UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DEPTH ESTIMATION FOR ORDINARY HIGH WATER OF STREAMS IN THE MOBILE DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS, ALABAMA AND ADJACENT STATES

By Joe R. Harkins and Mark E. Green

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DEPTH ESTIMATION FOR ORDINARY HIGH WATER OF STREAMS IN THE MOBILE DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS, ALABAMA AND ADJACENT STATES

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ABSTRACT

The 25 percent streamflow duration and corresponding depth were selected to represent ordinary high water. Statistical relations of 25 percent flow duration depth to eight basin parameters were analyzed using a stepwise linear regression procedure.

A procedure for estimating "ordinary high water" depth was derived using one independent variable--drainage area size. Two equations were derived; the standard error of estimate of the equation for hydrologic area 1, the Appalachian Plateaus, is 26 percent and for area 2, the Coastal Plains province, is 39 percent. The equations apply where the stream channels or streamflow is not significantly altered by man's activities.

INTRODUCTION

The U.S. Army Corps of Engineers requested the U.S. Geological Survey, by an interagency agreement, to devise a method for estimating "ordinary high water" elevations for streams in the Mobile District of the U.S. Army Corps of Engineers. Ordinary high water elevations are needed by the Corps of Engineers to fulfill their regulatory responsibilities under section 404 of the Federal Water Pollution Control Act. "Ordinary high water mark" is defined as the "25% inundation factor" in the Federal Register, Tuesday, July 19, 1977, Part II, Regulatory Program of the Corps of Engineers. The 25 percent flow duration (daily flow exceeded 25 percent of the time on the average) is used as the "25% inundation factor" to

include those areas where water will be present with predictable regularity. This flow is higher than average flow but is within-bank flow conditions.

Units of Measurement

Inch-pound units	Conversion factor	Metric units
inch	2.54	Millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.590	square kilometer (km^2)
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)

Multiply inch-pound values by conversion factor to obtain metric values.

METHOD OF COMPUTATION OF STREAM DEPTH USED FOR MODEL INPUT

Streamflow and stage records for 226 gaging stations having 10 or more years of continuous record of discharge on streams with natural channels draining from 0.98 to 6,600 square miles were used to determine stream depth. Records for stations subject to regulation of flow or regulation of water-surface elevation were not used. The 25 percent flow duration discharge was determined using daily flow values for each station. The rating curve (stage-discharge relation) and the stage of the stream bottom (stage of zero flow) at the gaging station control were used to determine the depth of water for the 25 percent flow duration. This depth was used as the dependent variable in the regression analyses.

REGRESSION ANALYSES

The Statistical Analysis System (SAS) stepwise regression procedure using the maximum R^2 improvement (MAXR) technique, developed by James H. Goodnight (Barr and others, 1979), was selected to analyze the dependence of the ordinary high water depth (DEPH25) on eight parameters for 226 gaging stations treating

the district as a homogeneous unit. Parameters used are as follows:

A Drainage area, in square miles

S Main channel slope, in feet per mile

L Main channel length, in miles

E Mean basin elevation, in feet, National Geodetic Vertical Datum of 1929

St Storage factor based on area of lakes and ponds, in percent of contributing drainage area

F Forest cover, in percent of contributing drainage area

Si Soils index

P Mean annual precipitation, in inches

The MAXR technique also provides a series of regression equations showing the "best" one-variable equation, the "best" two-variable equation, and so forth up to the "best" n-variable equation, where n is the number of independent variables. Variables are added to the regression equation in a stepwise manner that produces a maximum value of R^2, the multiple regression coefficient.

A regression analysis was made for unregulated streams in the Mobile District using the following model:

$$\log \text{DEPH25} = \log C + B_o \log X_1 + B_1 \log X_2 + \ldots + B_{n-1} \log X_n$$

where DEPH25 is the dependent variable,

log C is a regression constant,

$B_o \ldots B_{n-1}$ are the regression coefficients, and

$X_1 \ldots X_n$ are the independent variables.

The linear form can then be converted to the power-form equation,

$$\text{DEPH25} = C(X_1^{B_o})(X_2^{B_1}) \ldots (X_n^{B_{n-1}}).$$

The standard error of estimate, a measure of the accuracy of an equation, was not significantly reduced when more than one independent variable was considered in the model. Therefore, the general model proposed is of the form,

$$\text{DEPH25} = CX^B.$$

The "best" one-variable equation derived from the regression analyses had drainage area as the independent variable.

The District was then divided into two hydrologic areas (fig. 1) to attempt to reduce the standard error of estimate. The division was made to group data according to differences in geomorphology of the Appalachian Plateaus and the Coastal Plain physiographic provinces. The regression equations derived for the areas using the same techniques as used for the entire district are as follows:

Hydrologic area	Equation	Correlation coefficient R	Standard error of estimate in percent	Sample size (n)
1	$DEPH25 = 0.48A^{0.33}$	0.88	± 26	79
2	$DEPH25 = 0.45A^{0.38}$	0.81	± 39	147

where DEPH25 = stream depth at ordinary high water, in feet

A = drainage area, in square miles.

The regression coefficients and equations used are significant at the 5 percent level.

An analysis of covariance at the 5 percent level of significance showed there was a significant difference between the equation derived for the entire District and the two equations listed above. Therefore, the two equations listed above are used for the District.

Logarithmic plots of regression residuals versus the independent variable drainage area and residuals versus the dependent variable DEPH25 apparently have constant variance throughout the range of variable values used in the analyses. The logarithmic plot of DEPH25 versus drainage area provided a graph showing an apparent straight line relationship. A map showing residuals at gaging station locations did not show any apparent regional bias within the areas. The assumptions of linear regression appear to have been satisfied in the analyses.

Drainage areas of gaging stations used in the regression analyses for hydrologic area 1 ranged from 0.98 to 990 mi^2 while those in hydrologic area 2 ranged

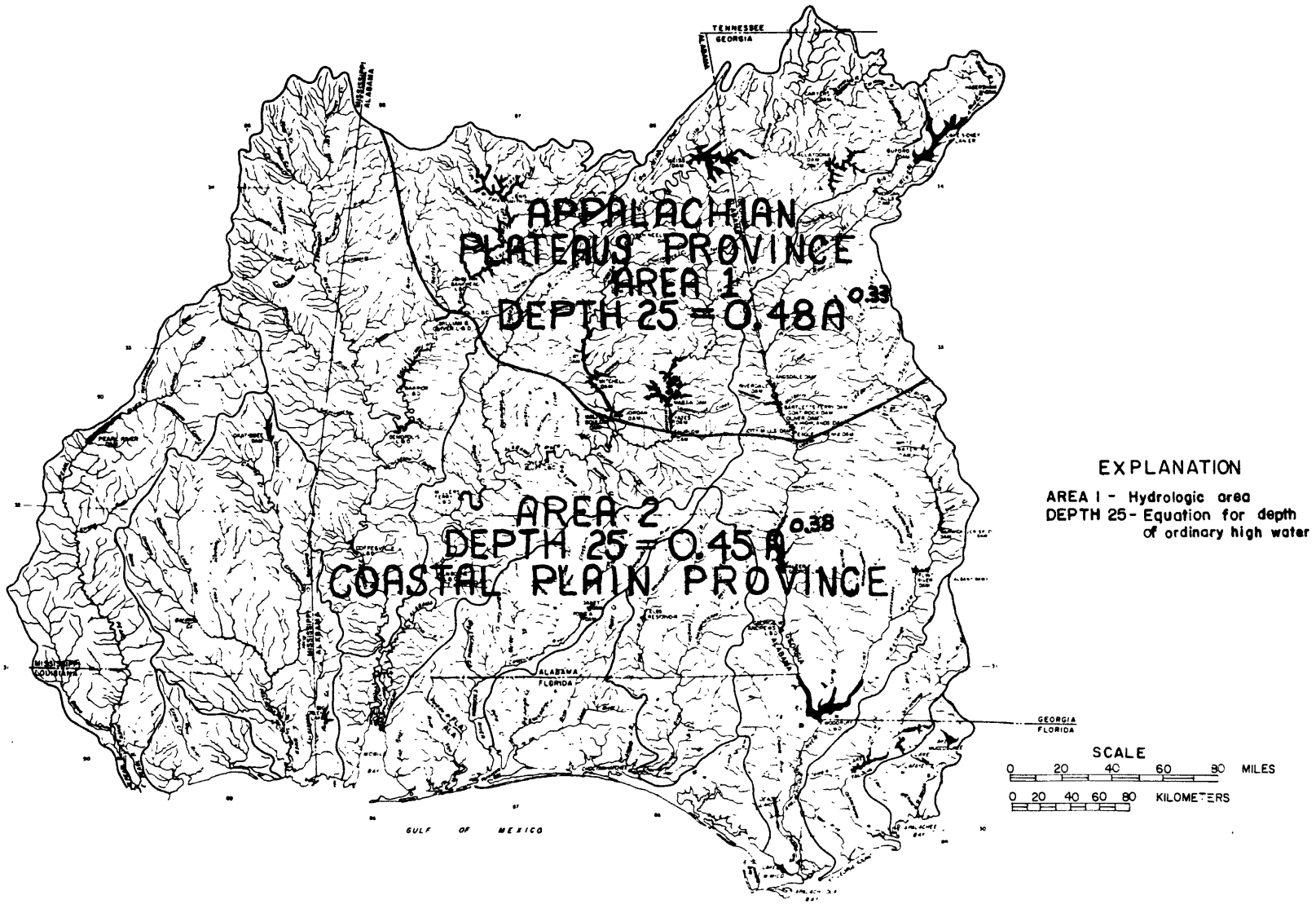

Figure 1.- Hydrologic areas for ordinary high-water relations.

from 3.25 to 6,600 mi^2. These and selected parameters are given in supplementary data tables 1 and 2. The validity of the equations applies only to the range of drainage areas used in the analyses. Serious errors could be introduced to the estimate if the equations are extended beyond these ranges.

A partial analysis of sensitivity of the regression equations was performed on the independent variable, drainage area. A 10 percent error in computing drainage area was found to produce an error of less than 4 percent in the ordinary high water depth estimate.

APPLICATION OF ESTIMATING METHOD

The estimating method consists of regression equations using one independent variable, drainage area. The method can be used to estimate the depth of ordinary high water at any point on a stream except on those streams where man's activities have altered either the water-surface elevation or streamflow.

The procedure for estimating ordinary high water elevation using this method is as follows:

Step 1. Determine if the stream or its drainage basin is affected by man's activities or has natural conditions. If the stream at the point of interest has natural conditions, proceed to step 2. If the stream is significantly altered by man's activities, select alternate methods for estimating ordinary high water elevations.

Step 2. Select from figure 1 the equation for use according to the location of the point of interest.

Step 3. Determine the drainage area at the point of interest.

Step 4. Using the drainage area computed (step 3) and the equation selected (step 2), compute the depth of water for ordinary high water.

If the elevation of ordinary high water is required, proceed to steps 5 and 6.

Step 5. Select the stream water-surface control location downstream from the

site of interest and determine the streambed elevation by on site surveys.

Step 6. Add the depth of water computed in step 4 to the elevation determined in step 5 to obtain the elevation of ordinary high water. If the point of interest is a great distance upstream, correct for slope of water surface.

Ordinary high water for streams affected significantly by man's activities cannot be estimated using this method. Ordinary high water for streams where the water surface and discharge are regulated require knowledge of storage, discharge patterns, stream profiles, and so forth. Generally, these are streams having large drainage areas. Many of these streams have reservoirs; however, water-surface elevation and flow data for these reservoirs and dams are available.

SELECTED REFERENCES

Barr, A. J., Goodnight, J. H., Sall, J. P., Blair, W. H., and Chilko, D. M., 1979, SAS User's guide: SAS Institute, Inc., 494 p.

Draper, Norman, and Smith, Harry, 1966, Applied regression analysis: John Wiley & Sons, Inc., 407 p.

Zar, Jerrold H., 1974, Biostatistical analysis: Prentice-Hall, Inc., 620 p.

Supplementary Data

1. Station and basin parameters in hydrologic area 1.

Station number	Station name	Area	D25	DEPH25	Slope	Length	Forest	Precip
02177000	Chattooga River near Clayton, Ga.	207	741	2.4	37.20	45.80	96.2	69.0
02178400	Tallulah River near Clayton, Ga.	56.5	220	2.0	72.80	13.90	95.0	60.0
02182000	Panther Creek near Toccoa, Ga.	32.5	77.1	1.7	103.50	12.70	90.0	65.0
02188500	South Beaverdam Creek at Dewy Rose, Ga.	35.8	60.9	1.7	10.90	20.00	26.1	50.0
02191000	North Fork Broad River near Carnesville, Ga.	119	204	2.3	9.00	31.20	55.0	53.0
02191200	Hudson River at Homer, Ga.	61.1	120	2.0	13.40	19.90	67.7	57.0
02193500	Little River near Washington, Ga.	291	306	3.7	6.41	34.80	77.2	46.0
02204500	South River near McDonough, Ga.	456	613	4.0	5.40	46.50	57.4	47.5
02205000	Wildcat Creek near Lawrenceville, Ga.	1.59	2.05	0.4	74.10	1.80	52.8	51.0
02205500	Pew Creek near Lawrenceville, Ga.	2.23	3.04	0.9	53.90	2.36	69.0	50.0
02206000	Shetley Creek near Norcross, Ga.	0.98	1.39	0.6	109.60	1.50	20.5	50.5
02206500	Yellow River near Snellville, Ga.	134	197	2.4	9.02	21.40	65.4	50.5
02207000	Garner Creek near Snellville, Ga.	5.54	8.1	0.6	44.40	4.10	75.8	49.0
02207500	Yellow River near Covington, Ga.	378	472	3.7	6.68	51.90	63.1	49.0
02209000	Alcovy River below Covington, Ga.	244	449	2.8	5.00	56.00	60.9	49.0
02211300	Towaliga River near Jackson, Ga.	105	155	2.4	9.80	22.10	70.0	47.0
02211500	Towaliga River near Forsyth, Ga.	315	398	2.3	10.20	37.80	65.1	47.0
02212600	Falling Creek near Juliette, Ga.	72.2	83.2	2.0	17.20	14.00	95.0	45.5
02217000	Allen Creek at Talmo, Ga.	17.3	30.4	1.2	28.10	11.00	73.0	53.0
02217500	Middle Oconee River near Athens, Ga.	398	599	1.9	6.32	42.90	60.2	51.5
02217900	North Oconee River at Athens, Ga.	283	467	2.3	6.60	62.60	61.4	53.0
02219500	Apalachee River near Buckhead, Ga.	436	639	4.4	9.94	51.90	57.4	48.5
02220550	Whitten Creek near Sparta, Ga.	15.0	21.7	1.5	29.30	8.41	95.0	44.5
02221000	Murder Creek near Monticello, Ga.	24.0	29.4	1.0	19.50	8.10	51.4	46.5
02331000	Chattahoochee River near Leaf, Ga.	150	466	3.2	31.70	28.30	85.2	61.5
02331500	Soque River near Demorest, Ga.	156	367	2.0	16.20	32.40	72.0	63.0
02331600	Chattahoochee River near Cornelia, Ga.	315	942	5.5	26.60	32.40	80.7	62.0
02333000	Chattahoochee River near Gainesville, Ga.	559	1339	4.0	9.50	65.10	80.1	60.0
02333500	Chestatee River near Dahlonega, Ga.	153	417	2.8	28.70	25.60	89.9	59.0
02335700	Big Creek near Alpharetta, Ga.	72.0	126	2.4	8.50	18.90	75.0	51.0
02337000	Sweetwater Creek near Austell, Ga.	246	395	2.7	3.44	38.80	73.4	49.5
02337500	Snake Creek near Whitesburg, Ga.	37.0	64.0	1.6	20.10	13.20	60.0	50.0
02339000	Yellowjacket Creek near LaGrange, Ga.	182	234	3.2	7.54	27.00	75.0	50.0
02340500	Mountain Oak Creek near Hamilton, Ga.	61.7	94.0	1.7	10.60	25.20	77.0	50.0
02344300	Camp Creek near Fayetteville, Ga.	17.2	26.3	1.4	16.50	8.73	60.0	48.0
02344500	Flint River near Griffin, Ga.	272	389	4.8	2.80	44.90	59.0	48.0
02344700	Line Creek near Senoia, Ga.	101	153	3.5	8.70	23.50	75.0	49.0
02345000	Flint River near Molena, Ga.	990	1630	7.4	2.20	69.20	66.9	48.5
02346500	Potato Creek near Thomaston, Ga.	186	269	2.7	4.63	34.50	69.5	48.5
02379500	Cartecay River near Ellijay, Ga.	135	320	2.3	23.50	30.10	93.6	54.0
02380000	Ellijay River at Ellijay, Ga.	90.0	215	2.0	16.90	20.60	84.0	53.5
02380500	Coosawattee River near Ellijay, Ga.	238	591	2.3	24.50	33.40	93.6	54.0
02382500	Coosawattee River at Carters, Ga.	531	1412	4.8	20.90	55.80	91.5	53.5
02383000	Rock Creek near Fairmount, Ga.	5.61	7.99	0.8	44.90	3.00	69.0	52.5
02383500	Coosawattee River at Pine Chapel, Ga.	856	1702	5.6	18.00	74.10	81.5	53.5
02384000	Conasauga River near Tennga, Ga.	108	274	2.2	73.00	26.40	96.0	53.5
02385800	Holly Creek near Chatsworth, Ga.	64.9	137	2.8	239.00	6.25	99.0	53.5
02387000	Conasauga River at Tilton, Ga.	682	1415	5.2	11.00	80.30	75.8	53.5

Supplementary Data

1. Station and basin parameters in hydrologic area 1--Continued

Station number	Station name	Area	D25	DEPH25	Slope	Length	Forest	Precip
02388000	West Armuchee Creek near Subligna, Ga.	34.5	77.5	1.6	19.90	13.50	60.0	52.5
02389000	Etowah River near Dawsonville, Ga.	103	297	1.8	15.20	35.90	90.3	57.0
02389300	Shoal Creek near Dawsonville, Ga.	20.5	54.1	1.2	50.70	8.40	85.0	56.0
02392500	Little River near Roswell, Ga.	60.5	98.8	1.7	15.50	12.60	60.0	51.5
02394950	Hills Creek near Taylorsville, Ga.	26.0	32.4	1.0	21.90	16.30	90.0	51.0
02397500	Cedar Creek near Cedartown, Ga.	109	176	1.8	4.73	19.20	47.0	51.5
02398000	Chattooga River at Summerville, Ga.	193	414	2.8	6.60	33.30	75.1	52.5
02404000	Choccolocco Creek near Jenifer, Ala.	281	410	1.9	6.80	37.50	70.0	52.0
02404500	Choccolocco Creek near Lincoln, Ala.	499	740	2.7	6.70	53.00	60.0	52.0
02405500	Kelly Creek near Vincent, Ala.	192	350	3.1	8.90	25.50	90.0	55.0
02405800	Talladega Creek above Talladega, Ala.	67.3	120	1.3	16.20	21.60	90.0	52.0
02406000	Talladega Creek near Talladega, Ala.	98.4	140	1.9	22.20	23.10	90.0	52.0
02406500	Talladega Creek at Alpine, Ala.	148	270	2.0	13.90	45.20	80.0	52.0
02407500	Yellowleaf Creek near Wilsonville, Ala.	97.2	160	2.4	23.50	6.80	90.0	54.0
02408500	Hatchet Creek near Rockford, Ala.	244	440	2.7	13.90	37.00	90.0	53.0
02410000	Paterson Creek near Central, Ala.	4.95	12.0	0.8	69.00	3.60	84.0	52.0
02411800	Little River near Buchanan, Ga.	18.0	40.4	0.9	25.10	7.00	75.0	51.0
02412000	Tallapoosa River near Heflin, Ala.	444	790	4.4	5.80	74.70	80.0	52.0
02412500	Tallapoosa River near Ofelia, Ala.	787	120	2.1	4.10	110.10	85.0	52.0
02413000	Little Tallapoosa River at Carrollton, Ga.	89.0	144	3.5	5.38	18.60	40.0	50.0
02413500	Little Tallapoosa River near Wedowee, Ala.	592	960	2.9	5.10	73.50	60.0	50.0
02414800	Harbuck Creek near Hackneyville, Ala.	6.7	16.0	0.8	67.20	4.50	90.0	54.0
02415000	Hillabee Creek near Hackneyville, Ala.	196	350	2.8	22.20	24.00	85.0	52.0
02462800	Davis Creek below Abernant, Ala.	45.2	64.0	1.74	14.80	9.40	80.0	53.0
02463500	Hurricane Creek near Holt, Ala.	108	150	1.62	10.60	25.10	90.0	54.0
02464000	North River near Samantha, Ala.	219	370	2.35	5.20	34.50	85.0	53.0
02464500	North River near Tuscaloosa, Ala.	366	520	2.03	4.30	52.60	85.0	53.0
03545000	Hiwassee River at Presley, Ga.	45.5	148	2.1	60.90	13.80	91.0	58.0
03550500	Nottely River near Blairsville, Ga.	74.8	212	2.2	58.70	12.60	78.0	56.0
03558000	Toccoa River near Dial, Ga.	177	569	2.5	30.40	29.60	85.2	55.0
03560000	Fightingtown Creek near McCaysville, Ga.	70.9	214	2.3	29.30	30.00	83.6	53.5

Station - U.S. Geological Survey station number, name, and location.
Area - Drainage area, in square miles.
D25 - Discharge, in cubic feet per second, for 25 percent flow duration.
DEPH25 - Depth of water, in feet, for 25 percent flow duration.
Slope - Main channel slope, in feet per mile.
Length - Main channel length, in miles.
Forest - Forest cover, in percent of contributing drainage area.
Precip - Mean annual precipitation, in inches.

Supplementary Data

2. Station and basin parameters in hydrologic area 2.

Station number	Station name	Area	D25	DEPH25	Slope	Length	Forest	Precip
02197600	Brushy Creek near Wrens, Ga.	28.0	34.0	1.7	14.30	13.80	65.0	41.0
02203000	Canoochee River near Claxton, Ga.	555	653	4.2	3.71	55.70	65.4	44.0
02213050	Walnut Creek near Gray, Ga.	29.0	43.8	1.0	18.50	9.42	90.0	45.5
02213500	Tobesofkee Creek near Macon, Ga.	182	250	2.4	9.61	42.30	77.9	47.5
02214000	Echeconnee Creek near Macon, Ga.	147	134	2.1	11.70	35.20	79.7	48.0
02216000	Little Ocmulgee River at Towns, Ga.	329	349	1.5	3.65	72.40	67.5	46.0
02223300	Big Sandy Creek near Jeffersonville, Ga.	31.0	34.9	1.6	13.80	11.10	87.1	45.0
02224000	Rocky Creek near Dudley, Ga.	62.9	71.6	1.3	12.10	15.30	50.0	45.5
02226100	Penholoway Creek near Jesup, Ga.	210	252	1.7	1.30	25.70	36.0	48.5
02222700	Hurricane Creek near Alma, Ga.	150	148	2.2	2.60	29.00	76.6	46.5
02227500	Little Satilla River near Offekman, Ga.	646	767	7.5	3.20	49.10	76.8	47.0
02316000	Alapaha River near Alapaha, Ga.	663	725	8.2	2.08	64.20	54.1	44.5
02318000	Little River near Adel, Ga.	577	682	7.4	3.63	50.70	45.5	46.5
02326900	St. Marks River near Newport, Fla.	535	740	1.8	2.04	62.24	59.9	55.2
02327100	Sopchoppy River near Sopchoppy, Fla.	102	240	4.3	4.88	19.67	98.0	57.1
02327500	Ochlockonee River near Thomasville, Ga.	550	633	7.5	4.06	57.40	46.8	50.0
02328000	Tired Creek near Cairo, Ga.	60.0	93.8	3.8	20.80	6.10	52.0	51.5
02329000	Ochlockonee River near Havana, Fla.	1140	1300	9.6	2.41	110.30	51.8	51.3
02329500	Little River near Quincy, Fla.	237	320	4.8	6.20	29.53	64.4	53.0
02329700	Rocky Comfort Creek near Quincy, Fla.	9.46	16.0	0.8	26.80	5.62	43.0	54.0
02330000	Ochlockonee River near Bloxham, Fla.	1700	2300	8.2	1.95	140.10	58.7	52.3
02330100	Telogia Creek near Bristol, Fla.	126	240	4.3	5.07	29.36	72.2	54.3
02330300	New River near Wilma, Fla.	81.7	200	4.6	4.51	18.03	98.0	55.4
02342500	Uchee Creek near Fort Mitchell, Ala.	325	480	1.8	9.10	31.70	45.0	49.0
02342933	South Fork Cowikee Creek near Batesville, Ga.	114	120	3.4	13.90	19.20	------	------
02343200	Pataula Creek near Lumpkin, Ga.	70.0	101	2.3	22.20	14.00	71.0	49.5
02343300	Abbie Creek near Haleburg, Ala.	144	260	3.4	8.20	24.40	60.0	53.0
02349000	Whitewater Creek near Butler, Ga.	93.4	179	2.4	17.80	15.70	76.0	48.5
02349900	Turkey Creek at Byromville, Ga.	45.0	66.0	2.4	8.70	11.00	29.0	47.0
02350600	Kinchafoonee Creek at Preston, Ga.	197	263	4.5	7.50	25.60	80.1	49.0
02353400	Pachitla Creek near Edison, Ga.	188	248	5.2	8.00	21.70	62.2	51.0
02353500	Ichawaynochaway Creek at Milford, Ga.	620	968	4.0	5.50	50.20	57.3	50.0
02354500	Chickasawhatchee Creek at Elmodel, Ga.	320	544	5.0	3.70	42.70	48.9	50.0
02357000	Spring Creek near Iron City, Ga.	485	592	7.1	4.20	42.30	48.6	53.0
02359000	Chipola River near Altha, Fla.	781	1800	4.2	1.61	54.09	41.8	53.9
02359450	Econfina Creek near Fountain, Fla.	70.2	190	3.4	10.40	17.70	95.8	58.0
02359500	Econfina Creek near Bennett, Fla.	122	580	3.1	5.61	31.49	35.4	58.2
02360000	West Fork Choctawhatchee River at Blue Springs, Ala.	84.7	160	2.8	9.80	17.00	50.0	53.0
02360500	East Fork Choctawhatchee River near Midland City, Ala.	297	100	1.7	4.70	38.50	50.0	53.0
02361000	Choctawhatchee River near Newton, Ala.	683	300	5.0	4.60	49.80	60.0	53.0
02363000	Pea River near Ariton, Ala.	492	740	2.5	6.00	45.25	70.0	53.0
02364500	Pea River near Samson, Ala.	1187	2000	7.5	4.10	96.80	65.0	54.0
02365500	Choctawhatchee River at Caryville, Fla.	3499	6600	13.1	2.00	156.50	60.7	54.0
02366000	Holmes Creek at Vernon, Fla.	386	730	6.7	3.80	41.45	52.3	56.6
02366500	Choctawhatchee River near Bruce, Fla.	4384	8500	9.2	1.72	199.90	72.2	54.8
02367000	Alaqua Creek near De Funiak Springs, Fla.	65.6	190	4.4	11.10	15.00	96.8	66.7
02367310	Juniper Creek at State Highway 85 near Niceville, Fla.	27.6	100	3.2	15.22	6.74	43.9	64.0
02368000	Yellow River at Milligan, Fla	624	1400	7.2	3.31	70.64	75.7	58.6
02368300	Baggett Creek near Milligan, Fla.	7.77	25.0	2.4	48.30	4.25	87.6	65.0
02368500	Shoal Creek near Mossy Head, Fla.	123	270	2.8	8.55	17.91	57.4	62.0

Supplementary Data

2. Station and basin parameters in hydrologic area 2--Continued

Station number	Station name	Area	D25	DEPH25	Slope	Length	Forest	Precip
02369000	Shoal River near Crestview, Fla.	474	1300	6.3	4.04	45.03	71.0	65.5
02369800	Blackwater Creek near Bradley, Ala.	86.8	170	1.9	----	-----	----	----
02370000	Blackwater River near Baker, Fla.	205	370	2.4	3.59	26.00	86.1	61.2
02370500	Big Coldwater Creek near Milton, Fla.	237	570	3.8	6.03	29.44	70.7	62.8
02370700	Pond Creek near Milton, Fla.	58.7	87.0	2.4	11.50	15.32	82.3	63.4
02371000	Conecuh River near Troy, Ala.	253	400	6.5	5.40	38.40	70.0	53.0
02371200	Indian Creek near Troy, Ala.	8.88	16.0	1.7	27.70	4.52	80.0	54.0
02371500	Conecuh River at Brantley, Ala.	492	850	4.9	4.80	60.80	60.0	54.0
02372000	Patsaliga Creek at Luverne, Ala.	249	420	6.0	7.10	26.50	70.0	54.0
02372500	Conecuh River near Andalusia, Ala.	1344	2300	7.6	4.10	96.00	70.0	57.0
02373000	Sepulga River near McKenzie, Ala.	464	680	3.0	6.80	28.60	90.0	57.0
02373500	Pigeon Creek near Thad, Ala.	296	480	4.6	6.60	35.50	75.0	57.0
02374500	Murder Creek near Evergreen, Ala.	170	320	2.2	9.00	23.80	80.0	58.0
02375000	Big Escambia Creek at Flomaton, Ala.	323	680	2.2	9.30	36.50	80.0	60.0
02375500	Escambia River near Century, Fla.	3817	7200	11.5	2.17	186.10	77.7	57.9
02376000	Pine Barren Creek near Barth, Fla.	75.3	150	3.4	11.90	19.51	54.4	63.3
02376300	Brushy Creek near Walnut Hill, Fla.	49.0	97.0	2.3	11.00	15.06	75.9	63.2
02376500	Perdido River near Barrineau Park, Fla.	394	810	4.5	5.51	43.63	86.3	64.2
02377500	Styx River near Loxley, Ala.	93.2	190	2.0	8.90	20.90	95.0	67.0
02378500	Fish River near Silver Hill, Ala.	55.1	110	2.1	9.80	16.30	80.0	66.0
02418500	Tallapoosa River below Tallassee, Ala.	3320	6500	8.5	2.90	211.00	80.0	50.0
02419000	Uphapee Creek near Tuskegee, Ala.	330	470	3.4	13.10	33.50	50.0	51.0
02430000	Mackeys Creek near Dennis, Miss.	66.8	110	2.1	8.20	17.50	85.0	53.0
02430500	Tombigbee River near Marietta, Miss.	307	520	6.0	6.10	24.10	84.0	53.0
02431000	Tombigbee River near Fulton, Miss.	612	1000	9.0	3.50	42.20	76.0	53.0
02432500	Bull Mountain Creek at Trenton, Miss.	120	230	2.6	8.20	33.60	----	53.0
02433000	Bull Mountain Creek near Smithville, Miss.	336	620	4.6	1.90	69.90	78.0	54.0
02433500	Tombigbee River at Bigbee, Miss.	1226	2600	6.5	1.80	79.00	74.0	53.0
02434000	Town Creek (Oldtown) near Tupelo, Miss.	110	79.0	1.9	8.20	20.20	29.0	54.0
02434250	Tishomingo Creek near Saltillo, Miss.	17.1	14.0	0.5	11.80	16.00	31.0	54.0
02434500	Euclautubba Creek at Saltillo, Miss.	19.2	11.0	1.0	9.70	9.20	8.0	53.0
02435020	Town Creek at Eason Blvd. in Tupelo, Miss.	230	310	2.3	6.90	24.60	49.0	54.0
02436000	Chiwapa Creek at Shannon, Miss.	144	120	1.4	7.40	24.00	28.0	54.0
02436500	Town Creek (West Fork Tombigbee River) near Nettleton, Miss.	617	580	3.4	6.90	38.20	40.0	53.0
02437000	Tombigbee River near Amory, Miss.	1924	3500	8.7	1.80	83.00	61.0	53.0
02437500	Tombigbee River at Aberdeen, Miss.	2169	3800	14.1	1.80	101.00	58.0	53.0
02439400	Buttahatchee River near Aberdeen, Miss.	787	1600	6.7	4.10	83.60	86.0	54.0
02439500	Buttahatchee River near Caledonia, Miss.	823	1600	5.9	3.90	93.10	86.0	54.0
02440000	Chuquatonchee Creek near Egypt, Miss.	170	100	1.9	1.10	27.20	84.0	53.0
02440500	Chuquatonchee Creek near West Point, Miss.	514	480	7.1	1.80	44.80	21.0	52.0
02441000	Tibbee Creek near Tibbee, Miss.	928	820	5.4	3.80	54.80	40.0	50.0
02441500	Tombigbee River at Columbus, Miss.	4490	7600	8.8	1.40	143.30	61.0	53.0
02443000	Luxapallila Creek at Steens, Miss.	309	550	3.7	5.80	56.90	85.0	54.0
02444000	Coal Fire Creek near Pickensville, Ala.	131	190	2.85	5.50	36.40	85.0	50.0
02445000	Lubbub Creek near Carrollton, Ala.	116	150	4.53	5.40	27.10	80.0	51.0
02447500	Noxubee River near Brooksville, Miss.	440	410	5.3	3.40	65.50	80.0	50.0
02448000	Noxubee River at Macon, Miss.	812	810	4.8	2.50	90.60	77.0	52.0

2. Station and basin parameters in hydrologic area 2--Continued

Station number	Station name	Area	D25	DEPH25	Slope	Length	Forest	Precip
02448500	Noxubee River near Geiger, Ala.	1140	1500	6.3	2.70	85.00	70.0	50.0
02465200	Lake Creek near Northport, Ala.	3.25	8.4	0.3	----	-----	----	----
02465500	Fivemile Creek near Greensboro, Ala.	72.2	74.0	1.99	9.50	15.50	95.0	53.0
02472000	Leaf River near Collins, Miss.	752	980	4.6	3.00	68.70	80.0	56.0
02472500	Bowie Creek near Hattiesburg, Miss.	304	400	3.1	6.50	51.00	64.0	58.0
02473000	Leaf River at Hattiesburg, Miss.	1760	2700	5.6	2.50	111.40	71.0	58.0
02473500	Tallahala Creek at Laurel, Miss.	233	330	4.6	3.20	56.60	75.0	57.0
02474000	Tallahoma Creek near Laurel, Miss.	149	240	5.1	3.30	57.80	64.0	57.0
02474500	Tallahala Creek near Runnelstown, Miss.	612	1100	5.4	2.50	102.00	66.0	58.0
02474600	Bogue Homo near Richton, Miss.	344	780	3.7	4.10	69.40	65.0	58.0
02475000	Leaf River near McLain, Miss.	3510	6000	8.5	1.90	168.60	70.0	60.0
02475500	Chunky River near Chunky, Miss.	368	440	3.5	5.10	35.80	62.0	51.0
02476000	Okatibbee Creek near Meridian, Miss.	239	280	3.2	3.50	46.10	71.0	50.0
02476500	Sowashee Creek at Meridian, Miss.	51.9	52.0	1.7	8.60	10.60	67.0	51.0
02477000	Chickasawhay River at Enterprise, Miss.	913	1300	7.2	4.30	54.70	70.0	54.0
02477500	Chickasawhay River near Waynesboro, Miss.	1660	3100	11.3	2.10	119.80	73.0	57.0
02477990	Buckatunna Creek near Denham, Miss.	490	1200	7.2	3.00	82.80	83.0	58.0
02478000	Buckatunna Creek at Denham, Miss.	503	940	6.6	2.90	87.80	82.0	58.0
02478500	Chickasawhay River at Leakesville, Miss.	2680	4500	8.7	1.60	183.90	77.0	60.0
02479000	Pascagoula River at Merrill, Miss.	6600	12000	11.2	1.90	183.50	74.0	60.0
02479130	Black Creek near Brooklyn, Miss.	361	800	4.7	4.70	56.30	64.0	59.0
02479155	Cypress Creek near Janice, Miss.	52.2	87.0	1.9	9.10	12.10	89.0	60.0
02479160	Black Creek at Wiggins, Miss.	730	1600	7.3	3.00	103.30	74.0	64.0
02479200	Flint Creek near Wiggins, Miss.	24.8	51.0	2.8	13.40	8.30	81.0	63.0
02479300	Red Creek at Vestry, Miss.	416	870	6.7	2.90	76.10	80.0	64.0
02480500	Tuxachanie Creek near Biloxi, Miss.	92.4	150	2.3	6.80	26.10	82.0	67.0
02481000	Biloxi River at Wortham, Miss.	98.3	180	2.1	7.30	29.60	91.0	65.0
02481500	Wolf River near Lyman, Miss.	253	510	3.3	5.40	47.60	88.0	63.0
02481510	Wolf River near Landon, Miss.	308	750	2.9	4.90	60.40	82.0	63.0
02482000	Pearl River at Edinburg, Miss.	903	1300	9.8	1.30	76.30	55.0	52.0
02482500	Lobutcha Creek near Carthage, Miss.	308	440	6.3	2.20	57.70	79.0	52.0
02482550	Pearl River near Carthage, Miss.	1345	2200	10.6	1.40	97.50	62.0	52.0
02483000	Tuscolameta Creek at Walnut Grove, Miss.	408	360	4.1	4.10	35.40	70.0	53.0
02483500	Pearl River near Lena, Miss.	1977	2700	11.5	1.30	109.70	64.0	52.0
02484000	Yockanookany River near Koscuisko, Miss.	304	330	4.6	3.30	37.10	70.0	53.0
02484500	Yockanookany River near Ofahoma, Miss.	459	680	6.3	2.20	73.90	68.0	53.0
02486000	Pearl River at Jackson, Miss.	3149	4900	12.5	1.00	176.80	64.0	52.0
02487500	Strong River at Dilo, Miss.	425	410	3.2	2.40	61.70	84.0	54.0
02488000	Pearl River near Rockport, Miss.	4541	7900	13.6	1.00	242.10	67.0	53.0
02488500	Pearl River near Monticello, Miss.	4977	8200	11.4	1.00	273.00	67.0	54.0
02488700	Whitesand Creek near Oakvale, Miss.	131	160	1.2	8.70	30.80	47.0	59.0
02489000	Pearl River near Columbia, Miss.	5705	9700	11.5	1.00	326.00	67.0	53.0
02489240	Lower Little Creek near Baxterville, Miss.	82.6	120	2.2	13.10	11.20	80.0	60.0
02490500	Bogue Chitto near Tylertown, Miss.	502	670	3.1	3.30	59.20	61.0	57.0
07266000	Cane Creek near New Albany, Miss.	22.2	32.0	1.4	12.80	9.70	54.0	53.0
07268000	Tallahatchee River at Etta, Miss.	526	540	4.3	5.30	32.00	45.0	54.0
07274000	Yocona River near Osford, Miss.	254	270	3.4	4.10	34.80	56.0	55.0
07283000	Skuna River at Bruce, Miss.	254	180	2.5	3.60	31.20	53.0	55.0
07290500	Bayou Pierre near Carpenter, Miss.	375	460	2.8	4.30	54.70	62.0	55.0
07291000	Homochitto River at Eddiceton, Miss.	181	170	2.0	6.20	32.60	71.0	56.0

Station - U.S. Geological Survey station number, name, and location.
Area - Drainage area, in square miles.
D25 - Discharge, in cubic feet per second, for 25 percent flow duration.
DEPH25 - Depth of water, in feet, for 25 percent flow duration.
Slope - Main channel slope, in feet per mile.
Length - Main channel length, in miles.
Forest - Forest cover, in percent of contributing drainage area.
Precip - Mean annual precipitation, in inches.