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ARKANSAS GEOLOGICAL COMMISSION

Norman F. Williams, State Geologist

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STORAGE REQUIREMENTS FOR ARKANSAS STREAMS

By
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U.S. GEOLOGICAL SURVEY

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STORAGE REQUIREMENTS FOR ARKANSAS STREAMS

By James L. Patterson

ABSTRACT

There is an abundant supply of good-quality surface water in Arkansas. However, due to seasonal and annual variability of streamflow, storage must be provided to insure dependable year-round supplies in most of the State.

Storage requirements for draft rates up to 60 percent of the mean annual flow at 49 continuous-record gaging stations can be obtained from tabular data in this report.

Through regional analyses of streamflow data, the State has been divided into three regions. Draft-storage diagrams developed for each region provide a means of estimating storage requirements for sites on streams where data are limited, provided the drainage area, the mean annual flow, and the low-flow index are determined. These data are tabulated for 53 gaging stations used in the analysis and for 132 partial-record sites where only base-flow measurements have been made. Mean annual flow can be determined for any stream whose drainage lies within the State by using the runoff map in this report. Low-flow indices can be estimated by correlating base flows determined from several discharge measurements with concurrent flows at nearby continuous-record gaging stations, whose low-flow indices have been determined.

INTRODUCTION

Total available water resources in Arkansas greatly exceed the present and probable future needs. However, the seasonal and yearly variability of streamflow is such that a dependable year-round surface-water supply without storage is not available in much of the State, even for modest demands. The average surface-water discharge for Arkansas is about 1.3 cfs per sq mi (cubic feet per second per square mile), or about 70,000 cfs. Average discharge ranges from about 0.9 cfs per sq mi in the extreme northwestern and southwestern parts of the State, to more than 1.8 cfs per sq mi in the Boston and Ouachita Mountains. An average of about 1,410 cfs, principally from storage reservoirs, was used from surface-water sources during 1965. This represents an increase of more than 50 percent since 1960, but is only 2 percent of the average discharge. Indications are that surface-water use in Arkansas will increase greatly during the next 30 to 50 years.

Sound development of water resources to meet the ever-increasing demand requires basic data

to define streamflow characteristics, and analyses of these data to develop methods of estimating storage requirements to meet specific needs. The Water Resources Division of the U.S. Geological Survey has a continuing program designed to collect these basic data. A previous report by Hines (1965) presents a summary of low-flow-frequency and flow-duration data for many streams in Arkansas.

Purpose and Scope

The purpose of this report is to provide a means by which a potential user of water from a particular stream can determine the storage required to meet a certain use rate during drought periods. This is accomplished in part by defining draft-storage relations for streams where continuous-record gaging stations are located. However, it is impracticable to operate gaging stations at all the possible sites where draft-storage data might be required. Therefore, to extend the usefulness of the present gaging-station network, draft-storage relations developed at the gaging-station sites have been

used to develop regional draft-storage curves from which storage requirements can be estimated at sites where only a few base-flow measurements are made.

In general, draft-storage relations were computed at gaging stations on streams having continuous discharge records of 10 years or more, not materially affected by regulation. Most of the large streams are regulated to some extent, and only streams having drainage areas of about 2,000 square miles or less above the gaged site were used in the analysis. Draft-storage relations developed in this report are not applicable to regulated streams.

Storage requirements were computed for draft rates up to 60 percent of the mean annual flow. For draft rates greater than 50 or 60 percent of the mean annual flow, required storage increases much faster than allowable draft. Surface storage is limited in much of the eastern part of the State due to flat terrain and, although storage requirements were computed for draft rates up to 60 percent of mean annual flow for the purpose of regionalization, the higher storage values for the eastern part of the State are not shown in this report.

Acknowledgments

This report was prepared by the Water Resources Division of the U.S. Geological Survey in cooperation with the Arkansas Geological Commission. Some of the data used were collected through cooperation with other Federal agencies, principally the U.S. Army Corps of Engineers.

Method of Analyses

An analysis of storage requirements to insure dependable draft rates requires data on streamflow characteristics. Ideally, a long-term record of daily flows should be available at the damsite. Unfortunately, this ideal situation is seldom realized. In this report, draft-storage relations have been developed at points on streams where continuous records of streamflow are available, and these relations have been regionalized to permit estimation of storage requirements at sites where there is limited information.

The traditional method of storage analysis is based on the mass curve of streamflow for the

period of record. Details of this method are given in texts on water supply and are not discussed here. This method is not suitable for analysis for optimum development of available streamflow, nor does it permit evaluation of the probability of a given storage being deficient; therefore, it was not used.

In this report for convenience of analyses, separate analyses were made of within-year and over-year-storage requirements, according to the time required for replenishment. Within-year storage was analyzed on a frequency basis by use of frequency-mass curves. For droughts having recurrence intervals greater than 5 years, over-year storage must be considered for draft rates in excess of from 0.3 to 0.5 of the mean annual discharge. The analysis of over-year storage is based on probability routing of mean annual discharge to define storage requirement related to the mean annual discharge and the variability of the annual discharges. Both analyses are explained in more detail in the following sections.

Within-Year Storage

Low-flow-frequency-curve series, based on annual minimum flows for various period lengths, have been used in computing within-year storage requirements. These curves are explained and presented in tabular form by Hines (1965). Data from the frequency curves have been used to prepare frequency-mass curves, which in turn were used to compute storage requirements for various draft rates.

To illustrate the method used, a within-year draft-storage analysis for Strawberry River at Evening Shade is detailed below. Figure 1 shows low-flow-frequency curves for Strawberry River near Evening Shade for periods from 7 days to 1 year. From these curves a curve relating volume to period of minimum discharge (frequency-mass curve) was prepared for recurrence intervals of 2, 5, 10, and 20 years. Figure 2 shows such a curve for a 20-year-recurrence interval. This curve is computed by multiplying the number of days times the corresponding discharge, as read from the ordinate scale in figure 1, for a recurrence interval of 20 years. This value, in cfs-days, was plotted against the number of days. The curve drawn through the plotted points represents the volume of discharge avail-

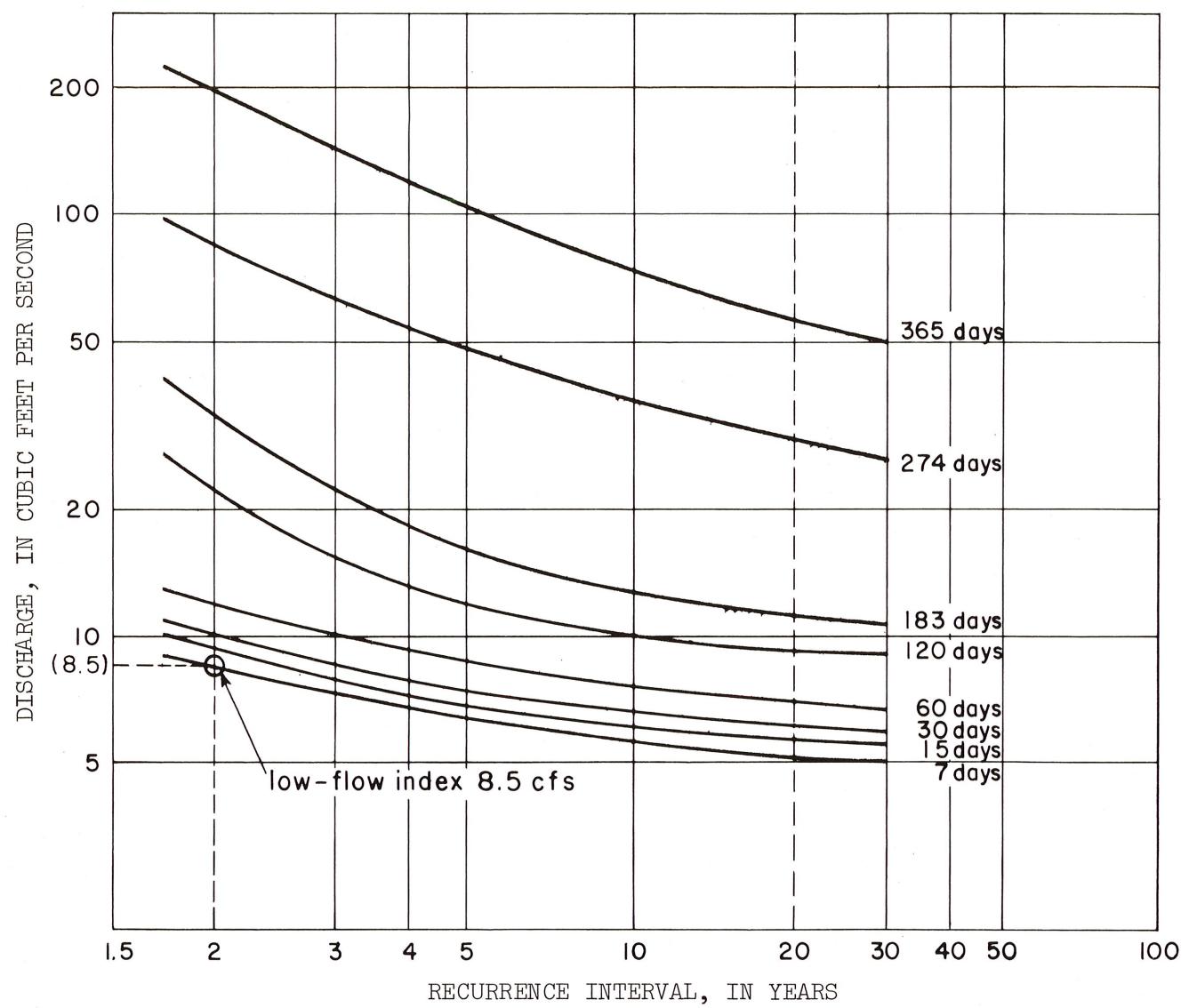


Figure 1.—Magnitude and frequency of annual low-flow periods for Strawberry River near Evening Shade.

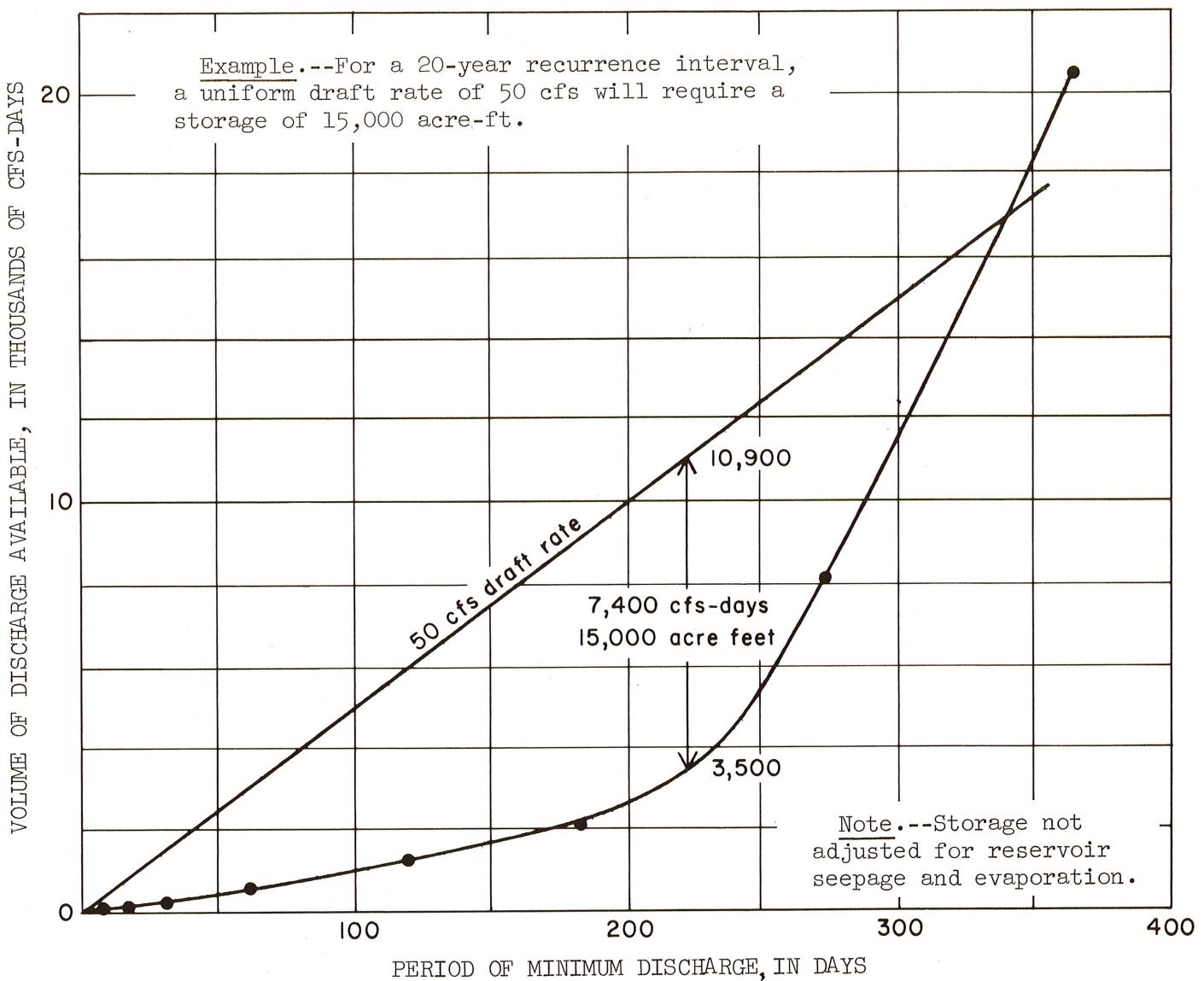


Figure 2.—Frequency-mass curve for Strawberry River near Evening Shade for 20-year recurrence interval.

able during a drought that would occur on the average of once in 20 years. Any desired constant-draft rate can be drawn as a straight line of the appropriate slope. The greatest distance scaled between the draft line and the frequency-mass curve represents the storage required to maintain the indicated draft rate. The storage required to maintain a uniform draft rate of 50 cfs for Strawberry River at Evening Shade is about 15,000 acre-feet. This storage will be deficient on the average of about once in 20 years, and has a 5-percent chance of being deficient during any year.

Using the method outlined above, within-year storage requirements at 49 gaging sites, 5 of which are in Oklahoma and Louisiana, were computed for recurrence intervals of 2, 5, 10, and 20 years. Draft rates in excess of the minimum annual average discharge must be supplied by over-year storage. For example, from the 365-day-frequency curve in figure 1, we can see that for a 5-year-recurrence interval, a draft rate of 102 cfs can be maintained by within-year storage; and for a 20-year-recurrence interval, a draft rate of 56 cfs can be maintained.

Over-Year Storage

An analysis of gaging-station records indicates that within-year storage will be inadequate at intervals of 5 years or so for higher draft rates. For a 20-year-recurrence interval, over-year storage is required for streams in Arkansas when the draft rate exceeds from 30 to 50 percent of the mean annual discharge. The method of analyzing over-year storage as described by Hardison (1966) has been used in this report. This method is based on probability routing of mean annual discharges, to define storage requirement related to the mean flow and the variability of the annual discharges. An analysis of streamflow records at many sites in humid areas (including the 49 sites for which storage requirements are computed for this report) indicates that generally the distribution of mean annual flows may be described by one of three standard two-parameter distributions: normal, log normal, and Weibull distributions. Hardison has developed diagrams for various recurrence intervals for each of the three distributions. These diagrams show the relation between storage, draft rate, and coefficient of variation of annual flows. Seasonal adjustment, as

described by Hardison, should be made to draft-storage relations computed from the diagrams.

Curves of relation for draft rates up to 60 percent of the mean annual discharge were obtained by combining the over-year-storage curve and the within-year-storage curve, computed from frequency-mass curves (fig. 2). A draft-storage curve for Strawberry River near Evening Shade for 20-year frequency, as shown in figure 3, illustrates the method of combining the two. Figure 4 shows draft-storage relations for 2-, 5-, 10-, and 20-year frequencies for Strawberry River near Evening Shade.

Regionalization of Draft-Storage Relations

Regionalizing data provides a tool by which draft-storage relations can be estimated for sites on streams at points other than where continuous-record gaging stations are located. Analyses of draft-storage data computed for stream-gaging stations indicate that these data can be regionalized by using an index of base flow as a parameter. The median annual minimum 7-day average flow (the minimum 7-day average flow having a recurrence interval of 2 years) has been used as a low-flow index in this report. The low-flow index for Strawberry River near Evening Shade is shown in figure 1. When draft rates are a large percentage of the mean annual discharge, mean annual discharge was also found to be a factor affecting draft-storage relations. The mean-discharge parameter was utilized by expressing draft rates, storage requirements, and low-flow indices as ratios to the mean annual flow. Draft-storage curves are defined for selected recurrence intervals by three parameter plots of draft rate against the low-flow index for selected values of storage, all expressed as ratios to the mean annual flow.

These plots define draft-storage relations for draft rates up to 60 percent of the mean annual discharge for recurrence intervals of 2, 5, 10, and 20 years. It was found that the standard error of estimate could be reduced considerably by dividing the State into three regions. Draft-storage diagrams for the three regions outlined in figure 13 are shown in figures 5 through 10. Definition of the curves is illustrated by plotting, on figure 8, gaging-station data for a storage of 0.20 of the mean annual runoff for a 20-year frequency in region B. The method of using the diagrams is explained in the section entitled "Application to Water-Supply Problems."

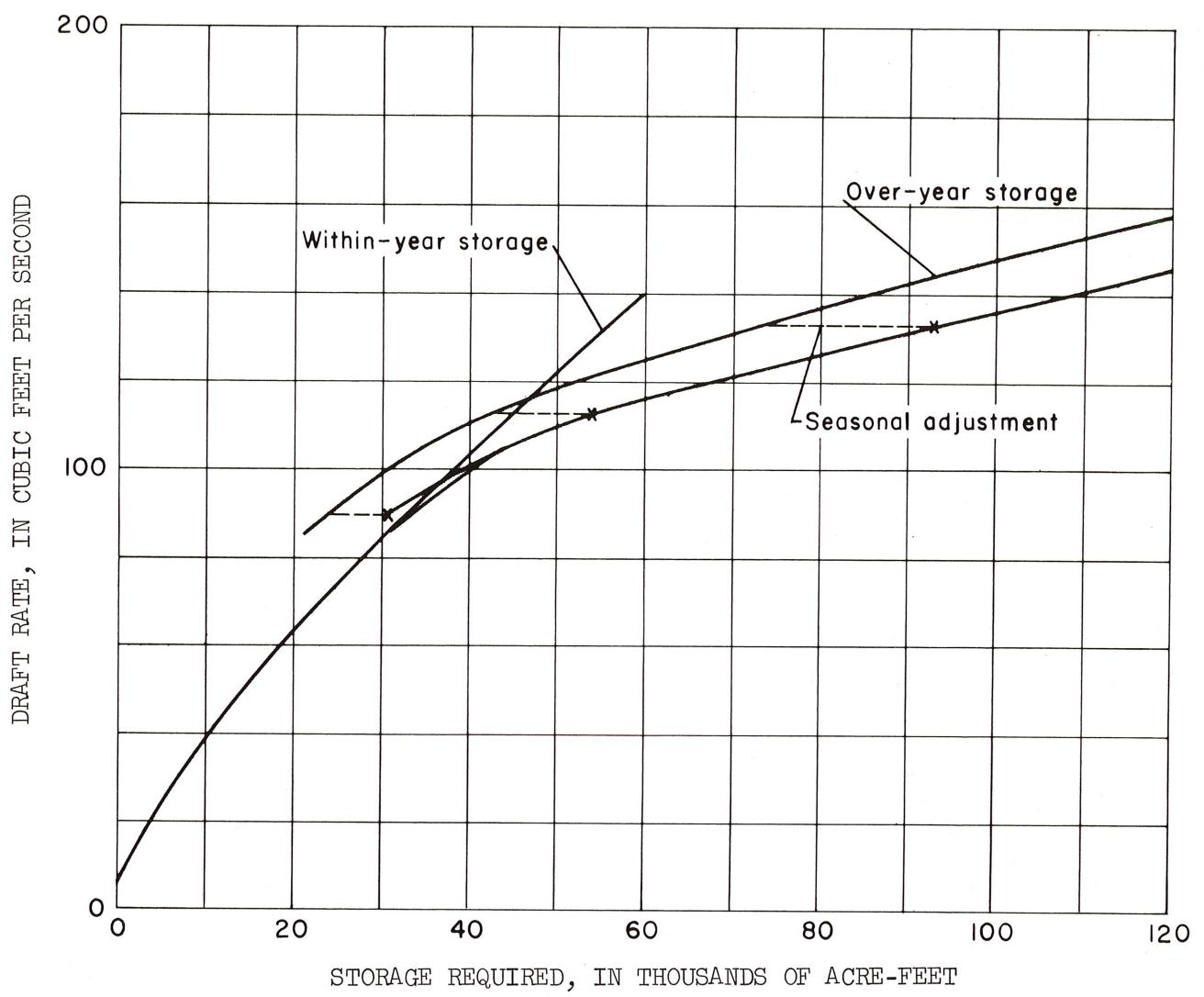


Figure 3.—Draft-storage diagram for 20-year-recurrence interval for Strawberry River near Evening Shade, showing method of combining within-year and over-year storage curves.

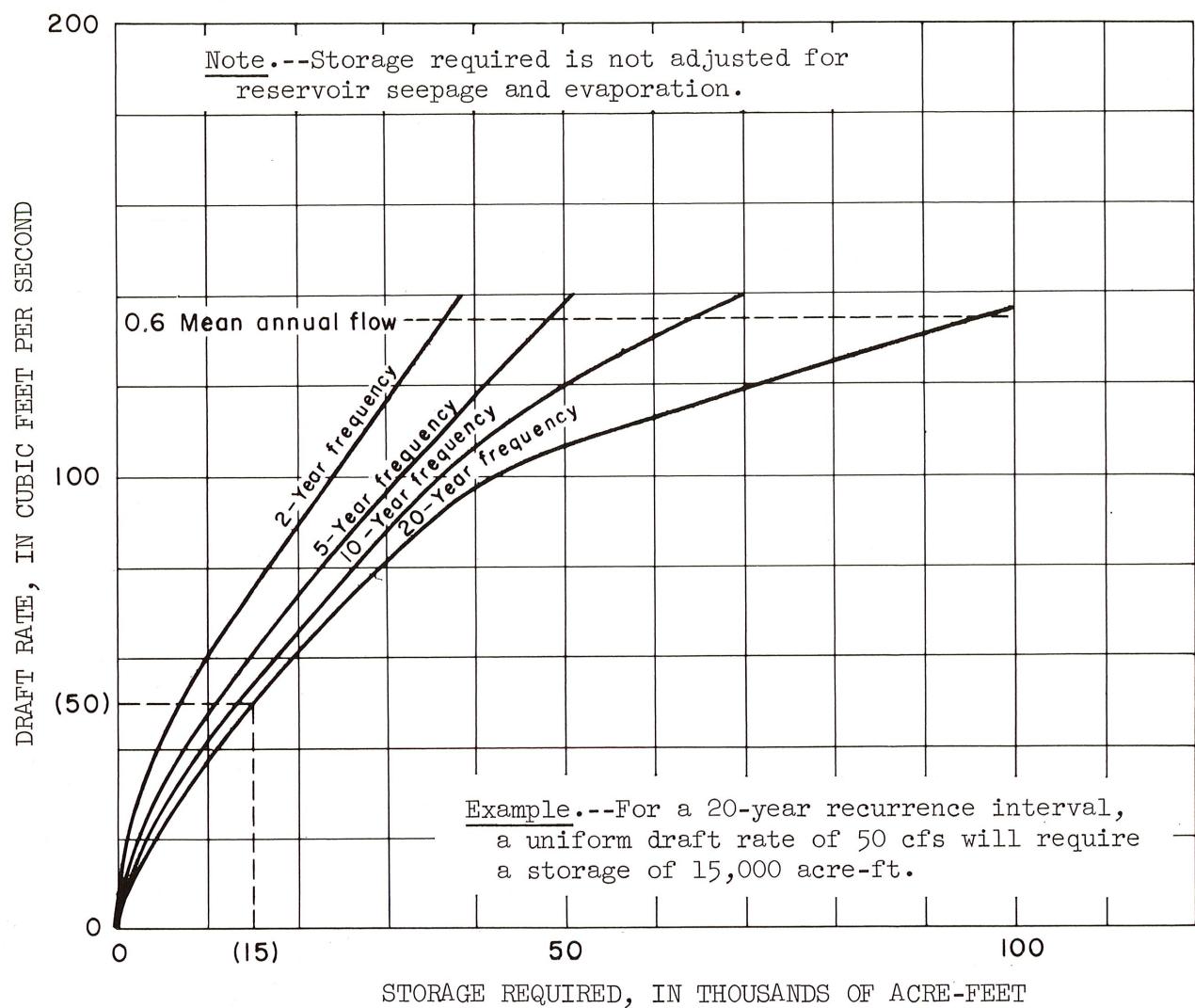
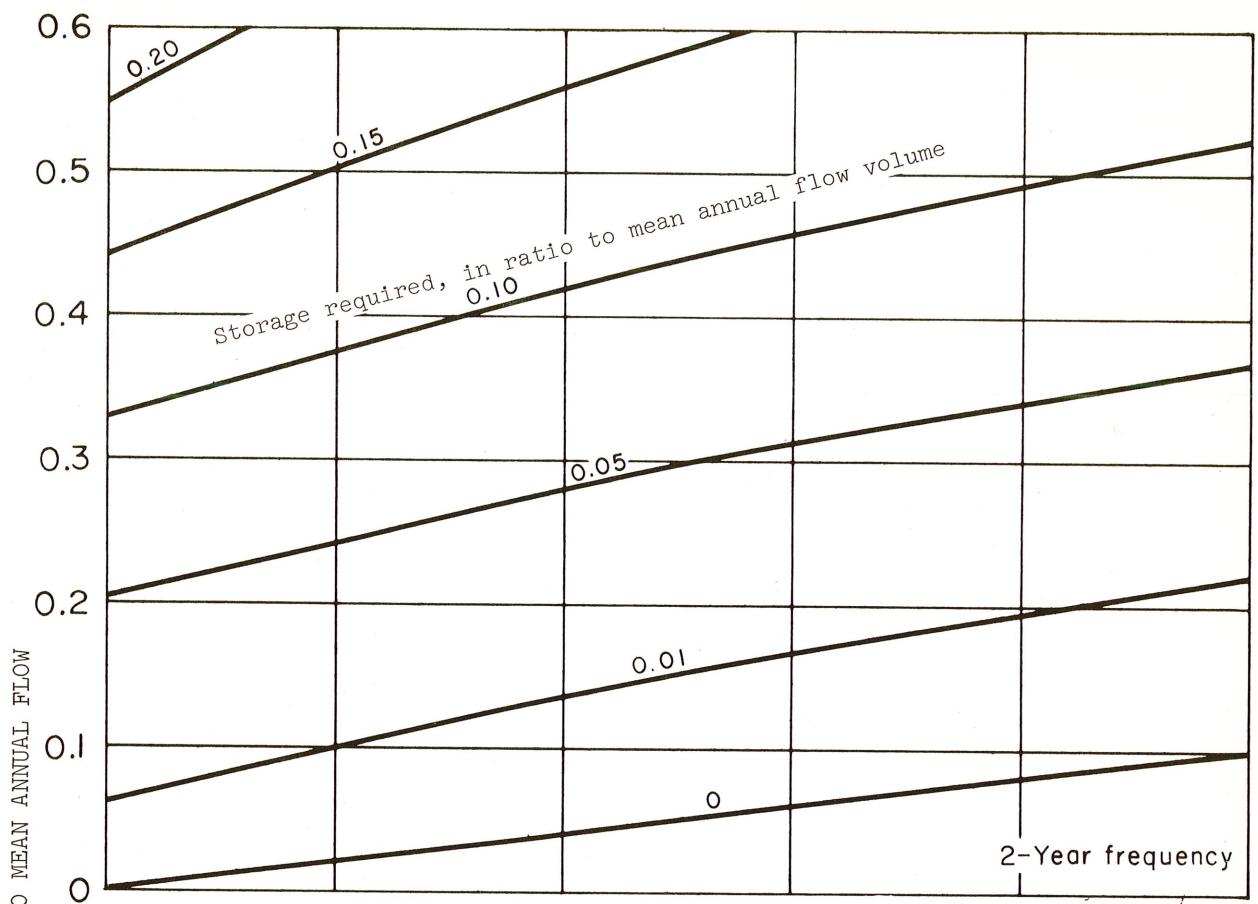


Figure 4.—Draft-storage diagram for selected frequencies for Strawberry River near Evening Shade.



Note.--Relations shown are for uniform draft rates.
No adjustment has been made for reservoir seepage and evaporation.

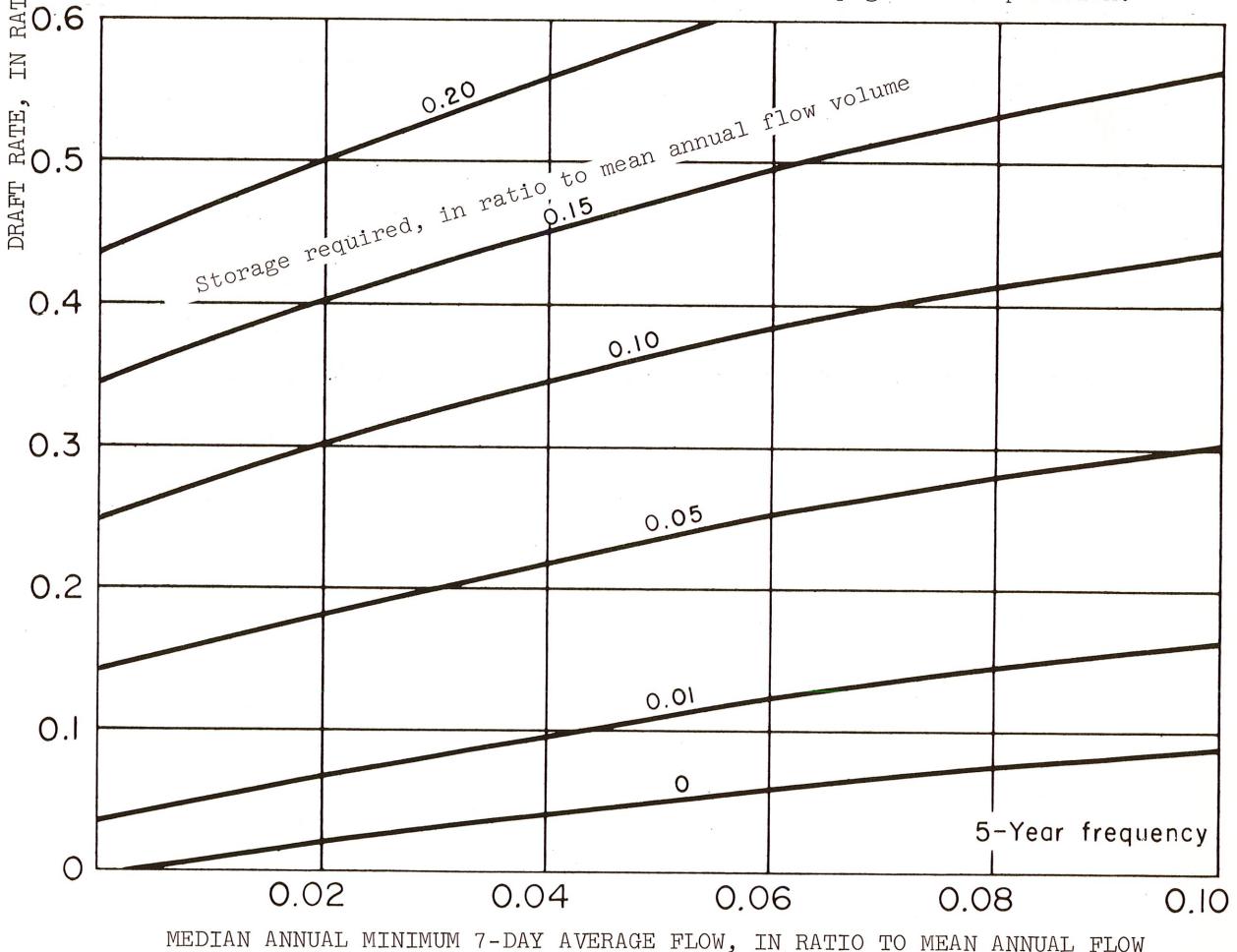
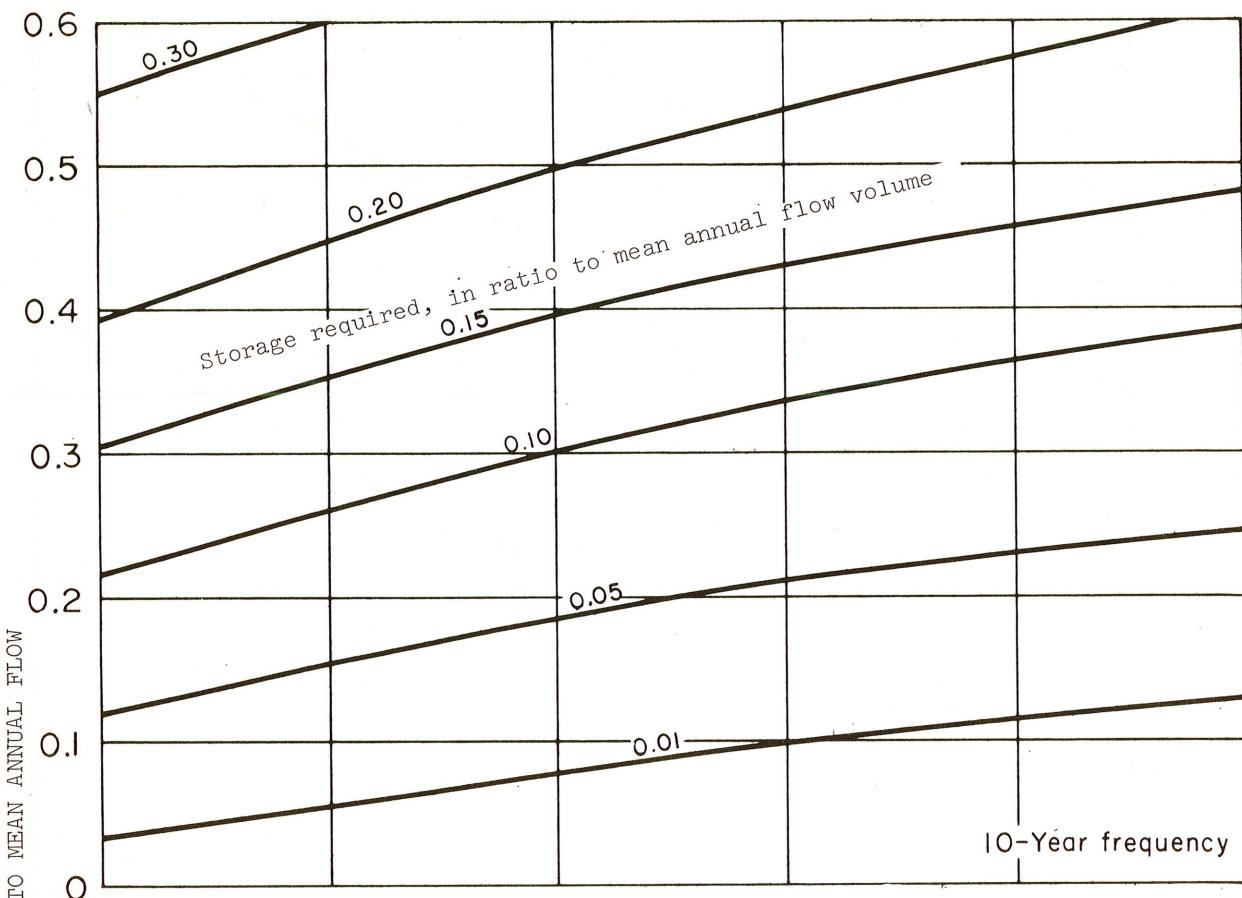
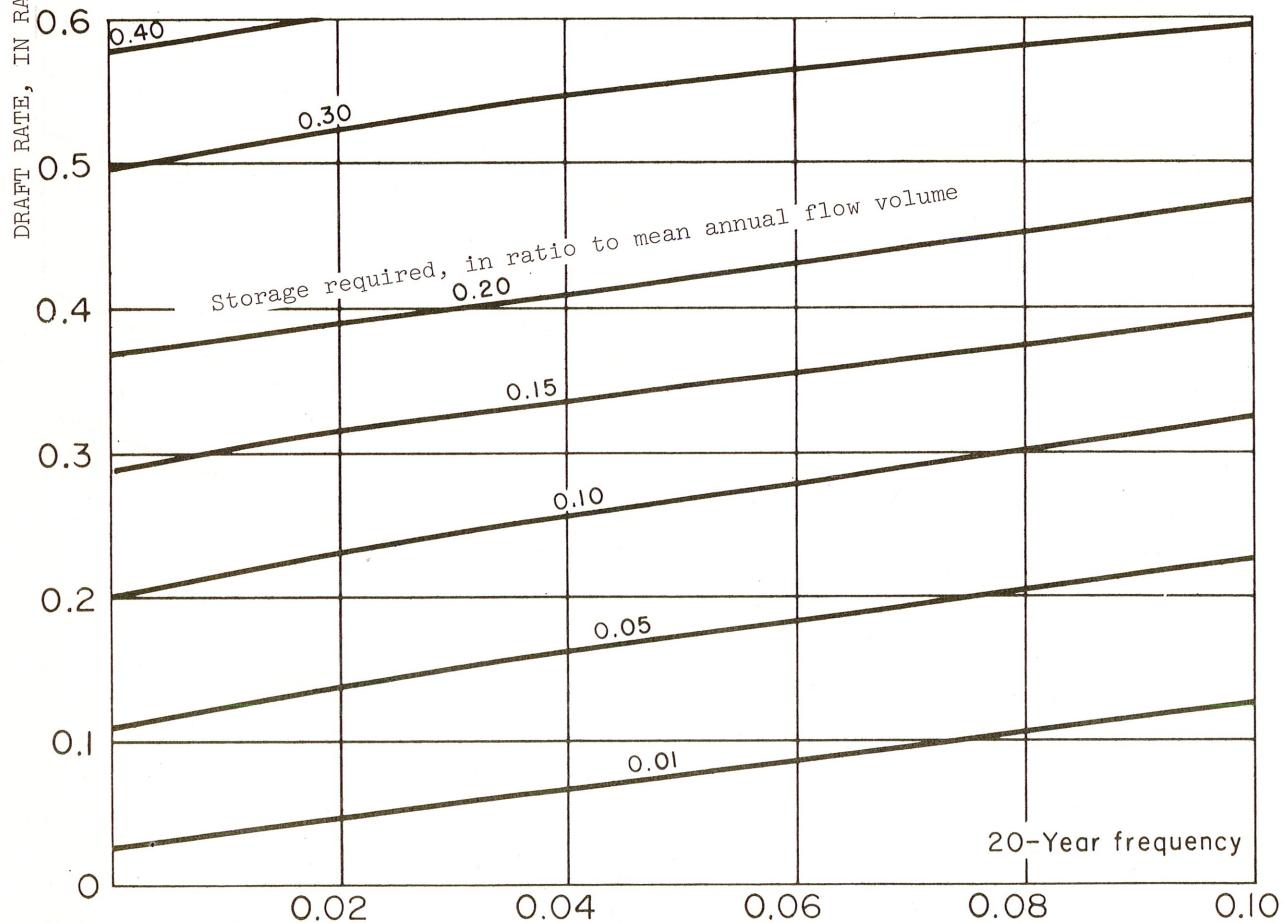


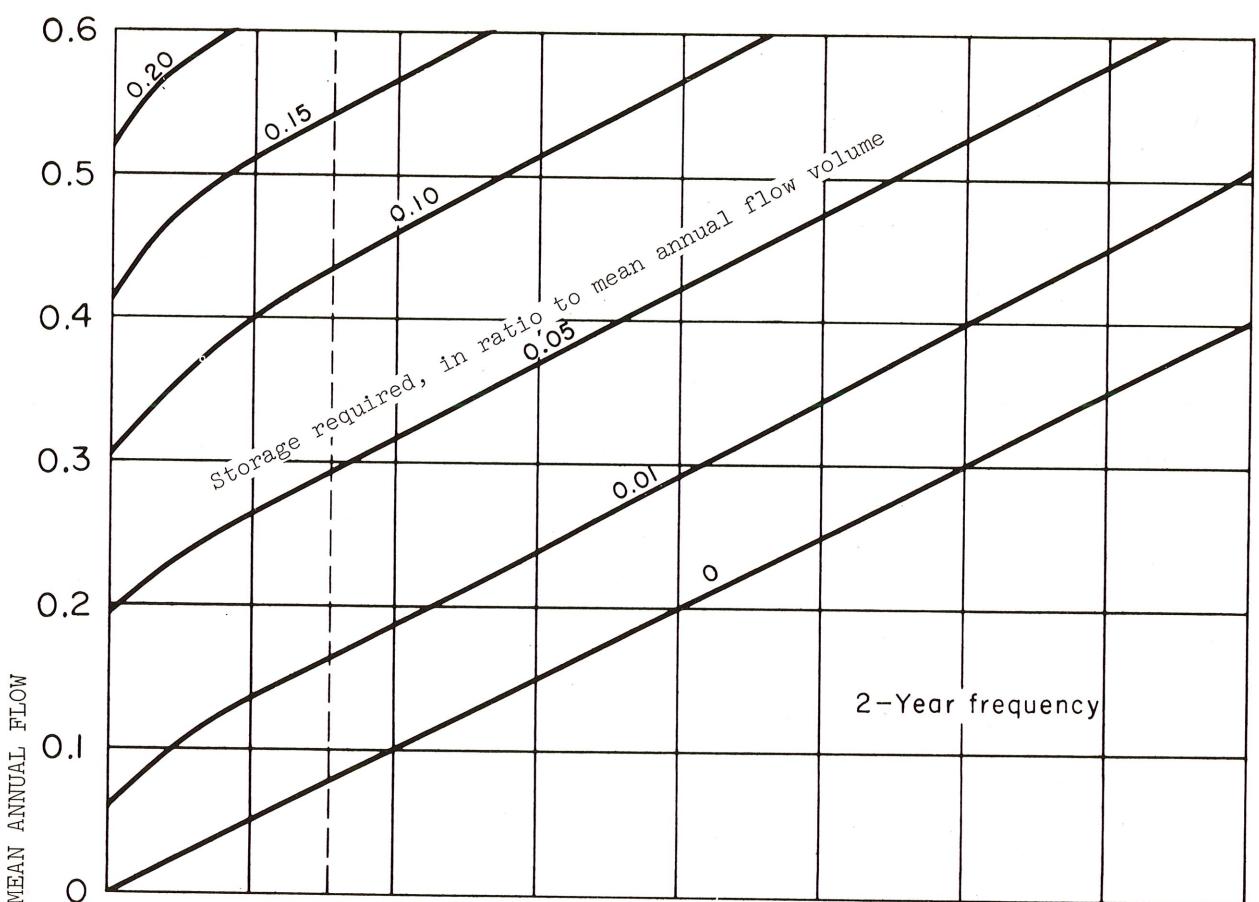
Figure 5.—Draft-storage relations for 2-year and 5-year frequencies, related to the median annual minimum 7-day average flow for streams in region A.



Note.--Relations shown are for uniform draft rates.
No adjustment has been made for reservoir seepage and evaporation.



MEDIAN ANNUAL MINIMUM 7-DAY AVERAGE FLOW, IN RATIO TO MEAN ANNUAL FLOW
Figure 6.—Draft-storage relations for 10-year and 20-year frequencies, related to the median annual minimum 7-day average flow for streams in region A.



Note.--Relations shown are for uniform draft rates.
No adjustment has been made for reservoir seepage and evaporation.

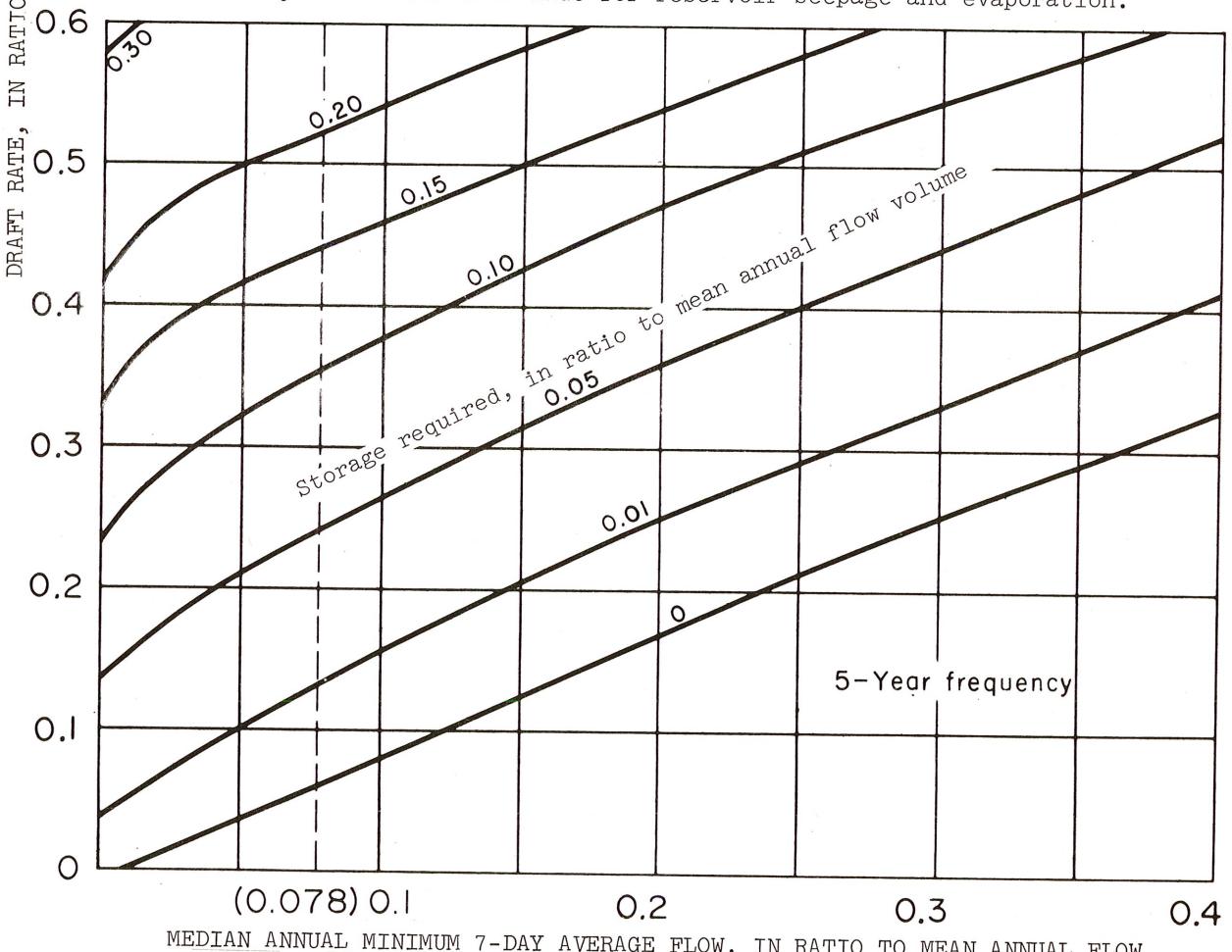
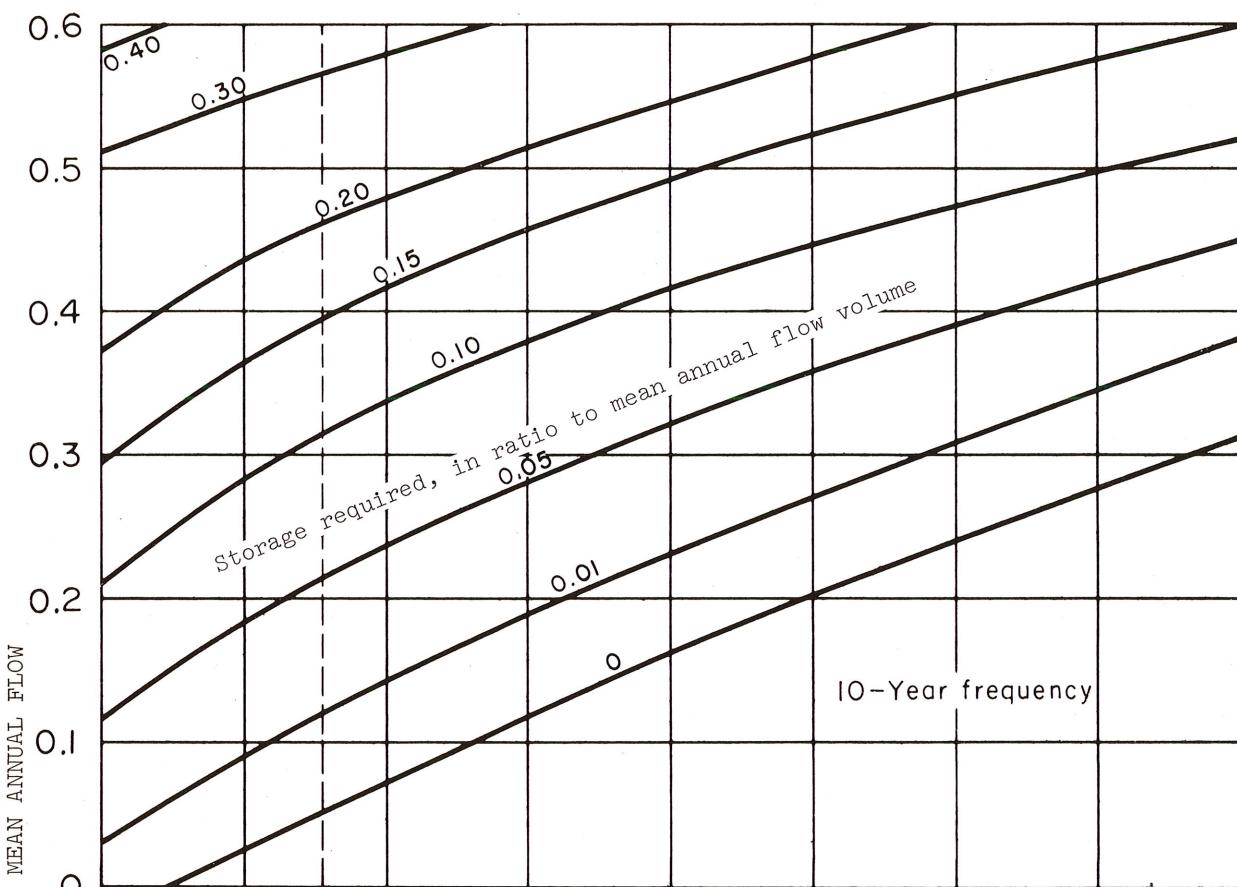


Figure 7.—Draft-storage relations for 2-year and 5-year frequencies, related to the median annual minimum 7-day average flow for streams in region B.



Note.--Relations shown are for uniform draft rates.
No adjustment has been made for reservoir seepage and evaporation.

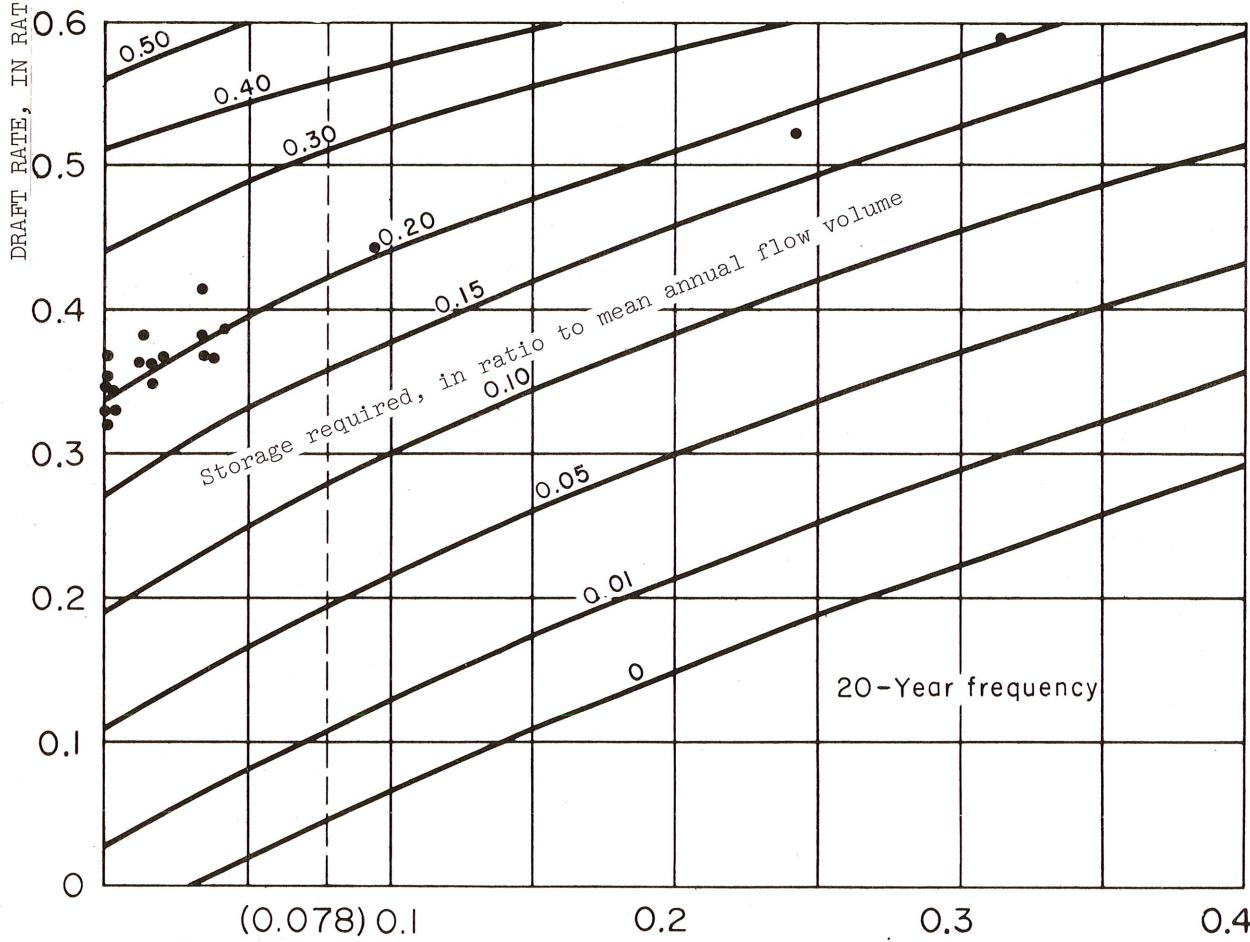
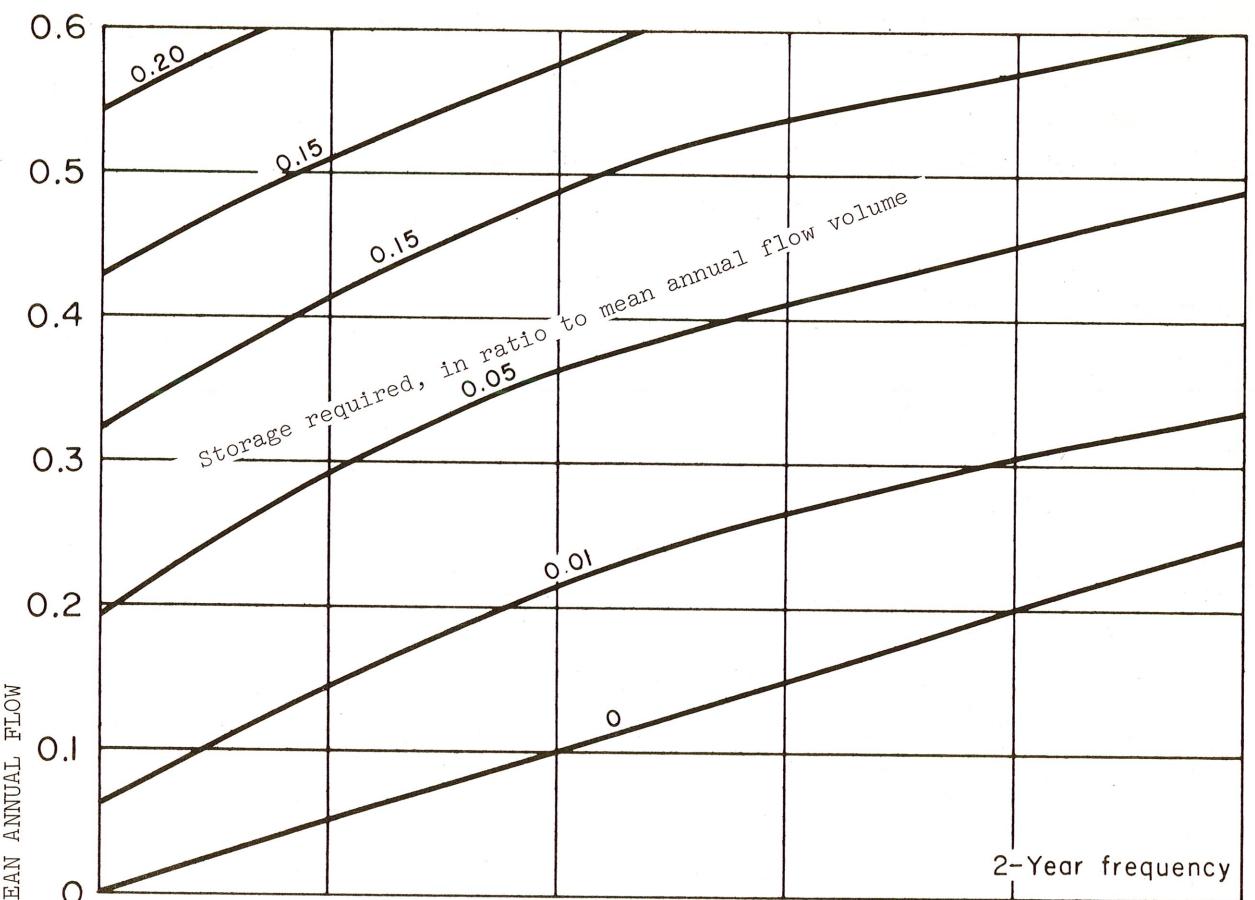
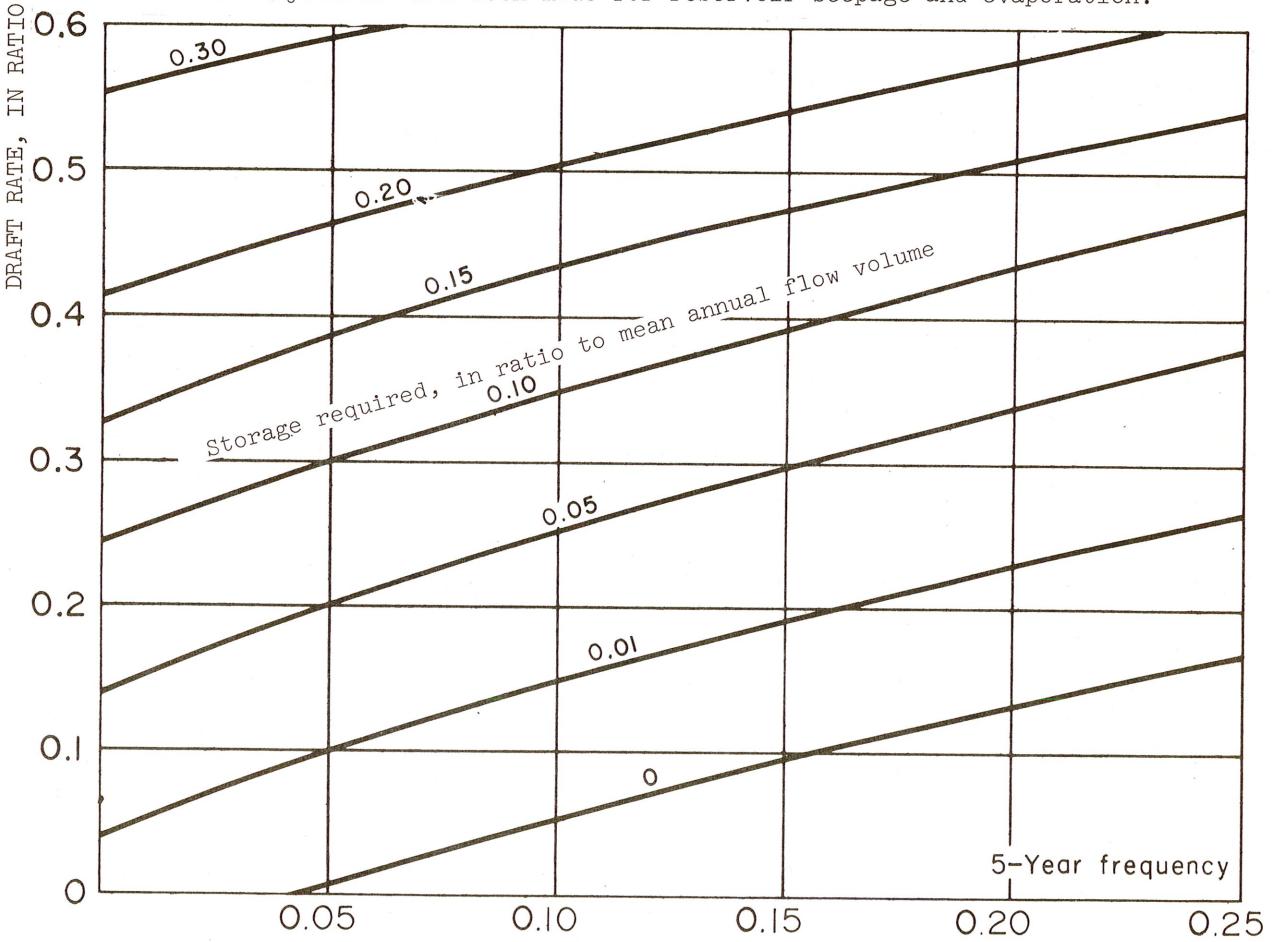


Figure 8.—Draft-storage relations for 10-year and 20-year frequencies, related to the median annual minimum 7-day average flow for streams in region B.

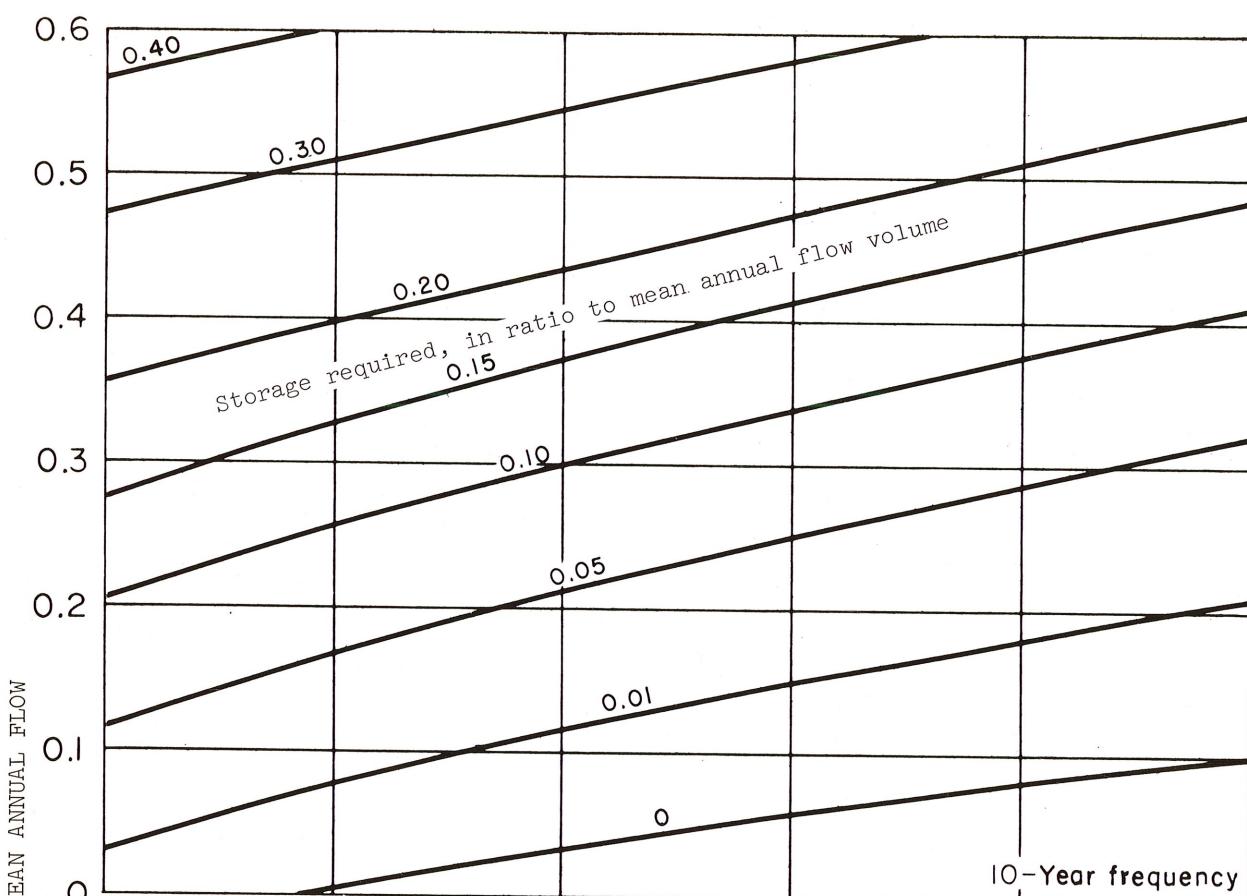


Note.--Relations shown are for uniform draft rates.
No adjustment has been made for reservoir seepage and evaporation.

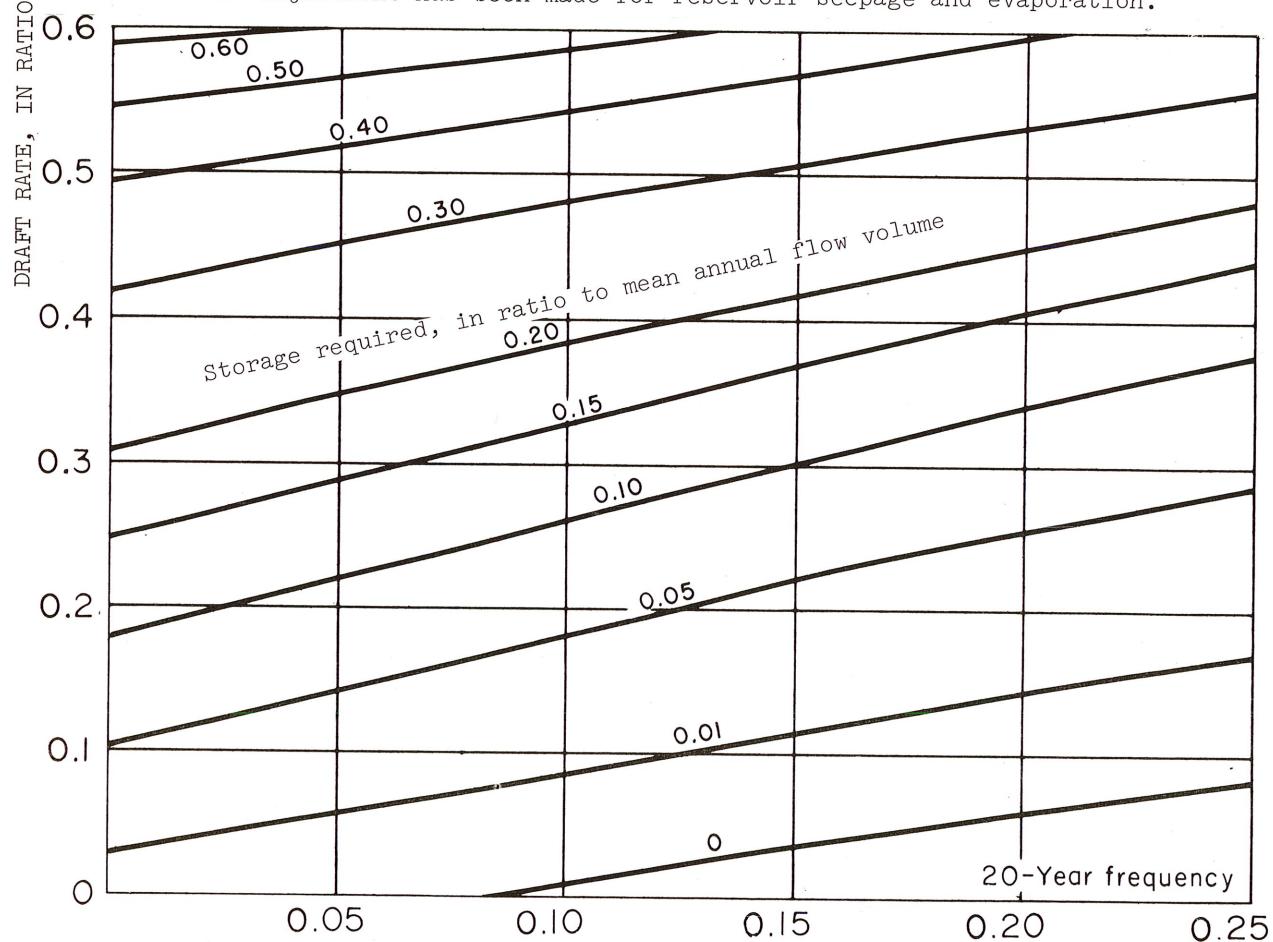


MEDIAN ANNUAL MINIMUM 7-DAY AVERAGE FLOW, IN RATIO TO MEAN ANNUAL FLOW

Figure 9.—Draft-storage relations for 2-year and 5-year frequencies, related to the median annual minimum 7-day average flow for streams in region C.



Note.--Relations shown are for uniform draft rates.
No adjustment has been made for reservoir seepage and evaporation.



MEDIAN ANNUAL MINIMUM 7-DAY AVERAGE FLOW, IN RATIO TO MEAN ANNUAL FLOW

Figure 10.—Draft-storage relations for 10-year and 20-year frequencies, related to the median annual minimum 7-day average flow for streams in region C. 13

STORAGE, COMPUTED FROM REGIONAL DRAFT-STORAGE
DIAGRAMS, IN THOUSANDS OF ACRE-FEET

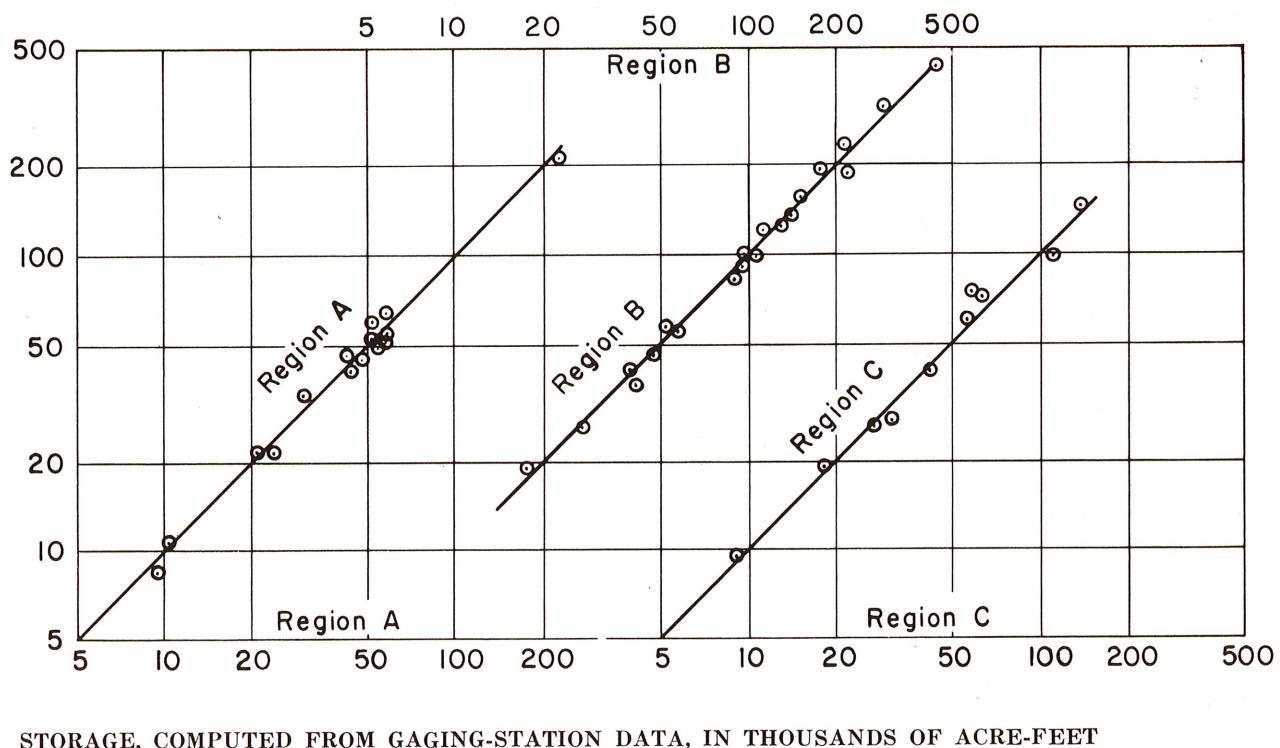


Figure 11.—Relation between storage requirements computed from gaging-station data and from draft-storage diagrams for a draft rate of 0.50 cubic feet per second per square mile for a 20-year frequency.

The standard error of estimate as computed from plots of draft rates from station data, against draft rates from regional curves for various storage values and frequencies in each of the three regions is less than 10 percent. The relation between storage requirements computed from individual gaging-station data and from draft-storage diagrams for a draft rate of 0.5 cfs per sq mi for a 20-year frequency are shown graphically in figure 11.

Adjustment for Natural Storage Depletion

No allowances have been made for losses due to seepage, evaporation, or silt accumulation in computation of draft-storage relations presented in this report. Seepage losses must be evaluated at the individual reservoir site on the basis of the permeability and porosity of the geologic formations underlying the reservoir. Average annual evaporation from lakes in Arkansas var-

ies from about 40 inches in the northeastern corner of the State to about 48 inches in the southwestern corner. (See fig. 12.) The average annual precipitation in the State is slightly greater than evaporation, and ranges from less than 44 inches in the northwestern part of the State to about 56 inches in the Ouachita Mountains. (See fig. 13.) It can be seen from this comparison that lake evaporation is not a problem in reservoir design in Arkansas during periods of normal rainfall and evaporation. However, during severe drought years, which are the critical periods for reservoir operation, evaporation may exceed rainfall by as much as 30 to 40 inches in some areas.

Losses in storage capacity due to silt accumulation in a reservoir must be evaluated on the basis of the size of the reservoir and the silt being carried into the reservoir.

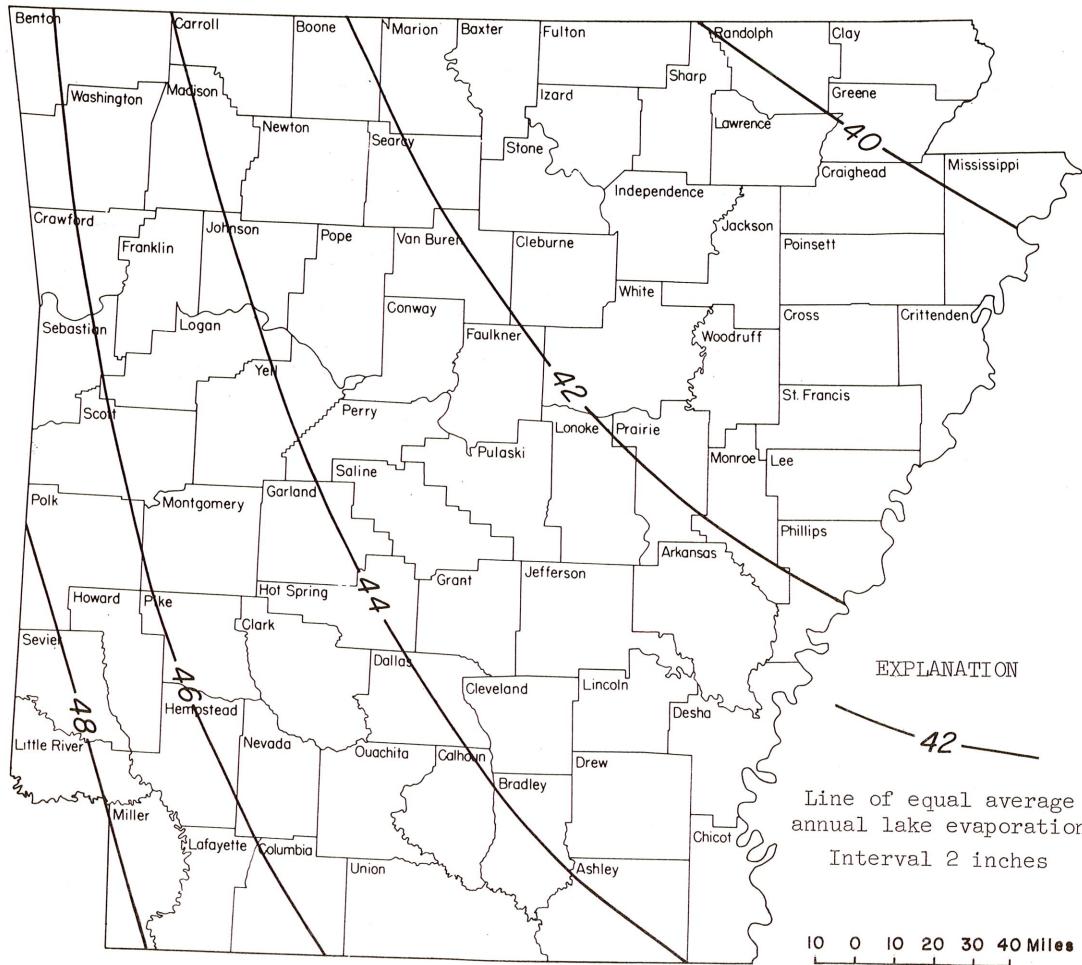


Figure 12.—Average annual lake evaporation, in inches, for the period 1946-55 (after U.S. Weather Bureau Technical Paper No. 37, 1959).

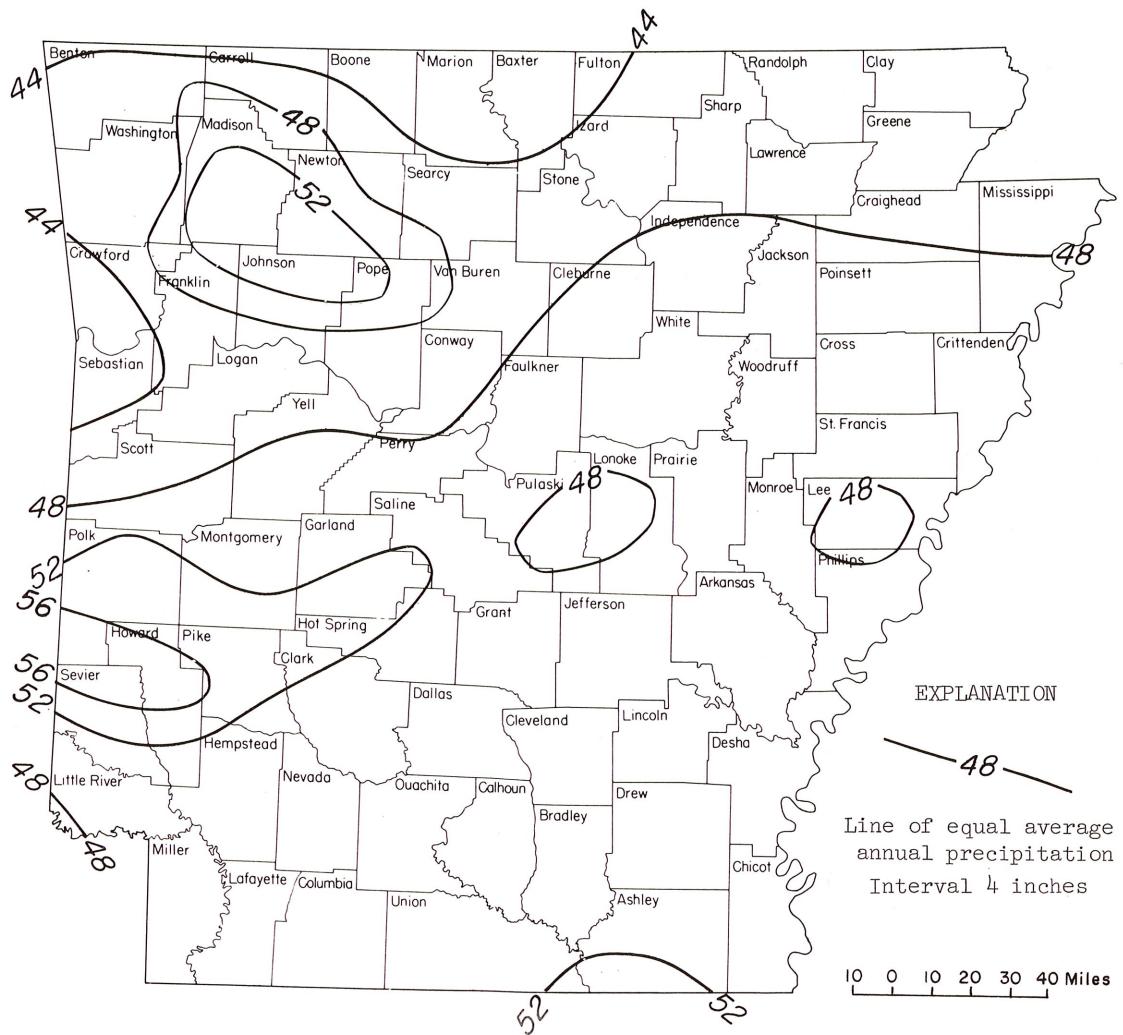


Figure 13.—Average annual precipitation, inches, for the period 1931-52 (after U.S. Weather Bureau, Hickman, 1959).

Application to Water-Supply Problems

If it is desired to build a reservoir on a stream at or near one of the continuous-record gaging stations shown in table 2, data can be used directly without use of the draft-storage diagrams. Adjustments can be made on a drainage-area basis, if the drainage area is not greatly different from that at the gaging station.

At other sites the diagrams in figure 5 through 10 must be used. In order to use these diagrams in reservoir design, the designer must know (1) the draft-storage region in which the site is located; (2) the drainage area above the site; (3) the mean annual discharge; (4) the value of the low-flow index at the site; and (5) the chance he is willing to take of storage being deficient.

Figure 14 shows the delineation of the State into draft-storage regions A, B, and C. The locations of the 53 continuous-record-gaging stations used in the analyses and 132 partial-record gaging stations are also shown. Figure 15 shows the average annual discharge for the State. Table 1 lists drainage areas, low-flow indices, mean annual discharge, and draft-storage regions for the 185 sites shown in figure 14. Table 2 gives draft-storage relations as computed for the 49 continuous-record gaging stations.

If the reservoir site is not on a stream at or near one of these sites, the low-flow indices must be estimated on the basis of a few measurements of base flow. The measured base flow at the site is then correlated with concurrent daily discharge at a gaging station for which the low-flow index has been determined. The storage requirements for the site can be determined by following the procedure outlined below.

Assume that it is desired to make a draft-storage study of a reservoir site on Curia Creek at bridge on State Highway 25, 1½ miles north of Dowdy. (See drainage outline in figs. 14 and 15.) Although this is a partial-record site (station number 744) listed in table 1, let us assume that we have no record at the site.

1. From figure 14 it is determined that the site is in region B.

2. Using the best available topographic map, the drainage area above the site is determined to be 55.7 square miles.

3. From figure 15, the mean annual discharge is determined to be 1.15 cfs per square mile, or 64 cfs (1.15×55.7), which is equivalent to 46,800 acre-feet per year (724×64). The mean annual discharge for any site can be determined by outlining the drainage area in figure 15, and either estimating by visual inspection, or by computing a weighted average of discharge based on areas between isograms.

4. To determine the low-flow index (abscissa in figs. 5 through 10), several discharge measurements are made during different periods of base flow. Plotting discharges for these measurements against concurrent daily mean discharge at nearby continuous-record gaging stations shows a good correlation (fig. 16) with Strawberry River near Poughkeepsie (station number 740).

5. From table 1 it is determined that the low-flow index for station number 740 is 48 cfs. Using this value of 48 cfs to enter the regression in figure 16, the low-flow index for Curia Creek is determined as 5 cfs, which is $5/64$, or 0.078 of the mean annual discharge.

6. Entering the abscissa scale of the draft-storage diagrams for region B (figs. 7 and 8) with a low-flow index of 0.078 of mean annual flow, draft rates for various storage values can be read from the ordinate scale for frequencies of 2, 5, 10, and 20 years. A summary of these data for a 20-year frequency is given below.

Ratio to mean annual runoff (1)	Storage Value		Draft Rate	
	Acre-ft (1) x 46,300	(2)	(3) Ratio to mean annual flow	(4) Cfs (3) x 64
0	0		0.045	2.9
.01	463		.106	6.8
.05	2,320		.195	12
.10	4,630		.280	18
.15	6,940		.355	23
.20	9,260		.423	27
.30	13,900		.512	33
.40	18,500		.560	36

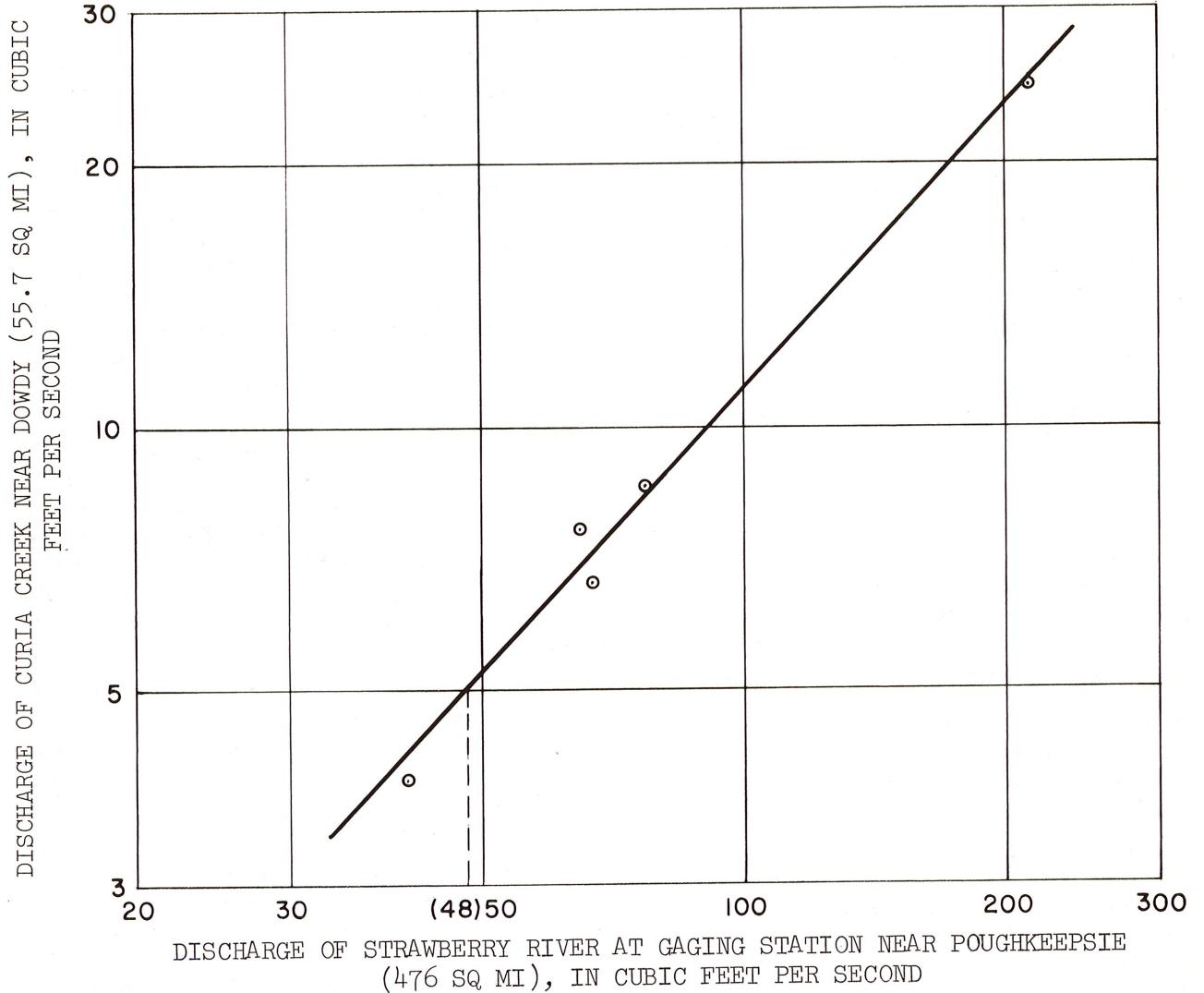
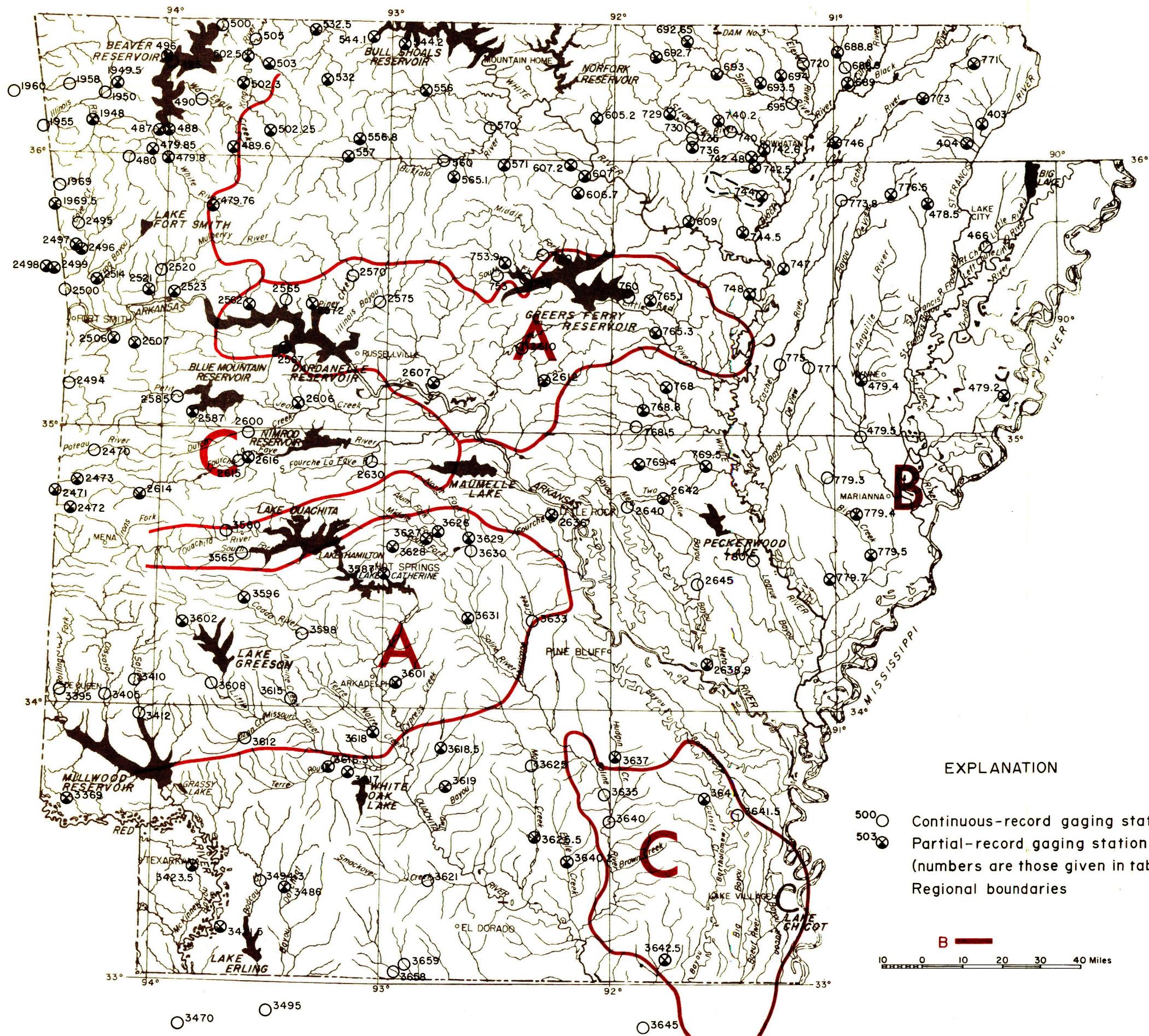


Figure 16.—Relation of concurrent base flows showing method of estimating median annual minimum 7-day average flow for ungauged streams.



EXPLANATION

- 500 ○ Continuous-record gaging station
- 503 ✕ Partial-record gaging station
(numbers are those given in tables 1 and 2)
- B — Regional boundaries

B —

10 0 10 20 30 40 Miles

Figure 14.—Map showing location of gaging stations and delineation of draft-storage regions.

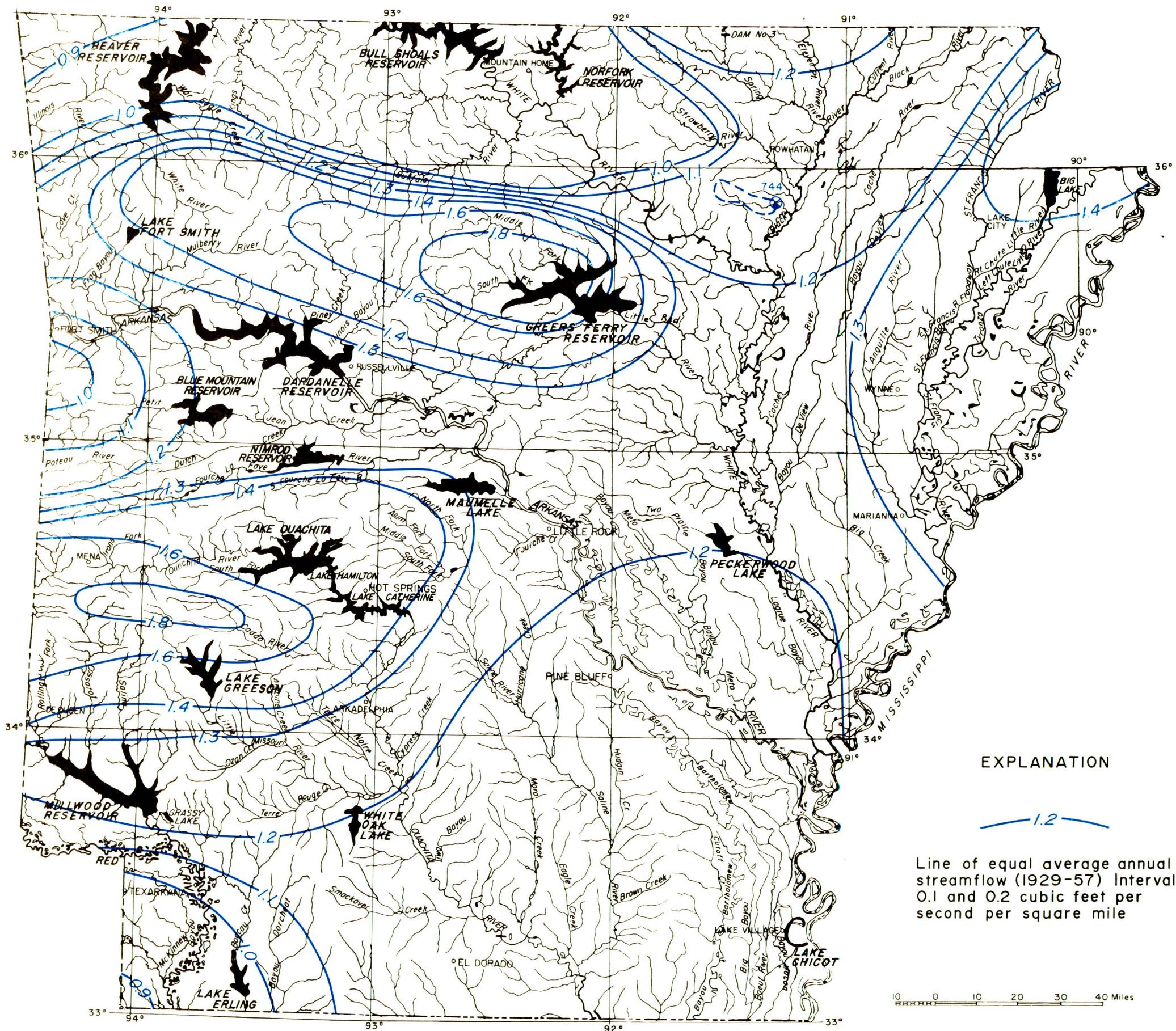


Figure 15.—Map showing average annual streamflow.

These data may be plotted similar to figure 4, and an analysis made knowing the draft rate required, storage capabilities of the site, and the frequency of deficiency of storage that can be tolerated. For instance, if computations are based on data for a 20-year frequency, storage will be inadequate to maintain the design draft rate on the average of once in 20 years.

Estimates should be made of seepage and evaporation losses, and silt accumulation that would reduce storage capacity, so that adjustments could be made to provide the required storage capacity.

Procedures outlined above are not applicable to streams whose flow is materially affected by regulation or diversion.

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- U.S. Department of Commerce, Weather Bureau, 1959, Evaporation maps of the United States, Tech. Paper No. 37.

Type of station: D, daily-discharge gaging station;
P, partial-record or short-term daily-discharge station.

Low-flow index: Median annual minimum 1-day average flow.
(Minimum 7-day average flow having a recurrence interval of 2 years.)

Station number	Station name	Location	Type of station	Drainage area (sq mi)	Mean annual discharge, adjusted to period, 1929-57		Low-flow index Cfs	Ratio to mean	Region
					Cfs	Cfsm			
403	St. Francis River basin	Lat 36°06'55", long 90°20'45", in SW $\frac{1}{4}$ sec.9, T.17 N., R.7 E., 5½ miles southeast of Marmaduke.	P	8247	(320)	(1.30)	68	0.21	B
404	Locust Creek Ditch near Paragould	Lat 36°03'10", long 90°23'10", in NE $\frac{1}{4}$ sec.1, T.16 N., R.6 E., at bridge on State Highway 25, 6 miles east of Paragould.	P	a78.3	(100)	(1.30)	1.4	.014	B
466	Right Hand Cutoff of Little River at Riverdale	Lat 35°40'20", long 90°20'12", in SW $\frac{1}{4}$ sec.10, T.12 N., R.7 E., at bridge on State Highway 135 at Riverdale.	D	a2,106	2,837	1.35	a390	.14	B
478.5	Little Bay Ditch near Jonesboro	Lat 35°49'20", long 90°35'15", in SW $\frac{1}{4}$ sec.20, T.14 N., R.5 E., at bridge on State Highway 18, 6½ miles east of Jonesboro.	P	a27.1	(35)	(1.30)	0	0	B
479.2	Fifteen Mile Bayou near West Memphis	Lat 35°08'50", long 90°14'05", in SW $\frac{1}{4}$ sec.10, T.6 N., R.8 E., at bridge on U.S. Highway 70, 3½ miles west of West Memphis.	P	a66.1	(89)	(1.35)	0	0	B
479.4	L'Anguille River near Wynne	Lat 35°12'00", long 90°53'20", in sec.28, T.7 N., R.2 E., at highway bridge 2.6 miles below Brusly Creek and 6 miles southwest of Wynne.	P	a442	(600)	(1.35)	0	0	B
479.5	L'Anguille River at Palestine	Lat 35°58'20", long 90°53'10", in NW $\frac{1}{4}$ sec.10, T.4 N., R.2 E., at bridge on U.S. Highway 70, 1 mile east of Palestine.	D	a786	1,159	1.47	0	0	B
	White River basin								
479.76	White River at Combs	Lat 35°49'40", long 93°50'00", in NW $\frac{1}{4}$ sec.2, T.13 N., R.27 W., at low-water crossing on county road at Combs.	P	90.9	(140)	(1.50)	.5	.0036	B
479.8	White River near Elkins	Lat 36°00'10", long 94°00'15", in SE $\frac{1}{4}$ sec.1, T.15 N., R.29 W., at highway bridge at Elkins.	P	181	(270)	(1.50)	2.1	.0078	
479.85	Middle Fork White River near Fayetteville	Lat 36°01'20", long 93°00'10", in SE $\frac{1}{4}$ sec.33, T.16 N., R.29 W., at ford on farm road, 1.4 miles upstream from Lake Sequoyah and 5.9 miles southeast of Fayetteville.	P	b72	(100)	(1.40)	.2	.0020	B
480	West Fork White River at Greenland	Lat 35°59', long 94°10', in NW $\frac{1}{4}$ sec.16, T.15 N., R.30 W., at bridge on U.S. Highway 71, 1 mile south of Greenland, 2½ miles upstream from small tributary, and 10.5 miles upstream from mouth.	D	83	120	1.45	.3	.0025	B
487	White River near Goshen	Lat 36°06'15", long 94°00'50", in NW $\frac{1}{4}$ sec.31, T.17 N., R.28 W., at bridge on State Highway 15, 0.2 mile upstream from Richland Creek and 1.2 miles west of Goshen.	P	408	(570)	(1.40)	1.9	.0033	B
488	Richland Creek at Goshen	Lat 36°06'05", long 94°00'25", in NE $\frac{1}{4}$ sec.31, T.17 N., R.28 W., at bridge on State Highway 45, 0.5 mile upstream from mouth and 1 mile west of Goshen.	P	147	(210)	(1.40)	.6	.0029	B

See footnotes at end of table.

Table 1--Flow characteristics of selected Arkansas streams--Continued

Station number	Station name	Location	Type of station	Drainage area (sq mi)	Mean annual discharge, adjusted to period, 1929-57		Low-flow index	Region
					Cfs	Cfsm		
<u>White River basin--Continued</u>								
489.6	War Eagle Creek near Huntsville	Lat 36°02'30", long 93°42'20", in SE _{1/4} sec.23, T.16 N., R.26 W., at bridge on State Highway 23, 4.0 miles south of Huntsville.	P	110	(160)	(1.45)	0.1	0.0006 B
490	War Eagle Creek near Hindsville	Lat 36°12'02", long 93°51'16", in SE _{1/4} sec.28, T.18 N., R.27 W., at bridge on State Highway 15, 3.8 miles downstream from Clear Creek and 3.9 miles north of Hindsville.	D	262	337	1.29	5.6	.017 B
495	White River near Rogers	Lat 36°19'59", long 94°01'07", in NW _{1/4} sec.12, T.19 N., R.29 W., at bridges on State Highway 15, 2.6 miles upstream from Prairie Creek, 5½ miles east of Rogers, and at mile 643.2.	D	1,020	1,280	1.25	4.2	.033 B
496	Prairie Creek near Rogers	Lat 36°21'05", long 94°02'30", in NE _{1/4} sec.2, T.19 N., R.29 W., at bridge on State Highway 12, 4½ miles northeast of Rogers.	P	19.5	(19)	(.95)	1.4	.074 B
500	White River at Beaver	Lat 36°28'20", long 93°45'55", in NE _{1/4} sec.20, T.21 N., R.26 W., at Missouri & North Arkansas Railway bridge, a quarter of a mile east of Beaver, 2½ miles upstream from Leatherwood Creek, and at mile 595.5.	D	1,238	1,551	1.25	5.3	.034 B
502.25	Kings River near Kingston	Lat 36°05'20", long 93°32'30", in SE _{1/4} sec.33, T.17 N., R.24 W., at bridge on State Highway 21, 3.5 miles northwest of Kingston.	P	b ₁₀₀	(130)	(1.30)	1.4	.011 B
502.3	Warm Fork Creek at Rockhouse	Lat 36°16'50", long 93°40'05", in SW _{1/4} sec.29, T.19 N., R.25 W., at low-water crossing on county road, 0.1 mile upstream from Kings River and 0.4 mile south-east of Rockhouse.	P	b ₁₉	(18)	(.95)	0	B
502.5	Kings River near Pleasant Valley	Lat 36°23'20", long 93°39'30", in NW _{1/4} sec.20, T.20 N., R.25 W., at bridge on county road, 2.9 miles upstream from Osage Creek and 3.1 miles west of Pleasant Valley.	P	351	(390)	(1.10)	7.3	.019 B
503	Osage Creek near Berryville	Lat 36°20'10", long 93°33'50", in NW _{1/4} sec.5, T.19 N., R.24 W., at bridge on State Highway 21, 1½ miles south of Berryville.	P	139	(140)	(1.00)	1.4	.010 B
505	Kings River near Berryville	Lat 36°25'30", long 93°37'20", in E _{1/2} sec.3, T.20 N., R.25 W., at highway bridge, 1½ miles downstream from Bee Creek, 2½ miles upstream from Clabber Creek, and 5½ miles northwest of Berryville.	D	532	571	1.07	1.1	.019 B
532	Long Creek at Alverson	Lat 36°17'30", long 93°31'50", in NE _{1/4} sec.23, T.19 N., R.22 W., at bridge on U.S. Highway 62, 1 mile east of Alverson.	P	67.3	(64)	(.95)	1.1	.017 B
532.5	Yocum Creek near Oak Grove	Lat 36°27'20", long 93°21'30", in NW _{1/4} sec.30, T.21 N., R.22 W., at low-water crossing on county road, 0.4 mile upstream from Spring Creek and 4.5 miles east of Oak Grove.	P	b ₅₀	(48)	(.95)	3.0	.062 B
544.1	Bear Creek near Omaha	Lat 36°26'50", long 93°04'30", in NW _{1/4} sec.26, T.21 N., R.20 W., at bridge on State Highway 14, 7.5 miles east of Omaha.	P	b ₁₃₀	(120)	(.95)	1.7	.014 B

See footnotes at end of table.

Table 1--Flow characteristics of selected Arkansas streams--Continued

Station number	Station name	Location	Type of station	Drainage area (sq mi.)	Mean annual discharge, adjusted to period, 1920-57		Low-flow index	Region
					Cfs	Cfsm		
<u>White River basin--Continued</u>								
544.2	West Sugarloaf Creek near Lead Hill	Lat 36°25'10", long 92°56'10", in NW $\frac{1}{4}$ sec.6, T.20 N., R.18 W., at bridge on State Highway 14, 1 mile west of Lead Hill.	P	b ₃₂ (30)	(.95)	0	0	B
556	Crooked Creek at Pyatt	Lat 36°11'40", long 92°50'10", in SE $\frac{1}{4}$ sec.36, T.19 N., R.18 W., at bridge on U.S. Highway 62 at Pyatt.	P	207 (200)	(.95)	9.5	.048	B
556.8	Buffalo River at Pruitt	Lat 36°03'30", long 93°08'30", in NW $\frac{1}{4}$ sec.7, T.16 N., R.20 W., at bridge on State Highway 7 at Pruitt.	P	190 (250)	(1.30)	3.3	.013	B
557	Little Buffalo River at Jasper	Lat 36°00'30", long 93°11'15", in SE $\frac{1}{4}$ sec.27, T.16 N., R.21 W., at bridge on State Highway 7 at Tassier.	P	124 (170)	(1.40)	1.6	.0094	B
560	Buffalo River near St. Joe	Lat 35°59', long 92°45', in SW $\frac{1}{4}$ sec.36, T.16 N., R.17 W., at bridge on U.S. Highway 65, 1½ miles downstream from Mill Creek, ¾ miles upstream from Bear Creek, and 4½ miles southeast of St. Joe.	D	825 1,098	1.33	36	.033	B
565.1	Bear Creek near Marshall	Lat 35°56'20", long 92°42'50", in SW $\frac{1}{4}$ sec.17, T.15 N., R.16 W., at bridge on U.S. Highway 65, 6.5 miles northeast of Marshall.	P	78.3 (100)	(1.30)	3.4	.034	B
570	Buffalo River near Rush	Lat 36°07', long 92°33", in NE $\frac{1}{4}$ sec.15, T.17 N., R.15 W., on left bank 0.8 mile upstream from Rush Creek, 1.5 miles southeast of Rush, and 2½ miles upstream from mouth.	D	1,091 1,367	1.25	46	.034	B
571	Big Creek near Big Flat	Lat 35°58'40", long 92°28'50", in NW $\frac{1}{4}$ sec.4, T.15 N., R.14 W., at bridge on State Highway 14, 4.7 miles southwest of Big Flat.	P	90.3 (110)	(1.20)	1.0	.0091	B
605.2	Piney Creek near Calico Rock	Lat 36°08'40", long 92°04'10", in NE $\frac{1}{4}$ sec.8, T.17 N., R.10 W., at bridge on State Highway 56, 4 miles northeast of Calico Rock.	P	78.5 (78)	(1.00)	7.1	.091	B
606.7	Lick Fork tributary near Mountain View	Lat 35°51'40", long 92°08'50", in W $\frac{1}{2}$ sec.10, T.14 N., R.11 W., at bridge on State Highway 66, 1.7 miles west of Mountain View.	P	b _{2.9} (3.5)	(1.20)	0	0	B
607	South Sylamore Creek at Allison	Lat 35°56'00", long 92°07'20", near center of sec.14, T.15 N., R.11 W., at bridge on State Highway 14 at Allison, and 0.9 mile upstream from mouth.	P	126 (140)	(1.10)	7.2	.051	B
607.2	North Sylamore Creek near Allison	Lat 35°58'00", long 92°10'20", in NE $\frac{1}{4}$ sec.5, T.15 N., R.11 W., at low-water crossing on county road, 1.5 miles north of State Highway 14 and 6.5 miles northwest of Allison.	P	b ₆₉ (69)	(1.00)	1.8	.026	B
609	Polk Bayou at Batesville	Lat 35°46'15", long 91°39'10", in NE $\frac{1}{4}$ sec.17, T.13 N., R.6 W., at bridge on State Highway 69 at Batesville, 1.5 miles above mouth.	P	165 (180)	(1.10)	33	.18	B
688.8	Mud Creek near Ingram	Lat 36°25'20", long 90°58'30", in SW $\frac{1}{4}$ sec.33, T.21 N., R.11 E., at low-water crossing on county road, 0.6 mile upstream from Fourche Creek and 3.5 miles northeast of Ingram.	P	b ₃₅ (40)	(1.15)	.6	.015	B

See footnotes at end of table.

Table 1.--Flow characteristics of selected Arkansas streams--Continued

Station number	Station name	Location	Type of station	Mean annual discharge, adjusted to period, 1929-57		Low-flow index	Region
				cfs	cfs		
<u>White River basin--Continued</u>							
688.9	Fourche Creek above Pocahontas	Lat 36°20'21", long 90°56'30", in NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.35, T.20 N., R.1 E., at bridge on State Highway 115, 1.2 miles southwest of Stokes, 6.1 miles north of Pocahontas, and 8.7 miles upstream from mouth.	P	228	(260)	(1.15)	.73
689	Fourche Creek near Pocahontas	Lat 36°16'50", long 90°55'40", in NW $\frac{1}{4}$ sec.2h, T.19 N., R.1 E., at bridge on State Highway 115, 2.7 miles northeast of Pocahontas and 3.8 miles upstream from mouth.	P	305	(320)	(1.15)	.029
692.65	Myatt Creek near Salem	Lat 36°26'40", long 91°40'10", in SW $\frac{1}{4}$ sec.30, T.21 N., R.6 W., at bridge on State Highway 9, 10 miles northeast of Salem.	P	102	(120)	(1.15)	.011
692.7	South Fork Spring River near Salem	Lat 36°24'40", long 91°49'10", 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.	P	b.170	(190)	(1.10)	.032
693	South Fork Spring River near Hardy	Lat 36°18'45", long 91°30'25", on line between secs.9 and 10, T.19 N., R.5 W., three-quarters of a mile upstream from mouth and 2 miles west of Hardy.	P	326	(360)	(1.10)	.14
693.5	Martins Creek near Williford	Lat 36°16'20", long 91°20'00", in NW $\frac{1}{4}$ sec.30, T.19 N., R.3 W., at bridge on U.S. Highway 63, 1.2 miles upstream from Spring River and 3 miles northeast of Williford.	P	66.6	(80)	(1.20)	.042
694	Janes Creek at Ravenden Springs	Lat 36°18'10", long 91°14'05", in SW $\frac{1}{4}$ sec.7, T.19 N., R.2 W., at bridge on State Highway 90, 1 mile south of Ravenden Springs.	P	78.5	(90)	(1.15)	.1
695	Spring River at Imoden	Lat 36°12', long 91°10", in NE $\frac{1}{4}$ sec.15, T.18 N., R.2 W., at bridge on U.S. Highway 62 at Imoden, 3.9 miles downstream from Fanes Creek, 8.5 miles upstream from Eleven Point River, and 12.1 miles upstream from mouth.	D	1,162	1,135	1.13	.24
720	Eleven Point River near Ravenden Springs	Lat 36°21', long 91°07", in SE $\frac{1}{4}$ sec.30, T.20 N., R.1 W., at bridge on State Highway 90, $\frac{1}{2}$ miles downstream from mouth, $\frac{1}{4}$ miles northeast of Ravenden Springs, and 21 miles upstream from mouth.	D	1,123	1,120	.997	.31
729	Strawberry River near Franklin	Lat 36°10'50", long 91°04'40", in NW $\frac{1}{4}$ sec.33, T.18 N., R.7 W., at bridge on State Highway 56, 2.3 miles east of Franklin.	P	153	(153)	(1.00)	.2.9
730	Strawberry River near Evening Shade	Lat 36°06', long 91°36", in NE $\frac{1}{4}$ sec.27, T.17 N., R.6 W., at bridge on U.S. Highway 167, 2 miles north of Evening Shade and 6.3 miles upstream from Piney Fork.	D	225	217	.964	.8.5
735	Piney Fork at Evening Shade	Lat 36°05', long 91°37", in NE $\frac{1}{4}$ sec.34, T.17 N., R.6 W., on right bank 20 ft downstream from bridge on U.S. Highway 167, three-quarters of a mile north of Evening Shade and 5.8 miles upstream from mouth.	D	99	98.2	.992	.012
736	Mill Creek at Evening Shade	Lat 36°03'55", long 91°36'30", in NE $\frac{1}{4}$ sec.3, T.16 N., R.6 W., at highway bridge a quarter of a mile upstream from mouth and half a mile southeast of Evening Shade.	P	12.5	-----	-----	-----
740	Strawberry River near Poughkeepsie	Lat 36°07', long 91°27", in NW $\frac{1}{4}$ sec.19, T.17 N., R.4 W., at bridge on State Highway 58, half a mile downstream from Hurricane Creek and $\frac{2}{3}$ miles northeast of Poughkeepsie.	D	476	514	1.08	.093

See footnotes at end of table.

Table 1.--Flow characteristics of selected Arkansas streams--Continued

Station number	Station name	Location	Type of station	Drainage area (sq mi.)	Mean annual discharge, adjusted to period, 1939-57		Low-flow index	
					cfs	cfs	cfs	Ratio to mean
White River basin--Continued								
740.2	North Big Creek near Evening Shade	Lat 36°08'20", long 91°30'10", in NW $\frac{1}{4}$ sec.10, T.17 N., R.5 W., at bridge on county road, 0.8 mile southeast of Center and 8 miles northeast of Evening Shade.	P	75.1	(79)	8.7	0.11	B
742.48	South Big Creek near Strawberry	Lat 36°01'20", long 91°20'10", in NW $\frac{1}{4}$ sec.19 and 20, T.16 N., R.3 W., at bridge on State Highway 117, 4 miles north of Strawberry.	P	69.4	(80)	17	.21	B
742.5	Reeds Creek near Strawberry	Lat 35°59'00", long 91°20'10", in SW $\frac{1}{4}$ sec.32, T.16 N., R.3 W., at bridge on State Highway 117, 1.4 miles northwest of Strawberry.	P	34.9	(40)	13	.32	B
742.6	Cooper Creek near Smithville	Lat 36°03'10", long 91°18'00", in SW $\frac{1}{4}$ sec.4, T.16 N., R.3 W., at bridge on State Highway 115, 2 miles south of Smithville.	P	b30	(34)	1.1	.032	B
744.	Curia Creek near Dowdy	Lat 35°52'10", long 91°18'40", in NE $\frac{1}{4}$ sec.9, T.14 N., R.3 W., at bridge on State Highway 25, 1½ miles north of Dowdy.	P	55.7	(64)	5.0	.078	B
744.5	Dota Creek near Newark	Lat 35°43'40", long 91°24'50", in W $\frac{1}{2}$ and on line between secs.27 and 34, T.13 N., R.4 W., at bridge on State Highway 122, 2 miles northeast of Newark.	P	56.3	(65)	3.2	.049	B
746	Village Creek at Walnut Ridge	Lat 36°04'30", long 90°57'45", in NE $\frac{1}{4}$ sec.34, T.17 N., R.1 E., at bridge on State Highway 25 at Walnut Ridge.	P	34.3	(41)	0	0	B
747	Village Creek near Newport	Lat 35°35'35", long 91°14'25", in E $\frac{1}{2}$ sec.5, T.11 N., R.2 W., at bridge on State Highway 14, 3.5 miles east of Newport.	P	270	(320)	3.1	.0097	B
748	Departee Creek near Coffeyville	Lat 35°30'30", long 91°23'25", in NW $\frac{1}{4}$ sec.11, T.10 N., R.4 W., at bridge on U.S. Highway 6, 1.2 miles northeast of Coffeyville.	P	a101	(120)	0	0	B
750	Middle Fork Little Red River near Shirley	Lat 35°39', long 92°18', in SW $\frac{1}{4}$ sec.20, T.12 N., R.12 W., on right bank half a mile downstream from Sugar Camp (or Wevers) Creek and 1 mile east of Shirley.	D	294	504	1.71	.3	A
752	Devils Fork Little Red River near Brownsville	Lat 35°38'20", long 92°01'30", in NW $\frac{1}{4}$ sec.35, T.12 N., R.10 W., at highway bridge 3 miles northeast of Brownsville.	P	193	(310)	1.60	.0006	A
753	South Fork Little Red River at Clinton	Lat 35°35'29", long 92°27'20", in SW $\frac{1}{4}$ sec.14, T.11 N., R.14 W., at bridge on U.S. Highway 65 at Clinton, a quarter of a mile upstream from Archey Fork.	P	145	(270)	1.85	.1	A
753.9	Archie Fork Little Red River at Clinton	Lat 35°36'10", long 92°27'20", in SW $\frac{1}{4}$ sec.10, T.11 N., R.14 W., at bridge on U.S. Highway 65 at northeast city limits of Clinton.	P	122	(230)	1.90	.1	A
755	South Fork Little Red River near Clinton	Lat 35°34', long 92°23', in NW $\frac{1}{4}$ sec.29, T.11 N., R.13 W., on left bank 1½ miles downstream from PeeDee Creek, ¾ miles southeast of Clinton, and 6 miles downstream from Archey Fork.	D	316	598	1.89	.2	A
760	Little Red River near Heber Springs	Lat 35°31'02", long 90°59'55", in NW $\frac{1}{4}$ sec.7, T.10 N., R.9 W., on right bank 1,600 ft downstream from Greers Ferry Dam and 3 miles northeast of town of Heber Springs. Prior to Oct. 1, 1960, at site 1½ miles upstream.	D	1,141	1,878	1.65	1.2	A

See footnotes at end of table.

Table 1.--Flow characteristics of selected Arkansas streams--Continued

Station number	Station name	Location	Type of station	Mean annual discharge, adjusted to period, 1929-57		Low-flow index	Region
				Cfs	Cfsm		
<u>White River basin--Continued</u>							
765.1	Big Creek near Pangburn	Lat 35°27'10", long 91°50'50", in NW $\frac{1}{4}$ sec.34, T.10 N., R.8 W., at bridge on county road, 1 mile upstream from Little Red River and 2 miles north of Pangburn.	P	b 83	(120)	(1.40)	0.1
765.3	Big Creek near Letona	Lat 35°21'40", long 91°48'00", in SE $\frac{1}{4}$ sec.36, T.9 N., R.8 W., at bridge on State Highway 16, 1.8 miles east of Letona.	P	72.9	(98)	(1.35)	.1
768	Bayou Des Arc near Garner	Lat 35°10'10", long 91°44'15", in SW $\frac{1}{4}$ sec.3, T.6 N., R.7 W., at bridge on U.S. Highway 67, 2.7 miles northeast of Garner.	P	97.1	(120)	(1.25)	0
768.5	Cypress Bayou near Beebe	Lat 35°01'30", long 91°52'23", in NE $\frac{1}{4}$ sec.32, T.5 N., R.8 W., at bridge on State Highway 31, 3 miles south of Beebe.	P	166	(210)	(1.25)	0
768.8	Bull Creek near McRae	Lat 35°05'30", long 91°51'20", in NW $\frac{1}{4}$ sec.3, T.5 N., R.8 W., at bridge on U.S. Highway 67, 2.5 miles southwest of McRae, and 1.3 miles northeast of Beebe.	P	89.2	(110)	(1.25)	0
769.4	Wattensaw Bayou near Lonoke	Lat 34°53'10", long 91°52'30", near center and on line between secs.16 and 17, T.3 N., R.8 W., at bridge on State Highway 31, 7.3 miles north of Lonoke.	P	31.7	(40)	(1.25)	0
769.5	Wattensaw Bayou near Hazen	Lat 34°52'35", long 91°33'55", near south edge of and on line between secs.17 and 18, T.3 N., R.5 W., at bridge on State Highway 11, 1 mile downstream from Barnes Creek, and 6.8 miles north of Hazen.	P	195	(240)	(1.25)	.1
771	Big Creek near Boydsville	Lat 36°22'10", long 90°19'50", in SE $\frac{1}{4}$ sec.16, T.20 N., R.7 E., at bridge on county road, 0.5 mile south of Crockett and 4 miles northeast of Boydsville.	P	12.9	(15)	(1.20)	0
773	Cache River near Stonewall	Lat 36°14'10", long 90°33'45", in NW $\frac{1}{4}$ sec.5, T.18 N., R.5 W., 1.2 miles southwest of Stonewall.	P	285	(340)	(1.20)	1.2
773.8	Cache River at Egypt	Lat 35°51'28", long 90°56'00", in NW $\frac{1}{4}$ sec.12, T.14 N., R.1 E., at bridge on State Highway 91, 1 mile southeast of Egypt, 2.2 miles northwest of Winsburg, and at mile 14.3.	P	698	(840)	(1.20)	.21
775	Cache River at Patterson	Lat 35°15'20", long 91°14'40", in S $\frac{1}{2}$ sec.6, T.7 N., R.2 W., at bridge on U.S. Highway 64, at Patterson and 9.5 miles upstream from Maple Slough.	D	1,041	1,194	1.15	.042
776.5	Big Creek near Jonesboro	Lat 35°51'02", long 90°45'05", in SE $\frac{1}{4}$ sec.10, T.14 N., R.3 E., at bridge on U.S. Highway 63, 2.7 miles northeast of Jonesboro.	P	51.1	(61)	(1.20)	.4
777	Bayou DeView at Morton	Lat 35°15'07", long 91°06'37", near corner of secs.4, 5, 8, and 9, T.7 N., R.1 W., at bridge on U.S. Highway 64, 1 mile west of Morton.	D	422	534	1.27	.3
779.3	Big Creek near Moro	Lat 34°50'50", long 91°00'35", in SW $\frac{1}{4}$ sec.28, T.3 N., R.1 E., at bridge on State Highway 78, 3½ miles north of Moro.	P	80.9	(100)	(1.25)	.2
779.4	Spring Creek near Aubrey	Lat 34°41'20", long 90°53'40", in SW $\frac{1}{4}$ sec.16, T.1 N., R.2 E., at bridge on State Highway 121, 2.1 miles south of Aubrey.	P	b 36	(45)	(1.25)	0

See footnotes at end of table.

Table 1--Flow characteristics of selected Arkansas streams--Continued

Station number:	Station name	Location	Type of station	Drainage area (sq mi)	Mean annual discharge, adjusted to period, 1939-57		Low-flow index	Region
					Cfs	CF:SM		
<u>White River basin--Continued</u>								
779.5	Big Creek at Poplar Grove	Lat 34°33'20", long 90°50'45", in NW ₁ sec.1, T.2 S., R.2 E., at bridge on State Highway 20, three quarters of a mile northeast of Poplar Grove.	P	389	(490)	(1.25)	0	B
779.7	Big Cypress Creek at Turner	Lat 34°27'45", long 91°01'15", in E ₁ sec.5, T.3 S., R.1 E., at bridge on State Highway 1, 1 mile south of Turner.	P	125	(160)	(1.25)	.2	B
780	Lagru Bayou near Stuttgart	Lat 34°31'55", long 91°21'20", in NW ₁ sec.17, T.2 S., R.3 W., at bridge on State Highway 146, 7½ miles downstream from small tributary, 11 miles east of Stuttgart, and 24 miles upstream from Little Lagru Bayou.	D	175	296	1.18	.1	B
<u>Arkansas River basin</u>								
1948	Illinois River at Savoy	Lat 36°06'05", long 94°20'30", in SW ₁ sec.36, T.17 N., R.32 W., at bridge on State Highway 16, 0.5 mile west of Savoy.	P	167	(200)	(1.20)	3.1	C
1949.5	Little Osage Creek near Healing Springs	Lat 36°44'40", long 94°26'20", in NW ₁ sec.15, T.18 N., R.31 W., 0.5 mile upstream from mouth and 1.5 miles south of Healing Springs.	P	40.0	(38)	(.95)	12.1	C
1950	Osage Creek near Elm Springs	Lat 36°13', long 94°17', in sec.21, T.18 N., R.31 W., on left bank 1 mile downstream from Little Osage Creek and 3½ miles northwest of Elm Springs.	D	129	123	.953	22	C
1955	Illinois River near Watts, Okla.	Lat 36°07'48", long 94°34'12", in NW ₁ sec.18, T.19 N., R.26 E., at bridge on U.S. Highway 59, 1.5 miles north of Watts, 4.5 miles downstream from Cincinnati Creek, and at mile 106.2.	D	635	649	1.02	77	C
1958	Flint Creek at Springtown	Lat 36°15'20", long 94°25'50", in NW ₁ sec.7, T.18 N., R.32 W., on right bank 20 ft downstream from State Highway 12, 0.8 mile southwest of Springtown.	P	b ₁₄	(13)	(.95)	.9	C
1960	Flint Creek near Kansas, Okla.	Lat 36°11'54", long 94°42'30", in SW ₁ sec.21, T.20 N., R.24 E., at bridge on Oklahoma State Highway 33, 6 miles southeast of Kansas, 6 miles downstream from Sager Creek, and at mile 2.8.	D	110	103	.936	14	C
1969	Barren Fork at Dutch Mills	Lat 35°52'40", long 94°29'10", on line between secs.21 and 22, T.14 N., R.33 W., at bridge on State Highway 59 at Dutch Mill, 2½ miles upstream from Arkansas-Oklahoma State line.	P	b ₄₃	(52)	(1.20)	0	C
1969.5	Evansville Creek at Evansville	Lat 35°48'40", 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 mile north of Evansville.	P	23.5	(28)	(1.20)	0	C
2470	Poteau River at Cauthron	Lat 34°55'08", long 94°17'55", in SW ₁ sec.16, T.3 N., R.31 W., at highway bridge at Cauthron, 8 miles downstream from Jones Creek.	D	200	226	1.13	0	C
2471	Black Fork near Page, Okla.	Lat 34°45'35", long 94°29'45", in sec.5, T.3 N., R.27 E., Indian Meridian, at highway bridge 2 miles west of Arkansas-Oklahoma State line, and 5 miles northeast of Page.	P	46.6	(61)	(1.30)	0	C

See footnotes at end of table.

Table 1.--Flow characteristics of selected Arkansas streams--Continued

Station number	Station name	Location	Type of station	Mean annual discharge, adjusted to period, 1929-57		Low-flow index	Region
				Cfs	Cfsm		
<u>Arkansas River basin--Continued</u>							
2472	Big Creek at Howard	Lat 34°42'20", long 94°26'40", in sec.31, T.1 N., R.32 W., 300 ft north of U.S. Highway 270, 1 mile east of Arkansas-Oklahoma State line at Howard.	P	10.9	(15)	0	C
2473	Haws Creek near Black Fork	Lat 34°47'35", long 94°25'05", in sec.32, T.2 N., R.32 W., at highway bridge 2 miles east of Arkansas-Oklahoma State line and 2 miles north of Black Fork.	P	8.0	(9.6)	0	C
2494	James Fork near Hackett	Lat 35°09'45", long 94°24'25", in NW $\frac{1}{4}$ sec.34, T.6 N., R.32 W., at bridge on State Highway 45, 1.7 miles south of Hackett, 2 miles downstream from Elder Branch, 2 miles upstream from small tributary, and 3.8 miles upstream from Arkansas-Oklahoma State line.	D	148	163	.4	C
2495	Cove Creek near Lee Creek	Lat 35°43'20", long 94°24'30", in SW $\frac{1}{4}$ sec.16, T.12 N., R.32 W., at highway bridge, $\frac{1}{2}$ miles northwest of Lee Creek and $\frac{5}{8}$ miles upstream from mouth.	D	36.9	47	1.27	C
2496	Lee Creek at Natural Dam	Lat 35°38'40", long 94°23'30", in SW $\frac{1}{4}$ sec.10, T.11 N., R.32 W., at bridge on State Highway 59 at Natural Dam.	P	168	(220)	.4	C
2497	Mountain Fork Creek at Natural Dam	Lat 35°39'10", long 94°23'55", in SE $\frac{1}{4}$ sec.9, T.11 N., R.32 W., 200 ft upstream from mouth and a quarter of a mile west of Natural Dam.	P	36.0	(43)	0	C
2498	Lee Creek near Short, Okla.	Lat 35°34'05", long 94°31'55", on line between secs.27 and 32, T.13 N., R.26 E., Indian Meridian, at highway bridge 2 miles west of Short.	P	236	(300)	.6	C
2499	Little Lee Creek near Short, Okla.	Lat 35°34'30", long 94°33'00", in NW $\frac{1}{4}$ sec.28, T.13 N., R.26 E., Indian Meridian, at highway bridge $\frac{2}{3}$ miles upstream from mouth and 3 miles west of Short.	P	103	(120)	0	C
2500	Lee Creek near Van Buren	Lat 35°29'40", long 92°27'00", in SE $\frac{1}{4}$ sec.21, T.12 N., R.27 E., Indian Meridian, on right bank 300 ft west of Arkansas-Oklahoma State line, 3.2 miles downstream from Webbers Creek, $\frac{4}{5}$ miles northwest of Van Buren, and 7.9 miles upstream from mouth.	D	427	557	1.1	C
2506	Vache Grasse Creek near Lavaca	Lat 35°19'05", long 94°13'00", in NW $\frac{1}{4}$ sec.5, T.7 N., R.30 W., at bridge on State Highway 22, 2.5 miles south of Lavaca.	P	111	(110)	0	C
2507	Big Creek at Bloomer	Lat 35°17'30", long 94°08'00", in SW $\frac{1}{4}$ sec.7, T.7 N., R.29 W., at bridge on State Highway 22 at Bloomer.	P	53.8	(56)	0	C
2514	Cedar Creek near Rudy	Lat 35°31'30", long 94°17'10", in SE $\frac{1}{4}$ sec.22, T.10 N., R.31 W., 200 ft upstream from mouth and 0.5 mile southwest of Rudy.	P	51.2	(61)	0	C
2520	Mulberry River near Mulberry	Lat 35°34', long 94°01', in NW $\frac{1}{4}$ sec.6, T.10 N., R.28 W., on left bank a quarter of a mile upstream from Mill Creek, 5 miles northeast of Mulberry, and 11.3 miles upstream from mouth.	D	372	574	1.54	A
2521	Little Mulberry Creek near Mulberry	Lat 35°30'25", long 94°01'30", in SE $\frac{1}{4}$ sec.27, T.10 N., R.29 W., at bridge on U.S. Highway 64, 1.2 miles northwest of Mulberry.	P	52.1	(65)	0	A

See footnotes at end of table.

Table 1.--Flow characteristics of selected Arkansas streams--Continued

Station number	Station name	Location	Type of station	Drainage area (sq mi)	Mean annual discharge, adjusted to period, 1929-57		Low-flow index Cfs	Ratio to mean	Region
					Cfs	Crsm			
<u>Arkansas River basin--Continued</u>									
2523	White Oak Creek near Ozark	Lat 35°30'20", long 93°56'50", in SW ₁ sec.26, T.10 N., R.28 W., at bridge on U.S. Highway 64, 7½ miles west of Ozark.	P	76.9	(100)	(1.30)	0	0	A
2562	Horsehead Creek at Hartman	Lat 35°26'00", long 93°36'25", in SE ₁ sec.13, T.9 N., R.25 W., at bridge on U.S. Highway 64, 0.5 mile east of Hartman.	P	123	(166)	(1.30)	.1	.0006	A
2565	Spadra Creek at Clarksville	Lat 35°28'06", long 93°27'46", in NE ₁ sec.5, T.9 N., R.23, W., 1,000 ft downstream from bridge on U.S. Highway 64 and 4½ miles upstream from mouth.	D	54.8	87	1.59	.3	.0034	A
2567	Shoal Creek near New Blaine	Lat 35°17'35", long 93°27'40", in SE ₁ sec.5, T.7 N., R.23 W., at bridge on State Highway 22, 2 miles west of New Blaine.	P	55.2	(69)	(1.25)	0	0	C
2570	Piney Creek near Dover	Lat 35°33'00", long 93°09'25", in NE ₁ sec.6, T.10 N., R.20 W., on left bank 7½ miles downstream from Indian Creek and 10 miles north of Dover.	D	274	441	1.61	.7	.0016	A
2572	Little Piney Creek near Lamar	Lat 35°26'55", long 93°20'20", near center of sec.9, T.9 N., R.22 W., at highway bridge 2.5 miles east of Lamar.	P	156	(230)	(1.50)	0	0	A
2575	Illinois Bayou near Scottsville	Lat 35°27'58", long 93°02'28", in SW ₁ sec.32, T.10 N., R.19 W., at bridge on county road, 1½ miles north of Scottsville and 3 miles downstream from North Fork Illinois Bayou.	D	242	396	1.64	.4	.0010	A
2585	Petit Jean River near Booneville	Lat 35°06'25", long 93°55'25", in NW ₁ sec.18, T.5 N., R.27 W., at bridge on State Highway 23, 0.5 mile downstream from Fletcher Creek and 2½ miles south of Booneville.	D	247	264	1.07	.1	.0004	C
2587	Sugar Creek near Sugar Grove	Lat 35°04'40", long 93°49'00", in NE ₁ sec.25, T.5 N., R.27 W., at highway bridge 1.1 miles west of Sugar Grove.	P	97.7	(120)	(1.20)	.1	.0008	C
2600	Dutch Creek at Waltreak	Lat 34°59'15", long 93°36'45", in SW ₁ sec.24, T.4 N., R.25 W., on left bank a quarter of a mile north of Waltreak and 20 miles upstream from mouth.	D	74	93	1.26	0	0	C
2606	Spring Creek near Danville	Lat 35°05'10", long 93°33'30", in SE ₁ sec.13, T.5 N., R.23 W., at bridge on State Highway 27, 1½ miles north of Danville.	P	28.8	(36)	(1.25)	0	0	C
2607	Point Remove Creek near Morrilton	Lat 35°10'55", long 92°47'05", in NW ₁ sec.11, T.6 N., R.17 W., at bridge on U.S. Highway 64, 3 miles northwest of Morrilton.	P	484	(680)	(1.40)	0	0	A
2610	Cedron Creek near Guy	Lat 35°17'56", long 97°24'10", in SW ₁ sec.29, T.8 N., R.13 W., at bridge on U.S. Highway 65, 4 miles southwest of Guy and 10.8 miles upstream from Cove Creek.	D	187	311	1.66	.1	.0003	B
2612	East Fork Cadron Creek near Enola	Lat 35°13'10", long 92°16'40", in NE ₁ sec.28, T.7 N., R.12 W., at highway bridge 4.5 miles west of Enola.	P	145	(200)	(1.35)	0	0	B
2614	Mill Creek near Boles	Lat 34°54'20", long 94°04'50", in SW ₁ sec.16, T.1 N., R.29 W., at bridge on U.S. Highway 71, 4 miles south of Boles.	P	55.0	(82)	(1.50)	0	0	B

See footnotes at end of table.

Table 1.--Flow characteristics of selected Arkansas streams--Continued

Station number	Station name	Location	Type of station	Drainage area (sq mi)	Mean annual discharge, adjusted to period, 1949-57		Low-flow index		Region
					Cfs	Cfsm	Cfs	Ratio to mean	
<u>Arkansas River basin--Continued</u>									
2615	Fourche La Fave River near Gravelly	Lat 34°52', long 93°39', in NW $\frac{1}{4}$ sec.34, T.3 N., R.25 W., at bridge on State Highway 28, 1 mile downstream from Garner Creek, 1 $\frac{1}{2}$ miles east of Gravelly, and 6.1 miles upstream from Gaffords Creek.	D	41.3	570	1.38	0.2	0.0004	B
2616	Gaffords Creek near Bluffton	Lat 34°53'50", long 93°36'50", in sec.24, T.3 N., R.25 W., at bridge on State Highway 28, 0.8 mile southwest of Bluffton and 1 mile upstream from mouth.	P	42.8	(60)	(1.40)	0	0	B
2630	South Fourche La Fave River near Hollis	Lat 34°55', long 93°03', in NE $\frac{1}{4}$ sec.18, T.3 N., R.19 W., on left bank 0.6 mile upstream from Big Cove Creek, 4 miles northeast of Hollis, and 5.8 miles upstream from mouth.	D	211	303	1.44	0	0	A
2636	Fourche Creek at Little Rock	Lat 34°32'55", long 92°15'30", in NW $\frac{1}{4}$ sec.14, T.1 N., R.12 W., at bridge on U.S. Highway 65 at Little Rock.	P	162	(200)	(1.25)	.2	.0010	B
2638.9	Little Bayou Meto at Reydel	Lat 34°09'20", long 91°34'00", in E $\frac{1}{2}$ sec.20, T.6 S., R.5 W., at bridge on State Highway 88 at Reydel.	P	450	(540)	(1.20)	0	0	B
2640	Bayou Meto near Lonoke	Lat 34°44'10", long 91°51'58", in SW $\frac{1}{4}$ sec.6, T.1 N., R.8 W., at bridge on State Highway 31, 3 miles upstream from Brushy Slough and 3 $\frac{1}{2}$ miles south of Lonoke.	P	203	274	1.34	.2	.0007	B
2642	Two Prairie Bayou at Carlisle	Lat 34°46'45", long 91°46'05", in SW $\frac{1}{4}$ sec.24, T.2 N., R.7 W., at bridge on U.S. Highway 70, 1 mile west of Carlisle.	P	149	(190)	(1.25)	.1	.0005	B
- 2645	Bayou Meto near Stuttgart	Lat 34°27'15", long 91°37'00", in SE $\frac{1}{4}$ sec.11, T.3 S., R.6 W., at bridge on U.S. Highway 79, 5 $\frac{1}{2}$ miles southwest of Stuttgart and 8 miles upstream from Crooked Creek.	D	560	-----	-----	0	0	B
<u>Red River basin</u>									
3369	Walnut Bayou near Foreman	Lat 33°39'20", long 94°22'35", on east line sec.12, T13 S., R.32 W., at highway bridge 5 miles southeast of Foreman.	P	83.6	(96)	(1.15)	0	0	B
3395	Rolling Fork near DeQueen	Lat 31°03', long 94°55', in SW $\frac{1}{4}$ sec.21, T.8 S., R.32 W., at bridge on U.S. Highway 70, 4 miles west of DeQueen, 6 miles upstream from Rock Creek and 17 miles upstream from mouth.	D	181	304	1.68	.4	.0013	A
3405	Cossatot River near DeQueen	Lat 31°03', long 94°13', on south edge of SE $\frac{1}{4}$ sec.20, T.8 S., R.30 W., at bridge on U.S. Highway 71 just downstream from Hale Creek and 7 miles east of DeQueen.	D	361	604	1.67	7.0	.012	A
3410	Saline River near Dierks	Lat 31°06', long 94°05', in W $\frac{1}{4}$ sec.3, T.8 S., R.29 W., at bridge on U.S. Highway 70, 3 $\frac{1}{2}$ miles upstream from Holly Creek and 4 miles southwest of Dierks.	D	124	189	1.52	.1	.0005	A
3412	Saline River near Lockesburg	Lat 33°57'43", long 94°03'40", in NW $\frac{1}{4}$ sec.23, T.9 S., R.29 W., at bridge on State Highway 24, 2 miles downstream from Brushy Creek, 6 miles east of Lockesburg, and at mile 30.	P	260	(380)	(1.45)	.5	.0013	B

See footnotes at end of table.

Table 1--Flow characteristics of selected Arkansas streams--Continued

Station number	Station name	Location	Type of station	Drainage area (sq mi)	Mean annual discharge, adjusted to period, 1929-57		Low-flow index	Ratio to mean	Region
					CFs	CFsm			
<u>Red River basin--Continued</u>									
3421.5	Manice Bayou near Cenfield	Lat 33°11'45", long 93°41'15", in SW ₁ sec.10, T.18 S., R.25 W., at highway bridge 3.1 miles west of Cenfield and 3.3 miles upstream from mouth.	P	109	(100)	(0.95)	0.2	0.0020	B
3423.5	McKinney Bayou near Garland	Lat 33°24'50", long 93°48'30", in SW ₁ sec.29, T.15 S., R.26 W., at bridge on U.S. Highway 82, 1 mile downstream from Red Cincte and 6.7 miles northeast of Garland.	P	169	(170)	(1.00)	0	0	B
3470	Kelly Bayou near Hosston, La.	Lat 32°51'25", long 93°52'20", in SW ₁ sec.36, T.22 N., R.15 W., at bridge on U.S. Highway 71, 0.4 mile downstream from Willow Lake lateral, 2 miles south of Hosston, and 2.7 miles upstream from mouth.	D	116	88	.759	2.7	.031	B
3486	Bayou Dorcheat at Buckner	Lat 33°21'30", long 93°24'50", in NW ₁ sec.18, T.16 S., R.22 W., at bridge on U.S. Highway 82, 1 mile east of Buckner.	P	101	(120)	(1.15)	0	0	B
3490	Bayou Dorcheat near Minden, La.	Lat 32°35'55", long 93°20'00", in NW ₁ sec.31, T.19 N., R.9 W., 500 ft upstream from bridge on U.S. Highway 80, three-quarters of a mile upstream from Louisiana & Arkansas Railway Co. bridge and 3 miles west of Minden.	D	1,097	1,150	1.05	1.1	.0010	B
3494.3	Bodcau Creek at Stamps	Lat 33°22'00", long 93°31'20", in NW ₁ sec.7, T.16 S., R.23 W., at bridge on U.S. Highway 82, 0.1 mile upstream from Tatum Branch and 1 mile west of Stamps.	P	234	306	1.31	0	0	B
3495	Bodcau Bayou near Sapello, La. (Bodcau Creek in Arkansas)	Lat 32°54'15", long 93°28'55", in NW ₁ sec.15, T.22 N., R.11 W., at bridge on State Highway 2, 2 miles west of Sapello and 9.5 miles upstream from Candy Creek.	D	546	601	1.10	.4	.0007	B
3560	Ouachita River near Mount Ida	Lat 34°26'40", long 93°41'45", in Sec.32, T.1 S., R.25 W., on right bank 350 ft upstream from bridge on U.S. Highway 270, 4½ miles upstream from Fiddlers Creek, and 5½ miles northwest of Mount Ida.	D	410	723	1.76	16	.022	A
3565	South Fork Ouachita River at Mount Ida	Lat 34°26'34", long 93°39', in NW ₁ sec.28, T.2 S., R.25 W., at bridge on U.S. Highway 270 at Mount Ida, 2½ miles upstream from Williams Creek, and 22.5 miles upstream from mouth.	D	64	103	1.61	3.0	.029	A
3587	Gulpha Creek near Hot Springs	Lat 34°28'15", long 92°59'20", in P ₂ sec.13, T.3 S., R.19 W., at bridge on U.S. Highway 270, 4.6 miles southeast of Hot Springs.	P	50.2	(75)	(1.50)	1.4	.019	A
3596	Caddo River at Caddo Gap	Lat 34°23'55", long 92°37'10", in NW ₁ sec.13, T.4 S., R.25 W., at highway bridge at Caddo Gap.	P	115	(210)	(1.80)	18	.086	A
3598	Caddo River near Alpine	Lat 34°16'00", long 93°21'15", in SW ₁ sec.28, T.5 S., R.22 W., at Runyan Bridge on gravel road between Alpine and Bismarck, 7.1 miles below Sugar Fork Creek, and 33.8 miles above mouth.	D	312	545	1.75	24	.044	A
3601	L'Eau Freis Creek at Joan	Lat 34°06'10", long 92°55'50", in SW ₁ sec.22, T.7 S., R.18 W., at highway bridge 0.5 mile southeast of Joan.	P	79.4	(99)	(1.25)	1.6	.016	B
3602	Little Missouri River near Langley	Lat 34°18'50", long 93°53'55", in SW ₁ sec.16, T.5 S., R.27 W., at highway bridge 3.5 miles west of Langley.	P	66.5	(120)	(1.80)	12	.10	A

See footnotes at end of table.

Table 1.--Flow characteristics of selected Arkansas streams--Continued

Station number	Station name	Location	Type of station	Mean annual discharge, adjusted to period, 1929-57		Low-flow index	Region
				Cfs	Crsm		
<u>Red River basin--Continued</u>							
3608	Muddy Fork Creek near Murfreesboro	Lat. 34° 05' 00", long 93° 45' 05", in NW ₁ sec. 3, T.8 S., R.26 W., 1.8 miles upstream from mouth and 3 miles northwest of Murfreesboro.	D	121	166	1.37	A
3612	Ozan Creek near McCaskill	Lat. 33° 52' 34", long 93° 35' 34", in NE ₁ NW ₁ sec. 17, T.10 S., R.24 W., at bridge on State Highway 24, 3.5 miles southeast of McCaskill and 14.5 miles upstream from mouth.	P	148	(180)	(1.25)	0
3615	Antoine River at Antoine	Lat. 34° 02' 20", long 93° 25' 05", in NW ₁ sec. 24, T.8 S., R.23 W., at bridge on State Highway 26 at Antoine, 1.6 miles downstream from Brushy Creek, 1.9 miles downstream from Stuck Creek, and 8.5 miles upstream from mouth.	D	181	267	1.48	.1
3616.5	Terre Rouge Creek near Prescott	Lat. 33° 16' 45", long 93° 14' 05", in SW ₁ sec. 14, T.11 S., R.2 W., at bridge on State Highway 24, 8.5 miles east of Prescott.	P	231	(290)	(1.25)	.2
3617	Caney Creek near Bluff City	Lat. 33° 45' 40", long 93° 09' 00", in NW ₁ sec. 22, T.11 S., R.20 W., at bridge on State Highway 24, 3.6 miles north of Bluff City.	P	167	(200)	(1.20)	0
3618	Terre Noire Creek near Gurdon	Lat. 33° 55' 00", long 93° 02' 15", in SW ₁ sec. 27, T.9 S., R.19 W., at highway bridge 7 miles east of Gurdon.	P	250	(320)	(1.30)	.2
3618.5	Tulip Creek near Pine Grove	Lat. 33° 51' 30", long 92° 44' 25", in NW ₁ sec. 16, T.10 S., R.16 W., at bridge on State Highway 128, 2 miles southeast of Pine Grove.	P	152	(180)	(1.20)	.1.3
3619	Bayou Freeo near Eagle Mills	Lat. 33° 43' 30", long 92° 42' 20", on line between and near south edge of secs. 35 and 36, T.11 S., R.16 W., at bridge on State Highway 9, 2.5 miles north of Eagle Mills.	P	94.8	(110)	(1.15)	.1
3621	Smackover Creek near Smackover	Lat. 33° 22' 40", long 92° 46' 45", in SW ₁ sec. 32, T.15 S., R.16 W., at bridge on State Highway 7, 3 miles northwest of Smackover and 23 miles above mouth.	P	377	(430)	(1.15)	.011
3625	Moro Creek near Fordyce	Lat. 33° 47' 1, long 92° 20", in NW ₁ sec. 3, T.11 S., R.12 W., at bridge on State Highway 8, 1,100 ft. upstream from Caney Creek, 4 miles southeast of Fordyce, and 12 miles upstream from White Water Creek.	D	216	250	1.16	0
3625.5	Moro Creek near Banks	Lat. 33° 32' 45", long 92° 18' 40", in NW ₁ sec. 35, T.13 S., R.12 W., at bridge on State Highway 4, 3.5 miles southwest of Banks.	P	374	(430)	(1.15)	0
3626	Alum Fork at Crows	Lat. 34° 56' 55", long 92° 45' 05", in NW ₁ sec. 29, T.1 S., R.16 W., at bridge on State Highway 5, 1 mile east of Crows.	P	123	(180)	(1.45)	.1.2
3627	Middle Fork at Crows	Lat. 34° 36' 55", long 92° 46' 50", in NW ₁ sec. 25, T.1 S., R.17 W., at bridge on State Highway 5, 0.5 mile west of Crows.	P	109	(160)	(1.45)	.3.6
3628	South Fork near Hot Springs	Lat. 34° 35' 10", long 92° 58' 20", in SE ₁ sec. 6, T.2 S., R.18 W., at bridge on State Highway 5, 7 miles northeast of Hot Springs.	P	12.9	(19)	(1.45)	.9

See footnotes at end of table.

Table 1--Flow characteristics of selected Arkansas streams--Continued

Station number	Station name	Location	Type of station	Drainage area (sq mi.)	Mean annual discharge, adjusted to period, 1920-57		Low-flow index	Region
					Cfs	Cfsm		
<u>Red River basin--Continued</u>								
3629	North Fork near Benton	Lat 34°36'25", long 92°37'05", in SW $\frac{1}{4}$ sec.28, T.1 S., R.15 W., at bridge on State Highway 5, 4 miles northwest of Benton.	P	132	(180)	(1.40)	0.7	0.0039
3630	Saline River at Benton	Lat 34°31'05", long 92°36'10", in NE $\frac{1}{4}$ sec.9, T.2 S., R.15 W., on left bank three-quarters of a mile west of Benton and 3 miles downstream from confluence of North Fork and Alum Fork.	D	569	815	1.43	1.2	.015
3631	Francois Creek near Poyen	Lat 34°19'10", long 92°36'45", near center of sec.3, T.5 S., R.15 W., at bridge on U.S. Highway 270, 2 miles east of Poyen.	P	84.1	(110)	(1.30)	.1	.0009
3633	Hurricane Creek near Sheridan	Lat 34°19'10", long 92°20'10", in NW $\frac{1}{4}$ sec.6, T.4 S., R.12 W., at bridge on U.S. Highway 270, 2.8 miles downstream from Simpson Creek and 3.5 miles east of Sheridan.	P	204	(260)	(1.25)	1.5	.0058
3635	Saline River near Rye	Lat 33°42', long 92°02', on line between secs.3 and 4, T.12 S., R.9 W., at bridge on State Highway 15, 4 miles southwest of Rye and 5 miles upstream from Hudgin Creek.	D	2,062	2,499	1.21	26	.010
3637	Hudgin Creek near Pansy	Lat 33°49'55", long 91°58'15", in NE $\frac{1}{4}$ sec.24, T.10 S., R.9 W., at bridge on State Highway 11, 1.5 miles northeast of Pansy.	P	90.3	(100)	(1.15)	0	0
3640	Saline River near Warren	Lat 33°35', long 92°01', sec.15, T.13 S., R.9 W., at bridge on State Highway 4, 3 miles downstream from Cypress Creek and 3½ miles southeast of Pansy.	P	2,476	2,990	1.21	34	.011
3640.2	Eagle Creek at Hermitage	Lat 33°26'15", long 92°11'30", in NE $\frac{1}{4}$ sec.1, T.15 S., R.11 W., at bridge on State Highway 15, 0.5-mile southeast of Hermitage.	P	167	(190)	(1.15)	0	0
3641.5	Bayou Bartholomew near McGehee	Lat 33°37'40", long 91°26'15", in W $\frac{1}{4}$ sec.30, T.12 S., R.3 W., at bridge on State Highway 4, 2.7 miles west of McGehee.	P	592	614	1.04	15	.024
3641.7	Cutoff Creek near Selma	Lat 33°40'20", long 91°34'10", in SE $\frac{1}{4}$ sec.11, T.12 S., R.5 W., at bridge on State Highway 4, 1.6 miles southwest of Selma.	P	88.4	(100)	(1.15)	0	0
3642.5	Chemin-a-Haut Creek near Berlin	Lat 33°05'30", long 91°45'50", in SW $\frac{1}{4}$ sec.31, T.18 S., R.6 W., at highway bridge 1.5 miles north of Berlin.	P	216	(250)	(1.15)	0	0
3645	Bayou Bartholomew near Beechman, La.	Lat 33°52'20", long 91°52'04", in NW $\frac{1}{4}$ sec.28, T.22 N., R.6 E., at bridge on State Highway 13, 0.8 mile downstream from Bayou De Glaise, 4 miles south of Beeckman, and 7 miles north of Bastrop.	D	1,645	1,694	1.03	103	.061
3658	Cornie Bayou near Three Creeks	Lat 33°02', long 92°56', in NW $\frac{1}{4}$ sec.36, T.19 S., R.18 W., at bridge on State Highway 15, 4½ miles downstream from Pidgeon Roost Creek and 6 miles southwest of town of Three Creeks.	D	180	188	1.04	.3	.0016
3659	Three Creek near Three Creeks	Lat 33°04', long 92°53', in SW $\frac{1}{4}$ sec.17, T.19 S., R.17 W., at bridge on State Highway 15, 2½ miles southwest of town of Three Creeks.	P	46	(53)	(1.15)	.6	.011

a. Revised.

b. Approximate.

Note.--Figures in parentheses are estimated from figure 14.

Table 2.--Draft-storage relations at gaging stations on selected Arkansas streams

Dashed line in storage column indicates physical limitation of storage sites or draft rates in excess of 0.6 of mean annual flow

Station number	Station name	Drainage area (sq mi)	Recurrence interval, in years	Storage required, in acre-feet per square mile, to maintain uniform draft rates, in cubic feet per second per square mile, as indicated in column headings (uncorrected for seepage and evaporation)										
				.02	.05	.10	.15	.20	.30	.40	.50	.60	.70	.80
<u>St. Francis River basin</u>														
466	Right Hand Chute Little River at Rivervale	2,106	2 5 10 20	0 0 0 0.10	0 0.11 1.3 4.0	0 2.1 6.2 13	0.24 8.2 19 27	4.8 30 48 61	17 64	33	-----	-----	-----	
479.5	Languille River at Palestine	786	2 5 10 20	.60 1.20 1.4 1.8	2.3 3.7 4.7 6.0	6.2 9.8 13 17	11 18 25 33	17 30 40 51	32 60 80 97	50 98	74	100	-----	
<u>White River basin</u>														
480	West Fork White River at Greenland	83	2 5 10 20	.90 2.5 3.6 4.4	4.4 9.0 11 13	12 35 44 50	22 50 62 72	56 85 103 118	82 121 148 168	112 162 243 220	142 203 294 285	173 247 350 365	206 290 350 460	
490	War Eagle Creek near Hindsville	262	2 5 10 20	.10 .20 .90 1.4	1.5 3.6 4.7 6.3	7.3 13 16 18	16 25 30 35	26 38 45 54	47 68 80 97	70 100 122 148	97 136 175 210	126 220 300 420	158 275 420 580	
505	Kings River near Berryville	532	2 5 10 20	0 .56 1.4 1.8	1.1 3.8 5.8 7.2	6.1 13 17 20	13 26 32 37	22 41 50 58	44 73 88 104	70 111 133 160	100 153 180 232	133 200 240 345	-----	
560	Buffalo River near St. Joe	825	2 5 10 20	0 0 .25 .47	.10 1.6 3.2 4.0	4.6 9.6 13 16	14 22 28 32	25 35 44 51	47 63 77 90	72 95 117 132	100 134 160 185	130 175 208 260	165 266 280 370	
570	Buffalo River near Rush	1,091	2 5 10 20	0 0 0 .10	.10 .80 2.0 3.1	3.4 7.0 11 14	9.4 18 24 29	18 31 40 47	38 62 73 83	65 96 112 125	95 133 152 170	128 173 200 238	165 210 265 350	
695	Spring River at Imboden	1,162	2 5 10 20	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	.50 4.2 7.5 12	13 28 37 46	34 59 81 98	58 100 140 180	84 145 224 350	
720	Eleven Point River near Ravenden Springs	1,123	2 5 10 20	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 1.1 5.6 9.6	3.4 20 52 85	20 52 93 155	46 93 128 155	-----	
730	Strawberry River near Evening Shade	225	2 5 10 20	0 0 0 0	.32 1.2 1.9 2.3	5.0 11 14 17	13 25 31 37	25 41 50 58	54 78 91 104	90 120 138 160	130 165 190 255	164 215 285 430	-----	
735	Piney Fork at Evening Shade	99	2 5 10 20	.16 .95 1.6 2.2	1.7 4.5 7.7 9.5	5.7 13 20 24	12 24 34 41	19 37 50 60	39 69 86 102	64 108 128 155	94 148 184 250	130 200 285 400	130 200 285 400	
740	Strawberry River near Poughkeepsie	476	2 5 10 20	0 0 0 0	0 0 0 1.5	2.5 6.2 .76 13	8.2 16 10 29	23 43 54 65	45 76 94 110	72 113 140 172	104 155 210 300	-----	-----	
750	Middle Fork Little Red River at Shirley	294	2 5 10 20	1.4 2.9 3.8 4.4	4.8 9.2 11 14	12 21 26 32	21 34 41 50	31 49 58 69	53 80 95 110	78 113 134 153	104 148 174 196	135 185 216 243	164 220 260 286	
755	South Fork Little Red River near Clinton	316	2 5 10 20	1.5 2.8 4.0 4.8	4.9 8.8 12 14	12 21 26 30	21 34 42 48	30 49 60 66	52 80 95 106	76 113 134 148	103 150 173 190	130 188 215 233	160 225 256 280	
775	Cache River at Patterson	1,041	2 5 10 20	0 0 .1 .3	.1 .9 2.1 3.2	3.0 10 13 16	11 26 31 35	21 44 50 54	49 80 88 96	83 117 132 150	115 158 132 170	150 158 162 170	-----	
777	Bayou DeView at Morton	422	2 5 10 20	.90 1.9 2.8 3.4	3.7 6.7 9.0 11	11 18 23 28	20 31 40 47	31 47 58 69	58 82 99 117	90 122 145 170	124 162 162 170	162 162 162 170	-----	
780	Lagru Bayou near Stuttgart	175	2 5 10 20	.6 1.1 1.7 2.3	2.5 4.7 6.6 9.1	7.6 14 18 24	14 26 33 41	23 40 50 61	43 72 88 104	69 110 132 154	97 155 132 154	130 155 132 154	-----	

Table 2.--Draft-storage relations at gaging stations on selected Arkansas streams--Continued

Station number	Station name	Drainage area (sq mi)	Recurrence interval, in years	Storage required, in acre feet per square mile, to maintain uniform draft rates, in cubic feet per second per square mile, as indicated in column headings (uncorrected for seepage and evaporation)											
				.02	.05	.10	.15	.20	.30	.40	.50	.60	.70	.80	1.00
<u>Arkansas River basin</u>															
1950	Osage Creek near Elm Springs	129	2	0	0	0	0	0.83	10	27	57	103	-----	-----	-----
			5	0	0	0	.92	5.3	29	70	122	180	-----	-----	-----
			10	0	0	.24	3.0	11	42	90	150	230	-----	-----	-----
			20	0	0	.90	5.5	16	54	115	200	370	-----	-----	-----
1955	Illinois River near Watts, Okla.	635	2	0	0	0	.37	3.0	17	40	65	98	-----	-----	-----
			5	0	0	.68	4.5	15	51	89	133	185	-----	-----	-----
			10	0	.16	4.2	15	31	70	118	178	248	-----	-----	-----
			20	0	1.6	9.3	22	40	88	150	222	370	-----	-----	-----
1960	Flint Creek near Kansas, Okla.	110	2	0	0	0	.22	2.6	18	42	67	100	-----	-----	-----
			5	0	0	.52	4.2	17	48	85	132	188	-----	-----	-----
			10	0	.29	4.5	14	29	65	116	178	245	-----	-----	-----
			20	0.22	2.9	11	23	39	85	146	230	400	-----	-----	-----
2470	Poteau River at Cauthron	200	2	1.6	5.8	15	25	38	65	95	130	166	203	-----	-----
			5	4.0	12	27	43	60	96	138	185	240	304	-----	-----
			10	5.7	16	34	54	74	122	175	238	305	400	-----	-----
			20	6.8	18	41	66	93	150	210	278	385	560	-----	-----
2494	James Fork near Hackett	148	2	.4	2.2	7.6	15	24	46	74	108	142	185	-----	-----
			5	2.0	7.0	18	32	47	82	120	163	210	260	-----	-----
			10	3.8	11	27	45	64	104	150	200	262	355	-----	-----
			20	4.8	15	34	56	79	130	188	262	365	520	-----	-----
2495	Cove Creek near Lee Creek	36.9	2	1.0	3.9	10	17	25	45	66	91	120	157	205	-----
			5	1.9	6.7	17	30	45	78	118	162	210	270	335	-----
			10	3.1	10	25	44	63	108	160	215	280	350	460	-----
			20	4.4	13	31	50	72	123	183	250	350	500	700	-----
2500	Lee Creek near Van Buren	427	2	1.3	5.0	14	25	37	61	86	110	140	171	208	-----
			5	2.8	8.9	22	36	53	88	126	162	200	252	310	-----
			10	3.7	11	27	44	63	103	147	198	255	330	460	-----
			20	4.4	13	32	52	74	122	172	234	325	450	650	-----
2520	Mulberry River near Mulberry	372	2	.7	3.1	9.5	18	29	54	80	106	136	170	202	278
			5	2.3	7.8	20	34	50	84	118	152	188	224	260	340
			10	3.3	10	25	40	59	97	133	171	210	252	300	420
			20	4.3	13	29	46	65	103	145	185	230	275	350	630
2565	Spadra Creek at Clarksville	54.8	2	.44	2.4	8.7	19	30	53	79	106	136	167	202	270
			5	1.6	6.2	18	32	48	80	115	152	190	230	272	360
			10	2.4	9.1	25	43	60	96	134	172	214	255	300	440
			20	4.3	13	31	50	67	106	146	185	230	270	340	590
2570	Piney Creek near Dover	274	2	.96	4.2	11	19	28	49	73	99	128	156	188	255
			5	2.4	7.7	19	31	45	76	108	144	182	222	262	350
			10	3.3	10	24	39	56	91	130	170	212	258	302	400
			20	4.0	12	27	44	63	102	144	188	234	280	332	450
2575	Illinois Bayou near Scottsville	242	2	1.0	4.2	11	20	29	51	77	104	135	168	202	276
			5	3.2	9.5	22	34	48	80	115	150	187	223	262	345
			10	3.9	11	25	41	58	94	132	172	214	260	303	400
			20	4.6	12	28	45	63	102	142	184	230	280	335	480
2585	Petit Jean River near Booneville	247	2	1.0	5.0	15	27	39	68	100	132	170	210	260	330
			5	3.3	10	25	42	61	103	150	200	250	310	400	-----
			10	4.4	14	33	54	77	126	180	235	320	520	-----	-----
			20	5.6	16	36	59	86	142	200	280	430	700	-----	-----
2600	Dutch Creek at Waltreak	74	2	2.1	6.8	16	28	40	67	97	130	162	200	240	-----
			5	4.2	12	28	44	63	102	140	182	224	274	330	-----
			10	5.4	15	34	54	74	117	162	216	280	380	580	-----
			20	6.6	18	39	61	85	138	200	260	360	530	780	-----
2610	Cadron Creek near Guy	187	2	1.5	5.2	13	23	34	58	85	114	146	180	215	290
			5	4.0	11	25	41	57	91	127	165	203	243	284	370
			10	5.0	14	31	50	68	104	142	184	230	280	340	500
			20	6.2	16	35	54	73	114	158	208	260	335	440	740
2615	Fourche La Fave River near Gravelly	413	2	1.7	5.6	14	24	34	58	85	114	145	177	210	-----
			5	3.5	10	23	38	52	87	120	157	195	233	274	-----
			10	4.5	13	29	46	64	102	140	180	222	280	365	-----
			20	5.7	16	34	53	72	113	158	205	270	380	530	-----
2630	South Fourche La Fave River near Hollis	211	2	1.2	4.3	12	21	31	56	85	117	150	190	230	-----
			5	3.4	10	23	38	53	86	122	160	200	240	280	-----
			10	4.6	13	29	45	63	100	140	180	222	268	312	-----
			20	5.2	14	32	50	70	112	154	200	245	290	360	-----
<u>Red River basin</u>															
3395	Rolling Fork near DeQueen	181	2	.8	3.5	9.7	17	26	49	73	98	123	150	178	232
			5	2.2	7.8	19	31	46	77	112	148	183	218	255	330
			10	3.7	11	25	40	56	91	128	167	205	250	295	400
			20	4.2	12	27	44	61	99	138	183	230	280	330	540
3405	Cossatot River near DeQueen	361	2	0	1.3	5.9	13	20	39	60	82	107	133	162	220
			5	.40	3.7	13	25	38	66	97	130	163	202	240	320
			10	.90	5.8	17	32	48	84	120	158	197	236	280	365
			20	1.3	7.6	22	38	56	95	138	182	228	280	326	440

Table 2.--Draft-storage relations at gaging stations on selected Arkansas streams--Continued

Station number	Station name	Drainage area (sq mi)	Recurrence interval, in years	Storage required, in acre-feet per square mile, to maintain uniform draft rates, in cubic feet per second per square mile, as indicated in column headings (uncorrected for seepage and evaporation)											
				.02	.05	.10	.15	.20	.30	.40	.50	.60	.70	.80	1.00
				1.00											
<u>Red River basin--Continued</u>															
3410	Saline River near Dierks	124	2	1.0	4.3	11	20	30	52	76	100	125	150	172	220
			5	3.1	9.4	22	35	50	80	114	147	182	220	252	322
			10	4.1	12	27	43	60	96	134	173	212	252	290	370
			20	5.1	14	32	50	70	110	152	195	240	288	350	540
3470	Kelley Bayou near Hosston, La.	116	2	0	1.2	8.0	18	31	63	100	-----	-----	-----	-----	-----
			5	.04	2.8	15	30	48	84	125	-----	-----	-----	-----	-----
			10	.08	3.8	18	36	54	96	-----	-----	-----	-----	-----	-----
			20	.15	4.7	21	39	59	103	-----	-----	-----	-----	-----	-----
3490	Bayou Dorcheat near Minden, La.	1,097	2	1.9	8.4	21	35	52	87	122	-----	-----	-----	-----	-----
			5	4.2	14	30	48	65	104	-----	-----	-----	-----	-----	-----
			10	5.6	15	33	52	72	112	-----	-----	-----	-----	-----	-----
			20	6.5	17	36	58	81	130	-----	-----	-----	-----	-----	-----
3495	Bodcau Bayou near Sarepta, La.	546	2	2.0	8.5	21	35	50	84	120	-----	-----	-----	-----	-----
			5	4.0	13	30	46	64	100	-----	-----	-----	-----	-----	-----
			10	5.1	15	32	50	70	110	-----	-----	-----	-----	-----	-----
			20	5.9	16	35	55	76	124	-----	-----	-----	-----	-----	-----
3560	Ouachita River near Mount Ida	410	2	0	.15	2.2	6.6	13	31	53	77	100	123	147	197
			5	0	1.1	7.0	16	28	50	76	104	138	170	208	280
			10	.14	2.2	10	21	33	60	89	120	154	192	233	320
			20	.37	3.7	14	26	40	72	107	143	180	220	265	380
3565	South Fork Ouachita River at Mount Ida	64	2	0	.03	1.7	6.3	13	26	43	63	87	113	142	210
			5	.30	1.7	7.5	16	26	50	79	110	142	178	215	290
			10	.90	4.0	12	23	35	64	95	130	156	202	240	320
			20	1.3	5.3	15	27	42	75	112	152	193	238	294	490
3598	Caddo River near Alpine	312	2	0	0	.40	3.1	8.4	22	42	66	94	123	155	220
			5	0	0	3.1	9.3	19	44	74	105	140	176	214	295
			10	0	.25	5.0	14	26	56	91	130	168	210	254	350
			20	0	.67	7.8	19	33	66	105	148	193	240	295	415
3608	Muddy Fork Creek near Murfreesboro	121	2	1.4	5.4	15	25	37	63	92	123	157	193	230	-----
			5	3.4	11	26	43	62	98	135	173	210	247	284	-----
			10	4.8	14	31	49	69	110	154	198	244	298	350	-----
			20	5.5	16	34	54	74	118	163	213	266	322	390	-----
3615	Antoine River at Antoine	181	2	1.5	5.5	15	27	41	72	104	140	175	212	250	-----
			5	3.2	11	27	44	62	97	132	168	204	242	280	-----
			10	4.4	14	31	50	68	105	142	180	217	257	295	-----
			20	6.1	17	35	54	73	112	150	188	226	276	340	-----
3625	Moro Creek near Fordyce	216	2	4.5	12	25	40	58	94	134	176	220	-----	-----	-----
			5	5.8	15	32	52	74	122	172	225	-----	-----	-----	-----
			10	6.6	17	37	59	85	138	194	-----	-----	-----	-----	-----
			20	7.5	19	40	65	94	153	222	-----	-----	-----	-----	-----
3630	Saline River at Benton	569	2	0	.70	5.6	12	21	42	66	92	122	155	190	-----
			5	.25	3.5	13	25	38	68	103	140	180	224	270	-----
			10	.78	4.8	17	32	49	84	124	168	214	263	330	-----
			20	1.4	6.9	21	38	56	96	140	190	240	294	380	-----
3635	Saline River near Rye	2,062	2	.16	2.4	9.0	18	30	56	88	124	-----	-----	-----	-----
			5	.92	5.4	18	34	50	86	125	-----	-----	-----	-----	-----
			10	1.4	7.5	23	41	61	98	140	-----	-----	-----	-----	-----
			20	2.0	9.5	27	47	65	105	154	-----	-----	-----	-----	-----
3645	Bayou Bartholomew near Beekman, La.	1,645	2	0	0	1.5	6.7	16	41	72	-----	-----	-----	-----	-----
			5	0	.13	3.0	13	33	69	-----	-----	-----	-----	-----	-----
			10	0	.60	7.8	22	41	77	-----	-----	-----	-----	-----	-----
			20	0	1.6	11	27	47	87	-----	-----	-----	-----	-----	-----
3658	Cornie Bayou near Three Creeks	180	2	1.0	5.4	17	32	48	83	117	153	-----	-----	-----	-----
			5	2.5	9.8	25	43	60	100	142	-----	-----	-----	-----	-----
			10	3.4	12	29	47	66	110	154	-----	-----	-----	-----	-----
			20	4.0	14	32	50	71	120	178	-----	-----	-----	-----	-----