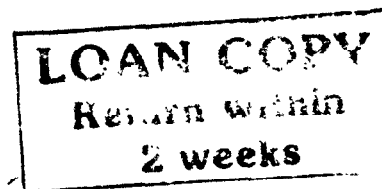


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

EFFECTS OF URBANIZATION ON THE
MAGNITUDE AND FREQUENCY OF FLOODS
ON SMALL STREAMS IN TENNESSEE -
BASIC DATA REPORT NO. 2

Open-File Report 82-911

Prepared in cooperation with the
TENNESSEE DEPARTMENT OF TRANSPORTATION and
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FEDERAL HIGHWAY ADMINISTRATION



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EFFECTS OF URBANIZATION ON THE MAGNITUDE AND FREQUENCY
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by Clarence H. Robbins

INTRODUCTION

Engineers involved in bridge, culvert and highway design often find it necessary to know the magnitude and frequency of discharge from small streams where the drainage basin is urbanized. In order to develop an adequate method for determining the frequency of floods on small streams in Tennessee, where urbanization is a factor, a considerable amount of runoff data are needed. At present there is a scarcity of runoff data from urban areas in Tennessee except in large metropolitan areas. With this in mind the U.S. Geological Survey and the Tennessee Department of Transportation entered into a cooperative agreement in July 1977 to collect data on streams draining less than about 25 mi² in municipalities with populations ranging between 5,000 and 100,000. The data collected under this project, in combination with urban runoff data collected in Memphis, Nashville and Knoxville, will give a full spectrum of runoff conditions likely to be experienced in Tennessee.

A total of 22 sites have been instrumented across the State as shown in figure 1. Each of the four hydrologic areas as defined in the report "Technique for Estimating Magnitude and Frequency of Floods in Tennessee," 1976, by Randolph and Gamble is represented.

This report summarizes data collected at these 22 sites during the period July 1977, to June 1982, and is the second basic data report to be released during the term of this project. The data presented in this report supersedes data in Basic Data Report No. 1.

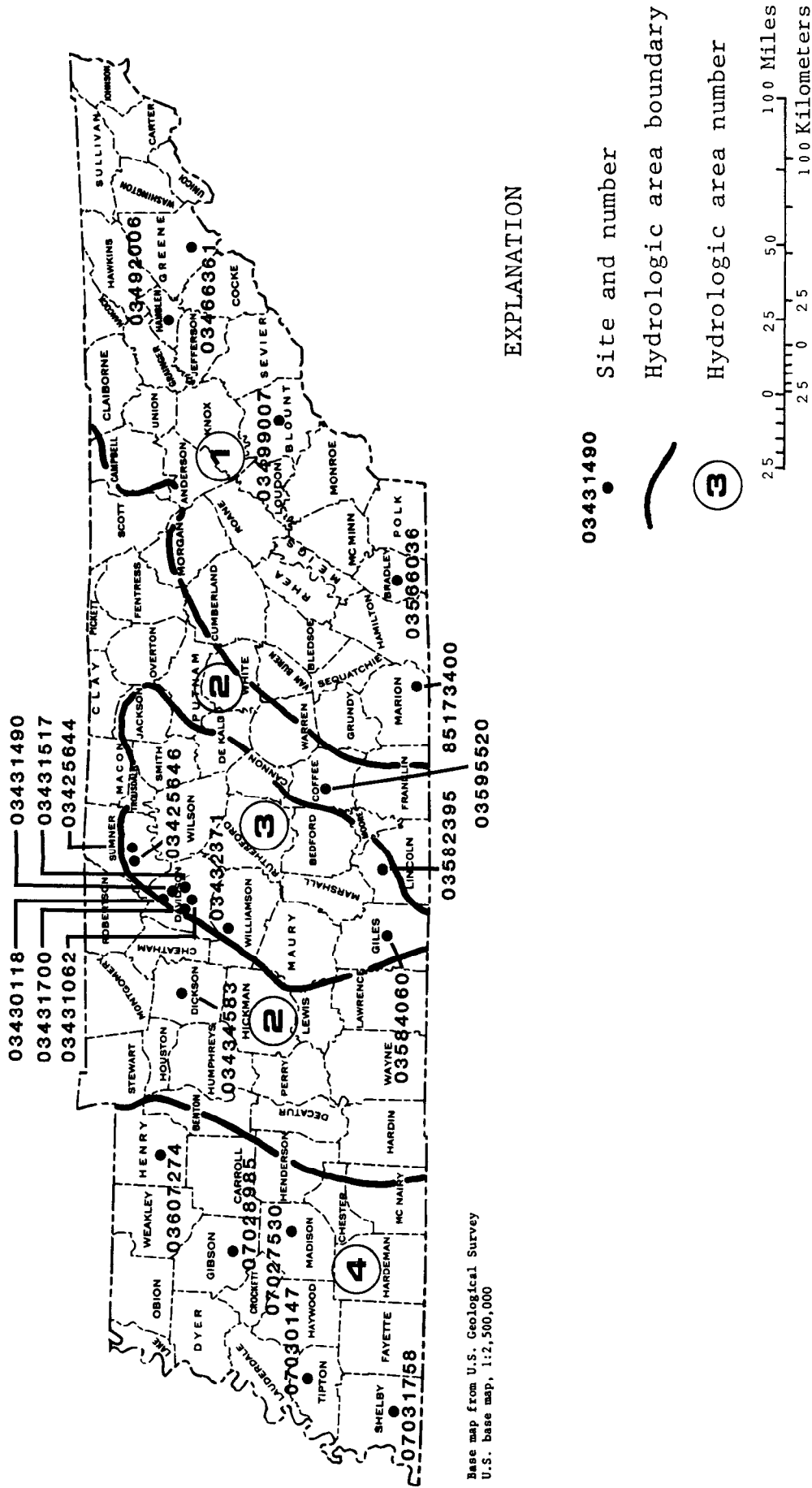


Figure 1.-- Location of gaging stations.

After sufficient data have been collected and analyzed, the Geological Survey Rainfall-Runoff model will be calibrated using these data. Urban runoff data from similar studies in Memphis, Nashville, and Knoxville will be incorporated into the data base of this study for the flood frequency analysis. Regional flood-frequency equations for the 2-year through the 100-year recurrence interval floods for small streams in urbanized areas will be developed using the expanded data base.

EXPLANATION OF DATA

The data, tabulated for each site, are composed of pertinent basin characteristics and major flood events above a predetermined discharge rate.

Basin characteristics: The basin drainage area (D.A.) is shown in square miles. The principle stream length (L), in miles, is from the drainage divide to the gage and was measured from 7 1/2-minute topographic maps. The main channel slope (S), in feet per mile, is the difference in elevation at points 10 percent and 85 percent of the main channel length measured upstream from the gage and divided by 75 percent of the stream length. Pervious, impervious, non-effective impervious, and noncontributing area (in percent of total area) are measured from aerial photographs of each site. These four characteristics have not been determined for some of the sites presented in this report.

Runoff events: Column headings are self-explanatory. Rainfall data are not available for some flood events because of equipment malfunctions. In addition, rainfall distribution over the basin for some events was such that no rainfall was recorded at the gage. The rainfall listed under the column heading "Total accumulated rainfall" is the total amount of rainfall associated with each runoff event. Only those events with complete rainfall and discharge data will be used in the model calibrations.

Data tabulated in this report are the best available at this time but should be considered provisional and subject to change, especially discharge values which are dependent on rating curve definition.

CUMBERLAND RIVER BASIN

03425644 Town Creek above Gallatin, TN

Location.--Lat 36°24'17", long 86°25'36", Sumner County, 200 feet above culvert on U.S. Highway 31E, 1.3 miles northeast of intersection of highway 109 and 31E in Gallatin.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established May 8, 1981.

Basin characteristics.--D. A. = 2.25 mi²; L = 2.52 mi; S = 68.8 ft/mi; percent pervious = 97.66; percent impervious = 2.28; percent noneffective impervious = 0.06; percent noncontributing D. A. = 0.

Remarks.--All peaks are listed. Stage-discharge relation is not defined at this time.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
5/18/81	1.03	.25	2.03						
5/19/81	0.81	.13	1.41						
6/ 1/81	1.51	.22	3.23						
6/ 2/92	0.38	.10	1.12						
6/ 6/81	2.22	.11	2.91						
6/10/81	1.69	.31	5.55						
8/16/81	1.93	.33	1.54						
9/15/81	2.01	.25	1.37						
12/21/81	1.53	.05	1.57						
1/ 2/82	1.81	.10	3.40						
1/ 3/82	1.19	.15	2.59						
1/20/82	1.01	.09	2.82						
1/23/82	1.18	.18	3.40						
2/ 8/82	2.05	.06	3.34						
3/15/82	0.84	.09	2.65						
4/ 3/82	0.47	.34	1.51						

CUMBERLAND RIVER BASIN

03425646 Town Creek at Gallatin, TN

Location.--Lat 36°22'50", long 86°27'15", Sumner County, at bridge on Maple Street, 1.6 miles upstream from mouth.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established October 28, 1977.

Basin characteristics.--D. A. = 4.90 mi²; L = 5.07 mi; S = 37.6 ft/mi; percent pervious = 90.36; percent impervious = 5.55; percent noneffective impervious = 3.79; percent noncontributing D. A. = 0.30.

Remarks.--Peaks above 5.0 feet are listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
12/ 5/77	1.58	.21	6.96	891	6/ 1/81	1.45	.21	6.00	586
1/25/78	2.04	.04	5.87	545	6/ 6/81	2.47	.11	6.53	749
3/14/78	2.01	.22	7.20	975	6/10/81	1.78	.41	9.03	1,820
5/ 8/78	2.86	.15	8.47	1,530	8/15/81	2.18	.47	5.19	362
5/12/78	1.29	.28	6.45	724	12/ 1/81	1.47	.05	5.64	478
7/25/78	2.06	.19	5.18	359	1/ 2/82	2.97	.12	7.11	943
8/11/78	2.32	.29	5.08	332					
9/11/78	1.73	.32	5.67	487					
12/ 3/78	4.87	.33	9.84	2,330					
12/ 7/78	2.93	.30	9.14	1,890					
12/ 8/78	4.94	.26	9.50	2,100					
1/ 1/79	2.47	.11	6.66	790					
1/ 7/79	1.99	.04	5.57	459					
1/20/79	1.78	.05	5.72	501					
4/ 2/79	2.02	.07	5.77	515					
4/12/79	1.63	.08	6.00	586					
5/ 4/79	2.57	.11	5.57	459					
9/13/79	5.91	.28	8.43	1,510					
9/21/79	2.44	.12	7.18	968					
9/27/79	1.66	.07	5.72	501					
12/13/79	3.04	.06	6.65	787					
3/ 8/80	1.30	.22	5.08	332					
3/17/80	1.24	.05	5.32	395					
3/20/80	2.48	.19	7.07	929					
3/28/80	1.19	.10	6.83	846					
5/18/81	2.51	.38	5.60	467					

CUMBERLAND RIVER BASIN

03430118 McCrory Creek at Ironwood Drive, at Donelson, TN

Location.--Lat 36°09'07", long 86°39'02", Davidson County, at bridge on Ironwood Drive, 1.3 miles southeast of intersection of U.S. Highway 70 (Lebanon Road) and Donelson Pike in Donelson.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established November 17, 1975.

Basin characteristics.--D. A. = 7.31 mi²; L = 4.48 mi; S = 26.8 ft/mi; percent pervious = 92.93; percent impervious = 5.74; percent noneffective impervious = 0.30; percent noncontributing D. A. = 1.03.

Remarks.--Peaks above 3.0 feet are listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
9/27/76	1.09	.14	3.39	208	4/ 1/79	1.74	.17	6.99	1,345
10/30/76	1.19	.08	3.64	250	4/ 2/79	1.58	.17	5.92	879
3/ 3/77	2.47	.05	5.39	691	4/12/79	1.77	.15	5.88	864
3/ 4/77	0.81	.03	5.24	643	5/ 3/79	2.98	.26	4.31	388
3/12/77	1.86	.09	6.21	993	5/ 4/79	1.24	.11	9.20	2,520
4/ 1/77	0.09	.02	3.22	182	8/25/79	2.16	.18	6.13	961
4/ 3/77	1.66	.05	5.46	714	9/13/79	5.51	.33	9.50	2,685
4/ 4/77	1.27	.07	6.55	1,140	9/21/79	2.57	.19	7.18	1,440
4/23/77	2.91	.31	6.44	1,090	10/28/79	1.70	.13	4.97	561
6/25/77	0.83	.20	3.31	195	11/ 1/79	1.85	.06	4.39	407
11/21/77	1.70	.28	4.46	424	11/25/79	1.14	.25	5.04	582
12/ 4/77	1.05	.07	4.39	407	3/20/80	2.68	.07	5.49	724
12/ 5/77	1.28	.15	6.27	1,018	3/28/80	1.38	.06	5.69	794
1/ 8/78	1.45	.15	3.20	179	5/17/80	3.43	.13	5.73	808
1/25/78	1.76	.03	4.66	475	5/19/80	1.46	.17	5.22	636
3/14/78	2.14	.18	6.82	1,263	4/19/81	1.27	.52	5.13	609
5/28/78	0.46	.15	4.50	434	6/ 6/81	3.55	.37	7.04	1,370
6/21/78	0	-	3.17	175	6/ 7/81	0	-	5.58	755
12/ 3/78	4.15	.33	5.82	841	1/22/82	1.00	.12	5.18	624
12/ 8/78	6.49	.49	8.09	1,940	2/ 8/82	2.28	.08	6.23	1,000
1/ 1/79	2.26	.11	5.00	570	3/15/82	1.13	.06	3.76	272
1/ 7/79	2.23	.05	4.92	547	4/17/82	1.53	.24	4.77	504
1/20/79	-	-	3.66	254	5/ 7/82	2.04	.08	4.38	404
1/21/79	0	-	3.20	179	5/18/82	1.49	.63	3.74	268
3/31/79	1.11	.19	3.21	180					

CUMBERLAND RIVER BASIN

03431062 Mill Creek tributary at Glenrose Avenue, at Woodbine, TN

Location.--Lat 36°07'02", long 86°43'37", Davidson County, at culvert under Glenrose Avenue, 1.1 miles northeast of intersection of Nolensville Road and Thompson Lane in Woodbine, TN.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established February 9, 1976.

Basin characteristics.--D. A. = 1.17 mi²; L = 1.61 mi; S = 78.5 ft/mi; percent pervious = 76.09; percent impervious = 22.81; percent noneffective impervious = 1.10; percent noncontributing D. A. = 0.

Remarks.--Peaks above 3.0 feet are listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
9/27/76	1.00	.17	3.25	118	9/21/79	2.44	.10	3.13	106
10/ 6/76	1.43	.10	3.14	107	10/28/79	1.77	.12	3.24	117
3/12/77	2.24	.07	3.14	107	11/25/79	1.03	.14	3.22	115
4/ 4/77	2.90	.05	3.05	98.3	3/20/80	2.83	.11	3.00	93.6
4/23/77	0.60	.11	3.04	97.4	3/28/80	1.52	.07	3.17	110
6/24/77	0.44	.28	3.49	143	4/ 8/80	1.50	.15	3.00	93.6
6/25/77	1.01	.22	3.17	110	4/13/80	1.19	.07	3.06	99.3
9/ 5/77	1.11	.25	3.64	159	5/17/80	5.06	.10	4.79	301
11/21/77	1.42	.21	3.64	159	6/29/80	2.62	.42	4.77	298
12/ 4/77	1.06	.12	3.12	105	7/ 2/80	0.61	.12	3.29	122
12/ 5/77	0.95	.17	3.41	134	7/22/80	1.79	.20	3.44	137
3/13/78	1.45	.15	3.76	172	7 27 80	0.49	.16	3.05	98.3
5/ 3/78	0.61	.11	3.01	94.6	4/19/81	1.21	.58	3.91	190
5/ 8/78	1.64	.23	4.71	290	5/10/81	0.49	.17	3.14	107
8/25/78	0.77	.23	3.28	121	5/18/81	0.81	.53	3.66	161
10/13/78	1.34	.11	3.00	93.6	6/ 4/81	0.69	.22	3.72	168
12/ 8/78	5.69	.34	5.82	452	6/ 6/81	2.74	.29	4.15	218
4/ 1/79	1.72	.23	3.27	120	6/12/81	0.69	.22	3.33	126
4/12/79	1.90	.20	3.37	130	6/25/81	1.14	.32	3.60	154
5/ 3/79	3.03	.30	3.40	133	7/ 6/81	1.36	.42	3.93	192
5/ 4/79	1.21	.11	*9.05	-	7/17/81	0.63	.08	3.47	140
7/21/79	0.96	.17	3.04	97.4	7/27/81	0.29	.12	3.09	102
8/ 1/79	0.55	.20	3.04	97.4	8/29/81	1.21	.35	3.27	120
8/25/79	1.73	.30	3.74	170	2/ 8/82	0	-	3.11	104
8/26/79	1.25	.19	3.25	118	4/17/82	1.49	.18	3.36	129
9/13/79	6.38	.54	*7.03	-					

* Stage exceeds upper end of rating curve.

CUMBERLAND RIVER BASIN

03431490 Pages Branch at Avondale, TN

Location.--Lat 36°12'22", long 86°46'24", Davidson County, at culvert under Trinity Lane, 900 feet east of intersection of Interstate 65 and Trinity Lane at Avondale.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established February 11, 1976.

Basin characteristics.--D. A. = 2.01 mi²; L = 2.27 mi; S = 97.1 ft/mi; percent pervious = 84.07; percent impervious = 14.97; percent noneffective impervious = 0.96; percent noncontributing D. A. = 0.

Remarks.--Peaks above 3.0 feet are listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
10/30/76	1.21	.04	3.04	71.1	11/ 1/79	2.05	.10	3.45	155
2/23/77	1.77	.07	3.66	207	11/23/79	1.82	.07	3.13	85.7
3/ 3/77	2.37	.06	4.10	334	11/25/79	0.87	.06	3.48	163
3/12/77	2.28	.16	4.94	627	12/12/79	1.79	.06	3.45	155
4/ 4/77	1.49	.10	4.08	327	12/13/79	1.15	.04	3.85	260
8/16/77	1.20	.33	3.21	101	12/23/79	1.40	.04	3.04	71.1
10/ 8/77	2.12	.06	3.14	87.5	3/17/80	0.64	.01	3.48	163
11/21/77	1.32	.12	3.17	92.9	3/20/80	2.64	.04	4.18	360
11/29/77	1.25	.07	3.09	78.9	3/24/80	0.82	.01	3.04	71.1
12/ 4/77	0.97	.04	3.29	118	3/28/80	0.94	.01	4.10	334
12/ 5/77	0.70	.07	3.98	297	4/13/80	0.08	.01	3.69	215
3/13/78	1.37	.18	4.25	383	5/17/80	-	-	5.37	809
9/21/78	0.96	.24	3.79	242	5/19/80	1.85	.46	4.78	565
11/17/78	0.83	.13	3.76	234	5/22/80	0.98	.08	3.17	92.9
12/ 3/78	4.80	.27	6.20	1,200	3/30/81	1.49	.14	3.01	66.8
12/ 7/78	2.53	.27	5.49	860	5/19/81	1.63	.15	3.07	75.7
12/ 8/78	4.21	.13	6.13	1,160	6/ 6/81	2.18	.09	3.65	204
12/20/78	1.13	.16	3.76	234	6/10/81	0.72	.23	3.03	69.7
12/31/78	1.12	.06	4.01	306	6/12/81	0.76	.29	3.66	207
1/ 1/79	1.36	.05	4.65	517	9/ 3/81	2.31	.27	3.46	158
1/ 7/79	1.95	.05	4.20	366	11/30/81	1.62	.05	3.50	167
1/20/79	1.87	.03	4.10	334	1/ 1/82	2.28	.10	4.23	376
3/10/79	0.32	.04	3.05	72.6	1/16/82	1.21	.08	3.87	266
4/12/79	1.91	.14	4.05	318	1/19/82	1.35	.16	3.65	204
5/ 3/79	2.62	.26	3.68	212	3/15/82	1.49	.14	3.98	297
5/ 4/79	0.91	.05	4.09	331	4/17/82	1.27	.10	3.40	144
7/ 8/79	1.24	.21	3.01	66.8	4/26/82	1.09	.32	3.14	87.5
9/13/79	5.35	.37	5.12	702	5/ 7/82	1.95	.09	3.18	94.8
9/21/79	2.59	.32	4.52	471					

CUMBERLAND RIVER BASIN

03431517 Cummings Branch at Lickton, TN

Location.--Lat 36°18'25", long 86°48'00", Davidson County, on right downstream wingwall of bridge, on Shaw Road, 900 feet above confluence with Shaw Branch, 0.8 miles northeast of Lickton.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established December 1, 1975.

Basin characteristics.--D. A. = 2.40 mi²; L = 2.71 mi; S = 71.4 ft/mi; percent pervious = 98.16; percent impervious = 1.84; percent noneffective impervious = 0; percent noncontributing D. A. = 0.

Remarks.--Peaks above 2.6 feet are listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
2/23/77	1.94	.06	2.62	47.2					
3/ 3/77	2.28	.19	3.35	149					
3/12/77	2.81	.09	4.74	616					
3/13/78	1.39	.23	2.92	80.8					
12/ 3/78	4.85	.24	3.27	135					
12/ 7/78	3.25	.26	3.68	224					
12/ 8/78	4.05	.18	4.39	456					
1/ 1/79	1.82	.05	3.32	144					
4/ 2/79	2.28	.12	3.29	138					
4/12/79	2.21	.14	3.54	189					
6/ 3/79	1.19	.09	2.68	53.0					
9/13/79	5.53	.17	5.21	881					
11/ 1/79	2.49	.30	3.01	93.4					
12/13/79	2.74	.06	3.16	116					
5/17/80	4.00	.13	4.78	636					
6/29/80	2.49	.27	2.88	75.6					
6/ 1/81	2.08	.18	4.19	382					
6/ 6/81	2.03	.12	3.11	108					
1/ 2/82	1.77	.09	2.81	67.1					
1/ 3/82	1.46	.14	3.44	167					
3/15/82	0.94	.11	2.82	68.3					
4/16/82	1.41	.22	3.07	102					
4/17/82	1.47	.14	3.28	136					
4/26/82	0.94	.18	3.28	136					

CUMBERLAND RIVER BASIN

03431700 Richland Creek at Charlotte Avenue, at Nashville, TN

Location.--Lat 36°09'04", long 86°51'16", Davidson County, at bridge on Charlotte Avenue, 0.8 miles south of McCann School, and 4.0 miles southwest of the State Capitol in Nashville.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established July 27, 1964.

Basin characteristics.--D. A. = 24.3 mi²; L = 7.90 mi; S = 33.0 ft/mi; percent pervious 68.89; percent impervious = 26.11; percent noneffective impervious = 4.76; percent noncontributing D. A. = 0.24.

Remarks.--Peaks above 4.0 feet are listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
9/ 3/76	0.33	.05	5.13	1,010	12/12/79	2.10	.11	6.87	1,850
2/23/77	1.86	.07	6.36	1,580	12/13/79	1.17	.04	7.05	1,960
3/ 3/77	2.44	.06	7.11	1,990	3/17/80	0.77	.07	4.80	879
3/12/77	2.37	.23	10.61	4,580	3/20/80	2.58	.09	6.56	1,680
4/ 4/77	2.81	.11	7.13	2,000	3/24/80	0.42	.03	4.01	606
11/21/77	1.37	.27	5.07	984	3/28/80	1.15	.09	7.40	2,160
11/29/77	1.34	.08	4.19	663	4/14/80	1.87	.10	7.96	2,520
12/ 4/77	0.87	.07	5.58	1,200	5/17/80	5.19	.18	12.23	6,120
12/ 5/77	0.83	.12	6.65	1,730	5/19/80	1.01	.21	5.58	1,200
1/25/78	1.82	.04	5.62	1,220	5/23/80	0.78	.06	4.10	634
3/14/78	1.77	.21	7.80	2,420	6/29/80	2.55	.46	8.04	2,580
5/ 8/78	1.22	.22	8.79	3,100	3/30/81	1.48	.14	4.21	670
12/ 4/78	5.03	.36	8.36	2,790	5/19/81	2.21	.32	4.69	838
12/ 8/78	5.95	.32	12.69	6,590	6/ 6/81	2.43	.20	5.45	1,140
1/20/79	1.76	.03	4.12	641	6/ 7/81	0.04	.01	5.47	1,150
2/25/79	1.59	.10	5.94	1,370	6/22/81	0.74	.13	4.42	741
3/23/79	0.96	.12	4.91	921	7/ 3/81	0.24	.04	4.55	787
4/ 1/79	3.10	.38	7.49	2,220	7/17/81	1.25	.30	6.89	1,860
4/ 2/79	1.48	.14	7.46	2,200	7/24/81	1.50	.22	4.71	845
4/ 8/79	0.84	.13	4.75	860	12/ 1/81	1.70	.05	5.49	1,160
4/12/79	2.35	.16	8.86	3,150	1/ 3/82	2.00	.13	5.86	1,330
5/ 4/79	3.56	.29	10.63	4,590	1/10/82	-	-	6.73	1,770
7/19/79	3.29	.32	8.44	2,850	3/15/82	1.55	.13	5.01	960
7/21/79	0	-	8.65	2,990	4/17/82	1.27	.12	5.93	1,360
11/23/79	1.91	.04	4.27	690	4/26/82	1.26	.47	4.08	628
11/25/79	1.37	.10	4.99	952	5/ 7/82	1.51	.05	4.16	653

CUMBERLAND RIVER BASIN

03432371 Harpeth River tributary at Franklin, TN

Location.--Lat 35°55'24", long 86°52'46", Williamson County, upstream from culvert on 11th Avenue and 0.7 mile above mouth.

Gage and history.--Dual digital recorders, with 5-minute punch intervals, housed in separate shelters. Station established November 4, 1977.

Basin characteristics.--D. A. = 1.81 mi²; L = 2.49 mi; S = 74.9 ft/mi; percent pervious = 88.2; percent impervious = 4.68; percent noneffective impervious = 6.96; percent noncontributing D. A. = 0.16.

Remarks.--Peaks above 3.5 feet listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
11/ 5/77	1.30	.14	3.74	65	1/23/82	1.21	.28	4.19	96
3/13/78	1.91	.18	4.90	147	2/ 9/82	1.74	.05	4.20	96
5/ 8/78	1.39	.25	4.34	106	3/15/82	1.23	.17	3.93	78
12/ 3/78	5.63	.27	6.77	354	4/17/82	2.08	.22	4.69	131
12/ 8/78	2.31	.12	4.42	111					
1/ 1/79	2.69	.07	3.61	57					
2/25/79	1.62	.13	3.59	56					
4/ 1/79	2.08	.37	3.89	75					
4/ 2/79	1.63	.23	3.79	68					
4/12/79	2.24	.30	4.71	133					
5/ 3/79	3.08	.45	3.79	68					
5/ 4/79	3.80	.47	7.78	767					
5/23/79	1.31	.24	3.80	69					
8/26/79	1.64	.15	3.54	53					
9/13/79	5.61	.27	6.49	304					
9/21/79	2.23	.10	3.92	77					
12/12/79	2.24	.08	3.53	52					
3/20/80	3.69	.13	4.53	119					
3/28/80	1.56	.08	4.54	120					
4/14/80	1.76	.13	4.48	115					
5/17/80	3.99	.19	4.95	151					
5/19/80	1.83	.39	4.38	108					
7/22/80	4.69	.46	7.27	500					
4/ 4/81	1.29	.21	3.54	53					
11/30/81	2.05	.08	4.08	89					
1/ 2/82	1.54	.09	3.62	58					

CUMBERLAND RIVER BASIN

03434583 Jones Creek tributary at Dickson, TN

Location.--Lat 36°05'08", long 87°22'39", Dickson County, upstream from culvert at private drive, 0.3 mile northeast of intersection of U.S. Highway 70 bypass and State Highway 48.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established April 7, 1978.

Basin characteristics.--D. A. = 2.29 mi²; L = 1.98 mi; S = 68.9 ft/mi.

Remarks.--Peaks above 4.0 feet listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
5/ 8/78	2.29	.14	6.25	412	4/17/81	1.18	.22	4.86	258
7/13/78	1.25	.33	4.16	191	5/18/81	0.17	.01	4.64	236
12/ 3/78	4.25	.18	5.87	368	5/19/81	0.09	.01	7.28	541
12/ 6/78	0	-	6.51	443	6/ 1/81	0.71	.22	6.00	382
12/ 7/78	3.80	.42	8.65	740	6/ 6/81	1.50	.12	7.05	510
12/ 8/78	3.48	.19	7.02	507	6/22/81	0.12	.01	5.12	284
1/ 1/79	2.83	.16	4.18	192	7/10/81	0.45	.18	7.41	558
3/23/79	2.06	.15	5.57	334	7/17/81	0.16	.01	5.68	346
4/ 1/79	2.84	.58	6.32	420	7/25/81	0.13	.01	6.30	417
4/ 2/79	0.88	.03	6.80	478	11/27/81	1.06	.20	4.08	184
4/12/79	3.31	.29	9.30	940	11/30/81	0	-	4.10	185
5/ 3/79	2.35	.22	5.88	369	1/23/82	0.66	.11	4.31	204
5/ 4/79	1.11	.07	5.84	364	2/ 8/82	0.08	.01	4.92	264
5/20/79	1.67	.24	4.28	202	3/15/82	1.28	.12	4.35	208
6/21/79	1.13	.11	4.01	178	4/17/82	6.04	.67	5.54	330
7/ 8/79	1.20	.18	4.51	223					
7/25/79	0.67	.29	4.23	197					
8/21/79	1.29	.32	5.12	284					
8/25/79	1.14	.08	4.63	235					
9/ 1/79	1.32	.35	4.42	215					
9/13/79	5.62	.10	7.88	623					
12/13/79	2.88	.11	4.88	260					
3/20/80	2.70	.11	4.42	215					
5/17/80	2.41	.10	6.10	394					
6/29/80	3.29	.22	7.32	546					
8/12/80	0.43	.10	4.12	187					

TENNESSEE RIVER BASIN

03466361 Richland Creek at Greeneville, TN

Location.--Lat 36°08'33", long 82°49'27", Greene County, at sewage plant, 0.2 mile upstream from bridge on Old Asheville Highway, and at mile 6.3.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established November 4, 1977.

Basin characteristics.--D. A. = 3.48 mi²; L = 3.09 mi; S = 76.3 ft/mi; percent pervious = 78.44; percent impervious = 18.41; percent noneffective impervious = 3.13; percent noncontributing D. A. = .016.

Remarks.--Peaks above 3.0 feet listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
11/ 6/77	1.28	.14	3.42	160	4/20/81	1.11	.14	3.65	187
12/25/77	1.13	.04	3.37	154	5/28/81	1.03	.11	3.48	166
8/ 4/78	1.03	.27	4.65	335	6/ 6/81	1.75	.59	6.10	646
8/ 7/78	1.89	.15	4.10	247	7/ 5/81	1.21	.19	4.02	236
8/14/78	1.76	.38	4.65	335	7/ 7/81	0.80	.26	4.85	371
9/ 2/78	0.43	.11	3.64	185	7/24/81	0.76	.19	3.52	171
9/22/78	0.98	.11	4.47	305	8/ 6/81	1.22	.23	3.93	223
4/ 4/79	0.37	.01	3.09	125	8/16/81	0.97	.18	4.67	339
6/ 7/79	1.08	.40	4.14	253	9/ 3/81	1.01	.26	3.99	232
6/19/79	0.35	.11	3.22	138	9/15/81	3.08	.20	4.15	255
7/ 4/79	1.36	.26	4.60	326	11/27/81	0.94	.25	4.61	328
7/19/79	1.36	.37	7.00	901	1/ 3/82	1.18	.03	3.07	123
7/21/79	1.90	.12	8.45	1,420	1/ 4/82	0.70	.15	4.40	293
7/27/79	0.75	.11	3.38	155	1/21/82	0.85	.06	4.02	236
8/21/79	1.00	.27	4.65	335	2/ 3/82	1.79	.04	4.31	279
9/30/79	0.45	.10	3.07	123	3/26/82	0.23	.05	3.76	200
3/ 8/80	1.13	.07	3.40	157					
3/21/80	1.78	.04	3.89	218					
5/23/80	0.54	.19	3.66	188					
6/16/80	0.95	.27	3.23	139					
7/ 3/80	2.25	.14	3.79	204					
8/20/80	0.70	.19	3.16	132					
8/22/80	0.58	.18	3.57	177					
9/10/80	1.18	.16	3.57	177					
9/24/80	1.62	.53	5.72	553					
10/18/80	1.37	.13	3.54	173					

TENNESSEE RIVER BASIN

03492006 Turkey Creek at Morristown, TN

Location.--Lat 36°14'09", long 83°17'51", Hamblen County, 300 feet downstream from South Outer St., and 1.1 mile upstream from mouth.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established December 9, 1977.

Basin characteristics.--D. A. = 5.09 mi²; L = 4.16 mi; S = 53.8 ft/mi; percent pervious = 86.61; percent impervious = 7.09; percent noneffective impervious = 5.98; percent noncontributing D. A. = 0.32.

Remarks.--Peaks above 3.0 feet listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
12/ 4/77	-	-	3.27	158	9/10/80	1.51	.15	3.85	211
6/ 8/78	3.44	.14	5.68	898	9/17/80	1.03	.05	3.38	166
7/ 8/78	0.38	.13	3.00	136	10/18/80	1.03	.27	3.27	158
7/27/78	0.88	.12	3.70	195	2/ 1/81	1.17	.13	3.00	136
8/11/78	-	-	4.65	329	6/ 1/81	1.23	.29	3.80	206
9/10/78	1.33	.59	3.39	167	6/ 4/81	0.40	.06	3.00	136
12/ 9/78	1.71	.11	3.03	139	6/ 6/81	1.19	.08	3.57	182
3/ 4/79	2.11	.05	4.41	282	6/30/81	1.28	.14	4.74	352
5/ 4/79	0.83	.11	3.06	141	7/ 1/81	1.61	.22	3.82	208
6/ 1/79	0.13	.02	3.02	138	7/ 5/81	1.12	.22	3.54	180
7/ 4/79	1.36	.44	4.16	246	7/24/81	0.38	.11	3.57	182
7/20/79	1.20	.06	3.43	171	1/ 3/82	2.87	.23	3.01	137
7/21/79	3.33	.26	4.96	412	1/ 4/82	1.54	.32	3.35	164
7/25/79	0.81	.21	3.85	211					
8/28/79	1.22	.26	5.11	462					
3/ 8/80	1.34	.28	4.19	249					
3/21/80	2.13	.07	3.92	220					
7/ 3/80	2.27	.40	5.02	432					
7/ 4/80	0.74	.28	3.25	156					
7/21/80	0.96	.18	4.58	312					
7/26/80	0.58	.13	3.81	207					
8/ 1/80	0.76	.15	5.24	517					
8/ 4/80	2.24	.72	5.49	709					
8/11/80	0	-	3.56	182					
8/19/80	0.95	.27	3.16	149					
8/20/80	0.02	.01	3.40	168					

TENNESSEE RIVER BASIN

03499007 Pistol Creek at Alcoa, TN

Location.--Lat 35°46'08", long 83°58'58", Blount County, about 150 feet upstream from Calderwood Ave., 7.6 miles upstream from mouth.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established January 4, 1978.

Basin characteristics.--D. A. = 15.7 mi²; L = 8.27 mi; S = 25.8 ft/mi; percent pervious = 88.40; percent impervious = 6.51; percent noneffective impervious = 5.09; percent noncontributing D. A. = 0.

Remarks.--Peaks above 4.0 feet listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
1/ 8/78	1.23	.05	4.24	210	3/21/80	3.06	.11	6.36	733
1/25/78	0.86	.03	4.61	255	3/28/80	0.95	.04	4.43	231
1/26/78	0.03	.01	4.57	250	4/13/80	1.49	.07	5.88	551
5/ 4/78	1.28	.15	4.43	231	6/24/80	1.41	.46	4.91	298
6/ 8/78	2.87	.19	4.84	288	7/ 3/80	2.03	.33	5.19	350
6/12/78	1.10	.37	5.05	321	7/27/80	1.02	.34	4.03	192
7/16/78	0.94	.10	4.28	214	9/17/80	1.39	.16	4.63	258
7/25/78	2.21	.29	4.55	247	9/24/80	1.85	.40	4.98	309
7/31/78	1.38	.39	4.79	281	2/ 2/81	0.24	.08	4.18	205
8/16/78	0.01	.01	4.44	232	6/ 4/81	0.69	.17	5.77	514
12/ 9/78	1.87	.09	4.74	273	6/ 6/81	1.49	.27	7.63	1,420
1/20/79	2.26	.03	4.76	276	6/23/81	3.48	.73	8.85	2,440
2/24/79	0.88	.04	4.33	219	8/ 6/81	0.91	.15	4.95	304
3/ 4/79	2.00	.10	5.54	443	8/ 8/81	1.29	.23	4.98	309
5/23/79	2.19	.13	4.78	279	9/ 6/81	1.13	.18	4.47	236
7/15/79	1.33	.31	4.86	291	4/27/82	1.16	.12	4.87	292
7/20/79	1.35	.09	4.96	306	5/27/82	1.72	.38	5.18	348
7/21/79	0.65	.07	4.09	197	5/28/82	1.78	.30	6.42	759
7/22/79	0.49	.15	4.34	220					
7/27/79	0.08	.02	5.42	409					
7/29/79	0	-	5.07	325					
8/31/79	1.34	.39	5.15	341					
11/ 1/79	0.10	.07	4.59	253					
1/ 8/80	0	-	4.63	258					
1/22/80	1.59	.03	5.01	314					
3/ 8/80	1.18	.51	4.70	268					

TENNESSEE RIVER BASIN

03566036 South Mouse Creek at Cleveland, TN

Location.--Lat 35°10'30", long 84°52'37", Bradley County, at bridge on 20th Street, 16.2 miles upstream from mouth.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established November 17, 1977.

Basin characteristics.--D. A. = 7.31 mi²; L = 4.07 mi; S = 24.3 ft/mi.

Remarks.--Peaks above 3.0 feet listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
1/ 8/78	1.31	.07	4.42	397	9/27/79	2.42	.04	4.26	371
1/25/78	1.62	.03	4.31	379	9/28/79	1.34	.07	3.61	274
4/18/78	2.81	.23	4.76	455	3/ 7/80	1.88	.08	4.38	390
12/ 4/78	1.04	-	3.78	298	3/17/80	0.39	.02	4.75	453
12/ 9/78	1.46	-	4.60	427	3/20/80	5.93	.22	6.71	852
1/ 1/79	1.64	-	3.19	219	5/23/80	0.71	.22	3.09	206
1/ 7/79	0.84	-	3.04	201	8/11/80	1.58	.29	3.86	310
1/20/79	1.05	-	3.24	225	9/27/80	0	-	3.26	227
2/25/79	0.95	.14	3.44	251	2/10/81	2.04	.04	3.38	243
3/ 4/79	2.85	.05	5.90	673	3/30/81	1.68	.04	3.49	258
4/ 3/79	1.01	.03	3.41	247	4/ 5/81	1.34	.28	4.17	357
4/12/79	1.90	.11	4.08	343	4/17/81	0.61	-	3.36	240
4/13/79	1.22	.03	4.98	494	4/23/81	0.85	-	3.31	234
4/26/79	1.47	.08	3.04	201	5/27/81	0.27	-	3.21	221
5/ 4/79	0.64	.28	3.19	219	6/ 7/81	1.79	-	3.26	227
5/21/79	2.31	.26	6.45	792	7/16/81	2.14	.43	6.43	788
5/23/79	3.91	.35	7.34	1,000	7/29/81	0.16	.02	3.07	204
5/31/79	2.17	.27	3.26	227	8/20/81	1.59	.09	4.80	462
6/24/79	0.56	.16	3.25	226	11/19/81	1.09	.26	3.78	298
7/13/79	0.63	.05	3.13	211	11/27/81	1.63	.19	3.63	277
7/20/79	2.50	.33	3.96	325	12/ 1/81	1.48	.11	3.96	325
7/21/79	0.86	.04	3.70	287	1/ 4/82	0	-	5.53	598
7/28/79	0.69	.32	3.02	199	2/ 2/82	1.42	.03	3.06	203
8/ 3/79	0.76	.14	3.38	234	2/ 3/82	0.39	.05	3.46	254
8/26/79	1.68	.17	5.32	557	2/ 9/82	1.15	.11	3.19	219
9/ 3/79	0.71	.09	4.21	363	3/15/82	2.39	.14	5.65	622
9/ 6/79	0.78	.38	3.13	211	3/21/82	1.61	.35	4.51	412
9/21/79	1.64	.15	4.13	351					

TENNESSEE RIVER BASIN

03582395 Tanyard Branch at Fayetteville, TN

Location.--Lat 35°09'02", long 86°34'22", Lincoln County, upstream from West Cambell Street.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established November 1, 1977.

Basin characteristics.--D. A. = 0.47 mi²; L = 0.65 mi; S = 184 ft/mi.

Remarks.--Peaks above 3.0 listed. Stage-discharge relation is not defined at this time.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
11/ 5/77	2.90	.14	3.00						
3/14/78	1.41	.29	3.60						
4/25/78	0.82	.46	3.14						
5/ 8/78	1.77	.18	3.61						
6/ 7/78	1.77	.24	3.05						
6/ 8/78	1.84	.23	3.62						
7/ 2/78	1.27	.29	3.19						
7/ 3/78	1.03	.18	3.13						
7/25/78	0	-	3.86						
8/ 4/78	0	-	3.44						
8/14/78	1.06	.33	3.42						
1/ 1/79	2.12	.20	3.58						
4/12/79	3.09	.20	3.36						
5/ 4/79	0.77	.29	3.35						
6/ 3/79	1.87	.38	5.43						
7/20/79	2.42	.26	3.14						
3/20/80	4.01	.43	4.25						
6/24/80	1.95	.31	3.50						
6/29/80	1.19	.30	3.20						
5/31/81	0.83	.34	3.03						
6/ 4/81	1.28	.30	3.53						
1/21/82	0.94	.22	3.27						
1/23/82	1.40	.13	3.44						
3/15/82	1.21	.36	3.55						
3/21/82	1.86	.23	3.24						
4/17/82	1.38	.27	3.67						

TENNESSEE RIVER BASIN

03584060 Pleasant Run Creek at Pulaski, TN

Location.-- Lat 35°11'47", long 87°01'52", Giles County, upstream from culvert under U.S. Highway 64 and 0.6 mile above mouth.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. From November 11, 1977 to March 3, 1980, recorders were located on the left downstream wingwall. On March 3, 1980, recorders were relocated upstream from culvert.

Basin characteristics.--D. A. = 1.29 mi²; L = 2.34 mi; S = 74.3 ft/mi.

Remarks.--Peaks above 4.5 feet listed. Stage-discharge relation is not defined at this time.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
11/29/77	-	-	5.46		5/17/80	2.85	.12	6.93	
3/14/78	-	-	5.46		6/29/80	1.07	.28	5.32	
5/ 8/78	-	-	4.68		7/ 3/80	0.40	.20	4.83	
5/30/78	-	-	6.14		7/21/80	0.91	.14	4.77	
6/ 8/78	-	-	6.54		7/27/80	2.13	.29	6.54	
7/13/78	-	-	5.32		8/11/80	1.14	-	4.87	
8/ 3/78	-	-	6.42		8/18/80	0.26	.12	5.03	
9/13/78	-	-	6.13		9/ 6/80	0	-	4.96	
10/ 7/78	-	-	6.40		10/27/80	1.23	.05	4.58	
10/14/78	-	-	5.65		11/27/80	0.47	.07	4.62	
11/ 7/78	-	-	6.59		2/ 1/81	2.03	.06	4.88	
11/10/78	-	-	5.31		3/ 4/81	1.03	.04	4.70	
8/21/79	-	-	7.32		4/ 9/81	1.06	.23	5.20	
9/ 1/79	-	-	6.87		7/ 5/81	1.59	.24	5.65	
9/21/79	-	-	8.09		1/21/82	1.42	.17	6.07	
11/ 1/79	-	-	5.70		1/23/82	1.56	.26	7.08	
11/19/79	-	-	6.28		2/ 9/82	0.44	.07	4.51	
3/16/80	1.64	.07	*6.06		3/15/82	0.77	.27	5.62	
3/17/80	0.85	.03	5.51		3/17/82	0.77	.15	5.73	
3/20/80	3.26	.08	6.50		3/21/82	1.62	.13	5.60	
3/24/80	0.50	.05	4.79		3/31/82	0.65	.35	5.40	
3/28/80	2.11	.06	6.40		4/ 3/82	0.78	.28	5.38	
4/ 8/80	1.40	.43	7.41		4/17/82	0.98	.39	5.75	
5/16/80	1.36	.24	5.84						

*Starting 3/16/80, peak given is for continuous recorder. Prior to 3/16/80, peak given is from CSG.

TENNESSEE RIVER BASIN

03595520 Grindstone Hollow Creek at Manchester, TN

Location.--Lat 35°28'56", long 86°05'33", Coffee County, upstream from culvert at Oakdale Street and at river mile 0.6.

Gage and history.--Dual digital recorders with 5-minute punch interval, housed in separate shelter. Station established October 27, 1977.

Basin characteristics.--D. A. = 2.11 mi²; L = 2.60 mi; S = 28.2 ft/mi.

Remarks.--Peaks above 3.0 feet listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
11/21/77	3.01	.03	3.37	141	8/ 4/80	2.37	.40	5.23	319
3/14/78	1.48	.24	3.63	165	9/ 2/80	0.95	.29	3.08	115
4/30/78	2.30	.14	4.03	201	1/ 3/82	4.18	.16	5.62	361
5/ 8/78	1.78	.14	4.12	208	1/21/82	1.46	.10	4.52	246
6/ 8/78	4.24	.40	5.37	334	1/23/82	1.41	.17	4.08	205
6/12/78	1.13	.51	3.27	132					
7/ 2/78	1.47	.31	3.03	111					
12/ 8/78	1.85	.07	3.24	130					
1/ 1/79	2.50	.27	4.44	238					
1/ 7/79	1.77	.03	3.42	146					
1/20/79	1.86	.04	3.06	113					
1/21/79	0.68	.03	3.35	140					
2/25/79	2.69	.36	5.67	367					
3/ 3/79	2.39	.05	4.50	244					
4/ 2/79	1.65	.09	3.34	139					
4/12/79	2.13	.14	3.31	136					
7/25/79	2.27	.13	4.34	228					
8/26/79	5.04	.58	6.86	508					
9/27/79	3.15	.09	3.48	151					
11/23/79	2.14	.08	3.26	131					
3/ 7/80	1.57	.08	3.42	146					
3/ 8/80	1.28	.34	4.51	245					
3/17/80	1.57	.03	3.07	114					
3/20/80	4.24	.14	6.32	442					
3/28/80	1.45	.07	3.67	168					
7/26/80	3.40	.30	3.18	124					

TENNESSEE RIVER BASIN

03607274 Bailey Fork Creek tributary at Paris, TN

Location.--Lat 36°18'17", long 88°17'39", Henry County, downstream from bridge on Wilson Street.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established February 17, 1978.

Basin characteristics.--D. A. - 1.04 mi²; L = 2.34 mi; S = 57.1 ft/mi.

Remarks.--Peaks above 2.5 feet listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
5/12/78	1.38	.36	*2.82	31.1	10/27/80	0.76	.04	2.59	18.6
12/ 3/78	4.93	.24	*5.07	184	11/17/80	1.86	.06	2.90	35.9
12/ 8/78	4.11	.32	*5.23	193	2/ 1/81	1.50	.12	2.99	41.6
2/23/79	1.55	.16	*3.66	92.2	3/ 4/81	1.36	.08	2.96	39.7
4/ 1/79	3.98	.23	*5.93	218	3/29/81	1.38	.10	2.86	33.5
4/11/79	1.88	.29	*2.62	20.1	5/18/81	0.56	.23	2.63	20.6
5/ 3/79	2.43	.25	*5.32	198	6/ 2/81	0.49	.23	2.66	22.3
6/21/79	1.57	.34	*4.91	175	6/ 4/81	0.45	.14	2.73	26.0
7/ 8/79	1.47	.19	*4.71	163	6/ 5/81	1.50	.17	3.94	113
7/ 9/79	0.29	.15	*2.58	18.1	6/ 6/81	3.21	.34	7.88	317
7/12/79	1.68	.08	*3.91	111	10/17/81	1.57	.16	3.83	105
7/15/79	0.80	.18	*3.04	44.9	1/ 2/82	0.82	.03	3.02	43.6
7/28/79	0.44	.12	2.93	37.8	1/ 9/82	1.28	.62	3.73	97.4
8/ 2/79	0.1	.01	2.86	33.5	4/16/82	-	-	4.65	159
8/10/79	0.60	.29	3.17	53.8					
9/21/79	4.18	.19	5.87	225					
11/ 9/79	0.99	.11	2.94	38.4					
11/23/79	3.03	.03	3.60	88					
12/23/79	1.43	.10	4.56	154					
12/24/79	0.78	.14	4.61	157					
1/11/80	0.61	.04	2.79	29.4					
4/13/80	0.80	.05	2.77	28.2					
5/16/80	0.60	.08	2.53	15.9					
6/ 8/80	0.47	.14	2.69	23.8					
6/29/80	2.85	1.99	7.51	300					
7/22/80	3.11	.42	4.95	177					

*Prior to July 19, 1979, gage located 10 feet upstream from present site.

OBION RIVER BASIN

07027530 South Fork Forked Deer River tributary at Jackson, TN

Location.--Lat 35°37'01", long 88°49'19", Madison County, upstream from culvert at Farrar Street at Jackson and 20 feet east of intersection of Union Street.

Gage and history.--Dual digital recorders with 5-minute punch interval, housed in separate shelters. Station established December 2, 1977.

Basin characteristics.--D. A. = 0.98 mi²; L = 1.64 mi; S = 54.9 ft/mi.

Remarks.--Peaks above 6.5 feet listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
3/13/78	1.37	.25	8.85	366	4/ 8/80	1.59	.35	8.07	297
4/24/78	0.56	.26	6.55	169	6/19/80	1.62	.46	9.76	453
5/ 1/78	2.08	.12	7.70	263	6/23/80	2.11	.35	8.86	368
5/ 7/78	2.37	.13	8.09	298	6/29/80	4.03	.59	11.61	643
5/ 8/78	0.99	.30	6.95	201	7/22/80	2.33	.16	6.58	174
5/29/78	2.14	.32	8.68	351	9/24/80	1.00	.41	8.38	324
6/18/78	1.41	.18	6.55	169	10/17/80	1.42	.42	8.50	335
11/17/78	0.62	.24	6.79	188	5/24/81	0.66	.31	7.26	228
12/ 3/78	3.98	.11	6.70	181	5/30/81	1.51	.28	8.67	350
12/ 7/78	2.89	.30	6.99	204	6/ 6/81	2.09	.06	10.49	526
12/ 7/78	2.89	.30	7.54	249	7/ 6/81	2.04	.23	8.26	313
12/ 8/78	2.20	.11	8.02	292	7/18/81	0.34	.13	7.58	255
3/23/79	1.62	.15	7.16	218	7/28/81	0	-	9.98	475
4/ 1/79	3.44	.21	10.62	540	8/28/81	0.88	.33	6.59	175
4/11/79	3.83	.56	11.42	623	10/17/81	2.06	.18	8.55	340
5/ 3/79	3.96	.29	10.02	477	1/22/82	1.49	.26	9.74	452
5/23/79	1.53	.15	6.77	187	1/31/82	1.02	.22	6.77	189
6/ 2/79	2.04	.56	10.93	571					
6/20/79	1.61	.31	8.42	328					
7/ 8/79	3.06	.39	11.34	614					
7/12/79	1.66	.10	6.76	186					
7/25/79	0.78	.24	6.69	180					
7/28/79	1.19	.23	9.23	401					
9/13/79	2.94	.17	7.36	233					
9/21/79	2.74	.17	7.11	214					
11/ 9/79	1.35	.23	6.68	179					
3/20/80	3.35	.11	7.55	252					

OBION RIVER BASIN

07028985 Middle Fork Forked Deer River tributary at Humboldt, TN

Location.--Lat 35°49'16", long 88°88'23", Gibson County, upstream from culvert at Sixth Street.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established January 6, 1978.

Basin characteristics.--D. A. = 2.12 mi²; L = 2.64 mi; S = 26.3 ft/mi.

Remarks.--Peaks above 3.5 feet listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
1/ 7/78	-	-	5.29	346	6/23/80	1.40	.16	5.58	396
3/ 2/78	1.25	.03	4.32	207	6/29/80	1.97	.50	4.75	264
3/13/78	1.17	.36	4.94	291	7/ 3/80	0.76	.12	3.94	162
5/ 1/78	1.19	.22	4.44	222	11/17/80	2.24	.08	3.51	120
5/ 7/78	2.04	.09	5.20	332	5/30/81	-	-	3.76	144
5/ 8/78	1.25	.21	5.73	423	6/ 6/81	-	-	6.03	479
5/12/78	1.12	.38	5.54	389	6/11/81	1.91	.28	6.13	498
5/28/78	1.18	.36	4.35	210	7/20/81	-	-	3.84	152
6/21/78	1.15	.41	5.83	441	8/31/81	-	-	3.69	137
11/17/78	-	-	3.90	158	9/ 2/81	-	-	4.02	171
12/ 3/78	-	-	4.48	227	10/17/81	-	-	4.69	255
12/ 7/78	-	-	5.77	430	1/ 2/82	1.21	.14	4.09	179
12/ 8/78	-	-	5.77	430	1/ 3/82	0.87	.18	4.42	219
2/23/79	-	-	5.99	471	1/20/82	1.47	.12	4.62	246
2/25/79	-	-	3.73	141	2/ 8/82	1.47	.06	4.79	269
3/23/79	-	-	3.95	164					
4/ 1/79	-	-	5.65	409					
4/11/79	1.55	.17	5.92	458					
7/ 8/79	2.71	.33	6.62	601					
7/12/79	1.38	.13	4.19	191					
10/31/79	1.21	.18	3.65	133					
12/13/79	1.88	.06	4.47	226					
12/23/79	1.29	.07	3.58	126					
3/20/80	2.12	.15	4.64	248					
3/23/80	1.08	.09	4.33	208					
4/ 8/80	1.22	.28	3.62	130					
6/19/80	1.00	.48	4.04	173					

HATCHIE RIVER BASIN

07030147 Town Creek tributary at Covington, TN

Location.--Lat 35°33'59", long 89°38' 55", Tipton County, on left bank 550 feet downstream of Liberty Ave., and 125 feet west of U.S. Highway 51.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate recorder shelters. Station established December 1, 1977.

Basin characteristics.--D. A. 0.75 mi²; L = 1.70 mi; S = 42.7 ft mi.

Remarks.--Peaks above 5.5 feet listed.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
12/ 4/77	1.49	.16	7.83	299	6/23/80	1.40	.34	6.20	134
1/ 7/78	1.96	.20	6.92	202	6/24/80	2.18	.37	7.12	222
5/ 1/78	1.71	.27	6.03	119	11/17/80	2.16	.04	6.33	146
5/ 7/78	4.54	.24	9.56	514	12/ 8/80	1.69	.10	6.15	130
5/ 8/78	1.35	.18	8.58	388	5/ 3/81	-	-	9.51	507
5/27/78	0.92	.23	7.65	279	5/26/81	-	-	6.73	183
6/20/78	1.15	.57	6.29	142	5/30/81	-	-	7.64	278
6/23/78	0.66	.28	5.59	83.7	6/ 5/81	-	-	6.56	167
7/11/78	2.26	.25	7.54	267	6/ 6/81	-	-	9.84	552
8/ 4/78	2.56	.22	8.24	347	7/20/81	-	-	5.74	95.3
8/30/78	2.54	.32	7.10	220	7/28/81	-	-	5.52	78.4
11/17/78	1.38	.22	5.79	99.3	1/ 3/82	1.46	.28	7.47	259
12/ 3/78	2.96	.20	7.52	265	1/20/82	1.19	.08	6.13	128
12/ 7/78	2.45	.22	5.96	113	1/31/82	0.96	.12	6.26	139
12/ 8/78	2.33	.16	8.56	385	4/17/82	4.82	.28	9.21	467
12/31/78	1.06	.21	6.35	147					
2/23/79	2.08	.19	7.83	299					
2/24/79	1.47	.07	6.86	196					
3/ 3/79	2.07	.10	7.60	274					
4/ 1/79	5.23	.34	5.65	88.3					
4/11/79	1.01	.35	7.36	247					
4/23/79	2.43	.09	5.51	77.6					
5/22/79	0.92	.13	5.88	107					
9/20/79	2.16	.09	5.72	93.7					
11/21/79	2.60	.17	6.27	140					
11/25/79	1.04	.06	5.51	77.6					
12/12/79	2.83	.10	7.04	214					

MISSISSIPPI RIVER BASIN

07031758 Cypress Creek at Memphis, TN

Location.--Lat 35°08'51", long 89°57'33", Shelby County, at bridge on Broad Street.

Gage and history.--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established November 3, 1977.

Basin characteristics.--D. A. = 4.97 mi²; L = 4.66 mi; S = 19.1 ft/mi.

Remarks.--Peaks above 4.0 feet listed. Stage-discharge relation is not defined at this time.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
12/ 4/77	2.06	.32	9.90		4/ 8/80	1.45	.23	5.82	
3/13/78	1.60	.34	8.26		4/11/80	1.20	.12	4.99	
5/ 7/78	3.91	.28	10.52		6/24/80	4.33	.23	9.28	
5/19/78	0.40	.10	6.97		7/22/80	6.76	.35	7.18	
6/ 6/78	1.24	.27	7.17		9/17/80	1.34	.12	4.56	
7/14/78	3.53	.25	7.28		9/23/80	1.12	.22	4.19	
8/ 8/78	1.86	.34	6.52		10/17/80	1.23	.26	4.42	
8/10/78	4.30	.35	10.62		10/27/80	1.84	.10	4.90	
8/29/78	1.97	.23	6.26		11/17/80	1.44	.12	4.36	
12/31/78	1.90	.23	5.66		3/29/81	2.11	.09	4.77	
3/ 3/78	2.53	.15	7.97		4/20/81	0.99	.23	4.64	
4/ 1/79	3.62	.29	9.85		4/22/81	0.64	.16	4.69	
8/22/79	-	-	7.47		5/ 9/81	0.84	.17	4.98	
8/24/79	1.33	.21	8.10		5/31/81	0.89	.16	4.48	
1/ 6/80	.02	.01	5.83		6/ 6/81	1.87	.11	5.87	
1/ 7/78	0.90	.10	4.23		7/ 5/81	1.43	.28	6.69	
1/24/78	2.02	.07	4.86		4/21/81	1.21	.26	4.74	
1/25/78	0.94	.03	4.07		8/ 6/81	1.20	.43	4.20	
5/ 8/78	1.35	.35	5.37		8/25/81	0.12	.05	4.28	
8/ 4/78	1.33	.12	4.55		8/31/81	-	-	8.78	
12/20/78	0	-	4.00		10/17/81	-	-	8.43	
2/23/79	1.33	.14	4.83		1/ 2/82	1.12	.16	4.28	
3/23/79	1.07	.13	4.00		1/20/82	1.02	.16	5.16	
4/23/79	-	-	4.54		1/22/82	1.23	.29	7.46	
6/ 2/79	1.48	.07	4.59		1/31/82	1.03	.23	6.08	
11/21/79	2.19	.20	4.41		2/ 9/82	1.79	.17	4.63	
11/22/79	2.04	.09	4.43		3/14/82	1.07	.18	4.68	
12/12/79	2.21	.08	4.48		3/20/82	0.64	.26	5.40	
3/16/80	2.32	.06	4.01		3/21/82	0.42	.21	4.13	
3/17/80	0.68	.10	4.36		4/17/82	3.14	.96	11.17	
3/23/80	1.35	.07	5.10						

TENNESSEE RIVER BASIN

85173400 South Fork Dobbs Branch at Chattanooga, TN

Location--Lat 35°00'36", long 85°17'34", Hamilton County, upstream from culvert at Clio Street at Chattanooga and 0.6 mile upstream from mouth.

Gage and history--Dual digital recorders with 5-minute punch intervals, housed in separate shelters. Station established December 4, 1979.

Basin characteristics--D. A. = 1.12 mi²; L = 1.41 mi; S = 111.3 ft/mi.

Remarks--Peaks above 46.00 feet listed that are not affected by backwater from Chattanooga Creek.

Runoff events

Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)	Date	Total accumu- lated rain- fall (in)	Maxi- mum 5- minute inten- sity (in)	Stage (ft)	Dis- charge (ft ³ /s)
3/ 7/80	1.77	.04	46.23	131	8/20/81	0.99	.10	46.73	165
3/17/80	2.49	.12	47.84	230	1/21/82	1.56	.11	46.92	175
3/21/80	5.96	.12	49.82	380	1/23/82	1.14	.13	47.13	187
4/13/80	1.61	.06	47.09	185	3/14/82	0.63	.20	47.02	181
5/17/80	2.75	.19	48.98	312	3/15/82	1.95	.14	47.85	231
5/22/80	0.71	.06	46.09	121					
6/16/80	1.09	.32	46.90	174					
6/25/80	0.15	.04	46.47	147					
7/26/80	0.82	.25	47.58	214					
8/29/80	1.76	.22	48.24	257					
11/23/80	1.59	.09	46.15	125					
2/10/81	2.01	.05	47.32	198					
3/30/81	1.61	.05	46.78	167					
4/ 5/81	1.08	.30	47.60	215					
4/ 9/81	0.50	.03	46.34	138					
4/23/81	0	-	46.08	121					
5/10/81	0.72	.02	48.08	246					
5/19/81	0.22	.01	46.58	155					
5/25/81	0	-	46.77	166					
5/31/81	0	-	48.97	311					
6/ 2/81	0.01	-	47.79	227					
6/ 4/81	0.03	-	46.50	150					
7/ 4/81	-	-	47.78	227					
7/16/81	-	-	46.85	171					
7/24/81	-	-	48.28	259					
8/ 6/81	0.75	.20	46.73	165					