowest recorded daily flows occur in Arkansas, so the basins during this period have larger sustained base flows. The increase in the performance of the WLS regression models for the bimonthly and monthly low-flow characteristics over the annual models reflects the reduced variation in the base flows. For the WLS regression models, additional information, such as the average model error and the basins removed for each of the regions, is presented in appendix 2.

The range of basin attribute values used to form the logistic models is listed in table 9. The range for those attributes used to form the multiple linear regression models using a WLS parameter fitting estimation are listed in table 10, which indicates appropriate ranges in values for application of the equations.

In addition to performing regression analyses on the data for streams in each region, an analysis also was performed for the entire State. Several times these analyses yielded "state-wide" regression models that were better (lower error statistics) than the regional models. When this was the case, or if there were insufficient data for no-flow events in a region, the statewide regression model was used in place of a regression model specific to that region.

Use of Regression Models

Example calculations to demonstrate use of the regression models are described in this section. The examples show application of logistic and WLS models.

Table 6. Logistic regression models and associated performance metrics (misclassification percentage) for each low-flow characteristic of interest.

[**, Insufficient annual events equal to zero cubic feet per second for individual equation; the statewide equation shown here is used for this calculation. *A*, area in square miles; *t_{Annual}*, tau annual, in days; *Q₇*, averaged consecutive 7-day minimum discharge; *Q_{7,10}*, 7-day, 10-year low flow; *Q_{7,2}*, 7-day, 2-year low flow; Ordo/Miss K, percent surficial geology as Ordovician and Mississippian rocks; --, no logistic regression model available for this low-flow characteristic]

Low-flow characteristic	Multiple linear weighted least squares (WLS) regression model	Misclassification percentage	
		<i>Q_{7,2}</i>	<i>Q_{7,10}</i>
Region 1			
Annual <i>Q₇</i>	$p_{zero} = 1 - \left(\frac{e^{-20.0+3.0\log_{10}(A)+16.8\log_{10}(\tau_{Annual})}}{1 + e^{-20.0+3.0\log_{10}(A)+16.8\log_{10}(\tau_{Annual})}} \right)$	5.1	8.5
**November-April <i>Q₇</i>	$p_{zero} = 1 - \left(\frac{e^{-10.2+1.2\log_{10}(A)+10.9\log_{10}(\tau_{Annual})+1.0\log_{10}(Ordo/Miss K+1)}}{1 + e^{-10.2+1.2\log_{10}(A)+10.9\log_{10}(\tau_{Annual})+1.0\log_{10}(Ordo/Miss K+1)}} \right)$	--	3.6
**November-December <i>Q₇</i>	$p_{zero} = 1 - \left(\frac{e^{-11.2+1.4\log_{10}(A)+11.5\log_{10}(\tau_{Annual})+1.1\log_{10}(Ordo/Miss K+1)}}{1 + e^{-11.2+1.4\log_{10}(A)+11.5\log_{10}(\tau_{Annual})+1.1\log_{10}(Ordo/Miss K+1)}} \right)$	--	1.8
**November <i>Q₇</i>	$p_{zero} = 1 - \left(\frac{e^{-11.7+1.4\log_{10}(A)+11.8\log_{10}(\tau_{Annual})+1.2\log_{10}(Ordo/Miss K+1)}}{1 + e^{-11.7+1.4\log_{10}(A)+11.8\log_{10}(\tau_{Annual})+1.2\log_{10}(Ordo/Miss K+1)}} \right)$	--	3.6
Region 2			
Annual <i>Q₇</i>	$p_{zero} = 1 - \left(\frac{e^{-7.0+9.0\log_{10}(\tau_{Annual})}}{1 + e^{-7.0+9.0\log_{10}(\tau_{Annual})}} \right)$	21.5	6.3
**November-April <i>Q₇</i>	$p_{zero} = 1 - \left(\frac{e^{-8.0+0.9\log_{10}(A)+9.4\log_{10}(\tau_{Annual})}}{1 + e^{-8.0+0.9\log_{10}(A)+9.4\log_{10}(\tau_{Annual})}} \right)$	--	30.0
**November-December <i>Q₇</i>	$p_{zero} = 1 - \left(\frac{e^{-8.7+1.2\log_{10}(A)+9.4\log_{10}(\tau_{Annual})}}{1 + e^{-8.7+1.2\log_{10}(A)+9.4\log_{10}(\tau_{Annual})}} \right)$	--	33.3
**November <i>Q₇</i>	$p_{zero} = 1 - \left(\frac{e^{-9.0+1.2\log_{10}(A)+9.6\log_{10}(\tau_{Annual})}}{1 + e^{-9.0+1.2\log_{10}(A)+9.6\log_{10}(\tau_{Annual})}} \right)$	--	33.3
Region 3			
Annual <i>Q₇</i>	$p_{zero} = 1 - \left(\frac{e^{-25.6+25.1\log_{10}(\tau_{Annual})+3.4\log_{10}(Ordo/Miss K+1)}}{1 + e^{-25.6+25.1\log_{10}(\tau_{Annual})+3.4\log_{10}(Ordo/Miss K+1)}} \right)$	13.5	32.4
**November-April <i>Q₇</i>	$p_{zero} = 1 - \left(\frac{e^{-10.2+1.2\log_{10}(A)+10.9\log_{10}(\tau_{Annual})+1.0\log_{10}(Ordo/Miss K+1)}}{1 + e^{-10.2+1.2\log_{10}(A)+10.9\log_{10}(\tau_{Annual})+1.0\log_{10}(Ordo/Miss K+1)}} \right)$	--	3.1

Table 6. Logistic regression models and associated performance metrics (misclassification percentage) for each low-flow characteristic of interest.—Continued

[**, Insufficient annual events equal to zero cubic feet per second for individual equation; the statewide equation shown here is used for this calculation. *A*, area in square miles; *t_{Annual}*, tau annual, in days; *Q₇*, averaged consecutive 7-day minimum discharge; *Q_{7,10}*, 7-day, 10-year low flow; *Q_{7,2}*, 7-day, 2-year low flow; Ordo/Miss K, percent surficial geology as Ordovician and Mississippian rocks; --, no logistic regression model available for this low-flow characteristic]

Low-flow characteristic	Multiple linear weighted least squares (WLS) regression model	Misclassification percentage	
		<i>Q_{7,2}</i>	<i>Q_{7,10}</i>
Region 3—Continued			
**November-December <i>Q₇</i>	$p_{zero} = 1 - \left(\frac{e^{-11.2+1.4\log_{10}(A)+11.5\log_{10}(\tau_{Annual})+1.1\log_{10}(Ordo/Miss K+1)}}{1 + e^{-11.2+1.4\log_{10}(A)+11.5\log_{10}(\tau_{Annual})+1.1\log_{10}(Ordo/Miss K+1)}} \right)$	--	3.1
**November <i>Q₇</i>	$p_{zero} = 1 - \left(\frac{e^{-11.7+1.4\log_{10}(A)+11.8\log_{10}(\tau_{Annual})+1.2\log_{10}(Ordo/Miss K+1)}}{1 + e^{-11.7+1.4\log_{10}(A)+11.8\log_{10}(\tau_{Annual})+1.2\log_{10}(Ordo/Miss K+1)}} \right)$	--	3.1

Table 7. Multiple linear weighted least squares regression models for each region in Arkansas.

[**, Insufficient data for individual equation for region; the statewide equation shown here is used for this calculation. $Q_{7,2}$, averaged consecutive 7-day minimum discharge; $Q_{7,10}$, 7-day, 10-year low flow; $Q_{7,2}$, 7-day, 2-year low flow; *Ordo/Miss K*, percent surficial geology as Ordovician and Mississippian rocks; τ_{Annual} , tau annual in days; *SoilHydro*, Soil Hydrologic Group; $\tau_{Nov-Dec}$, tau, November-December (days); $P_{(Nov-Apr) 71-00}$, precipitation 1971-2000, November-April basin average, mean monthly (inches); $P_{(Mar) 61-90}$, precipitation 1961-1990, March basin average, mean monthly (inches); $P_{(Annual) 71-00}$, precipitation 1971-2000, basin average, mean monthly (inches); $P_{(Nov-Dec) 61-90}$, precipitation 1961-1990, November-December basin average, mean monthly (inches); $\tau_{(Mar-Apr)}$, tau, March-April (days); $P_{(Nov) 61-90}$, precipitation, 1961-1990, basin average, mean monthly (inches)]

Low-flow characteristic	Multiple linear weighted least squares (WLS) regression model	Pseudo-R ² (percent)	S _p (percent)
Region 1			
Annual $Q_{7,2}$	$\log_{10}(Q_{7,2})_{Annual} = 5.2+0.9 \log_{10}(A)-19.1 \log_{10}(SoilHydro)+0.8 \log_{10}(Ordo/Miss K+1)$	68.6	107.0
Annual $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Annual} = 6.9+0.9 \log_{10}(A)-26.7 \log_{10}(SoilHydro)+1.3 \log_{10}(Ordo/Miss K+1)$	54.4	236.7
November-April $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Nov-Apr} = -2.6+0.9 \log_{10}(A)+0.8 \log_{10}(Ordo/Miss K+1)$	57.1	130.2
November-December $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Nov-Dec} = -2.6+0.8 \log_{10}(A)+0.8 \log_{10}(Ordo/Miss K+1)$	56.7	129.6
January-February $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Jan-Feb} = -1.8+0.9 \log_{10}(A)+0.4 \log_{10}(Ordo/Miss K+1)$	68.5	82.4
March-April $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Mar-Apr} = -7.9+1.1 \log_{10}(A)+0.3 \log_{10}(Ordo/Miss K+1)+4.6 \log_{10}(P_{(Nov-Apr) 71-00})$	80.7	55.5
November $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Nov} = -2.5+0.9 \log_{10}(A)+0.8 \log_{10}(Ordo/Miss K+1)$	55.2	133.0
December $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Dec} = -2.0+0.9 \log_{10}(A)+0.5 \log_{10}(Ordo/Miss K+1)$	62.1	97.0
January $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Jan} = -1.8+0.9 \log_{10}(A)+0.5 \log_{10}(Ordo/Miss K+1)$	67.9	81.6
February $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Feb} = -8.4+1.1 \log_{10}(A)+0.2 \log_{10}(Ordo/Miss K+1)+5.0 \log_{10}(P_{(Nov-Apr) 71-00})$	81.6	55.2
March $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Mar} = -3.4+1.1 \log_{10}(A)+3.7 \log_{10}(P_{(Mar) 61-90})$	76.9	58.1
April $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Apr} = -6.8+1.1 \log_{10}(A)+4.2 \log_{10}(P_{(Nov-Apr) 71-00})$	79.4	55.0
Region 2			
Annual $Q_{7,2}$	$\log_{10}(Q_{7,2})_{Annual} = -7.1+1.1 \log_{10}(A)+4.4 \log_{10}(\tau_{Annual})$	77.0	85.2
**Annual $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Annual} = -9.6+1.1 \log_{10}(A)+4.0 \log_{10}(\tau_{Annual})+1.8 \log_{10}(P_{(Annual) 71-00})$	52.9	340.7
November-April $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Nov-Apr} = -5.4+0.7 \log_{10}(A)+3.2 \log_{10}(P_{(Nov-Dec) 61-90})$	88.6	82.4
November-December $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Nov-Dec} = -5.7+0.7 \log_{10}(A)+3.5 \log_{10}(P_{(Nov-Dec) 61-90})$	85.7	87.9
**January-February $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Jan-Feb} = -4.9+1.2 \log_{10}(A)+0.2 \log_{10}(Ordo/Miss K+1)+3.0 \log_{10}(P_{(Nov-Apr) 61-90})$	96.6	31.3
**March-April $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Mar-Apr} = -2.0+1.1 \log_{10}(A)+0.1 \log_{10}(Ordo/Miss K+1)+0.7 \log_{10}(\tau_{Mar-Apr})$	89.2	48.5
November $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Nov} = -10.2+0.7 \log_{10}(A)+5.4 \log_{10}(\tau_{Nov-Dec})+4.0 \log_{10}(P_{(Nov) 61-90})$	84.9	94.3
**December $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Dec} = -3.1+1.1 \log_{10}(A)+0.3 \log_{10}(Ordo/Miss K+1)+1.2 \log_{10}(\tau_{Annual})$	83.0	76.8
**January $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Jan} = -1.8+1.1 \log_{10}(A)+0.3 \log_{10}(Ordo/Miss K+1)$	90.2	51.3
**February $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Feb} = -5.1+1.2 \log_{10}(A)+0.1 \log_{10}(Ordo/Miss K+1)+2.7 \log_{10}(P_{(Nov-Apr) 61-90})$	98.6	18.9
**March $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Mar} = -3.0+1.2 \log_{10}(A)+0.1 \log_{10}(Ordo/Miss K+1)+2.6 \log_{10}(P_{(Mar) 61-90})$	94.8	33.0
April $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Apr} = -1.3+1.2 \log_{10}(A)$	91.3	46.7
Region 3			
Annual $Q_{7,2}$	$\log_{10}(Q_{7,2})_{Annual} = -17.5+0.8 \log_{10}(A)+3.6 \log_{10}(\tau_{Annual})+12.5 \log_{10}(P_{(Mar-Apr) 71-00})$	68.5	115.5
Annual $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Annual} = -29.6+1.3 \log_{10}(A)+5.0 \log_{10}(\tau_{Annual})+21.4 \log_{10}(P_{(Mar-Apr) 71-00})$	81.3	138.5
November-April $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Nov-Apr} = -25.4+1.1 \log_{10}(A)+5.6 \log_{10}(\tau_{Annual})+12.9 \log_{10}(P_{(Nov-Apr) 61-90})$	76.9	99.1
November-December $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Nov-Dec} = -24.7+1.1 \log_{10}(A)+5.4 \log_{10}(\tau_{Annual})+12.5 \log_{10}(P_{(Nov-Apr) 61-90})$	72.7	109.2
January-February $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Jan-Feb} = -1.1+1.1 \log_{10}(A)$	92.1	48.1
March-April $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Mar-Apr} = -14.2+1.2 \log_{10}(A)+12.7 \log_{10}(P_{(Mar-Apr) 61-90})$	95.1	39.3
November $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Nov} = -24.4+1.0 \log_{10}(A)+5.3 \log_{10}(\tau_{Annual})+12.4 \log_{10}(P_{(Nov-Apr) 61-90})$	70.7	113.4
**December $Q_{7,10}$	$\log_{10}(Q_{7,10})_{Dec} = -3.1+1.1 \log_{10}(A)+0.3 \log_{10}(Ordo/Miss K+1)+1.2 \log_{10}(\tau_{Annual})$	83.0	76.8

Table 7. Multiple linear weighted least squares regression models for each region in Arkansas.—Continued

[***, Insufficient data for individual equation for region; the statewide equation shown here is used for this calculation. Q_7 , averaged consecutive 7-day minimum discharge; $Q_{7,10}$, 7-day, 10-year low flow; $Q_{7,2}$, 7-day, 2-year low flow; *Ordo/Miss K*, percent surficial geology as Ordovician and Mississippian rocks; τ_{Annual} , tau annual in days; *SoilHydro*, Soil Hydrologic Group; $\tau_{\text{Nov-Dec}}$, tau, November-December (days); $P_{(\text{Nov-Apr}) 71-00}$, precipitation 1971-2000, November-April basin average, mean monthly (inches); $P_{(\text{Mar}) 61-90}$, precipitation 1961-1990, March basin average, mean monthly (inches); $P_{(\text{Annual}) 71-00}$, precipitation 1971-2000, basin average, mean monthly (inches); $P_{(\text{Nov-Dec}) 61-90}$, precipitation 1961-1990, November-December basin average, mean monthly (inches); $\tau_{(\text{Mar-Apr})}$, tau, March-April (days); $P_{(\text{Nov}) 61-90}$, precipitation, 1961-1990, basin average, mean monthly (inches)]

Low-flow characteristic	Multiple linear weighted least squares (WLS) regression model	Pseudo-R ² (percent)	S _p (percent)
Region 3—Continued			
January $Q_{7,10}$	$\log_{10}(Q_{7,10})_{\text{Jan}} = -1.1 + 1.1 \log_{10}(A)$	89.8	54.6
February $Q_{7,10}$	$\log_{10}(Q_{7,10})_{\text{Feb}} = -1.0 + 1.1 \log_{10}(A)$	90.7	52.4
March $Q_{7,10}$	$\log_{10}(Q_{7,10})_{\text{Mar}} = -0.9 + 1.1 \log_{10}(A)$	86.5	64.9
April $Q_{7,10}$	$\log_{10}(Q_{7,10})_{\text{Apr}} = -1.0 + 1.1 \log_{10}(A)$	83.2	72.8

Table 8. Continuous-streamflow and partial-record gaging stations used to form the weighted least squares regression models.

[ACR, active continuous streamflow record gaging station; ICR, inactive continuous streamflow record gaging station; PR, partial record gaging station; SACR (PR), short term active continuous record (analyzed and listed as partial-record stations)]

Station number	Station name	Latitude (degrees and decimal degrees)	Longitude (degrees and decimal degrees)	Region (plate 1)	Station type
07047976	White River at Combs, Ark.	35.8280	93.8320	1	PR
07047980	White River at Elkins, Ark.	36.0010	94.0040	1	PR
07047985	Middle Fork White River near Fayetteville, Ark.	36.0160	94.0660	1	PR
07048000	West Fork White River at Greenland, Ark.	35.9830	94.1720	1	ICR
07048550	West Fork White River east of Fayetteville, Ark.	36.0540	94.0830	1	SACR (PR)
07048600	White River near Fayetteville, Ark.	36.0730	94.0810	1	ACR
07048800	Richland Creek at Goshen, Ark.	36.1040	94.0080	1	SACR (PR)
07048960	War Eagle Creek near Huntsville, Ark.	36.0420	93.7050	1	PR
07049000	War Eagle Creek near Hindsville, Ark.	36.2000	93.8550	1	ACR
07050225	Kings River near Kingston, Ark.	36.0880	93.5420	1	PR
07050250	Kings River near Pleasant Valley, Ark.	36.3890	93.6590	1	PR
07050390	Osage Creek southwest of Berryville, Ark.	36.3490	93.5910	1	PR
07050500	Kings River near Berryville, Ark.	36.4260	93.6230	1	ACR
07053207	Long Creek at Denver, Ark.	36.3900	93.3170	1	SACR (PR)
07053250	Yocum Creek near Oak Grove, Ark.	36.4540	93.3560	1	ACR
07054410	Bear Creek near Omaha, Ark.	36.4490	93.0750	1	SACR (PR)
07055646	Buffalo River near Boxley, Ark.	35.9450	93.4030	1	SACR (PR)
07055700	Little Buffalo River near Jasper, Ark.	36.0100	93.1840	1	PR
07055875	Richland Creek near Witts Spring, Ark.	35.7970	92.9290	1	ACR
07055893	Calf Creek near Silverhill, Ark.	35.9680	92.7760	1	SACR (PR)
07056000	Buffalo River near St. Joe, Ark.	35.9830	92.7480	1	ACR
07056510	Bear Creek near Marshall, Ark.	35.9410	92.7130	1	PR
07057100	Big Creek near Big Flat, Ark.	35.9790	92.4810	1	PR
07058980	Bennetts River at Vidette, Ark.	36.4220	92.1190	1	SACR (PR)
07059450	Big Creek near Elizabeth, Ark.	36.3570	92.1130	1	SACR (PR)
07060520	Piney Creek near Calico Rock, Ark.	36.1470	92.0710	1	PR
07060700	South Sylamore Creek at Allison, Ark.	35.9360	92.1210	1	PR
07060710	North Sylamore Creek near Fifty Six, Ark.	35.9950	92.2130	1	ACR
07060720	North Sylamore Creek near Allison, Ark.	35.9680	92.1710	1	PR
07060900	Polk Bayou at Batesville, Ark.	35.7710	91.6550	1	PR
07068880	Mud Creek near Ingram, Ark.	36.4230	90.9750	1	PR
07069265	Myatt Creek near Salem, Ark.	36.4440	91.6700	1	PR
07069270	South Fork Spring River near Salem, Ark.	36.4090	91.8180	1	PR
07069350	Martins Creek near Williford, Ark.	36.2730	91.3330	1	PR
07069400	Janes Creek at Ravenden Springs, Ark.	36.3030	91.2330	1	PR
07072900	Strawberry River near Franklin, Ark.	36.1780	91.7390	1	PR
07073000	Strawberry River near Evening Shade, Ark.	36.0990	91.6080	1	ICR

Table 8. Continuous-streamflow and partial-record gaging stations used to form the weighted least squares regression models.—Continued

[ACR, active continuous streamflow record gaging station; ICR, inactive continuous streamflow record gaging station; PR, partial record gaging station; SACR (PR), short term active continuous record (analyzed and listed as partial-record stations)]

Station number	Station name	Latitude (degrees and decimal degrees)	Longitude (degrees and decimal degrees)	Region (plate 1)	Station type
07073500	Piney Fork at Evening Shade, Ark.	36.0810	91.6110	1	ICR
07073600	Mill Creek at Evening Shade, Ark.	36.0660	91.6100	1	PR
07073995	North Big Creek near Evening Shade, Ark.	36.1380	91.5030	1	PR
07074000	Strawberry River near Poughkeepsie, Ark.	36.1100	91.4500	1	ICR
07074248	South Big Creek near Strawberry, Ark.	36.0200	91.3360	1	PR
07074250	Reeds Creek near Strawberry, Ark.	35.9830	91.3370	1	PR
07074260	Cooper Creek near Smithville, Ark.	36.0530	91.3100	1	PR
07074400	Curia Creek near Dowdy, Ark.	35.8710	91.3100	1	PR
07074450	Dota Creek near Newark, Ark.	35.7290	91.4140	1	PR
07075200	Devils Fork Little Red river near Brownsville, Ark.	35.6390	92.0320	2	PR
07075300	South Fork of Little Red River at Clinton, Ark.	35.5870	92.4520	2	ACR
07075390	Archey Creek at Clinton, Ark.	35.6040	92.4600	2	PR
07075500	South Fork Little Red River near Clinton, Ark.	35.5670	92.3830	2	ICR
07076510	Big Creek near Pangburn, Ark.	35.4560	91.8450	2	PR
07076530	Big Creek near Letona, Ark.	35.3620	91.8010	2	PR
07076800	Bayou Des Arc near Garner, Ark.	35.1720	91.7460	2	PR
07076850	Cypress Bayou near Beebe, Ark.	35.0250	91.8730	2	ICR
07194790	Muddy Fork Illinois River near Savoy, Ark.	36.0700	94.3480	1	PR
07194800	Illinois River at Savoy, Ark.	36.1030	94.3440	1	ACR
07194950	Little Osage Creek near Healing Springs, Ark.	36.2330	94.2770	1	PR
07195400	Illinois River at Hwy 16 near Siloam Springs, Ark.	36.1450	94.4940	1	SACR (PR)
07195430	Illinois River South of Siloam Springs, Ark.	36.1090	94.5340	1	ACR
07195800	Flint Creek at Springtown, Ark.	36.2550	94.4340	1	ACR
07196900	Baron Fork at Dutch Mills, Ark.	35.8800	94.4860	1	ACR
07196950	Evansville Creek at Evansville, Ark.	35.8060	94.4960	1	PR
07246970	Jones Creek near Waldron, Ark.	34.8870	94.1880	2	PR
07247000	Poteau River at Cauthron, Ark.	34.9190	94.2990	2	ACR
07247010	Poteau River near Bates, Ark.	34.8890	94.4200	2	PR
07247100	Black Fork near Page, Okla.	34.7600	94.4900	2	PR
07247200	Big Creek at Howard, Ark.	34.7070	94.4370	2	PR
07247300	Haws Creek near Black Fork, Ark.	34.7930	94.4160	2	PR
07249400	James Fork near Hackett, Ark.	35.1630	94.4070	2	ACR
07249500	Cove Creek near Lee Creek, Ark.	35.7220	94.4080	2	ICR
07249600	Lee Creek at Natural Dam, Ark.	35.6460	94.3940	2	PR
07249700	Mountain Fork Creek at Natural Dam, Ark.	35.6450	94.3970	2	PR
07249800	Lee Creek at Short, Okla.	35.5660	94.5320	2	SACR (PR)
07249985	Lee Creek near Short, Okla.	35.5190	94.4660	2	ACR

Table 8. Continuous-streamflow and partial-record gaging stations used to form the weighted least squares regression models.—Continued

[ACR, active continuous streamflow record gaging station; ICR, inactive continuous streamflow record gaging station; PR, partial record gaging station; SACR (PR), short term active continuous recored (analyzed and listed as partial-record stations)]

Station number	Station name	Latitude (degrees and decimal degrees)	Longitude (degrees and decimal degrees)	Region (plate 1)	Station type
07250600	Vache Grasse Creek near Lavaca, Ark.	35.3180	94.2150	2	PR
07250935	Jones Creek at Winfrey, Ark.	35.7360	94.1030	2	SACR (PR)
07250965	Frog Bayou near Winfrey, Ark.	35.7270	94.1070	2	SACR (PR)
07250974	Jack Creek near Winfrey, Ark.	35.7050	94.0890	2	SACR (PR)
07251400	Cedar Creek near Rudy, Ark.	35.5290	94.2780	2	PR
07251800	Little Mulberry Creek near Oark, Ark.	35.6860	93.6600	2	PR
07251900	Mulberry River near Cass, Ark.	35.6690	93.8290	2	PR
07252000	Mulberry River near Mulberry, Ark.	35.5770	94.0160	2	ACR
07252100	Little Mulberry Creek near Mulberry, Ark.	35.5100	94.0710	2	PR
07252300	White Oak Creek near Ozark, Ark.	35.5070	93.9460	2	PR
07256200	Horsehead Creek at Hartman, Ark.	35.4350	93.6060	2	PR
07256700	Big Shoal Creek near New Blaine, Ark.	35.2920	93.4600	2	PR
07257006	Big Piney Creek at Highway 164 near Dover, Ark.	35.5060	93.1810	2	ACR
07257470	Middle Fork Illinois Bayou near Hector, Ark.	35.5280	92.9410	2	PR
07257480	North Fork Illinois Bayou near Scottsville, Ark.	35.5000	93.0190	2	PR
07257500	Illinois Bayou near Scottsville, Ark.	35.4660	93.0410	2	ACR
07258500	Petit Jean River near Booneville, Ark.	35.1070	93.9240	2	ACR
07258700	Sugar Creek near Sugar Grove, Ark.	35.0770	93.8190	2	PR
07260000	Dutch Creek at Waltreak, Ark.	34.8870	93.6130	2	ACR
07260500	Petit Jean River at Danville, Ark.	35.0590	93.3960	2	ACR
07260673	West Fork Point Remove Creek near Hattieville, Ark.	35.3250	92.8730	2	SACR (PR)
07260700	Point Rmove Creek near Morrilton, Ark.	35.1820	92.7840	2	PR
07261000	Cadron Creek near Guy, Ark.	35.2990	92.4040	2	ACR
07261200	East Fork Cadron Creek near Enola, Ark.	35.2180	92.2790	2	PR
07261400	Mill Creek near Boles, Ark.	34.7370	94.0800	2	PR
07261500	Fourche LaFave River near Gravelly, Ark.	34.8730	93.6570	2	ACR
07261600	Gafford Creek near Bluffton, Ark.	34.8980	93.6120	2	PR
07263000	South Fourche LaFave River near Hollis, Ark.	34.9110	93.0560	2	ICR
07263295	Maumelle River at Williams Junction, Ark.	34.8760	92.7740	2	ACR
07336900	Walnut Bayou near Foreman, Ark.	33.6540	94.3590	2	PR
07338700	Twomile Creek near Hatfield, Ark.	34.5140	94.3370	3	PR
07338720	Mountain Fork near Hatfield, Ark.	34.5050	94.4310	3	PR
07339200	Rolling Fork near Grannis, Ark.	34.2470	94.3730	3	PR
07339500	Rolling Fork near DeQueen, Ark.	34.0470	94.4130	3	ICR
07340300	Cossatot River near Vandervoort, Ark.	34.3790	94.2360	3	ACR
07340400	Cossatot River near Umpire, Ark.	34.2960	94.1770	3	PR

Table 8. Continuous-streamflow and partial-record gaging stations used to form the weighted least squares regression models.—Continued

[ACR, active continuous streamflow record gaging station; ICR, inactive continuous streamflow record gaging station; PR, partial record gaging station; SACR (PR), short term active continuous recored (analyzed and listed as partial-record stations)]

Station number	Station name	Latitude (degrees and decimal degrees)	Longitude (degrees and decimal degrees)	Region (plate 1)	Station type
07341000	Saline River near Dierks, Ark.	34.0960	94.0840	3	ICR
07341200	Saline River near Lockesburg, Ark.	33.9623	94.0616	3	ICR
07349430	Bodcau Creek at Stamps, Ark.	33.3670	93.5220	2	ICR
07355810	Ouachita River near Mena, Ark.	34.5840	94.1520	3	PR
07356000	Ouachita River near Mount Ida, Ark.	34.6100	93.6970	3	ACR
07356500	South Fork Ouachita River at Mount Ida, Ark.	34.5600	93.6360	3	ICR
07357710	Glazypeau Creek at Mountain Pine, Ark.	34.5720	93.1590	3	PR
07358010	Fourche A Loupe Creek near Hot Springs, Ark.	34.3830	93.1330	3	PR
07358700	Gulpha Creek near Hot Springs, Ark.	34.4710	92.9860	3	PR
07359610	Caddo River near Caddo Gap, Ark.	34.3830	93.6060	3	ACR
07359800	Caddo River near Alpine, Ark.	34.2670	93.3620	3	ICR
07360200	Little Missouri River near Langley, Ark.	34.3110	93.8990	3	SACR (PR)
07361000	Little Missouri River near Murfreesboro, Ark.	34.0490	93.7200	3	ICR
07361025	Prairie Creek near Murfreesboro, Ark.	34.0430	93.6840	3	PR
07361160	North Fork Ozan Creek near McCaskill, Ark.	33.8730	93.6420	3	PR
07361500	Antoine River at Antoine, Ark.	34.0390	93.4180	3	ACR
07361540	Wolf Creek near Antoine, Ark.	34.0200	93.4380	3	PR
07361640	Little Terre Rouge Creek near Emmet, Ark.	33.7490	93.4630	3	PR
07361650	Terre Rouge Creek near Prescott, Ark.	33.7790	93.2360	3	PR
07361800	Terre Noire Creek near Gurdon, Ark.	33.9170	93.0360	3	PR
07362090	Camp Creek near Smackover, Ark.	33.3530	92.7740	2	PR
07362100	Smackover Creek near Smackover, Ark.	33.3760	92.7770	2	ACR
07362500	Moro Creek near Fordyce, Ark.	33.7920	92.3330	2	ACR
07362550	Moro Creek near Banks, Ark.	33.5440	92.3170	2	PR
07362587	Alum Fork Saline River near Reform, Ark.	34.7970	92.9330	3	ACR
07362600	Alum Fork Saline River at Crows, Ark.	34.6160	92.7490	3	PR
07362700	Middle Fork Saline River at Crows, Ark.	34.6150	92.7790	3	PR
07362800	South Fork Saline River near Hot Springs, Ark.	34.5860	92.9700	3	PR
07362900	North Fork Saline River near Benton, Ark.	34.6050	92.6190	3	PR
07363110	Big Creek at Poyen, Ark.	34.3140	92.6400	3	PR
07363160	Saline River near Leola, Ark.	34.2100	92.5480	3	PR
07363180	Lost Creek near Sheridan, Ark.	34.3140	92.4660	2	PR
07363276	Hurricane Creek near Ico, Ark.	34.4510	92.3720	2	PR
07364060	Bayou Lapile at Strong, Ark.	33.1150	92.3460	2	PR
07365800	Cornie Bayou near Three Creeks, Ark.	33.0390	92.9380	2	ICR
07365900	Three Creeks near Three Creeks, Ark.	33.0670	92.8840	2	ICR

Table 9. Logistic regression models: Basin attribute ranges.

[$A(mi^2)$, area in square miles; τ_{Annual} (days), tau annual in days; *Ordo/Miss K*, percent surficial geology as Ordovician and Mississippian rocks; **, Insufficient annual events equal to zero cubic feet per second for individual equation; the statewide equation is used for this calculation; --, attribute not used in regression model]

Low-flow characteristic	<i>A (mi²)</i>		τ_{Annual} (days)		<i>Ordo/Miss K + 1 (percent)</i>	
	Mini-mum	Maxi-mum	Min-mum	Maxi-mum	Mini-mum	Maxi-mum
Region 1						
Annual Q_7	3.1	828.5	8.7	40.9	--	--
**November-April Q_7	3.1	931.9	5.3	40.9	1.0	101.0
**November-December Q_7	3.1	931.9	5.3	40.9	1.0	101.0
**November Q_7	3.1	931.9	5.3	40.9	1.0	101.0
Region 2						
Annual Q_7	--	--	5.3	10.0	--	--
**November-April Q_7	3.3	763.0	5.3	10.0	--	--
**November-December Q_7	3.3	763.0	5.3	10.0	--	--
**November Q_7	3.3	763.0	5.3	10.0	--	--
Region 3						
Annual Q_7	--	--	6.2	12.1	3.7	101.0
**November-April Q_7	3.1	931.9	5.3	40.9	1.0	101.0
**November-December Q_7	3.1	931.9	5.3	40.9	1.0	101.0
**November Q_7	3.1	931.9	5.3	40.9	1.0	101.0

Table 10. Weighted least squares regression models: Basin attribute ranges.

[A (mi²), area in square miles; Ordo/Miss K, percent surficial geology as Ordovician and Mississippian rocks; Soil hydro, soil hydrologic group; τ , tau in day: Min, minimum; Max, maximum; **, Insufficient data for individual equation for this region; the statewide equation is used for this calculation. --, attribute not used in regression model]

Low-flow characteristic	A (mi ²)		Ordo/Miss K+1 (percent)		Soil hydro		Precipitation (inches)		τ (days)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Region 1										
Annual $Q_{7,2}$	12.1	828.5	1.5	101	2.5	2.7	--	--	--	--
Annual $Q_{7,10}$	12.1	828.5	1.5	101	2.5	2.7	--	--	--	--
November-April $Q_{7,10}$	12.1	828.5	1	101	--	--	--	--	--	--
November-December $Q_{7,10}$	12.1	828.5	1	101	--	--	--	--	--	--
January-February $Q_{7,10}$	12.1	828.5	1	101	--	--	--	--	--	--
March-April $\hat{Q}_{7,10}$	12.1	828.5	1	101	--	--	21.3 ¹	26.2 ¹	--	--
November $Q_{7,10}$	12.1	828.5	1	101	--	--	--	--	--	--
December $Q_{7,10}$	12.1	828.5	1	101	--	--	--	--	--	--
January $Q_{7,10}$	12.1	828.5	1	101	--	--	--	--	--	--
February $Q_{7,10}$	12.1	828.5	1	101	--	--	21.3 ¹	26.2 ¹	--	--
March $Q_{7,10}$	12.1	828.5	--	--	--	--	4.1 ²	5.3 ²	--	--
April $Q_{7,10}$	12.1	828.5	--	--	--	--	21.3 ¹	26.2 ¹	--	--
Region 2										
Annual $Q_{7,2}$	8.0	763.0	--	--	--	--	--	--	6.2 ³	9.9 ³
Annual $Q_{7,10}$	4.7	931.9	--	--	--	--	44.5 ⁴	61.9 ⁴	6.6 ³	26.7 ³
November-April $Q_{7,10}$	8.0	763.0	--	--	--	--	7.6 ⁵	10.9 ⁵	--	--
November-December $Q_{7,10}$	8.0	488.7	--	--	--	--	7.6 ⁵	10.9 ⁵	--	--
**January-February $Q_{7,10}$	4.7	931.9	1	101	--	--	8.3 ⁶	12.7 ⁶	--	--
**March-April $Q_{7,10}$	4.7	931.9	1	101	--	--	--	--	4.5 ⁷	25.2 ⁷
November $Q_{7,10}$	8.0	763.0	--	--	--	--	4.3 ⁸	5.6 ⁸	6.5 ⁹	12.33 ⁹
**December $Q_{7,10}$	4.7	931.9	1	101	--	--	--	--	5.5 ³	26.7 ³
**January $Q_{7,10}$	4.7	931.9	1	101	--	--	--	--	--	--

Table 10. Weighted least squares regression models: Basin attribute ranges.—Continued

[A (mi²), area in square miles; Ordo/Miss K, percent surficial geology as Ordovician and Mississippian rocks; Soil hydro, soil hydrologic group; τ , tau in day: Min, minimum; Max, maximum; **, Insufficient data for individual equation for this region; the statewide equation is used for this calculation. --, attribute not used in regression model]

Low-flow characteristic	A (mi ²)		Ordo/Miss K+1 (percent)		Soil hydro		Precipitation (inches)		τ (days)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Region 2—Continued										
**February $Q_{7,10}$	4.7	931.9	1	101	--	--	19.8 ⁶	31.1 ⁶	--	--
**March $Q_{7,10}$	4.7	931.9	1	101	--	--	4.1 ¹⁰	6.6 ¹⁰	--	--
**April $Q_{7,10}$	6.9	763.0	--	--	--	--	--	--	--	--
Region 3										
Annual $Q_{7,2}$	4.7	931.9	--	--	--	--	10.0 ¹¹	12.3 ¹¹	6.6 ³	12.1 ³
Annual $Q_{7,10}$	4.7	931.9	--	--	--	--	10.0 ¹¹	12.3 ¹¹	6.6 ³	12.1 ³
November-April $Q_{7,10}$	4.7	931.9	--	--	--	--	25.8 ⁶	30.7 ⁶	6.2 ³	12.1 ³
November-December $Q_{7,10}$	4.7	931.9	--	--	--	--	25.8 ⁶	30.7 ⁶	6.2 ⁹	12.1 ⁹
January-February $Q_{7,10}$	4.7	931.9	--	--	--	--	--	--	--	--
March-April $\hat{Q}_{7,10}$	4.7	931.9	--	--	--	--	10.0 ¹²	11.6 ¹²	--	--
November $Q_{7,10}$	4.7	931.9	--	--	--	--	25.8 ⁶	30.7 ⁶	6.2 ³	12.1 ³
December $Q_{7,10}$	4.7	931.9	--	--	--	--	27.9 ¹	32.8 ¹	6.2 ³	12.1 ³
January $Q_{7,10}$	4.7	931.9	--	--	--	--	--	--	--	--
February $Q_{7,10}$	4.7	931.9	--	--	--	--	--	--	--	--
March $Q_{7,10}$	4.7	931.9	--	--	--	--	--	--	--	--
April $Q_{7,10}$	4.7	931.9	--	--	--	--	--	--	--	--

¹ Precipitation 1971-2000, November-April basin average, Mean seasonal (inches).

² Precipitation 1961-1990, March basin average, Mean monthly (inches).

³ Tau annual, days.

⁴ Precipitation 1971-2000, basin average, Mean annual (inches).

⁵ Precipitation 1961-1990, November-December basin average, Mean seasonal (inches).

⁶ Precipitation 1961-1990, November-April basin average, Mean seasonal (inches).

⁷ Tau, March-April (days).

⁸ Precipitation 1961-1990, November basin average, Mean monthly (inches).

⁹ Tau, November-December (days).

¹⁰ Precipitation 1961-1990, March basin average, Mean monthly (inches).

¹¹ Precipitation, 1971-2000, March-April basin average, Mean seasonal (inches).

¹² Precipitation 1961-1990, March-April basin average, Mean seasonal (inches).

Suppose estimates of the annual $Q_{7,10}$ ($T = 10$) value within an ungaged basin in Region 1 with $A = 20 \text{ mi}^2$, $\tau_{\text{annual}} = 12$ days, $Ordo/Miss K = 20$ percent, and $Sl_{HydroGroup} = 2.6$ is desired. If the basin attributes fall within the appropriate ranges (tables 9-10) then the logistic and conventional WLS regression model can be applied to this basin. The first step is to determine the probability that the annual Q_7 flow is zero using the Region 1 logistic regression model for annual Q_7 (table 6).

$$p_{\text{zero}} = 1 - \left(\frac{e^{\hat{\beta}_0 + \hat{\beta}_A \log_{10}(A) + \hat{\beta}_{\tau_{\text{annual}}} \log_{10}(\tau_{\text{annual}})}}{1 + e^{\hat{\beta}_0 + \hat{\beta}_A \log_{10}(A) + \hat{\beta}_{\tau_{\text{annual}}} \log_{10}(\tau_{\text{annual}})}} \right) \Rightarrow$$

$$p_{\text{zero}} = 1 - \left(\frac{e^{-20 + 3.0 \log_{10}(20) + 16.8 \log_{10}(12)}}{1 + e^{-20 + 3.0 \log_{10}(20) + 16.8 \log_{10}(12)}} \right) \Rightarrow$$

$$p_{\text{zero}} = 1 - \left(\frac{7.6}{1 + 7.6} \right) \Rightarrow p_{\text{zero}} = 0.12.$$

To determine whether the annual $Q_{7,10}$ for an ungaged basin is zero, the non-exceedence probability ($=1/T=1/10=0.1$) is compared to p_{zero} ($=0.12$). In this case, p_{zero} is greater than 0.1, so the annual $Q_{7,10}$ is estimated to be zero for this example.

Using the previous example, but with $A = 100 \text{ mi}^2$ (instead of 20 mi^2) the user wishes to calculate the annual $Q_{7,10}$. Computing the probability that the annual Q_7 flow is zero using the Region 1 logistic regression model for Q_7 (table 6):

$$p_{\text{zero}} = 1 - \left(\frac{e^{\hat{\beta}_0 + \hat{\beta}_A \log_{10}(A) + \hat{\beta}_{\tau_{\text{annual}}} \log_{10}(\tau_{\text{annual}})}}{1 + e^{\hat{\beta}_0 + \hat{\beta}_A \log_{10}(A) + \hat{\beta}_{\tau_{\text{annual}}} \log_{10}(\tau_{\text{annual}})}} \right) \Rightarrow$$

$$p_{\text{zero}} = 1 - \left(\frac{e^{-20 + 3.0 \log_{10}(100) + 16.8 \log_{10}(12)}}{1 + e^{-20 + 3.0 \log_{10}(100) + 16.8 \log_{10}(12)}} \right) \Rightarrow$$

$$p_{\text{zero}} = 1 - \left(\frac{62.2}{1 + 62.2} \right) \Rightarrow p_{\text{zero}} = 0.02.$$

Again the non-exceedence probability ($=1/T=1/10=0.1$) is compared to p_{zero} ($=0.02$). In this case, p_{zero} is less than 0.1, so the annual $Q_{7,10}$ is estimated by the WLS regression model for Region 1. From table 7,

$$\log_{10}(Q_{7,10}) = 6.9 + 0.9 \log_{10}(A) - 26.7 \log_{10}$$

$$(SoilHydro) + 1.3 \log_{10}(Ordo / MissK + 1) \Rightarrow$$

$$\log_{10}(Q_{7,10}) = 6.9 + 0.9 \log_{10}(100) -$$

$$26.7 \log_{10}(2.6) + 1.3 \log_{10}(20 + 1) \Rightarrow Q_{7,10} = 0.22 \text{ ft}^3/\text{s}$$

Use of Computer Program

A computer program, LFArk1.exe program, is on the compact disk included with this report. The example calculations in the “Use of Regression Models” section are automated in the program. A user’s manual is included in the Low-flow_Program_Instructions file. Instructions for installing the program on a Windows-based computer are included in the user’s manual. The program facilitates data entry to apply the logistic and WLS regression models.

Summary

The low-flow characteristics of a stream ultimately affect its utilization by humans. Specific information on the low-flow characteristics of streams is essential to State water-management agencies such as the Arkansas Department of Environmental Quality (ADEQ), Arkansas Natural Resources Commission (ANRC), and Arkansas Game and Fish Commission (AGFC) when dealing with problems related to irrigation, municipal and industrial water supplies, fish and wildlife conservation, and dilution of waste. Low-flow frequency data are of particular value to management agencies responsible for the development and management of the State’s water resources.

Historically, limits imposed by National Pollutant Discharge Elimination System permits issued by the ADEQ for wastewater discharge into streams have been based upon the annual 7-day, 10-year low flow ($Q_{7,10}$) at the location of wastewater discharge. In 2005, the ADEQ acquired approval from the U.S. Environmental Protection Agency (USEPA) to issue NPDES permits with limits for ammonia toxicity based upon a monthly $Q_{7,10}$ during the months of November through April. This approval allows regulatory agencies, such as the ADEQ, to better manage the available water resources by allowing an increase of wastewater discharge into streams during periods of higher flows that do not occur in the period of July through October in Arkansas.

This report contains the low-flow characteristics for 70 active continuous-streamflow record gaging stations, 59 inactive continuous-streamflow record stations, and 101 partial-record gaging stations. These characteristics are estimates of the ($Q_{7,10}$) and the annual 7-day, 2-year low flow ($Q_{7,2}$), and the seasonal, bimonthly, and monthly ($Q_{7,10}$) for the 129 active and inactive continuous-streamflow record and 101 partial-record gaging stations.

Low-flow characteristics were computed on the basis of streamflow data for the period of record for discontinued continuous-streamflow record gaging stations and through September 2005 for active continuous-streamflow record and partial-record streamflow gaging stations. The low-flow characteristics of these continuous- and partial-record streamflow gaging stations were utilized in a regional regression analysis to produce equations for estimating the annual, seasonal, bimonthly, and monthly (November through April) ($Q_{7,10}$)’s

and the annual ($Q_{7.2}$) for ungaged streams in the western two-thirds of Arkansas.

Selected References

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Tables 4-5

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.

07040000 St. Francis River at Fisk, Mo.

LOCATION.--Lat 36°47'25.14", long 90°12'05" referenced to North American Datum of 1927, in NE 1/4 NW 1/4 sec.28, T.24 N., R.8 E., Butler County, Mo., Hydrologic Unit 08020203, at bridge on U.S. Hwy 60 at Fisk, Missouri.

DRAINAGE AREA.--1,370 square miles.

PERIOD OF RECORD.-- October 1997 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
77.0	40.5

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
121	131	308	196

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
134	165	342	411	638	185

07040100 St. Francis River at St. Francis, Ark.

LOCATION.--Lat 36°27'21", long 90°08'13" referenced to North American Datum of 1927, in sec.18, T.21 N., R.9 E., Clay County, Ark., Hydrologic Unit 08020203, at bridge on U.S. Highway 62 at St. Francis, and at mile 229.

DRAINAGE AREA.--1,772 square miles.

PERIOD OF RECORD.-- April 1941 to September 1977, October 1989 to September 1990, October 1991 to September 1992, and October 1997 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
122	74.2

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
91.1	89.3	317	460

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
88.1	179	333	407	759	470

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07040450 St. Francis River at Lake City, Ark.**

LOCATION.--Lat 35°49'16", long 90°25'56" referenced to North American Datum of 1927, in SE 1/4 sec.22, T.14 N., R.6 E., Craighead County, Ark., Hydrologic Unit 08020203, at bridge on State Highway 18 at Lake City, and at mile 173.6.

DRAINAGE AREA.--2,374 square miles.

PERIOD OF RECORD.--April 1941 to September 1977 and October 1999 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

260

10-year recurrence interval

112

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

146

November-December

144

January-February

523

March-April

930

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

142

December

301

January

575

February

671

March

1,410

April

928

07046600 Right Hand Chute of Little River at Rivervale, Ark.

LOCATION.--Lat 35°40'20", long 90°29'12" in SW 1/4 sec. 10, T.12 N., R.7 E., Poinsett County, Hydrologic Unit 08020204, at bridge on State Highway 135 at Rivervale, 9.0 upstream from St. Francis River.

DRAINAGE AREA.--2,106 square miles.

PERIOD OF RECORD.--April 1947 to April 1977.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

356

10-year recurrence interval

142

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

186

November-December

188

January-February

438

March-April

1,040

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

187

December

338

January

455

February

723

March

1,170

April

1,150

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07047500 St. Francis River at Marked Tree, Ark.**

LOCATION.--Lat 35°31'20", long 90°25'27" in SE 1/4 NW 1/4 sec. 2, T.10 N., R.6 E., Poinsett County, Hydrologic Unit 08020203, near left bank on downstream side of bridge on U.S. Highway 63 at Marked Tree, 5. mi downstream from Little River, 7.6 mi downstream from dam of Poinsett County Drainage District 7, and at mile 147.0.

DRAINAGE AREA.--5,148 square miles.

PERIOD OF RECORD.--April 1941 to September 1973.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

199

10-year recurrence interval

98.6

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

108

November-December

108

January-February

180

March-April

796

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

122

December

131

January

184

February

383

March

843

April

982

07047600 Tyronza River near Tyronza, Ark.

LOCATION.--Lat 35°30'18", long 90°22'48", Poinsett County, Hydrologic Unit 08020203, near Tyronza.

DRAINAGE AREA.--290 square miles.

PERIOD OF RECORD.--April 1949 to September 1974.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

47.8

10-year recurrence interval

29.0

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

30.5

November-December

31.0

January-February

38.6

March-April

55.1

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

33.8

December

33.4

January

38.2

February

55.2

March

61.3

April

73.6

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07047800 St. Francis River at Parkin, Ark.**

LOCATION.--Lat 35°16'23", long 90°33'33" referenced to North American Datum of 1927, in NE 1/4 SE 1/4 sec.33, T.8 N., R.5 E., Cross County, Ark., Hydrologic Unit 08020203, at bridge on U.S. Highway 64 at Parkin, 1.1 mi downstream from Tyronza River, and at mile 102.0.

DRAINAGE AREA.--Indeterminate. Total drainage area of St. Francis River and St. Francis Bay, 6,475 square miles.

PERIOD OF RECORD.--April 1941 to September 1982, October 1985 to September 1994, and October 1997 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

409

10-year recurrence interval

98.7

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

134

November-December

135

January-February

292

March-April

905

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

146

December

211

January

293

February

673

March

972

April

1,220

07047810 St. Francis River Floodway near Marked Tree, Ark.

LOCATION.--Lat 35°32'15", long 90°29'05" in SE 1/4 NE 1/4 sec.31, T.11 N., R.6 E., Poinsett County, Hydrologic Unit 08020203, at bridge on U.S. Highway 63, 3.6 mi northwest of Marked Tree.

DRAINAGE AREA.--Undetermined.

PERIOD OF RECORD.--October 1934 to September 1970; October 1990 to September 2004.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

193

March-April

456

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

159

January

412

February

330

March

605

April

862

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07047900 St. Francis Bay at Riverfront, Ark.**

LOCATION.--Lat 35°15'34", long 90°40'48" referenced to North American Datum of 1927, in NW 1/4 NW 1/4 sec.4, T.7 N., R.4 E., Cross County, Ark., Hydrologic Unit 08020203, at bridge on U.S. Highway 64 at Riverfront, 7.0 mi west of Parkin.

DRAINAGE AREA.--Indeterminate. Total drainage area of St. Francis River and St. Francis Bay, 6,475 square miles.

PERIOD OF RECORD.--April 1941 to September 1982, October 1985 to September 1994, and October 1997 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

242

10-year recurrence interval

74.3

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

106

November-December

110

January-February

576

March-April

1,080

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

112

December

370

January

823

February

782

March

1,720

April

1,180

07047902 St. Francis River at Latitude of Wittsburg, Ark.

LOCATION.--Lat 35°13'00", long 90°38'00", Cross County, Hydrologic Unit 08020203.

DRAINAGE AREA.--6,475 square miles, combined drainage area of St. Francis River at Parkin, and St. Francis Bay at Riverfront.

PERIOD OF RECORD.--January 1935 to September 1977.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

949

10-year recurrence interval

430

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

516

November-December

514

January-February

1,320

March-April

3,050

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

514

December

860

January

1,380

February

1,990

March

3,500

April

3,490

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07047942 L'Anguille River near Colt, Ark.**

LOCATION.--Lat 35°08'40", long 90°52'40" referenced to North American Datum of 1927, in NE 1/4 NW 1/4 sec.15, T.6 N., R.2 E., St Francis County, Ark., Hydrologic Unit 08020205, near center of span on downstream side of bridge on State Highway 306, 1.1 mi downstream from Lick Creek, 3.9 mi northwest of Colt, and at mile 52.8.

DRAINAGE AREA.--535 square miles.

PERIOD OF RECORD.--October 1970 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

7.84

10-year recurrence interval

2.21

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

4.86

November-December

4.51

January-February

44.6

March-April

39.4

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

4.73

December

26.7

January

54.2

February

115

March

92.5

April

46.1

07047950 L'Anguille River at Palestine, Ark.

LOCATION.--Lat 34°58'20", long 90°53'10" referenced to North American Datum of 1983, in NW 1/4 sec.10, T.4 N., R.2 E., St Francis County, Ark., Hydrologic Unit 08020205, at bridge on U.S. Highway 70 1.0 mi east of Palestine, and at mile 33.6.

DRAINAGE AREA.--786 square miles.

PERIOD OF RECORD.--April 1949 to September 1977 and October 1997 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

2.70

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

48.3

March-April

38.9

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

2.26

January

53.7

February

168

March

202

April

41.2

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07048000 West Fork White River at Greenland, Ark.**

LOCATION.--Lat 35°58'50", long 94°10'05", in NW 1/4 sec. 16, T.15 N., R.30 W., Washington County, Hydrologic Unit 11010001, at highway bridge 800 ft upstream of bridge on U.S. Highway 71, and 1.0 mi south of Greenland.

DRAINAGE AREA.--83.1 square miles.

PERIOD OF RECORD.--October 1945 to October 1983.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.15

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November - April

0.00

November - December

0.00

January-February

2.57

March - April

12.5

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.73

January

2.69

February

10.3

March

14.1

April

21.4

7048600 White River near Fayetteville, Ark.

LOCATION.--Lat 36°04'23", long 94°04'52" referenced to North American Datum of 1927, in NE 1/4 SW 1/4 sec.8, T.16 N., R.29 W., Washington County, Ark., Hydrologic Unit 11010001, on left abutment, downstream side of bridge, 0.6 mi downstream from West Fork White River, 0.8 mi downstream from Lake Sequoyah Dam on White River, 4.3 mi east of Fayetteville and at mile 684.0.

DRAINAGE AREA.--400 square miles.

PERIOD OF RECORD.--October 1963 to December 1994 , October 1998 to September 2005.

REMARKS.-- --None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

3.23

10-year recurrence interval

0.80

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November - April

3.68

November - December

3.79

January-February

24.4

March - April

67.5

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

3.68

December

15.1

January

24.3

February

53.8

March

81.6

April

128

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07049000 War Eagle Creek near Hindsville, Ark.**

LOCATION.--Lat 36°12'00", long 93°51'18" referenced to North American Datum of 1927, in SW 1/4 SE 1/4 NE 1/4 sec.28, T.18 N., R.27 W., Madison County, Ark., Hydrologic Unit 11010001, on left bank about 800 ft above bridge on State Highway 45, 3.9 mi north of Hindsville, and at mile 22.4.

DRAINAGE AREA.--263 square miles.

PERIOD OF RECORD.--July 1952 to September 1970 , October 1998 to September 2005.

REMARKS.--None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

10.1

10-year recurrence interval

2.22

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

6.37

November-December

6.48

January-February

13.1

March-April

36.6

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

6.45

December

10.7

January

13.6

February

26.6

March

42.8

April

56.4

07049500 Beaver Lake at Highway 12 Bridge near Rogers, Ark.

LOCATION.--Lat 36°19'56", long 94°01'08" in SE 1/4 NW 1/4 sec.12, T.19 N., R.29 W., Benton County, Hydrologic Unit 11010001, at bridge on State Highway 12, 5.3 mi east of Rogers.

DRAINAGE AREA.--1,020 square miles.

PERIOD OF RECORD.--October 1952 to September 1963.

REMARKS.--Highly regulated (highly altered). Prior to 1964 published as White River near Rogers.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

37.9

10-year recurrence interval

6.83

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

25.4

November-December

24.8

January-February

48.0

March-April

173

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

24.3

December

43.5

January

47.6

February

146

March

211

April

235

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07050000 White River at Beaver, Ark.**

LOCATION.--Lat 36°28'28", long 93°45'54" in NE 1/4 SE 1/4 sec.20, T.21 N., R.26 W., Carroll County, Hydrologic Unit 11010001, at bridge on State Highway 187, 0.4 mi downstream from Butler Creek, and 13 mi downstream from Beaver Dam.

DRAINAGE AREA.--1,244 square miles.

PERIOD OF RECORD.--October 1909 to September 1958.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

61.0

10-year recurrence interval

12.5

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

48.7

November-December

46.3

January-February

96.9

March-April

239

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

45.3

December

72.1

January

105

February

161

March

260

April

358

07050500 Kings River near Berryville, Ark.

LOCATION.--Lat 36°25'38", long 93°37'15" referenced to North American Datum of 1983, in SE 1/4 NE 1/4 sec.3, T.20 N., R.25 W., Carroll County, Ark., Hydrologic Unit 11010001, on right downstream end of new bridge on State Highway 143, 1.5 mi downstream from Bee Creek, 2.5 mi upstream from Clabber Creek, 5.3 mi northwest of Berryville and at mile 35.1.

DRAINAGE AREA.--527 square miles.

PERIOD OF RECORD.--April 1939 to September 1975 , October 1992 to September 1995 , October 1998 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

12.1

10-year recurrence interval

2.30

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

11.8

November-December

11.6

January-February

36.7

March-April

80.0

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

11.2

December

25.4

January

38.4

February

63.3

March

93.6

April

122

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07053250 Yocum Creek near Oak Grove, Ark.**

LOCATION.--Lat 36°27'17", long 93°21'21" referenced to North American Datum of 1927, in NE 1/4 SW 1/4 NE 1/4 sec.30, T.21 N., R.22 W., Carroll County, Ark., Hydrologic Unit 11010001, on right bank 50 ft upstream from County Road 86, 0.4 mi upstream from Spring Creek, 1.2 mi downstream from Stillhouse Creek, and 4.7 mi east of Oak Grove.

DRAINAGE AREA.--52.8 square miles.

PERIOD OF RECORD.--May 1993 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

5.85

10-year recurrence interval

3.80

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

4.24

November-December

5.19

January-February

6.96

March-April

10.7

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

4.99

December

7.51

January

10.7

February

7.91

March

11.5

April

12.5

07055000 White River near Flippin, Ark.

LOCATION.--Lat 36°18'35", long 92°33'28" in NE 1/4 NW 1/4 sec.10, T.19 N., R.15 W., Marion County, Hydrologic Unit 11010003, on right bank 1.4 mi upstream from Hightower Creek, 3.2 mi northeast of Flippin.

DRAINAGE AREA.--6,081 square miles.

PERIOD OF RECORD.--January 1964 to September 1980.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

736

10-year recurrence interval

410

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

374

November-December

508

January-February

625

March-April

531

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

659

December

619

January

930

February

631

March

912

April

704

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07055875 Richland Creek near Witts Spring, Ark.**

LOCATION.--Lat 35°47'49", long 92°55'43" referenced to North American Datum of 1927, in SE 1/4 SE 1/4 SE 1/4 sec.6, T.13 N., R.18 W., Searcy County, Ark., Hydrologic Unit 11010005, 50 ft upstream from bridge on county road, 1,800 ft downstream from Falling Water Creek and 3.9 mi northwest of Witts Spring.

DRAINAGE AREA.--67.4 square miles.

PERIOD OF RECORD.--June 1995 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.12

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

2.02

November-December

2.18

January-February

8.85

March-April

21.5

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

2.04

December

10.4

January

9.95

February

9.97

March

22.6

April

28.8

07056000 Buffalo River near St. Joe, Ark.

LOCATION.--Lat 35°58'59.01", long 92°44'49.67" referenced to North American Datum of 1983, in SW 1/4 SW 1/4 sec.36, T.16 N., R.17 W., Searcy County, Ark., Hydrologic Unit 11010005, near right bank on downstream side of bridge on U.S. Highway 65, 1.2 mi downstream from Mill Creek, 4.0 mi upstream from Bear Creek, 4.5 mi southeast of St. Joe, and at mile 58.3.

DRAINAGE AREA.--829 square miles.

PERIOD OF RECORD.--October 1939 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

34.1

10-year recurrence interval

16.8

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

28.2

November-December

27.6

January-February

77.4

March-April

192

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

26.7

December

52.3

January

82.8

February

145

March

218

April

300

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07057000 Buffalo River near Rush**

LOCATION.--Lat 36°11'72", long 92°55'44", in NE 1/4 sec. 15, T.17 N., R.15 W., Marion County, Hydrologic Unit 11010005, 3.2 mi east of State Highway 14, and 1.4 mi southeast of Rush.

DRAINAGE AREA.--1,100 square miles.

PERIOD OF RECORD.--October 1928 to September 1970.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

59.0

10-year recurrence interval

26.0

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

48.6

November-December

47.9

January-February

105

March-April

227

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

47.6

December

76.1

January

110

February

167

March

246

April

374

07059000 Norfolk Lake near Henderson

LOCATION.--Lat 36°22'20", long 92°14'25"

DRAINAGE AREA.--1,610 square miles.

PERIOD OF RECORD.--October 1928 to April 1943.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

451

10-year recurrence interval

359

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

401

November-December

392

January-February

492

March-April

599

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

402

December

424

January

521

February

521

March

610

April

715

70 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07060000 North Fork River at Norfolk Dam near Norfolk, Ark.

LOCATION.--Lat 36°14'18", long 92°14'18" in SE 1/4 SW 1/4 sec.2, T.18 N., R.12 W., Baxter County, Hydrologic Unit 11010006, at Norfolk Dam, 3.9 mi northeast of Norfolk, and at mile 4.8.

DRAINAGE AREA.--1,808 square miles.

PERIOD OF RECORD.--October 1944 to September 1977.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval		10-year recurrence interval			
311		30.7			
Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval					
November-April	November-December	January-February		March-April	
39.0	117	63.2		189	
Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval					
November	December	January	February	March	April
197	181	77.7	94.3	220	252

07060500 White River at Calico Rock, Ark.

LOCATION.--Lat 36°06'58", long 92°08'35" referenced to North American Datum of 1927, in SE 1/4 NE 1/4 sec.22, T.17 N., R.11 W., Izard County, Ark., Hydrologic Unit 11010004, on left bank at Calico Rock, 200 ft upstream from bridge on State Highway 5, 700 ft upstream from Calico Creek, 3.2 mi downstream from Cataract Creek, 6.0 mi upstream from Piney Creek, and at mile 359.1.

DRAINAGE AREA.--9,978 square miles.

PERIOD OF RECORD.--January 1964 to September 2005.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval		10-year recurrence interval			
1,830		977			
Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval					
November-April	November-December	January-February		March-April	
1,050	1,080	1,730		1,950	
Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval					
November	December	January	February	March	April
1,320	1,260	1,850	2,380	2,730	2,360

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07060710 North Sylamore Creek near Fifty Six, Ark.**

LOCATION.--Lat 35°59'30", long 92°12'50" referenced to North American Datum of 1927, in SW 1/4 NW 1/4 sec.25, T.16 N., R.12 W., Stone County, Ark., Hydrologic Unit 11010004, on right bank 30 ft upstream from bridge on Ozark National Forest service road, 200 ft downstream from Gunner Creek, 2.7 mi north of Fifty-Six, and 7.0 mi upstream from South Sylamore Creek.

DRAINAGE AREA.--58.1 square miles.

PERIOD OF RECORD.--January 1966 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

2.93

10-year recurrence interval

1.81

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

3.30

November-December

3.13

January-February

4.36

March-April

6.36

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

3.25

December

4.01

January

4.50

February

6.07

March

6.93

April

8.36

07061000 White River at Batesville, Ark.

LOCATION.--Lat 35°34'35", long 91°38'28" referenced to North American Datum of 1927, Independence County, Ark., Hydrologic Unit 11010004, at highway bridge on State Highway 167 (old State Highway 11), at south edge of Batesville, Independence County, Hydrologic Unit 11010004, 0.25 mi above Lock & Dam No. 1, 1.0 mi below Polk Bayou, 32.0 mi above mouth of Black River, and about 179 mi upstream from gaging station at DeValls Bluff.

DRAINAGE AREA.--11,070 square miles.

PERIOD OF RECORD.--October 1986 to September 1994 and October 2000 to September 2005.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

2,350

10-year recurrence interval

1,150

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

1,130

November-December

1,360

January-February

1,970

March-April

3,020

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

1,610

December

1,870

January

2,070

February

4,470

March

4,880

April

3,250

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07064000 Black River near Corning, Ark.**

LOCATION.--Lat 36°24'07", long 90°32'29" referenced to North American Datum of 1927, in SW 1/4 NE 1/4 sec.4, T.20 N., R.5 E., Clay County, Ark., Hydrologic Unit 11010007, near left bank on downstream side of bridge on U.S. Highway 62, 2.2 mi east of Corning, 11.9 mi downstream from Cane Creek, and at mile 152.2.

DRAINAGE AREA.--1,749 square miles.

PERIOD OF RECORD.--June 1948 to September 1995 and October 1998 to September 2005.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

370

10-year recurrence interval

272

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

324

November-December

315

January-February

444

March-April

645

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

315

December

384

January

452

February

546

March

759

April

724

07069000 Black River at Pocahontas

LOCATION.--Lat 36°15'14", long 90°58'12" referenced to North American Datum of 1927, in SW 1/4 SW 1/4 sec.27, T.19 N., R.1 E., Randolph County, Ark., Hydrologic Unit 11010009, near right bank on downstream side of bridge on U.S. Highway 67 at Pocahontas, 2.2 mi downstream from Fourche River, 6.4 mi downstream from Current River, 18.1 mi upstream from Spring River, and at mile 90.1.

DRAINAGE AREA.--4,845 square miles.

PERIOD OF RECORD.--January 1936 to April 1948.

REMARKS.-- Highly regulated after 1948 (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

1,620

10-year recurrence interval

1,310

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

1,510

November-December

1,480

January-February

1,770

March-April

2,310

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

1,450

December

1,610

January

1,780

February

1,660

March

2,240

April

3,600

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07069000 Black River at Pocahontas, Ark.**

LOCATION.--Lat 36°15'14", long 90°58'12" referenced to North American Datum of 1927, in SW 1/4 SW 1/4 sec.27, T.19 N., R.1 E., Randolph County, Ark., Hydrologic Unit 11010009, near right bank on downstream side of bridge on U.S. Highway 67 at Pocahontas, 2.2 mi downstream from Fourche River, 6.4 mi downstream from Current River, 18.1 mi upstream from Spring River, and at mile 90.1.

DRAINAGE AREA.--4,845 square miles.

PERIOD OF RECORD.--May 1948 to September 1970, October 2001 to September 2005.

REMARKS.-- Highly regulated after 1948.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

1,670

10-year recurrence interval

1,280

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

1,390

November-December

1,390

January-February

1,570

March-April

2,460

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

1,390

December

1,510

January

1,590

February

2,040

March

2,710

April

2,920

07069190 Mammoth Spring at Mammoth Spring, Ark.

LOCATION.--Lat 36°29'53", long 91°32'08", in SE 1/4 SW 1/4 sec.5, T.21 N., R.5 W., Fulton County, Ark., Hydrologic Unit 11010010, at north bank of spring outlet pool, 0.25 mi upstream from confluence of Mammoth Spring and Warm Fork at town of Mammoth Spring, Ark.

DRAINAGE AREA.--undetermined.

PERIOD OF RECORD.-- March 1981 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

232

10-year recurrence interval

192

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

187

November-December

187

January-February

215

March-April

253

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

193

December

193

January

215

February

256

March

269

April

267

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07069500 Spring River at Imboden, Ark.**

LOCATION.--Lat 36°12'19", long 91°10'19" referenced to North American Datum of 1927, in SE 1/4 NE 1/4 sec.15, T.18 N., R.2 W., Randolph County, Ark., Hydrologic Unit 11010010, near left bank on downstream side of bridge on U.S. Highway 62 at Imboden, 1.8 mi upstream from Harding Creek, 3.9 mi downstream from Janes Creek, 8.2 mi upstream from Eleven Point River, and at mile 12.1.

DRAINAGE AREA.--1,183 square miles.

PERIOD OF RECORD.--April 1936 to September 1994, October 2001 to September 2003, and October 2004 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

380

10-year recurrence interval

287

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

306

November-December

308

January-February

360

March-April

549

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

308

December

332

January

366

February

453

March

590

April

642

07072500 Black River at Black Rock, Ark.

LOCATION.--Lat 36°06'15", long 91°05'50" referenced to North American Datum of 1927, in NW 1/4 sec.21, T.17 N., R.1 W., Lawrence County, Ark., Hydrologic Unit 11010009, on right bank beneath U.S. Highway 63 bridge at Black Rock, 3.7 mi downstream from Spring River, and at mile 69.3.

DRAINAGE AREA.--7,369 square miles.

PERIOD OF RECORD.-- June 1948 to September 2005.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

2,720

10-year recurrence interval

2,060

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

2,130

November-December

2,120

January-February

2,620

March-April

3,920

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

2,120

December

2,310

January

2,700

February

3,250

March

4,400

April

4,500

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07073000 Strawberry River near Evening Shade, Ark.**

LOCATION.--Lat 36°10'41", long 91°44'19", in NW 1/4 sec. 33, T.18 N., R.7 W., IZARD County, Hydrologic Unit 11010012, at bridge on State Highway 56, 2.1 mi east of Franklin.

DRAINAGE AREA.--155 square miles.

PERIOD OF RECORD.--March 1939 to September 1979.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

10.5

10-year recurrence interval

61.6

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

7.88

November-December

7.74

January-February

16.0

March-April

36.4

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

7.58

December

12.6

January

17.5

February

26.8

March

42.8

April

44.3

07073500 Piney Fork at Evening Shade, Ark.

LOCATION.--Lat 36°04'50", long 91°36'39", in SE 1/4 NE 1/4 sec.34, T.17 N., R.6 W., SHARP County, Hydrologic Unit 11010012, on right bank, 20 ft upstream from bridge on U.S. Highway 167, 0.8 mi north of Evening Shade.

DRAINAGE AREA.--99.2 square miles.

PERIOD OF RECORD.--March 1939 to November 1984.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

2.43

10-year recurrence interval

0.16

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

1.79

November-December

1.75

January-February

6.08

March-April

16.9

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

1.80

December

4.17

January

6.54

February

12.4

March

20.4

April

21.0

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07074000 Strawberry River near Poughkeepsie, Ark.**

LOCATION.--Lat 36°07'37", long 91°26'59", in SE 1/4 NW 1/4 sec. 19, T.17 N., R.4 W., Sharp County, Hydrologic Unit 11010012, on left bank 250 ft upstream of bridge on State Highway 58, 0.5 mi downstream from Hurricane Creek, 2.5 mi northeast of Poughkeepsie, and at mile 35.9.

DRAINAGE AREA.--473 square miles.

PERIOD OF RECORD.--April 1936 to September 1994 , October 2001 to September 2004.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

53.5

10-year recurrence interval

41.7

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

48.6

November-December

48.1

January-February

75.2

March-April

131

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

47.9

December

62.5

January

78.5

February

113

March

153

April

155

07074500 White River at Newport, Ark.

LOCATION.--Lat 35°36'18", long 91°17'19" referenced to North American Datum of 1983, in NE 1/4 NE 1/4 sec.10, T.11 N., R.3 W., Jackson County, Ark., Hydrologic Unit 11010013, The gage is approximately 60 ft below the State Highway 367 bridge, which crosses the White River at Newport. This is at river mile 254.7 on the White River (from maps of White River, May 1973).

DRAINAGE AREA.--19,860 square miles.

PERIOD OF RECORD.--January 1964 to September 2005.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

6,270

10-year recurrence interval

4,190

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

4,290

November-December

4,290

January-February

6,070

March-April

8,490

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

4,410

December

5,290

January

6,350

February

7,620

March

10,100

April

9,840

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07075000 Middle Fork Little Red River at Shirley**

LOCATION.--Lat 35°39'25", long 92°17'34", in SW1/4SW1/4, sec.20, T.12 N, R.11 W., Van Buren County, Hydrologic Unit 11010014, on right bank 05 mi downstream from Sugar Camp or Weavers Creek, 1.0 mi east of Shirley, and at mile 122.0.

DRAINAGE AREA.--302 square miles.

PERIOD OF RECORD.--March 1939 to September 1984.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.90

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.49

November-December

0.47

January-February

29.4

March-April

74.4

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.46

December

21.5

January

30.6

February

60.6

March

93.2

April

96.3

07075300 South Fork of Little Red River at Clinton, Ark.

LOCATION.--Lat 35°35'12.77", long 92°27'05.37" referenced to North American Datum of 1927, in SW 1/4 sec.14, T.11 N., R.14 W., Van Buren County, Ark., Hydrologic Unit 11010014, at U.S. Highway 65, 0.25 mi upstream from Archey Fork at Clinton.

DRAINAGE AREA.--148 square miles.

PERIOD OF RECORD.--October 1961 to September 1994 , September 2001 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.23

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

1.43

November-December

1.39

January-February

22.5

March-April

51.6

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

1.37

December

14.5

January

23.9

February

46.6

March

67.4

April

59.7

78 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07075500 South Fork Little Red River near Clinton, Ark.

LOCATION.--Lat 35°34'00", long 92°23'00", Van Buren County, Hydrologic Unit 11010014, near Clinton.

DRAINAGE AREA.--316 square miles.

PERIOD OF RECORD.--March 1939 to December 1961.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
0.58	0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
0.01	0.01	24.4	90.9

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
0.01	7.89	25.9	73.1	107	143

07076000 Little Red River near Heber Springs, Ark.

LOCATION.--Lat 35°31'02", long 91°59'50" in NE 1/4 sec.7, T.10 N., R.9 W., Cleburne County, Hydrologic Unit 11010014, on right bank 1,600 ft downstream from Greers Ferry Dam, 3.0 mi northeast of Heber Springs, and at mile 78.8.

DRAINAGE AREA.--1,153 square miles.

PERIOD OF RECORD.--August 1964 to September 1980.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
105	47.6

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
50.3	60.2	100	91.8

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
80.4	84.5	182	124	153	124

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07076620 Little Red River near Searcy, Ark.**

LOCATION.--Lat 35°16'57", long 91°43'09" in NE 1/4 NE 1/4 sec.35, T.8 N., R.7 W., White County, Hydrologic Unit 11010014, on right bank 0.8 mi upstream from lower dam, and 1.0 mi upstream from old Highway 67 bridge, 2.0 mi north of Searcy, and at mile 31.7.

DRAINAGE AREA.--1,648 square miles.

PERIOD OF RECORD.--June 1983 to September 1996.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

145

10-year recurrence interval

2.65

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

25.3

November-December

25.8

January-February

161

March-April

473

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

30.3

December

86.3

January

179

February

342

March

814

April

512

07076850 Cypress Bayou near Beebe, Ark.

LOCATION.--Lat 35°01'30", long 91°52'23", in SW 1/4 sec. 28, T.5 N., R.8 W., White-Lonoke County line, Hydrologic Unit 08020301, at bridge on State Highway 31, 3.0 mi south of Beebe.

DRAINAGE AREA.--166 square miles.

PERIOD OF RECORD.--October 1961 to September 1976.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

12.8

March-April

7.51

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

1.17

January

14.0

February

27.1

March

30.4

April

7.34

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07077000 White River at DeValls Bluff, Ark.**

LOCATION.--Lat 34°47'25", long 91°26'45" referenced to North American Datum of 1927, in SE 1/4 sec.17, T.2 N., R.4 W., Prairie County, Ark., Hydrologic Unit 08020301, near center of span on downstream side of bridge on U.S. Highway 70, 1.0 mi northeast of DeValls Bluff, 7.5 mi downstream from Wattensaw Bayou, 24.1 mi upstream from Cache River, and at mile 125.3.

DRAINAGE AREA.--23,431 square miles.

PERIOD OF RECORD.--January 1964 to September 1970 and October 1988 to September 2005.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

7,130

10-year recurrence interval

4,960

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

4,960

November-December

4,940

January-February

7,450

March-April

10,500

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

5,200

December

6,190

January

7,820

February

10,300

March

12,800

April

13,000

07077380 Cache River at Egypt, Ark.

LOCATION.--Lat 35°51'28", long 90°56'00" referenced to North American Datum of 1927, in NW 1/4 SE 1/4 sec.12, T.14 N., R.1 E., Craighead County, Ark., Hydrologic Unit 08020302, on left upstream abutment of bridge on State Highway 91, 50 ft downstream from junction of East Cache River Ditch (Cache River channel separation), 1.0 mi southeast of Egypt, 2.2 mi northwest of Winesburg, and at mile 143.

DRAINAGE AREA.--701 square miles.

PERIOD OF RECORD.--October 1964 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

0.00

March-April

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.00

January

0.00

February

0.00

March

0.00

April

0.00

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07077500 Cache River at Patterson, Ark.**

LOCATION.--Lat 35°16'10", long 91°14'15" referenced to North American Datum of 1927, in SE 1/4 sec.31, T.8 N., R.2 W., Woodruff County, Ark., Hydrologic Unit 08020302, at bridge on U.S. Highway 64 at Patterson, 10.9 mi upstream from Maple Slough, and at mile 77.2.

DRAINAGE AREA.--1,037 square miles.

PERIOD OF RECORD.--October 1927 to September 1931, October 1937 to September 1977, and October 1997 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

48.9

10-year recurrence interval

9.91

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

15.4

November-December

15.0

January-February

63.0

March-April

96.3

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

14.8

December

41.6

January

73.5

February

116

March

195

April

114

07077555 Cache River near Cotton Plant, Ark.

LOCATION.--Lat 35°02'07", long 91°19'19" referenced to North American Datum of 1927, in SE 1/4 SW 1/4 sec.21, T.5 N., R.3 W., Woodruff County, Ark., Hydrologic Unit 08020302, on left bank on downstream side of bridge on county road, 1.4 mi upstream from Roaring Slough, and 4.2 mi northwest of Cotton Plant.

DRAINAGE AREA.--1,172 square miles.

PERIOD OF RECORD.--April 1987 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

46.8

10-year recurrence interval

15.6

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

19.4

November-December

17.0

January-February

151

March-April

133

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

18.2

December

57.6

January

249

February

252

March

247

April

156

82 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07077700 Bayou DeView near Morton, Ark.

LOCATION.--Lat 35°15'07", long 91°06'37" referenced to North American Datum of 1927, in sec.5, T.7 N., R.1 W., Woodruff County, Ark., Hydrologic Unit 08020302, at bridge on U.S. Highway 64, 1.0 mi west of Morton, and at mile 39.6.

DRAINAGE AREA.--421 square miles.

PERIOD OF RECORD.--April 1939 to May 1973, October 1973 to September 1977, and October 1997 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
0.00	0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
0.00	0.00	0.00	1.57

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
0.00	0.00	0.00	24.1	27.8	2.00

07077800 White River at Clarendon, Ark.

LOCATION.--Lat 34°41'08", long 91°18'55" in W 1/4 sec.22, T.1 N., R.3 W., Monroe County, Hydrologic Unit 08020303, at St. Louis Southwestern Railroad bridge at Clarendon, 1.1 mi downstream from Cache River and at mile 100.1.

DRAINAGE AREA.--25,555 square miles.

PERIOD OF RECORD.--January 1964 to September 1981.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
8,700	6,100

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
6.280	6,530	7,590	10,600

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
6,540	8,030	8,000	9,040	12,500	13,000

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07077930 Big Creek near Moro, Ark.**

LOCATION.--Lat 34°50'50", long 91°00'35" in NW 1/4 sec.28, T.3 N., R.1 E., Lee County, Hydrologic Unit 08020304, at bridge on State Highway 78, 3.5 mi north of Moro.

DRAINAGE AREA.--77.4 square miles.

PERIOD OF RECORD.--November 1961 to September 1970.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.13

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

2.24

March-April

0.66

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.00

January

2.06

February

6.97

March

1.46

April

0.66

07077950 Big Creek at Poplar Grove, Ark.

LOCATION.--Lat 34°33'20", long 90°50'44" in NE 1/4 NE 1/4 sec.1, T.2 S., R.2 E., Phillips County, Hydrologic Unit 08020304, near right bank on downstream side of bridge on U.S. Highway 49, at Poplar Grove, 900 ft upstream from Crooked Creek, and 3.9 mi east of Marvel.

DRAINAGE AREA.--448 square miles, includes that of Crooked Creek. Area at site used prior to September 30, 1972, 459 square miles .

PERIOD OF RECORD.--October 1970 to September 1993.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

2.81

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

2.02

November-December

1.92

January-February

39.1

March-April

32.4

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

2.09

December

21.6

January

46.7

February

118

March

70.5

April

39.1

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07078000 LaGrue Bayou near Stuttgart, Ark.

LOCATION.--Lat 34°31'55", long 91°21'21" in NW 1/4 NW 1/4 sec.17, T.2 S., R.3 W., Arkansas County, Hydrologic Unit 08020303, at bridge on State Highway 146, 9.8 mi east of Stuttgart.

DRAINAGE AREA.--176 square miles.

PERIOD OF RECORD.--October 1935 to September 1954.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
0.08	0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
0.00	0.00	5.18	4.33

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
0.00	0.94	6.63	11.8	11.3	4.36

07194800 Illinois River at Savoy, Ark.

LOCATION.--Lat 36°06'11", long 94°20'40" referenced to North American Datum of 1927, SES36T17NR32W, Washington County, Ark., Hydrologic Unit 11110103, on eastern boundary of Ozark National Forest, on left bank downstream end of State Highway 16 bridge, 0.3 mi downstream from tributary of Lake Weddington, 0.4 mi upstream from Clear Creek, and 0.9 mi southwest of Savoy.

DRAINAGE AREA.--167 square miles.

PERIOD OF RECORD.--July 1979 to December 1981 , September 1985 to September 1986 , September 1995 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
8.26	3.65

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
8.21	8.94	11.3	15.4

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
9.80	10.5	12.2	14.2	17.8	20.5

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07195000 Osage Creek near Elm Springs, Ark.**

LOCATION.--Lat 36°13'19", long 94°17'18" referenced to North American Datum of 1927, in SW 1/4 NE 1/4 sec.21, T.18 N., R.31 W., Benton County, Hydrologic Unit 11110103, on left bank 0.7 mi downstream from Little Osage Creek, and 3.2 mi. northwest of Elm Springs.

DRAINAGE AREA.--130 square miles.

PERIOD OF RECORD.--October 1950 to September 1975, and August 1995 to September 2005.

REMARKS. Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

38.0

10-year recurrence interval

16.0

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

21.9

November-December

23.1

January-February

25.7

March-April

32.4

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

23.6

December

24.4

January

26.1

February

30.9

March

33.6

April

37.0

07195430 Illinois River South of Siloam Springs, Ark.

LOCATION.--Lat 36°06'31", long 94°32'00" referenced to North American Datum of 1983, in SE 1/4 NE 1/4 sec.31, T.17 N., R.33 W., Benton County, Ark., Hydrologic Unit 11110103, at bridge on State Highway 59, 5.0 mi south of Siloam Springs, and 0.6 mi downstream from mouth of Cincinnati Creek.

DRAINAGE AREA.--575 square miles.

PERIOD OF RECORD.--August 1995 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

122

10-year recurrence interval

95.1

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

127

November-December

124

January-February

165

March-April

186

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

122

December

170

January

169

February

183

March

208

April

222

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07195800 Flint Creek at Springtown, Ark.

LOCATION.--Lat 36°15'21.50", long 94°26'00.80" referenced to North American Datum of 1983, in NW 1/4 sec.7, T.13 N., R.32 W., Benton County, Ark., Hydrologic Unit 11110103, on right bank 20 ft downstream from State Highway 12, 0.8 mi southwest of Springtown.

DRAINAGE AREA.--14.2 square miles.

PERIOD OF RECORD.--July 1961 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
3.40	1.19

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
2.44	2.77	3.49	3.94

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
2.75	3.74	3.68	4.05	4.14	4.62

07195855 Flint Creek near West Siloam Springs, Ark.

LOCATION.--Lat 36°12'58", long 94°36'15" referenced to North American Datum of 1927, in NE 1/4 NE 1/4 sec.14, T.20 N., R.25 E., Delaware County, Hydrologic Unit 11110103, on left bank 800 ft downstream from county bridge, 2.5 mi from Arkansas-Oklahoma State line, northwest of West Siloam Springs, Okla.,

DRAINAGE AREA.--59.8 square miles.

PERIOD OF RECORD.--October 1979 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
6.67	1.62

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
5.48	6.43	7.04	8.94

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
6.49	8.36	7.06	8.41	9.65	12.9

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07196900 Baron Fork at Dutch Mills, Ark.**

LOCATION.--Lat 35°52'48", long 94°29'11" referenced to North American Datum of 1927, Washington County, Ark., Hydrologic Unit 11110103, near right bank on downstream side of bridge on State Highway 59 at Dutch Mills, 2.2 mi downstream from Fly Creek, and 2.9 mi upstream from Arkansas-Oklahoma State line.

DRAINAGE AREA.--40.6 square miles.

PERIOD OF RECORD.--April 1958 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.60

10-year recurrence interval

0.01

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.77

November-December

0.76

January-February

2.10

March-April

4.62

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.77

December

1.67

January

2.19

February

4.09

March

5.73

April

6.08

07247000 Poteau River at Cauthron, Ark.

LOCATION.--Lat 34°55'08", long 94°17'58" referenced to North American Datum of 1927, in NW 1/4 SE 1/4 sec.16, T.3 N., R.31 W., Scott County, Ark., Hydrologic Unit 11110105, on right bank at downstream side of Scott County Road No. 56 bridge at Cauthron, 200 ft south of juncton with State Hwy 28, 2.9 mi downstream from Cross Creek, 7.8 mi downstream from Jones Creek, and at mile 109.0.

DRAINAGE AREA.--203 square miles.

PERIOD OF RECORD.--March 1939 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.32

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.06

November-December

0.06

January-February

3.93

March-April

13.0

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.07

December

2.38

January

4.04

February

15.0

March

19.3

April

15.7

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07249400 James Fork near Hackett, Ark.

LOCATION.--Lat 35°09'45", long 94°24'25" referenced to North American Datum of 1927, in NW 1/4 NW 1/4 sec.34, T.6 N., R.32 W., Sebastian County, Ark., Hydrologic Unit 11110105, near left bank on downstream side of bridge on State Highway 45, 1.7 mi south of Hackett, 2.0 mi downstream from Elder Branch, 2.0 mi upstream from small tributary, and 3.6 mi upstream from Arkansas-Oklahoma State line.

DRAINAGE AREA.--147 square miles.

PERIOD OF RECORD.--April 1958 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.84

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.87

November-December

0.90

January-February

2.49

March-April

7.98

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.91

December

2.21

January

2.73

February

7.44

March

12.0

April

11.6

07249500 Cove Creek near Lee Creek, Ark.

LOCATION.--Lat 35°41'10", long 94°22'00", in SE 1/4 SW 1/4 sec. 26, T.12 N., R.32 W., Crawford County, Hydrologic Unit 11010104, at low-water crossing on unimproved road, 0.7 mi upstream from Lee Creek, and 1.0 mi west of Lee Creek.

DRAINAGE AREA.--35.3 square miles.

PERIOD OF RECORD.--May 1950 to September 1970.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.08

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

0.65

March-April

3.02

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.27

January

0.64

February

2.90

March

3.44

April

5.70

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07249985 Lee Creek near Short, Okla.**

LOCATION.--Lat 35°33'57", long 94°31'56" referenced to North American Datum of 1927, in SE 1/4 sec.27, T.13 N., R.26 E., Sequoyah County, Okla., Hydrologic Unit 11110104, on right bank at right downstream end of bridge on State Hwy 101, 0.5 mi west of Short, Okla.

DRAINAGE AREA.--236 square miles.

PERIOD OF RECORD.--October 1930 to June 1937 , October 1950 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.66

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.18

November-December

0.17

January-February

15.3

March-April

63.1

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.17

December

7.09

January

15.8

February

49.4

March

76.6

April

101

07250085 Lee Creek at Lee Creek Reservoir near Van Buren, Ark.

LOCATION.--Lat 35°29'02", long 94°23'34" referenced to North American Datum of 1927, SESW S03 T 09N R 32W5, Crawford County, Ark., Hydrologic Unit 11110104, in control house at dam on left bank, 2.8 mi northwest of Van Buren, and at mile 3.5.

DRAINAGE AREA.--432 square miles.

PERIOD OF RECORD.--October 1992 to September 2005.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

0.00

March-April

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.00

January

0.00

February

0.00

March

0.00

April

0.00

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07250550 Arkansas River at James W. Trimble L&D near Van Buren, Ark.

LOCATION.--Lat 35°20'56", long 94°17'54" referenced to North American Datum of 1927, in sec.28, T.8 N., R.31 W., Sebastian County, Ark., Hydrologic Unit 11110104, in metal shelter on dam and at mile 308.9.

DRAINAGE AREA.--150,547 square miles, of which 22,241 square miles is probably noncontributing.

PERIOD OF RECORD.--April 1970 to September 2005.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
2,250	878

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
1,180	1,200	2,520	4,100

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
1,470	2,100	2,730	3,840	5,760	5,320

07251000 Frog Bayou near Mountainburg, Ark.

LOCATION.--Lat 35°39'40", long 94°09'10" referenced to North American Datum of 1927, in NW 1/4 NE 1/4 sec. 2, T.11 N., R.30 W., Crawford County, Ark., Hydrologic Unit 11110201, on left bank above concrete weir in spillway of Fort Smith Dam 0.8 mi upstream from Warloop Creek, 1.2 mi upstream from Howard Fork, 2.5 mi northeast of Mountainburg, and 3 mi downstream from Jones Fork.

DRAINAGE AREA.--74.0 square miles.

PERIOD OF RECORD.--October 1936 to September 1961.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
0.00	0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
0.00	0.00	0.00	2.22

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
0.00	0.00	0.00	0.00	2.23	11.5

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07251500 Frog Bayou at Rudy, Ark.**

LOCATION.--Lat 35°31'32", long 94°16'18" referenced to North American Datum of 1927, in SW 1/4 SW 1/4 sec.23, T.10 N., R.31 W., Crawford County, Ark., Hydrologic Unit 11110104, at bridge on State Highway 282 at Rudy.

DRAINAGE AREA.--216 square miles.

PERIOD OF RECORD.--May 1950 to September 1970 and October 2002 to September 2004.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

1.01

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

3.57

March-April

19.4

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

2.38

January

3.57

February

17.2

March

22.6

April

44.4

07252000 Mulberry River near Mulberry, Ark.

LOCATION.--Lat 35°34'38", long 94°00'56" referenced to North American Datum of 1927, in SE 1/4 SW 1/4 sec.31, T.11 N., R.28 W., Franklin County, Ark., Hydrologic Unit 11110201, on left bank 0.6 mi upstream from Mill Creek, 5.7 mi north of Mulberry, and at mile 11.3.

DRAINAGE AREA.--373 square miles.

PERIOD OF RECORD.--June 1938 to January 1995 , October 1998 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

1.36

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

1.37

November-December

1.38

January-February

25.8

March-April

91.0

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

1.35

December

14.3

January

27.2

February

82.5

March

109

April

160

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07253000 Sixmile Creek at Chismville, Ark.

LOCATION.--Lat 35°13'15", long 93°56'20", in E 1/2 sec. 2, T.6 N., R.28 W., Logan County, Hydrologic Unit 11110202, on right bank on downstream side of highway bridge at Chismville, 0.5 mi downstream from Rocky Creek, and at mile 25.6.

DRAINAGE AREA.--24.1 square miles.

PERIOD OF RECORD.--July 1954 to April 1970.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

0.00

March-April

0.37

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.00

January

0.00

February

0.18

March

0.53

April

0.57

07253500 Sixmile Creek near Branch, Ark.

LOCATION.--Lat 35°14'55", long 93°58'28", in NE 1/4 SE 1/4 sec. 28, T.7 N., R.28 W., Franklin County, Hydrologic Unit 11110202, 0.4 mi downstream from Rattlesnake Creek, 1.0 mi upstream from Prairie Creek, 4.2 mi southwest of Branch, and at mile 21.5.

DRAINAGE AREA.--36.7 square miles.

PERIOD OF RECORD.--July 1954 to April 1970.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

0.00

March-April

1.31

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.00

January

0.00

February

0.60

March

1.86

April

1.56

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07255000 Sixmile Creek at Caulksville, Ark.**

LOCATION.--Lat 35°18'05", long 93°51'15", in SE 1/4 sec. 3, T.7 N., R.27 W., Logan County, Hydrologic Unit 11110202, at bridge on State Highway 22, 0.6 mi east of Caulksville.

DRAINAGE AREA.--104 square miles.

PERIOD OF RECORD.--July 1954 to April 1970.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.01

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

0.00

March-April

4.30

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.00

January

0.00

February

0.88

March

6.10

April

1.90

07255500 Hurricane Creek near Branch, Ark.

LOCATION.--Lat 35°21'03", long 93°56'02", on line between and near south edge of secs. 23 and 24, T.8 N., R.28 W., Franklin County, Hydrologic Unit 11110202, at center of span on downstream side of bridge on State Highway 41, 1.5 mi upstream from Perry Creek, 3.2 mi northeast of Branch, and at mile 9.0

DRAINAGE AREA.--17.2 square miles.

PERIOD OF RECORD.--July 1954 to April 1970.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

0.00

March-April

0.82

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.00

January

0.00

February

0.24

March

2.25

April

0.49

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07256000 Hurricane Creek near Caulksville, Ark.

LOCATION.--Lat 35°20'49", long 93°51'44", in SE 1/4 sec. 21, T.8 N., R.27 W., Franklin County, Hydrologic Unit 11110202, at bridge on State Highway 23, 3.2 mi north of Caulksville.

DRAINAGE AREA.--53.0 square miles.

PERIOD OF RECORD.--July 1954 to April 1970.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

0.00

March-April

1.84

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.00

January

0.00

February

1.01

March

5.46

April

0.97

07256500 Spadra Creek at Clarksville, Ark.

LOCATION.--Lat 35°28'06", long 93°27'46" in NW 1/4 NE 1/4 sec.5, T.9 N., R.23 W., Johnson County, Hydrologic Unit 11110202, on right bank at Clarksville, 0.2 mi downstream from bridge on U.S. Highway 64.

DRAINAGE AREA.--61.1 square miles.

PERIOD OF RECORD.--October 1952 to September 1970.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

1.48

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

1.10

March-April

10.1

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.82

January

1.11

February

7.83

March

12.7

April

12.2

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07257006 Big Piney Creek at Highway 164 near Dover, Ark.**

LOCATION.--Lat 35°30'20.8", long 93°10'53.2" referenced to North American Datum of 1983, in SE 1/4 NW 1/4 sec.25, T.10 N., R.21 W., Pope County, Ark., Hydrologic Unit 11110202, on right bank 11.9 mi downstream from Indian Creek, 7.2 mi north of Dover, and at mile 23 on State Highway 164 bridge.

DRAINAGE AREA.--297 square miles.

PERIOD OF RECORD.--October 1950 to September 1995 , October 1998 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.79

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

1.03

November-December

1.01

January-February

23.6

March-April

78.3

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.99

December

16.9

January

23.8

February

70.2

March

94.1

April

121

07257500 Illinois Bayou near Scottsville, Ark.

LOCATION.--Lat 35°27'59", long 93°02'28" referenced to North American Datum of 1927, in SE 1/4 SW 1/4 sec.31, T.10 N., R.19 W., Pope County, Ark., Hydrologic Unit 11110202, on downstream side of bridge on State Highway 164, 1.3 mi north of Scottsville, and 3.1 mi downstream from North Fork Illinois Bayou.

DRAINAGE AREA.--241 square miles.

PERIOD OF RECORD.--October 1947 to September 1970 , October 1999 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

1.05

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.18

November-December

0.18

January-February

17.1

March-April

65.7

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.18

December

7.05

January

17.7

February

51.8

March

88.1

April

80.1

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07258000 Arkansas River at Dardanelle, Ark.

LOCATION.--Lat 35°13'34", long 93°08'58" in SW1/4 sec.29, T.7 N., R.20 W., Pope County, Hydrologic Unit 11110203, near left bank on upstream side of bridge on State Highway 7 at Dardanelle, 1.0 mi upstream from Whig Creek, 2.0 mi downstream from Dardanelle Dam, 4.7 mi downstream from Illinois Bayou, and at mile 219.5.

DRAINAGE AREA.--153,670 square miles of which 22, 241 square miles are probably noncontributing.

PERIOD OF RECORD.--April 1970 to September 1994, October 2000 to September 2003.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

1,980

10-year recurrence interval

743

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

1,210

November-December

1,200

January-February

2,950

March-April

5,480

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

1,480

December

2,020

January

3,030

February

4,410

March

7,680

April

6,550

07258500 Petit Jean River near Booneville, Ark.

LOCATION.--Lat 35°06'25", long 93°55'25" referenced to North American Datum of 1927, in NW 1/4 NW 1/4 sec.18, T.5 N., R.27 W., Logan County, Ark., Hydrologic Unit 11110204, on right bank at downstream side of bridge on State Highway 23, 0.5 mi downstream from Fletcher Creek, 2.3 mi south of Booneville.

DRAINAGE AREA.--241 square miles.

PERIOD OF RECORD.--November 1938 to September 1984 , October 1999 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.04

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

1.60

March-April

14.5

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.44

January

1.67

February

9.22

March

21.1

April

19.3

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07259500 Petit Jean River near Waveland, Ark.**

LOCATION.--Lat 35°06'17", long 93°37'53" in SE 1/4 SE 1/4 sec.11, T.5 N., R.25 W., Yell County, Ark., Hydrologic Unit 11110204, at Blue Mountain Dam, 1.9 mi southwest of Waveland, and at mile 74.4.

DRAINAGE AREA.--516 square miles.

PERIOD OF RECORD.--February 1939 to September 1980.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

4.95

10-year recurrence interval

0.34

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

1.08

November-December

1.05

January-February

6.32

March-April

16.2

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

1.10

December

3.65

January

7.27

February

15.1

March

22.2

April

22.0

07260000 Dutch Creek at Waltreak, Ark.

LOCATION.--Lat 34°53'13.3", long 93°36'47.1" referenced to North American Datum of 1927, in SE 1/4 NW 1/4 sec.24, T.4 N., R.25 W., Yell County, Ark., Hydrologic Unit 11110204, on left bank 0.2 mi north of Waltreak and 21.0 mi upstream from mouth.

DRAINAGE AREA.--81.4 square miles.

PERIOD OF RECORD.--October 1945 to November 1975 , October 1999 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

1.49

March-April

8.11

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.44

January

1.55

February

8.48

March

14.1

April

8.51

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07260500 Petit Jean River at Danville, Ark.

LOCATION.--Lat 35°03'31.6", long 93°23'44.2" referenced to North American Datum of 1983, in NW 1/4 SE 1/4 sec.25, T.5 N., R.23 W., Yell County, Ark., Hydrologic Unit 11110204, on right bank 125 ft upstream of bridge on State Highway 10 at Danville, 0.3 mi upstream from old Chicago Rock Island and Pacific Railroad Co. Bridge, 0.5 mi upstream from Spring Creek, 0.6 mi downstream from Dutch Creek, and at mile 48.8.

DRAINAGE AREA.--764 square miles.

PERIOD OF RECORD.--June 1916 to April 1946

REMARKS.-- Highly regulated after 1946 (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
2.97	0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
1.64	1.60	53.6	80.2

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
1.66	23.7	58.3	67.9	115	112

07260500 Petit Jean River at Danville, Ark.

LOCATION.--Lat 35°03'31.6", long 93°23'44.2" referenced to North American Datum of 1983, in NW 1/4 SE 1/4 sec.25, T.5 N., R.23 W., Yell County, Ark., Hydrologic Unit 11110204, on right bank 125 ft upstream of bridge on State Highway 10 at Danville, 0.3 mi upstream from old Chicago Rock Island and Pacific Railroad Co. Bridge, 0.5 mi upstream from Spring Creek, 0.6 mi downstream from Dutch Creek, and at mile 48.8.

DRAINAGE AREA.--764 square miles.

PERIOD OF RECORD.--May 1946 to September 2005.

REMARKS.-- Highly regulated after 1946 (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
6.21	0.60

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
1.93	1.74	18.6	45.4

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
1.78	8.12	20.6	55.8	72.0	59.7

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07261000 Cadron Creek near Guy, Ark.**

LOCATION.--Lat 35°17'55", long 92°24'14" referenced to North American Datum of 1983, in NW 1/4 SE 1/4 sec.29, T.8 N., R.13 W., Faulkner County, Ark., Hydrologic Unit 11110205, on left bank on downstream side of bridge on U.S. Highway 65, 4.3 mi southwest of Guy, 10.5 mi upstream from Cove Creek, and at mile 48.3.

DRAINAGE AREA.--169 square miles.

PERIOD OF RECORD.--October 1954 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.10

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.31

November-December

0.30

January-February

34.7

March-April

54.8

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.33

December

13.5

January

35.9

February

70.3

March

83.1

April

60.5

07261500 Fourche LaFave River near Gravelly, Ark.

LOCATION.--Lat 34°52'24.0", long 93°39'23.6" referenced to North American Datum of 1927, in NW 1/4 NW 1/4 sec.34, T.3 N., R.25 W., Yell County, Ark., Hydrologic Unit 11110206, near left bank on downstream side of bridge on State Highway 28, 1.2 mi downstream from Garner Creek, 1.9 mi east of Gravelly, 6.4 mi upstream from Gaffords Creek, and at mile 103.7.

DRAINAGE AREA.--410 square miles.

PERIOD OF RECORD.--March 1939 to September 1994 , October 1999 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.70

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

18.1

March-April

67.3

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

10.2

January

19.2

February

56.2

March

93.6

April

80.0

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

7262500 Fourche LaFave River near Nimrod, Ark.

LOCATION.--Lat 34°57'02", long 93°09'16" in NE 1/4 SW 1/4 sec.32, T.4 N., R.20 W., Perry County, Ark., Hydrologic Unit 11110206, at Nimrod Dam 4.5 mi southwest of Nimrod.

DRAINAGE AREA.--684 square miles.

PERIOD OF RECORD.--April 1936 to September 1980.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
2.31	0.28

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
0.64	0.67	9.71	12.3

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
0.79	3.42	10.9	37.1	29.6	20.3

007263000 South Fourche LaFave River near Hollis, Ark.

LOCATION.--Lat 34°54'41", long 93°01'21", in SE 1/4 NE 1/4 sec. 18, T.3 N., R.19 W., Perry County, Hydrologic Unit 11110206, on left bank 0.8 mi upstream from Big Cove Creek, 2.1 mi downstream from Cedar Creek, 4.0 mi northeast of Hollis, and at mile 5.6.

DRAINAGE AREA.--210 square miles.

PERIOD OF RECORD.--June 1941 to September 1995.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
0.11	0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
0.13	0.12	13.3	24.6

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
0.13	7.98	14.0	38.3	39.2	29.1

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07263295 Maumelle River at Williams Junction, Ark.

LOCATION.--Lat 34°52'34", long 92°46'28" referenced to North American Datum of 1927, in SE 1/4 NE 1/4 sec.26, T.3 N., R.17 W., Perry County, Ark., Hydrologic Unit 11110207, near left bank on downstream side of State Highway 9 bridge 0.4 mi south of Williams Junction.

DRAINAGE AREA.--46.1 square miles.

PERIOD OF RECORD.--October 1989 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

4.80

March-April

4.53

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

3.64

January

5.61

February

5.90

March

7.63

April

4.77

07263300 Maumelle River at Maumelle Dam at Natural Steps, Ark.

LOCATION.--Lat 34°51'47", long 92°29'07" referenced to North American Datum of 1983, in SW 1/4 SE 1/4 sec.27, T.3 N., R.14 W., Pultaski County, Ark., Hydrologic Unit 11110207, at right bank 100 ft upstream from spillway, 0.5 mi west of Natural Steps.

DRAINAGE AREA.--137 square miles.

PERIOD OF RECORD.--October 1989 to September 2005.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

0.00

March-April

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.00

January

0.00

February

0.00

March

0.00

April

0.00

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07263450 Arkansas River at Murray Dam near Little Rock, Ark.

LOCATION.--Lat 34°47'27", long 92°21'32" referenced to North American Datum of 1927, in sec.23, T.2 N., R.13 W., Pulaski County, Ark., Hydrologic Unit 11110207, in metal shelter on dam and at mile 141.5.

DRAINAGE AREA.--158,030 square miles, of which 22,241 square miles probably is noncontributing.

PERIOD OF RECORD.--April 1970 to September 2005.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
2,320	819

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
1,440	1,420	4,520	6,460

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
1,570	3,160	4,720	7,160	8,990	9,000

07264000 Bayou Meto near Lonoke, Ark.

LOCATION.--Lat 34°44'13", long 91°54'58" referenced to North American Datum of 1927, in SW 1/4 sec.6, T.1 N., R.8 W., Lonoke County, Ark., Hydrologic Unit 08020402, near left bank on downstream side of bridge on State Highway 31, 3.0 mi upstream from Brushy Slough, and 3.5 miles south of Lonoke, and at mile 106.4.

DRAINAGE AREA.--207 square miles.

PERIOD OF RECORD.--October 1954 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
2.28	0.03

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
0.88	0.81	17.5	38.3

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
0.79	7.58	18.5	50.4	76.0	37.8

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07264500 Bayou Meto near Stuttgart, Ark.**

LOCATION.--Lat 34°27'15", long 91°36'58" in SE 1/4 sec.11, T.3 S., R.6 W., Arkansas County, Hydrologic Unit 08020402, at bridge on U.S. Highway 79, 5.5 mi southwest of Stuttgart.

DRAINAGE AREA.--574 square miles (At high stages, Bayou Meto and Crooked Creek are interconnected and the combined area is 653 square miles).

PERIOD OF RECORD.--October 1935 to September 1954.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

24.7

March-April

66.6

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

3.47

January

31.7

February

66.3

March

113

April

95.5

07265000 Crooked Creek near Humphrey, Ark.

LOCATION.--Lat 34°25'35", long 91°40'04" in SE 1/4 sec.20, T.3 S., R.6 W., Arkansas County, Hydrologic Unit 08020402, at bridge on U.S. Highway 79, 2.3 mi east of Humphrey.

DRAINAGE AREA.--79.2 square miles.

PERIOD OF RECORD.--April 1940 to September 1954.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

0.00

March-April

5.80

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.00

January

0.00

February

3.54

March

7.82

April

12.8

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07337000 Red River at Index, Ark.

LOCATION.--Lat 33°33'07", long 94°02'28" referenced to North American Datum of 1927, in NW 1/4 SW 1/4 sec.7, T.14 S., R.28 W., Miller County, Ark., Hydrologic Unit 11140106, near right bank on downstream side of southbound bridge on U.S. Highway 71 at Index, 2.2 mi south of Ogden, 20.6 mi upstream from Little River, and at mile 485.3.

DRAINAGE AREA.--48,030 square miles of which 5,936 square miles probably is noncontributing.

PERIOD OF RECORD.--January 1974 to September 2005.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

1,880

10-year recurrence interval

1,240

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

1,430

November-December

1,430

January-February

1,780

March-April

2,180

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

1,400

December

1,690

January

1,780

February

2,680

March

2,420

April

2,670

07339500 Rolling Fork near DeQueen, Ark.

LOCATION.--Lat 34°02'51", long 94°24'47", in SW 1/4 SW 1/4 sec. 21, T.8 S., R.32 W., Sevier County, Hydrologic Unit 11140109, near span on downstream side of brige on U.S. Highway 70, 4.0 mi west of De Queen.

DRAINAGE AREA.--182 square miles.

PERIOD OF RECORD.--October 1948 to September 1980 . Used October 1948 to December 1976.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

1.84

10-year recurrence interval

0.16

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

1.14

November-December

1.17

January-February

13.5

March-April

23.3

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

1.19

December

6.41

January

14.2

February

36.8

March

38.4

April

23.6

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07340000 Little River near Horatio, Ark.**

LOCATION.--Lat 33°55'10.3", long 94°23'12.1" referenced to North American Datum of 1983, in NE 1/4 sec.10, T.10 S., R.32 W., Sevier County, Ark., Hydrologic Unit 11140109, on left bank, downstream side of bridge on State Highway 41, 0.9 mi downstream from Rolling Fork, 2.0 mi southwest of Horatio, 28.5 mi upstream from Cossatot River, and at mile 72.0.

DRAINAGE AREA.--2,662 square miles.

PERIOD OF RECORD.--April 1931 to September 1968.

REMARKS.--Highly regulated after 1968.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

27.1

10-year recurrence interval

3.95

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

26.9

November-December

26.1

January-February

241

March-April

450

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

25.9

December

122

January

240

February

570

March

648

April

533

07340000 Little River near Horatio, Ark.

LOCATION.--Lat 33°55'10.3", long 94°23'12.1" referenced to North American Datum of 1983, in NE 1/4 sec.10, T.10 S., R.32 W., Sevier County, Ark., Hydrologic Unit 11140109, on left bank, downstream side of bridge on State Highway 41, 0.9 mi downstream from Rolling Fork, 2.0 mi southwest of Horatio, 28.5 mi upstream from Cossatot River, and at mile 72.0.

DRAINAGE AREA.--2,662 square miles.

PERIOD OF RECORD.--October 1968 to September 2005.

REMARKS.--Highly regulated after 1968 (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

305

10-year recurrence interval

202

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

244

November-December

226

January-February

416

March-April

442

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

204

December

365

January

441

February

645

March

636

April

557

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07340300 Cossatot River near Vandervoort, Ark.

LOCATION.--Lat 34°22'48.0", long 94°14'11.2" referenced to North American Datum of 1983, in SE 1/4 NE 1/4 sec.30, T.4 S., R.30 W., Polk County, Ark., Hydrologic Unit 11140109, on right bank 200 ft upstream from bridge on State Highway 246, 0.3 mi downstream from Brushy Creek, 3.2 mi upstream from Flat Creek, and 7.5 mi east of Vandervoort.

DRAINAGE AREA.--89.6 square miles.

PERIOD OF RECORD.--June 1967 to September 2005.

REMARKS.--None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

11.5

10-year recurrence interval

8.37

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

15.8

November-December

15.6

January-February

28.4

March-April

35.5

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

15.4

December

26.6

January

28.9

February

40.2

March

44.1

April

39.9

07340500 Cossatot River near DeQueen, Ark.

LOCATION.--Lat 34°02'45", long 94°12'42" in NE 1/4 NE 1/4 sec.29, T.8 S., R.30 W., Sevier County, Hydrologic Unit 11140109, near right bank on downstream side of bridge on U.S. Highway 71, 7.0 mi east of DeQueen.

DRAINAGE AREA.--360 square miles.

PERIOD OF RECORD.--April 1938 to September 1980.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

9.64

10-year recurrence interval

2.87

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

13.0

November-December

12.5

January-February

45.8

March-April

74.2

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

12.3

December

29.6

January

48.2

February

92.4

March

100

April

84.5

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07341000 Saline River near Dierks, Ark.**

LOCATION.--Lat 34°05'45", long 94°05'04", in NW 1/4 SW 1/4 sec. 3, T.8 S., R.29 W., Howard County, Hydrologic Unit 11140109, near left bank on downstream side of U.S. Highway 70, 4.0 mi southwest of Dierks.

DRAINAGE AREA.--121 square miles.

PERIOD OF RECORD.--October 1938 to September 1980. Used October 1938 to April 1975.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.27

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.32

November-December

0.30

January-February

9.90

March-April

18.0

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.30

December

4.24

January

10.4

February

28.1

March

26.3

April

20.9

07341200 Saline River near Lockesburg, Ark.

LOCATION.--Lat 33°57'44.4", long 94°03'41.7" referenced to North American Datum of 1927, in NW 1/4 SE 1/4 sec.23, T.9 S., R.29 W., Sevier County, Ark., Hydrologic Unit 11140109, on right bank 50 ft upstream from bridge on State Highway 371, 2.0 mi downstream from Brushy Creek, 6.0 mi east of Lockesburg, and at mile 30.0.

DRAINAGE AREA.--256 square miles.

PERIOD OF RECORD.--July 1963 to April 1975.

REMARKS.-- Highly regulated after April 1975 (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.97

10-year recurrence interval

0.32

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

1.04

November-December

0.98

January-February

14.0

March-April

22.0

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.92

December

2.75

January

14.3

February

43.6

March

45.0

April

21.4

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07341200 Saline River near Lockesburg, Ark.

LOCATION.--Lat 33°57'44.4", long 94°03'41.7" referenced to North American Datum of 1927, in NW 1/4 SE 1/4 sec.23, T.9 S., R.29 W., Sevier County, Ark., Hydrologic Unit 11140109, on right bank 50 ft upstream from bridge on State Highway 371, 2.0 mi downstream from Brushy Creek, 6.0 mi east of Lockesburg, and at mile 30.0.

DRAINAGE AREA.--256 square miles.

PERIOD OF RECORD.--May 1975 to September 2005.

REMARKS.-- Highly regulated after April 1975.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

10.8

10-year recurrence interval

5.17

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

9.55

November-December

8.70

January-February

23.1

March-April

30.2

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

8.74

December

21.0

January

22.6

February

51.8

March

49.4

April

37.2

07341500 Red River at Fulton, Ark.

LOCATION.--Lat 33°36'26", long 93°48'56" in NE 1/4 SE 1/4 sec.20, T.13 S., R.26 W., Hempstead-Miller County line, Hydrologic Unit 11140201, near left bank on downstream side of bridge on U.S. Highway 67 at Fulton, 0.2 mi downstream from Missouri Pacific Railroad Co. bridge, 2.5 mi downstream from Little River, and at mile 463.0.

DRAINAGE AREA.--52,336 square miles, of which 5,936 square miles are probably noncontributing.

PERIOD OF RECORD.--January 1966 to September 1981.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

2,200

10-year recurrence interval

1,120

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

1,380

November-December

1,390

January-February

2,250

March-April

2,680

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

1,500

December

2,060

January

2,240

February

3,040

March

2,970

April

2,740

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07349430 Bodcau Creek at Stamps, Ark.

LOCATION.--Lat 33°22'00", long 93°31'20", in NW 1/4 sec. 7, T.16 S., R.23 W., Lafayette County, Hydrologic Unit 11140205, near center of span on downstream side of bridge on U.S. Highway 82, 0.1 mi upstream from Tatum Branch, and 1 mi west of Stamps.

DRAINAGE AREA.--234 square miles.

PERIOD OF RECORD.-- October 1958 to September 1970.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
0.08	0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
0.64	0.64	32.5	32.1

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
0.64	7.11	30.9	63.5	84.4	32.1

07356000 Ouachita River near Mount Ida, Ark.

LOCATION.--Lat 34°36'35.8", long 93°41'50.5" referenced to North American Datum of 1983, in SE 1/4 SW 1/4 sec.32, T.1 S., R.25 W., Montgomery County, Ark., Hydrologic Unit 08040101, on right bank, 350 ft upstream from bridge on U.S. Highway 270, 3.1 mi upstream from Fiddler's Creek, 5.2 mi northwest of Mount Ida, and at mile 553.4.

DRAINAGE AREA.--414 square miles.

PERIOD OF RECORD.--October 1941 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
22.3	8.39

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
31.5	30.7	85.8	123

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
30.8	67.8	91.0	147	175	135

110 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07356500 South Fork Ouachita River at Mount Ida, Ark.

LOCATION.--Lat 33°34'37", long 93°38'09", in NE 1/4 sec. 23, T.2 S., R.25 W., Montgomery County, Hydrologic Unit 08040101, at bridge on U.S. Highway 270 at Mount Ida.

DRAINAGE AREA.--61.0 square miles.

PERIOD OF RECORD.--July 1949 to September 1970.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

2.62

10-year recurrence interval

0.13

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

4.77

November-December

4.76

January-February

8.35

March-April

13.6

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

4.82

December

6.40

January

8.40

February

15.3

March

18.3

April

13.4

07359002 Ouachita River at Rammel Dam above Jones Mill, Ark.

LOCATION.--Lat 34°25'35", long 92°53'27" referenced to North American Datum of 1927, in SW 1/4 NW 1/4 sec.36, T.3 S., R.18 W., Hot Spring County, Ark., Hydrologic Unit 08040102, at right bank 1,000 ft downstream from Rammel Dam and 0.8 mi above Jones Mill.

DRAINAGE AREA.--1,550 square miles.

PERIOD OF RECORD.--April 1954 to September 2005.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

406

10-year recurrence interval

271

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

290

November-December

335

January-February

399

March-April

332

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

417

December

394

January

444

February

546

March

424

April

353

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07359610 Caddo River near Caddo Gap, Ark.

LOCATION.--Lat 34°22'58.7", long 93°36'20.6" referenced to North American Datum of 1983, in SW 1/4 NE 1/4 sec.19, T.4 S., R.24 W., Montgomery County, Ark., Hydrologic Unit 08040102, on downstream side of bridge on State Highway 240, 1.3 mi southeast of Caddo Gap, Arkansas.

DRAINAGE AREA.--136 square miles.

PERIOD OF RECORD.--October 1988 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

33.4

10-year recurrence interval

26.4

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

46.5

November-December

44.7

January-February

59.4

March-April

79.2

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

43.6

December

59.2

January

62.2

February

69.7

March

96.7

April

79.2

07357501 Ouachita River at Blakely Mountain Dam near Hot Springs, Ark.

LOCATION.--Lat 34°34'18", long 93°11'37" in SE 1/4 sec.12, T.2 S., R.21 W., Garland County, Hydrologic Unit 08040101, on outlet of power tunnel at Blakely Mountain Dam, 2.3 mi upstream from Glazypeau Creek, 10.0 mi northwest of Hot Springs, and at mile 486.9.

DRAINAGE AREA.--1,105 square miles.

PERIOD OF RECORD.--October 1952 to September 1977.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

34.0

10-year recurrence interval

6.51

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

10.8

November-December

46.6

January-February

12.3

March-April

15.6

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

125

December

64.1

January

32.2

February

16.8

March

22.6

April

21.8

112 Low-Flow Characteristics and Regionalization of Low-Flow Characteristics for Selected Streams in Arkansas

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07359800 Caddo River near Alpine, Ark.

LOCATION.--Lat 34°16'00", long 93°22'00", in SW 1/4 SE 1/4 sec. 28, T.5 S., R.22 W., Clark County, Hydrologic Unit 08040102, at Runyan Bridge, 2.8 mi northeast of Alpine.

DRAINAGE AREA.--301 square miles.

PERIOD OF RECORD.--October 1938 to September 1970.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

27.3

10-year recurrence interval

12.6

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

34.2

November-December

33.6

January-February

65.4

March-April

83.7

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

37.5

December

41.8

January

66.5

February

101

March

111

April

91.6

07360000 Ouachita River at Arkadelphia, Ark.

LOCATION.--Lat 34°07'16", long 93°02'46" in sec.17, T.7 S., R.19 W., Clark County, Hydrologic Unit 08040102, on downstream side of bridge on State Highway 7 at Arkadelphia, 5.4 mi downstream from Caddo River, and at mile 420.6.

DRAINAGE AREA.--2,311 square miles.

PERIOD OF RECORD.--October 1952 to September 1977.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

442

10-year recurrence interval

255

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

286

November-December

326

January-February

472

March-April

462

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

412

December

462

January

522

February

790

March

653

April

439

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07360501 Little Missouri River at Narrows Dam near Murfreesboro, Ark.**

LOCATION.--Lat 34°08'54", long 93°42'54" in NW 1/4 sec.18, T.7 S., R.25 W., Pike County, Hydrologic Unit 08040103, in powerhouse at Narrows Dam, 6.5 mi northwest of Murfreesboro, 9.7 mi upstream from Muddy Fork, and at mile 105.5.

DRAINAGE AREA.--237 square miles.

PERIOD OF RECORD.--January 1951 to September 1977.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

11.9

10-year recurrence interval

6.63

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

5.90

November-December

7.13

January-February

8.84

March-April

9.20

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

14.4

December

9.65

January

12.6

February

13.3

March

12.3

April

10.8

07361000 Little Missouri River near Murfreesboro, Ark.

LOCATION.--Lat 34°02'55", long 93°43'12", in NE 1/4 NE 1/4 sec. 24, T.8 S., R.26 W., Pike County, Hydrologic Unit 08040103, near right bank on downstream side of bridge on State Highway 27, 1.8 mi downstream from Muddy Fork Creek, 2.0 mi southwest of Murfreesboro, 4.6 mi upstream from Prairie Creek, 11.4 mi downstream from Lake Greeson, and at mile 94.1.

DRAINAGE AREA.--380 square miles.

PERIOD OF RECORD.--April 1928 to March 1950.

REMARKS.-- Highly regulated after March 1950.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

7.57

10-year recurrence interval

3.68

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

15.6

November-December

13.4

January-February

65.5

March-April

78.5

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

15.4

December

27.8

January

71.2

February

77.3

March

81.5

April

126

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07361000 Little Missouri River near Murfreesboro, Ark.

LOCATION.--Lat 34°02'55", long 93°43'12", in NE 1/4 NE 1/4 sec. 24, T.8 S., R.26 W., Pike County, Hydrologic Unit 08040103, near right bank on downstream side of bridge on State Highway 27, 1.8 mi downstream from Muddy Fork Creek, 2.0 mi southwest of Murfreesboro, 4.6 mi upstream from Prairie Creek, 11.4 mi downstream from Lake Greeson, and at mile 94.1.

DRAINAGE AREA.--380 square miles.

PERIOD OF RECORD.--April 1950 to September 1977.

REMARKS.-- Highly regulated after March 1950.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

21.6

10-year recurrence interval

9.59

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

11.7

November-December

13.3

January-February

20.1

March-April

27.0

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

20.7

December

22.2

January

22.2

February

55.1

March

59.6

April

24.8

07361500 Antoine River at Antoine, Ark.

LOCATION.--Lat 34°02'20", long 93°25'05" referenced to North American Datum of 1927, in NW 1/4 NW 1/4 sec.24, T.8 S., R.23 W., Pike County, Ark., Hydrologic Unit 08040103, near right bank on downstream side of bridge on State Highway 26 at Antoine, 1.6 mi downstream from Brushy Creek, 1.9 mi downstream from Suck Creek, and at mile 8.5.

DRAINAGE AREA.--178 square miles.

PERIOD OF RECORD.--October 1954 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.40

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.76

November-December

0.72

January-February

18.0

March-April

26.2

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.71

December

7.96

January

19.1

February

50.0

March

55.3

April

27.5

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07361600 Little Missouri River near Boughton, Ark.**

LOCATION.--Lat 33°52'41", long 93°18'16" in NE 1/4 sec.13, T.10 S., R.22 W., Nevada County, Hydrologic Unit 08040103, on downstream side of bridge on U.S. Highway 67, 1.5 mi northeast of Boughton, 5.9 mi downstream from Howard Creek, 10.2 mi downstream from Antoine River, and at mile 46.8.

DRAINAGE AREA.--1,068 square miles.

PERIOD OF RECORD.--January 1951 to September 1977.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

64.0

10-year recurrence interval

27.8

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

37.1

November-December

35.4

January-February

83.7

March-April

122

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

42.7

December

68.7

January

87.4

February

248

March

252

April

119

07362000 Ouachita River at Camden, Ark.

LOCATION.--Lat 33°35'47", long 92°49'05" referenced to North American Datum of 1927, in SE 1/4 sec.14, T.13 S., R.17 W., Ouachita County, Ark., Hydrologic Unit 08040102, at bridge on U.S. Highway 79B at Camden, 3.4 mi downstream from Ecore Fabre Bayou, 6.2 mi upstream from Two Bayou Creek, and at mile 354.1.

DRAINAGE AREA.--5,357 square miles.

PERIOD OF RECORD.--October 1928 to July 1969.

REMARKS.-- Regulated by a series of dams and lakes August 1969 - March 1985. Regulated by additional dams after March 1985.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

469

10-year recurrence interval

200

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

403

November-December

408

January-February

1,000

March-April

1,260

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

426

December

695

January

1,120

February

1,510

March

1,960

April

1,300

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07362000 Ouachita River at Camden, Ark.

LOCATION.--Lat 33°35'47", long 92°49'05" referenced to North American Datum of 1927, in SE 1/4 sec.14, T.13 S., R.17 W., Ouachita County, Ark., Hydrologic Unit 08040102, at bridge on U.S. Highway 79B at Camden, 3.4 mi downstream from Ecore Fabre Bayou, 6.2 mi upstream from Two Bayou Creek, and at mile 354.1.

DRAINAGE AREA.--5,357 square miles.

PERIOD OF RECORD.--August 1969 to March 1985.

REMARKS.-- Regulated by a series of dams and lakes August 1969 - March 1985. Regulated by additional dams after March 1985.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
858	584

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
903	864	1,830	1,340

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
831	1,580	1,830	3,290	2,400	1,320

07362000 Ouachita River at Camden, Ark.

LOCATION.--Lat 33°35'47", long 92°49'05" referenced to North American Datum of 1927, in SE 1/4 sec.14, T.13 S., R.17 W., Ouachita County, Ark., Hydrologic Unit 08040102, at bridge on U.S. Highway 79B at Camden, 3.4 mi downstream from Ecore Fabre Bayou, 6.2 mi upstream from Two Bayou Creek, and at mile 354.1.

DRAINAGE AREA.--5,357 square miles.

PERIOD OF RECORD.--April 1985 to September 2005.

REMARKS.-- Regulated by a series of dams and lakes August 1969 - March 1985. Regulated by additional dams after March 1985.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
952	708

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
891	907	1,590	1,470

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
956	1,250	1,730	2,120	1,930	1,880

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07362100 Smackover Creek near Smackover, Ark.**

LOCATION.--Lat 33°22'33", long 92°46'37" referenced to North American Datum of 1927, in NW 1/4 SE 1/4 sec.32, T.15 S., R.16 W., Union County, Ark., Hydrologic Unit 08040201, near right bank on downstream side of bridge on State Highway 7, 0.1 mi downstream from Camp Creek, 3.3 mi northwest of Smackover, and at mile 22.0.

DRAINAGE AREA.--385 square miles.

PERIOD OF RECORD.--October 1961 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

3.83

10-year recurrence interval

0.34

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

4.55

November-December

4.45

January-February

39.9

March-April

49.5

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

4.42

December

22.4

January

39.1

February

77.4

March

86.2

April

50.9

07362500 Moro Creek near Fordyce, Ark.

LOCATION.--Lat 33°47'32", long 92°20'00" referenced to North American Datum of 1983, in NW 1/4 NW 1/4 sec.3, T.11 S., R.12 W., Calhoun County, Ark., Hydrologic Unit 08040201, on downstream side of bridge on State Highway 8, 5.0 mi southeast of Fordyce.

DRAINAGE AREA.--240 square miles.

PERIOD OF RECORD.--October 1951 to September 1983 , October 2001 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.00

November-December

0.00

January-February

1.30

March-April

10.8

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.00

December

0.17

January

1.26

February

20.7

March

28.2

April

10.6

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07362587 Alum Fork Saline River near Reform, Ark.

LOCATION.--Lat 34°47'51", long 92°56'00" referenced to North American Datum of 1927, in NW 1/4 NE 1/4 sec.29, T.2 N., R.18 W., Saline County, Ark., Hydrologic Unit 08040203, on left bank 100 ft above low-water bridge on forest road, 5.7 mi west of Reform.

DRAINAGE AREA.--27.0 square miles.

PERIOD OF RECORD.--October 1989 to September 2005.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.00

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.29

November-December

0.26

January-February

2.86

March-April

4.38

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.26

December

1.66

January

3.36

February

3.53

March

7.51

April

4.32

07363000 Saline River at Benton, Ark.

LOCATION.--Lat 34°34'05", long 92°36'38" referenced to North American Datum of 1927, in SW 1/4 NE 1/4 sec.9, T.2 S., R.15 W., Saline County, Ark., Hydrologic Unit 08040203, on left bank three-quarters of a mile west of Benton, 3.0 mi downstream from confluence of North Fork and Alum Fork, and at mile 198.1.

DRAINAGE AREA.--550 square miles.

PERIOD OF RECORD.--October 1950 to September 1979, October 1983 to September 1984, and October 2000 to September 2005.

REMARKS.-- Highly regulated (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

22.5

10-year recurrence interval

2.67

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

29.3

November-December

29.1

January-February

93.5

March-April

124

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

28.4

December

67.9

January

94.6

February

172

March

205

April

120

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07363200 Saline River near Sheridan, Ark.

LOCATION.--Lat 34°06'56", long 92°24'21" referenced to North American Datum of 1927, in NE 1/4 NW 1/4 sec.15, T.7 S., R.13 W., Grant County, Ark., Hydrologic Unit 08040203, on downstream side of bridge on U.S. Highway 167, 13.5 mi south of Sheridan.

DRAINAGE AREA.--1,123 square miles.

PERIOD OF RECORD.--October 1970 to September 1982 and October 2000 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
37.2	14.1

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
58.5	55.9	264	290

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
52.1	214	263	476	455	262

07363400 Hurricane Creek below Sheridan, Ark.

LOCATION.--Lat 34°13'42", long 92°22'21" referenced to North American Datum of 1927, in SW 1/4 NW 1/4 sec.1, T.6 S., R.13 W., Grant County, Ark., Hydrologic Unit 08040203, on downstream side of bridge on State Highway 35, 6.0 mi south of Sheridan.

DRAINAGE AREA.--261 square miles.

PERIOD OF RECORD.--October 1995 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
0.00	0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
0.00	0.00	10.6	27.8

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
0.00	5.00	11.4	15.1	57.8	26.9

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07363500 Saline River near Rye, Ark.

LOCATION.--Lat 33°42'03", long 92°01'33" referenced to North American Datum of 1927, in SW 1/4 NE 1/4 sec.3, T.12 S., R.9 W., Bradley County, Ark., Hydrologic Unit 08040204, near left bank on downstream side of bridge on U.S. Highway 63, 3.6 mi southwest of Rye, 5.8 mi upstream from Hudgin Creek, and at mile 71.0.

DRAINAGE AREA.--2,102 square miles, (revised 1979).

PERIOD OF RECORD.--October 1937 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

39.2

10-year recurrence interval

13.1

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

42.8

November-December

41.7

January-February

231

March-April

406

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

41.7

December

126

January

242

February

433

March

663

April

442

07364133 Bayou Bartholomew at Garrett Bridge, Ark.

LOCATION.--Lat 33°51'59", long 91°39'22" referenced to North American Datum of 1983, in SE 1/4 SW 1/4 sec.6, T.12 S., R.3 W., Lincoln County, Ark., Hydrologic Unit 08040205, on downstream side of bridge on State Highway 54, 1.9 mi upstream from Flat Creek at Garrett Bridge.

DRAINAGE AREA.--380 square miles.

PERIOD OF RECORD.--October 1987 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

4.96

10-year recurrence interval

0.36

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

2.49

November-December

2.49

January-February

43.6

March-April

49.5

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

2.51

December

13.1

January

44.6

February

80.0

March

108

April

51.0

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued**07364150 Bayou Bartholomew near McGehee, Ark.**

LOCATION.--Lat 33°37'40", long 91°26'45" referenced to North American Datum of 1983, in NE 1/4 SW 1/4 sec.30, T.12 S., R.3 W., Desha County, Ark., Hydrologic Unit 08040205, near center of stream on downstream side of bridge on State Highway 278, 2.7 mi west of McGehee, 17.5 mi downstream from Ables Creek, at mile 200.5.

DRAINAGE AREA.--576 square miles.

PERIOD OF RECORD.--October 1938 to September 1942 and October 1945 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

26.2

10-year recurrence interval

5.49

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

15.4

November-December

15.2

January-February

60.1

March-April

102

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

15.5

December

27.4

January

65.9

February

124

March

191

April

106

07365800 Cornie Bayou near Three Creeks, Ark.

LOCATION.--Lat 33°02'21", long 92°56'15", in SW 1/4 NW 1/4 sec. 36, T.19 S., R.18 W., Union County, Hydrologic Unit 08040206, on left bank at downstream side of bridge on State Highway 15, 3.4 mi downstream from Pigeon Creek, and 6.0 mi southwest of town of Three Creeks.

DRAINAGE AREA.--180 square miles.

PERIOD OF RECORD.--April 1956 to September 1987.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval

0.20

10-year recurrence interval

0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April

0.26

November-December

0.26

January-February

11.3

March-April

12.0

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November

0.27

December

4.88

January

11.0

February

22.3

March

25.6

April

11.6

Table 4. Low-flow characteristics for continuous streamflow-record gaging stations having 10 or more years of streamflow record.—Continued

07365900 Three Creeks near Three Creeks, Ark.

LOCATION.--Lat 33°04'01", long 92°53'02", in NW 1/4 sec. 20, T.19 N., R.7 W., Union County, Hydrologic Unit 08040206, at bridge on State Highway 15, 2.2 mi southwest of the town of Three Creeks.

DRAINAGE AREA.--50.4 square miles.

PERIOD OF RECORD.--October 1957 to September 1971.

REMARKS.-- None.

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
0.26	0.00

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
0.58	0.59	3.14	2.41

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
0.59	0.82	3.10	5.25	4.39	2.48

07369680 Bayou Macon at Eudora, Ark.

LOCATION.--Lat 33°06'09", long 91°15'08" referenced to North American Datum of 1927, SESES25T18SR02W, Chicot County, Ark., Hydrologic Unit 08050002, near left bank on downstream side of bridge on U.S. Highway 65, 0.6 mi south of Eudora.

DRAINAGE AREA.--500 square miles.

PERIOD OF RECORD.--October 1988 to September 2005.

REMARKS.-- Numerous anthropogenic alterations within basin (highly altered).

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and indicated recurrence interval

2-year recurrence interval	10-year recurrence interval
47.4	34.8

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November-April	November-December	January-February	March-April
32.9	42.4	48.3	36.2

Averaged consecutive seven-day minimum discharge, in cubic feet per second, and 10-year recurrence interval

November	December	January	February	March	April
41.8	48.7	51.0	51.0	49.3	38.9

Table 5. Partial-record gaging stations analyzed for low-flow characteristics and the results of this analysis.

Station number	Station name	R ²	Annual		Annual		November-April		November		December	
			Q _{7,10} (ft ³ /s)	Vari- ance	Q _{7,2} (ft ³ /s)	Vari- ance	Q _{7,10} (ft ³ /s)	Vari- ance	Q _{7,10} (ft ³ /s)	Vari- ance	Q _{7,10} (ft ³ /s)	Vari- ance
07047976	White River at Combs	0.79	0.10	0.34	0.69	0.34	0.65	0.67	0.68	2.91	0.54	
07047980	White River at Elkins	0.87	0.13	0.30	1.39	0.30	0.00	0.38	0.00	3.64	0.35	
07047985	Middle Fork White River near Fayetteville	0.82	0.02	0.59	0.20	0.13	0.97	0.14	1.17	0.61	0.83	
07048550	West Fork White River east of Fayetteville	0.89	0.40	0.19	1.63	0.19	1.46	0.37	1.50	4.27	0.30	
07048800	Richland Creek at Goshen	0.88	0.21	0.37	1.97	0.37	0.84	0.42	0.87	1.62	0.42	
07048960	War Eagle Creek near Huntsville	0.79	0.05	0.71	0.62	0.71	0.28	0.78	0.29	0.68	0.78	
07050225	Kings River near Kingston	0.90	0.40	0.32	2.92	0.32	2.54	0.33	2.47	6.01	0.27	
07050250	Kings River near Pleasant Valley	0.70	1.63	0.32	5.74	0.32	5.61	0.32	5.40	10.0	0.30	
07050390	Osage Creek southwest of Berryville	0.96	0.11	0.47	1.18	0.47	1.03	0.48	0.98	2.98	0.39	
07053200	Long Creek at Alpena	0.89	0.93	0.16	1.35	0.16	1.32	0.16	1.29	2.09	0.13	
07053207	Long Creek at Denver	0.92	2.92	0.04	6.01	0.04	3.61	0.11	4.64	7.32	0.11	
07054410	Bear Creek near Omaha	0.85	2.60	0.05	5.76	0.05	3.30	0.13	4.35	7.10	0.13	
07055600	Crooked Creek at Pyatt	0.76	5.30	0.10	14.6	0.10	9.69	0.19	9.76	16.7	0.22	
07055646	Buffalo River near Boxley	0.87	0.09	0.30	0.54	0.30	0.34	0.65	0.30	1.38	0.75	
07055700	Little Buffalo River near Jasper	0.84	1.33	0.11	3.69	0.11	2.61	0.24	2.54	5.11	0.28	
07055893	Calf Creek near Silverhill	0.91	1.00	0.08	1.64	0.08	1.20	0.17	1.18	2.06	0.19	
07056510	Bear Creek near Marshall	0.89	1.96	0.05	3.90	0.05	3.18	0.13	3.08	5.34	0.15	
07057100	Big Creek near Big Flat	0.63	3.67	0.04	7.11	0.04	5.35	0.07	5.43	7.38	0.08	
07058980	Bennetts River at Vidette	0.76	0.58	0.16	2.39	0.16	0.89	0.31	1.44	2.57	0.30	
07059450	Big Creek near Elizabeth	0.75	0.29	0.19	1.14	0.19	0.59	0.28	0.62	1.03	0.30	
07060520	Piney Creek near Calico Rock	0.76	7.70	0.01	9.78	0.01	8.88	0.02	8.89	10.4	0.03	
07060700	South Sylamore Creek at Allison	0.67	3.38	0.08	6.40	0.08	4.89	0.16	4.92	7.26	0.23	

[Q_{7,10}, 7-day, 10-year low flow; ft³/s, cubic foot per second; Q_{7,2}, 7-day, 2-year low flow]

Table 5. Partial-record gaging stations analyzed for low-flow characteristics and the results of this analysis.—Continued

[$Q_{7,10}$, 7-day, 10-year low flow; ft^3/s , cubic foot per second; $Q_{7,2}$, 7-day, 2-year low flow]

Station number	Station name	R ²	Annual		Annual		November-April		November		December	
			$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,2}$ (ft^3/s)	Vari- ance	April $Q_{7,10}$ (ft^3/s)	Vari- ance	November $Q_{7,10}$ (ft^3/s)	Vari- ance	December $Q_{7,10}$ (ft^3/s)	Vari- ance
07060720	North Sylamore Creek near Allison	0.83	1.68	0.06	3.21	0.06	3.36	0.11	3.69	0.18	4.89	0.18
07060900	Polk Bayou at Batesville	0.85	28.8	0.01	36.0	0.01	33.0	0.03	32.8	0.04	39.5	0.05
07068880	Mud Creek near Ingram	0.94	0.32	0.10	0.65	0.10	0.50	0.36	0.49	0.46	0.95	0.58
07068890	Fourche River above Pocahontas	0.86	13.7	0.04	21.4	0.04	17.7	0.10	17.6	0.12	24.0	0.14
07068900	Fourche River near Pocahontas	0.94	8.95	0.05	15.2	0.05	12.4	0.20	12.16	0.27	20.1	0.33
07069265	Myatt Creek near Salem	0.67	1.01	0.23	1.67	0.23	1.38	0.38	1.34	0.44	2.28	0.50
07069270	South Fork Spring River near Salem	0.88	5.55	0.04	7.64	0.04	6.75	0.11	6.63	0.14	9.33	0.17
07069350	Martins Creek near Williford	0.78	2.42	0.05	4.03	0.05	3.27	0.10	3.28	0.13	4.53	0.15
07069400	Janes Creek at Ravenden Springs	0.40	0.63	0.27	1.18	0.27	0.93	0.52	0.89	0.63	1.74	0.73
07072900	Strawberry River near Franklin	0.96	2.22	0.04	3.37	0.04	2.87	0.16	2.80	0.21	4.37	0.26
07073600	Mill Creek at Evening Shade	0.65	12.4	0.00	13.7	0.00	13.1	0.00	13.1	0.00	13.8	0.00
07073995	North Big Creek near Evening Shade	0.96	6.18	0.02	8.47	0.02	7.51	0.07	7.41	0.10	10.0	0.12
07074248	South Big Creek near Strawberry	0.84	15.0	0.01	20.4	0.01	18.4	0.02	18.3	0.03	22.3	0.02
07074250	Reeds Creek near Strawberry	0.72	8.39	0.02	11.8	0.02	10.1	0.04	10.1	0.05	12.2	0.05
07074260	Cooper Creek near Smithville	0.76	0.72	0.10	1.48	0.10	1.10	0.20	1.11	0.25	1.74	0.29
07074400	Curia Creek near Dowdy	0.83	4.04	0.03	5.94	0.03	5.07	0.06	5.07	0.08	6.53	0.09
07074450	Dota Creek near Newark	0.78	2.49	0.05	4.11	0.05	3.31	0.10	3.33	0.12	4.51	0.14
07075200	Devils Fork Little Red river near Brownsville	0.67	0.00	0.64	0.20	0.64	0.30	0.64	0.34	0.68	3.15	0.39
07075390	Archey Creek at Clinton	0.92	0.00	0.30	0.38	0.30	1.57	0.33	1.56	0.40	9.86	0.20
07076510	Big Creek near Pangburn	0.45	0.00	0.99	0.05	0.99	0.06	0.99	0.07	1.02	0.55	0.81
07076530	Big Creek near Letona	0.80	0.00	0.57	0.13	0.57	0.25	0.57	0.28	0.62	3.43	0.28
07076800	Bayou Des Arc near Garner	0.81	0.00	0.57	0.08	0.57	0.17	0.57	0.18	0.63	2.47	0.26

Table 5. Partial-record gaging stations analyzed for low-flow characteristics and the results of this analysis.—Continued

[$Q_{7,10}$, 7-day, 10-year low flow; ft^3/s , cubic foot per second; $Q_{7,2}$, 7-day, 2-year low flow]

Station number	Station name	R ²	Annual $Q_{7,10}$ (ft^3/s)	Vari- ance	Annual $Q_{7,2}$ (ft^3/s)	Vari- ance	November- April $Q_{7,10}$ (ft^3/s)	Vari- ance	November $Q_{7,10}$ (ft^3/s)	Vari- ance	December $Q_{7,10}$ (ft^3/s)	Vari- ance
07194790	Muddy Fork Illinois River near Savoy	0.77	0.76	0.13	2.25	0.13	1.62	0.15	1.63	0.17	2.34	0.15
07194950	Little Osage Creek near Healing Springs	0.87	7.24	0.04	15.3	0.04	11.2	0.05	11.4	0.05	13.8	0.05
07195400	Illinois River at Highway 16 near Siloam Springs	0.67	65.8	0.02	107	0.02	92.2	0.02	104	0.04	105	0.03
07196950	Evansville Creek at Evansville	0.59	0.00	0.47	0.24	0.47	0.12	0.44	0.13	0.51	0.22	0.44
07246970	Jones Creek near Waldron	0.86	0.00	0.59	0.05	0.59	0.01	0.74	0.01	0.99	0.38	0.66
07247010	Poteau River near Bates	0.92	0.00	0.58	0.22	0.58	0.02	0.78	0.03	1.12	2.03	0.67
07247100	Black Fork near Page, Okla.	0.81	0.00	1.15	0.02	1.15	0.02	1.67	0.02	2.29	0.14	1.71
07247200	Big Creek at Howard	0.51	0.00	1.42	0.02	1.42	0.01	1.92	0.02	2.51	0.10	1.95
07247300	Haws Creek near Black Fork	0.83	0.00	0.35	0.03	0.35	0.03	0.54	0.03	0.76	0.09	0.55
07249600	Lee Creek at Natural Dam	0.93	0.00	0.48	0.60	0.48	0.17	0.60	0.17	0.72	3.17	0.40
07249700	Mountain Fork Creek at Natural Dam	0.77	0.00	0.70	0.10	0.70	0.01	0.91	0.01	1.24	0.70	0.80
07249800	Lee Creek at Short, Okla.	0.93	0.00	0.70	0.31	0.70	0.07	0.91	0.07	1.11	3.08	0.57
07250600	Vache Grasse Creek near Lavaca	0.69	0.00	1.00	0.03	1.00	0.00	1.20	0.00	1.38	0.16	0.88
07250935	Jones Creek at Winfrey	0.83	0.00	0.73	0.02	0.73	0.02	1.00	0.02	1.22	0.23	0.59
07250965	Frog Bayou near Winfrey	0.82	0.00	0.70	0.10	0.70	0.02	0.91	0.02	1.11	1.01	0.57
07250974	Jack Creek near Winfrey	0.63	0.00	1.67	0.00	1.67	0.00	2.14	0.00	2.58	0.02	1.39
07251400	Cedar Creek near Rudy	0.81	0.00	0.61	0.07	0.61	0.02	0.76	0.02	0.91	0.44	0.51
07251800	Little Mulberry Creek near Oark	0.93	0.00	0.55	0.20	0.55	0.17	0.74	0.17	0.90	1.58	0.45
07251900	Mulberry River near Cass	0.94	0.00	0.59	0.77	0.59	0.68	0.81	0.68	0.99	7.02	0.49
07252100	Little Mulberry Creek near Mulberry, Ark.	0.79	0.00	1.17	0.02	1.17	0.01	1.52	0.01	1.80	0.27	1.00
07252300	White Oak Creek near Ozark	0.73	0.00	0.93	0.06	0.93	0.04	1.19	0.04	1.41	0.47	0.81
07256200	Horsehead Creek at Hartman	0.88	0.00	1.20	0.13	1.20	0.15	0.91	0.15	1.09	3.93	0.46

Table 5. Partial-record gaging stations analyzed for low-flow characteristics and the results of this analysis.—Continued

Station number	Station name	R ²	Annual		Annual		November-April		November		December	
			Q _{7,10} (ft ³ /s)	Vari- ance	Q _{7,2} (ft ³ /s)	Vari- ance	Q _{7,10} (ft ³ /s)	Vari- ance	Q _{7,10} (ft ³ /s)	Vari- ance	Q _{7,10} (ft ³ /s)	Vari- ance
07256700	Big Shoal Creek near New Blaine	0.78	0.00	1.97	0.00	1.97	0.00	0.00	1.53	0.00	1.80	0.86
07257470	Middle Fork Illinois Bayou near Hector	0.99	0.00	0.50	0.17	0.50	0.02	0.02	0.83	0.02	0.98	0.56
07257480	North Fork Illinois Bayou near Scottsville	0.82	0.01	0.26	0.62	0.26	0.20	0.20	0.37	0.19	0.42	0.28
07258700	Sugar Creek near Sugar Grove	0.83	0.00	0.42	0.00	0.42	0.00	0.00	0.39	0.00	0.48	0.33
07260673	West Fork Point Remove Creek near Hattieville	0.85	0.00	0.97	0.47	0.97	0.29	0.29	0.79	0.30	0.90	0.52
07260700	Point Remove Creek near Morilton	0.27	0.00	1.19	0.50	1.19	0.65	0.65	0.98	0.63	1.11	0.66
07261200	East Fork Cadron Creek near Enola	0.73	0.00	0.96	0.03	0.96	0.06	0.06	0.96	0.06	1.03	0.55
07261400	Mill Creek near Boles	0.85	0.00	1.52	0.01	1.52	0.00	0.00	2.00	0.00	2.36	1.16
07261600	Gafford Creek near Bluffton	0.82	0.00	0.61	0.04	0.61	0.00	0.00	0.78	0.00	0.91	0.48
07336900	Walnut Bayou near Foreman	0.73	0.00	0.27	0.22	0.27	0.21	0.21	0.33	0.22	0.39	0.29
07338700	Twomile Creek near Hatfield	0.92	0.33	0.09	0.92	0.09	1.07	1.07	0.11	1.08	0.16	0.12
07338720	Mountain Fork near Hatfield	0.79	0.53	0.28	3.17	0.28	3.20	3.20	0.32	3.37	0.44	0.35
07339200	Rolling Fork near Grannis	0.59	0.04	0.33	0.25	0.33	0.17	0.17	0.45	0.18	0.51	0.35
07340400	Cossatot River near Umpire	0.77	6.87	0.06	15.9	0.06	17.1	17.1	0.07	17.4	0.10	0.08
07355810	Ouachita River near Mena	0.76	0.03	0.41	0.29	0.41	0.35	0.35	0.48	0.37	0.66	0.52
07357710	Glazypeau Creek at Mountain Pine	0.62	0.40	0.15	2.73	0.15	2.78	2.78	0.06	2.96	0.07	0.07
07358010	Fourche A Loupe Creek near Hot Springs	0.58	0.01	0.35	0.19	0.35	0.15	0.15	0.18	0.16	0.20	0.21
07358700	Gulpha Creek near Hot Springs	0.79	0.09	0.35	1.70	0.35	1.92	1.92	0.11	2.07	0.13	0.15
07360200	Little Missouri River near Langley	0.93	9.52	0.02	15.7	0.02	17.1	17.1	0.05	17.3	0.07	0.05
07361025	Prairie Creek near Murfreesboro	0.73	0.01	0.46	0.44	0.46	0.29	0.29	0.25	0.32	0.27	0.28

[Q_{7,10}, 7-day, 10-year low flow; ft³/s, cubic foot per second; Q_{7,2}, 7-day, 2-year low flow]

Table 5. Partial-record gaging stations analyzed for low-flow characteristics and the results of this analysis.—Continued

[$Q_{7,10}$, 7-day, 10-year low flow; ft^3/s , cubic foot per second; $Q_{7,2}$, 7-day, 2-year low flow]

Station number	Station name	R ²	Annual		Annual		November-April		November		December		
			$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,2}$ (ft^3/s)	Vari- ance	April $Q_{7,10}$ (ft^3/s)	Vari- ance	November $Q_{7,10}$ (ft^3/s)	Vari- ance	December $Q_{7,10}$ (ft^3/s)	Vari- ance	
07361160	North Fork Ozan Creek near McCaskill	0.92	0.00	2.41	0.25	2.41	0.43	1.21	0.43	1.24	0.57	2.63	0.70
07361540	Wolf Creek near Antoine	0.59	0.04	0.40	0.93	0.40	0.14	1.20	0.14	1.31	0.16	1.82	0.18
07361640	Little Terre Rouge Creek near Emmet	0.79	0.06	0.17	0.37	0.17	0.15	0.86	0.15	0.86	0.15	2.30	0.13
07361650	Terre Rouge Creek near Prescott	0.78	0.26	0.10	1.81	0.10	0.09	2.86	0.09	2.86	0.09	5.79	0.08
07361800	Terre Noire Creek near Gurdon	0.74	0.18	0.13	1.62	0.13	0.12	2.35	0.12	2.35	0.12	4.68	0.11
07362090	Camp Creek near Smackover	0.70	0.01	0.30	0.22	0.30	0.21	0.17	0.21	0.19	0.24	0.86	0.17
07362550	Moro Creek near Banks	0.75	0.00	0.56	0.00	0.56	0.91	0.00	0.91	0.00	1.06	0.91	1.04
07362600	Alum Fork Saline River at Crows	0.78	0.15	0.32	2.55	0.32	0.08	3.50	0.08	3.68	0.10	4.83	0.11
07362700	Middle Fork Saline River at Crows	0.61	0.75	0.21	7.53	0.21	0.08	8.09	0.08	8.62	0.09	10.7	0.10
07362800	South Fork Saline River near Hot Springs	0.75	0.34	0.11	1.83	0.11	0.03	2.11	0.03	2.18	0.04	2.55	0.04
07362900	North Fork Saline River near Benton	0.41	0.07	0.69	3.07	0.69	0.26	6.54	0.26	6.62	0.29	9.45	0.32
07363110	Big Creek at Poyen	0.45	0.07	0.38	1.44	0.38	0.31	0.62	0.31	0.71	0.31	0.87	0.32
07363160	Saline River near Leola	0.95	4.51	0.21	18.3	0.21	0.32	20.1	0.32	19.6	0.42	78.14	0.41
07363180	Lost Creek near Sheridan	0.90	0.00	1.15	0.04	1.15	0.58	0.11	0.58	0.11	0.66	0.48	0.65
07363276	Hurricane Creek near Ico	0.40	0.00	0.78	1.17	0.78	0.37	2.61	0.37	2.55	0.43	8.81	0.42
07364060	Bayou Lapile at Strong	0.76	0.05	0.14	0.50	0.14	0.13	0.80	0.13	0.80	0.13	1.73	0.11

Table 5. Partial-record gaging stations analyzed for low-flow characteristics and the results of this analysis.—Continued[$Q_{7,10}$, 7-day, 10-year low flow; ft^3/s , cubic foot per second; $Q_{7,2}$, 7-day, 2-year low flow]

Station number	Station name	January		February		March		April		November		January-February		March-April	
		$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance
07047976	White River at Combs	4.60	0.41	10.1	0.30	15.9	0.30	23.5	0.22	0.68	0.73	4.49	0.36	12.5	0.27
07047980	White River at Elkins	8.54	0.24	20.2	0.16	25.1	0.15	35.8	0.14	0.12	0.42	8.11	0.22	21.8	0.14
07047985	Middle Fork White River near Fayetteville	0.95	0.67	2.12	0.54	3.42	0.54	4.97	0.45	0.13	1.04	0.91	0.62	2.59	0.50
07048550	West Fork White River east of Fayetteville	5.95	0.23	10.5	0.17	14.5	0.16	19.2	0.12	1.51	0.40	5.85	0.20	12.2	0.15
07048800	Richland Creek at Gos- hen	2.24	0.45	5.20	0.36	9.24	0.27	13.5	0.28	0.86	0.43	2.11	0.41	7.50	0.27
07048960	War Eagle Creek near Huntsville	1.02	0.82	3.17	0.68	7.11	0.54	11.3	0.57	0.29	0.79	0.95	0.77	5.45	0.54
07050225	Kings River near Kingston	9.54	0.26	16.5	0.20	25.4	0.19	34.4	0.17	2.52	0.37	8.99	0.23	21.1	0.17
07050250	Kings River near Pleasant Valley	13.7	0.30	20.0	0.27	26.9	0.27	33.0	0.26	5.54	0.34	13.3	0.29	23.9	0.26
07050390	Osage Creek southwest of Berryville	5.28	0.38	10.4	0.29	17.8	0.26	25.9	0.24	1.01	0.55	4.93	0.34	14.2	0.24
07053200	Long Creek at Alpena	2.95	0.13	4.73	0.10	8.04	0.09	11.5	0.08	1.34	0.18	2.85	0.11	6.34	0.08
07053207	Long Creek at Denver	11.0	0.07	7.88	0.15	12.6	0.18	13.6	0.12	4.70	0.13	6.66	0.12	11.3	0.11
07054410	Bear Creek near Omaha	11.0	0.08	7.69	0.18	12.8	0.21	13.9	0.14	4.39	0.15	6.40	0.14	11.4	0.13
07055600	Crooked Creek at Pyatt	24.1	0.18	37.9	0.15	53.4	0.14	68.5	0.12	9.72	0.22	22.4	0.17	46.9	0.13
07055646	Buffalo River near Boxley	3.39	0.62	9.12	0.49	15.8	0.46	22.9	0.38	0.32	0.76	3.09	0.56	13.3	0.42
07055700	Little Buffalo River near Jasper	8.19	0.23	14.6	0.18	22.6	0.17	31.2	0.14	2.58	0.28	7.55	0.20	19.4	0.15
07055893	Calf Creek near Silverhill	3.01	0.16	4.80	0.13	6.80	0.12	8.81	0.10	1.19	0.19	2.82	0.14	6.00	0.11
07056510	Bear Creek near Marshall	7.75	0.12	12.2	0.09	17.2	0.09	22.2	0.07	3.14	0.15	7.30	0.11	15.3	0.07
07057100	Big Creek near Big Flat	9.08	0.07	11.8	0.06	14.4	0.06	16.6	0.05	5.38	0.08	8.68	0.07	13.3	0.05

Table 5. Partial-record gaging stations analyzed for low-flow characteristics and the results of this analysis.—Continued

[$Q_{7,10}$, 7-day, 10-year low flow; ft^3/s , cubic foot per second; $Q_{7,2}$, 7-day, 2-year low flow]

Station number	Station name	January		February		March		April		November		January		March	
		$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance
07058980	Bennetts River at Vidette	4.49	0.22	2.91	0.40	6.00	0.46	6.38	0.32	1.35	0.34	2.22	0.33	4.95	0.31
07059450	Big Creek near Elizabeth	1.45	0.27	2.25	0.24	3.15	0.23	4.01	0.21	0.60	0.30	1.33	0.25	2.74	0.22
07060520	Piney Creek near Calico Rock	11.8	0.04	14.4	0.03	16.9	0.03	17.1	0.03	8.87	0.03	11.4	0.03	15.4	0.02
07060700	South Sylamore Creek at Allison	9.99	0.23	16.4	0.20	24.4	0.17	25.0	0.17	4.88	0.17	9.16	0.20	19.2	0.15
07060720	North Sylamore Creek near Allison	5.70	0.17	8.52	0.16	10.2	0.22	13.1	0.20	3.50	0.14	5.47	0.14	9.07	0.18
07060900	Polk Bayou at Batesville	46.1	0.05	59.0	0.04	72.1	0.03	72.8	0.03	32.8	0.03	44.6	0.04	64.6	0.03
07068880	Mud Creek near Ingram	1.66	0.59	4.08	0.48	8.50	0.38	8.79	0.38	0.49	0.41	1.48	0.47	5.74	0.31
07068890	Fourche River above Pocahontas	31.2	0.15	47.1	0.12	65.9	0.10	67.1	0.10	17.6	0.11	29.4	0.12	54.5	0.09
07068900	Fourche River near Pochontas	30.7	0.34	60.6	0.28	106	0.22	108	0.22	12.2	0.23	28.2	0.27	78.7	0.18
07069265	Myatt Creek near Salem	3.59	0.50	7.45	0.45	13.6	0.39	13.9	0.39	1.35	0.40	3.29	0.44	9.95	0.35
07069270	South Fork Spring River near Salem	12.5	0.17	20.0	0.14	29.3	0.12	29.8	0.12	6.66	0.12	11.8	0.14	24.0	0.10
07069350	Martins Creek near Williford	5.90	0.15	8.91	0.13	12.4	0.11	12.6	0.11	3.26	0.12	5.50	0.13	10.2	0.10
07069400	Janes Creek at Ravenden Springs	3.07	0.75	7.65	0.65	16.2	0.55	16.7	0.55	0.90	0.57	2.76	0.64	11.0	0.48
07072900	Strawberry River near Franklin	6.39	0.27	11.8	0.22	19.5	0.18	19.9	0.18	2.82	0.19	5.95	0.22	15.0	0.14
07073600	Mill Creek at Evening Shade	14.5	0.00	15.5	0.00	16.4	0.00	16.4	0.00	13.1	0.00	14.3	0.00	15.8	0.00
07073995	North Big Creek near Evening Shade	13.0	0.12	19.6	0.10	27.4	0.08	27.8	0.08	7.44	0.08	12.3	0.10	22.9	0.06
07074248	South Big Creek near Strawberry	25.5	0.02	30.2	0.02	34.2	0.01	37.5	0.01	18.3	0.02	24.9	0.02	32.7	0.01

Table 5. Partial-record gaging stations analyzed for low-flow characteristics and the results of this analysis.—Continued

[$Q_{7,10}$, 7-day, 10-year low flow; ft^3/s , cubic foot per second; $Q_{7,2}$, 7-day, 2-year low flow]

Station number	Station name	January		February		March		April		November		January-February		March-April	
		$Q_{7,10}$ (ft^3/s)	Variance	$Q_{7,10}$ (ft^3/s)	Variance	$Q_{7,10}$ (ft^3/s)	Variance	$Q_{7,10}$ (ft^3/s)	Variance	$Q_{7,10}$ (ft^3/s)	Variance	January-February $Q_{7,10}$ (ft^3/s)	Variance	March-April $Q_{7,10}$ (ft^3/s)	Variance
07074250	Reeds Creek near Strawberry	14.2	0.06	17.8	0.05	21.5	0.04	21.7	0.04	10.1	0.04	13.6	0.05	19.1	0.04
07074260	Cooper Creek near Smithville	2.50	0.29	4.40	0.25	6.93	0.21	7.12	0.21	1.10	0.22	2.27	0.25	5.26	0.19
07074400	Curia Creek near Dowdy	8.07	0.10	11.2	0.08	14.6	0.07	14.8	0.07	5.05	0.07	7.65	0.08	12.5	0.06
07074450	Dota Creek near Newark	5.79	0.14	8.54	0.12	11.7	0.10	11.9	0.10	3.31	0.11	5.42	0.12	9.67	0.09
07075200	Devils Fork Little Red River near Brownsville	5.81	0.33	9.30	0.32	9.65	0.31	7.94	0.31	0.31	0.67	5.47	0.32	7.63	0.31
07075390	Archey Creek at Clinton	13.9	0.15	22.7	0.12	30.2	0.11	27.9	0.11	1.56	0.36	13.1	0.14	24.0	0.10
07076510	Big Creek near Pangburn	1.08	0.77	1.87	0.76	1.87	0.75	1.54	0.75	0.06	1.02	1.00	0.76	1.53	0.75
07076530	Big Creek near Letona	6.54	0.21	10.6	0.19	11.4	0.19	9.10	0.19	0.25	0.61	6.19	0.20	8.54	0.18
07076800	Bayou Des Arc near Garner	4.80	0.19	7.86	0.17	8.48	0.16	6.75	0.16	0.17	0.61	4.56	0.18	6.30	0.16
07194790	Muddy Fork Illinois River near Savoy	2.78	0.15	4.49	0.13	6.32	0.10	7.70	0.11	1.64	0.15	2.70	0.14	5.65	0.10
07194950	Little Osage Creek near Healing Springs	15.3	0.05	19.8	0.04	23.5	0.03	26.5	0.03	11.3	0.05	15.0	0.04	22.0	0.03
07195400	Illinois River at Highway 16 near Siloam Springs	112	0.03	118	0.03	130	0.03	136	0.03	96.5	0.02	108	0.03	120	0.03
07196950	Evansville Creek at Evansville	0.26	0.43	0.37	0.37	0.48	0.37	0.49	0.36	0.12	0.47	0.24	0.41	0.39	0.36
07246970	Jones Creek near Waldron	0.67	0.64	2.64	0.44	3.45	0.43	2.77	0.42	0.01	0.88	0.65	0.57	2.27	0.39
07247010	Poteau Rive near Bates	3.87	0.64	17.6	0.38	23.9	0.37	18.4	0.35	0.02	0.97	3.65	0.56	14.4	0.30
07247100	Black Fork near Page, Okla.	0.25	2.26	1.81	1.44	4.79	1.27	4.07	0.93	0.02	1.92	0.20	2.01	1.97	1.09
07247200	Big Creek at Howard	0.20	2.48	1.32	1.70	3.45	1.54	2.66	1.22	0.02	2.16	0.16	2.24	1.37	1.36

Table 5. Partial-record gaging stations analyzed for low-flow characteristics and the results of this analysis.—Continued

[$Q_{7,10}$, 7-day, 10-year low flow; ft^3/s , cubic foot per second; $Q_{7,2}$, 7-day, 2-year low flow]

Station number	Station name	January		February		March		April		November		January-February		March-April		Vari- ance
		$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	
07247300	Haws Creek near Black Fork	0.12	0.75	0.40	0.46	0.72	0.40	0.67	0.28	0.03	0.63	0.11	0.66	0.43	0.33	
07249600	Lee Creek at Natural Dam	5.70	0.31	12.5	0.18	17.6	0.18	20.8	0.15	0.17	0.64	5.45	0.27	14.7	0.17	
07249700	Mountain Fork Creek at Natural Dam	1.35	0.77	5.84	0.51	7.99	0.50	6.12	0.48	0.01	1.09	1.24	0.68	4.74	0.44	
07249800	Lee Creek at Short, Okla.	6.73	0.42	19.9	0.21	30.9	0.21	39.4	0.16	0.07	0.97	6.45	0.36	25.0	0.19	
07250600	Vache Grasse Creek near Lavaca	0.32	0.73	0.76	0.54	1.17	0.54	1.39	0.50	0.00	1.25	0.29	0.68	0.92	0.52	
07250935	Jones Creek at Winfrey	0.45	0.44	1.48	0.24	2.02	0.24	2.97	0.18	0.02	1.10	0.42	0.40	1.60	0.21	
07250965	Frog Bayou near Winfrey	2.21	0.42	6.54	0.22	10.2	0.22	13.0	0.17	0.02	0.97	2.11	0.36	8.20	0.19	
07250974	Jack Creek near Winfrey	0.08	1.05	0.38	0.60	0.76	0.59	1.07	0.48	0.00	2.28	0.07	0.92	0.53	0.53	
07251400	Cedar Creek near Rudy	0.84	0.40	1.97	0.25	2.88	0.25	3.43	0.21	0.02	0.81	0.79	0.36	2.35	0.23	
07251800	Little Mulberry Creek near Oark	2.80	0.34	7.34	0.20	9.55	0.20	13.1	0.15	0.18	0.81	2.63	0.31	7.83	0.18	
07251900	Mulberry River near Cass	12.9	0.36	36.2	0.21	47.8	0.21	66.9	0.16	0.69	0.89	12.1	0.33	38.9	0.18	
07252100	Little Mulberry Creek near Mulberry	0.56	0.80	1.88	0.55	2.67	0.54	3.98	0.46	0.01	1.64	0.50	0.74	2.01	0.51	
07252300	White Oak Creek near Ozark	0.88	0.65	2.47	0.47	3.36	0.47	4.73	0.41	0.04	1.28	0.80	0.62	2.61	0.44	
07256200	Horsehead Creek at Hartman	5.72	0.38	18.5	0.23	26.6	0.25	34.6	0.20	0.15	0.97	5.53	0.33	20.8	0.21	
07256700	Big Shoal Creek near New Blaine	0.34	0.74	1.32	0.51	2.09	0.55	2.83	0.48	0.00	1.63	0.32	0.67	1.50	0.50	
07257470	Middle Fork Illinois Bayou near Hector	3.92	0.29	12.9	0.19	23.1	0.14	20.8	0.14	0.02	0.90	3.76	0.27	16.7	0.12	
07257480	North Fork Illinois Bayou near Scottsville	3.94	0.20	7.96	0.16	11.3	0.15	10.6	0.14	0.20	0.40	3.84	0.19	9.29	0.14	
07258700	Sugar Creek near Sugar Grove	0.64	0.29	2.79	0.22	4.02	0.20	2.80	0.21	0.00	0.46	0.60	0.27	2.62	0.20	

Table 5. Partial-record gaging stations analyzed for low-flow characteristics and the results of this analysis.—Continued[$Q_{7,10}$, 7-day, 10-year low flow; ft^3/s , cubic foot per second; $Q_{7,2}$, 7-day, 2-year low flow]

Station number	Station name	January		February		March		April		November		January-February		March-April	
		$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance
07260673	West Fork Point Remove Creek near Hattieville	4.79	0.47	10.8	0.37	14.6	0.39	17.7	0.36	0.29	0.83	4.54	0.44	11.7	0.37
07260700	Point Remove Creek near Morrilton	17.1	0.60	52.5	0.49	71.2	0.51	92.2	0.47	0.64	1.03	16.9	0.57	58.8	0.48
07261200	East Fork Cadron Creek near Enola	2.43	0.46	4.37	0.43	4.62	0.43	3.60	0.43	0.06	1.01	2.26	0.45	3.40	0.42
07261400	Mill Creek near Boles	0.61	0.94	3.02	0.67	6.25	0.57	4.90	0.56	0.00	2.17	0.54	0.87	3.51	0.50
07261600	Gafford Creek near Bluffton	0.56	0.40	1.46	0.31	2.23	0.27	1.93	0.26	0.00	0.84	0.52	0.37	1.57	0.25
07336900	Walnut Bayou near Foreman	1.06	0.23	1.55	0.20	1.64	0.20	1.21	0.21	0.21	0.37	0.99	0.22	1.11	0.20
07338700	Twomile Creek near Hatfield	2.65	0.09	3.96	0.08	4.64	0.08	3.73	0.08	1.06	0.14	2.48	0.08	3.38	0.07
07338720	Mountain Fork near Hatfield	12.5	0.28	22.6	0.25	29.0	0.25	21.1	0.26	3.25	0.39	11.1	0.26	17.8	0.23
07339200	Rolling Fork near Grannis	1.15	0.31	2.37	0.27	2.44	0.28	1.69	0.30	0.17	0.47	1.11	0.30	1.67	0.28
07340400	Cossatot River near Umpire	34.0	0.06	45.9	0.05	52.0	0.05	44.2	0.06	17.2	0.09	32.1	0.06	40.6	0.05
07355810	Ouachita River near Mena	2.10	0.42	4.57	0.36	6.33	0.36	4.14	0.38	0.36	0.58	1.80	0.37	3.31	0.34
07357710	Glazypeau Creek at Mountain Pine	4.12	0.07	5.82	0.07	6.47	0.07	5.53	0.07	2.86	0.06	4.07	0.07	5.35	0.06
07358010	Fourche A Loupe Creek near Hot Springs	0.26	0.21	0.41	0.20	0.48	0.20	0.39	0.21	0.16	0.19	0.25	0.20	0.37	0.19
07358700	Gulpha Creek near Hot Springs	3.40	0.14	5.76	0.14	6.76	0.13	5.27	0.14	1.98	0.12	3.34	0.14	5.10	0.12
07360200	Little Missouri River near Langley	27.3	0.05	35.1	0.04	37.9	0.04	34.9	0.04	17.3	0.05	26.3	0.04	31.0	0.03
07361025	Prairie Creek near Murfreesboro	0.52	0.28	0.87	0.27	1.03	0.27	0.83	0.28	0.30	0.26	0.51	0.28	0.78	0.26

Table 5. Partial-record gaging stations analyzed for low-flow characteristics and the results of this analysis.—Continued

[$Q_{7,10}$, 7-day, 10-year low flow; ft^3/s , cubic foot per second; $Q_{7,2}$, 7-day, 2-year low flow]

Station number	Station name	January		February		March		April		November		January-February		March-April		Vari- ance
		$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	$Q_{7,10}$ (ft^3/s)	Vari- ance	
07361160	North Fork Ozan Creek near McCaskill	5.41	0.68	26.7	0.62	42.8	0.58	18.6	0.69	1.20	0.49	5.32	0.63	19.2	0.50	
07361540	Wolf Creek near Antoine	2.40	0.17	4.46	0.16	5.36	0.16	4.02	0.17	1.25	0.15	2.35	0.17	3.81	0.15	
07361640	Little Terre Rouge Creek near Emmet	4.20	0.12	5.64	0.10	6.34	0.11	4.27	0.11	0.86	0.15	4.29	0.11	4.27	0.11	
07361650	Terre Rouge Creek near Prescott	9.00	0.07	10.5	0.06	11.6	0.06	8.64	0.06	2.86	0.09	8.72	0.06	8.64	0.06	
07361800	Terre Noire Creek near Gurdon	7.27	0.10	8.34	0.09	9.18	0.09	6.91	0.09	2.35	0.12	6.98	0.09	6.90	0.09	
07362090	Camp Creek near Smack-over	1.26	0.15	1.68	0.13	1.76	0.12	1.24	0.14	0.18	0.22	1.20	0.13	1.21	0.13	
07362550	Moro Creek near Banks	4.02	0.88	31.4	0.55	39.4	0.52	19.2	0.56	0.00	0.98	4.12	0.81	19.5	0.53	
07362600	Alum Fork at Crows	6.16	0.11	10.6	0.10	12.5	0.10	9.56	0.11	3.57	0.09	6.08	0.11	9.37	0.09	
07362700	Middle Fork at Crows	12.8	0.09	19.5	0.09	22.2	0.09	18.3	0.10	8.32	0.08	12.7	0.09	17.7	0.08	
07362800	South Fork near Hot Springs	2.93	0.04	4.01	0.04	4.40	0.04	3.79	0.04	2.14	0.03	2.91	0.04	3.73	0.03	
07362900	North Fork near Benton	13.3	0.31	28.4	0.30	35.6	0.29	24.0	0.31	6.51	0.27	13.2	0.30	24.3	0.27	
07363110	Big Creek at Poyen	1.02	0.32	1.52	0.31	1.75	0.31	1.52	0.32	0.67	0.31	1.00	0.31	1.41	0.31	
07363160	Saline River near Leola	176	0.33	362	0.28	610	0.18	370	0.24	19.6	0.40	165	0.28	329	0.15	
07363180	Lost Creek near Sheridan	1.30	0.51	3.37	0.36	4.80	0.33	2.14	0.41	0.11	0.61	1.25	0.45	2.12	0.34	
07363276	Hurricane Creek near Ico	20.6	0.32	46.0	0.22	62.1	0.19	31.4	0.25	2.56	0.40	19.9	0.28	31.1	0.20	
07364060	Bayou Lapile at Strong	2.81	0.10	3.29	0.09	3.67	0.09	2.67	0.09	0.80	0.13	2.70	0.10	2.67	0.09	

Appendixes 1-4

Appendix 1. Description of Base-Flow Correlation Method

The Stedinger and Thomas (1985) method, or base-flow correlation method, estimates low-flow characteristics by using the mean and standard deviation of the time series of 7-day low flows at the partial-record station given by

$$\log_{10}(Q_{7,10}) = \hat{\mu}_p + K\hat{\sigma}_p \quad (1-1)$$

where

- $\hat{\mu}_p$ is the estimate of the mean of the time series of the 7-day low flows at the partial record gage,
- $\hat{\sigma}_p$ is the estimate of the standard deviation of the time series of the 7-day low flows at the partial-record gage, and
- K is the log-Pearson Type III standard deviate for a recurrence interval of T -years at the partial-record gage.

By assuming that the time series of the 7-day low flows are log-Pearson Type III distributed at both the index and partial-record gages with equal skew coefficients, the K is estimated by the log-Pearson Type III standard deviate at the index gage, K_i . The $\hat{\mu}_p$ and $\hat{\sigma}_p$ are

$$\hat{\mu}_p = \beta_o + \beta_1 m_i \quad (1-2)$$

$$\hat{\sigma}_p = \left\{ \beta_1^2 s_i^2 + s_e^2 \left[1 - \frac{s_i^2}{(n_b - 1) s_c^2} \right] \right\}^{1/2} \quad (1-3)$$

where

- m_i is the mean of the time series of the 7-day low flows at the index gage,
- s_i^2 is the variance of the time series of the 7-day low flows at the index gage,
- s_c^2 is the variance of the concurrent base flows at the index gages,
- n_b is the number of base-flow measurements at the partial-record gage,
- β_o and β_1 are the constant and coefficient of a regression among concurrent flows at the partial-record and index gages, and
- s_e^2 is the squared standard error from the regression among concurrent flows.

This approach is dependent on the number of available base-flow discharge measurements at the partial-record gage. Having anything less than about 10 base-flow discharge measurements (U.S. Geological Survey, 1985) at the partial-record gage will result in unreliable estimates of β_o , β_1 and s_e^2 , because they are calculated from a regression model. In this study, the base-flow correlation approach was not applied when less than 10 base-flow measurements were available at the partial-record station.

Appendix 2. Regional Regression Models

The parameters of the logistic regression model are estimated by maximizing the log likelihood function given by:

$$L(\beta) = \sum_{i=1}^n \left\{ y_i \ln \left[\frac{e^{g(x)}}{1 + e^{g(x)}} \right] + (1 - y_i) \ln \left[1 - \frac{e^{g(x)}}{1 + e^{g(x)}} \right] \right\} \quad (2-1)$$

and

$$g(x) = \hat{\beta}_0 + \hat{\beta}_1 \log_{10}(x_1) + \hat{\beta}_2 \log_{10}(x_2) + \dots + \hat{\beta}_k \log_{10}(x_k) \quad (2-2)$$

where

- n is the total number of annual events at all sites,
- y_i is equal to one if an observed annual d -day low flow is not zero in year i , and
- y_i is equal to zero if an observed annual d -day low flow is zero,
- x_k is the value of the k^{th} basin attribute.

The treatment of partial-record gaging stations in the logistic regression models was to assign a value of y_i (in equation 2-1) equal to one if the date of the measured base-flow value fell within the time period of interest for every climatic year, i (April 1 to March 31). Otherwise, the value of y_i was zero for partial-record sites that did not have measurements during the period of interest in every climatic year, i . For every climatic year, the value of y_i was set equal to one. The assumption was that the measured base-flow values were the lowest for the period of interest for every climatic year considered.

If the total number of zero events for any chosen annual series was less than 5 percent of the observed events equal to zero, then a logistic regression was not formed. For regions that did not meet the 5 percent criteria, the statewide regression (see Low-Flow Characteristics at Ungaged Basins section of the report for explanation) was used for the region specific logistic regression model if at least 5 percent of observed events equaled zero.

The general relation between the logarithmic (base 10) transforms of the peak discharges and basin attributes in the regression model can be given by

$$\log_{10}(Q_{d\text{-day},T\text{-year}}) = \beta_0 + \beta_1 \log_{10}(x_1) + \dots + \beta_k \log_{10}(x_k) + \delta \quad (2-3)$$

where

- $Q_{d\text{-day},T\text{-year}}$ is the d -day, T -year low flow,
- k is the number of basin attributes, and
- δ is the model error with mean equal to zero and variance equal to δ_δ^2 .

The streamflow record at continuous-record streamflow gaging stations can be used to estimate $\log_{10}(Q_{d\text{-day},T\text{-year}})$ values for use in equation (2-3), referred to as $\log_{10}(\hat{Q}_{d\text{-day},T\text{-year}})$. The difference between the estimated and $\log_{10}(Q_{d\text{-day},T\text{-year}})$ is known as the time sampling error, η , given as

$$\eta = \log_{10}(\hat{Q}_{d\text{-day},T\text{-year}}) - \log_{10}(Q_{d\text{-day},T\text{-year}}) \quad (2-4)$$

Substituting equation (2-4) into equation (2-3) give

$$\eta = \log_{10}(\hat{Q}_{d\text{-day},T\text{-year}}) = \beta_0 + \beta_1 \log_{10}(x_k) + \dots + \beta_k \log_{10}(x_k) + \nu \quad (2-5)$$

where

$$\nu \text{ is } \delta + \eta.$$

Unlike generalized least squares parameter fitting (Stedinger and Tasker, 1985; Tasker and Stedinger, 1989), for weighted least squares (WLS) parameter fit, the time-sampling errors from basins close together are assumed not to be correlated (Tasker, 1980).

The estimates of the parameters in equation (2-5) were calculated using a WLS method. A vector of these parameter estimates, $\hat{\beta}_1$, calculated by the WLS method, is given as

$$\hat{\beta} = (\mathbf{X}^T \hat{\mathbf{W}}^{-1} \mathbf{X})^{-1} \mathbf{X}^T \hat{\mathbf{W}}^{-1} \hat{\mathbf{Y}} \quad (2-6)$$

where

- \mathbf{X} is a $(n \times (k + 1))$ matrix augmented by a column of ones (n is equal to the number of basins in the regression model),
- $\hat{\mathbf{Y}}$ is a $(n \times 1)$ vector of $(\hat{Q}_{d\text{-day},T\text{-year}})$ values, and
- $\hat{\mathbf{W}}$ is a matrix containing the estimates of the weights on the main diagonal, while the off diagonal elements are all zero.

The weights contain a part associated with δ and η . Following Tasker (1980), $\hat{\mathbf{W}}$ is given as

$$\hat{W}_{pq} = \begin{cases} \hat{c}_0 + \hat{c}_1 \left(\frac{1}{POR} \right) & (p = q) \\ 0 & (p \neq q) \end{cases} \quad (2-7)$$

and

$$\hat{c}_0 = \max \left[0, \hat{\sigma}_{OLS}^2 - \hat{c}_1 \left(\frac{1}{n} \sum_{i=1}^n \frac{1}{POR_i} \right) \right] \quad (2-8)$$

$$\hat{c}_1 = \max \left[0, \bar{s}^2 \left(1 + \frac{\bar{K}_{LP3}^2}{2} (1 + 0.75\bar{g}^2) + \bar{K}_{LP3}\bar{g} \right) \right] \quad (2-9)$$

where

- POR* is the number of complete climatic years (March 31 to April 1) of streamflow record at both types (continuous-streamflow record and partial-record) of gaged basins,
- n* is the number of basins used in the regression model,
- $\hat{\sigma}_{OLS}^2$ is the observed standard error of estimate using OLS fitting,
- \bar{K}_{LP3} is the arithmetic average of the log-Pearson Type III deviates for all continuous-streamflow record gaging stations used in the regression model,
- \bar{g} is the arithmetic average of the station skews for all continuous-streamflow record gaging stations used in the regression model, and
- \bar{s} is the arithmetic average of standard deviation of the annual series of low flows estimated by a sigma regression (Tasker and Stedinger, 1989).

The sigma regression was formed from the standard deviations at continuous-streamflow record gaging stations and partial-record gaging stations and their associated basin attributes that were found to be statistically significant ($p < 0.05$).

The use of the weights given by equation (2-7) is valid only for continuous-streamflow record gaging stations. When including partial-record gaging stations into the regression model, the weights computed must be modified. As described earlier, this study used the base-flow correlation method by Stedinger and Thomas (1985) to estimate the low-flow characteristics at the partial-record gaging stations. From this analysis, only an estimate of the variance was computed for each partial-record gaging station (table 5). In this method, the K_{LP3} and *g* values at the partial-record gaging station are assumed to be the same as those at the index station selected. These assumptions also are extended to the graphical method. As can be seen from table 2-1, certain index stations were selected often while others were not selected at all. It is unwise to use the repeated K_{LP3} and *g* values from the partial-record gaging stations to compute the \bar{K}_{LP3} and \bar{g} values in equation (2-9), so only the continuous-streamflow record gaging stations were used to compute \bar{K}_{LP3} and \bar{g} (table 2-1).

For the sigma regression, the standard deviation of the annual series of low flows from the continuous-streamflow record gaging stations and those from the partial-record stations were used. A simple approach was used in this study to estimate the *POR* for the partial-record stations. A value of 1 year was assigned for every year that base-flow discharge measurements were measured regardless of the number of discharge measurements observed that year. These values of one were summed and the total number was assumed to be the entire *POR* for each partial-record gaging station. This approach for partial-record stations was consistent with how the continuous-streamflow record gaging stations were treated, which assigned a value of one for each complete year of streamflow record.

The amount of variability accounted for by regression models is usually moderate, nearly 50 percent, so the model error typically tends to be much larger than the time-sampling error. This result suggests that an exact estimate of *POR* values for the partial-record stations will improve the estimation of the coefficients marginally. A previous study by Ries and Friesz (2000) concluded that the use of equivalent years of record for partial-record stations (Hardison and Moss, 1972) to determine a weight was a poor surrogate for the true value of the *POR* at a partial-record station. Ries and Friesz (2000) also considered that a year (counted within the *POR*) can be assigned a value of greater than one for every year where multiple base-flow discharge measurements were observed, which was not explored in this study nor is it explained in this report.

Table 2-1. Statistical summary of the coefficient values used in the regression models for each low-flow characteristics of interest.

[$Q_{7,10}$, 7-day, 10-year low flow; $Q_{7,2}$, 7-day, 2-year low flow; **, Insufficient data for individual equation for region. The statewide equation is used for this calculation. --, no continuous streamflow-record gaging stations were compared from this model]

Low-flow characteristic	Standard error of the model (percent)	Final number of points in regression	Leverage threshold ¹ (d, h_{limit})	Number of large leverage points ¹	Continuous-streamflow record gaging stations removed
Region 1					
Annual $Q_{7,2}$	101.2	53	0.15	4	07195800, 07073500
Annual $Q_{7,10}$	216.6	50	0.16	3	07195430, 07073500
November-April $Q_{7,10}$	123.7	52	0.11	7	07055875
November-December $Q_{7,10}$	123.6	52	0.11	7	07055875
January-February $Q_{7,10}$	78.4	52	0.11	6	07055875
March-April $Q_{7,10}$	51.8	51	0.15	6	07055875, 07195800
November $Q_{7,10}$	126.9	52	0.11	7	07055875
December $Q_{7,10}$	92.7	52	0.11	7	07055875
January $Q_{7,10}$	77.9	52	0.11	7	07055875
February $Q_{7,10}$	51.2	52	0.15	7	07195800
March $Q_{7,10}$	55.4	52	0.11	7	07195800
April $Q_{7,10}$	52.5	52	0.11	7	07195800

Table 2-1. Statistical summary of the coefficient values used in the regression models for each low-flow characteristics of interest.—Continued

[$Q_{7,10}$, 7-day, 10-year low flow; $Q_{7,2}$, 7-day, 2-year low flow; **, Insufficient data for individual equation for region. The statewide equation is used for this calculation. --, no continuous streamflow-record gaging stations were compared from this model]

Low-flow characteristic	Standard error of the model (percent)	Final number of points in regression	Leverage threshold ¹ (d, h_{limit})	Number of large leverage points ¹	Continuous-streamflow record gaging stations removed
Region 2					
Annual $Q_{7,2}$	79.8	52	0.12	5	--
**Annual $Q_{7,2}$	316.9	81	0.10	4	07356500, 07047980, 07069265
November-April $Q_{7,10}$	69.2	46	0.12	7	07247000, 07260500
November-December $Q_{7,10}$	76.3	47	0.12	6	07260500
**January-February $Q_{7,10}$	28.7	145	0.05	15	07195800, 07360200
**March-April $Q_{7,10}$	46.8	147	0.05	11	--
November $Q_{7,10}$	77.4	46	0.17	7	07247000, 07362100
**December $Q_{7,10}$	76.5	145	0.05	13	07068880, 07069400
**January $Q_{7,10}$	49.7	147	0.05	11	--
**February $Q_{7,10}$	16.3	146	0.05	17	07195800
**March $Q_{7,10}$	31.2	136	0.05	15	07195800
April $Q_{7,10}$	43.7	60	0.07	9	--

Table 2-1. Statistical summary of the coefficient values used in the regression models for each low-flow characteristics of interest.—Continued

[$Q_{7,10}$, 7-day, 10-year low flow; $Q_{7,2}$, 7-day, 2-year low flow; **, Insufficient data for individual equation for region. The statewide equation is used for this calculation. --, no continuous streamflow-record gaging stations were compared from this model]

Low-flow characteristic	Standard error of the model (percent)	Final number of points in regression	Leverage threshold ¹ (d, h_{limit})	Number of large leverage points ¹	Continuous-streamflow record gaging stations removed
Region 3					
Annual $Q_{7,2}$	104.4	30	0.26	3	--
Annual $Q_{7,10}$	121.0	28	0.29	2	--
November-April $Q_{7,10}$	87.4	31	0.25	4	07359800
November-December $Q_{7,10}$	97.5	31	0.25	4	07359800
January-February $Q_{7,10}$	43.6	32	0.12	3	--
March-April $Q_{7,10}$	34.2	31	0.19	2	07360200
November $Q_{7,10}$	101.2	31	0.25	4	07359800
**December $Q_{7,10}$	76.5	145	0.05	13	07068880, 07069400
January $Q_{7,10}$	50.4	32	0.12	3	--
February $Q_{7,10}$	48.5	32	0.12	3	--
March $Q_{7,10}$	61.0	32	0.12	2	--
April $Q_{7,10}$	68.7	32	0.12	1	--

¹ See equations (7 and 8) on page 34 for information on leverage thresholds and leverage points.

Appendix 3. Basin Attributes Tested for Significance in the Regression Analysis

Average basin slope, in percent, is the length of the basin measured along a line areally centered through the drainage divide from the basin outlet (at the point of interest) to where the main channel of the basin extended meets the basin divide (top of basin) divided by the change in elevation from the basin divide to the basin outlet.

Average overland flow distance, in miles, is the average of distances traveled from the centroid of each response unit in the basin to the nearest stream as computed by the Watershed Modeling System (WMS) software (WMS 7.1, Brigham Young University, 2005).

Basin length, in miles, is the length of the basin measured along a line areally centered through the delineated basin from the basin outlet (at the point of interest) to where the main channel of the basin extended meets the basin divide (top of basin).

Basin perimeter, in miles, is the length as measured along the entire drainage-basin boundary.

Basin shape factor, dimensionless, is the ratio of the total drainage area to the basin length.

Basin sinuosity factor, dimensionless, is the ratio of the maximum stream length to the basin length as computed by WMS software.

Coniferous forest, in percent, is the percent of the basin that is coniferous. Defined in 1992 National Land Cover Dataset (NLCD) metadata as areas dominated by trees where 75 percent or more of the tree species maintain their leaves all year. Canopy is never without green foliage.

Deciduous forest, in percent, is the percent of the basin that is deciduous. Defined in NLCD metadata as areas dominated by trees where 75 percent or more of the tree species shed foliage simultaneously in response to seasonal change.

Drainage area, in square miles, is the area measured in a horizontal plane that is enclosed by a drainage divide.

Effective basin width, in miles, is the ratio of the total drainage area to the basin length.

Forest coverage, in percent, calculated from the NLCD as the percent of the basin that is mixed forested.

Maximum flow distance, in miles, is the maximum flow distance within a basin from the start of overland flow to the basin outlet as computed by WMS software.

Maximum flow slope, in foot/foot, is the slope of the maximum flow distance from the start of overland flow to the basin outlet as computed by WMS software.

Maximum stream length, in miles, is the maximum distance from the highest point on a stream within the basin to the basin outlet as computed by WMS software.

Mean annual and seasonal precipitation, in inches, as a basin average along a stream channel is calculated from PRISM average monthly and annual precipitation data for two time periods: 1961 to 1990 and 1971 to 2000. It is based on 2-kilometer grid data. Twenty-two parameters were determined for the two time periods (table 3) based on these data:

- annual at the precipitation gage
- seasonal at the precipitation gage (November – April)
- monthly at the precipitation gage (November – April)
- bimonthly at the precipitation gage (November – December; January – February; March – April)

Mean basin elevation, in feet, is the mean basin elevation in the drainage basin calculated from digital elevation models of the basin of interest.

Mixed coniferous/deciduous forest, in percent, is the percent of the basin that is mixed coniferous and deciduous. Defined in NLCD metadata as areas dominated by trees where neither deciduous nor evergreen species represent more than 75 percent of the cover present.

Mean permeability, in inches per hour, is the mean permeability in each basin as determined from STATSGO (State Soil Geographic) (Schwarz and Alexander, 1995 and U.S. Department of Agriculture, 2001) data.

Pasture/hay, in percent, is the percent of the basin that is pasture and hay. Defined in NLCD metadata as areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops.

Percent facing north, in percent, is the percentage of the basin with an aspect that is directed north as computed by Watershed Modeling System (WMS) software (see Brigham Young University (2005) for further explanation).

Percent facing south, in percent, is the percentage of the basin with an aspect that is directed south as computed by WMS software (see Brigham and Young (2005) for further explanation).

Percent Mississippian, in percent, is the percent of the basin that has surficial geology that is of Mississippian age as defined by the Geologic Map of Arkansas (Haley and others, 1976).

Percent Ordovician, in percent, is the percent of the basin that has surficial geology that is of Ordovician age as defined by the Geologic Map of Arkansas (Haley and others, 1976).

Percent Mississippian, Ordovician, Kn, Kt, Kto, and Tw, in percent, is the percent of the basin that has surficial geology that is of Mississippian, Ordovician, select Cretaceous (Kn – Nacatoch Sand; Kt – Trinity Formation; and Kto – Tokio Formation) and select Tertiary (Tw – Wilcox Group) age as defined by the Geologic Map of Arkansas (Haley and others, 1976).

Row crops, in percent, is the percent of the basin that is used for row crops. Defined in NLCD metadata as areas used for the production of crops, such as corn, soybeans, vegetables, tobacco, and cotton.

Soil drainage, in percent, is the percentage of drainage basin that is well drained as determined from STATSGO (State Soil Geographic) (Schwarz and Alexander, 1995 and U.S. Department of Agriculture, 2001) data.

Soil hydrologic group, dimensionless, is a single value numeric code identifying a composite of the hydrologic characteristics of the soil in the basin. As defined from STATSGO (State Soil Geographic) data, numeric codes are as follows: 1 – high infiltration, deep soils, well drained to excessively drained sands and gravels, 2 - moderate infiltration rates, deep and moderately deep, moderately well and well drained soils with moderately coarse textures, 3 - slow infiltration rates, soils with layers impeding downward movement of water, or soils with moderately fine or fine textures, and 4 - very slow infiltration rates, soils are clayey, have a high water table, or are shallow to an impervious layer (Schwarz and Alexander, 1995; U.S. Department of Agriculture, 1991).

Appendix 4. Basin Attribute Selection

Before the determination of the best set of basin attributes (table 3) to use as predictor variables in multiple linear regression models, two dimensional plots of the different combinations of basin attributes were examined, and a Pearson correlation value was computed. For two paired basin attributes, if their Pearson correlation value was greater than 0.5, then one of these two attributes was eliminated from consideration in the study. To decide which basin attribute to eliminate, additional Pearson correlation values were computed for each basin attribute to the low-flow characteristic of interest, and the attribute having the highest correlation was retained in the analysis. When two different precipitation attributes were considered, the plots and Pearson correlations were not examined because precipitation attributes tend to be highly correlated with one another ($p > 0.7$). Instead, each of the 42 precipitation variables, one at a time, was allowed into the selection analysis with the remaining 22 basin attributes not related to precipitation. This procedure was done to minimize the amount of redundant information or multicollinearity among the basin attributes that would be used in the regression models. Table 4-1 lists the basin attributes removed from this procedure leaving 64 out of the original 75 basin attributes.

Table 4-1. Basin attributes removed from regression analysis after two-dimensional plots indicated moderate correlation.

[Moderate correlation indicated when Pearson's correlation rho was greater than 0.5]

Percent of the basin facing north, in percent
Percent of the basin facing south, in percent
Maximum flow distance, in feet
Maximum stream slope, in foot per foot
Maximum flow slope, in foot per foot
Maximum stream length, in feet
Effective basin width, in feet
Basin perimeter, in feet
Total forest, in percent
Soil drainage, in percent
Basin length, in feet

Basin attributes were selected individually for each regression. Selection of a set of statistically significant basin attributes was done by four methods (best subsets, forward-selection, backward-elimination, and stepwise selection using OLS parameter fits; Montgomery and others, 2001) within each physiographic region of Arkansas. A set of basin attributes was selected when they were found to be statistically significant ($p < 0.05$) and overlapped in all four methods. An additional criterion was that the final set of basin attributes was to have no more than three basin attributes to reduce overfitting of the regression model and minimize the amount of multicollinearity. The three basin attributes were selected from a list of ranked basin attributes based on their p -values.

The metric used to measure the amount of multicollinearity that is present in the regression model is the VIF statistic (Montgomery and others, 2001):

$$VIF_k = \frac{1}{1 - R_k^2}$$

where

- k is the k^{th} predictor variable in a regression model, and
- R_k^2 is the coefficient of determination obtained from regressing the k^{th} basin attribute on all the remaining basin attributes in the regression model.

A VIF_k value greater than 5-10 generally indicates that multicollinearity is a serious problem in the regression model, and the highly correlated variables were removed from the regression model. The attributes with a VIF_k value less than five were chosen as the final set of predictor variables to form a regression model.

A constant of 1 percent was added to any basin attribute reported as a percentage, and if several basin attribute values for individual basins were equal to one, the constant of one was not optimized to linearize the regression model. This nonoptimization treated the basin attribute as a pseudo-binary response variable. This basin-attribute selection procedure was repeated for all of the regression models presented in this report, resulting in 15 unique basin attributes used in the regression models (table 4-2).

Table 4-2. Values of basin attributes found to be significant in the regression model.

[Kn, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Region number (figure 1; plate 1)	Drainage area (square miles)	Precipitation 1971-2000, basin average (inches)		Precipitation 1971-2000, March-April basin average mean seasonal (inches)		Precipitation 1971-2000, November-April basin average mean seasonal (inches)		Precipitation 1961-1990, November basin average mean monthly (inches)		Precipitation 1961-1990, March basin average mean monthly (inches)	
				1971-2000, basin average mean annual (inches)	1971-2000, March-April basin average mean seasonal (inches)	1971-2000, November-April basin average mean seasonal (inches)	1971-2000, November basin average mean monthly (inches)	1961-1990, November basin average mean monthly (inches)	1961-1990, March basin average mean monthly (inches)				
07047976	White River at Combs, Ark.	1	89.6	54.69	9.82	25.84	4.48	4.78					
07047980	White River at Elkins, Ark.	1	182.1	52.95	9.63	25.02	4.37	4.67					
07047985	Middle Fork White River near Fayetteville, Ark.	1	72.2	50.47	9.32	23.69	4.24	4.71					
07048000	West Fork White River at Greenland, Ark.	1	82.9	50.30	9.30	23.50	4.39	4.76					
07048550	West Fork White River east of Fayetteville, Ark.	1	122.2	49.35	9.14	23.06	4.24	4.56					
07048600	White River near Fayetteville, Ark.	1	397.9	51.10	9.38	24.03	4.20	4.50					
07048800	Richland Creek at Goshen, Ark.	1	139.6	49.07	9.26	23.38	4.12	4.39					
07048960	War Eagle Creek near Huntsville, Ark.	1	104.7	50.62	9.51	24.34	4.37	4.65					
07049000	War Eagle Creek near Hindsville, Ark.	1	264.6	48.73	9.27	23.38	4.15	4.42					
07050225	Kings River near Kingston, Ark.	1	100.0	49.78	9.47	24.37	4.41	4.69					
07050250	Kings River near Pleasant Valley, Ark.	1	347.6	47.98	9.10	23.01	4.14	4.38					
07050390	Osage Creek southwest of Berryville, Ark.	1	150.1	48.00	9.01	23.01	4.22	4.42					
07050500	Kings River near Berryville, Ark.	1	527.8	47.89	9.05	22.94	4.15	4.38					
07053207	Long Creek at Denver, Ark.	1	102.8	46.21	8.60	22.25	4.20	4.40					
07053250	Yocum Creek near Oak Grove, Ark.	1	52.5	45.22	8.37	21.33	3.97	4.11					
07054410	Bear Creek near Omaha, Ark.	1	132.9	44.46	8.33	21.63	4.16	4.30					
07055646	Buffalo River near Boxley, Ark.	1	59.2	50.15	9.65	25.38	4.49	4.79					
07055700	Little Buffalo River near Jasper, Ark.	1	125.7	50.52	9.46	25.14	4.39	4.70					
07055875	Richland Creek near Witts Spring, Ark.	1	67.3	50.87	9.55	25.51	4.40	4.79					
07055893	Calf Creek near Silverhill, Ark.	1	45.1	46.73	8.76	23.76	4.39	4.70					
07056000	Buffalo River near St. Joe, Ark.	1	828.5	48.74	9.15	24.36	4.35	4.64					
07056510	Bear Creek near Marshall, Ark.	1	80.8	47.05	8.85	24.02	4.58	4.97					
07057100	Big Creek near Big Flat, Ark.	1	91.0	46.79	8.92	24.09	4.42	4.85					
07058980	Bennetts River at Vidette, Ark.	1	68.3	45.44	8.75	23.11	4.13	4.44					
07059450	Big Creek near Elizabeth, Ark.	1	52.1	45.84	8.88	23.66	4.25	4.62					
07060520	Piney Creek near Calico Rock, Ark.	1	78.4	46.19	8.98	24.01	4.30	4.71					

Table 4-2. Values of basin attributes found to be significant in the regression model.—Continued

[Kn, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Region number (figure 1; plate 1)	Drainage area (square miles)	Precipitation 1971-2000, basin average (inches)		Precipitation 1971-2000, March-April basin average mean seasonal (inches)		Precipitation 1971-2000, November-April basin average mean seasonal (inches)		Precipitation 1961-1990, basin average mean monthly (inches)	
				1971-2000, basin average mean annual (inches)	1971-2000, March-April basin average mean seasonal (inches)	1971-2000, November-April basin average mean seasonal (inches)	1961-1990, November basin average mean monthly (inches)	1961-1990, March basin average mean monthly (inches)			
07060700	South Sylamore Creek at Allison, Ark.	1	142.1	48.21	9.38	25.12	4.61	5.14			
07060710	North Sylamore Creek near Fifty-Six, Ark.	1	58.6	47.27	9.10	24.41	4.48	4.82			
07060720	North Sylamore Creek near Allison, Ark.	1	68.5	47.38	9.15	24.51	4.48	4.87			
07060900	Polk Bayou at Batesville, Ark.	1	167.5	47.75	9.29	25.62	4.55	4.96			
07068880	Mud Creek near Ingram, Ark.	1	34.3	48.04	9.45	25.68	4.70	5.31			
07069265	Myatt Creek near Salem, Ark.	1	101.9	45.86	8.90	23.58	4.25	4.57			
07069270	South Fork Spring River near Salem, Ark.	1	169.7	45.89	8.94	23.53	4.21	4.57			
07069350	Martins Creek near Williford, Ark.	1	67.0	46.60	9.01	24.57	4.50	4.83			
07069400	Janes Creek at Ravenenden Springs, Ark.	1	79.2	46.62	8.99	24.53	4.52	4.87			
07072900	Strawberry River near Franklin, Ark.	1	153.2	46.52	9.15	24.50	4.34	4.78			
07073000	Strawberry River near Evening Shade, Ark.	1	215.3	46.77	9.16	24.75	4.37	4.83			
07073500	Piney Fork at Evening Shade, Ark.	1	99.6	47.31	9.18	25.20	4.42	4.92			
07073600	Mill Creek at Evening Shade, Ark.	1	12.1	48.05	9.26	26.05	4.48	5.06			
07073995	North Big Creek near Evening Shade, Ark.	1	74.8	47.20	9.16	25.19	4.45	4.90			
07074000	Strawberry River near Poughkeepsie, Ark.	1	472.2	47.14	9.18	25.11	4.41	4.90			
07074248	South Big Creek near Strawberry, Ark.	1	69.4	47.93	9.34	25.91	4.55	5.03			
07074250	Reeds Creek near Strawberry, Ark.	1	35.0	48.04	9.44	26.00	4.63	5.03			
07074260	Cooper Creek near Smithville, Ark.	1	32.2	48.36	9.50	26.19	4.70	5.11			
07074400	Curia Creek near Dowdy, Ark.	1	55.6	48.25	9.52	26.15	4.66	5.02			
07074450	Dota Creek near Newark, Ark.	1	56.6	48.33	9.56	26.20	4.67	4.99			
07075200	Devils Fork Little Red River near Brownsville, Ark.	2	194.9	50.42	9.77	26.37	4.90	5.45			
07075300	South Fork of Little Red River at Clinton, Ark.	2	148.2	51.75	9.94	26.89	4.89	5.51			
07075390	Archey Creek at Clinton, Ark.	2	119.2	51.93	9.94	26.73	4.93	5.56			
07075500	South Fork Little Red River near Clinton, Ark.	2	319.3	51.82	9.96	26.86	4.90	5.55			
07076510	Big Creek near Pangburn, Ark.	2	84.3	50.48	9.90	27.00	4.95	5.30			
07076530	Big Creek near Letona, Ark.	2	72.5	50.62	9.97	27.22	5.05	5.39			

Table 4-2. Values of basin attributes found to be significant in the regression model.—Continued

[Kn, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Region number (figure 1; plate 1)	Drainage area (square miles)	Precipitation 1971-2000, basin average (inches)		Precipitation 1971-2000, March-April basin average mean seasonal (inches)		Precipitation 1971-2000, November-April basin average mean seasonal (inches)		Precipitation 1961-1990, November basin average mean monthly (inches)		Precipitation 1961-1990, March basin average mean monthly (inches)	
				1971-2000, basin average (inches)	1971-2000, March-April basin average mean seasonal (inches)	1971-2000, November-April basin average mean seasonal (inches)	1971-2000, November basin average mean monthly (inches)	1961-1990, November basin average mean monthly (inches)	1961-1990, March basin average mean monthly (inches)				
07076800	Bayou Des Arc near Garner, Ark.	2	96.9	50.48	10.11	27.51	5.10	5.49	5.10	5.11	5.11	5.11	
07076850	Cypress Bayou near Beebe, Ark.	2	166.4	50.38	10.10	27.59	5.16	5.11	5.16	5.11	5.11	5.11	
07194790	Muddy Fork Illinois River near Savoy, Ark.	1	73.5	48.33	8.94	22.35	4.03	4.31	4.03	4.31	4.31	4.31	
07194800	Illinois River at Savoy, Ark.	1	168.3	48.04	8.89	22.28	3.92	4.19	3.92	4.19	4.19	4.19	
07194950	Little Osage Creek near Healing Springs, Ark.	1	46.1	47.12	8.62	21.63	3.78	4.13	3.78	4.13	4.13	4.13	
07195400	Illinois River at Hwy 16 near Siloam Springs, Ark.	1	509.8	47.35	8.72	21.81	3.82	4.11	3.82	4.11	4.11	4.11	
07195430	Illinois River South of Siloam Springs, Ark.	1	568.9	47.41	8.73	21.82	3.82	4.12	3.82	4.12	4.12	4.12	
07195800	Flint Creek at Springtown, Ark.	1	14.9	47.63	8.73	21.81	3.79	4.14	3.79	4.14	4.14	4.14	
07196900	Baron Fork at Dutch Mills, Ark.	1	41.2	50.35	9.31	23.39	4.22	4.48	4.22	4.48	4.48	4.48	
07196950	Evansville Creek at Evansville, Ark.	1	23.6	52.10	9.61	24.26	4.31	4.53	4.31	4.53	4.53	4.53	
07246970	Jones Creek near Waldron, Ark.	2	70.4	52.53	9.38	25.65	4.30	4.61	4.30	4.61	4.61	4.61	
07247000	Poteau River at Cauthron, Ark.	2	202.7	52.13	9.32	25.52	4.32	4.61	4.32	4.61	4.61	4.61	
07247010	Poteau River near Bates, Ark.	2	250.6	52.17	9.34	25.46	4.31	4.58	4.31	4.58	4.58	4.58	
07247100	Black Fork near Page, Okla.	2	47.0	58.01	10.56	28.33	5.00	5.39	5.00	5.39	5.39	5.39	
07247200	Big Creek at Howard, Ark.	2	11.1	68.70	12.70	34.55	5.65	6.22	5.65	6.22	6.22	6.22	
07247300	Haws Creek near Black Fork, Ark.	2	8.0	54.67	9.88	26.47	4.51	4.68	4.51	4.68	4.68	4.68	
07249400	James Fork near Hackett, Ark.	2	145.4	49.27	8.88	23.90	4.26	4.31	4.26	4.31	4.31	4.31	
07249500	Cove Creek near Lee Creek, Ark.	2	34.9	52.07	9.61	24.28	4.36	4.58	4.36	4.58	4.58	4.58	
07249600	Lee Creek at Natural Dam, Ark.	2	169.1	51.62	9.54	24.16	4.41	4.71	4.41	4.71	4.71	4.71	
07249700	Mountain Fork Creek at Natural Dam, Ark.	2	14.9	50.91	9.41	23.85	4.33	4.60	4.33	4.60	4.60	4.60	
07249800	Lee Creek at Short, Okla.	2	241.7	51.18	9.46	23.99	4.37	4.69	4.37	4.69	4.69	4.69	
07249985	Lee Creek near Short, Okla.	2	432.2	50.26	9.30	23.55	4.28	4.57	4.28	4.57	4.57	4.57	
07250600	Vache Grasse Creek near Lavaca, Ark.	2	104.6	47.46	8.61	23.31	4.07	4.24	4.07	4.24	4.24	4.24	
07250935	Jones Creek at Winfrey, Ark.	2	20.3	53.04	9.80	24.91	4.47	4.92	4.47	4.92	4.92	4.92	
07250965	Frog Bayou near Winfrey, Ark.	2	54.9	53.50	9.88	25.15	4.51	5.00	4.51	5.00	5.00	5.00	
07250974	Jack Creek near Winfrey, Ark.	2	6.9	53.38	9.98	25.27	4.50	4.88	4.50	4.88	4.88	4.88	

Table 4-2. Values of basin attributes found to be significant in the regression model.—Continued

[Kn, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Region number (figure 1; plate 1)	Drainage area (square miles)	Precipitation 1971-2000, basin average (inches)		Precipitation 1971-2000, March-April basin average mean seasonal (inches)		Precipitation 1971-2000, November-April basin average mean seasonal (inches)		Precipitation 1961-1990, November basin average mean monthly (inches)		Precipitation 1961-1990, March basin average mean monthly (inches)	
				1971-2000, basin average	1971-2000, mean annual	1971-2000, March-April basin average	1971-2000, mean seasonal	1971-2000, November-April basin average	1971-2000, mean seasonal	1961-1990, November basin average	1961-1990, mean monthly	1961-1990, March basin average	1961-1990, mean monthly
07251400	Cedar Creek near Rudy, Ark.	2	51.4	50.67	50.67	9.47	24.09	4.35	4.67	4.35	4.67	4.85	4.90
07251800	Little Mulberry Creek near Oark, Ark.	2	67.2	51.91	51.91	9.68	25.47	4.52	4.85	4.52	4.85	4.90	4.87
07251900	Mulberry River near Cass, Ark.	2	267.1	52.06	52.06	9.68	25.45	4.55	4.90	4.55	4.90	4.87	4.73
07252000	Mulberry River near Mulberry, Ark.	2	373.5	52.02	52.02	9.66	25.30	4.52	4.87	4.52	4.87	4.73	4.66
07252100	Little Mulberry Creek near Mulberry, Ark.	2	51.4	51.03	51.03	9.52	24.59	4.39	4.73	4.39	4.73	4.66	4.66
07252300	White Oak Creek near Ozark, Ark.	2	75.5	49.99	49.99	9.26	24.32	4.30	4.66	4.30	4.66	4.66	4.85
07256200	Horsehead Creek at Hartman, Ark.	2	126.3	49.31	49.31	9.12	24.55	4.35	4.66	4.35	4.66	4.84	5.25
07256700	Big Shoal Creek near New Blaine, Ark.	2	48.8	52.36	52.36	9.81	26.13	4.52	4.84	4.52	4.84	5.25	4.89
07257006	Big Piney Creek at Highway 164 near Dover, Ark.	2	297.2	51.17	51.17	9.65	25.79	4.46	4.84	4.46	4.84	5.07	4.41
07257470	Middle Fork Illinois Bayou near Hector, Ark.	2	57.4	50.83	50.83	9.56	25.89	4.67	5.25	4.67	5.25	4.89	5.07
07257480	North Fork Illinois Bayou near Scottsville, Ark.	2	86.7	50.74	50.74	9.58	25.79	4.40	4.89	4.40	4.89	5.07	4.41
07257500	Illinois Bayou near Scottsville, Ark.	2	241.5	50.51	50.51	9.52	25.77	4.56	5.07	4.56	5.07	4.41	4.41
07258500	Petit Jean River near Booneville, Ark.	2	240.7	49.17	49.17	8.81	24.14	4.17	4.41	4.17	4.41	5.19	5.19
07258700	Sugar Creek near Sugar Grove, Ark.	2	95.0	54.84	54.84	10.03	27.28	4.35	5.19	4.35	5.19	5.19	4.77
07260000	Dutch Creek at Walbreak, Ark.	2	81.9	54.58	54.58	10.00	27.30	4.57	5.19	4.57	5.19	4.77	4.77
07260500	Petit Jean River at Danville, Ark.	2	763.0	50.70	50.70	9.24	25.31	4.30	4.77	4.30	4.77	4.99	4.99
07260673	West Fork Point Remove Creek near Hattieville, Ark.	2	221.1	49.73	49.73	9.47	25.89	4.51	4.99	4.51	4.99	5.02	5.02
07260700	Point Remove Creek near Morrilton, Ark.	2	489.0	49.82	49.82	9.50	26.21	4.60	5.02	4.60	5.02	5.33	5.33
07261000	Cadron Creek near Guy, Ark.	2	172.2	51.24	51.24	9.95	27.21	5.01	5.33	5.01	5.33	5.32	5.32
07261200	East Fork Cadron Creek near Enola, Ark.	2	122.2	50.67	50.67	9.95	27.11	5.00	5.32	5.00	5.32	5.60	5.60
07261400	Mill Creek near Boles, Ark.	2	50.4	59.55	59.55	10.99	29.94	4.74	5.60	4.74	5.60	5.20	5.20
07261500	Fourche LaFave River near Gravelly, Ark.	2	409.9	54.90	54.90	9.99	27.36	4.63	5.20	4.63	5.20	5.32	5.32
07261600	Gafford Creek near Bluffton, Ark.	2	41.4	53.91	53.91	10.00	27.44	4.84	5.32	4.84	5.32	5.68	5.68
07263000	South Fourche LaFave River near Hollis, Ark.	2	209.7	54.78	54.78	10.39	28.45	5.15	5.68	5.15	5.68	5.41	5.41
07263295	Maumelle River at Williams Junction, Ark.	2	46.0	54.86	54.86	10.69	29.34	5.08	5.41	5.08	5.41	4.92	4.92
07336900	Walnut Bayou near Foreman, Ark.	2	90.1	51.50	51.50	8.90	26.31	4.58	4.92	4.58	4.92	4.92	4.92

Table 4-2. Values of basin attributes found to be significant in the regression model.—Continued

[Kn, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Region number (figure 1; plate 1)	Drainage area (square miles)	Precipitation 1971-2000, basin average (inches)		Precipitation 1971-2000, March-April mean seasonal (inches)		Precipitation 1971-2000, November-April mean seasonal (inches)		Precipitation 1961-1990, basin average mean monthly (inches)	
				1971-2000, basin average mean annual (inches)	1971-2000, March-April mean seasonal (inches)	1971-2000, November-April mean seasonal (inches)	1961-1990, November basin average mean monthly (inches)	1961-1990, March basin average mean monthly (inches)			
07338700	Twomile Creek near Hatfield, Ark.	3	15.9	59.93	10.70	28.97	4.94	5.50			
07338720	Mountain Fork near Hatfield, Ark.	3	168.4	59.98	10.74	29.19	4.86	5.52			
07339200	Rolling Fork near Grannis, Ark.	3	31.1	57.49	10.37	28.17	4.64	5.43			
07339500	Rolling Fork near DeQueen, Ark.	3	187.7	56.36	10.11	27.84	4.63	5.36			
07340300	Cossatot River near Vandervoort, Ark.	3	89.3	61.93	11.41	30.55	5.00	5.87			
07340400	Cossatot River near Umpire, Ark.	3	141.4	60.42	11.07	29.82	4.94	5.80			
07341000	Saline River near Dierks, Ark.	3	120.3	59.04	10.73	30.23	5.16	5.91			
07341200	Saline River near Lockesburg, Ark.	3	255.8	57.24	10.42	29.49	5.03	5.66			
07349430	Bodcau Creek at Stamps, Ark.	2	237.6	53.54	9.60	28.49	5.07	4.96			
07355810	Ouachita River near Mena, Ark.	3	39.5	61.66	11.18	30.47	5.28	5.85			
07356000	Ouachita River near Mount Ida, Ark.	3	413.5	59.55	11.02	29.97	4.93	5.82			
07356500	South Fork Ouachita River at Mount Ida, Ark.	3	61.0	56.83	10.58	29.23	4.97	5.80			
07357710	Glazypeau Creek at Mountain Pine, Ark.	3	30.1	57.60	10.96	30.26	5.70	5.54			
07358010	Fourche A Loupe Creek near Hot Springs, Ark.	3	4.7	56.93	10.82	29.83	5.67	5.57			
07358700	Gulpha Creek near Hot Springs, Ark.	3	38.9	56.70	10.66	29.53	5.61	5.45			
07359610	Caddo River near Caddo Gap, Ark.	3	132.0	59.17	11.07	30.39	5.25	5.93			
07359800	Caddo River near Alpine, Ark.	3	301.4	58.97	10.97	30.39	5.37	5.88			
07360200	Little Missouri River near Langley, Ark.	3	67.7	64.57	12.29	32.80	5.38	6.54			
07361000	Little Missouri River near Murfreesboro, Ark.	3	381.6	58.99	11.03	30.42	5.28	5.85			
07361025	Prairie Creek near Murfreesboro, Ark.	3	32.0	57.02	10.57	29.57	5.39	5.56			
07361160	North Fork Ozan Creek near McCaskill, Ark.	3	97.3	54.91	10.05	28.57	5.12	5.27			
07361500	Antoine River at Antoine, Ark.	3	178.9	57.26	10.58	29.90	5.62	5.48			
07361540	Wolf Creek near Antoine, Ark.	3	37.5	55.78	10.39	29.23	5.48	5.32			
07361640	Little Terre Rouge Creek near Emmet, Ark.	3	40.7	54.38	9.89	28.81	5.33	5.09			
07361650	Terre Rouge Creek near Prescott, Ark.	3	232.4	54.30	9.84	28.79	5.28	5.07			
07361800	Terre Noire Creek near Gundon, Ark.	3	257.1	54.70	10.21	28.93	5.36	5.11			

Table 4-2. Values of basin attributes found to be significant in the regression model.—Continued

[Kn, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Region number (figure 1; plate 1)	Drainage area (square miles)	Precipitation 1971-2000, basin average (inches)		Precipitation 1971-2000, March-April basin average mean seasonal (inches)		Precipitation 1971-2000, November-April basin average mean seasonal (inches)		Precipitation 1961-1990, November basin average mean monthly (inches)		Precipitation 1961-1990, March basin average mean monthly (inches)	
				1971-2000, basin average (inches)	1971-2000, March-April basin average mean seasonal (inches)	1971-2000, November-April basin average mean seasonal (inches)	1961-1990, November basin average mean monthly (inches)	1961-1990, March basin average mean monthly (inches)					
07362090	Camp Creek near Smackover, Ark.	2	43.1	54.38	9.94	28.90	4.71	4.99					
07362100	Smackover Creek near Smackover, Ark.	2	384.3	53.88	9.86	28.89	4.85	5.02					
07362500	Moro Creek near Fordyce, Ark.	2	239.9	53.94	10.08	29.53	4.97	5.18					
07362550	Moro Creek near Banks, Ark.	2	405.0	54.13	10.20	29.79	4.97	5.25					
07362587	Alum Fork Saline River near Reform, Ark.	3	27.1	59.63	11.69	31.56	5.58	5.99					
07362600	Alum Fork Saline River at Crows, Ark.	3	121.2	56.58	11.12	30.17	5.37	5.67					
07362700	Middle Fork Saline River at Crows, Ark.	3	101.7	57.12	11.12	30.20	5.60	5.79					
07362800	South Fork Saline River near Hot Springs, Ark.	3	12.5	57.34	10.87	30.01	5.66	5.52					
07362900	North Fork Saline River near Benton, Ark.	3	132.6	54.33	10.69	29.14	5.26	5.40					
07363110	Big Creek at Poyen, Ark.	3	31.3	54.62	10.46	29.27	5.23	5.27					
07363160	Saline River near Leola, Ark.	3	931.9	55.12	10.64	29.38	5.33	5.42					
07363180	Lost Creek near Sheridan, Ark.	2	67.9	53.49	10.37	28.96	5.10	5.15					
07363276	Hurricane Creek near Ico, Ark.	2	88.8	53.63	10.47	28.88	5.29	5.20					
07364060	Bayou Lapile at Strong, Ark.	2	88.8	55.06	10.60	30.27	4.74	5.32					
07365800	Cornie Bayou near Three Creeks, Ark.	2	180.3	54.16	9.94	29.21	4.85	4.96					
07365900	Three Creeks near Three Creeks, Ark.	2	104.5	54.78	10.10	29.33	4.71	5.02					

Table 4-2. Basin attributes found to be significant in the regression model.—Continued

[Kn, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Precipitation			Soil hydrologic group (dimensionless)	Percent Ordovician (percent)	Percent Mississippian, Ordovician, Kn, Ki, Kto and Tw (percent)	Tau, annual (days)
		1961-1990, November-December basin average mean seasonal (inches)	1961-1990 March-April basin average mean seasonal (inches)	1961-1990, November-April basin average mean monthly (inches)				
07047976	White River at Combs, Ark.	8.26	9.40	23.12	2.60	0.0	0.0	9.00
07047980	White River at Elkins, Ark.	8.01	9.24	22.66	2.60	0.0	8.2	9.02
07047985	Middle Fork White River near Fayetteville, Ark.	7.78	9.27	22.47	2.60	0.0	18.5	8.89
07048000	West Fork White River at Greenland, Ark.	7.95	9.38	22.68	2.60	0.0	9.9	8.67
07048550	West Fork White River east of Fayetteville, Ark.	7.69	9.10	21.91	2.60	0.0	29.9	9.02
07048600	White River near Fayetteville, Ark.	7.68	9.02	21.84	2.60	0.0	20.6	9.12
07048800	Richland Creek at Goshen, Ark.	7.57	8.80	21.31	2.60	0.0	28.3	9.56
07048960	War Eagle Creek near Huntsville, Ark.	8.09	9.11	22.43	2.60	0.0	0.5	9.84
07049000	War Eagle Creek near Hindsville, Ark.	7.66	8.74	21.35	2.53	0.0	35.8	10.61
07050225	Kings River near Kingston, Ark.	8.19	9.11	22.59	2.60	0.0	19.1	10.29
07050250	Kings River near Pleasant Valley, Ark.	7.62	8.63	21.18	2.52	17.3	70.1	10.47
07050390	Osage Creek southwest of Berryville, Ark.	7.74	8.63	21.38	2.68	29.1	62.3	10.66
07050500	Kings River near Berryville, Ark.	7.63	8.61	21.18	2.59	24.6	69.6	10.39
07053207	Long Creek at Denver, Ark.	7.76	8.49	21.26	2.49	0.0	78.8	13.15
07053250	Yocum Creek near Oak Grove, Ark.	7.22	8.18	20.01	2.46	7.5	99.6	13.61
07054410	Bear Creek near Omaha, Ark.	7.71	8.33	20.96	2.62	46.4	100.0	14.38
07055646	Buffalo River near Boxley, Ark.	8.36	9.28	23.00	2.60	0.0	7.4	10.54
07055700	Little Buffalo River near Jasper, Ark.	8.31	8.93	22.70	2.60	0.7	28.6	11.06
07055875	Richland Creek near Witts Spring, Ark.	8.68	9.15	23.76	2.60	0.0	0.6	9.56
07055893	Calf Creek near Silverhill, Ark.	8.31	8.93	22.70	2.64	0.0	66.8	11.32
07056000	Buffalo River near St. Joe, Ark.	8.17	8.86	22.40	2.57	8.7	50.2	11.52
07056510	Bear Creek near Marshall, Ark.	8.65	9.31	23.62	2.65	0.0	49.0	11.00
07057100	Big Creek near Big Flat, Ark.	8.40	9.03	22.94	2.50	10.0	93.7	11.10
07058980	Bennetts River at Vidette, Ark.	7.95	8.62	21.81	2.68	100.0	100.0	22.99
07059450	Big Creek near Elizabeth, Ark.	8.21	8.78	22.50	2.60	100.0	100.0	21.78
07060520	Piney Creek near Calico Rock, Ark.	8.37	8.84	22.92	2.64	100.0	100.0	16.32

Table 4-2. Basin attributes found to be significant in the regression model.—Continued

Station number	Station name	Precipitation			Soil hydrologic group (dimensionless)	Percent Ordovician (percent)	Percent Mississippian, Kn, Ki, Kto and Tw (percent)	Tau, annual (days)
		1961-1990, November-December basin average mean seasonal (inches)	1961-1990 March-April basin average mean seasonal (inches)	1961-1990 November-April basin average mean monthly (inches)				
07060700	South Sylamore Creek at Allison, Ark.	8.98	9.59	24.55	2.49	95.0	12.05	
07060710	North Sylamore Creek near Fifty-Six, Ark.	8.62	9.10	23.48	2.57	100.0	12.71	
07060720	North Sylamore Creek near Allison, Ark.	8.67	9.16	23.62	2.58	100.0	12.42	
07060900	Polk Bayou at Batesville, Ark.	8.83	9.43	24.37	2.55	98.8	10.22	
07068880	Mud Creek near Ingram, Ark.	9.21	9.79	25.73	2.60	98.3	39.47	
07069265	Myatt Creek near Salem, Ark.	8.28	8.84	22.54	2.60	100.0	24.07	
07069270	South Fork Spring River near Salem, Ark.	8.15	8.81	22.34	2.60	100.0	22.20	
07069350	Martins Creek near Williford, Ark.	8.79	9.09	23.90	2.57	100.0	27.25	
07069400	Janes Creek at Ravenden Springs, Ark.	8.85	9.15	24.07	2.59	99.9	32.07	
07072900	Strawberry River near Franklin, Ark.	8.43	8.95	23.12	2.58	99.3	16.15	
07073000	Strawberry River near Evening Shade, Ark.	8.47	9.02	23.30	2.65	99.5	14.52	
07073500	Piney Fork at Evening Shade, Ark.	8.62	9.17	23.77	2.55	99.6	11.77	
07073600	Mill Creek at Evening Shade, Ark.	8.72	9.36	24.23	2.50	100.0	11.75	
07073995	North Big Creek near Evening Shade, Ark.	8.66	9.16	23.80	2.59	100.0	16.98	
07074000	Strawberry River near Poughkeepsie, Ark.	8.58	9.14	23.65	2.60	99.8	17.01	
07074248	South Big Creek near Strawberry, Ark.	8.87	9.41	24.53	2.52	96.9	19.89	
07074250	Reeds Creek near Strawberry, Ark.	9.07	9.51	25.00	2.50	91.4	19.19	
07074260	Cooper Creek near Smithville, Ark.	9.21	9.53	25.34	2.59	99.0	21.61	
07074400	Curia Creek near Dowdy, Ark.	9.13	9.59	25.15	2.55	90.8	18.26	
07074450	Dota Creek near Newark, Ark.	9.14	9.62	25.14	2.50	77.0	14.10	
07075200	Devils Fork Little Red River near Brownsville, Ark.	9.56	10.19	26.16	2.64	8.8	8.55	
07075300	South Fork of Little Red River at Clinton, Ark.	9.60	10.14	26.30	2.62	0.0	9.87	
07075390	Archey Creek at Clinton, Ark.	9.61	10.22	26.32	2.60	0.0	9.76	
07075500	South Fork Little Red River near Clinton, Ark.	9.63	10.18	26.37	2.61	0.0	7.71	
07076510	Big Creek near Pangburn, Ark.	9.55	10.11	26.19	2.60	0.0	7.73	
07076530	Big Creek near Letona, Ark.	9.69	10.22	26.58	2.84	0.0	7.46	

[Kn, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Table 4-2. Basin attributes found to be significant in the regression model.—Continued

[Kn, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Precipitation			Soil hydrologic group (dimensionless)	Percent Ordovician (percent)	Percent Mississippian, Ordovician, Kn, Ki, Kto and Tw (percent)	Tau, annual (days)
		1961-1990, November-December basin average mean seasonal (inches)	1961-1990 March-April basin average mean seasonal (inches)	1961-1990 November-April basin average mean monthly (inches)				
07076800	Bayou Des Arc near Garner, Ark.	9.99	10.35	27.30	2.82	0.0	0.0	6.84
07076850	Cypress Bayou near Beebe, Ark.	9.93	10.02	26.73	3.03	0.0	6.9	5.54
07194790	Muddy Fork Illinois River near Savoy, Ark.	7.31	8.74	20.85	2.62	0.0	78.3	10.56
07194800	Illinois River at Savoy, Ark.	7.13	8.57	20.33	2.60	0.0	74.0	10.24
07194950	Little Osage Creek near Healing Springs, Ark.	7.00	8.37	19.79	2.63	0.0	100.0	12.23
07195400	Illinois River at Hwy 16 near Siloam Springs, Ark.	7.02	8.42	19.91	2.55	0.0	89.1	17.97
07195430	Illinois River south of Siloam Springs, Ark.	7.02	8.43	19.91	2.55	0.0	90.3	19.79
07195800	Flint Creek at Springtown, Ark.	7.01	8.45	19.83	2.38	0.0	100.0	16.45
07196900	Baron Fork at Dutch Mills, Ark.	7.56	8.95	21.65	2.60	0.0	58.4	11.70
07196950	Evansville Creek at Evansville, Ark.	7.66	8.98	21.97	2.60	0.0	8.5	10.83
07246970	Jones Creek near Waldron, Ark.	8.23	9.15	22.97	2.93	0.0	0.0	7.37
07247000	Poteau River at Cauthron, Ark.	8.28	9.12	23.01	2.90	0.0	0.0	6.95
07247010	Poteau River near Bates, Ark.	8.23	9.07	22.87	2.90	0.0	0.0	7.76
07247100	Black Fork near Page, Okla.	9.48	10.78	26.96	2.84	0.0	14.6	8.31
07247200	Big Creek at Howard, Ark.	10.95	12.28	31.15	2.89	0.0	36.0	8.37
07247300	Haws Creek near Black Fork, Ark.	8.38	9.50	23.62	2.90	0.0	0.0	8.01
07249400	James Fork near Hackett, Ark.	7.89	8.61	21.68	2.92	0.0	0.0	9.34
07249500	Cove Creek near Lee Creek, Ark.	7.77	9.07	22.25	2.60	0.0	11.0	8.58
07249600	Lee Creek at Natural Dam, Ark.	7.89	9.23	22.55	2.60	0.0	2.4	8.53
07249700	Mountain Fork Creek at Natural Dam, Ark.	7.66	8.92	21.90	2.60	0.0	5.8	8.55
07249800	Lee Creek at Short, Okla.	7.81	9.11	22.29	2.60	0.0	2.6	9.58
07249985	Lee Creek near Short, Okla.	7.60	8.96	21.74	2.59	0.0	5.6	8.83
07250600	Vache Grasse Creek near Lavaca, Ark.	7.61	8.28	20.84	2.93	0.0	0.0	8.57
07250935	Jones Creek at Winfrey, Ark.	8.24	9.63	23.66	2.60	0.0	0.0	8.56
07250965	Frog Bayou near Winfrey, Ark.	8.30	9.71	23.75	2.60	0.0	0.0	8.57
07250974	Jack Creek near Winfrey, Ark.	8.25	9.76	23.64	2.60	0.0	0.0	8.64

Table 4-2. Basin attributes found to be significant in the regression model.—Continued

[Kn, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Precipitation 1961-1990,,		Precipitation 1961-1990 March-April basin average mean seasonal (inches)	Precipitation 1961-1990 November-April basin average mean monthly (inches)	Soil hydrologic group (dimensionless)	Percent Ordovician (percent)	Percent Mississippian, Kn, Ki, Kto and Tw (percent)	Tau, annual (days)
		November-December basin average mean seasonal (inches)	November-December basin average mean seasonal (inches)						
07251400	Cedar Creek near Rudy, Ark.	7.75	9.01	9.01	22.11	2.60	0.0	0.0	8.44
07251800	Little Mulberry Creek near Oark, Ark.	8.43	9.43	9.43	23.20	2.60	0.0	0.0	9.39
07251900	Mulberry River near Cass, Ark.	8.42	9.53	9.53	23.37	2.60	0.0	0.0	9.12
07252100	Little Mulberry Creek near Mulberry, Ark.	7.99	9.31	9.31	22.81	2.85	0.0	0.0	8.87
07252000	Mulberry River near Mulberry, Ark.	8.35	9.49	9.49	23.31	2.60	0.0	0.0	9.16
07252300	White Oak Creek near Ozark, Ark.	8.03	8.83	8.83	22.21	2.78	0.0	0.0	8.87
07256200	Horsehead Creek at Hartman, Ark.	8.24	8.89	8.89	22.56	2.80	0.0	0.0	8.87
07256700	Big Shoal Creek near New Blaine, Ark.	8.90	9.58	9.58	24.56	2.73	0.0	0.0	8.62
07257006	Big Piney Creek at Highway 164 near Dover, Ark.	8.51	9.28	9.28	23.42	2.60	0.0	3.0	8.97
07257470	Middle Fork Illinois Bayou near Hector, Ark.	9.22	9.62	9.62	25.24	2.60	0.0	0.0	8.93
07257480	North Fork Illinois Bayou near Scottsville, Ark.	8.70	9.19	9.19	23.99	2.60	0.0	0.0	8.73
07257500	Illinois Bayou near Scottsville, Ark.	8.98	9.41	9.41	24.67	2.62	0.0	0.0	8.59
07258500	Petit Jean River near Booneville, Ark.	7.95	8.63	8.63	21.90	2.76	0.0	0.0	7.31
07258700	Sugar Creek near Sugar Grove, Ark.	8.55	9.92	9.92	24.57	2.63	0.0	0.0	7.62
07260000	Dutch Creek at Waltreak, Ark.	8.86	9.89	9.89	24.87	2.76	0.0	0.0	8.17
07260500	Petit Jean River at Danville, Ark.	8.31	9.12	9.12	23.04	2.74	0.0	0.0	8.87
07260673	West Fork Point Remove Creek near Hattieville, Ark.	8.87	9.27	9.27	24.36	2.75	0.0	0.0	8.58
07260700	Point Remove Creek near Morrilton, Ark.	9.01	9.32	9.32	24.59	2.81	0.0	0.0	7.99
07261000	Cadron Creek near Guy, Ark.	9.65	10.04	10.04	26.27	2.87	0.0	0.0	9.38
07261200	East Fork Cadron Creek near Enola, Ark.	9.65	10.07	10.07	26.39	2.89	0.0	0.0	8.11
07261400	Mill Creek near Boles, Ark.	9.30	10.60	10.60	26.44	2.81	0.0	0.0	8.21
07261500	Fourche LaFave River near Gravelly, Ark.	8.98	9.95	9.95	25.08	2.76	0.0	1.6	8.63
07261600	Gafford Creek near Bluffton, Ark.	9.53	9.95	9.95	25.83	2.88	0.0	0.0	8.59
07263000	South Fourche LaFave River near Hollis, Ark.	9.98	10.62	10.62	27.31	2.83	0.0	4.5	7.71
07263295	Maumelle River at Williams Junction, Ark.	9.94	10.29	10.29	27.14	2.80	0.0	3.5	6.53

Table 4-2. Basin attributes found to be significant in the regression model.—Continued

[Kn, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Precipitation			Soil hydrologic group (dimensionless)	Percent Ordovician (percent)	Percent Mississippian, Ordovician, Kn, Ki, Kto and Tw (percent)	Tau, annual (days)
		1961-1990, November-December basin average mean seasonal (inches)	1961-1990 March-April basin average mean seasonal (inches)	1961-1990 November-April basin average mean monthly (inches)				
07336900	Walnut Bayou near Foreman, Ark.	8.78	9.39	24.65	3.30	27.4	7.57	
07338700	Twomile Creek near Hatfield, Ark.	9.43	10.72	26.72	2.59	96.1	9.17	
07338720	Mountain Fork near Hatfield, Ark.	9.36	10.69	26.68	2.76	71.8	9.01	
07339200	Rolling Fork near Grannis, Ark.	9.07	10.44	26.10	2.85	97.8	8.78	
07339500	Rolling Fork near DeQueen, Ark.	9.02	10.23	25.79	2.90	87.0	7.79	
07340300	Cossatot River near Vandervoort, Ark.	9.79	11.24	28.06	2.64	79.8	10.09	
07340400	Cossatot River near Umpire, Ark.	9.68	11.08	27.73	2.73	87.2	9.24	
07341000	Saline River near Dierks, Ark.	10.09	11.06	28.34	2.88	89.9	7.11	
07341200	Saline River near Lockesburg, Ark.	9.83	10.60	27.40	2.97	68.9	7.51	
07349430	Bodcau Creek at Stamps, Ark.	10.15	9.69	27.53	3.09	68.0	7.18	
07355810	Ouachita River near Mena, Ark.	10.04	11.44	28.49	2.66	69.3	8.99	
07356000	Ouachita River near Mount Ida, Ark.	9.65	11.05	27.53	2.67	76.2	9.14	
07356500	South Fork Ouachita River at Mount Ida, Ark.	9.78	10.82	27.56	2.78	100.0	8.81	
07357710	Glazypeau Creek at Mountain Pine, Ark.	10.68	10.97	28.82	2.63	95.8	10.67	
07358010	Fourche A Loupe Creek near Hot Springs, Ark.	10.76	10.97	29.04	2.50	82.9	10.51	
07358700	Gulpha Creek near Hot Springs, Ark.	10.60	10.92	28.71	2.65	92.9	9.13	
07359610	Caddo River near Caddo Gap, Ark.	10.25	11.23	28.90	2.68	84.3	12.10	
07359800	Caddo River near Alpine, Ark.	10.44	11.19	29.05	2.75	94.3	12.01	
07360200	Little Missouri River near Langley, Ark.	10.60	12.32	30.69	2.56	77.2	9.15	
07361000	Little Missouri River near Murfreesboro, Ark.	10.28	11.09	28.60	2.83	57.4	7.33	
07361025	Prairie Creek near Murfreesboro, Ark.	10.41	10.71	28.34	2.94	34.1	7.45	
07361160	North Fork Ozan Creek near McCaskill, Ark.	9.98	10.27	27.32	3.37	29.0	6.89	
07361500	Antoine River at Antoine, Ark.	10.80	10.67	28.83	2.89	44.0	7.25	
07361540	Wolf Creek near Antoine, Ark.	10.51	10.37	28.07	2.91	50.7	7.23	
07361640	Little Terre Rouge Creek near Emmet, Ark.	10.36	10.13	28.10	2.91	54.9	7.13	
07361650	Terre Rouge Creek near Prescott, Ark.	10.33	10.05	28.05	3.23	27.3	7.80	

Table 4-2. Basin attributes found to be significant in the regression model.—Continued

[Kn, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Precipitation			Soil hydrologic group (dimensionless)	Percent Ordovician (percent)	Percent Mississippian, Kn, Ki, Kto and Tw (percent)	Tau, annual (days)
		1961-1990, November-December basin average mean seasonal (inches)	1961-1990 March-April basin average mean seasonal (inches)	1961-1990 November-April basin average mean monthly (inches)				
07361800	Terre Noire Creek near Gurdon, Ark.	10.41	10.17	27.90	3.27	0.0	16.9	8.30
07362090	Camp Creek near Smackover, Ark.	9.52	9.24	27.37	3.07	0.0	0.0	9.48
07362100	Smackover Creek near Smackover, Ark.	9.84	9.39	27.41	3.06	0.0	0.0	9.57
07362500	Moro Creek near Fordyce, Ark.	10.19	9.83	28.09	3.32	0.0	7.0	5.48
07362550	Moro Creek near Banks, Ark.	10.18	9.85	28.28	3.30	0.0	4.1	6.63
07362587	Alum Fork Saline River near Reform, Ark.	10.91	11.58	30.27	2.90	0.0	23.1	6.19
07362600	Alum Fork Saline River at Crows, Ark.	10.42	11.06	28.73	2.86	39.5	64.2	7.06
07362700	Middle Fork Saline River at Crows, Ark.	10.73	11.23	29.20	2.76	73.8	86.8	7.38
07362800	South Fork Saline River near Hot Springs, Ark.	10.66	10.98	28.84	2.54	73.5	87.5	8.48
07362900	North Fork Saline River near Benton, Ark.	10.19	10.63	27.89	2.90	62.3	80.8	6.70
07363110	Big Creek at Poyen, Ark.	10.37	10.41	28.25	3.30	0.0	57.2	6.97
07363160	Saline River near Leola, Ark.	10.39	10.72	28.37	2.94	41.8	67.5	6.59
07363180	Lost Creek near Sheridan, Ark.	10.17	10.35	27.89	3.09	0.0	56.7	6.22
07363276	Hurricane Creek near Ico, Ark.	10.28	10.55	28.02	2.95	31.1	73.3	6.03
07364060	Bayou Lapile at Strong, Ark.	9.62	9.69	28.40	3.05	0.0	0.0	7.69
07365800	Cornie Bayou near Three Creeks, Ark.	9.77	9.25	27.41	3.13	0.0	0.0	8.07
07365900	Three Creeks near Three Creeks, Ark.	9.50	9.28	27.59	3.11	0.0	0.0	8.49

Table 4-2. Basin attributes found to be significant in the regression model.—Continued

[Kn, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Tau November-December (days)	Tau March-April (days)
07047976	White River at Combs, Ark.	9.66	8.33
07047980	White River at Elkins, Ark.	9.66	8.33
07047985	Middle Fork White River near Fayetteville, Ark.	9.52	8.21
07048000	West Fork White River at Greenland, Ark.	10.56	8.22
07048550	West Fork White River east of Fayetteville, Ark.	9.28	8.25
07048600	White River near Fayetteville, Ark.	9.12	8.29
07048800	Richland Creek at Goshen, Ark.	9.82	8.67
07048960	War Eagle Creek near Huntsville, Ark.	10.42	9.10
07049000	War Eagle Creek near Hindsville, Ark.	11.35	9.72
07050225	Kings River near Kingston, Ark.	10.80	9.50
07050250	Kings River near Pleasant Valley, Ark.	11.12	9.28
07050390	Osage Creek southwest of Berryville, Ark.	11.39	9.56
07050500	Kings River near Berryville, Ark.	11.04	9.17
07053207	Long Creek at Denver, Ark.	14.27	11.83
07053250	Yocum Creek near Oak Grove, Ark.	14.95	12.30
07054410	Bear Creek near Omaha, Ark.	15.52	12.47
07055646	Buffalo River near Boxley, Ark.	10.61	9.66
07055700	Little Buffalo River near Jasper, Ark.	10.97	9.96
07055875	Richland Creek near Witts Spring, Ark.	8.30	9.02
07055893	Calf Creek near Silverhill, Ark.	11.03	9.47
07056000	Buffalo River near St. Joe, Ark.	11.35	9.49
07056510	Bear Creek near Marshall, Ark.	10.69	9.22
07057100	Big Creek near Big Flat, Ark.	10.62	8.81
07058980	Bennetts River at Vidette, Ark.	23.39	17.72
07059450	Big Creek near Elizabeth, Ark.	22.08	16.78
07060520	Piney Creek near Calico Rock, Ark.	15.78	12.37
07060700	South Synamore Creek at Allison, Ark.	10.84	9.00
07060710	North Synamore Creek near Fifty-Six, Ark.	10.43	8.55
07060720	North Synamore Creek near Allison, Ark.	10.64	8.78

Table 4-2. Basin attributes found to be significant in the regression model.—Continued

[K.n, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Tau November-December (days)	Tau March-April (days)
07060900	Polk Bayou at Batesville, Ark.	12.61	9.73
07068880	Mud Creek near Ingram, Ark.	36.90	25.24
07069265	Myatt Creek near Salem, Ark.	23.03	18.48
07069270	South Fork Spring River near Salem, Ark.	21.63	17.24
07069350	Martins Creek near Williford, Ark.	26.26	20.35
07069400	Janes Creek at Ravenden Springs, Ark.	30.26	23.40
07072900	Strawberry River near Franklin, Ark.	16.22	13.32
07073000	Strawberry River near Evening Shade, Ark.	14.14	11.73
07073500	Piney Fork at Evening Shade, Ark.	15.16	12.45
07073600	Mill Creek at Evening Shade, Ark.	15.07	12.31
07073995	North Big Creek near Evening Shade, Ark.	17.72	13.84
07074000	Strawberry River near Poughkeepsie, Ark.	18.48	13.92
07074248	South Big Creek near Strawberry, Ark.	21.20	14.99
07074250	Reeds Creek near Strawberry, Ark.	20.69	14.50
07074260	Cooper Creek near Smithville, Ark.	22.53	15.93
07074400	Curia Creek near Dowdy, Ark.	19.97	13.50
07074450	Dota Creek near Newark, Ark.	16.28	11.28
07075200	Devils Fork Little Red River near Brownsville, Ark.	9.22	8.09
07075300	South Fork of Little Red River at Clinton, Ark.	9.37	9.60
07075390	Archey Creek at Clinton, Ark.	9.29	9.46
07075500	South Fork Little Red River near Clinton, Ark.	8.75	7.91
07076510	Big Creek near Pangburn, Ark.	9.11	7.95
07076530	Big Creek near Letona, Ark.	8.93	7.79
07076800	Bayou Des Arc near Garner, Ark.	8.28	7.29
07076850	Cypress Bayou near Beebe, Ark.	6.57	6.14
07194790	Muddy Fork Illinois River near Savoy, Ark.	10.80	10.14
07194800	Illinois River at Savoy, Ark.	10.30	9.72
07194950	Little Osage Creek near Healing Springs, Ark.	12.72	10.11
07195400	Illinois River at Hwy 16 near Siloam Springs, Ark.	16.86	16.31

Table 4-2. Basin attributes found to be significant in the regression model.—Continued

[K.n, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Tau November-December (days)	Tau March-April (days)
07195430	Illinois River south of Siloam Springs, Ark.	17.80	18.73
07195800	Flint Creek at Springtown, Ark.	17.27	12.58
07196900	Baron Fork at Dutch Mills, Ark.	13.32	11.73
07196950	Evansville Creek at Evansville, Ark.	12.52	10.88
07246970	Jones Creek near Waldron, Ark.	7.17	6.80
07247000	Poteau River at Cauthron, Ark.	6.55	6.37
07247010	Poteau River near Bates, Ark.	7.49	7.21
07247100	Black Fork near Page, Okla	7.94	7.76
07247200	Big Creek at Howard, Ark.	7.91	7.77
07247300	Haws Creek near Black Fork, Ark.	7.59	7.42
07249400	James Fork near Hackett, Ark.	9.91	8.79
07249500	Cover Creek near Lee Creek, Ark.	10.76	8.71
07249600	Lee Creek at Natural Dam, Ark.	10.21	8.53
07249700	Mountain Fork Creek at Natural Dam, Ark.	10.22	8.54
07249800	Lee Creek at Short, Okla.	10.44	9.45
07249985	Lee Creek near Short, Okla.	9.51	8.67
07250600	Vache Grasse Creek near Lavaca, Ark.	9.36	8.12
07250935	Jones Creek at Winfrey, Ark.	9.87	8.05
07250965	Frog Bayou near Winfrey, Ark.	9.87	8.05
07250974	Jack Creek near Winfrey, Ark.	9.83	8.06
07251400	Cedar Creek near Rudy, Ark.	9.59	8.14
07251800	Little Mulberry Creek near Oark, Ark.	9.62	8.52
07251900	Mulberry River near Cass, Ark.	9.75	8.27
07252100	Little Mulberry Creek near Mulberry, Ark.	9.67	8.14
07252000	Mulberry River near Mulberry, Ark.	9.81	8.23
07252300	White Oak Creek near Ozark, Ark.	9.54	8.09
07256200	Horsehead Creek at Hartman, Ark.	9.28	8.27
07256700	Big Shoal Creek near New Blaine, Ark.	9.25	8.10
07257006	Big Piney Creek at Highway 164 near Dover, Ark.	8.78	8.53

Table 4-2. Basin attributes found to be significant in the regression model.—Continued

[Kn, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

Station number	Station name	Tau November-December (days)	Tau March-April (days)
07257470	Middle Fork Illinois Bayou near Hector, Ark.	8.58	8.93
07257480	North Fork Illinois Bayou near Scottsville, Ark.	8.63	8.83
07257500	Illinois Bayou near Scottsville, Ark.	8.67	8.78
07258500	Petit Jean River near Booneville, Ark.	8.41	7.26
07258700	Sugar Creek near Sugar Grove, Ark.	8.31	7.49
07260000	Dutch Creek at Waltreak, Ark.	8.04	8.01
07260500	Petit Jean River at Danville, Ark.	9.87	7.88
07260673	West Fork Point Remove Creek near Hattieville, Ark.	8.47	8.55
07260700	Point Remove Creek near Morrilton, Ark.	7.92	8.03
07261000	Cadron Creek near Guy, Ark.	9.56	9.10
07261200	East Fork Cadron Creek near Enola, Ark.	8.52	8.09
07261400	Mill Creek near Boles, Ark.	7.81	7.47
07261500	Fourche LaFave River near Gravelly, Ark.	8.49	7.80
07261600	Gafford Creek near Bluffton, Ark.	8.50	7.89
07263000	South Fourche LaFave River near Hollis, Ark.	8.19	7.08
07263295	Maumelle River at Williams Junction, Ark.	5.71	6.45
07336900	Walnut Bayou near Foreman, Ark.	9.36	7.19
07338700	Twomile Creek near Hatfield, Ark.	8.65	8.45
07338720	Mountain Fork near Hatfield, Ark.	8.57	8.46
07339200	Rolling Fork near Grannis, Ark.	8.60	8.83
07339500	Rolling Fork near DeQueen, Ark.	7.96	8.92
07340300	Cossatot River near Vandervoort, Ark.	9.50	9.06
07340400	Cossatot River near Umpire, Ark.	8.90	8.59
07341000	Saline River near Dierks, Ark.	7.61	7.07
07341200	Saline River near Lockesburg, Ark.	7.96	7.77
07349430	Bodcau Creek at Stamps, Ark.	10.88	7.98
07355810	Ouachita River near Mena, Ark.	8.44	8.05
07356000	Ouachita River near Mount Ida, Ark.	8.75	8.34
07356500	South Fork Ouachita River at Mount Ida, Ark.	10.11	8.37

Table 4-2. Basin attributes found to be significant in the regression model.—Continued

[K.n, Nacatoch Sand; Ki, Trinity Formation; Kto, Tokio Formation; Tw, Wilcox Group]

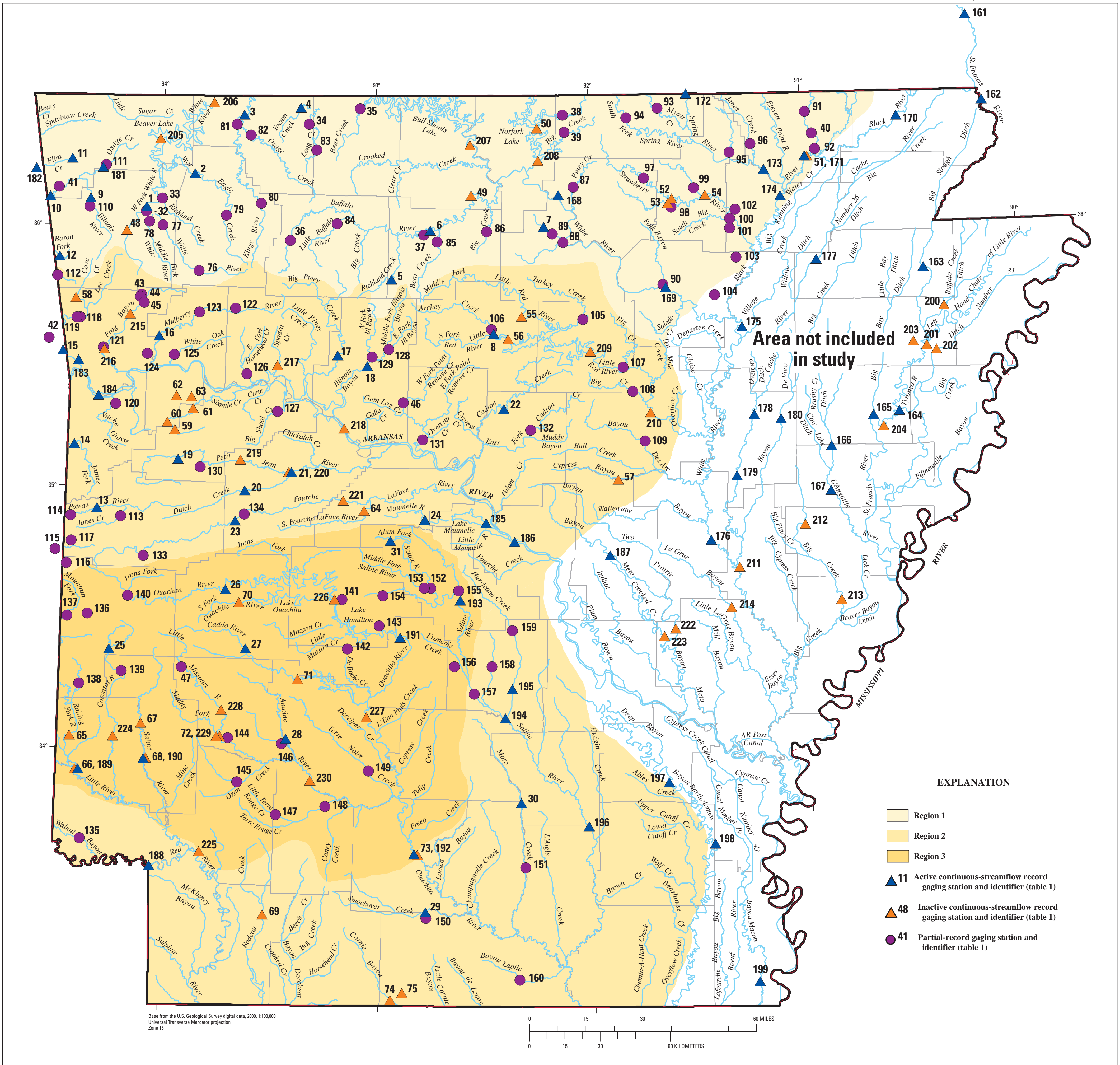
Station number	Station name	Tau November-December (days)	Tau March-April (days)
07357710	Glazypeau Creek at Mountain Pine, Ark.	8.90	7.45
07358010	Fourche A Loupe Creek near Hot Springs, Ark.	8.46	7.64
07358700	Gulpha Creek near Hot Springs, Ark.	7.54	7.09
07359610	Caddo River near Caddo Gap, Ark.	9.63	10.51
07359800	Caddo River near Alpine, Ark..	9.14	8.44
07360200	Little Missouri River near Langley, Ark.	8.61	8.74
07361000	Little Missouri River near Murfreesboro, Ark.	7.66	8.47
07361025	Prairie Creek near Murfreesboro, Ark.	7.75	8.52
07361160	North Fork Ozan Creek near McCaskill, Ark.	8.16	8.21
07361500	Antoine River at Antoine, Ark.	7.82	8.44
07361540	Wolf Creek near Antoine, Ark.	7.86	8.44
07361640	Little Terre Rouge Creek near Emmet, Ark.	9.08	8.20
07361650	Terre Rouge Creek near Prescott, Ark.	9.46	8.00
07361800	Terre Noire Creek near Gurdon, Ark.	9.16	7.44
07362090	Camp Creek near Smackover, Ark.	12.34	7.84
07362100	Smackover Creek near Smackover, Ark.	12.51	7.97
07362500	Moro Creek near Fordyce, Ark.	7.65	4.45
07362550	Moro Creek near Banks, Ark.	9.01	5.30
07362587	Alum Fork Saline River near Reform, Ark.	5.77	6.30
07362600	Alum Fork Saline River at Crows, Ark.	6.29	6.27
07362700	Middle Fork Saline River at Crows, Ark.	6.28	6.65
07362800	South Fork Saline River near Hot Springs, Ark.	7.17	6.86
07362900	North Fork Saline River near Benton, Ark.	6.27	6.14
07363110	Big Creek at Poyen, Ark.	6.90	5.83
07363160	Saline River near Leola, Ark.	7.04	5.54
07363180	Lost Creek near Sheridan, Ark.	6.68	5.43
07363276	Hurricane Creek near Ico, Ark.	6.50	5.60
07364060	Bayou Lapile at Strong, Ark.	10.00	6.01
07365800	Cornie Bayou near Three Creeks, Ark.	10.13	7.16
07365900	Three Creeks near Three Creeks, Ark.	10.28	6.55

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Low-Flow Regions of Arkansas

By
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2008

