UNITED STATES

DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

TECHNIQUE FOR ESTIMATING DEPTH OF 100-YEAR FLOODS IN TENNESSEE

Open-File Report 77-668

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By Charles R. Gamble and James G. Lewis

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TECHNIQUE FOR ESTIMATING DEPTH OF 100-YEAR FLOODS IN TENNESSEE

BY CHARLES R. GAMBLE AND JAMES G. LEWIS

ABSTRACT

A method is presented for estimating the depth of the 100-year flood in four hydrologic areas in Tennessee. Depths at 151 gaging stations on streams that were not significantly affected by manmade changes were related to basin characteristics by multiple regression techniques. Equations derived from the analysis can be used to estimate the depth of the 100-year flood if the size of the drainage basin is known.

INTRODUCTION

Population growth and economic expansion have resulted in increased development of flood-prone lands and have caused an increase in the Nation's average annual flood losses. As a result, the National Flood Insurance Program was established by Congress in the National Flood Insurance Act of 1968 and expanded in the Flood Disaster Protection Act of 1973. These acts established programs for identifying towns and streams subject to flood problems and outlining flood-prone areas on maps by approximate methods. Beginning in 1968 the U.S. Geological Survey began delineating flood-prone areas on 7-1/2-minute topographic quadrangle maps. During the first two years of the program the work was limited to large streams and the flood prone areas were based on the maximum known flood. It was then decided that the delineation of the 100-year flood might be more meaningful by giving areal uniformity to the size of flood delineated. The 100-year flood is defined as that peak discharge which will be exceeded once, on the average, in 100 years, or in other words, the peak discharge which has a one percent chance of being exceeded in any year.

Because of the expansion of the National Flood Insurance Program by the Flood Disaster Protection Act of 1973, this flood delineation project was greatly accelerated and expanded to include small streams. An easy method of estimating the depth of the 100-year flood was needed, especially on small streams where limited data were available. Wiitala, Jetter, and Somerville (1961) and Thomas (1964) were among the first to regionalize flood depths.

The purpose of this report is to describe the development of the method and present relationships used for estimating the depth of the 100-year flood for natural streams in Tennessee. Relationships were defined between size of the drainage basin and depth of the 100-year flood for four hydrologic areas of the state.

Conversion to Metric Units

The analysis and compilations in this report were made using English units of measurements. To convert English units to metric units, the following conversion factors should be used:

Multiply English unit	By	To obtain metric units
cubic feet per second (ft^3/s)	0.0283	cubic meters per second (m^3/s)
feet (ft)	.3048	meters (m)
miles (mi)	1.609	kilometers (km)
square miles (mi^2)	2.590	square kilometers (km^2)

DEFINITION OF DEPTH

Since the major uses of the relationships developed in this study were anticipated to be estimating depth at a specific site on a stream and flood mapping, for simplicity and ease of use, depth needed to be related to some parameter which could be taken from topographic maps. The assumption was made that the elevations represented on 7-1/2-minute topographic maps by contour lines which cross stream channels approximate the elevation of the median discharge at the point of the crossing. The median discharge is that discharge which is exceeded 50 percent of the time. A study based on selected stations seems to substantiate this assumption. Also, aerial photographs used to prepare topographic maps are taken when vegetation is dormant and when streamflow approaches median discharge in most Tennessee streams. Depth of the 100-year flood used in this report is the depth above the stream contour crossings shown on 7-1/2-minute topographic maps.

The median discharge and the 100-year flood discharge and their corresponding stages were determined for each gaging station used in the analysis. The 100-year flood discharge used is the weighted discharge from table 2 of Randolph and Gamble (1976). For crest-stage partial-record stations and stations having short records, the median discharge and stage were estimated on the basis of discharge measurements, slope of the rating curve, size of the drainage basin, and knowledge of the site. The difference between the two stages (stage of the 100-year flood minus the stage of the median discharge) is the depth of the 100-year flood used in the analysis. The data used in the analysis are shown in table 2.

METHOD OF ANALYSIS

Randolph and Gamble (1976) defined mathematical equations relating floodflow characteristics to size of drainage basin. Other basin variables were also investigated to see if they improved the estimating equations. These included stream length, stream slope, and mean basin elevation. The definition and method of computation of values for these variables are described by May and others (1970). The same variables were tested by multiple regression techniques in this analysis to see if any improvement in the relation could be detected over the use of drainage basin size alone.

Data from 151 gaging stations with drainage areas between 0.17 and 666 mi^2 were used in a statewide multiple regression of depth versus four basin variables. Those variables showing significance at the 5 percent level were drainage basin size and mean basin elevation. Residuals based on this relation were plotted on a map to see if areal bias could be detected. Inspection of the map indicated the state should be divided into four hydrologic areas. The stations within each of these four areas were then grouped and multiple regressions were run for each separate area using the same four basin variables. Different variables showed significance for different areas but the standard error of estimate showed no significant decrease in reliability of the estimating equation when all basin variables were dropped except size of the drainage basin. This one-variable equation is considered the most practical for estimating purposes due to its simplicity of use, especially since the additional variables showed little improvement.

The equations that were developed to compute depth of the 100-year flood in each of the four hydrologic areas (fig. 1) are shown in table 1 and in graphical form on figure 2.

Table 1.--Summary of regression equations

D = Depth of the 100-year flood, in feet.
A = Drainage basin size, in square miles.

Hydrologic area	Depth of 100-year flood (feet)	Standard error of estimate (percent)
1	$D = 5.3\ (A)^{.200}$	31
2	$D = 7.1\ (A)^{.226}$	33
3	$D = 6.1\ (A)^{.230}$	30
4	$D = 7.4\ (A)^{.110}$	36

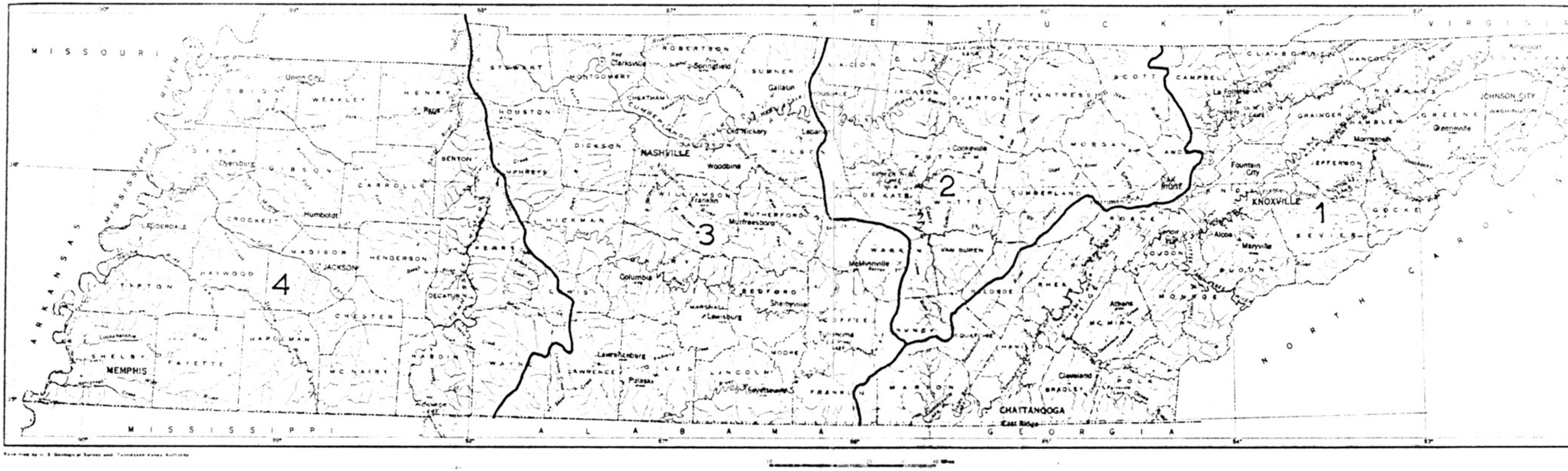

FIGURE 1--HYDROLOGIC AREAS FOR ESTIMATING 100-YEAR FLOOD DEPTHS IN TENNESSEE.

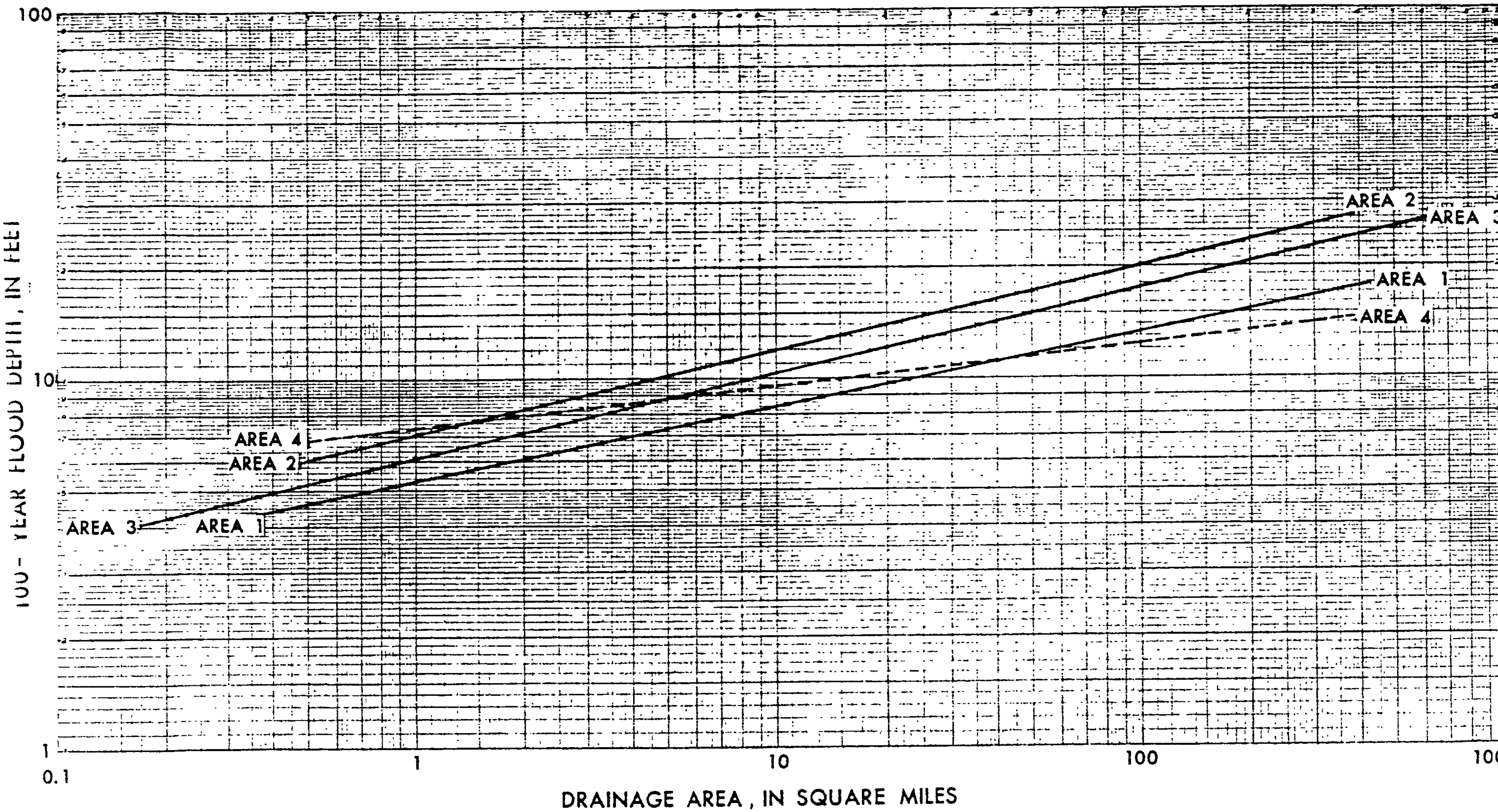

Figure 2.--Relation of 100-year flood depth to drainage area for numbered hydrologic areas in Tennessee.

Application of Results

To determine the elevation of the 100-year flood at a given point on a stream, proceed as follows:

1. Determine the correct hydrologic area from figure 1.
2. Determine the drainage area of the stream, in square miles.
3. Compute the depth of the 100-year flood using the appropriate formula from table 1.
4. Add the 100-year flood depth to the median discharge elevation represented by contour crossings on 7-1/2-minute topographic maps to obtain the elevation of the 100-year flood.

On streams where reliable flood data are available they should be used to help define the 100-year flood depth or to appraise its validity. If a profile of an actual flood is available, it should be used as a guide to shape the 100-year flood profile.

ACCURACY AND LIMITATIONS

The accuracy of the regression equations can be expressed in terms of the standard error of estimate. The standard error of estimate is a measure of how well the actual depths agree with those computed by the regression equations. By definition, approximately two of three gaged sites have observed 100-year flood depths within one standard error of estimate of the regression value. The standard error of estimate of the regression equation for each hydrologic area is shown in table 1.

The regression equations are known to be applicable only within the range of drainage area sizes used in their definition. Reliability of the equations for estimating depths at sites outside the sample range is unknown. Therefore, the regression equations are applicable only to streams in Tennessee whose basin sizes fall within the following ranges:

Hydrologic area 1	0.36 to 428 mi^2
Hydrologic area 2	.49 to 382 mi^2
Hydrologic area 3	.17 to 666 mi^2
Hydrologic area 4	.51 to 383 mi^2

Stations with larger drainage areas were not used because profiles and other data which can be used to estimate flood depths are available for most large streams.

This report is not intended to be used in making final decisions on land use. The results should be used as a guide to decide if a more detailed investigation is needed. Their use in delineating flood boundaries on 7-1/2-minute topographic maps should yield accuracies consistent with map production standards, which is one-half contour interval.

In West Tennessee (hydrologic area 4), dredging of the low-water channels and construction of levees in about the past 15 years have undoubtedly affected the flood characteristics, and consequently flood depths, of some streams. Randolph and Gamble (1976) state that "... the discharges of 50-year floods on small streams with a large improved channel may be as much as 100 percent larger than other streams in the vicinity without an improved channel." It seems obvious then, that discharges for the 100 year flood may also be larger for improved channels. Many of these improved channels in West Tennessee are of sufficient size to carry major floods within the channel. This means that a greater discharge is confined in a relatively narrow channel, hence a greater depth must occur. Limited data on streams with improved channels indicates that depth of the 100-year flood is greater than that on unimproved channels in the same vicinity. However, no attempt was made to develop any adjustments for improved channels to the developed relations in this report because of lack of sufficient data. A knowledge of whether the particular stream is improved or not is essential in applying the relation given for West Tennessee. It should also be noted that most of the topographic maps in West Tennessee were prepared before about 1960 and, therefore, do not reflect recent channel changes.

The relations given in this report may not be applicable to regulated streams, since the stream contour crossings shown on the topographic maps may not reflect the median discharge elevation and the 100-year flood discharge cannot be determined in the conventional manner.

REFERENCES

May, V. J., Wood, G. H., and Rima, D. R., 1970, A proposed streamflow-data program for Tennessee: U.S. Geol. Survey open-file report, 55 p.

Randolph, W. J., and Gamble, C. R., 1976, Technique for estimating magnitude and frequency of floods in Tennessee: Tennessee Dept. Transportation, 52 p.

Thomas, D. M., 1964, Flood-depth frequency in New Jersey: New Jersey Dept. Conserv. and Econ. Devel. Water-Resources Circ. 14, 14 p.

Wiitala, S. W., Jetter, K. R., and Somerville, A. J., 1961, Hydraulic and hydrologic aspects of flood-plain planning: U.S. Geol. Survey Water-Supply Paper 1526, 68 p.

Table 2.—100-year flood depth data at gaging stations

Station number	Station name	Hydrologic area	Drainage area (mi^2)	100-year flood Stage (ft)	100-year flood Discharge (ft^3/s)	Median stage (ft)	Median discharge (ft^3/s)	Depth of 100-year flood (ft)
02384900	Coahulla Creek near Cleveland	1	4.35	8.5	2,750	.9	-	7.6
03313600	West Fork Drakes Creek tributary near Fountain Head	3	.95	12.8	928	1.9	-	10.9
03408500	New River at New River	2	382	38.0	63,500	2.9	233	35.1
03409500	Clear Fork near Robbins	2	272	20.5	44,600	2.1	142	18.4
03414500	East Fork Obey River near Jamestown	2	196	30.5	44,700	2.0	149	28.5
03415000	West Fork Obey River near Alpine	2	81	19.0	19,800	1.1	47.3	17.9
03415700	Big Eagle Creek near Livingston	2	4.77	13.5	2,440	1.0	-	12.5
03416000	Wolf River near Byrdstown	2	106	12.5	31,400	1.7	67.7	10.8
03417700	Mathews Branch tributary near Livingston	2	.49	10.5	687	.2	-	10.3
03418000	Roaring River near Hilham	2	51.4	15.0	12,800	1.3	42.0	13.7
03418900	Raccoon Creek near Old Winesap	2	1.52	11.7	667	3.2	-	8.5
03420000	Calfkiller River below Sparta	2	111	32.0	20,900	1.6	149	30.4
03420360	Mud Creek tributary Number 2 near Summitville	3	2.28	5.5	1,440	1.5	-	4.0
03420380	Mud Creek tributary near Summitville	3	1.03	7.0	790	2.0	-	5.0
03420400	Mud Creek near Summitville	3	7.30	6.4	3,780	.6	-	5.8
03420500	Barren Fork near Trousdale	3	126	18.1	38,300	1.5	98.3	16.6
03420600	Owen Branch near Centertown	3	4.60	8.4	3,690	1.0	-	7.4
03421100	Sink tributary at McMinnville	3	.47	8.4	549	.2	-	8.2
03425500	Spring Creek near Lebanon	3	35.3	12.2	13,300	1.0	13.5	11.2
03425700	Spencer Creek near Lebanon	3	3.32	9.7	3,800	.5	-	9.2
03425800	Cedar Creek tributary at Green Hill	3	.86	9.2	817	1.0	-	8.2
03426000	Drakes Creek above Hendersonville	3	19.2	14.0	8,760	1.0	5.3	13.0
03426800	East Fork Stones River at Woodbury	3	39.1	17.5	16,400	2.5	28.3	15.0
03427500	East Fork Stones River near Lascassas	3	262	41.0	46,400	3.8	113	37.2
03427830	Short Creek tributary near Christiana	3	.17	10.2	250	2.2	-	8.0
03427840	Short Creek near Christiana	3	3.54	9.3	4,020	3.1	-	6.2
03428000	West Fork Stones River near Murfreesboro	3	122	22.5	39,000	1.9	48.6	20.6
03430400	Mill Creek at Nolensville	3	12.0	10.5	9,130	1.9	-	8.6
03430600	Mill Creek at Hobson Pike	3	43.0	14.6	14,500	.5	-	14.1
03430700	Indian Creek at Pettus Road at Nashville	3	3.86	9.3	2,500	0	-	9.3
03431000	Mill Creek near Antioch	3	64.0	21.5	21,600	2.9	22.1	18.6
03431080	Sims Branch at Elm Hill Pike, near Donelson	3	3.92	15.5	3,180	1.3	-	14.2
03431120	West Fork Browns Creek at General Bates Drive at Nashville	3	3.30	8.5	3,660	1.2	-	7.3
03431240	East Fork Browns Creek at Baird-Ward Printing Company at Nashville	3	1.58	5.6	899	.2	-	5.4
03431340	Browns Creek at Factory Street at Nashville	3	13.2	9.8	5,670	1.9	-	7.9

Table 2.--100-year flood depth data at gaging stations--Continued

Station number	Station name	Hydrologic area	Drainage area (mi^2)	100-year flood Stage (ft)	100-year flood Discharge (ft^3/s)	Median Stage (ft)	Median Discharge (ft^3/s)	Depth of 100-year flood (ft)
03431520	Claylick Creek at Lickton	3	4.13	9.2	3,420	1.3	-	7.9
03431580	Ewing Creek at Knight Road near Bordeaux	3	13.3	11.0	7,540	1.0	-	10.0
03431600	Whites Creek at Tucker Road near Bordeaux	3	51.6	19.5	19,200	3.7	21.8	15.8
03431630	Richland Creek at Lynnwood Blvd., at Belle Meade	3	2.21	5.0	1,710	1.3	-	3.7
03431650	Vaughns Gap Branch at Percy Warner Blvd., at Belle Meade	3	2.66	8.0	2,250	1.7	-	6.3
03431700	Richland Creek at Charlotte Ave., at Nashville	3	24.3	16.5	10,600	1.2	9.0	15.3
03431800	Sycamore Creek near Ashland City	3	97.2	14.5	23,000	2.7	47.5	11.8
03432500	West Harpeth River near Leipers Fork	3	66.9	16.0	38,900	1.0	21.5	15.0
03433500	Harpeth River at Bellevue	3	393	24.5	41,400	1.8	167	22.7
03434500	Harpeth River near Kingston Springs	3	666	34.0	69,700	2.1	309	31.9
03435020	Red River near New Deal	3	9.32	11.5	5,820	3.2	-	8.3
03435030	Red River near Portland	3	15.1	14.0	6,990	2.7	10.7	11.3
03435500	Red River near Adams	3	309	39.0	49,800	3.0	359	36.0
03435600	Sulphur Fork Red River tributary near White House	3	3.5	9.1	2,430	1.4	-	7.7
03436000	Sulphur Fork Red River near Adams	3	165	28.5	27,200	4.1	73.0	24.4
03436700	Yellow Creek near Shiloh	3	124	17.0	17,900	4.2	79.3	12.8
03461200	Cosby Creek above Cosby	1	10.2	4.9	2,580	.9	23.0	4.0
03467000	Lick Creek at Mohawk	1	220	18.0	16,800	2.8	81.2	15.2
03469110	Ramsey Creek near Pittman Center	1	2.18	6.8	641	3.2	-	3.6
03469130	Little Pigeon River near Sevierville	1	110	19.5	19,400	1.5	-	18.0
03469160	East Fork Little Pigeon River near Sevierville	1	64.1	22.7	11,500	.2	-	22.5
03469500	West Prong Little Pigeon River near Pigeon Forge	1	76.2	14.2	13,800	1.5	-	12.7
03470000	Little Pigeon River at Sevierville	1	353	16.0	50,500	1.8	339	14.2
03480000	Watauga River at Stump Knob	1	172	21.2	36,300	1.6	193	19.6
03482500	Roan Creek at Butler	1	166	11.4	11,100	.8	98.2	10.6
03483000	Watauga River at Butler	1	427	18.1	37,600	1.5	461	16.6
03485500	Doe River at Elizabethton	1	137	8.8	11,700	1.1	163	7.7
03491000	Big River Creek near Rogersville	1	47.3	9.8	6,350	1.9	24.6	7.9
03491200	Big Creek tributary near Rogersville	1	2.00	8.1	1,070	.8	-	7.3
03497300	Little River above Townsend	1	106	16.5	26,200	2.1	208	14.4
03498000	Little River near Walland	1	192	19.5	26,600	1.7	222	17.8
03498500	Little River near Maryville	1	269	25.5	37,200	7.1	312	18.4
03498700	Nails Creek near Knoxville	1	.36	6.5	246	1.5	-	5.0
03518500	Tellico River at Tellico Plains	1	118	14.5	20,900	1.8	188	12.7
03519600	Island Creek at Vonore	1	11.2	12.5	2,790	2.8	-	9.7
03519610	Baker Creek tributary near Binfield	1	2.10	7.2	1,060	2.7	-	4.5
03519630	Griffitts Branch near Greenback	1	1.46	9.8	817	1.8	-	8.0

Table 2.--100-year flood depth data at gaging stations--Continued

Station number	Station name	Hydrologic area	Drainage area (mi^2)	100-year flood Stage (ft)	100-year flood Discharge (ft^3/s)	Median Stage (ft)	Median Discharge (ft^3/s)	Depth of 100-year flood (ft)
03519640	Baker Creek near Greenback	1	16.0	10.1	3,790	2.5	23	7.6
03519700	Bat Creek near Vonore	1	30.7	17.7	6,170	1.5	-	16.2
03520100	Sweetwater Creek near Loudon	1	62.2	14.6	5,760	2.5	-	12.1
03534000	Coal Creek at Lake City	1	24.5	10.6	7,760	0	-	10.6
03534500	Buffalo Creek at Norris	1	7.82	11.4	2,070	1.4	-	10.0
03535000	Bullrun Creek near Halls Crossroads	1	68.5	12.0	13,800	2.4	42.5	9.6
03535160	Beaver Creek near Halls Crossroads	1	14.1	10.4	4,160	1.0	-	9.4
03535180	Willow Fork near Halls Crossroads	1	3.23	9.5	1,490	2.5	-	7.0
03538130	Caney Creek near Kingston	1	5.55	8.3	2,420	2.8	-	5.5
03538200	Poplar Creek near Oliver Springs	2	55.9	21.1	9,990	1.9	-	19.2
03538225	Poplar Creek near Oak Ridge	2	82.5	28.5	13,600	3.9	68	24.6
03538250	East Fork Poplar Creek near Oak Ridge	2	19.5	16.0	4,340	2.0	32	14.0
03538300	Rock Creek near Sunbright	2	5.54	6.6	1,880	.2	-	6.4
03538500	Emory River near Wartburg	2	83.2	28.3	26,000	1.9	38.9	26.4
03538600	Obed River at Crossville	2	12.0	10.6	1,830	1.0	-	9.6
03538900	Self Creek near Big Lick	2	3.80	10.1	1,380	1.9	-	8.2
03539100	Byrd Creek near Crossville	2	1.10	11.4	494	2.8	-	8.6
03539500	Daddys Creek near Crab Orchard	2	93.5	26.0	15,500	1.5	54.1	24.5
03541100	Bitter Creek near Camp Austin	2	5.53	9.5	4,310	2.0	-	7.5
03541200	Forked Creek near Oakdale	2	2.44	10.3	1,400	4.0	-	6.3
03541500	Whites Creek near Glen Alice	1	108	24.4	42,800	1.9	55.1	22.5
03543500	Sewee Creek near Decatur	1	117	23.0	20,100	.5	75.7	22.5
03544500	Richland Creek near Dayton	1	50.2	11.7	14,900	1.0	-	10.7
03556000	Turtletown Creek at Turtletown	1	26.9	7.8	1,900	1.3	42.2	6.5
03565300	South Chestuee Creek near Benton	1	31.8	12.0	9,050	1.1	19.2	10.9
03565500	Oostanaula Creek near Sanford	1	57.0	13.5	8,190	2.8	58.1	10.7
03566200	Brymer Creek near McDonald	1	9.68	8.0	2,470	1.8	-	6.2
03566420	Wolftever Creek near Ooltewah	1	18.8	9.5	5,590	.8	13.4	8.7
03567500	South Chickamauga Creek near Chickamauga	1	428	23.0	35,100	2.2	296	20.8
03570800	Little Brush Creek near Dunlap	1	15.4	11.3	3,910	2.0	-	9.3
03571000	Sequatchie River near Whitwell	1	384	17.5	32,500	2.6	328	14.9
03571600	Brown Spring Branch near Sequatchie	1	0.67	8.7	285	1.2	-	7.5
03571800	Battle Creek near Monteagle	1	50.4	11.7	9,130	.2	-	11.5
03574700	Big Huckleberry Creek near Belvidere	3	2.18	9.5	1,770	.5	-	9.0
03578000	Elk River near Pelham	3	65.6	14.0	12,100	3.3	53.2	10.7
03578500	Bradley Creek near Prairie Plains	3	41.3	16.0	8,290	1.5	23.5	14.5
03581500	West Fork Mulberry Creek at Mulberry	3	41.2	16.0	16,400	1.5	-	14.5
03582300	Norris Creek near Fayetteville	3	42.6	12.8	17,800	.5	-	12.3
03583000	Bradshaw Creek at Frankewing	3	36.5	16.9	14,400	1.5	17.2	15.4
03583200	Chicken Creek at McBurg	3	7.66	8.3	6,600	.2	-	8.1
03583300	Richland Creek near Cornersville	3	47.5	18.2	18,100	2.5	18.3	15.7
03584000	Richland Creek near Pulaski	3	366	29.5	90,200	1.5	195	28.0

Table 2.--100-year flood depth data at gaging stations--Continued

Station number	Station name	Hydrologic area	Drainage area (mi^2)	100-year flood Stage (ft)	100-year flood Discharge (ft^3/s)	Median Stage (ft)	Median Discharge (ft^3/s)	Depth of 100-year flood (ft)
03587200	Bluewater Creek tributary near Leoma	3	.49	6.8	436	.8	-	6.0
03587500	Shoal Creek above Little Shoal Creek at Lawrenceburg	3	27.0	19.5	12,600	1.0	-	18.5
03588400	Chisholm Creek at Westpoint	3	43.0	14.5	16,100	3.1	37.7	11.4
03588500	Shoal Creek at Iron City	3	348	27.0	90,200	3.0	293	24.0
03594200	Eagle Creek near Clifton Junction	4	19.0	8.5	10,700	0	-	8.5
03596000	Duck River below Manchester	3	107	22.0	44,600	.9	60	21.1
03597000	Garrison Fork at Fairfield	3	66.3	24.6	28,100	1.5	32.7	23.1
03597300	Wartrace Creek above Bell Buckle	3	4.99	16.0	4,690	2.4	-	13.6
03597400	Wartrace Creek near Bell Buckle	3	9.59	10.3	7,410	.4	-	9.9
03597450	Kelly Creek tributary near Bell Buckle	3	.73	4.9	684	.3	-	4.6
03597500	Wartrace Creek at Bell Buckle	3	16.3	12.0	10,200	2.5	6.5	9.5
03597550	Muse Branch near Bell Buckle	3	1.86	6.1	1,390	1.9	-	4.2
03598200	Weakley Creek near Rover	3	9.46	6.2	5,030	0	-	6.2
03599200	East Rock Creek at Farmington	3	43.1	17.5	20,000	.5	-	17.0
03599400	Little Flat Creek tributary near Rally Hill	3	.63	8.6	701	.5	-	8.1
03600500	Big Bigby Creek at Sandy Hook	3	17.5	13.0	10,600	1.5	10.9	11.5
03602500	Piney River at Vernon	3	202	23.5	43,400	2.7	141	20.8
03604070	Coon Creek tributary near Hohenwald	4	.51	6.7	345	1.8	-	4.9
03604080	Hugh Hollow Branch near Hohenwald	4	1.52	4.2	968	.5	-	3.7
03604090	Coon Creek above Chop Hollow near Hohenwald	4	6.02	7.2	3,660	1.5	-	5.7
03604100	Coon Creek near Hohenwald	4	10.1	8.3	4,840	1.5	6.1	6.8
03606500	Big Sandy River at Brucetown	4	205	16.5	18,900	3.5	117	13.0
07024300	Beaver Creek at Huntingdon	4	55.5	14.0	8,650	2.2	43	11.8
07024500	South Fork Obion River near Greenfield	4	383	18.5	30,200	6.8	205	11.7
07026500	Reelfoot Creek near Samburg	4	110	17.5	17,900	7.6	8.9	9.9
07028500	North Fork Forked Deer River at Trenton	4	73.5	15.2	10,600	4.1	20.8	11.1
07028560	Cain Creek near Fruitland	4	6.17	13.5	2,780	.5	-	13.0
07028600	Cain Creek tributary near Trenton	4	.95	10.5	977	1.0	-	9.5
07028700	Cain Creek near Trenton	4	14.4	13.1	5,180	0	-	13.1
07028900	Middle Fork Forked Deer River near Spring Creek	4	88.2	12.5	17,100	0	-	12.5
07028935	Turkey Creek tributary near Medina	4	1.08	21.9	1,540	12.0	-	9.9
07028950	Turkey Creek at Fairview	4	13.3	15.9	8,590	2.5	-	13.4
07029000	Middle Fork Forked Deer River near Alamo	4	369	16.5	24,500	7.7	168	8.8
07029050	Nash Creek near Tigrett	4	7.23	11.8	2,470	1.0	-	10.8
07029090	Lewis Creek near Dyersburg	4	25.5	19.5	6,120	1.0	-	18.5
07029370	Cypress Creek at Selmer	4	44.1	16.0	5,630	.5	-	15.5
07030270	Clear Creek near Arlington	4	60.5	17.6	6,350	-.5	-	18.1